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A newcomer to the septic service business, Darin Gross is making the most of an opportunity to refresh an existing Michigan company. Gross is shown with a 2020 International carrying a FlowMark Vacuum Trucks tank and National Vacuum Equipment pump. (Photo by Amy Voigt)

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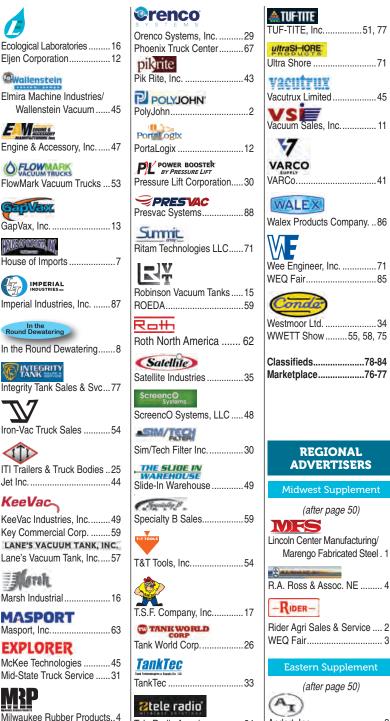
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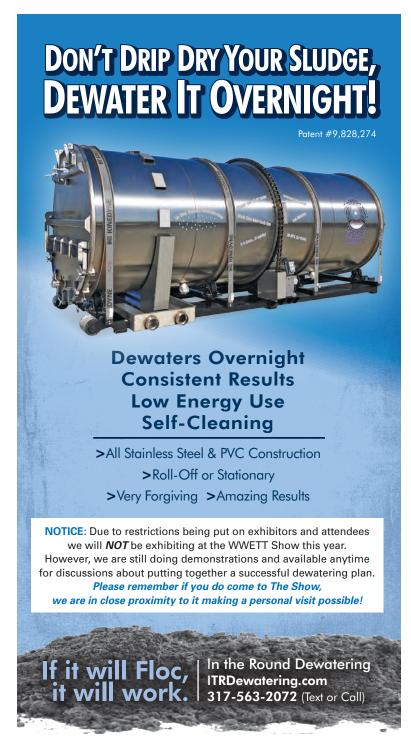
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Contact Jim with your comments, questions and opinions at editor@pumper.com.

Jim Kneiszel Editor

Follow These Words of Wisdom From Warren Buffett

The quotable king of the investment world has a lot to say that will help small wastewater companies and business owners seeking a retirement nest egg

ore than 15 years ago, a group of friends from my neighborhood and I started a stock club. Once a month we got together and pooled our modest dues to purchase a tiny slice of a company.

We talk equities, sure, but it's as much a social gathering as anything. We've watched our kids grow up and each member flourish in their chosen careers. As for our portfolio, we've enjoyed high-flying economic times and sweated out the devastating market collapse of 2008.

It's been a great learning experience and I would recommend such a club to pumpers who may want to scratch that investing itch, especially if it's part of an overall retirement savings strategy. Anyone can benefit from a greater awareness of stocks, bonds, mutual funds and how smart investing can help build a retirement nest egg.

One thing about the stock club I've really enjoyed is following the stories and advice of Warren Buffett, the chairman and CEO of Berkshire Hathaway and one of the richest people in the world. From his start hawking sticks of gum on the street at age 6 to his massive current wealth of about \$80 billion, the 90-year-old so-called Oracle of Omaha is one of the great American success stories.

PRACTICAL GENTLEMEN

Buffett reminds me a lot of Sam Johnson, the late CEO of Johnson Wax, another billionaire who I had the opportunity to interview years ago. Neither used their wealth to live a life of over-indulgent luxury and gave a lot of their money away. When I met Johnson, he drove a late-model Buick to his office everyday and often took his lunches at a little hamburger stand nearby. I would call both of these gentlemen practical given their circumstances.

Buffett is somewhat famous for his austerity. He could buy mansions all over the world, but he's lived in the same relatively small house in Omaha since 1958. He often eats breakfast at McDonald's like other working folks. And in 2006 he announced he would give away 85% of his fortune rather than salt it away for generations of his heirs.

Buffett has generously shared investor advice throughout the years. And the advice is not just good for prolific stock traders. Many of these insights would be helpful to pumpers trying to build and improve their businesses in 2021 ... and save a little nest egg for their retirement.

So here are a few of my favorite words of wisdom from Warren Buffett and how they can impact the pumping community:

I'll give my children enough money so that they would feel they could do anything, but not so much that they could do nothing. 37

- WARREN BUFFETT

It takes 20 years to build a reputation and five minutes to ruin it. If you think about that, you'll do things differently.

Buffett is saying that you can't just go out and buy a good reputation. It's hard earned and protecting it should be job No. 1. He backstopped this when talking about how he would react to an employee error: "Lose money for the firm and I will be understanding. Lose a shred of reputation for the firm and I will be ruthless."

Recently I heard about a pumper contemplating firing a new employee for making a mistake in the field that would cost some money to fix. That could be a teachable moment for an otherwise quality worker. Things happen. But if an employee did something to harm your company's good name, Buffett would tell you not to put up with that.

"When you have able managers of high character running businesses about which they are passionate, you can have a dozen or more reporting to you and still have time for an afternoon nap," Buffett has said. "Conversely, if you have even one person reporting to you who is deceitful, inept or uninterested, you will find yourself with more than you can handle."

And when you find a good driver or manager, Buffett would tell you to get out of the way and let them do their jobs. He once used this baseball analogy, "The important thing we do with managers, generally," he said, "is to find .400 hitters and then not tell them how to swing."

Your best investment is in yourself. There is nothing that compares to it.

I think of this one every time I attend an industry event. Consider the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show, for instance. The pumpers I've met there took time from their busy schedules to learn through industry training, see the latest technology being offered,

and spent hours networking with others. Over the course of ownership of a wastewater company, all these investments will pay major dividends. Whenever you have the choice to learn something that can help your small business thrive, go in that direction. This will help you evolve in the industry and build an asset that will be worth a lot of money someday.

Opportunities come infrequently. When it rains gold, put out the bucket, not the thimble.

Buffett reminds us all to seize the day when it comes to moves for your business or in the stock market. In buying stocks, Buffett says you have to go against the grain and buy when others are selling off. "We simply attempt to be fearful when others are greedy and to be greedy when others are fearful," he explained. That's how you buy low and sell high.

In your own business, watch carefully for great opportunities. Perhaps another pumper in your area is contemplating selling off his company and buying it would allow you to build revenue in a practical way. Or maybe you see demand for a new service and you could fulfill it with training and a new piece of equipment. These opportunities may come around only a few times in a decade. Learn to recognize them and have the courage to take the leap.

Rule No. 1: Never lose money. Rule No. 2: Don't forget rule No. 1.

This simple advice goes for your business as well as your personal finances. If you are going to hire a new crew member or buy a new piece of equipment, make sure those investments are going to pay off. Track how much you're spending on human and steel assets, then do well by taking care of them. Watch the ledgers closely and make sure the numbers are black and not red at the end of the month.

As for investing, Buffett would tell you it takes hours and hours of regular reading and research to choose your own investments. Most of us, pumpers included, don't really have time to do that. So as soon as you can, find a smart and trustworthy professional to help you organize your retirement investments. To save money, Buffett has often recommended buying a variety of index funds (those owning a broad spectrum of leading stocks) and keep them forever.

I'll give my children enough money so that they would feel they could do anything, but not so much that they could do nothing.

Buffett wants to help his family realize the American dream and have a good life, but he doesn't want his success to stunt their desire to work and create their own success stories. So he will leave them maybe millions, not billions, and encourage his heirs to continue with the work ethic he has taught them.

As pumpers, you're not talking billions, but maybe if you are successful after 30 years, you might be talking millions. Buffett would have you take care of your kids and grandkids, but not make them feel entitled to a paycheck without working hard for a day's wage.

It's always been a mistake to bet against America, since 1776.

Amen to that. Take solace in the fact that your company has the great good fortune to be located in the best country in the world for small business success. The same can be said for your ability to save money and invest in a broad portfolio of companies, be they American or foreign. Our economic leadership and stability is the envy of many countries across the globe. The potential for your company is limitless if you have the smarts and energy to grow it bigger.

"In the 20th century, the United States endured two world wars and other traumatic and expensive military conflicts; the Depression; a dozen

or so recessions and financial panics; oil shocks; a flu pandemic; and the resignation of a disgraced president," Buffett has said. "Yet the (Dow Jones market) rose from 66 to 11,497 (points)."

NEVER TOO LATE TO START

Maybe your current business is allowing you to put hamburgers on the table, but not much more right now. Or you have trucks and equipment to pay off and little left to invest in a retirement plan. Maybe you're older and you feel like there's not much time to amass that nest egg. I get that. But I'll leave you with one interesting fact that should give hope to all of us who work hard but have trouble seeing the light at the end of the tunnel: Warren Buffett made 99% of his wealth after age 50.













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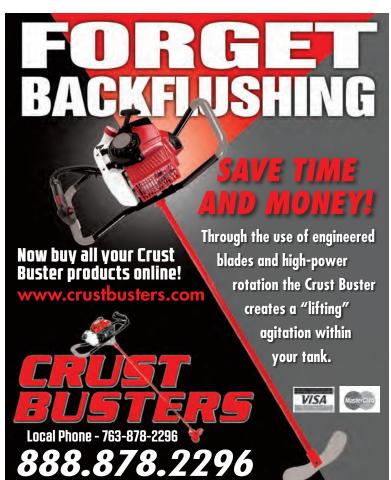
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eshaping an established business sometimes is like a remodeling project on an older home: Despite due diligence, the unexpected still happens. That's what Darin Gross experienced in early 2020 after he bought Turner Sanitation, a septic service and portable restroom-rental business based in Lake Orion, Michigan, about 40 miles north of Detroit.

Gross was tested early on when the business, started in the late 1970s, caught fire just before he was about to close on the sale. About half the facility was destroyed, including the front office, which housed reams of valuable documents and records, he says.

"It put me in a position where I almost was starting from scratch," he says. "I had to learn a lot of things on the fly. The company does a lot of recurring (pumping) service, but now I didn't even know who those recurring customers were.

"There were a lot of things to get organized, but nothing there to organize, if that makes any sense," he adds. "Even with help from the previous owners, who are great people, it was challenging."

Then the COVID-19 pandemic hit a few months later. That dealt a blow to the company's restroom-rental business, which Gross was counting on for revenue. And the learning curve involved with entering an entirely new field added only more complexity to the situation.



- The Turner Sanitation team includes, from left, Daniel Siegers, Zack Gross, Don Siegers, Jim Smith, Fallon Eldred, Darin Gross, Sue Gross, Steven Burk, Charles Cross, Bob Lawton, John Fowler and Mike Daly. (*Photos by Amy Voigt*)
- Don Siegers pumps a septic tank at a commercial property in Lake Orion, Michigan.



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DARIN GROSS

APPLYING LESSONS LEARNED

But as a successful entrepreneur over the years, Gross, 54, has learned a thing or two about business. For starters, being both resilient and proactive in the face of adversity matters greatly.

"You have to be resourceful or you're dead in the water," he notes.

Furthermore, it's also critical to create a professional image through effective branding. And last but not least, it's essential to charge prices that are high enough to pay employees well, invest in reliable and productive equipment, and still turn a reasonable profit.

So in short, Gross found himself well-equipped to handle the forces unexpectedly battering the business, which he bought after selling a semi-trailer repair business. He'd operated the company for about 10 years before selling it to a national maintenance company. Before that, he worked for his father, who ran a similar business, as well as a semi-trailer leasing company.

When Gross sold his company in 2018, he took some time off to think about his next move. That's when he learned that Turner Sanitation was for sale. The founder of the company, Bob Turner, had passed away about 10 years ago and his daughter and her husband, who had assumed ownership, now wanted to retire.





Darin Gross works at his desk at Turner Sanitation.

Fallon Eldred, the account manager, reviews a job with a customer over the phone at the Turner Septic office in Lake Orion, Michigan.

"The business is located five minutes from my home, was well-established and had a great reputation," he says. "Financial records showed slow growth, but the business had been profitable every year. I sensed it was a huge opportunity.

"I found all of that very enticing — a great chance to see if I could build something again." $\,$

EXPERIENCE PAYS OFF

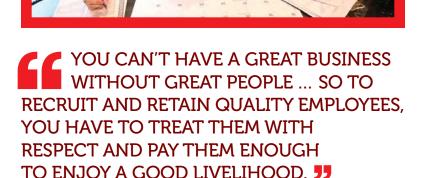
To mitigate the pandemic's impact, Gross drew on his experience with the 2008 recession, which hit about a year after he established his trailer-repair company.

"It taught me how to be very proactive in finding new business," he explains. "I got on the phone and made numerous calls to companies with truck fleets to ask for work. And it paid off."

During the next decade, Gross built the business to more than 50 mobile service trucks serving multiple trucking companies in nearly half a dozen states. "That experience taught me how to grow a company," he says.

In the wake of the pandemic, Gross hit the phones again. He and his office staff made hundreds of calls to both existing and potential customers to drum up business. Along the way, he secured a contract to clean county-owned portable restrooms located in parks as well as pump out RV waste tanks at county-owned campgrounds.

"That helped us a lot as far as generating revenue goes," he says. "The main thing in cases like this is to be proactive instead of shutting down. You have to push forward and find out where the business is."



DARIN GROSS

RAISING RATES

Gross also raised rates for septic pumping. He believed the rates being charged weren't commensurate with the value of the services provided. In addition, the rates didn't generate enough revenue to allow the company to invest in newer equipment and pay employees better, he says.

"So I tested the market and increased rates," he says. "And so far, it's working the way I thought it would ... revenue is up 25% more than the same time period last year, and that's with only 50% of the business operating (the pumping business)."

To produce more revenue, Gross also added a service-call charge to his pumping fees. His rationale? Businesses that send out expensive vehicles every day that require constant upkeep and maintenance should generate a separate revenue stream to fund those expenses.

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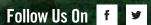


















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The trip fee is based on the distance to reach the customer. "If you pump 100 tanks a week, it adds up quickly," he says. But at the same time, he also offers a discounted pumping rate for repeat customers.

The bottom line: Maintaining and investing in new vehicle and equipment must be a top priority, he says.

FLEET IMPROVEMENTS

Gross also had to upgrade the company's service vehicles, another factor that spurred him to raise rates. He did that not only to improve vehicle reliability and boost customer service, but to improve working conditions for route drivers.

On the septic side of the business, the company runs a 2021 International HV607-H1 built out by FlowMark Vacuum Trucks with a 4,200-gallon aluminum tank and National Vacuum Equipment pump; a 2020 International CV515-4 with a 1,600-gallon aluminum tank from FlowMark and an NVE pump; and a 2007 Sterling outfitted with a 3,600-gallon steel tank from U.S. Tanks Industry and a Wallenstein pump (Elmira Machine Industries).

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Two other trucks round out the septic fleet: A 2005 International 4000 with a 2,000-gallon steel tank from Progress Tank and a Masport pump, and a 2001 Sterling with a 3,500-gallon steel tank from TankTec and a Wallenstein pump.

The company also owns four restroom service trucks: a 2016 Dodge Ram 4500 with a 550-gallon waste/150-gallon freshwater steel tank built by TankTec; a 2015 Dodge Ram 3500 with a 400-gallon waste/100-gallon freshwater aluminum tank, also manufactured by TankTec; a 2006 Ford LCF with a 440-gallon waste/150-gallon freshwater steel tank; and a 2005 GMC Sierra outfitted with a 300-gallon waste/100-gallon freshwater aluminum tank. Progress Tank built the tanks for the latter two trucks. All four trucks feature Masport vacuum pumps.

The business also owns about 400 standard and 57 handicapped-accessible restrooms, 57 hand-wash stations and a 14-foot restroom trailer from Satellite Industries. To transport restrooms, the company relies on three Ford pickup trucks and trailers from McKee Technologies and Golden Trailers.

REBRAND, RAISE PAY

Revamping the company's image was another early focal point. That included building a new website, creating a new logo and developing an integrated marketing campaign where everything from brochures to invoices were uniformly branded.

"These days, it's all about technology and image," Gross says. "There's no question that rebranding the image of the company was huge."

Gross also raised pay for employees. He didn't do it to ensure the staff, all of whom stayed on board, would like their new boss. Instead, he considered it an essential part of his business plan, which wouldn't succeed if employees left the company. He also felt they were underpaid.

"To me, it's all about the people," he explains. "You can't have a great business without great people. I certainly can't run a business by myself. So to recruit and retain quality employees, you have to treat them with respect and pay them enough to enjoy a good livelihood."

In early 2021, Gross also plans to offer health insurance and 401(k) retirement plans.

(continued)



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Charles Cross, left, and John Fowler arrange new restrooms from Satellite Industries in the company yard.

The investments in new equipment, marketing and employees helped ease what otherwise can be an awkward transition period between new owner and existing staff. After employees saw Gross was willing to put money into the business to make it better, morale increased, he says.

"In terms of personnel, the main goal for me is find out what our people do and what's their expertise — really push what they know," he explains. "I try to let them make decisions based on what they know, versus me just telling them what to do.

"The way I see it, we don't have any bosses," he adds. "We just try to respect everyone's job. Everyone plays a key role. They've been very appreciative. And if they're happy, then I'm happy."

The full-time employees include septic-route drivers Mike Daly (a 20-year employee), Robert Lawton, John Bolvee, Steven Burk (also a certified mechanic) and Charles Cross; Don Siegers, field manager and certified mechanic; Fallon Eldred, accounts manager; Jim Smith, business-development representative; and restroom-route drivers Daniel Siegers, Jake Eldred and John Fowler.

The company also employs two part-timers: Shyanne Welch, accounts manager assistant, and Zack Gross, field assistant.

HIGH EXPECTATIONS

Looking ahead, Gross sums up his business goals in two words: total domination.

"That's what I want," he says. "In the next five years, I want everyone to know about us and use us."

The potential for growth is high, he says, noting that in Oakland County alone, where the business is located, there are roughly 80,000 potential septic customers.

"And we currently service only a small percentage of them, so there's opportunity for extreme growth everywhere," he says. "We're doing well right now, but we're not even close to firing on all cylinders."

Gross also believes the restroom-rental business will rebound in 2021. Currently septic pumping generates about 75% of the company's annual revenue, but he expects sales levels to revert back to the approximately 50/50 split between septic and restrooms that existed when he bought the company.

"Despite all the challenges, I'm really excited — we're positioned to do great things," he concludes. "I'm very confident about what we're doing and where we're going."

It's good to be green

to call the company he owns — Turner Sanitation in Lake Orion, Michigan — a professional services company, not a septic pumping and portable restroom business. To him, it's an important distinction, as well as one that he firmly believes justifies charging higher prices.

Darin Gross prefers

"We are a professional business and this is a very professional industry," says Gross, who bought Turner Sanitation in January 2020. "People think of it as a dirty business, but if they have the right equipment, it's not all that dirty.

"I don't think people in the industry give themselves enough credit," he adds. "We need a better image and it all starts with the owners. We need to let people know we're professional in an essential industry ... and one way to do that is charge higher rates that allow us to pay employees better and keep investing in new equipment that enhances the industry's image."

Some may bristle at advice coming from an industry newcomer. But Gross, who built a semi-trailer repair business from three mobile-repair trucks to a 50-truck fleet, then sold the company for an eight-figure price, has the business chops to back up his assertion.

"I'd rather be known as one of the higher-priced companies," he adds. "You might lose a little business that way, but that's okay as long as customers are saying, 'But wow, they do a really great job.' Besides, most times you don't want to deal with customers who'll do anything to get a better price."

Gross also criticized companies that continually undercut competitors on price. That does nothing but damage the industry and its reputation.

Companies can still stay in business if they raise rates; as proof, Gross point to his own business, where revenue grew 25% in 2020 over the prior year. And that's with his restroom rentals battered badly by the COVID-19 pandemic.

"I know my rates are higher than my competitors' prices and I'm still getting business," he points out.

So how does a pumper deal with rate-hike objections from customers? Gross says education is important, both for customers and for employees who handle phone calls. They must be trained to answer such questions, he notes.

From his experience, customers' objections weaken if they know the reasons why a company raises its prices, such as providing a better standard of living for employees or investing in advanced, reliable equipment that minimizes on-the-job breakdowns and helps route drivers finish jobs faster.

"When customers understand things like that, they're generally okay with higher rates," he says.





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RTX	Max	Max.	Max.	Max.	Max.	Req.
	GPM.	LMP	PSI	Bar	RPM	HP
JU	12.0	45.4	4350	300	1450	27.2

Max	Max.	Max.	Max.	Max.	Req.	RTX
GPM.	LMP	PSI	Bar	RPM	HP	
14.0	53.0	4350	300	1450	47.2	6 U

R	X	Max GPM.	Max. LMP	Max. PSI	Max. Bar	Max. RPM	Req. HP
	U	17.0	64.4	3000	200	1450	25.4

Max	Max.	Max.	Max.	Max.	Req.	RTX
GPM.	LMP	PSI	Bar	RPM	HP	
21.0	85.0	3000	200	1450	34.0	00

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New NOWRA Executive Director Pushes for a Higher Industry Profile

By David Steinkraus

Fric Casev

Reach Thomas Groves at executivedirector@nowra.org or 508-254-6078. (Photos courtesy of NOWRA)

n January, the longest-serving executive director of the National Onsite Wastewater Recycling Association retired, and the next executive director started. Eric Casey's contract officially ended on Dec. 31, but he stayed on for a few weeks until Thomas Groves was finished with his previous job and was ready to take over.

Groves is an engineer who has been involved with NOWRA since the mid 1990s. Before becoming NOWRA's executive director, he was director of wastewater and onsite programs for the New England Interstate Water Pollution Control Commission. The commission is a quasi-governmental organization that provides training and technical assistance, organizes conferences and workshops, and conducts research on water topics for its seven member states. In other words, it's a kind of regulator, and when he was on the NOWRA board, Groves filled the seat designated for regulatory agencies.

Groves was president of the NOWRA board that hired Casey a decade ago as the organization's first (and only) full-time employee.

BUILDING OUT

"I'm going to build off a lot of the structure that Eric's put in place," Groves says.

For example, NOWRA was ahead of the curve in putting training programs online, he says, and he wants to expand that. "We were lucky to be where we were and have it so established when the pandemic hit. We see that trend not going away," Groves says.

Some in-person training may return, he says, but because online resources can flex to fit peoples' schedules, and because of the variety of programs that can be offered, virtual training will remain a major way to help people in the industry, he says.

It's also part of diversifying NOWRA's income, Groves says. Membership dues are still important, but by 2019, revenue from training had grown to comprise the largest share of NOWRA's revenue at about 31%.

Part of Groves' revenue diversification plan includes putting NOWRA in a position to apply for grants. As a 501(c)(6) it can't accept most grants

now because it lobbies lawmakers on behalf of members. So, there may have to be a sister organization eligible to accept grants for research or other purposes, he says.

Groves also wants to continue building connections between NOWRA and its state affiliates, and perhaps help create state affiliate organizations where none exist now.

"I think we'd like to change the idea of NOWRA as a parent that is off in D.C. and doesn't care about the state affiliates as much. We do care; we do deeply," he says.

CENSUS QUESTION

Some people who work only locally don't understand how a national organization can benefit their business, he says. For example, NOWRA has been encouraging the U.S. Census Bureau to ask people if their home uses an onsite system. Hard information like that can be used when lobbying Congress to appropriate money or when talking to state policymakers.

Casey notes that NOWRA has been working with other nonprofits to expand the amount of federal grant money available to repair or replace failing onsite systems. This would happen through the Rural Decentralized

The regulations 30 years ago on a septic system were way different than they are now, and now there are emerging contaminants; there are pharmaceuticals; there are any number of different things for which very little research has been done. 37 - Eric Casey

Water Systems Grant Program of the U.S. Agriculture Department. NOW-RA — along with the National Groundwater Association and the Rural Community Assistance Partnership — has pushed to expand the amount appropriated for onsite system aid. Last year, Congress appropriated \$5 million although the grant program is authorized for as much as \$20 million. All of that money was used for rural wells, Casey says.

Another challenge facing the entire industry is the aging of the work-force, Groves says. That means not just people who understand pipes, pumps, and electronics and who makes wastewater systems run. Many folks are closing in on retirement, he says. "There's a lot of knowledge that will be going out the door, and there isn't a proven mechanism for grooming the next wave (of workers)," he says.

The commission has been working with states to provide instruction teaching potential managers about budgets, labor relations and other management subjects, Groves says. He believes the

and professionalize its own workforce.

it's important, Casey says. It's a view he developed from being NOWRA's executive director.

His training was not in a technical discipline but in government and business, and before joining NOWRA he worked at some of the many professional associations with offices in the nation's capital.

"Over the 10 1/2 years I've been here," he says, "I have come to not just love this industry but truly respect it for what it does, and the important role that it plays that is so greatly underappreciated by most people."

MONEY NEEDED

As he looks back at the industry he's served, Casey's key worry is about research in college and university programs.

onsite industry could draw on this idea to expand

"I personally think it's the most critical longterm problem that NOWRA can play a role in addressing," Casey says. "Since the early 2000s, the number of colleges and universities that offer programs in onsite wastewater of any type has dropped by almost two-thirds."

Only about four schools offer full programs to train professionals, he says. That means fewer people training the next generation of soil scientists and engineers, and it means fewer people researching topics related to onsite wastewater, and fewer people helping to develop new treatment technologies, he says. The last major influx of research money came about 20 years ago, and many ideas flowed from that, he says.

"The regulations 30 years ago on a septic system were way different than they are now, and now there are emerging contaminants; there are pharmaceuticals; there are any number of different things for which very little research has been done," Casey says. And there's climate change and how sea level rise will affect onsite systems in coastal areas, he adds.

Like everyone else, Casey says, scientists and universities have to follow the money, and young students can't build a career studying a topic if there is no money to support them and their work.

As part of this leadership change, NOWRA will no longer have an office in Washington, D.C. Instead, Groves will work from his home in Westford, Massachusetts, about 30 miles northwest of Boston near the New Hampshire border. He will commute to Washington as needed.

Casey, who is 62, will do some consulting if he has the opportunity, but he primarily wants to work on what interests him. Related to onsite treatment, he is particularly interested in working for groups trying to improve sanitation for lower-income people. Call it environmental justice if you wish, but

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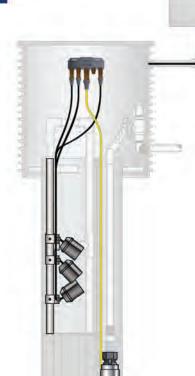
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BUILDING THE BUSINESS





Jeremy Eskenazi is a human resources trainer, author of RecruitConsult! Leadership, and founder of the consulting firm Riviera Advisors. Contact him at www.rivieraadvisors.com.

8 Ways to Secure Top Talent Without Offering More Salary

Cash is king. But there are more ways to sweeten the pot to land your next star technician or driver.

By Jeremy Eskenazi

iring in wastewater-related industries has been challenging for a long time. Even through the pandemic, many pumping companies were looking to add employees and having a hard time finding qualified candidates that would make for a good fit in the wastewater industry.

As you start looking for the next great worker to further your company's goals, deciding how hard you can compete for talent is important. While there are trends making candidate relationship-building easier — such as offering a more flexible work schedule for some roles — money is still a primary driver for candidates.

Salary has traditionally been king. And this king is powerful because it compounds year over year on your list of expenses. Not every company can spend more now, but every company wants to attract and retain the best talent for their team. This is where the candidate experience and your employer brand can be a strategic differentiator from other companies looking to hire.

It's important to remember that people don't come to work just for money. Everyone wants to feel valued and find the work interesting and challenging.

There are a few ways to minimize the amount of extra cash you need to help candidates consider your company over others.

THE COST OF HIRING

Understanding one-time costs versus compounding costs is a good starting point. If you can give someone an upfront, one-time cash bonus, it will save your company money year-over-year compared to a larger starting salary. When you get into their second year of employment, having to raise salary by a percentage compounds the cost and can add much more to your operating costs than a one-time payment. Even hourly employees in lower-earning roles that are in high demand may be swayed by a cash bonus upfront.

As you approach your budget and talent needs for the coming year, you may find you have less flexibility to offer bigger salaries to help you win the talent war. While everything has some cost, there are alternative areas you can invest in that cost much less and will not steadily rise like a salary does. Here are eight of them:

- Another great noncompounding benefit is education subsidies ... For instance, offer to pay the costs of a technician seeking a CDL license to drive your bigger trucks or industry certifications that improve a worker's career path.
- **1.** Offering flexibility Whether it is the start and end time of the workday or a compressed work week think four days at 10 hours per day, giving long weekends these are coveted offerings. If the job allows for flexibility, it's worth considering.
- **2.** Covering perks There are tons of creative offerings that matter to employees and are often available at a small cost. A few examples are: subsidies for public transit or commuting, extra uniforms paid for by the company, meal services at work, free or discounted laundry service, gym or lifestyle club memberships or discounts.
- **3.** Job sharing or part-time work Many people have their own reasons for wanting to work less than full time. Offering part-time or job-sharing options where two people perform what was once a full-time job can give you more coverage in talent and attract some amazing candidates who wouldn't otherwise be interested.
- **4.** Having good managers A positive workplace culture is a competitive advantage. If you invest in managers who care about their teams and prioritize teaching and coaching employees, you will be able to attract, develop and, importantly, retain top talent. It's been proven many times that people work for people, not companies, so make sure your managers are good listeners, care about their people and can show empathy.

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- **5.** Offering hiring bonus/signing bonus A bonus can help you counter another offer and be equally attractive up front as many bonuses can be paid within the first three months and can have a condition of repayment if the employee leaves before a set amount of time. For hourly workers, a few hundred dollars up front can make a big difference in whether they decide if they want to join your organization. Because these are one-time costs, they don't compound like salary does.
- **6.** Starting benefits coverage earlier The traditional model for health care coverage has been to delay offering benefits for 90 days to get through a probation period. Offering insurance coverage immediately becomes a great employee incentive. A company could also offer to reimburse existing health costs or pay for the previous employer's benefits until the transition occurs.
- **7.** Reimbursing education costs Another great noncompounding benefit is education subsidies. Skills change quickly and the investment in learning benefits both the employee and the company in the long term. For instance, offer to pay the costs of a technician seeking a CDL license to drive your bigger trucks or industry certifications that improve a worker's career path.

8. Having modern work tools — Sure, you want to have the best technology for your office workers; newer computers, GPS tracking, etc., but what about offering to pay for your employees' mobile phones? Offering a broad range to choose from or solid reimbursement plans for employees to have the latest and greatest is a draw.

CREATIVITY COUNTS

Remember, money does reign as king. If you offer 30% less salary than your competitor, even this list will not help you win the talent war. However, if you offer 30% more salary, your balance sheet might start to look a little funny and it will be difficult to sustain making above-market salary offers for many roles. The market is competitive and being creative with the advantages you can afford will help show candidates you care about their experience and that you understand what matters to them in a comprehensive employment package. **P**

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BioMicrobics Inc. 16002 W 110th St. Lenexa, KS 66219 913-422-0707 Fax: 913-422-0808 jcisneros@biomicrobics.com www.biomicrobics.com See ad, page 23	SciencoFAST BioBarrier MarineMBR, SaniLIFT, SciCHLOR, SciBRINE	150 to 200,000	1985	A global manufacturer of Type II Marine Sanitation Devices, as well as Water Management Solutions for Agriculture, Commercial Food & Beverage markets, Municipal Water Treatment, and providing environmentally-friendly maintenance products and cleaners. The Scienco SciCHLOR and SciBRINE can be used in various applications, such as various chemical processes, disinfection, etc. The Scienco/FAST knowledge, long term proven history and performance, the company received many awards for Innovation in Marine Environmental Technology and Integrated Water Leadership. certified to EPA, Coast Guard and IMO Effluent Requirements, as well as the Scienco Products received NSF 61 certification.	
	SeptiTech STAAR	500 to 150,000+	1996	Received the EPA's Environmental Technology Innovator award as an advanced, Trickle Filtration Sewage Solution, these Smart Trickling Anaerobic/Aerobic Recirculating Filter Systems are designed for both residential and commercial properties with minimal operator oversight, while delivering consistent high quality treatment even during peak, low or intermittent flows. Utilizing an unsaturated, engineered textile media, reliable equalization/clarification process and maintains low levels of Nitrate-N with all below-grade components. The PCL Smart technology allows the system automatically goes into a sleep mode to achieve lower operating costs and power requirements. Systems are ETV-EPA verified, NSF/ANSI Standards 40/245 certified and achieves Provisional Use Performance Requirements.	
delta treatment systems Delta Treatment Systems 9125 Comar Dr.	DF Series ECOPOD	500 to 1,500	1993	The process occurs entirely within the self-contained treatment unit which is comprised of outer mixing tank and a cone-shaped settling chamber. Raw, unsettled domestic wastewater enters directly into the mixing tank where mixing occurs through an air distribution system. The mixed liquid then enters the settling chamber from the bottom. The settling chamber maintains a quiet condition which allows solids to settle down and re-enter the mixing chamber for more processing. The liquid is hydraulically displaced upward and is discharged as a clear, odorless treated water which meets or exceeds state water quality standards.	DF Series, ECOPOD: AL, AK, AZ, BC, BWI, CA, CO, FL, GA, HI, ID, IL, IN, IA, KY, LA, ME,
Walker, LA 70785 800-219-9183 • 225-665-6162 info@deltatreatment.com www.deltatreatment.com	ECOPOD	500 to 100,000	2006	The ECOPOD Advanced Wastewater Treatment System is a FFBR (fixed film bioreactor) system that houses an engineered PVC media specifically designed to treat domestic wastewater. Five models accommodate daily flows ranging from 500 to 1,500 gpd, with customizable options available for commercial applications up to 100,000 gpd. The ECOPOD is ideal for individual residential installations, cluster designs, and small-to-medium commercial wastewater treatment applications. Self-contained, it can be inserted into a standard-sized septic tank or vault providing quiet, odorless operation. ECOPOD is certified to ANSI/NSF International Standards 40 and 245, FHA and VA acceptable, and suitable for intermittent usage.	MI, MD, MN, MO, MS, MT, NC, NM, NV, NY, OH, OK, ON, OR, TN, TX, UT, VA, WA, WI, WV
	Enviro-Aire Series	500 to 1,500	2005	The plant achieves treatment by a flow through process. Raw sewage enters a primary chamber, which has a hydraulic capacity of 346 gallons, providing a retention time of 16.6 hours. This chamber provides for separation of heavy, easily settled solids as well as floatable materials such as grease. Settleable solids accumulate on the bottom and floatable solids accumulate on the surface. Effluent from the clear layer flows into an aeration/mixing chamber with a 28-hr retention time. An aeration system provides for oxygenation of the primary effluent with the wastewater in the aeration/mixing chamber. Air is introduced by passing from the air pump to the air drop-line located in the chamber. The mixed liquor enters the settling chamber at the bottom and travels upward toward the discharge pipe. The quiet condition allows solids to settle down and re-enter the mixing chamber.	Enviro- Aire Series: IL, LA, MS, TX

MANUFACTURER	BRAND	GPD	RELEASED	DESCRIPTION	DISTRIBUTOR LOCATIONS
Eliminite, Inc. PO Box 359 Belgrade, MT 59714 888-406-2289 info@eliminite.com www.eliminite.com	Eliminite Grizzly	Up to 50,000	1997	The Eliminite Grizzly system is designed for large-scale, high-volume, high-strength commercial applications where advanced nitrogen reduction is necessary. The system was originally developed to serve high-altitude commercial and resort developments in the Rocky Mountains where winter temperatures linger at or below 0 degrees F, and seasonal use patterns/dramatic fluctuations in flow and wastewater strength are the norm. It functions with little operator input and simple maintenance. C-Series systems serve high-altitude highway rest areas, resort communities, golf courses, ski areas, mixed-use residential communities, restaurants, RV parks, work camps, corporate retreats, business parks and convenience stores. It is suited for use in multi-stage treatment trains and as a means of reducing waste strength prior to conveyance to municipal treatment facilities.	US
Eljen Corporation 90 Meadow Rd. Windsor, CT 06095 800-444-1359 info@eljen.com www.eljen.com See ad, page 12	GSF	Scalable to site conditions	1982	The Eljen Geotextile Sand Filter (GSF) is an advanced wastewater treatment and dispersal technology. The GSF's unique design provides treatment and dispersal in the same footprint while keeping installations easy and maintenance minimal.	North America and Australia
Fuji Clean USA 41-2 Greenwood Rd. Brunswick, ME 04011 207-406-2927 Fax: 207-406-2929 info@fujicleanusa.com www.fujicleanusa.com	CE	450 to 2,700 (6 Models)	2010	Fuji Clean's CE model series averages 50,000 systems being installed annually worldwide. The popularity is driven by a small footprint (about 7' x 4' for CE5), low power draw (1.1kWh/day for CE5), easy plug & play installation and simple, efficient O&M and consistent treatment (95% BOD and TS removal, NSF 40 certified, no preceding septic tank). There are no moving parts in the "contact filtration" treatment process. One 80 L/min external air blower (FujiMAC Series) introduces oxygen into aerobic chambers and powers internal air lift pumps, which facilitate sludge return and discharge of clean effluent.	Most States
	CEN	450 to 1,900 (4 Models)	2010	Fuji Clean's CEN technology provides enhanced denitrification into its standard contact filtration treatment process and produces a consistent high quality effluent (NSF 40/245 certified: 5 BOD, 6 TSS and 10 TN) from straight septic wastewater – no proceeding septic tank necessary. There are no moving parts in the treatment process. Extremely compact (about 8' x 4' for CEN5), lightweight (about 475 lbs for CEN5), highly maneuverable and features a low power draw (one 80 L/min blower drawing 1.1 kWh/day for CEN5), plug & play installation and optional wireless telecommunication package that offers both dial and text capabilities. A proprietary electrolysis-based phosphorus reduction option is also available with this system.	
	CE6KG	6,000	2015	Fuji Clean's largest CE commercial system, is now available to supplement its existing CE21 (1,900 gpd) and CE30 (2,700 gpd) models. The CE6KG, which can treat up to 6,000 gpd, uses the same treatment technology, process flow and one-tank structure as the smaller CE systems and can be squeezed into the tightest of sites. The footprint size on the CE6KLG is only 36' x 6.5' (including built-in septic tank).	
ност	LA-Hoot	500 to 1,000	1986	LA-Hoot is an improved version from the original Hoot Treatment System introduced in 1984. Results are better than 10/10 mg/L on CBOD asd TSS, with more than a 95% reduction of the wastewater influent. Two-year warranty/NSF Standard 40 certified.	Nationwide
Hoot Systems, LLC 2885 Highway 14 E Lake Charles, LA 70607 888-878-4668 • 337-474-2804 questions@hootsystems.com www.hootsystems.com	H-Series	500 to 1,200	1995	Five-stage, one piece system with a pretreatment tank, aeration chamber, final clarifier, optional disinfection device and a pump tank. Results are better than 5/5 mg/L on CBOD/TSS. A 99% reduction on CBOD and TSS. Marketed as BNR in MD and FL with Biological Nitrogen Reduction of >50%. Three-year warranty/NSF Standard 40 certified.	

MANUFACTURER	BRAND	GPD	RELEASED	DESCRIPTION	DISTRIBUTOR LOCATIONS
(Continued) Hoot Systems, LLC 2885 Highway 14 E Lake Charles, LA 70607	ANR	450 to 900	2007	Adds Advanced Nutrient Reduction to the Hoot System. Results of 5.8 mg/L on TN, better than 10/10/10 mg/L on CBOD/TSS and Total Nitrogen. Areas where 10 mg/L is the discharge limit for Total Nitrogen, the federal level for drinking water. Three-year warranty/NSF Standard 40 and 245 certified.	Nationwide
888-878-4668 • 337-474-2804 questions@hootsystems.com www.hootsystems.com	MTS	3,000 to 500,000	2011	The Hoot MTS, (Media Treatment System) is a series of larger treatment systems that were tested and verified under NSF Standard 40/245 protocol. The Hoot MTS is used for Residential, Commercial and High Strength wastewater applications and can also be set up to treat for Ammonia, Total Nitrogen, Phosphorus and other discharge parameters. Instead of selling a one size fits all box, or multiple boxes, Hoot can deploy our MTS technology into locally sourced concrete castings, retrofit into existing structures or fabricated for new, poured in place vessels. We have substantial experience with RV parks, camps, convenience stores, restaurants, shopping plazas, schools, churches, brewery/ winery tasting rooms and other challenging applications.	
Wastewater Treatment Solutions Founded on Innovation. Anchored by Service. Jet, Inc. 750 Alpha Dr. Cleveland, OH 44143 800-321-6960 • 440-461-2000 Fax: 440-442-9008 email@jetincorp.com www.jetincorp.com See ad, page 44	J 1500 BAT Media Plant; J 500-800 PLT	500 to 1,500 450 to 1,500		Jet's residential wastewater treatment plants employ the Jet BAT Process Media which provides the ideal environment for nature's own bacteria to thrive and grow. Great numbers of these living microorganisms attach themselves to this submerged structure to create a "biomass" that rapidly treats wastewater. The Jet 700++ Aerator provides the mixing and fresh oxygen the microorganisms require to live while the Jet BAT Process Media provides the environment to support the microorganisms that allow natural filtration and biological reduction to take place. Available in concrete and plastic.	US and International
MicroSepTec MST Manufacturing, LLC 23362 Medero, Ste. C Mission Viejo, CA 92691 877-473-7842 • 949-297-4590 Fax: 949-916-2093 microseptec@microseptec.com www.microseptec.com	EnviroServer	600, 1,200 and 2,500	1998	The EnviroServer ES is a combination of primary treatment, flow equalization, and secondary treatment by both fixed-growth and suspended-growth aerobic processes. The system consists of five chambers in one compact preengineered unit. The first chamber is a primary clarifier, the second chamber is the first aeration zone, the third chamber is the second aeration zone, the fourth chamber is the final clarifier, and the fifth chamber is the effluent chamber where an optional pump(s) and disinfection device may be installed.	Nationwide & International
NEXTGEN SEPTIC NextGen Septic, LLC 1776 Mentor Ave. Cincinnati, OH 45212 513-262-9506 sales@nextgenseptic.com www.nextgenseptic.com	NextGen Advanced NextGen Retrofit NextGen Community	1,200 1,200 1,500 to Unlimited		NextGen Advanced with Septigen technology is a three-stage, compact, wastewater treatment solution that saves water, saves money and saves the environment. In stage one, simultaneous biological aerobic and anoxic treatment of the organic material breaks down solids and treats nitrogen and phosphorous through a combination of proprietary biomedia and high-capacity aeration technology. Then, membrane separation phase treats water for nitrogen and phosphorous in addition to filtrating and treating any remaining suspended solids. Ozone disinfection technology is used as a final stage to ensure treated water meets surface discharge and reuse standards. NextGen Retrofit with Septigen technology can be installed into any approved, existing septic tank and works to repair a clogged soil drain field in as little as 8-12 weeks. By eliminating the cost of excavation and tank removal as well as the cost of replacing or extending the drain field area, NextGen saves the homeowner tens of thousands of dollars on installation alone. And, the low-maintenance design gives them peace of mind that the field will remain clear in the future. NextGen technology features a compact, stand-alone, automated, two-stage treatment system for domestic sewage that removes nitrogen phosphorous. NextGen Community Septic Systems are advanced multi-home sewage treatment systems that are hybrids between a packaged treatment plant and an advanced septic system. The system design eliminates the need for large septic tanks in each yard, creates a stand-alone treatment system that removes traditional contaminants plus nitrates and phosphorous, and provides graywater irrigation usable for community greenspace. The NextGen system uses Septigen technology, a patent-pending, multi-stage treatment process that includes simultaneous aerobic and anoxic treatment, high-capacity aeration, membrane separation and disinfection.	Nationwide

MANUFACTURER	BRAND	GPD	RELEASED	DESCRIPTION	DISTRIBUTOR
Engineering the future of water and wastewater treatment Norweco, Inc. 220 Republic St. Norwalk, OH 44857 800-667-9326 • 419-668-4471 Fax: 419-663-5440 email@norweco.com www.norweco.com See ad, page 27	Singulair Model 960 and Model TNT (Total Nitrogen Reduction)	500 to 1,500	1996, 2006	The Singulair system is the state-of-the-art alternative to a troublesome septic tank for domestic wastewater treatment. Employing the extended aeration process, the Singulair plant provides flow equalization, pretreatment, aeration, clarification, tertiary filtration and optional chemical addition within a single precast concrete tank. Designed for domestic wastewater flows ranging from 500 to 1,500 gpd, performance of the Singulair system is certified by NSF International (Standards 40 and 245) and the Canadian Standards Association.	North America, Central America, South America, Europe, Africa and
	Singulair Green Model 960 and Model TNT (Total Nitrogen Treatment)	600	2010	The Singulair Green aerobic treatment system incorporates Norweco's advanced aerobic treatment process into a durable, watertight polyethylene tank. It is ideal for new or retrofit applications and can be installed easily in the most difficult jobsite with just a backhoe. Incorporating support ribs and inherently strong arch shape, the durable Singulair Green tank will provide decades of reliable performance. Designed for domestic wastewater flows up to 600 gpd, with treatment performance meeting or exceeding the strictest state and county requirements, Singulair Green is certified by NSF International (Standards 40 and 245).	Middle East
	Hydro- Kinetic	500 to 1,500	2012	The Hydro-Kinetic wastewater treatment system employs innovative Hydro-Kinetic filtration technology to produce the cleanest, most consistent effluent quality available. The Hydro-Kinetic system uses the extended aeration and attached growth processes to treat wastewater, and features innovative nitrification-denitrification technology. The Hydro-Kinetic FEU system is the only NSF/ANSI Standard 40 and 245 certified residential wastewater treatment system to pass two consecutive back-to-back tests without performing routine maintenance for a full 12 months. The Hydro-Kinetic FEU system meets or exceeds regulatory standards and is performance certified and listed to BNQ Standards CAN/BNQ 3680-600 and NQ 3680-910. It quietly, efficiently and automatically pretreats, aerates, flow equalizes and filters all wastewater returning only the purest effluent back to the environment.	
	Singulair R3 and Singulair R3 Green	500 to 1,500	2018	The Singulair R3 REDUCES water consumption, REUSES treated effluent and RECYCLES water to conserve and recharge our groundwater. It provides the cutting-edge solution to chronic water shortages and reduces energy costs of water and wastewater treatment. The system efficiently treats incoming wastewater to the highest level for restricted indoor and unrestricted outdoor use. With unrivaled performance, the Singulair R3 system exceeds the effluent requirements of NSF/ANSI Standards 40, 245 and 350.	
	Singulair Solar	500 to 1,500	2020	The Singulair Solar system delivers an environmentally friendly solution for onsite wastewater treatment by utilizing renewable solar energy to generate electricity. Solar power is a 100% clean, renewable energy source that offers year round efficiency and reduces your carbon footprint. Singulair Solar technology requires no moving parts, providing quiet, efficient operation with minimal maintenance.	
Orenco Systems, Inc. 814 Airway Ave. Sutherlin, OH 97479 800-348-9843 • 541-459-4449 www.orenco.com See ad, page 29	AdvanTex AX20	Up to 500 (more if clustered)	2001	Consistent, reliable wastewater treatment under real-world conditions. Easy to operate and maintain. Fits small yards. Works in poor soils. No power-hungry, noisy blowers. No activated sludge to manage or pump. No discharge of untreated sewage during peak flows or emergencies. Produces clear effluent that's reusable, depending on local regulations. Ideal for single-family homes, small commercial properties, new construction, and repair/replacement projects. Limited, three-year warranty. Optional 24-hour web-based monitoring system. Can be installed in multi-unit arrays to handle higher flows.	350 Locations worldwide
	AdvanTex AX-RT	Up to 625 (more if clustered)	2010	Compact, "plug and play" wastewater treatment system. Super easy to install with few connections to make. Fits on small lots, reducing the cost of excavation and installation. Low power costs. Low maintenance costs. No power-hungry, noisy blowers. Produces clear effluent that's reusable, depending on local regulations. Reliable nitrogen reduction. Able to meet stringent permit requirements. Competitively priced for use in homes with up to six bedrooms or on small commercial properties. Ideal for new construction or repair/replacement projects. Service provider oversight through Orenco's VeriComm remote telemetry control panel and monitoring system. Can be installed in multi-unit arrays for higher flows.	

MANUFACTURER	BRAND	GPD	RELEASED	DESCRIPTION	DISTRIBUTOR LOCATIONS
(Continued) Orenco Systems, Inc. 814 Airway Ave. Sutherlin, OH 97479 800-348-9843 • 541-459-4449 www.orenco.com See ad, page 29	AdvanTex AX100	Up to 5,000 (more if clustered)	2002	Ideal for municipal treatment and a variety of commercial projects, including subdivisions, apartments, golf courses, parks, campgrounds, schools, churches, resorts, and other businesses. Consistent, reliable treatment, even under peak flows. Compact package, small footprint for small sites. Low maintenance requirements, low power use, low life-cycle costs. Produces clear effluent that's reusable, depending on local regulations. Backed by Orenco's commercial AdvanTex program that includes trained installers and operators, plan reviews with designers, complete checklists for installation and start-up, and 24-hour service provider oversight via Orenco's remote telemetry controls. Limited, three-year manufacturer's warranty. Can be installed in multi-unit arrays for higher flows.	350 Locations worldwide
Presby Environmental, Inc. Presby Environmental 143 Airport Rd. Whitefield, NH 03598 800-473-5298 info@presbyeco.com www.presbyenvironmental.com	Advanced Enviro- Septic	Varies		Advanced Enviro-Septic (AES) is a combined treatment and dispersal system. This effective and non-mechanical onsite system is designed for residential, commercial, and community use. AES has been proven to remove up to 99% of wastewater contaminants without the use of electricity or replacement media. AES does this quickly and naturally establishing multiple bacterial treatment environments throughout the system that break down and digest wastewater contaminants leaving the septic tank. This passive process allows the system to discharge highly purified wastewater, preventing soil clogging and groundwater contamination. AES has third party certifications from NSF, Cebedeau, BNQ, and SAI Global.	Worldwide
Waterloo Biofilter Systems Inc. 65 Massey Rd., Ste. C Guelph, ON N1H 7M6 Canada 866-366-4329 • 519-856-0757 Fax: 519-856-0759 info@waterloo-biofilter.com www.waterloo-biofilter.com	Waterloo Biofilter Systems	Up to 50,000	1994	The Waterloo Biofilter is an efficient, low maintenance biological trickling filter for treating residential and commercial wastewaters. Fully scaleable and developed for cold climates, the system has small space and low energy and maintenance requirements. The patented filtration media carries a 20-year warranty. A variety of small to large plug & play configurations for ease of installation are available. This includes attractive self-contained modules in 5,000 and 50,000 gpd ISO shipping container units, and remote camp units transportable by helicopter. Versatile and robust systems include options for re-use, nitrogen and phosphorus removal, and remote monitoring.	US and Canada

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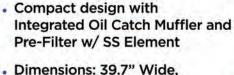
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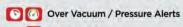
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RULES & REGS

West Virgina Supreme Court Exempts Sales Tax for Some Industrial Portable Sanitation Services

By David Steinkraus

s part of a tax case, the state Supreme Court exempted portable restrooms from the consumer sales and service tax for their use by an oil drilling company.

Antero Resources Corp., of Denver, appealed to court because of a tax bill from the state for its remote horizontal drilling operations. The company asked for a tax exemption on its crew quarters, portable restrooms and other equipment. The court sided mostly with the company.

In its opinion, the court noted that the key question under state law was whether items were used or consumed in the production of natural resources and whether the items were an essential part of production. Drillers are on site for two weeks at a time and work shifts around the clock.

"These (portable restrooms) are located at remote well sites, and it would be impractical if not impossible for Antero to operate its well sites without making bathroom facilities available," the court wrote. "Indeed, it is difficult to imagine how such operations could proceed without such facilities."

The court did allow the state to tax the company for rentals of trash trailers and waste receptacles. As a result of the court's opinion, the state will collect a fraction of what had been a seven-figure tax bill, reported WVNews.

Michigan

After a two-year struggle, residents of a Michigan township will be allowed to repair or replace failing onsite systems individually instead of being forced to pay for a central wastewater treatment plant.

In 2018, the state Environment, Great Lakes and Energy department found a number of failing septic systems in Seville Township were discharging into the nearby Pine River. The department sent a letter to the town board ordering construction of a wastewater treatment plant for homes in the community of Riverdale, reported the *Morning Sun* of Alma, Michigan. Riverdale's 124 property owners were looking at \$6 million to \$8 million.

"We were told the soil wasn't adequate for septic systems, but that wasn't true," Tish Mallory, a town supervisor, told the newspaper.

Citizens formed a committee and the township began working with the Michigan Rural Water Association to address the problem. In a four-page letter, the department agreed to alternative proposals made by the town. Among those are conducting semiannual water tests, establishing a septic district for the community, mandating pumping of all systems every seven to 10 years, and enacting point-of-sale rules requiring system inspections.

Three homes and two businesses are using their onsite tanks as holding tanks until the local health department issues permits for new systems.

"We have been told by other (government) entities that we've been an example for other (EGLE) cases because no one has ever done this," Mallory said.

The township is in central Michigan, about 44 miles west of Saginaw.

Iowa

Story County commissioners voted 2-1 to require all septic systems be pumped every five years. The county is in the central part of the state, about 45 miles north of Des Moines and includes the city of Ames.

There are 3,120 active permitted systems in the county, but 900 rural properties have no permit, reported the *Ames Tribune* of Ames, Iowa. A small study of systems without permits found that none had drainfields for secondary treatment. Systems instead discharged into field tiles, ditches or creeks.

Penalties for violating the new law begin with a \$65 fine, but the county's Environmental Health Department won't begin looking for noncomplying residences until later this year. Residents who have never pumped their tanks, or who haven't done so since 2016, will have the rest of the year to comply with the law.

Massachusetts

A septage hauler will pay \$500,000 in penalties and fees for illegally disposing of wastewater. In addition, Midstate Sewerage, of Millbury, Massachusetts, will not seek state or municipal contracts for two years as part of a settlement with the state, announced the office of Massachusetts Attorney General Maura Healy. The settlement ends a lawsuit filed in 2018.

Midstate was accused of dumping septage into a Millbury municipal



pump station instead of hauling it to the Upper Blackstone Water Pollution Abatement District, news reports said. By doing so, the company avoided paying thousands of dollars in disposal fees.

At the same time, the company had a contract with the state Transportation Department to dispose of wastewater, and the state says the company lied about disposal so it could receive payment under the contract.

Midstate — along with related entity LDI LLC — was also accused of installing unauthorized septage storage tanks at its property and of illegally handling and disposing of waste oil.

Virginia

The Accomack-Northampton Regional Housing Authority has grant money available for low- and moderate-income families who need to have their septic tanks pumped or who need help repairing or replacing a failing system.

Depending on whether a property is in the water quality project area, and depending on income and other factors, property owners may receive up to 100% of the cost of pumping, repairing or replacing a septic system, said a press release from the authority.

Pump-out grants are available for the Chesapeake Bay watershed, and people are eligible if their household income is less than about \$40,000.

The repair or replacement program is available only to people in parts of Northampton County. Income limits apply to this also, but even people with incomes greater than about \$70,000 are eligible for a 50% cost share, the press release said.

Oregon

Money is available through the Federal Emergency Management Agency for people who lost their well water supply or onsite systems in the Echo Mountain Complex wildfire last fall. Residents in Lincoln, Clackamas, Douglas, Jackson, Klamath, Lane, Linn and Marion counties designated for federal disaster aid may be eligible for money to cover repairs not covered by home insurance.

"FEMA assistance cannot duplicate insurance coverage," the agency said in a press release. "However, households that don't have insurance or have received an insurance settlement less than the cost to repair serious damage may apply to FEMA for help with costs that are necessary to have a functioning home, including for repair or replacement of private wells and/ or septic systems."

Washington

Jefferson County's Board of Health declined to change the county's ban on outhouses at a December meeting. The board has been reviewing a number of regulations, such as sanitation requirements for people who live in RVs, tents and other nonpermitted residences.

One commissioner, Greg Brotherton, asked for repeal of the law. Other counties allow them, he said, according to *The Leader* of Port Townsend, Washington. And not everyone can afford to install a septic system, he said.

Other members of the board refuted his idea, saying there was too much risk to groundwater and that it would be impossible to enforce state outhouse rules, which requires outhouses to be clean, free of flies and not drain into state waters.

Brotherton made a motion to repeal the law, but it failed for lack of a second.

Jefferson County covers roughly the center of the Olympic Peninsula about 25 miles northwest of Seattle. ${\bf P}$



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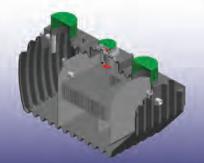
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SEPTIC SYSTEM ANSWER MAN





Jim Anderson, Ph.D. Contributor

Jim Anderson, Ph.D., is an emeritus professor at the University of Minnesota Department of Soil, Water and Climate. He works with the National Association of Wastewater Technicians and is a recipient of the pumping industry's Ralph Macchio Lifetime Achievement Award. Send Anderson questions about septic system maintenance and operation by email to editor@pumper.com.

Follow These Tips to Prevent Nasty Root Intrusions

Your customer's big holiday weekend can be ruined with backups when a tiny root grows to knock out their septic system

By Jim Anderson, Ph.D.

eaders often recount stories of some of the problems they encounter while inspecting or troubleshooting systems. Lately I have had several readers contact me with stories of opening part of a system to find that roots have filled or nearly filled the supply or drainfield piping. Obviously if the piping is filled with roots, sewage will not flow between parts of the system as it should. Over time this results in sewage backups or surfacing.

System piping, sewage tanks, distribution and drop boxes should all be watertight. That means water is not allowed to flow into the system from outside or flow out into the soil from system components except in the soil treatment area. If water is infiltrating the system through a non-watertight component, the excess water can hydraulically overload the system and cause failure. It can also be a source of sewage leaving the system before the soil treatment area, presenting a health or environmental hazard.

The presence of roots in any part of the system indicates a problem due to some defect or poor installation or maintenance activity. The first location to evaluate root penetration is the supply line from the house to the septic tank. If roots have entered the supply line it will lead to blockages and backups into the house.

ROOT OF THE PROBLEM

Roots can be present in the supply line if the piping was not properly bedded and it was cracked or broken during installation. Other potential causes are poor connections, which could include improper gluing of the piping or the use of inappropriate connections such as couplings not designed to be watertight.

This is something a neighbor of mine experienced last summer. She had some work done on her system a year ago and apparently the contractor had problems matching up the piping and used a flexible coupling. Roots from nearby conifers entered the pipe creating a blockage. Since it takes the roots some time to enter and block the pipe, it would finally occur during the most inopportune time over the July Fourth weekend when it was difficult to get a hold of her service provider and there was a house full of company with nowhere to go.

Roots can enter the system through the septic or other sewage tanks. Here again if they are in the tank, they can eventually block either the inlet You've seen photos of a tiny, flattened root going through a small opening between the lid and tank wall and then once inside the tank, forming a huge root ball.

or outlet creating backups to the house or potential for sewage at the surface. Any penetrations or joints in the tanks should be checked for watertightness and root penetrations.

As we all know, roots can get through what seems to be the smallest crack or opening and then once inside the tank expand and grow very large. You've seen photos of a tiny, flattened root going through a small opening between the lid and tank wall and then once inside the tank, forming a huge root ball.

During tank installation, self-sealing gaskets should be applied where the tank lid meets the walls, or better yet, the tank constructed with a tongue-and-groove connection along with the gasket. These days many tanks come with cast-in-place gaskets at the inlet, outlet and where the manhole riser will attach to the tank.

If these gaskets and connections are not already cast in the tank, it is important that seals and gaskets be fitted to these openings during installation. Simply resting smooth wall plastic pipe on the concrete opening and then applying mortar into and around the opening will not create a watertight connection or keep roots out.

DISTRIBUTION WOES

Risers added to bring the manhole to the surface for tank maintenance also need to be watertight. Plastic and concrete sealants are available to make connections between riser sections and must be used.

Another place where roots are likely to enter the system is through distribution or drop boxes. Once in these boxes, roots can grow into the piping providing blockages at the inlet, outlet and even in the system distribution piping. Distribution boxes, whether plastic or concrete, usually



Avaflable.

have flexible gaskets built in during the manufacturing process. If they are not precast, gaskets need to be installed. Lids on the boxes should have a self-sealing gasket where the lid meets the walls.

Cummins 350 hp. Auto, 4000 gal. carbon steel tank,

The supply pipe from the house, piping between the tank and distribution boxes, or from the boxes to sewage treatment trenches are areas where roots can penetrate if the piping is broken during backfill, connections are not done correctly, or soil has settled in around or under the pipe leading to connections breaking. An indicator of settling at the surface would be dips or low areas around the supply line. There is often wetness in this area as well because sewage is leaking out of the piping.

Distribution pipe in the soil treatment area can also have root problems if the piping was damaged during backfill. The other major cause of roots in the soil treatment area is planting vegetation on or near the system that

will aggressively grow into the system. This vegetation could be a variety of types depending on where you live. Where I reside, white pines, willows, basswoods and cottonwoods would be problems. In southern areas palm trees and similar vegetation can be problems. **P**

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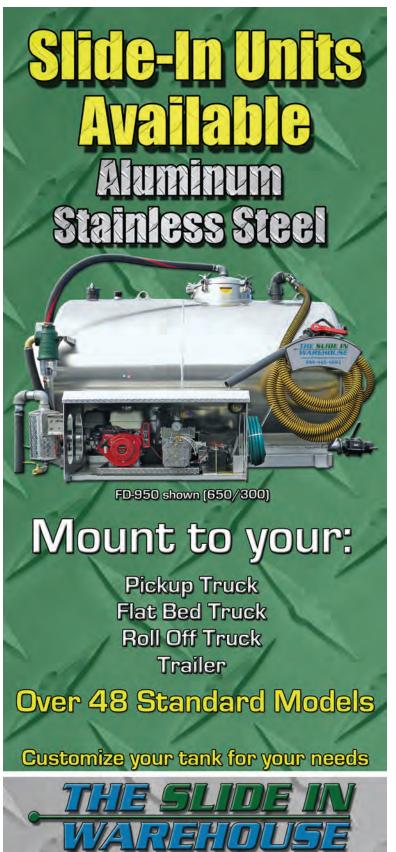
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Lankin, North Dakota



erry Novak added a white 2012 Peterbilt 348 carrying a 3,300-gallon aluminum tank and PV750 pump from Presvac Systems. Power from the 8.9-liter PACCAR engine goes to a 13-speed Eaton Fuller transmission. The truck features a hoist and rearopening door, alloy wheels, dual 3-inch heated valves and 9-inch heated dump valve, A/C and air-ride seats. LED lights and backup camera installed by Potulny Auto Body. Graphics were provided by Hwy 35 Design. Terry Novak is the driver, and the truck is used for residential, municipal and commercial pumping and car wash pits.

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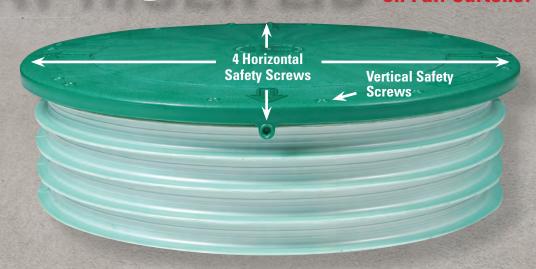
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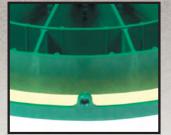
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Customer Friendships, Smarter Regulations Build a Wastewater Business

Nebraska needs to approve more alternative septic solutions to serve customers better

In States Snapshot, we talk to a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we visit a member of the Nebraska On-site Waste Water Association (NOWWA).

Name and title or job description: Kelly Tucker, service tech, master onsite wastewater pumper and installer, master plumber, journeyman licensed electrician, HVAC tech.

Business name and location: Anderson Bros. Electric, Plumbing, & Heating, Kearney, Nebraska.

Services we offer: Electric, HVAC and plumbing services and septic installations. We mostly do Infiltrator Water Technologies systems with FRALO tanks.

Age: 57

Years in the industry: 38 — since 1983. It was hard to get work back in the 1980s and I was laid off a couple times, so I decided I was going to learn everything I could about the industry. Anderson threw me into electrical, plumbing and septic, which is how I got all my licenses.

Association involvement: I've been a member of the Nebraska On-site Waste Water Association for 10 years. I've been a board member and Region 5 director.

Benefits of belonging to the association: Keeping educated and current on regulations and products is one of the main benefits. It also puts us in contact with homeowners as we answer their questions and educate the public on what happens in a septic system and what are the do's and don'ts. We also work with legislators.

Biggest issue facing your association right now: Public awareness is probably our biggest issue. Homeowners or contractors who don't get licensed still do things illegally or try to get in under the wire or they don't know what they're doing, and that can affect the groundwater.

Our crew includes: We have about 65 people in the company but on the septic side, in addition to myself, we have Ben Vavra and Derek Vavra, both master installers.

Typical day on the job: I work on all sides of the business, but as far as septic work, I help design systems and oversee the work. I resolve issues on failed systems and new installations.

The job I'll never forget: Back in the late 1990s we installed a system for a four-bedroom, two-bathroom home with a whirlpool and a garbage disposal. We sized according to Nebraska's Department of Health

and Human Services Title 179 regulations, which at the time figured off of number of bedrooms and bathrooms. We put in an Infiltrator system with a FRALO tank.

About six weeks later we got called because they had water flooding out of the ground. I wondered how that could be because we used the book and sized it accordingly. The customer was upset because they thought we didn't do the system



Kelly Tucker

right. Come to find out, there were actually 16 people living in that fourbedroom house. The homeowner was a minister and he fostered kids. His wife told me she was doing 16 loads of laundry a day.

It would have been nice to know all that information beforehand. By the time we got everything figured out and calculated, I had to add another 500-gallon tank and more leachfield. Their whole front yard and backyard was leachfield. And I had to put in a diverter valve so when one side of the house would fill up the flow could be diverted to the other side. They had to do that every six weeks. The key to a successful system is to ask the homeowner lots of questions and see what they really have and what their issues are.

My favorite piece of equipment: My iPhone. It makes it so much easier to communicate. Back in the 1980s we had to use a pager and a radio. And if I want to look up information, I can go to Google and get answers right away or technical support.

Most challenging site I've worked on: I got a call on a system that had water leaching out of the ground. It was a six-bedroom, three-bathroom home and they had a 450-gallon whirlpool bath that had to drain into the tank. When I dug up the end pipe I found they didn't put in a drop box, they just put in a diverter box so all that pressure and volume was actually pushing all the way to the end of the leachfield and pushing it out on the ground.

We re-perc-tested the ground. It was perking less than three minutes an inch. That was like perking in sand. It was telling me I needed to put in a



barrier to slow that water down. But it was clay soil, and I knew clay doesn't perc that fast. It's more like 20 to 30 minutes an inch. That's when I called up the city inspector and asked him what he thought. As it turned out, over the years topsoil had blown in and laid on the old grass. The roots on that old grass died and left little veins in the ground all the way down. So, as the clays would swell, it would perc slower.

The design was telling me to put in a liner. We chose not to do the liner; we chose to calculate it at 30 minutes an inch because we knew that once those clays would swell up that soil would perc slower. That meant the leach-field had to be bigger. I put in a water baffle so the water pressure couldn't push through the drop box to the end of the line and would actually fill up in the drop box and then it would divert as the leachfield would fill up. I also put in an effluent filter to slow flows coming out of the tank to go into the leachfield. That's a high-maintenance item, they have to clean that filter every six months. In the 15 years since, they haven't had a problem.

The craziest question I've been asked by a customer: A customer asked why he kept smelling rotten cabbage in the house. I went and looked at it. Come to find out, the owner was a cancer doctor and was putting leftover medications down the sink. Those cancer chemicals will knock a system out. You've got to keep those bugs alive or they don't break down the solids.

I told the customer to call a pumper from a toxic waste center to have his tank pumped. They took the waste to Oklahoma to have it burned, which cost him a lot of money. It took almost nine months before that tank really started to work right. He learned a lot about septic systems. But one way or another we do have to deal with chemicals that go into our water system. The more we can keep those hazards out of the system, the cleaner our water will be.

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

I would like regulators to make it easier for us to put in alternative systems, rather than just keeping us in a little box of "this is all we can do." There are issues we could address if we had more alternative solutions. It's just more difficult to put in the alternative systems. We have done them, and the state approved it, but it's a permitted system so there are rules you've got to follow over a two- or four-year plan. We're doing better on the mound systems — they've opened that up a little bit more — which works really well. Alternatives are young in the system, so we haven't had them out there long enough to see how they actually function, and I think that has a lot to do with what holds it up. Once some time has lapsed and we see we can get 30 years out of a system, then I think we're going to see more approval.

Best piece of small business advice I've heard: Customers don't always know what they're really asking for but if you can keep them happy you have a friendship for life. It's not so much a service-to-customer relationship, it's more of a friendship relationship. They get pretty partial to you and they brag you up to their friends. That friendship is very important and if you can see that, in the long run you'll have a successful business.

If I wasn't working in the wastewater industry, I would: I always wanted to be an airline pilot. My dad used to fly and my middle son flies. He's a flight instructor so he could teach me but I've never cornered him to do it.

Crystal ball time – This is my outlook for the wastewater industry: It's about taking care of the water. We're all in the same drinking glass and we all need to realize what we're doing after we get done with that glass of water. As long as we keep educating, I think taking care of the water will come. **P**

- Compiled by Betty Dageforde



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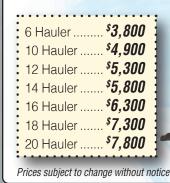
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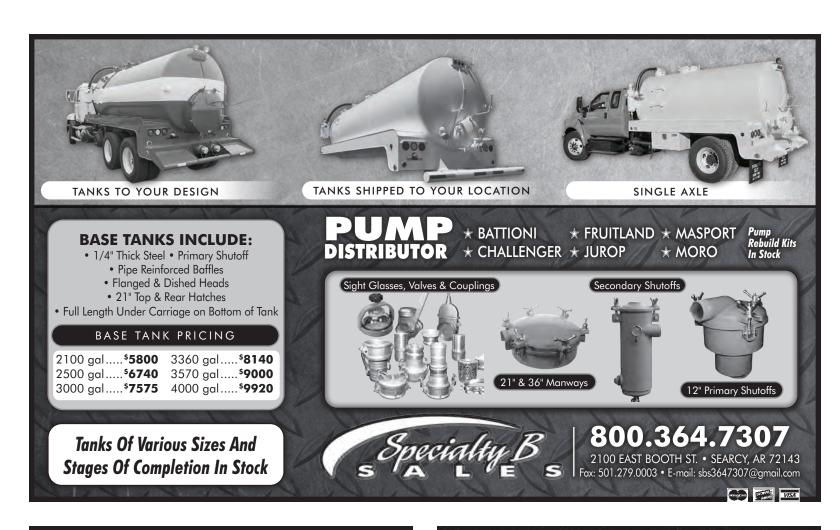
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Treated water exiting **NextGen Septic** technology meets higher water-quality standards than treated water leaving a typical centralized wastewater treatment plant. The system is suitable for sites traditionally requiring costly drainfield construction due to size restrictions and/or hilly, rocky, clay or sandy soil conditions. It is approved for surface discharge in Kentucky, and it uses a combination of anoxic treatment of the raw wastewater followed

by aerobic degradation of the contaminants. An ultra-filtration membrane further treats the water before being disinfected using ozone. Treated water has less than 15 mg/L of BOD5, less than 2 mg/L ammonia, less than 1 mg/L phosphorus and no TSS. Ozone decomposes to oxygen, which increases the dissolved oxygen level in the discharged water. This treated water can be used for irrigation or to resurrect a clogged leachfield. **513-673-3583**; www.nextgenseptic.com.

SeptiTech STAAR filter systems

SeptiTech STAAR (Smart Trickling Anaerobic/ Aerobic Recirculating) filter systems are designed for residential and commercial properties with minimal operator oversight, while delivering consistent treatment during peak, low or intermittent flows. Using an unsaturated, engineered textile media to treat wastewater that meets strict permit limits, the commercial filter



system provides a simple, automatic equalization and clarification process for 500- to more than 150,000-gpd flows. The biological trickling filter technology also maintains low levels of Nitrate-N, with all below-grade components that fit in watertight concrete, plastic or fiberglass tanks. Smart technology allows the system to go into a sleep mode to achieve lower operating costs and power requirements. Systems are ETV-EPA verified and NSF/ANSI Standard 40/245 certified. **800-753-3278**; www.septitech.com.

COMMERCIAL ONSITE TREATMENT SYSTEM

Eliminite Commercial C-Series

The **Commercial C-Series** system from **Eliminite** is designed to provide reliable treatment with emphasis on total nitrogen reduction for high-strength waste applications such as worker camps, RV parks, restaurants, ski and golf resorts,



breweries, mines and agricultural operations. It is designed to work with locally sourced tanks and components when possible. MetaRocks treatment media is designed to withstand a variety of high-strength waste-loading scenarios, particularly where clogging and odor control are major considerations. The system is scalable and may be adapted to suit specific phasing requirements, site constraints and unique demands. 888-406-2289; www.eliminite.com.

NITROGEN REDUCTION SYSTEMS



Jet Inc. J-1500CF Series

The **J-1500CF Series** nutrient-reducing BAT media plant from **Jet Inc.** offers variable capacity in an NSF-245-tested treatment system. It provides com-

plete effluent treatment from 500 to 1,500 gpd. The 500- and 800-gpd PLT Series tanks are the lightweight, rotational molded alternative to the concrete J-1500CF Series. The seamless polyethylene tanks are easy to transport and install in difficult site conditions. The system uses a 700++ aerator, effluent filter and the Jet 197 control panel, which cycles the aerator to reduce nitrogen by over 60%. **800-321-6960**; www.jetincorp.com.

Norweco Singulair Green

The **Singulair Green** advanced treatment unit from **Norweco** offers a solution to difficult tank delivery concerns such as limited site access and steep grades. The system treats up to 600 gpd. Treatment occurs in the pretreatment, aeration and final clarifi-



cation chambers. Activated sludge recirculates to the aeration chamber via a biostatic sludge return mounted in the aeration/clarification wall. Effluent in the clarification chamber enters the biokinetic filter and is equalized and filtered. Model TNT, or total nitrogen treatment, reduces total nitrogen by more than 68%. Designed for easy installation, operation and maintenance, the TNT system minimizes effluent nitrogen concentrations reliably and economically. 800-667-9326; www.norweco.com.



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2011 Mack Granite, DMP8 505 HP, jakes, 18 spd, 20# lb fronts, full lockers, 4200 gallon steel code 407 vac tank, Masport 400 vac pump. \$69,500

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2013 Pete 337, Paccar 300 HP, Allison auto, 33# GVW, only 85K miles, **NEW** 2300 gallon steel vac tank, **NEW** MasportViper pump.

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2012 Mack Granite, MP8 - 415 HP, jake, 10 spd, 20 fronts, 44 rears, **NEW** 3500 gallon steel vac tank, **NEW** Masport Hydra vac pump.

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Orenco Systems AdvanTex AX20-RTUV

The **AdvanTex AX20-RTUV** treatment system from **Orenco Systems** is a self-contained module designed to treat typical septic tank effluent to better than secondary standards, with nitrogen reduction and UV disinfection. It is designed for homes with up to four bedrooms and suited for small sites with poor soils or sites requiring shallow burial. It helps protect surface waters and aquifers and can be an effective solution for

areas that have strict discharge limits, according to the maker. It is installed following a septic tank equipped with Biotube effluent filters. The unit eliminates the need for separate recirculation, treatment, discharge and disinfection tanks and basins; and it reduces the number of risers and lids needed in the treatment train. 800-348-9843; www.orenco.com.

UV DISINFECTION EQUIPMENT

SALCOR 3G UV Wastewater Disinfection Unit

The **3G UV Wastewater Disinfection Unit** from **SALCOR** is used for residential, commercial and municipal applications, and it is UL-certified NEMA 6P floodproof and NSF/Washington State Protocol six-month tested (with 21 upstream treatment systems). It inactivates bacteria/virus pathogens, including superbugs. Rated at 9,000-gpd gravity flow, it is meant as a reliable



building block for large-water recovery/reuse systems. When installed in 12-unit parallel/series arrays with ABS pipe fittings, systems can disinfect more than 100,000 gpd. Gravity flow equalizes without distribution boxes. Each unit has a foul-resistant Teflon lamp covering, two-year long-life lamp with efficient installation, minimal annual maintenance and energy use of less than 40 watts. **760-731-0745**; www.salcor.world. **P**







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Advanced Treatment Units

By Craig Mandli



Onsite system for limited-access site

Problem: Onsite system installer Nature Works had a challenging project in a small Virginia community in an environmentally sensitive area. "It's a repair of a failed conventional, aerobic system that was put in 12 to 15 years ago," says Michael

Burch of Nature Works. "It's a challenging site with limited access, very high-water table, and no place to put excavated dirt."

Solution: Two 10,000-gallon **EQ** tanks were installed in front of the treatment tanks housing a MicroFAST 4.5 4,500-gpd unit that is a scaled-up version of the company's NSF/ANSI Standard 40, Class 1 and 245 certified units; along with two NitriFAST 4.5 units, an ABC-N 3.0 anoxic biological clarifier denitrification device for additional nitrogen reduction, and a secondary **MicroFAST** 3.0 added for re-aeration. The **BioMicrobics** MicroFAST and the two NitriFAST units' legs were bolted to the bottom in each of their precast tanks with an internal waterproof coating. The tanks also have an anti-floatation curb on the bottom. Conseal was added on each FAST flange, which comes in contact with the top half of the tank lids. The ABC-N 4.5 completes the treatment units in the tanks to add extra denitrification.

Result: The units have performed as expected, reducing nitrogen and enabling future growth potential for the community. **800-753-3278**; www.biomicrobics.com.

Package treatment plant enables expansion and reduces maintenance at RV park

Problem: Yogi Bear's Jellystone Park in Waller, Texas, is a full-service campground and recreation center featuring cabins, tent sites, RV camping, swimming pools, a lazy river and two food service venues. The park's

existing sewage treatment system had been expanded many times and was again at capacity, restricting park service expansion and requiring costly and time-consuming maintenance. The design engineer was tasked with designing a new system that could handle the wastewater flow of 30,000 gpd and meet Texas Commission of Environmental Quality standards.



Solution: A **Delta Treatment Systems Package Treatment Plant** was selected that processes wastewater via an extended aeration and oxidation process that purifies the sewage using naturally occurring bacteria to destroy the organic compounds. Continued mixing with air feeds the biological organisms, which consume the volatile materials and convert them into water and inert solids. The result is a clear and odor-free effluent that meets TCEQ permit requirements. The custom package plant is installed upon an engineered, reinforced concrete structural slab. The plant has dual aeration basins, sludge holding tanks, blowers and pumps, and a single 10-foot-diameter mechanical clarifier with skimmers and a clarifier bridge. A separate pump tank was incorporated into the design.

Result: The custom-designed plant was built at the factory and shipped to the project site as a self-contained unit and required little assembly. It continues to perform as expected. **800-219-9183**; www.deltatreatment.com.

(continued)



Treatment system fits on lakeside lot with small footprint

Problem: Homeowners in North Carolina were designing their dream home on a lake-side lot. A traditional system could not fit in the available area, and a 50-foot setback was needed from the lake.

Solution: An **Eljen GSF System** was designed for the three-bedroom home. The product's approval gets a setback reduction due to meeting NSF 40 secondary treatment standards, and its flexible design options were able to contour around the new

construction in the available space. Don Gaddy Septic installed the 38 Eljen GSF A42 modules in a trench configuration. One lateral had to be contoured using standard fittings around the home to meet the setbacks from the waterfront and the home's foundation. The system is pressurized, dosed at 67.5 gallons per dose, to promote equal distribution to the laterals.

Result: The homeowners were able to move into their new home. The system provides advanced treatment and was able to be installed in the available space while protecting the lake for years to come. **800-444-1359**; www.eljen.com.





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Replacing an overboard discharge on a microscopic site



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

Solution: The **Fuji Clean Model CEN7,** design capacity 700 gpd, was utilized. It offers one-tank treatment with a tiny footprint and low profile (99 by 57 by 73 inches).

Result: At-grade access ports do not hinder the view. Its quiet blower (<50 dB) is in sync with serene surroundings, while the lightweight tank (705 pounds) was easy to maneuver into location. One simple 3/4-inch air line hookup minimizes excavation requirements. **207-406-2927**; www.fujicleanusa.com.

System eliminates biomat clogging issue

Problem: A Connecticut convenience store had long dealt with failures in its leachfield receiving high-strength wastewater. The existing system contained a septic tank, grease trap and two concrete chamber



leachfields. Both had experienced failures within 12 years of installation and required frequent pump-outs.

Solution: In 2017, **Geomatrix** was engaged to investigate. Analysis determined the failures were due to high-strength wastewater biomat clogging. A **SoilAir** system was installed to rejuvenate the existing chambers and handle the future high-strength wastewater flows. This solution eliminated the need to excavate, repair or replace the existing chamber systems which were intertwined with the fuel dispensers, piping, tanks and parking, all directly in front of the store. The direct and indirect costs of disturbing the fuel system would have been many times the cost of the septic system. Construction took less than a week, and store traffic was unaffected.

Result: For three years, the system has operated utilizing less than 50% of the leaching system. Geomatrix continues to remotely monitor the system through a logic-based control system that can react to issues before they become problems. **860-510-0730**; www.geomatrixsystems.com.

Treatment system used to moderate flow within limits

Problem: Registered sanitarian Jon Maass of JMI OSSF Consulting was contracted to help with a challenging mixed-use site of a 300-plus-people office complex, culinary training facility with corporate housing/



condos for trainees in Dripping Springs, Texas. When all the uses of the property were added up, they were looking at 5,400-gpd flow on weekdays, with just the condos on the weekends at 2,700 gpd. In Texas, systems discharging more than 5,000 gpd aren't permitted at the local level under TAC 285. State permits can take up to a year to obtain and at much greater expense in both equipment and permit/design fees, and this site was well under construction and expected to be occupied within six months.

Solution: Working with the sanitarian, **Hoot Systems** devised a plan to provide additional flow equalization and stack the excess waste generated Monday through Friday, adding this to the weekend flows to utilize the whole week's capacity limits. The flows from the condos were residential strength, however the office building and training kitchen generate higher strength waste. This combined flow required a 12,500-gpd MTS treatment system to properly treat the waste stream.

Result: Technicians from Hill Country Wastewater were able to get the system installed on budget and in time for the grand opening and are the current operators. The daily flow to the drainfield has kept at or below 4,800 gpd and is in compliance with the TAC 285. **888-878-4668**; www.hootsystems.com.

Advanced Treatment Leachfield solves limited site challenges

Problem: Homeowners in St. Joseph County, Indiana, had a failing septic system requiring a replacement, but site limitations and regulations limited available options. Due to limited space for a new system and soil spoils, regulations prohibited using conventional trenches. Additionally, an extremely steep brick paver driveway made the use of heavy



equipment risky and potentially damaging.

Solution: An **Advanced Treatment Leachfield (ATL)** system from **Infiltrator Water Technologies** was selected. Because the ATL system treats effluent to NSF 40 levels, the system engineer could reduce the required footprint. St. Joseph County had recently approved the use of the ATL and the system engineer, Stuart Meade, was certified on

(continued)

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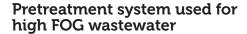
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(continued)

the technology. The county requires all individuals involved in the design, installation and inspection of a system to be certified by the manufacturer. To accomplish this, the county provided training meetings for sanitarians and the installer, Dervin Witmer of Dig-It Excavating.

Result: Without the system size reduction made possible by using of the ATL system, there were no other approved options for the homeowners. The installer welcomed the challenges presented by the site and the ability to provide a new solution to the homeowners. **800-221-4436**; www.infiltratorwater.com.



Problem: The Cottage Hotel is a historic tavern and restaurant sitting at the center of town in Mendon, New York. The one-third acre parcel presents major challenges for a septic system, as space at the site is mostly limited to the footprint of the buildings and parking. Wastewater is treated and then



discharged into a nearby stream. Pretreatment had historically been accomplished through an aerobic treatment unit with polishing through a single pass sand filter with SPDES-permitted surface discharge. Although the ATU and sand filter are good treatment technologies, at this particular site, the fats, oils and greases generated from the kitchen waste were too much for the system to handle causing the Sand Filter to routinely become clogged. Regulatory authorities mandated that the failing system be upgraded to that which would be better suited for handling the high strength of commercial wastewater.

Solution: The owner hired Onsite Engineering PLLC to design a commercial septic system that could handle the high strength restaurant wastewater — and treat it to the high level needed for a permitted surface water discharge. The redesigned system uses the White Knight Microbial Inoculator Generator from Knight Treatment Systems. The system inoculates and pretreats the wastewater with select bacteria that aggressively digest the FOG and other organic constituents prior to passing through the rebuilt single pass sand filter.

Result: The system has been working well since its 2017 installation. **800-560-2454; www.knighttreatment.com.**



National park service research station uses combined treatment and dispersal system to protect sensitive environment

Problem: An upgrade of the existing, inadequate potable water and onsite sanitary sewer system was required to serve the existing lodge, houses and cabins at the University of Wyoming's AMK Ranch research center. The center is adjacent to Jackson Lake in Grand Teton National Park and is owned by the U.S. National Park Service's Grand Teton National Park. The new wastewater treatment system design had to comply with all federal wastewater regulations for national parks and had to preserve the pristine Jackson Lake environment. Additionally, the solution had to be compatible with the extreme cold and frost depths prevalent in area winters.

Solution: A 6,500-gpd combined treatment and dispersal **Advanced Enviro-Septic** (AES) treatment system from **Presby Environmental** with 3,120 linear feet of AES pipe was specified because it removes up to 99% of wastewater contaminants without using electricity or replacement media. The depth of allowable cover over the system was a contributing factor in the selection of the system given the extreme winter conditions. Construction of the new system could only begin once the AMK Ranch was closed for the season and it needed to be completely operational for the 2020 season.

Result: Materials were delivered by Ferguson Water Works, which provided the AES pipe. The small footprint of the passive AES system as compared to conventional wastewater treatment systems resulted in minimal impact and disturbance of the site during installation. **800-473-5298; www.presbyeco.com. P**

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PRODUCT **NEWS**





SEPTIC VENT ODOR FILTER GETS 'GREEN' UPGRADE

You probably hear claims about "environmentally friendly" household products and appliances regularly, as more Americans become conscious about using less, saving more and recycling. But can this apply to your septic system? As a matter of fact, yes it does.

By nature, your septic system is already environmentally conscious. Conventional systems only have two major components: a septic tank and a disposal area. Accessories for those components are also becoming more environmentally conscious, as Simple Solutions Distributing's Industrial Odor Control brand has replaced its disposable Wolverine Septic Vent Odor Filter with a more environmentally friendly, refillable filter. The Wolverine Cub is refillable by simply removing the rain cap and pouring in the new carbon.

"We were looking at replacing the disposable model and releasing a new economically priced filter but knew we wanted to be more eco-conscious about the impact on our planet," Industrial Odor Control President Andrew McGibbon says. "Making these refillable was the sensible and responsible thing to do."

The Wolverine Cub's housing is made of sturdy Schedule 30 PVC. It installs in minutes with nothing more than a 10 mm wrench. When the filter arrives, the carbon comes in a separate bag with the top off the filter. Pour the carbon in the top, place the rain cap with perforated disc on the top of the filter, line up the bolts with the holes in the filter body and screw them in. The carbon can easily be changed by reversing the process.

The Wolverine Cub is available in 1-, 2-, 3- or 4-inch models. It holds 1 pound of Norit Darco Sulfursorb Plus, activated carbon designed to adsorb hydrogen sulfide in a high-humidity atmosphere. This is the same carbon used by Industrial Odor Control in their industrial filters for the municipal, wastewater and other industries.

According to McGibbon, homeowners will find the life span of the filter varies based on each situation. "That said, most homeowners will find they get two to three years out of the filter before having to replace the carbon," he says. As long as excess activated carbon is kept in its sealed bag, it remains effective indefinitely. **866-667-8465**; www.industrialodorcontrol.com.

DUPERON DUAL AUGER SYSTEM

The Duperon Dual Auger System is a solution to pump clogging caused by flushable wipes and other pump-fouling debris. The patent-pending DAS uses three Duperon technologies to remove flushable wipes at or near where they enter the collections system, before downstream equipment can be impacted. The DAS, which offers a mechanical solution that reduces hands-on labor, can be installed easily in manholes as small as 17 inches. The system captures, dewaters, compacts and conveys solids in a single system. It features completely contained screenings for odor control and aesthetics. Aboveor below-grade discharge options offers flexibility for each application and a built-in bypass eliminates sewer backup during power outages. **800-383-8479**; www.duperon.com.





CUES QZ3 ADVANCED PORTA-BLE INSPECTION CAMERA

The QZ3 advanced lightweight, portable, HD wireless video inspection pole camera from CUES can be operated by one person using any tablet. The camera is designed to provide safe viewing in industrial or environmental areas with no-worker entry. The QZ3 can also be used to locate lateral services or to identify blockages at manholes, access ports or other entry points without entering the line or structure. Added features over the basic model include motorized

height and tilt, and laser distance measurements. The camera is mounted on a lightweight, telescopic carbon fiber pole that extends up to 24 feet, and an optional 34-foot pole is available. The 1080p camera features a 360-to-1 zoom with built-in image stabilization, automatic focus and distance-to-defect measurement. Self-contained waterproof Multiple Aspheric Projection lighting, including six LED spotlights, works in pairs and focuses at different lengths, to provide enhanced, detailed viewing of cracks, breaks, pipe separations, scale and various defect conditions. The QZ3 Advanced also includes two diffused LED floodlights for evenly lit manhole inspections. **800-327-7791**; www.cuesinc.com.

BOSS VAC VACUUM EXCAVATION TRAILER

Boss Vac's vacuum excavation trailer is ideal for removing wet or dry materials, cleaning emergency road spills or hazardous waste, keyholing, trenching, cleaning irrigation canals, drilling oil fields and completion sites, removing debris from catch basins, locating un-



derground utilities without impact damage and more. The tandem axle trailer is 9.5 feet wide and 21.5 feet long with the highest point reaching 7.5 feet tall with options for a gooseneck, skid or truck mount. Included on the trailer is everything needed to tackle the job from the moment it's received, including hoses, fittings and couplings, to engines. On the water side, a 9 hp engine pushes 4 gpm at 4,000 psi while a separate 24 hp engine powers a vacuum generating up to 300 cfm in either gasoline or diesel options. For debris storage, customers can choose between a 3.96-cubic-yard (800-gallon) or a 2.47-cubic-yard (500-gallon) storage tank. **405-885-1234; www.bossvac.com.**



2021 M2-106 350HP Cummins, Allison Auto., Full Lockers, 4000-Gal. Alum., 4310 and 4307 NVEs Available. Multiple Units!



2021 M2-106, 2500-Gal. Aluminum, 300HP Cummins L9, Allison Automatic, Multiple Units Available!





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PRODUCT **NEWS**



BEE VALVE HEAVY-DUTY NYGLASS COUPLERS AND ADAPTERS

Bee Valve's 4-inch heavy-duty 404 Series nylon couplers and adapters have a heavier wall construction for greater strength. All 404 Series couplers come standard with four stainless steel handles for a more secure connection in higher-pressure applications. The fittings are constructed in lightweight glass-reinforced nylon, with the strength to resist cross threading, thread seizure and out-of-round condition. The nonconducting nylon fittings are chemical resistant to most acids and are interchangeable with other couplers and adapters manufactured to MIL-spec. 800-634-3078; www.beevalve.com. P





Upcoming Training & Events

SAVE THE DATES

Virtual Training

CPOW 0&M 1 March 16 & 17, 2021

Location: Virtual Online Course Contact: Lisa Nicoll cpow@cpow.net

CPOW 0&M 2

April 13 & 14, 2021

Location: Virtual Online Course Contact: Lisa Nicoll cpow@cpow.net

CPOW Inspector May 4 & 5, 2021

Location: Virtual Online Course Contact: Lisa Nicoll cpow@cpow.net

NAWT Inspector by RETS November 12-13, 2021

Location: Arlington, TX La Quinta Inn & Suites Contact: Lauren Truiillo rets@rets-llc.com

Soils Workshop

University of Arizona Soil & Site Evaluation Course **TBD Spring 2021**

Location: AZ Contact: Aaron Tevik - 520-621-3691 E: atevik@arizona.edu

NAWT Inspector by RETS June 18-19, 2021

Location: Houston

Contact: Lauren Trujillo rets@rets-llc.com

2021 William Hapchuk Memorial Scholarship Fund

Deadline Extended until April 15th, 2021

www.nawt.org/resources.html #scholarship

- 1. Must be enrolled in an accredited university offering a bachelor degree in the following fields related to wastewater transport and treatment:
- a. Natural and Environmental Sciences
- b. Biological sciences
- c. Agricultural and Civil engineering
- d. Management/Business
- 2. Must have completed at least one year of study and have attained a cumulative arade point average above the average for the university in which you are enrolled.
- 3. Have an interest in a career related to the management of wastewater

Online Vacuum Truck Training Available!

Please visit our website for more information.

For more information call: 800-236-6298

WWW.NAWT.ORG



Grand opening of Renegade Equipment, Sales and Consulting

Mike Grieco opened Renegade Equipment, Sales and Consulting in Longmont, Colorado. The company specializes in construction equipment sales and rental.



Mike Grieco

Ashland Pump announces name change, acquisition

Ashland Pump acquired Water Source, a supplier of accessories and pumps for the sump, sewage and water systems markets. The Water Source team, currently located in Norwalk, Ohio, will be relocating to Ashland, Ohio, facilities. Their key staff will remain with the company. In addition to the acquisition, Ashland Pump changed its corporate name to Ashland Water Group, effective Jan. 1.

Vactor launches virtual tours

Vactor, a subsidiary of Federal Signal Corp., launched contactless, virtual tours offering customers a detailed and photorealistic viewing of equipment. The tours are now available for many of the company's models, including the Vactor 2100i PD and the Vactor 2100i Fan, and are accessible through Vactor-authorized dealers. The guided 3D tours employ highquality and realistic digital models, allowing visitors to walk around the equipment and learn more about technology and features.

Custom Truck One Source to combine with Nesco

Custom Truck One Source has entered into an agreement to combine with Nesco, another provider of specialized truck and heavy equipment solutions including rental, sales and aftermarket parts and services. The combined company will operate on a national scale with over 1,800 employees, 46 company-operated locations and a rental fleet that will be nearly double in size with almost 9,000 units and more than \$1.3 billion in combined OEC. The company will also have more than 400 service technicians and 120 mobile service technicians available for support.

Wastequip acquires ContainerPros

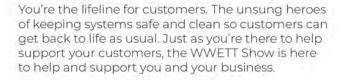
Wastequip acquired Carlsbad, California-based professional waste services company ContainerPros.

This acquisition enhances the existing cart assembly and delivery service offering provided by Wastequip's Toter brand by adding a team with more than 20 years' experience providing cart assembly, delivery and maintenance services for waste haulers and municipalities. The acquisition lays the groundwork for Wastequip to include the repair and refurbishment of steel containers as part of its service offering. ContainerPros' founding partners, Mark Merhab and Gary Lima, will remain with the company.

Vacuum Truck Rentals partners with Northern Safety and Industrial

Vacuum Truck Rentals and Northern Safety and Industrial announced a partnership to provide customers another avenue to access corrugated hose in the industrial cleaning industry, the Advanced Drainage Systems' Evac Hose. Through this partnership, VTR will be the exclusive reseller of the Evac Hose with NSI as the distributor.

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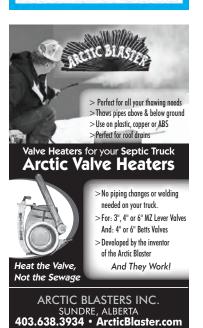


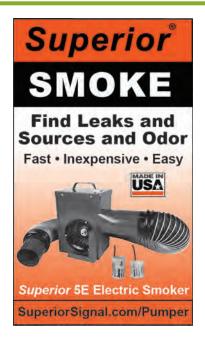
(a) wwettshow







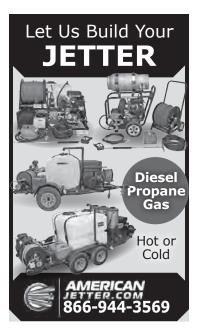














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What Do You Do AFTER HOURS

Our *After Hours* feature explores the personal stories behind the pumper, talking about what you do in your leisure time, your personal interests and hobbies, your charitable pursuits or community involvement.

Pumper welcomes story ideas If you take part in something interesting outside of work, or if you know someone in the pumping business who does.

Send us a note to editor@pumper.com.



BUCKET MACHINES

Bucket Machines - Sreco truck loader, Sreco pull-in machine, 2-cylinder Wisconsin engines, gear reductions, belt drive. All for \$10,000. 313-600-1700. (P03)

BUSINESSES

Thriving, well established since 1945 Septic Cleaning Company in Northeast CT for sale. Turn-key business. Large residential and commercial client base. Includes two Kenworth pump trucks, 2016 & 2019 each 4,600-gallon capacity, 2004 Mack, 3,300-gallon capacity, 2016 Ford F550 Mason Dump with plow. Full service expansion opportunities possible in this area due to minimal competition. If interested, garage for rent or purchase with three high bays, storage room and office attached. Willing to train. ONLY serious inquiries please. CONTACT: lisact@parentsanitation.com. (P03)

Very profitable septic business for sale. Company has been in business for over 60 years. Company comes with 2 - septic trucks, 2 - sewer vans, 1 - jetter truck and numerous parts and supplies. \$289,000+EBITDA with over \$300,000 in equipment. Company offers several lines of service including septic tank pumping, drain cleaning and grease trap pumping/service. Continued growth potential. New 4,500 sqft facility currently being built. Contact septicbizforsale@gmail.com for more information. Serious inquiries only, will be required to sign NDA and submit PFS before releasing company information. Business located in Ohio. (P03)

Busy, South Denver, Colorado septic business for sale. Septic pumping, maintenance, inspections, septic installs and camera work. Established business with a great location. 2 pump trucks 1 - 2020 and 1 - 2006 both in excellent condition. 2016 mini ex, 2017 trencher, 2019 skidsteer, 2017 5500 4x4 truck, 2018 trailer. Nice equipment. Can purchase business with or without office/real estate. For more information, please call 303-882-1986. (P05)

For Sale - 46 year septic business, just 1994 FL70 Freightliner, 1,500-gallon tank and phone number. North Central Illinois. \$25,000. 815-228-6001. (P03)

Septic Pumping Business for sale in Berks County, PA. Owner retiring after 17 years of servicing customers. Thousands of repeat customers. Walk into a turn-key company and be your own boss. The possibility of growth is tremendous in this area. For more information call Rodney 610-488-7351 or email loebseptic@comcast.net. (P03)

Selling South Florida septic business with: Pumper 2,700-gallon; 2 dump trucks; 2001 Ford Van; 3 JD backhoes, trailers. Asking \$280,000. HUGE POTENTIAL for growth! Only qualifiers contact: Andy Fischer, a.fischer@murphybusinessbroker.com or 786-253-7450. (P05)

www.RooterMan.com. Franchises available with low flat fee. New concept. Visit web site or call 1-800-700-8062. (PBM)

COMPUTER SOFTWARE

FreeServiceReminderSoftware.com, FreeServiceDispatchSoftware.com, FreeRouteManagementSoftware.com. (PBM)

DEWATERING

Used dewatering boxes and accessories for dewatering equipment. Call for details 979-245-5656. (P08)

DRAIN/SEWER EQUIPMENT



1984 Camera Van. Chevrolet. Rearwheel drive, gas, 8 cylinder, automatic transmission. 222,000 miles. 2 Trac camera's. 4,000 Watt Onan Generator.

\$6,500. Contact Ray @ 360-957-0891 or alloutsewer@live.com. WA (P03)

Submit your classified ad online! www.pumper.com/classifieds/place_ad

EXCAVATING EQUIPMENT



This Kubota is 1.5 years old, still smells new. Has about 230 hrs on it. Has 36" trenching bucket for chamber drainfield installations. No problems or damage. Also available 16ft Big Tex trailer, same age as Kubota. Paid \$58,000 for Kubota and \$5,000 for trailer. Package deal \$48,000 0BO.

Located in Winder, GA. Call 678-221-7567. (P03)

GREASE UNIT



1999 International 4700 DT466.
235,000 approximately. 1,400-gallon vac tank. Toilet carrier rack, new
Battioni mec 6500 vac pump. 6-speed
manual transmission. Runs and pumps
perfectly. Was used to collect used
cooking oil, has been indoor garage
kept for entire life. Has been a backup
truck in our fleet but now we need the
space for new trucks. Asking \$25,000
for whole unit, will consider selling as
cab and chassis without tank or pump
for right price. Please contact us
at 609-902-5093, ask for Jeff. NJ
(P03)

HAZARDOUS WASTE UNITS

2009 Peterbilt 340 cab & chassis with a Presvac 3,200 U.S. gallon, C/S, D.O.T. 412, dump type, vacuum tank and a Presvac PV750 pump. (Stock #8412C).

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

2010 Peterbilt 340 cab & chassis with a Presvac 3,200 U.S. gallon, S/S, D.O.T. 412, vacuum tank and Presvac PV750 pump. (Stock #7530C).

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648).

(PBM)

2013 Peterbilt 348 cab & chassis with a Presvac 3,200 U.S. gallon, C/S, D.O.T. 412, dump type, vacuum tank and a Presvac PV750 pump. (Stock #9277C).

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

2011 Peterbilt 348 cab & chassis with a Presvac 3,200 U.S. gallon, C/S, D.O.T. 412, dump type, vacuum tank and a Presvac PV750 pump. (Stock #0200V).

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

Used 2020 Peterbilt 348 cab & chassis with a Presvac 3,000 U.S. gallon c/s D.O.T dump unit. (Stock #055R).

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

1997 Ford with Cusco 3,200-gallon DOT certified dump and door liquid vacuum truck. Cat engine with Moro M9 vacuum pump. Runs and pumps excellent. \$37,500. KLM Companies 617-909-9044 (PBM)

2000 International with Cusco High Dump 27", DOT Certified, 412 with vacuum pump, pressure offload as well. Cummins Power with low miles and hours. KLM Companies 617-909-9044. (PBM)



2007 Kenworth T800 with Presvac 3,500-gallon DOT Certified dump/door vacuum tank, Hibon 900 CFM 27", new blower and tank inspections, preemission with 400 CAT with 18-speed trans. 44k rears 20k pusher 20k front. Great condition. KLM Companies 617-909-9044. (PBM)

New 3,200 U.S. gallon, carbon steel, D.O.T. certified 412 vacuum tank, dump type with full open rear door and a Presvac PVB 750 vacuum-pressure pump installed on a 2021 Freightliner 108SD cab and chassis. (Stock# 13938) www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)



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HYDROEXCAVATING EQUIPMENT



2018 Freightliner 26k, under CDL unit w/ ISB Cummins engine, Allison 4500 transmission. 12,800 miles. 801 hours. Freightliner has a Vactor Paradigm Hydro excavator mounted on it. Paradigm has the ability to dig w/ water or air; the air system is 300 cfm . Unit has a 6" boom w/ manual rotation and hydraulic raise and lower. 3-yd debris tank. Unit is priced to sell \$179,000. Unit is located in Oklahoma City. Contact Tim or Rodney @ 405-495-5110. (P04)



99' Vactor 2100 Fan, Sterling L7501, VIN# 2FZNRJBB9XAA73422, CAT 7.2 L6 engine, 54k mi, 10.6k truck engine hours, water pump 80gpm @ 2,500 psi, 15y debris tank, 1,300g water tank, John Deere engine 6068TF. \$30,000. Runs good. 727-359-4971. FL (P03)



08 International 7600 Vactor Hydro- Ex. Cat C13 engine, Hibon 27" blower, 12 yd, 1,200-gal water tank, 800,000 btu HXX burner pkg., 297k miles. 6,864 hrs. Well maintained & ready to work. **Asking \$135,000. 248-345-3993. MI (P04)**

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JETTERS – TRAILER



2018 Spartan Warrior 4018, 800-hours, Kohler diesel, 500' hose included, remote, 300-gal holding tank, swivel reel, great machine, stored indoors, delivery available. \$32,000. Call 330-231-5943. OH (P05)



The HotJetll® is a best-selling hotand cold-water drainline cleaner

featuring a 35hp Vanguard engine by Toyota and delivering 10gpm @ 4,000psi that cleans drains up to 300' and 12" in diameter. Priced at \$32,995 including freight to the lower 48 states, the HotJet II® is American made using nonpropriety parts for affordability and ease in serviceability making its return on investment truly impressive.

Financing available. 800-624-8186; sales@hotjetusa.com; www.hotjetusa.com (PBM)

JETTERS - TRUCK

1992 GMC top kit, jet engine is a CAT, 236,000 miles, jet has a new tank (coated inside and out), truck is painted and has a Perkins engine. New wiring, alternator, battery and starter. New valves in pump, Pump is a Myers MH7 70 gpm at 2,000 psi. \$16,500. 313-600-1700. (P03)

LEASE/FINANCING

Western Equipment Finance, a bank-owned direct lender, is committed to continuing to help you prosper. All Equipment Types, New or Used; we have the best rates and terms you deserve. App-Only Financing and credit decisions within an hour. Call the team you can TRUST, Jim Stekl at Western Equipment Finance 701-665-1647. jim.stekl@westernequipmentfinance.com (PBM)

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PARTS & COMPONENTS



Clear the Main Line with ease, JnA Main Line Vac. Just hook the line vac to your hose, insert the incoming mainline pipe and watch the line come clean. Works on 3" & 4" pipe. Free shipping in the US. \$129.99. Order at jnamainlinevac.com. 919-559-9344. (PBM)

ALUMINUM VACUUM PIPES: Parts/pipe to help you manage wastewater. Our knowledgeable staff and fast service will help you choose and quickly receive the right pipe & parts. We can custom build almost any aluminum/cast aluminum, black/galvanized steel and PVC fitting. Call 800-246-3685. Schumacher Irrigation, Inc. (P08)

PORTABLE RESTROOMS

HUNDREDS of wood skid units for \$75 each. Available in both Tennessee and Arkansas. Please contact Richie White @ 904-802-9045 or rwhite@fusionsiteservices.com.

(P04)

4,000 used portable restrooms for sale. Updating our fleet to the new Zenith portable restrooms from Sansom Industries. Prices range from \$125 - \$325. Call Jim Reisinger @ 314-776-4000. (PBM)

PORTABLE RESTROOM TRAILERS



2019 15' JAG Mobile Solution 7-Station Restroom Trailer. Cottage Series interior design. This unit has three toilets in the women's station, one toilet and three urinals in the men's station. 500-gallon waste tank, heating and air conditioning. Excellent condition. Used in one location for two years. Price -

\$38,000. Call Mike at 336-240-3367 for more information! NC (P03)



ASCI 'PRESIDENTIAL' COMFORT STATIONS (2000) - Two units available. Double doors, aluminum steps, extended landings, aluminum handrails. Interior features: private stalls with wooden doors, flushable porcelain toilets, wood doors, simulated marble interior wall finish, heavy-duty vinyl flooring, ladies' has four stalls (one with private basin) and twin-basin vanity, men's has one stall, three wall-hung porcelain urinals, two vanities, each area climate controlled, back-up emergency power access, 1,000-gallon waste tank. \$27,500 each. Call Edwin Scott @ 336-266-6101. NC (P03)

2005 Black Tie single ADA restroom trailer. Just completely gone through. Cold A/C, hot water, new tires, 300-gal tank, fresh paint excellent condition ready to put to work. \$17,950. For info or pics call Steve 863-581-5680. FL (P03)

2001 Keith Huber International pump truck. 2 Decons, 28' Tonto, 18' Royal, 2001 ASCI, 16' Presidential, 26' Presidential, portable toilet hauler trailers. 315-437-1291, NY (PBM)



Brand new 2020 custom-made

Single or can be ADA Restroom Trailer -We are the manufacturer, we also make hot water sink trailers & shower trailers, weed wash trailers, this 1 is designed to be operated with wheels removed & lowered to the ground, or left up with all water running into a holding tank or bladder bag, we have a-500-gallon holding tank available separately. Fully insulated, epoxy, non-slip floor. 1 or 2 separate entrances, FRP walls, LED lighting, roof top air conditioning, electric strip heater, aluminum exterior, light weight. \$15,000 OBO as is or ask us for an updated quote with how you want 1 or more finished. Contact: Russ

928-242-1106, Russ@ElkCreek-Builders.com. www.sinktrailers. com. Free pickup or shipping available. AZ (P03)

PORTABLE RESTROOM TRUCKS



New 2021 Isuzu NPRHD diesel with 999-gallon aluminum portable (700/400 split), Masport HXL4/Honda 13 hp, Plug-N-Play vac pump, 12V wash pump w/ hose reel, toilet rack, bucket holder, hose trays, dual 2" side serv w/ hose wand, 4" dish, dual 3" side suction, toolboxes. Isuzu Diesel Ext 5 Yr / 200k Mile Warranty. \$71,500. Call Josh 918-607-1006. (P03)

2005 Mitsubishi truck, 19,500 GVW, 294,000 miles, runs, drives and works. Transverse 500 waste and 300 fresh tank with Honda engine / Jurop pump on flatbed with lift gate. Hauls 7 regular units. \$10,500 OBO. 717-284-0303 smexcavating@aol. com. PA (P03)

2005 Freightliner M2 Business Class: Mercedes MBE 900 with 225 HP and 285k miles. Allison automatic transmission, under CDL, current D0T inspection and used daily. Tires and brakes are 75%. Stainless steel tank, 1,000-gallons waste, 200-gallons pressurized fresh water, 2 large toolboxes, 2 unit toilet carrier, NEW vacuum pump. Call or text for more information. 734-777-0390. \$25,000. Delivery available. MI (P03)

2004 F-550 6L diesel (head bolts done) portable restroom truck. Stake body with lift gate, hauls 4 regular units. Slide-in aluminum unit with Honda engine, 400-gallon waste/175-gallon fresh. 134,000 miles. Ready to work. \$14,500 OBO. 717-284-0303, smexcavating@aol.com. PA (P03)



2011 Ford F450, diesel, auto, 2-wheel drive, steel vac tank, 500 waste/250 water, Conde SD pump. \$32,000. Call JR @ 720-253-8014, CO. (PBM)

2019 Ford F650 cab & chassis with a Imperial s/s flat vac unit, 300 water/700 waste, 6 unit capacity with Thieman lift-gate and Masport HXL4V pump. (Stock #94456C).

(888)VAC-UNIT (822-8648) www.vsirentalsllc.com.

(PBM)



2012 F550 Flatbed Delivery Truck,
4x2 XL 201" 6.7L v-8 diesel, 6-speed
automatic, ONLY 94,468 miles on new
motor and turbo, also ONLY 58,462
miles on A/C compressor and rebuilt
the drive line and rear deferential. All
maintenance records on file. 61" x 89"
lift gate -carries 8 units, tool box on
each side of the truck, ladder stairs on
each side. \$28,900. Call/Text
Bill 614-496-5571 or
billjr@potty4u.com. 0H (P03)



Texla Services Portable Toilet
Service Truck Bodies – Standard
turnkey package mounted on your
chassis includes: painted body, lighting,
right angle Jurop, DC10, water hose,
valves & plumbing and PTO. 1,100/400
- \$22,500; 700/300 - \$19,500;
1,700/600 - \$24,500.

Call 936-641-3938.
Check us out on Facebook! (PBM)



2011 Ford F750, Satellite 1,000 waste/500 fresh, Burks dc10 water pump, Conde vacuum pump. 118,000 miles, ISB Cummins, Allison automatic, hydraulic brakes, no CDL required. \$52,000. Clean one owner. Skylar

435-272-7457 or email sky27ews@ gmail.com. UT (P03)

New Imperial 1,300 U.S. gallon, portable toilet service unit mounted on a 2020 Ford F550 cab and chassis with a Masport HXL4 pump package. (Stock #13946).

(888)VAC-UNIT (822-8648) www.vsirentalslic.com.

Sell your equipment on the web! www.pumper.com/classifieds/place ad



2015 Dodge 5500, Cummins auto, 93,500 miles, aluminum tank, 800 waste/400 water, DC10 wash down Masport pump. Call JR @ 720-253-8014, CO. (PBM)



Chassis 2007 Isuzu NRR Service Truck. 19,500lbs with a 132" wheelbase. Tank is Progress aluminum with 200-gallon fresh water capacity and 400-gallon waste capacity installed by FMI Portland in June of 2014 along with a Honda Direct Drive. Can haul 6 toilets: 4 with the lift gate up. 2 on the lift gate. This truck was a flatbed originally and we purchased, installed tank, liftgate, and hitch in 2014 for an event vehicle. We wanted an NRR for the larger breaks, wheels, and lower rear ratio to be able to pull trailers and still service up to 40 toilets on a smaller route. We are upgrading our fleet to newer models. Maintenance records are available upon request. \$23.995. Please contact kimi@portapros.com or call/text 541-212-3175 for more information. ID (P03)

2008 Isuzu, 1,100/400 alum tank, Masport XL4, Burkes DC10 wash-down pump, dual-side service, 2 unit hauler, 311,000 miles (top half rebuilt 5 years ago), all maintenance records, includes (2) spare Masport XL4 pumps, truck well maintained, pics available. portajohn@portajohn1.com or 815-877-9770. IL (P05)

2000 International 4700 cab & chassis with a 500 waste/300 freshwater compartment with a Masport HXL4V vacuum pump. (Stock# 0767C) www.VacuumSalesInc. com (888) VAC-UNIT (822-8648). (PBM)

New Imperial 980 U.S. gallon, portable toilet service unit mounted on a 2020 Ford F550 cab and chassis with a Masport HXL4 pump package. (Stock #13931)

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

New 1,600-gallon portable toilet service unit. (Stock# 13762)

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648).

(PBM)



Chassis 2014 Isuzu NPR HD Service Truck, 14.500 lbs with a 109" wheelbase. Tank is a 2012 WorkMate Junior Slide-In modified and installed on NPR HD. Capacity of the tank is 225-gallons of fresh water, 300-gallons of waste. Can haul 8 toilets, 6 with the flatbed gate up, 2 on the lift gate. Complete hitch and electrics to pull up to 10k trailers. We installed and modified the slide-in liftgate and hitch in 2014 for an event vehicle. We are upgrading our fleet to newer models; there are no problems that we are aware of. Maintenance records are available upon request. \$32,995, please contact kimi@portapros.com or call 541-212-3175 for more information. (P03)

PORTABLE SINKS



Brand new 2020 12-sink, hot water trailer, all steel frame undercoated, 500+ gallons fresh water/500-gallon grey water, USB 110V outlet, (4) 110V outlets outside, (4) 5,000 lb Leveler iacks, aluminum exterior, 12 SS sinks, adjustable water faucets (to meet new guidelines), paper towel dispensers, liquid soap dispensers, plumbed for easy winterization. LED interior & exterior lights, high efficiency on demand LP water heater, light weight ~ easily pulls with 1/2 ton pickup. We are the manufacturer in AZ. Also make 16 sinks and 20 sinks HW trailers. Discount for 2 or more. Manufactured IN AZ, don't pay to get an Inferior Trailer from back east.

Call Russ @ 928-242-1106, www.sinktrailers.com. (P03)

POSITIONS AVAILABLE

Walter and Son Waste Hauling is looking to hire an experienced septic technician. We run new Mack Granites with 4310 NVE blowers. We are a family-owned business located in South Central Wisconsin. Pay and benefits are negotiable. Will help relocate the right candidate. If interested, please contact James at 1-608-289-7876. (P03)

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(PBM)

GapVax, Inc., a nationally recognized manufacturing business, is seeking a talented, highly motivated individual to fill a full-time Sales Position in the Midwest (lowa based preferred) region. GapVax is the leading manufacturer of industrial and municipal vacuum units and hydro-excavation units in the United States. We provide the most reliable, comprehensive, and efficient mobile vacuum units in the industrial and municipal markets. Specifications of the position are listed on our website, www.gapvax.com, click on the Now Hiring link in the left hand column. Send resumes to or betty@gapvax.com or 575 Central Avenue, Johnstown, PA 15902.

Bright Technologies, a waste & recycling equipment manufacturer, is seeking a talented, highly motivated individual to fill a full-time Sales/Field Technician. Individual would be focused on rentals and startup's of the Belt Filter Press Division. The individual should have a solid background in water and wastewater to help oversee the design and management of various projects within that division. We manufacture a reliable, user friendly, and efficient belt filter press for the industrial and municipal markets. Send resumes to stuart@sebrightproducts. com or PO BOX 296, Hopkins MI 49328 Attn: Stuart Sebright. (P03)

PUMPS

Buy & Sell all makes and models, new & used vacuum pumps, blowers, high-pressure water pumps, new and good used replacement parts. Buy discounted pumps online 24/7. Call us for a current inventory list. www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648). (PBM)

PUMPS-VACUUM

Used NVE Challenger 607 liquid cooled vacuum vane pump with truck mount bracket, muffler, oil tank and gearbox. \$2,800.717-284-0303. PA (P03)

RENTAL EQUIPMENT

Liquid vacs, wet/dry industrial vacs, combination jetter/vacs, vacuum street sweeper & catch basin cleaner, truck & trailer mounted jetters. All available for daily, weekly, monthly, and yearly rentals. VSI Rentals, LLC, (888)VAC-UNIT (822-8648) www.vsirentalsIc.com. (PBM)

ROLL-OFF TRAILERS

2001 ESP Roll-off trailer: Two (2) container roll-off trailer good brakes, tires, frame. etc. KLM Companies 617-909-9044 (PBM)

SEPTIC TANK FORMS

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SEPTIC TRUCKS



2011 Freightliner M2 112 DD13, Allison automatic, 420 HP, original double frame from factory with spring suspension, 44K rear, 18K front, double lock differential, new tires and aluminum rims, new 4,000-gallon carbon steel tank, new Masport Hydra Plug & Play. Call Alan for price 786-908-5436. (P03)

2007 Freightliner M2 Business Class: 33k GVW, 6-speed manual transmission, 275 hp, new Virgin 11R22.5 tires mounted on aluminum rims, fresh cab and frame paint, complete service of all fluids and filters. New 2,500 steel vacuum tank complete with a 400 cfm pump, 120' suction hose, 10' discharge hose, all stainless steel cam and groove fittings plus much more. \$65,500, includes delivery. Call or text for more information 734-777-0390. (P03)



2013 Freightliner M2, automatic, Cummins engine, 152,000 miles, brand new 2,000-gallon carbon steel tank. Brand new Moro pump PM70, brand new tires and aluminum rims all around. \$63,000. Call Alan 786-908-5436. (P03)



New 2021 Kenworth T270 (Non CDL) with 1,900-gallon steel vacuum tank, Jurop R-260 pump with 363 CFM, 36" rear hatch, heavy duty bumper, 1/4" hose trays, (2) 4" suction ports, trailer hookups, (2) 36" toolbox, 300 HP Cummins, Allison auto 2500 RDS transmission. \$105,225. Call Eric 405-826-4706. (P03)



New Kenworth T370 (54,000 gvw) with 3,550-gallon 1/4" steel powdered coated steel vacuum tank, Jurop LC240 pump, hose trays, 36" rear hatch, heavy duty bumper, (2) 4" suction ports, trailer hookups, (2) 36" toolbox, 350 hp Cummins, Allison automatic transmission.

\$135,500 + FET. Call Seth 918-688-5672. (P03)



2000 Freightliner FLD 120, 418,583 miles, Cummins power with 2009 5,500-gallon Longhorn Trailer. \$31,000. Contact Bradst.clair@a-ableseptic.com. Would consider breaking them apart. FL (P03)

2004 Sterling Quad Axle, 2011 Advance 6,500-gallon aluminum tank, Mercedes 425 hp, 645K miles, 10-speed, 20k front, 40k drives, 20k drop axles, non-steerable duels, 150 Witting Demag, 2-4", 1-6" heated valves, 100-gallon stainless pressurized heated wash down, 4 aluminum tool boxes. All stainless and aluminum. Used every day. Must see 608-626-3371. (P03)



2007 International 7000 Series w/ a 2007 Progress vacuum tank - 4,200-gal capacity. NVE pump with 250 ft of hose. For more information call Gary 215-783-0099. \$40,000 0B0. Truck located in Bucks County. PA. (P03)



2020 International HV607, aluminum 4,000-gallon Imperial tank, Challenger 4307 blower, heated collars. Only 52,000 miles. 5-year/150k transferable extended warranty. WWETT Show truck. No FET. \$140,000. 443-235-5979. (P03)



2000 Mack RD688, 350 hp, 8LL trans, Jake brake, 18k front, 44k rears, 90% rubber, 264k mi, A/C, new tank & pump w/only 600 hrs, SS hose trays, (2) front intakes, rear intake & discharge, heated collars, Masport HXL-400 liquid cooled, SeeLevel, comes w/hoses, 50-gal freshwater w/12v wash-down pump, pintle hitch w/electric, LED strobes. Garage kept. Extremely reliable. Pristine condition! \$79,500. 518-225-2560. (P03)



Freightliner M2 Business Class, CAT C7. Septic Truck: 2006 truck, 2016 Jurop pump and 2,250-gal tank. 260,000 miles. 250 foot of hoses. \$65,000. Call 618-614-2560. IL (P03)



2013 Freightliner Cascadia, 10-speed, Cummins engine ISX15, 450 hp, 322,000 miles, double chassis, brand new 3,600-gallon carbon steel tank, new Masport Hydra Plug and Play package. \$80,000. Call Alan 786-908-5436. (P03)



2004 Mack Vision, 400 hp, 5,000-gal steel tank. In working condition. \$45,000. Call JB's Line Cleaning 607-263-9920. NY (P03)



2001 Kenworth T800 tandem, 4000 Huber Dominator tank, rebuilt Detroit 60 series, 13-speed, Becker pump, hoist, 300-gal w/ pressure water, new frame, new clutch & transmission, stored inside. \$45,000 080, 330-231-5943.

\$45,000 OBO. 330-231-5943. OH (P05)



2009 Freightliner, Detroit 60, 10-speed Eaton Fuller, 166k miles w/ a Wittin vacuum pump. 150 barrel vac trailer - title in-hand, unit's working daily. \$60,000. Downsizing company. 281-444-8082. TX (P03)



2012 International Super Cab pump truck with 3 axles (1 lift axle). Transway pump package with a 4,000-gallon tank. This truck has a newly factory rebuilt Allison transmission with a 1-year warranty. The current mileage is 132,915. Asking price of \$83,000. Great truck that is ready to go to work! Call our office 804-733-1422. VA (P03)



2001 Freightliner FL-112, CAT C-10 Engine, 460,xxx miles. 9-speed Eaton Fuller trans. 2007 3,500-gal steel tank, heated valves, Homemade tool box jetter (no fresh water tank). Masport pump. Purchased a competitor company and do not need the truck/equipment. Truck runs and operates and was the primary vacuum truck used with the previous company. Call or Text 330-442-8070. Asking \$38,000 0B0. Cheaper with cash! Can also quote shipping if need be. Looking to move this truck fast, No reasonable offer will be refused. OH (P03)



1996 GMC Pump Truck with Cummins ISC 285. 36,000 GVW, 8 cylinder, rearwheel drive, diesel. 2,300-gallon baffled tank. Newer water cooled Masport pump. Clean title and good condition. \$19,500. Contact Ray @ 360-957-0891 or alloutsewer@live.com. WA (P03)



1983 Ford Pump Truck. 1,600-gallons. 34,000 GVW. 3208 CAT Engine, 8 cylinder, rear wheel drive, diesel. 6 cylinder Thompson Pump. Clean title. Good condition. \$9,500. Contact Ray 360-957-0891 or alloutsewer@live.com. WA (P03)



1998 Kenworth T300, 33,000 GVRW, 3126 CAT, 7-speed Eaton Fuller, 80,300 miles. 2,300-gallon J-Eagle tank with 3" intake and 6" discharge, Jurop R260D pump. Tank and pump are only 3 years old. \$32,000. Contact Tyler @ 501-388-6777. AR (P03)



2006/STLG, 4,800-gallon vacuum tank, 1/4 inch steel, 2 baffles, trays, hose hooks, 3 sight glasses, 36-inch rear manway. New transmission as of 2020. \$65,000. Please contact crestviewmini1@gmail.com for more informa-

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tion. FL (P03)



2006 Freightliner Columbia, Mercedes MBE40003200 steel tank, Fruitland pump. \$38,000. 281-794-3487 or jcooley@cooleyconstructionllc.com. TX (P03)



1996 International 4900 series, five axle, no engine or transmission. 2 links 10,000 lb drop axles. 4,000-gallon stainless steel tank, full dump open back door. \$25,000. 757-407-4166. VA (P03)



1995 International 4900 Series (rebuilt engine), runs good. Has 3,500-gallon steel baffled tank. Tank is only 10 years, in great shape. Has Masport water-cooled pump. Everything in good, working order. Needs TLC. Been great truck. Only used local hauling. Asking \$25,000. For more information call 941-639-5055. FL (P03)

2001 Freightliner C-120 cab & chassis with a 2006 Presvac 3,200 U.S. gallon, C/S, dump type unit with a Presvac PV750 pump. (Stock #0480C).

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

1997 Peterbilt 378 cab & chassis with a Presvac 3,000 U.S. gallon, C/S, vacuum tank & Masport HXL15WV water cooled pump. (Stock #6625C).

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Stainless steel 2010 Polar 3,600-gallon tank ready to mount on your chassis or sell outright. 20" rear manway, two 4" inch rear valves with full stainless hose trays. KLM Companies 617-909-9044 (PBM)



2013 Freightliner Cascadia, Cummins ISX 450 hp, automatic, 487k miles, NEW 3,500-gallon vacuum tank, interior tank lined and coated, NEW Masport vacuum pump, aluminum hose trays, 36-inch rear manway. \$70,000. Phoenix Truck Center - Atlanta, GA 404-844-8968. (PBM)



Used 2015 International 4300 with NEW 2500-gallon steel vacuum tank, aluminum trays, NVE 607 Challenger pump, Allison automatic transmission. \$79,807. Stock# 97988. 800-558-2945, imperialind.com, salesinfo@imperialind. com. (PBM)

2005 Mack CV713 cab & chassis with a Presvac 4,200-gallon (200 water/4,000 waste) tank and Jurop pump. (Stock #6025V). www.vacuumsalesinc.com (888)VAC-UNIT (822-8648) (PBM)



2011 Kenworth T800, Cummins ISX 485, 18-speed, Transway-built 4,000-gallon waste, 200-gallon freshwater with 10 gpm 3,000 psi jetter. Full hoist, vibrator and rear-open door. Transway 1200 pump. 167,500 miles, 14,500 hours.

Asking \$105,000. 802-658-6243. dispatch@pandpseptic.com. VT (P04)

Pre-owned Keith Huber Dominator, 4,000 U.S. gallon, two compartment, dump type unit, with a Becker 440 vacuum pump package. Mounted on a 1999 Sterling cab & chassis. (Stock #3408V)

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(PBM)



2004 Sterling Quad Axle, 2011
Advance 6,500-gallon aluminum tank,
Mercedes 425 HP, 645K miles, 10-speed,
20K front, 40K drives, 20K drop axles,
non-steerable duels, 150 Witting Demag,
2-4", 1-6" heated valves, 100-gallon
stainless pressurized heated wash down,
4 aluminum tool boxes. All stainless and
aluminum. Used every day. Must see
608-626-3371. WI (P03)



2012 Mack GU713 Granite, MP8, 18-spd, 340,578 miles, original heavy spec truck, 82,000lb. gvw, 18,000lb. front axle/44,000lb. camelback rears suspension/third axle, jake brake, 4,650-gallon vacuum tank, Masport pump, excellent mechanically, truck serviced and DOT inspected. \$75,500.



1991 GMC Kodiak, 2,300-gallon tank, 427 with 5/2-speed, air brakes, Moro M10 pump, recent tune-up, recent pump rebuild. 155,000 miles. \$17,500. **Call Kelly 608-835-7767. (PBM)**



2014 International 4300, under CDL, DT466 diesel, auto., 68k miles. New 1,800-gallon steel tank and new Masport pump.

Call JR @ 720-253-8014, CO. (PBM)

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1995 Mack CH612 cab & chassis with a Presvac 2,300 U.S. gallon, C/S, vacuum tank and a Wittig RFL100 vacuum pump (coming in August). (Stock # 6224V).

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Pre-owned 1984 Mack R686ST cab and chassis with a 3,000 U.S. gallon, carbon steel, vacuum tank unit. (Stock # 6115C).

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Pre-owned 2000 Mack RD686S cab & chassis with a 4,000 U.S. gallon, carbon steel, vacuum tank unit. (Stock #0514CV)

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TANKS

4,200-gallon steel vacuum tank mfg. by Curry Supply Co. 9/14. Comes complete with hose trays, NVE Challenger 6078 pump, pump mount bracket, oil tank, driveshafts, gearbox, etc. \$2,800. 717-284-0303 or smexcavating@aol.com. PA (P03)



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CA (P03)



2011 Kenworth T800. 4,620-gallon tank, 391,855 miles, 485 Cummins, Heritage Tank, Fruitland pump, tires have 70%-75% tread life left. Truck runs good. All oil and filters have been changed/replaced, all lights operable, new engine oil cooler installed. Asking \$89,900. Contact Brett for details, 330-531-3853. Truck is located in Ohio. (P03)



2011 Freightliner M2 business class. Cummins motor, automatic trans, 263,867 miles, 2,500-gal carbon steel tank (1.5 year old & warranty good for another 3.5 years), Jurop PTO pump Also Includes: - 2"x 25' cam lock hose w/ caps & plugs x4 - 3" x 25' cam lock hose w/ caps & plugs x4 - 2"x3' stinger - 4"-3" reducer fitting - 3"-2" reducer fitting - 2"-2" male to male - 2"-2" female to female - 3"-3" male to male -3"-3" female to female. Bought the truck a year and a half ago and haven't used it enough to keep it around. We've put less than 3,000 miles on it. Everything is excellent working condition. Asking \$49,000 OBO. Call for info or interest 979-203-4325. TX (P03)



2012 Peterbilt 389 Cummins, 550 hp diesel, manual 18-speed transmission, air-ride suspension, quad axle. 4,700-gal vacuum tank, bucket seats, Fruitland vacuum pump. 288,000 miles, great condition. Priced to sell - \$78,500 OBO. Call Jeff 607-220-9488. NY (P04)

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1999 Freightliner Model:FLD112SD, CAT 425 engine, 10-speed manual transmission, 3,800-gallon steel tank, equipped with a Masport HXL400WV pump. Asking \$26,000 OBO. For additional information or if interested please contact Steve at 251-747-1956. AL (P04)



2013 International, 52,000 GVW, 270 HP, only 77,000 miles, equipped with NEW hydraulic set bed, 12,000 lb capacity. \$64,000. Call Dewayne 256-338-4985. (PBM)

VACUUM EQUIPMENT



1998 Safejetvac Model 1015, 10-yd debris tank/1,500-gal water tank. Myers water pump 65 gpm @ 2,000 psi. Roots 8x24 blower 3,650 cfm @ 15" vacuum. Front boom with 8' - 6" extension, 800' front reel with rotation and brake. 600" of 1" sewer jet hose. Chassis Volvo WG-64, 1998 11,8413 miles, CAT 3306 300 hp, 8,365 hrs. 13-speed Eaton Fuller manual trans. \$42,950. Contact Tim Timmons 205-807-0294 or ttimmons@specenviro.com. AL (P03)

VACUUM LOADERS

2017 Guzzler Classic Kenworth Chassis, 19,500 miles, 4,880-hours - \$235,000. 2013 Guzzler Classic International Chassis, 43,000 miles, 6,940-hours - \$185,000. 440-813-0025. OH (P03)

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FOR SALE INDUSTRIAL VACUUM **LOADER TRUCK: 2010 GapVax HV-56** industrial vacuum loader, sn HV56-0642-10, 15 cubic yard debris tank and 55-0 gal. water tank, wet/dry filtration 6 cyclones with 40 filter bags, Easy Decon cyclones, with hydro excavation package, mounted on a 2010 Peterbilt 367 chassis, vin 1NPTX4TX6AD110191. Cummins 485 HP ISX engine 2100, Allison 4500 RDS automatic trans. 6-speed, toolboxes mounted on truck, with hydraulic boom telescopic, 8' power extension 16' to 22' reach from center of truck. Many other options. This is a very clean unit and Ready to go to work! Contact us today!! Asking price: \$375,000. See our website for spec sheet: www. hilpipre.com Contact: Hilpipre Auction Co. - 319-235-6007 - email: sue@hilpipre.com. Located in Cedar Rapids, Iowa. (P03)

2003 SuperSucker vacuum loader, 27' blower with spare blower for the truck. 400 HP with Fuller 14708LL trans, 44k rears 20k front. Very clean and runs excellent. KLM Companies 617-909-9044. (PBM)

Pre-owned 2008 International 7600, with a Guzzler Ace XXS4118TS Wet/Dry Industrial Vacuum Loader, 18-yard debris body, dump type, carbon steel vacuum tank. (Stock #4401C).

www.VacuumSalesInc.com, 888) VAC-UNIT (822-8648). (PBM)

2000 Guzzler Ace International chassis with CAT engine. Great running truck and blower. Tank body was recently replaced brand new from Guzzler. KLM Companies 617-909-9044. (PBM)

VACALL ALLVAC AVRB, 18-yard debris body mounted on a 2014 Freightliner 114SD cab and chassis. (Stock #033R).

www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

2015 Freightliner 114SD cab & chassis with a VACALL AVRB-18 industrial vacuum loader. (Available for rent or purchase). (Stock # 039R). www.vacuumsalesinc.com (888)VAC-UNIT (822-8648). (PBM)

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