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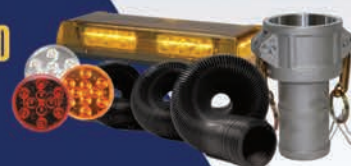
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- Ken Wysocky

Arthur and Justin Breault and the crew at ADB Construction & Septic keep on expanding services so they never have to say 'no' when a customer calls.

ON THE COVER: ADB Construction & Septic is intent on improving the image of the wastewater industry through professional marketing and consumer education. Justin, left, and Arthur Breault are shown with their Peterbilt vacuum truck built out by Crown Tank with a 4,600-gallon steel tank and a Fruitland Mfg. vacuum pump.
(Photo by Tim Becker)

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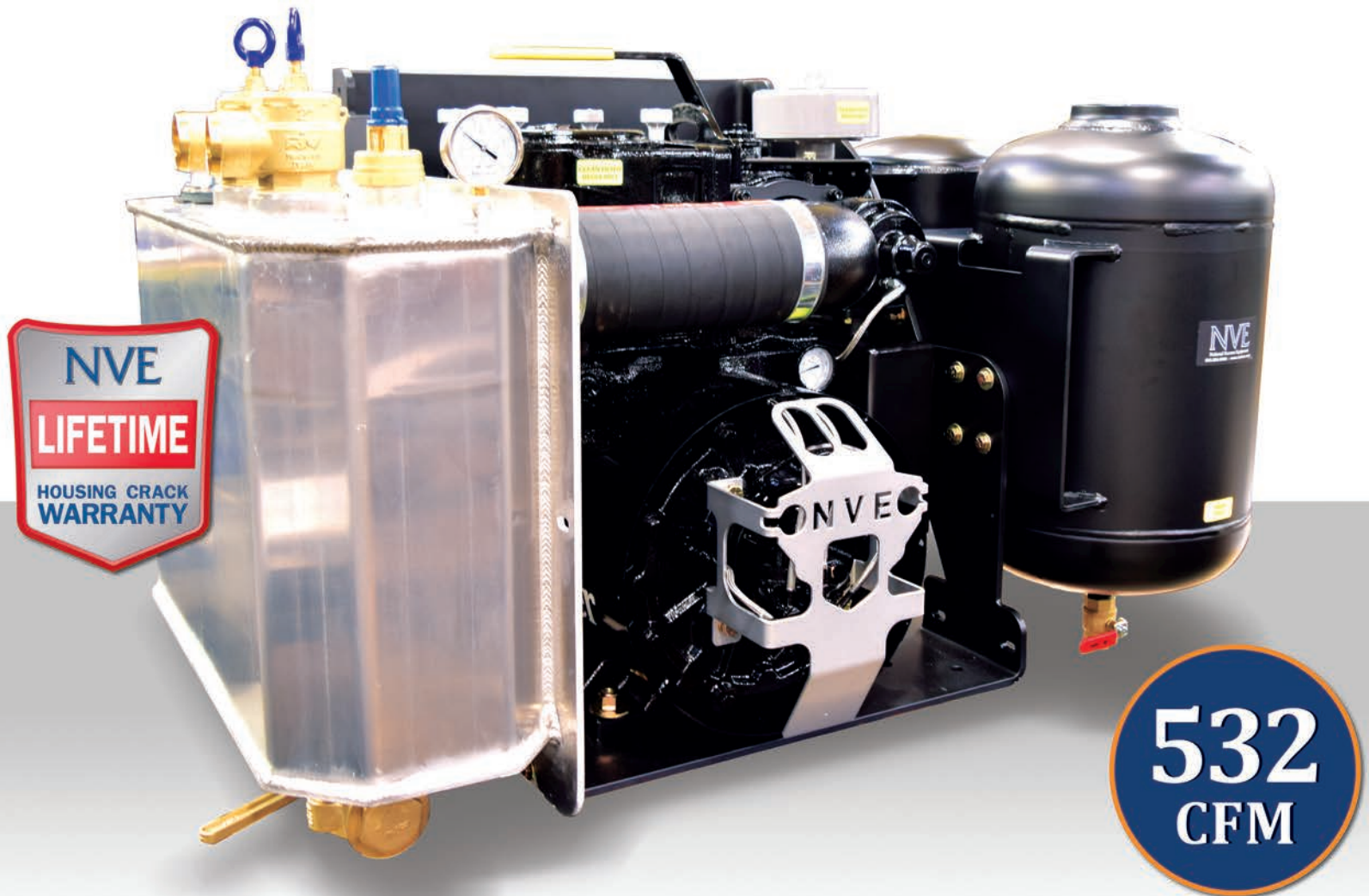
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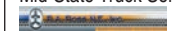

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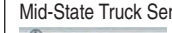


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Contact Jim with your comments, questions and opinions at editor@pumper.com.

A Big Thumbs-Down for Septic Stupidity

People say the darndest things in an effort to discredit mandated maintenance of onsite systems

By Jim Kneisel, Editor

A few months ago, I used this space to propose wastewater industry recognition of an educator who goes above and beyond to help consumers understand the need for proper maintenance of septic systems. I heralded the efforts of Sandy May, the wastewater system specialist for St. Charles County, Missouri, who has helped countless homeowners extend the lives of their onsite systems and protect the environment around them.

Folks like Sandy do a great job of explaining how ever-more-complex wastewater systems work — and that they require periodic inspection and pumping. Through her career-long efforts, Sandy has helped homeowners save money and deal with the heartaches felt when a system fails. There are many good people like Sandy working on behalf of our industry, showing the value of private onsite wastewater treatment and its important role in developing rural and suburban areas.

But all of septic educators' good work can be quickly undone. Sometimes it seems there aren't enough top-notch educators to make up for the ignorance of so many people who boldly speak out on a topic about which they know little or nothing. You know who I mean:

- It's the homeowner, so certain in his opinion, who stands up at a town board meeting to explain his secret to caring for a septic system. Maybe he advocates for putting a chicken from the supermarket in the septic tank once a year to raise bacteria levels.

- It's the state legislator from a rural district so opposed to any environmental regulations that he refuses to listen to county or state health officials who try to explain the science of wastewater treatment. Playing up to a voting block that doesn't want to open their wallets — even if it's in their best interest to do so — he fights tooth and nail against even the least restrictive pumping rules.

- It's the Realtors group in Anytown, U.S.A., that values a quick sale over well-informed buyers and sellers every time. "Point-of-sale inspection? There's no reason for a point-of-sale inspection. That's just the septic service companies putting dollars in their pockets." Let's not paint Realtors with too broad a brush, but you've all heard this argument at one time or another.

I KNOW WHEN TO PUMP!

This is an exaggeration, some critics might say. People in positions of power don't spout unqualified opinions just to score political points, they argue. Why, people with little or no knowledge of septic systems would never give advice that would actually hurt homeowners, right?

Thanks for raising those points. So let's look at a few recent examples of the septic maintenance deniers who are doing a grave disservice to users of onsite systems. These both came from Ontario, Canada.

In the communities surrounding Thunder Bay, officials have univer-

Sometimes it seems there aren't enough top-notch educators to make up for the ignorance of so many people who boldly speak out on a topic about which they know little or nothing.

sally opposed new rules that would require septic tanks to be pumped every five years or when the sludge fills one-third of the tank. Particularly interesting was the response from Oliver-Paipoonge Mayor Lucy Kloosterhuis, as reported at tbnewswatch.com:

"We all know when it's time to have our septic tanks pumped out and we pump it out," said Kloosterhuis, adding that her tank hasn't been pumped since 2006. Her response to provincial officials who would mandate pumping: "We more or less told them to 'mind their own business,' kind of. Nobody tells us when we have to clean out our chimneys for our wood stoves or pump out our septic tanks. They're just getting a bit too much in our face."

Stop and think about what Kloosterhuis said. How does she know when it's time to pump her tank? I doubt she's digging up the lid and checking the sludge level, cleaning her outlet filter or inspecting her drainfield lines. I'm going to go out on a limb and guess she's basing her strong opinion about septic maintenance on exactly no expert knowledge.

It sounds to me like Kloosterhuis is precisely the type of person who needs to be told when to pump her septic tank. And while they're at it, provincial officials might want to look into her chimney to protect her from a fire hazard.

TOO MUCH MAINTENANCE?

My second example comes from Central Frontenac, north of Lake Ontario, where town council member Jamie Riddell spoke out against a septic system maintenance and assessment program. This is what he said at a meeting while trying to rescind the maintenance provisions, as reported by kingstonregion.com:

"From my understanding from people who sell septic systems is that over-maintaining can have just as much harm on a septic system as under-maintaining," he told the governing members.

Let that sink in. While I'm sure every pumper has heard a customer question whether pumping is necessary, I wonder if you've heard anyone say it's harmful to provide too much maintenance to a septic system? I'm trying to conceive of the situation where a pumper would stand over the open lid, suction hose in hand, and tell Riddell, "Well, we probably shouldn't in-

(continued)

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spect your system too often, because, you know, that could be a lot worse than never looking at it. Better to put that lid back on and come back and talk about it again in 20 years."

SOME NEED REGULATIONS

Many people are opposed to rules from the government in general — fearing over-regulation in many areas of life. I won't dispute that concern. But let's look at septic systems and where mandated maintenance might be a prudent idea.

Many homeowners build relationships with septic service providers and rely on them to take care of their systems. Some people with septic systems further make it their business to learn how they work. A few will go so far as to check the depth of sludge and clean their own outlet filters. Maintenance regulations are not aimed at these people and, frankly, they probably don't need them.

But how about people like Kloosterhuis and Riddell? Some people refuse to listen to sound, expert advice about maintaining these complex and expensive systems. We may need to mandate septic inspections and pumping intervals to protect them from themselves — and perhaps more importantly, protect their neighbors from them. Those of us who know a thing or two about septic systems and want to protect the general public and the environment may choose to support reasonable maintenance rules.

THUMBS-DOWN

Just like we could give an award to a fine septic educator every year, we could give a Siskel and Ebert-style "thumbs-down" every year to a person or persons who set back those education efforts through their ignorant public remarks. I've suggested a few candidates and maybe you have a few more for consideration. Share them with me at editor@pumper.com. ■



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— *Here's Why You Shouldn't Bad-Mouth Your Competition*
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DRAIN PROBLEMS

seeing is believing

Gene and Kathy Morris say that adding a pipe inspection camera to their business

earned them extra credibility with customers. But they also agree it's the coolest tool on the truck. After adding drain cleaning services to their business in 1994, the owners of Jarvis Septic & Drain of Seville, Ohio, say that one of the first pieces of equipment they purchased was a pipe inspection video camera. And they've never looked back.

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YOUNG INNOVATORS

students start company

Earlier this year, pumper.com reported on a trio of high schoolers who designed and built their own septic pumping tool. Now, these same students are starting a company and offering their pumper hose attachment for sale. They have a long road ahead of them, but their supportive community in Three Lakes, Wisconsin, is doing everything it can to ensure their success.

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Tree roots are like miniature excavators — they'll move anything they can to accomplish their task. In their endless search for water, septic lids and risers are fair game. With the busy summer season now here, you're all but guaranteed to run into customers with root-intrusion problems over the next few months. Check out this online guide for using chemical treatment applications.

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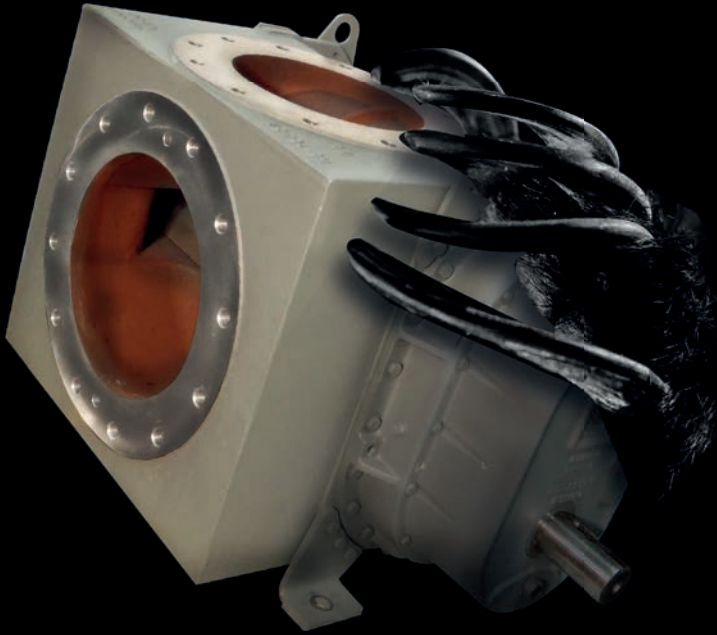
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The ADB Construction and Septic crew includes, from left, Thomas Nevins, Chris Barnard, Justin Breault, Arthur Breault, Melinda Onofrio, Mark Williams and Matt Choptij. (Photos by Tim Becker)



THE YES MEN

Arthur and Justin Breault and the crew at ADB Construction & Septic keep on expanding services so they never have to say 'no' when a customer calls

Profile

ADB Construction & Septic Manchester, Connecticut

OWNER: Arthur Breault

FOUNDED: 2005

EMPLOYEES: 7

SERVICES: Septic pumping, system repairs and inspections, drain cleaning and pipe lining

SERVICE AREA: 30-mile radius around Hartford

WEBSITE: www.adbseptic.com



By Ken Wysocky

For most businesses, answering phone calls from potential customers is simply a means to an end: booking a job. But at ADB Construction & Septic, phone calls are viewed as a marketing opportunity — a chance to probe callers for valuable information and promote other services offered by the well-diversified company.

"We used to get phone calls from customers who would ask for a specific service and that's where it would end," says Arthur Breault, owner of the company based in Manchester, Connecticut. "But now we try to do more than just sell a job. We try to get more information when they call and explain that we not only do drain cleaning, for instance, but also pump septic tanks and replace sewer pipes.

"It's almost like we interview customers, which brings us more work," he continues. "Before, we were losing sales that we didn't even know were out there. Better yet, it doesn't cost us anything."

The approach makes sense. By calling, customers are already indicating they're interested in hiring the company. As such, they're probably more receptive to taking a few minutes to listen. "We've already passed some kind of initial test for determining which contractor they'll use," says Justin Breault, Arthur's son, the company's service manager. "So now we get a chance to educate them about other ser-

(continued)



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Left: Justin Breault and Matt Choptij dig a trench through a garden bed for a water softener discharge drywell. They are using a Futura LT-800 laser level.

Below: Matt Choptij guides Justin Breault as he maneuvers a Yanmar mini-excavator off a Big Tex trailer. The International 4300 carries a Crysteel dump body.



vices they may not know we offer.”

Receptionists also obtain callers’ email addresses, which are then used in future marketing efforts. Moreover, calls also provide an opportunity to explain to price-sensitive customers that there’s more to consider than cost when hiring a septic tank pumper.

“We want to help them understand who we are as a company,” Arthur says. “They need to understand that we’re selling a product. ... A lot of guys will just throw a hose into a tank and start pumping, and the homeowner thinks they’re getting properly serviced. But we tell (potential) customers that we perform a mini-inspection of their system — check things like the condition of the tank and baffles, the water level and what we find inside the tank.

“Along the way, we explain that cheap prices will probably cost them more down the road,” he adds. “Sure, there are times when we have to decline jobs (when customers want a better rate). But we don’t lower our prices. Many times, customers don’t realize that the other guy’s price is so low because he may not be pumping full time, for example, and has no overhead and no insurance.”

“A lot of guys will just throw a hose into a tank and start pumping, and the homeowner thinks they’re getting properly serviced. But we tell (potential) customers that we perform a mini-inspection of their system.”

TEACHABLE MOMENTS

When Arthur founded ADB Construction in 2005, he wanted to develop a company with customer education as its centerpiece.

“The industry has a bad rap as it is and I wanted to change that,” says Arthur, 59. “I wanted to explain to customers what we’re doing and why we’re doing it. There’s a lot of (mystery) in this industry from customers’ standpoints and sometimes companies take advantage of that.”

Arthur started out doing septic system repairs, equipped at first with

ARTHUR BREAUT

nothing more than some basic hand tools and a 1972 Buick Skylark. But he reinvested profits back into the business, buying more tools and equipment to increase efficiency. He also started installing sewer lines for homes being converted from septic service; at that point, he subbed out pumping work to a friend.

“Things were still a little slow for the first five years,” Arthur says. “But then business exploded. Our (gross) revenue has increased between 400 and 500 percent in the last five years.”

Arthur says the company’s educational approach played a large role in that growth. And it doesn’t end with the initial phone call; drivers take time on job sites to explain procedures to customers and build relationships. To allow time to do that, the company schedules fewer stops for its drivers than it otherwise could, Justin notes.

“If a driver has eight or nine pump-outs in a day, he’s jamming — there’s no time to be personal with customers,” Justin explains. “We like to see them take a couple of minutes to say hello, shake hands and explain what’s going on with their system.”

EXPANDING SERVICES

In 2011, the company added drain cleaning to its menu of services. It was a natural fit because, often enough, clogged lines are the cause of cus-

(continued)

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“When the economy got bad (in 2008 and 2009), companies with all their eggs in one basket got hurt,” Arthur says. “We flourished on one side even if another dried up. People might put off septic pumping for a year. But if their toilet isn’t working because a sewer line goes bad, they have no choice but to get it fixed.”

MORE EQUIPMENT

As services grow, so does the company’s fleet of equipment. On the septic end, the company relies on two trucks, built on 2013 Peterbilt 388 and 2001 Mack truck chassis. The Peterbilt was outfitted by Crown Tank with a 4,600-gallon steel tank and a Fruitland Mfg. vacuum pump. The Mack was built out by LMT Inc. with a 4,000-gallon steel tank and a Wittig pump (Gardner Denver).

Chris Barnard, waste haul manager, activates the PTO in the cab of a Peterbilt truck from Crown Tank, carrying a Fruitland Mfg. pump.

Barnard connects the suction hose during a septic service appointment.

For drain cleaning, technicians use a RIDGID K-330 cart-mounted jetter (3,000 psi at 5.5 gpm), a Spartan 300 drum machine, a JM 1000 mini-jet toolbox jetter from General Pipe Cleaners, two RIDGID K-400 drum ma-

tomers’ septic system problems. Drain cleaning also created opportunities to sell other services, Justin says.

“Drain cleaning is essentially a loss leader that leads to larger repairs — gets us in the door with customers,” he says. “In some situations, we might clean lines and find a system needs to be replaced, but the customer can’t afford \$15,000 to \$20,000 for a new system. The short-term solution is more frequent pumping. So we get the pumping business and when the customer has enough money, we get the installation business, too.”

In 2012, the company bought its first vacuum truck. Pumping out tanks was not only another logical extension of the company’s core services, it also boosted revenue that previously went to pumping subcontractors. “We started tracking the number of times we were hiring someone else to pump tanks,” Justin explains. “We found we were giving a lot of money to someone else.” Moreover, tank pump-outs often lead to drain cleaning work in order to solve customers’ problems, he adds.

In 2016, ADB invested in a Nu Flow pipe lining system, adding yet another complementary service to its core offerings. After noticing the growing need for replacing aging water and sewer infrastructure, the Breaults started looking at pipe lining systems at the WWETT Show. In addition, trenchless pipe lining is an attractive solution for customers who want to avoid tearing up driveways, sidewalks, patios and the like in order to replace sewer lines, Justin says.

Diversification not only allows the company to better serve customers, but also stabilizes the business. If one segment hits a cyclical lull — think tank pump-outs in winter, for instance — other segments keep contributing to cash flow. Employees stay busy, averting seasonal layoffs.

Kids, trucks and charity

Last year marked the first time ADB Construction & Septic participated in the annual Wishes On Wheels event, which raises money for the Make-A-Wish Foundation. And Justin Breault, the service manager of the Manchester, Connecticut-based business, vows it won’t be the last.

In 2016, the event — held in nearby East Hartford — raised more than \$100,000 for children with life-threatening conditions. Breault was one of more than 530 drivers who paid \$25 each to participate in the fundraising convoy, in which people from all manner of businesses drive their rigs on a roughly 22-mile loop, mostly on I-384.

“It’s a massive event,” says Breault, the son of company owner Arthur Breault. “By the time the first trucks are returning to the starting point, other trucks are still waiting to leave. The sheer magnitude of all those trucks rolling down the highway is mighty impressive. People stand on the overpasses with signs and wave at the trucks.”

The trek starts and ends at Pratt & Whitney Stadium at Rentschler Field, the football and soccer home of the University of Connecticut Huskies. A variety of events are held after the convoy, including contests for best-looking truck, most unusual truck, and the truck that traveled the farthest to participate.

Breault drove the company’s Peterbilt dump truck while route driver Chris Barnard piloted a 2013 Peterbilt vacuum truck. “You see all kinds of trucks, including wreckers, box trucks, semi tractors, UPS and FedEx delivery trucks, dump trucks, hook-lift trucks and crane trucks,” Breault says.

In many cases, a sick child rides shotgun with a truck driver. The reaction from the children is priceless, Breault says. And the emotions run even higher during a ceremony held later inside the stadium, where participating children get introduced and announce their individual wishes. “There’s not a dry eye in the crowd,” he says.

The company also participates in many other local charitable events. “Charity and giving back is really important,” says Arthur Breault. “It’s only right that we give back to the towns and communities that have done right by us.”

As for the Wishes On Wheels event, Breault says it’s penciled in on the calendar for next year. “We’re going to try to make this a routine event every year,” he notes. “It’s really worth the time.”

chines and three RIDGID SeeSnake pipeline inspection camera systems.

To support excavations for sewer line repairs and replacements, the company owns two Takeuchi excavators, one Takeuchi skid-steer, a Yanmar mini-excavator, a Big Tex equipment trailer, a 2016 Peterbilt with 16-cubic-foot Bibeau dump body, and a 2005 International 4300 with a Crysteel dump body. The company also owns a Chevy pickup equipped with a Knapheide utility body, a GMC cut-away van with a Stahl (a Scott Fetzer company) utility body, and a 2010 Ford van. To carry the pipe lining system, the company bought a 16-foot Sure-Trac enclosed trailer.

GATHERING INTEL

When the Breaults need to educate themselves, they attend the WWETT Show. Knowledge gleaned at the trade shows has led to valuable revenue-generating and efficiency-enhancing investments, like the Nu Flow pipe lining system.

"We get to meet and talk to other people — it's a great place to network and share tricks of the trade, Arthur says. "When you talk to people who don't operate in your market, they're not afraid to share information."

WWETT attendance led the Breaults to invest in RazorSync field-management software to improve productivity. For example, when a job is booked, essential customer information — phone number, email address and so forth — is added to the RazorSync system. "Sometimes our techs don't even come to the office in the morning because they can call up their schedule on a smartphone," Art says.

The system also tracks how much time it takes technicians to do jobs and enables them to input critical information, such as the location of septic tanks and the size of the tank, on reports that are scanned into the system.

“If you're not pushing forward as a business and striving to be better — be a leader in your industry — then you're stagnant, and stagnant businesses don't last very long.”

JUSTIN BREAUT

represented on a variety of platforms, from vinyl wraps on trucks and internet advertising to technicians' uniforms and business cards, invoices and yard signs. A key component is a new company logo.

"We want people to think of us when they think of waste and sewers," Justin explains. "If you're not pushing forward as a business and striving to be better — be a leader in your industry — then you're stagnant, and stagnant businesses don't last very long. We really want to keep growing our business, and creating a fresh brand seemed to be the most logical next step."

While growth is important, the Breaults believe that slow and steady is better than exponential increases. "Two years ago, we grew too much, too fast," Arthur says. "But we've stabilized that a bit and now we're concentrating more on developing employees."

Currently, septic-related business generates about 60 percent of the company's revenue, while drain cleaning kicks in another 30 percent and pipe lining contributes the balance. Arthur says further growth could come from buying additional equipment, such as a trailer-mounted water jetter or

"Technicians can call up customers' files on their cellphones and see what we did last time and who did the work," Art explains. "The files might contain information as simple as a beware-of-dog warning or note that there's no clean-out access in the basement."

BRAND RECOGNITION

To establish a more prominent business profile, the Breaults are working with a marketing firm to ensure the company's brand is consistently represented

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a portable grease-trap pumping unit. He also expects pipe lining to become a bigger part of the company's business in the years ahead.

"Down the road, we're even thinking about getting into portable restrooms," he adds. "We think the future looks really, really good." ■

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Andrew A. Gonzalez is an attorney who focuses on business and intellectual property matters. For more information, visit www.golawny.com.

What Is a Trademark and Why Do You Need One?

You've worked hard to build a good name and customer recognition for your pumping business. Now it's time to protect your reputation By Andrew A. Gonzalez

Good branding and marketing weren't invented yesterday. Consider the story of John K. Hogg of Frederick, Maryland, a manufacturer of soap. Mr. Hogg had a concept for a special soap, so he applied for a trademark for the name Star Soap and a star symbol to be "printed, stamped or impressed upon the outside of each piece of soap," as he wrote in his application. Yes, Mr. Hogg exhibited sophisticated 21st century branding and marketing skills more than 100 years ago:

- A simple, one-syllable name
- A name to convey both his aspirations and the quality of his product
- A striking physical symbol built right into the name

And the rest of the story? Mr. Hogg was the recipient of trademark No. 9. That's right, one of the first trademarks ever issued by the U.S. government. The date of his registration was Oct. 25, 1870. Memorable names Colt (1889), Quaker (1895), Pepsi-Cola (1896) and Mercedes (1900) all followed the soap maker.

What is a trademark?

A trademark is defined by the United States Patent and Trademark Office as any word, slogan, shape, color, scent, taste or any combination of these used in commerce to identify and distinguish the goods of one manufacturer or seller from those of another and to indicate the source of the goods. A trademark is a mark that is applied to a product. For example, if you sell footwear, then the mark you apply to the shoe (the Nike swoosh, for example) is a trademark.

A service mark is used in the delivery of services. If your bank is offering a checking account service called "Smart Checking," the term would be a service mark rather than a trademark, because it is used in the delivery of services rather than being applied to a physical product.

What are trademarks for?

Satisfied consumers are likely to buy or use the product or service again in the future. For this, they need to be able to distinguish easily between identical or similar products. The main function of a trademark is to enable consumers to identify a product or service of a particular company and distinguish it from competitors. You know what it's like walking down the aisles of a grocery store. Somehow you find the product you want out of the hundreds on the shelf. That's the power of a trademark.

By enabling companies to differentiate their products and services, trademarks play a powerful role in the branding and marketing strategies of companies. The image and reputation of a company helps create trust, the basis for establishing a loyal clientele and enhancing a company's goodwill. Consumers develop an emotional attachment to certain trademarks based

Consumers value trademarks ... and desired qualities they associate with the mark. ... Therefore, the very ownership of a trademark with a good image and reputation provides a company with a competitive edge.

on desired qualities or features of the products or services they use.

The value of trademarks

A carefully selected and nurtured trademark is a valuable asset for your small business. For some, it may be the most valuable asset they own. Estimates of the value of some of the world's most famous trademarks such as Coca-Cola or IBM exceed \$70 billion each. This is because consumers value trademarks, their reputation, their image and desired qualities they associate with the mark, and are willing to buy a product bearing a trademark they recognize. Therefore, the very ownership of a trademark with a good image and reputation provides a company with a competitive edge.

While most businesses realize the importance of using trademarks to differentiate their products or services from competitors, not all realize the importance of protecting them through registration.

Registration, under relevant U.S. trademark law, gives your company the exclusive right to prevent others from marketing identical or similar products or services under the same or a confusingly similar mark. Without trademark registration, your investments in marketing may be wasted as rival companies could adopt similar identities. If a competitor takes on a similar or identical trademark, your customers may be misled into buying the competitor's product or service. This could not only decrease your company's profits and confuse your customers, but it may also damage the reputation and image of your company, particularly if the rival product or service is of inferior quality.

Receiving a trademark cease-and-desist letter or infringement notice can be an unsettling event. There are many circumstances under which you may receive one, but they all have one common thread — if the allegations in the letter are true, they can be devastating for a business. Securing ownership of intellectual property serves as prima-facie evidence of the validity and exclusivity of the mark for the goods and services listed in the registration and serves as defense in a conflict matter.

Given the value of trademarks and the importance that a trademark may have in determining the success of your business, it is critical to make sure



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that it is registered in the relevant markets. In addition, a registered trademark may be licensed to other companies, thus providing an additional source of revenue for your company or may be the basis for a franchising agreement.

How can your company protect its trademarks and service marks?

Trademark protection can be obtained through registration and, in some cases, through use. Even where trademarks can be protected through use, you are well advised to register the trademark by filing the appropriate application. Registering a trademark will provide stronger protection, particularly in case of conflict with an identical or confusingly similar mark.

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Erik Gunn is a magazine business writer in Racine, Wisconsin. Direct inquiries to him at editor@pumper.com.

Is It Important to Own Your Land and Shop?

Leasing is an option for property and buildings used to start up or grow an existing pumping business **By Erik Gunn**

To lease or to buy? For contractors like you, that question more typically comes up when talking about equipment — that new vacuum truck or excavator, for instance. In this case, we're exploring a more basic business asset: the land and space your business calls home.

If that surprises you, you're probably not alone. Leasing business space — isn't that something that professional offices do? Lawyers and accountants?

Isn't that a stretch for a service contractor, who needs not just an office but also a garage to store and repair service trucks and other heavy equipment?

Not as much as you might think.

Better returns

John Ingrassia, a New Jersey land developer and investor, suggests there are some sound reasons to consider leasing your business real estate instead of buying it. That's what most big Fortune 500 companies do, he points out.

"They almost all of the time lease rather than buy," Ingrassia says. "The question is, 'Are you in the real estate business, or are you in some other business that will benefit more over the years from your ability to use the money to buy newer and better equipment, and products to sell and increase your overall business?'"

Given the volatile nature of real estate prices, he believes, over a 10-year period a well-run business will do better putting its money in areas such as marketing and inventory, ensuring it's visible to customers and prospective customers, and always prepared to meet their needs. Even after one subtracts the monthly or annual cost of leasing your business property, Ingrassia says, the return on investment could easily be 10 to 12 percent a year better.

"You rarely see a bank, McDonald's, or other large successful company owning real estate because money invested in inventory or advertising yields a greater return — even given the tax credit of owning."

Startups and veterans

For a startup business, leasing is an obvious attraction. Just as a new college graduate taking her first job may have no choice but to rent an apartment instead of buying a home until she can save for that big down payment, the startup business can marshal whatever capital resources it has more efficiently if it doesn't tie it up in a major real estate commitment to start with.

Especially for a long-established, multi-generation operation, there are, of course, solid reasons to own your real estate — especially if you already own it free and clear. If your grandparents started up your pumping business, bought the land and built the buildings, and your parents made improvements and have paid them off, there probably isn't much advantage to just turning your back on that and going out to lease something new instead.

On the other hand, perhaps you already have a business reason to move. You could be landlocked with no room to expand your footprint even as you're

growing at such a fast clip that you've added new employees, new equipment and even new services as you expand into related lines of business.

Where is that extra garage going to go for the three new restroom trailers you've acquired? Or what do you do if your community has developed so that your primary customer base has moved farther and farther west of town, no longer surrounding you like spokes around the hub of a wheel? All those and more scenarios may put you in the position of having to look at relocating anyway — and if so, the buy-or-lease decision may be relevant even to you.

No single answer

Harry Hecht, a strategic business consultant and entrepreneur coach in Orlando, Florida, says the real answer to the "lease or buy" question when it comes to business real estate is, "it depends."

"A contractor should rent or lease a facility to start, preferably on a short-term basis," Hecht says. "This way the business can plan for growth and not commit too early to square footage or a location that may not work for them a few years down the road."

“ The goal for any business, especially a newer one, is to keep expenses as low as possible until the business is consistently profitable. Owning a property might seem like a good idea, but there are significant risks. **”**

Harry Hecht

An alternative? "Share a space with another company," he says. "Many property owners are not fully utilizing their facilities and may be able to offer greater flexibility through a sharing arrangement."

"The goal for any business, especially a newer one, is to keep expenses as low as possible until the business is consistently profitable. Owning a property might seem like a good idea, but there are significant risks should business begin to deteriorate or possibly accelerate where additional space is needed."

But this is not a one-size-fits-all question, he cautions.

"Owning offers a business the opportunity to build equity outside of the value of the 'business,'" Hecht points out. Some, like Ingrassia, might look askance at the tax advantages or the potential for appreciation when you own your property. But Hecht says those can be real benefits.

"In addition, there are tax advantages and potential appreciation gains available should the value of the property increase," he says.

But there is still that potential downside: "There is also the risk that the property value could go down, and the owner may then have to come up with cash to sell the property if they are in a negative equity situation."

The location factor

There's the old saw that in real estate, the three most important features



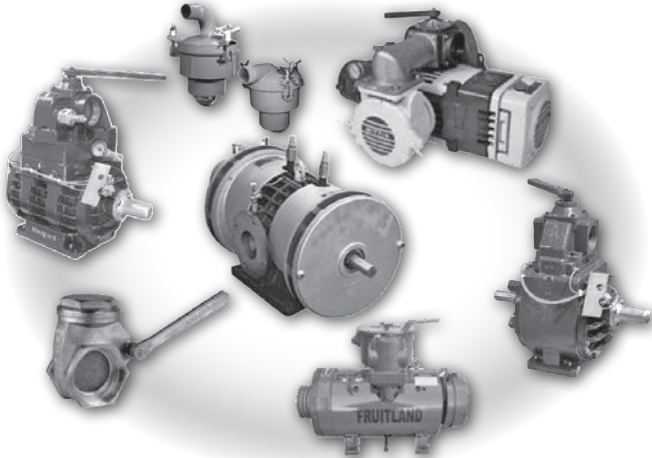
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are "Location, location, location." That's an important point to remember when considering your business property options and making that lease-or-buy decision. Leasing, of course, gives you the flexibility to move should your current location no longer be adequate for your needs.

So too, when buying, you need to be able to look at that location with the long view in mind.

"Always be sure that when acquiring any property for a business that location is still very important, and should be in your servicing area and close to your employees," Hecht says. "Also be sure that there are options for expansion and that the zoning is properly researched prior to any commitment."

There is another option to consider, Hecht points out. As the owner of your contracting business, you could set up a separate business entity that owns the property, then leases it back to your contracting firm, which pays the rent. An arrangement like this can give you some of the advantages of flexibility — unshackling your business from the land it is on — while at the same time maintaining the advantages that building long-term equity can provide. Should changes make it advisable for you to move your operation elsewhere, you might still profit in the long-term if you can find a new customer for the property you own even as you leave it behind.

Then, your answer to Ingrassia's question might actually be, "Well, I'm in both the real estate business and my other business."

These are highly complicated arrangements, and you shouldn't consider them without walking through all your options, their advantages and disadvantages against your specific business conditions, needs, and long-term plans with your lawyer, accountant and other professional advisers.

If rethinking exactly what kind of relationship you want to have with the grounds and buildings your business stands on intrigues you, it might be time to take a closer look. ■



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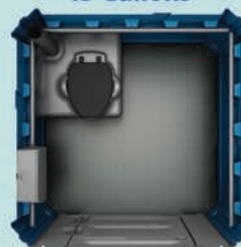
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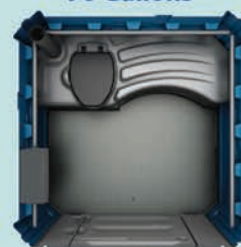


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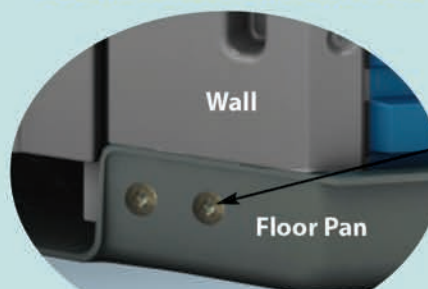
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Steve Smith, left, with son Stephen Smith, are shown with a Kenworth service truck built out by Pik Rite with a blower from National Vacuum Equipment.
(Photos by James Robinson)

THE ACCIDENTAL PUMPER

When Stephen I. Smith purchased a 1949 Studebaker pumper truck in the 1950s, he had no intention of getting into the septic service business. Rather, his purpose was practical. He couldn't find reliable pumpers to service his mobile home park, so he decided to do the work himself.

It wasn't long before family and friends were asking him to pump their septic tanks, and in 1959 he officially started a part-time pumping business. From the beginning, his 12-year-old son, Stephen (Steve) C. Smith, rode with his father. When he graduated from high school in 1966, Steve worked full time in the family pumping business covering the Hanover, Pennsylvania, area.

These days, Steve, 69, carries on the three-generation business with his son, Stephen Paul Smith, who is 41. With nine trucks and a 330-acre farm, Smith's Sanitary Septic Service has added a broad spectrum of services to meet customers' needs as types of allowable septic systems have changed over the years.

According to Joan Smith, Steve's wife, who runs the office with two other women, Smith's offers one-stop service from pumping to installation to repair and inspection. The company has grown over the years, but the Smith name and reputation continue to focus on

(continued)

Stephen Smith bought a vacuum truck in the 1950s to serve his mobile home park and parlayed the experience into a multigeneration family wastewater business

By Dee Goerge

Profile

Smith's Sanitary Septic Service Hanover, Pennsylvania

OWNERS: Steve and Joan Smith

FOUNDED: 1959

EMPLOYEES: 13

SERVICES: Commercial and residential pumping, excavating, installation, jetting, locating systems, inspections

SERVICE AREA: 25-mile radius

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the quality of service since its simple beginnings.

The service menu has grown gradually, Joan explains.

"It just evolved," she explains, recalling her nearly 46 years with the company since marrying Steve. "At first we had two trucks, and then we'd add more each year as the business grew."

Before CDL licenses were required, and when the trucks were smaller, she drove a truck and learned the business hands-on. With the office in their home, the Smiths started out with two trucks parked in an oversized garage at their home.

DOING MORE

About 75 percent of the Smiths' work continues to be pumping, with about 25 percent commercial, including pumping grease. The remaining revenue comes from related services. The additional services began when Stephen graduated from high school, and he was interested in excavating.

"We used to give backhoe work away," Joan explains their one-time preference for subcontracting the dirt work. "But then they'd be busy, and we had to have someone immediately. We decided it was best to do our own (backhoe work). When a septic is backed up, you need to do it immediately."

With repair and installation services, jetting was added. Later, Joan and a driver earned certifications in 2007 to do inspections.

“ Appearance means a lot. We keep (the trucks) clean, and my husband takes a lot of pride in doing that. ”

JOAN SMITH

One reason for adding services comes from how systems have changed over the years.

"We had cesspools from the '40s through the '60s. In the '70s we went to drainfields. In the 1990s we had sand mound systems and then more sophisticated systems in the 2000s. With the changes came the need to repair pumps and install systems, and emergency repair," Joan says.

In addition to onsite excavation, their son, Stephen, oversees the farm and land application end of the business. He was the one who pushed for purchasing land four years ago. His father, Steve, land-applied septage until 1991, before regulations increased and it became difficult to find land. Hauling septage to a treatment plant became more practical.

"For the size we are now, it is much more worth it. The amount of gallons (3 to 4 million gallons/year) made more sense expense-wise," Stephen notes. Besides the 180 tillable acres on the Smiths' 330-acre farm, the business has access to a neighbor's fields for a total of nearly 500 acres — more than they need to meet regulations.

Though it requires more management and fieldwork hours, land application has been a good addition to the business, Stephen says.

PROMOTION AND IMAGE

While their son keeps track of land application and the farm, Steve and Joan have a handle on the day-to-day workload. Joan's on-the-job education pays off when she answers phones. "At first they don't want to talk to a woman, until they realize I know what I am talking about," Joan says.

(continued)

The Smith's Sanitary Septic Service team includes, from left, James Strift, Annalee Werelius, Darren Dixon, Stephen Smith, Todd Sherman, Steve Smith, Adam Kreider, Joan Smith, Gerald Shanebrook, Donna Hull, Ray Sloan, Alex Pullin and Jeff Baldwin.





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The ups and downs of land application

Because Smith Sanitary Septic Service operates year-round and deals with a large volume of septage, land application is an economical and efficient alternative to hauling to a treatment plant, says Stephen Smith. But it takes planning and plenty of storage to meet regulations and have the flexibility to work around the weather.

The farm owned by Smith's Sanitary Septic Service has three underground tanks: a 500,000-gallon tank, 750,000-gallon tank and a 1 million-gallon tank. These poured concrete tanks range from 8 to 10 feet in height and 119 to 140 feet in diameter, and were constructed following Natural Resources Conservation Service (NRCS) regulations for manure storage. They feature required leak detection systems for holding septage.

"It's a long-term investment," Stephen says. "The massive storage allows us to haul for big accounts, and if we don't have the right weather, we can store for months."

By spreading whenever the weather allows, they don't anticipate ever filling the tanks to capacity. But having extra storage ensures they don't have to haul to a waste treatment plant.

In Pennsylvania, certified tanks with liners are required, and the waste is tested a couple times a year. It is screened and stabilized with lime to raise the pH to 12 before being spread on fields. The Smiths use an 8230 4WD John Deere tractor and 7,400-gallon Jamesway spreader with flotation tires. By spreading during the summer and fall when soils aren't too wet and on no-till fields, there is minimal soil compaction.

For Stephen, who spreads the septage with the help of a neighbor, a big part of the job is paperwork and planning.

"The amount of gallons is based on nitrogen in accordance with the crop in the field," he says, explaining he figures the nitrogen conversion based on the test results. Septage can only be spread on hay and field animal crops such as corn.

"We have more land than material, so it makes it more selectable when you are spreading," Smith adds.

With the farm and storage tanks located centrally in the business' service territory and 12 miles from the shop, it is convenient and saves time for employees to empty loads and get back on the road quickly. At the same time, if it makes more sense they have the option of going to a treatment plant.

“It's a long-term investment. The massive storage allows us to haul for big accounts, and if we don't have the right weather, we can store for months.”

STEPHEN SMITH

In the business' early years, customers only called when they had problems with their system. Years ago, she started a handwritten system to contact customers every couple of years to remind them it was time to have their tanks pumped. Now the information is handy to retrieve through her computer's Septic Tracker (Westrom) software.

"Over the years we've educated our customers. It's preventative maintenance," Joan says.

"When we clean a septic tank we hook up a water hose. We (backflush)



Above: Technician Todd Sherman racks the hoses after a residential pumping job. The truck was built by Pik Rite and uses a National Vacuum Equipment blower to generate vacuum.



Left: Technician Jeff Baldwin pumps a residential FRALO (now Roth Global Plastics) septic tank.

and also use the water hose hookup to completely clean the tank and wash it down to the bottom."

An important component of good service is making sure technicians are effectively trained on all procedures and prepared to meet a standard of service dictated from the top.

"We are very particular about our pumpers before they go out on their own," she adds. Newly hired crew members ride along with an experienced driver for a couple of months before going solo.

A FIT FLEET

Steve's priority of thorough cleaning can also be seen in the condition of the truck fleet.

"Appearance means a lot. We keep them clean, and my husband takes a lot of pride in doing that," Joan says. The service trucks with blue cabs and white tanks help create a professional image and effective mobile advertising for the business, she says. The Smiths believe money spent to make the trucks look sharp has a big payoff in image.

"You can never have too much chrome," Steve says.

To maintain consistency, the Smiths have ordered their last 18 trucks from Pik Rite Inc. The manufacturer is conveniently located two hours away, and Joan says the company builds quality trucks and stands behind its products. Since winter weather can be a challenge and the Smiths pump tanks year-round, one feature they include on every truck is heated valves.

The current Pik Rite fleet of nine trucks all carry steel tanks, with capacities ranging from 4,200 gallons to 5,500 gallons. Model years range from

2008 to 2017 and chassis come from Peterbilt, Mack and Kenworth. Most of the trucks run pumps from Wittig (Gardner Denver) or Jurop/Chandler, but the last three were purchased with more powerful vacuum blowers from National Vacuum Equipment.

"We tried one on the 2016 truck, liked it and put them on the next two trucks," Joan says. "They (NVE blower pumps) definitely save time. We strive to have the top-of-the-line equipment," Stephen adds.

ADAPTING AND IMPROVING

During their decades of work in the wastewater industry, Steve and Joan have witnessed many changes, and they've blended traditional and new ways of working. They still work from home, but now two large shops with three bays each house the bigger trucks they purchased in the past several years. Steve has a washing area outside to keep the trucks clean according to his high standards. Maintenance and minor repair work can be done indoors by a part-time mechanic.

In her home office, Joan, Annalee Werelius and Donna Hull keep the drivers on track with daily job sheets, which they can update or add stops for drivers through cellphone texts. All the trucks have GPS. Customers can pay bills with credit cards through the office. When she's not in the office, Joan can often be found mowing about 2 acres of lawn to keep up the business' appearance.

Driver/technicians are Jeff Baldwin, Darren Dixon, Adam Kreider, Nathanael Nell, Alan Pullin, Todd Sherman, James Stiff, Jeff Schuhart, Gerald Shanebrook and Ray Sloan.

The Smiths maintain a landline phone and advertise in five phone books, but also have taken up new technologies to improve marketing, utilizing a website, a Facebook page and employing small-business digital marketing firm Hibu.

Though Steve and Joan have reached a typical retirement age, that's not part of any discussion, Joan says. The business is a big part of their lives, and they enjoy what they do. Besides maintaining the trucks, Steve drives and provides services when the need comes up.

"Eventually, we would like to take more time off," Joan says.

THE NEXT GENERATION

Stephen has taken on a bigger role over the years. "My job is overseeing daily operations, and to keep the ball rolling," he says. He has taken over the hiring process, and by offering better wages, incentives and bonuses, the goal is to keep good employees.

In addition to seeking out opportunities for more commercial work, he is open to adding services as the need comes up.

"Maybe we will get a little more into plumbing; so far we just do outside work," Stephen says. "And maybe we can do more advertising to make people aware that we do all aspects of it — pumping, excavating, plumbing and troubleshooting."

Wherever the future takes the business, he emphasizes that some things won't change.

"We stress that it's done right. Name recognition is a large part of our business," he concludes. ■

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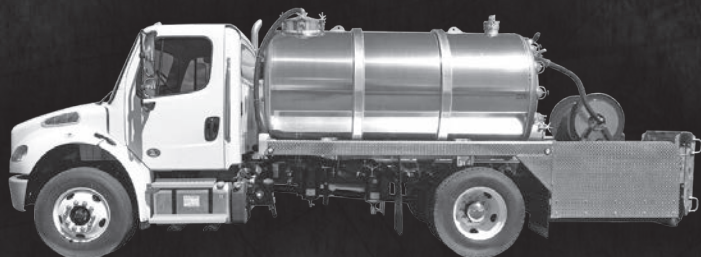
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7.9	30.0	4500	310	1450	24.3	0.787	20	0.906	23

RTX50

Max. GPM	Max. LMP	Max. PSI	Max. Bar	Max. RPM	Req. HP	Bore Dia. in.	Bore Dia. mm	Stroke in.	Stroke mm
13.2	50.0	3000	206	1450	27.2	0.984	25	0.906	23

RTX70

Max. GPM	Max. LMP	Max. PSI	Max. Bar	Max. RPM	Req. HP	Bore Dia. in.	Bore Dia. mm	Stroke in.	Stroke mm
18.5	70.0	2000	138	1450	25.4	1.181	30	0.906	23

RTX85

Max. GPM	Max. LMP	Max. PSI	Max. Bar	Max. RPM	Req. HP	Bore Dia. in.	Bore Dia. mm	Stroke in.	Stroke mm
22.5	85.0	2200	151.7	1450	34.0	1.181	30	1.102	28

RTX100

Max. GPM	Max. LMP	Max. PSI	Max. Bar	Max. RPM	Req. HP	Bore Dia. in.	Bore Dia. mm	Stroke in.	Stroke mm
26.4	100	1500	103	1450	27.2	1.417	36	0.906	23



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California prepares for direct potable reuse of wastewater

By David Steinkraus

California's multi-year drought was officially declared over this spring, but the Legislature is on the verge of making the state a pioneer in the direct reuse of wastewater for potable consumption.

A bill in the General Assembly would require the state Water Resources Control Board to formulate uniform state standards for potable reuse by Dec. 31, 2021. By June 2018, the board would have to adopt a framework for the regulation of potable reuse projects.

AB 547 is sponsored by Rep. Bill Quirk (D-Hayward), who chairs the legislature's Environmental Safety and Toxic Materials Committee. According to a fact sheet prepared by committee staff, the bill has the support of 42 environmental groups, utilities and municipalities. Among them are the U.S. Green Building Council, the Metropolitan Water District of Southern California and the California Association of Sanitation Agencies.

There are no regulations in the country governing direct potable reuse, and California will need to expand its use of recycled water in order to meet projected demand. A report on the issue to the legislature by the water board says the state's population is expected to increase from the current 39 million to about 50 million by the year 2049. The board's report found only two direct potable reuse projects operating in the world, one in Namibia and the other in Texas.

While the legislature is working on the bill, water board experts are working on concerns raised in the report to the legislature, said board spokesman Andrew DiLuccia. Those include developing methods to monitor pathogens in raw wastewater and establish maximum counts for recycled water, and developing methods to identify unknown contaminants that may not be removed by advanced treatment.

As part of the response to the most recent drought, California Gov. Jerry Brown ordered a statewide cut of 25 percent in urban water use.

Florida

A bill before the state legislature was stripped of a provision mandating time-of-sale septic system inspections. The bill's sponsor, Rep. Randy Fine (R-Palm Bay), changed the bill to require only that a seller tell a buyer whether a property has a septic system. Buyers would have to sign a form saying they understand systems need to be inspected and pumped every three to five years because they can contribute to the pollution of groundwater. Inspections would be voluntary. News reports said Fine altered the bill after it attracted opposition from other lawmakers and the real estate industry.

The bill would also order the Florida Department of Health to create, by January 2019, a statewide database and map of existing septic systems. Fine said there are an estimated 2 to 3 million septic systems in the state, and an estimated 10 percent of them are malfunctioning.

Tennessee

A bill in the state Legislature would roll back state regulations on farms so that only those with animal waste actually polluting groundwater would be subject to state oversight. If it passes, the bill would make Tennessee rules consistent with federal regulations.

Tennessee regulations currently require farms with 200 or more dairy cows to obtain state permits that govern the storage and disposal of animal waste. Farms with pigs, chickens and other animals would also be affected.

News reports quoted Tish Calabrese Benton, director of water quality at the state Department of Environment and Conservation, as saying the department's ability to protect waterways would be reduced if the state adopts the less-strict federal standard. The department currently permits 332 animal feeding operations. Only 15 of those have permits under the federal Clean Water Act.

For the agricultural industry, it's a matter of cost and competitiveness. Plans for waste disposal facilities can cost \$8,000 to \$10,000. But according to state and federal statistics, agricultural businesses are the leading cause of pollution of the 27 miles of impaired waterways in Tennessee.

Wyoming

To help educate the public about water quality, the Teton Conservation District is offering a subsidy for cleaning septic systems.

The conservation district is in Teton County, which lies in the northwestern corner of the state and incorporates land around Grand Teton and Yellowstone national parks. The program offers homeowners a 50 percent reimbursement, up to \$150, for cleaning systems that have not been maintained for at least five years.

"We're doing it because septic systems pose a threat to human and environmental health," says Carlin Girard, a water resources specialist for the conservation district. "Septic system maintenance is an opportunity to mitigate that risk, and by offering the reimbursement we are hoping to raise awareness about the topic."

No one knows how many septic systems are in the county or where they are located. A recent U.S. Geological Survey study found septic systems account for about 4 percent of the nitrogen and 5 percent of phosphorus in the watershed of Fish Creek.

Ontario, Canada

As part of a wide-ranging revision of its building code, the province is proposing a stricter rule for pumping septic tanks. Present rules require pumping when sludge and scum occupy one-third of working capacity. The proposed change would require pumping at the one-third level or every five

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years, whichever comes first. Anyone who operates a septic system would be required to keep records of the cleanings.

Provincial officials acknowledge this will impose costs on property owners and on municipalities that will manage enforcement, but they also say current code does not require regular pumping.

All six rural communities surrounding Thunder Bay, Ontario, on the northern shore of Lake Superior, passed resolutions opposing the proposal. News reports said the communities are asking the province to exempt rural residential homeowners. ■



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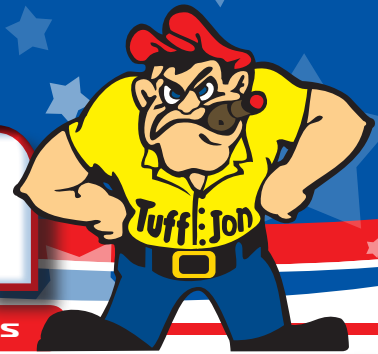
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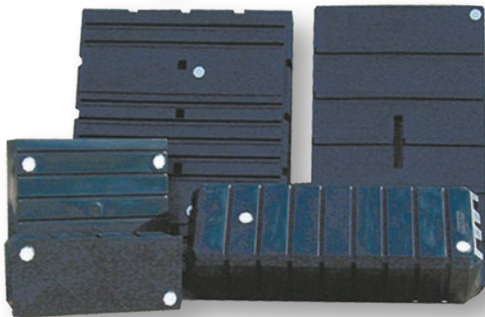
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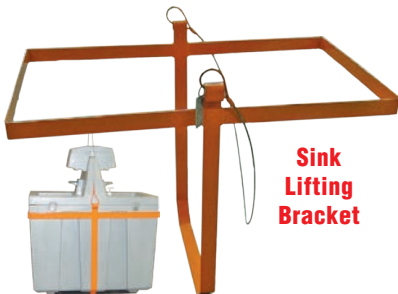
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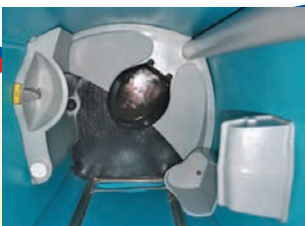


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We Need More Flexible Regulations

Pumpers, installers and their customers would benefit if state and local health officials would give latitude to solve septic system challenges

In States Snapshot, we visit with a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we learn about a leader in the Connecticut Onsite Wastewater Recycling Association.

Names: Bill Coffey, president; Billy Coffey, vice president

Business: Pembroke Pumping Services Inc.

Location: Danbury, Connecticut

Age: Bill 72, Billy 46

Years in the industry: Bill 47, Billy 26

Our crew includes:

Judy Coffey (founder), treasurer

Kelli Coffey, secretary

Sara Coffey and Erica Carboni, office staff

Bill Conlea (lead foreman), Dave White and Will Coffey, installation and repair

Greg Corso, mechanic

Diego Lesmes and Jesus Mendieta, pumping

Andy Pankulis, Bob Barnwell and Rob Dzamko, portable sanitation

Bill Coffey:

Association involvement:

Connecticut Onsite Wastewater Recycling Association (COWRA). We have been members for over 30 years, 12 of which I have held the position of vice president.

Benefits of belonging to the association:

COWRA is a legislative organization employing a lobbyist who works with the state of Connecticut regarding rules and regulations affecting septic installations and repairs. Two representatives from COWRA meet with the state Department of Health on a regular basis. These representatives have input on state codes, which benefit the organization's members. The importance of COWRA is to keep its members current to the constantly changing health code.



Biggest issue facing your association right now:

FOG (fats, oils and grease) seems to be the trending topic right now. It's a very sore subject for most cities because it's such a detriment to sewer lines, septic systems and lift stations. City infrastructures are clogging with grease, and businesses and government are battling on how to solve this problem. The Department of Energy and Environmental Protection is now mandating restaurants pump grease traps every three months instead of a couple times a year and local governments are enforcing this now more than ever. The biggest issue is where to dispose of the grease because many facilities don't have frac tanks to take it. In our district we are allotted one grease day a week for 3,000 gallons. This becomes difficult to manage the increasing customer demand.

Bill Coffey and son Billy Coffey.
(Photos courtesy of Pembroke Pumping Services Inc.)

Billy Coffey:

Typical day on the job:

The guys come into the office and grab work orders or contracts we have scheduled for the day. We go over important details/specifics of the job and then send out the separate crews. I will help on jobs when needed, but I find myself much more productive in the office generating and scheduling work for the week. In the past I would spend many hours on the job, in the hole, but more recently I've learned to let others do the labor so I can stay on top of the endless paperwork in the office.

(continued)

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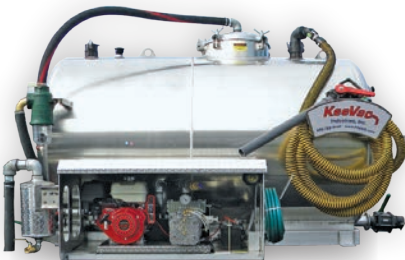
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Helping hands — indispensable crew member:

I can't choose one member, as all contribute an important role. It is a difficult industry to maintain good help, so the turnover rate can be high. The crew members we have presently have been with us for several years and each brings something different to the table. Our lead foreman has been with us 35 years and his knowledge is irreplaceable.

The job I'll never forget:

Every job has its story. The most recent one is a residential site where we had to crane all the equipment and materials in and out due to the slope of the property on the side of a mountain. The yard was probably 50 feet below the road with no accessibility. It was a tedious process but the cranes, combined with the talent of the crew, got the job done. The customer, neighbors, sanitarians and all involved were very impressed with the final product.

My favorite piece of equipment:

The Camel truck from Super Products. Repairing broken waterlines is a large part of our business, which used to require digging and repairing by hand. Once we purchased the truck 10 or 15 years ago, this process became simplified by using hydroexcavation instead. It's a timesaving piece of equipment.

Most challenging site I've worked on:

There was a septic system we installed about 20 years ago on the side of a cliff on Lake Candlewood. It was on a small lot with a narrow road and all work had to be done over a wall with a steep drop. This was before we discovered cranes on a job, which made this very challenging. This job was not for anyone with a fear of heights. The drop was terrifying. Since that time, we have returned to pump the septic tank a half dozen times, and to date I am still a bit queasy when I do this job.

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

Why is my grass the wrong shade of green? I had a customer who did not like the color of her grass. The job came out beautiful and she calls and complains about the color of the grass. I chuckled and said, "I'm sorry, that's the color Mother Nature gives you. I can't do anything about that."

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

Municipalities — a little more flex-

The Pembroke Pumping crew includes (back row, from left) Bill Coffey, Kelli Coffey and Billy Coffey; front row, from left, Judy Coffey, Erica Carboni and Sara Coffey.



In a recent job, the crew delivered a Kubota KX121-3 Super Series Excavator by crane to a cliff-side residential site.



ibility, a little less rigidity. Our engineering departments don't allow any on-the-job changes that could ultimately be better and more cost-effective for the town and the customer. Things can happen on the job that differ from the original plan and there is not enough flexibility for changes. OSHA is the largest and most necessary of industry regulators. As essential as they are for every employee's safety, they can be challenging, as well.

Best piece of small-business advice I've heard:

My father always said, "Stick with what you're good at." A lot of guys want to diversify in business and sometimes that'll sink a ship. My father started with one septic truck back in 1970 and then we expanded into portable toilets, then we expanded into the electric snaking and the jetting. It all fell right in line with septic and sewer, so that's pretty much where we've stayed.

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

I always said I wanted to be a lawyer, but I never had the staying power for school. I knew I would follow in my father's footsteps, expanding and growing the family business, just as I have. In hindsight, I wouldn't have changed a thing.

Crystal ball time — this is my outlook for the wastewater industry:

I've seen things change from when I was younger, backing up to a pond and blowing your septic truck off and looking at the biggest tomatoes you've ever seen grow in what they call lagoons! Today we have to give samples when we go to the treatment plant since the technology with dewatering has changed so drastically. Technology has become a game-changer in our industry in terms of snaking and cameras and things of that nature, and the key is to stay on top of the constant changes. Some people don't like change. I am all for it. I want the latest and greatest products and equipment available that are going to save me time and the customer money. ■

- Compiled by Betty Dageforde

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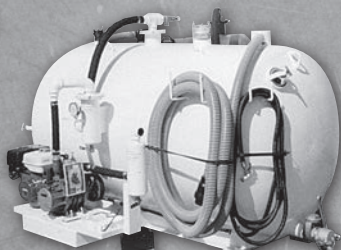
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Idaho

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

Illinois

Onsite Wastewater Professionals of Illinois
www.owpi.org

Indiana

Indiana Onsite Waste Water Professionals Association
www.iowpa.org; 317/889-2382

Iowa

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

Kansas

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

Kentucky

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Maine

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Maryland

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Massachusetts

Yankee Onsite Wastewater Association
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Michigan

Michigan Onsite Wastewater Recycling Association
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Michigan Septic Tank Association
www.msta.biz; 989/808-8648

Minnesota

Minnesota Onsite Wastewater Association
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Missouri

Missouri Smallflows Organization
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Nebraska

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Ohio

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Oregon

Oregon Onsite Wastewater Association
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Pennsylvania

Pennsylvania Association of Sewage Enforcement Officers
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Pennsylvania Onsite Wastewater Recycling Association
www.powra.org

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

Tennessee

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Washington

Washington On-Site Sewage Association
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Wisconsin

Wisconsin Onsite Water Recycling Association
www.wowra.com; 608/441-1436

Wisconsin Liquid Waste Carriers Association
www.wlwca.com; 608/441-1436

NATIONAL

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

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

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

CANADA

Alberta

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

British Columbia

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

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

Manitoba

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

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

New Brunswick

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

Nova Scotia

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

Ontario

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

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

Saskatchewan

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

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2 - 2007 Freightliner M2, Cat 210 HP, 6 spd, **NEW** 2300 gallon steel tank, **NEW** Jurop PN 84 vac pump.

Call For Pricing!

**2-YEAR 200,000 MILE
DRIVE TRAIN WARRANTY**



LOW, LOW MILES

2013, 2014 and 2015 Western Stars, Detroit 450 HP, Allison autos, jakes, full lockers, CODE 407 3360 gallon steel vacs, inner lined, Masport liquid cooled vac pumps.

Call For Complete Specs and Pricing!

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LOW, LOW MILES

2011 and 2015 Freightliner SD, Detroit 450 HP, 8LL and Allison auto, jakes, full lockers, CODE 407 3360 gallon steel vacs, inner lined, Masport liquid cooled vac pumps.

Call For Complete Specs and Pricing!

SAVE BIG OFF NEW!



2005 Peterbilt, Cat 210 HP, 6 spd, **NEW** 2300 gallon steel tank, **NEW** Jurop PN 84 vac pump.

\$51,500

**1-YEAR 100,000 MILE
DRIVE TRAIN WARRANTY**



NON CDL

2006 and 2007 International 4300, DT466 210 HP, Allison Auto or 6 spd, Non CDL, **NEW** 1850 gallon steel vac tank, **NEW** Jurop PN84 vac pump.

Call For Pricing!

**2-YEAR 200,000 MILE
DRIVE TRAIN WARRANTY**



2007 International 9200, Cummins 435 HP, 10 spd, Jakes, **NEW** 3360 gallon steel vac tank, **NEW** Masport HXL400 liquid cooled vac pump.

\$65,950

**2-YEAR 200,000 MILE
DRIVE TRAIN WARRANTY**



NON CDL

2008 Sterling Acterra, Cummins 240 HP, 6 spd, NON CDL, **NEW** 1850 gallon steel vac tank, **NEW** Jurop PN84 vac pump.

Call For Pricing!

**2-YEAR 200,000 MILE
DRIVE TRAIN WARRANTY**



2009 Freightliner M2, Cummins 260 HP, 6 spd, **NEW** 2450 gallon steel vac tank, **NEW** Jurop PN84 vac pump.

Call For Pricing!

**2-YEAR 200,000 MILE
DRIVE TRAIN WARRANTY**






2007 Mack CX613, AC-380 HP, jakes, 10 spd, double framed, 14# lb fronts, 44# lb rears, **NEW** 3400 gallon steel vac tank, **NEW** Masport 400 liquid cooled pump, heated valves.


\$71,850

**2-YEAR 200,000 MILE
DRIVE TRAIN WARRANTY**

BLOWER & VACUUM PUMP MANUFACTURER DIRECTORY

	MANUFACTURER — COMPANY	PUMP MODEL #	BLOWER MODEL #	RECOMMENDED TANK SIZE (gallon)	MAXIMUM VACUUM (hg)	MAXIMUM PRESSURE (psi)	NET WEIGHT (lbs)	NUMBER OF VANES	AIR, FAN, LIQUID COOLED or LIQUID RING	RPM RANGE	NUMBER OF LOBES	HORSEPOWER (bhp)	PORT/PIPING
See ad page 71	Elmira Machine Industries 20 Martins Ln. Elmira, ON N3B 2A1 Canada 800-801-6663 • 519-669-1541 (f) 519-669-8331 info@elmiramachine.com www.wallypumps.com	Wallenstein 30		50 - 1,800	28"	35	20	4	Air	500 - 1,750			
		Wallenstein 151		50 - 1,800	28"	35	100	4	Air	500 - 1,750			
		Wallenstein 202		50 - 1,800	28"	35	160	3	Fan	500 - 1,200			
		Wallenstein 302		50 - 1,800	28"	35	185	3	Fan	500 - 1,200			
		Wallenstein 402		50 - 1,800	28"	35	200	3	Fan	500 - 1,200			
		Wallenstein 403		1,800 - 4,300	28"	35	245	3	Fan	500 - 1,200			
		Wallenstein 403LN		1,800 - 4,300	28.5"	35	245	3	Liquid	500 - 1,200			
		Wallenstein 553		1,800 - 4,300	28"	35	300	3	Fan	500 - 1,200			
		Wallenstein 753		1,800 - 4,300	28"	35	340	3	Fan	500 - 1,200			
		Wallenstein 753LN		1,800 - 4,300	28.5"	35	340	3	Liquid	500 - 1,200			
		Wallenstein 1054		3,200 - 10,000	28"	35	700	5	Fan	500 - 1,100			
		Wallenstein 1054LN		3,200 - 10,000	28.5"	35	750	5	Liquid	500 - 1,100			
		Wallenstein 1504LN		3,200 - 10,000	28.5"	35	750	3	Liquid	500 - 1,100			
		Wallenstein 1604		3,200 - 10,000	28"	35	1,200	5	Fan	500 - 1,100			
		Wallenstein 1604LN		3,200 - 10,000	28.5"	35	1,200	5	Liquid	500 - 1,100			
		Wallenstein 2106		3,200 - 10,000	28"	35	1,700	5	Fan	500 - 1,100			
		Wallenstein 2106LN		3,200 - 10,000	28.5"	35	1,700	5	Liquid	500 - 1,100			
See ad page 17	 Fruitland Manufacturing 324 Leaside Ave. Stoney Creek, ON L8E 2N7 Canada 800-663-9003 • 905-662-6552 (f) 905-662-5412 sales@fruitland-mfg.com www.fruitlandmanufacturing.com	RCF 250		500 - 3,000	27"	30	255	4	Fan	1,400			
		RCF 370		500 - 3,000	28.5"	35	385	8	Fan	1,400			
		RCF 500		Any	28.5"	35	450	8	Air	1,400			
		RCF 870		Any	28.5"	30	575	8	Air	1,400			
		RCF 1200		Any	28.5"	35	1,400	8	Air	1,000			
		VacuStar WR 2500		Any	26"	21.3	385		Liquid	1,600			
		VacuStar WR 3100		Any	26"	21.3	422		Liquid	1,600			
		VacuStar WR 4000		Any	27"	14.5	657		Liquid	1,300			
		W1600		3,000 - 8,000	27"	29	747	6	Liquid	1,000 - 1,500			
			FB 2000	2,000 - 8,000	27"	10	545			2,000 - 3,300	3	90	6"
See ad page 3	 Masport, Inc. 6801 Cornhusker Hwy. Lincoln, NE 68507 800-228-4510 • 402-466-8428 cs@masportpump.com www.masportpump.com	Hydra		4,000	27"	30	467	6	Liquid	1,000 - 1,400			
		Titan		4,000	27"	30	545	6	Fan	1,000 - 1,400			
		Sidewinder		4,000	27"	30	550	6	Fan	1,000 - 1,400			
		HXL400WV		4,000	27"	30	450	6	Liquid	1,000 - 1,250			
		HXL75WV		2,500	27"	30	260	4	Liquid	1,000 - 1,250			
		HXL75V		2,500	27"	25	230	4	Air	1,000 - 1,250			
		HXL4V		1,500	27"	15	167	4	Air	1,100 - 1,400			
		HXL3V		1,000	27"	15	110	4	Air	1,225 - 1,750			
		HXL2V		750	27"	15	96	4	Air	1,225 - 1,750			
See ad page 61	 Moro USA, Inc. PO Box 424 Union, MO 63084 800-383-6304 • 412-787-8400 (f) 412-787-8444 sales@morousa.com www.morousa.com	PM60A		500 - 2,500	28"	29	265	6	Air	1,100 - 1,400			
		PM70A		1,000 - 3,000	28"	29	309	6	Air	1,100 - 1,400			
		PM80A		1,000 - 4,000	28"	29	358	6	Air	1,100 - 1,400			
		PM70T		500 - 2,500	28"	21.7	287	3	Fan	1,100 - 1,300			
		PM80T		1,000 - 3,000	28"	29	401	3	Fan	1,100 - 1,300			
		PM100T		2,000 - 6,000	28"	29	480	6	Fan	1,200 - 1,500			

BLOWER & VACUUM PUMP MANUFACTURER DIRECTORY

	MANUFACTURER — COMPANY	PUMP MODEL #	BLOWER MODEL #	RECOMMENDED TANK SIZE (gallon)	MAXIMUM VACUUM (Hg)	MAXIMUM PRESSURE (psi)	NET WEIGHT (lbs)	NUMBER OF VANES	AIR, FAN, LIQUID COOLED or LIQUID RING	RPM RANGE	NUMBER OF LOBES	HORSEPOWER (bhp)	PORT/PIPING
See ad page 61	 MORO USA Inc More than a Pump Company Moro USA, Inc. PO Box 424 Union, MO 63084 800-383-6304 • 412-787-8400 (f) 412-787-8444 sales@morousa.com www.morousa.com	AC5T		2,000 - 6,000	28"	14.5	441	3	Fan	1,100 - 1,300			
		PM80W		2,000 - 4,000	28"	29	455	6	Liquid	1,200 - 1,400			
		PM110W		2,000 - 6,000	28"	29	585	6	Liquid	1,200 - 1,400			
		M9		3,000 - 6,000	28"	14.5	970	2	Liquid	900 - 1,000			
		PM200		3,000 - 6,000	28"	14.5	970	3	Liquid	1,100 - 1,250			
		PM2000		3,000 - 6,000	28"	29	1,034	6	Liquid	1,200 - 1,400			
		PM3000		3,000 - 6,000	28"	29	1,177	6	Liquid	1,200 - 1,400			
		HM36		3,000 - 6,000	28"	14.5	1,323	6	Liquid	1,000			
		HM46		3,000 - 6,000	28"	14.5	1,587	6	Liquid	1,000			
		900i		Any	27"	14.5	210		Liquid Ring	1,200 - 1,350			
		1600i		Any	27"	14.5	397		Liquid Ring	1,200 - 1,350			
		2000i		Any	27"	14.5	397		Liquid Ring	1,200 - 1,350			
		2400i		Any	25"	14.5	463		Liquid Ring	1,200 - 1,350			
		3100i		Any	25"	14.5	463		Liquid Ring	1,200 - 1,350			
		7000i		Any	24"	14.5	1,433		Liquid Ring	1,200 - 1,350			
See ad page 7	 NVE Challenger Series National Vacuum Equipment, Inc. National Vacuum Equipment 2707 Aero Park Dr. Traverse City, MI 49686 800-253-5500 • 231-941-0215 (f) 231-941-2354 sales@natvac.com www.natvac.com	304 Challenger		Application Specific	27.5"	30	260	4	Air	1,100 - 1,400			
		607 PRO Challenger Heavy-Duty		Application Specific	28"	30	395	7	Fan/Liquid	1,100 - 1,500			
		866 Challenger Heavy-Duty		Application Specific	27"	20	507	6	Fan/Liquid	800 - 1,150			
		887 Challenger Heavy-Duty		Application Specific	28"	30	631	7	Fan/Ballast Port Cooled	900 - 1,200			
		Defender 500		Application Specific	27.5"	25	397	5	Ballast Port Cooled	900 - 1,200			
			4307 Tri-Lobe	Application Specific	27"	15	421		Ballast Port Cooled	2,400 - 4,000	3	47	4"
			4310 Tri-Lobe	Application Specific	27"	15	456		Ballast Port Cooled	2,400 - 4,000	3	58	4"
			5314 Tri-Lobe	Application Specific	27"	15	532		Ballast Port Cooled	1,500 - 3,600	3	95	6"
See ad page 96	Presvac Systems 4131 Morris Dr. Burlington, ON L7L 5L5 Canada 800-387-7763 • 905-637-2353 (f) 905-681-0411 sales@presvac.com www.presvac.com	PV 750		1,000 - 6,000	27"	35	450	8	Fan/Ballast Port Cooled	1,500			
See ad page 21	 VARCO 7489 Mason King Ct. Manassas, VA 20109 866-872-1224 • 703-334-5980 (f) 703-334-5979 sales@varcopumper.com www.varcopumper.com	Patriot 300		2,000 - 6,000	18"	21.8	397		Ballast Port Cooled	900 - 1,200			
See ad page 65	 Westmoor, Ltd. 906 W Hamilton Ave. Sherrill, NY 13461 800-367-0972 • 315-363-1500 (f) 315-363-0193 pumps@westmoorltd.com www.westmoorltd.com	Conde Super 6		300 - 500	28"	20	80	3	Air	1,200 - 1,750			
		Conde SDS 6		500 - 1,000	28"	20	100	4	Air	1,100 - 1,500			
		Conde SDS 12		1,000 - 2,000	28"	20	150	4	Air	1,100 - 1,500			
		Conde SDS Ultra		1,200 - 2,500	28"	20	160	8	Air	1,100 - 1,500			
		Conde ProVac3		50 - 300	28"	20	45	4	Air	1,100 - 1,750			

BLOWER & VACUUM PUMP DEALER/DISTRIBUTOR DIRECTORY

	DEALERS/DISTRIBUTORS COMPANY	VACUUM PUMP & BLOWER LINES
See ad page 41	A.R. North America 140 81st Ave. NE Fridley, MN 55432 763-398-2008 • (f) 763-398-2009 thomasc@arnorthamerica.com www.arnorthamerica.com	Battioni
See ad page 3 Midwest & Eastern Supplements	Advance Pump & Equipment 15418 Old Hwy. Rd., Peosta, IA 52068 563-557-0957 • (f) 563-557-0961 wayne@advancepump.com www.advancepump.com	Conde, Demaag Wittig, Dresser Roots, Jurop, Masport, Moro, National Vacuum Equipment, Robuschi
See ad page 2 Eastern Supplement	Andert, Inc. 39 Route 244, Eastford, CT 06242 860-974-3893 • (f) 860-974-2145 andertinc@gmail.com	Fruitland, Masport, National Vacuum Equipment, Wittig
See ad page 28	Armstrong Equipment, Inc. 11200 Greenstone Ave., Santa Fe Springs, CA 90670 800-699-7557 • 562-944-0404 • (f) 562-944-3636 jerome@vacump.com www.vacump.com	Battioni, Burks DC 10, Conde, Fruitland, Gardner Denver Wittig, Jurop, Masport, MORO, National Vacuum Equipment, Sutorbilt, Tuthill
See ad page 77	Best Enterprises, Inc. 3513 W Mountain Springs Rd., Cabot, AR 72023 800-288-2378 • 501-988-1905 • (f) 501-988-2880 info@bestenterprises.net www.bestenterprises.net	Battioni, Conde, Fruitland, Jurop, Masport, Moro, National Vacuum Equipment, Wallenstein
See ad page 3 Midwest & Eastern Supplements	Crescent Tank Mfg. PO Box 116, Bloomfield NY 14469 585-657-4104 • (f) 585-657-1014 info@crescenttank.com www.crescenttank.com	Conde, Masport, Moro, National Vacuum Equipment
See ad page 27	Engine & Accessory, Inc. 12201 NW 30th Pl., Miami, FL 33167 800-327-5431 • 305-573-2268 • (f) 305-576-4617 rcs@rampstar.com www.rampstar.com	Fruitland, Hibon, Jurop, Masport, National Vacuum Equipment
See ad page 40	Erickson Tank & Pump 800 Rd. P. 5 SW, Quincy, WA 98848 509-785-2955 • (f) 509-785-3770 sales@ericksonstank.com www.ericksonstank.com	Masport
See ad page 54	Fraserwoods Fabrication & Machining Ltd.  418 Ellis Dr., Units 5-8, 53016 Hwy 60 Acheson, AB T7X 5A7 Canada 780-962-1827 • (f) 780-962-1830 sales@fraserwoods.ca www.fraserwoods.ca	Fruitland, Gardner Denver, Hibon, Hick Hargreaves, Holmes, Howden Roots, Moro, National Vacuum Equipment, Robuschi, Sutorbilt, Tuthill
See ad page 49	GapVax, Inc. 575 Central Ave., Johnstown, PA 15902 888-442-7829 • 814-535-6766 • (f) 814-539-3617 kdoyka@gapvax.com www.gapvax.com	Fruitland, Hibon
See ad page 63	Imperial Industries, Inc.  505 W Industrial Park Ave. Rothschild, WI 54474 800-558-2945 • 715-359-0200 • 715-355-5349 info@imperialind.com www.imperialind.com	Conde, Fruitland, Masport, Moro, National Vacuum Equipment, Wittig
See ad page 28	LMT Inc. 1105 SE 2nd St., Galva, IL 61434 309-932-3311 info@lmtmfg.com www.lmtmfg.com	Battioni Pagani, Conde, Fruitland, Hertell, Jurop, Masport, Moro, National Vacuum Equipment, Wallenstein
See ad page 1 Midwest & Eastern Supplements	Marengo Fabricated Steed, LTD. 1089 Cty. Rd. 26, Marengo, OH 43334 800-919-2652 • (f) 419-253-2120 www.mfsltd.com	Masport, Moro, Wallenstein

	DEALERS/DISTRIBUTORS COMPANY	VACUUM PUMP & BLOWER LINES
See ad page 67	Marsh Industrial 135 E Mile Rd., Kalkaska, MI 49646 800-952-1537 • 231-258-4870 • (f) 231-258-2019 sales@marshind.com www.marshind.com	Conde, Giant, Jurop, Masport, Moro, National Vacuum Equipment
See ad page 68	Milwaukee Rubber Products, Inc. N52 W13319 Falls Creek Ct., Menomonee Falls, WI 53051 800-325-3730 • 262-781-7888 • (f) 262-781-1742 www.milwaukeeerubber.com	Jurop, Moro National Vacuum Equipment
See ad page 7	National Vacuum Equipment  2707 Aero Park Dr., Traverse City, MI 49686 800-253-5500 • 231-941-0215 • (f) 800-998-6834 sales@natvac.com www.natvac.com	Battioni
See ad page 64	Pik Rite, Inc. 60 Pik Rite Ln., Lewisburg, PA 17837 800-326-9763 • 570-523-8174 • (f) 570-523-8175 sales@pikrite.com www.pikrite.com	Conde, Fruitland, Gardner Denver Wittig, Jurop, Masport, Moro, National Vacuum Equipment, Robuschi, Wallenstein
See ad page 2 Midwest & Eastern Supplements	R.A. Ross NE, Inc. 10280 Brecksville Rd., Brecksville, OH 44141 800-678-4581 • 440-546-1190 • (f) 440-546-1188 jeremy@rarossne.com www.rarossne.com	Battioni, Conde, Dresser Roots, Fruitland, Gardner Denver, Hibon, Jurop, Masport, Moro, National Vacuum Equipment, Robuschi, Tuthill
See ad page 4 Midwest Supplement	Rider Agri Sales & Service, Inc. 7716 Greenville Celina Rd., Greenville, OH 45331 800-521-1338 • 937-548-2080 • (f) 937-547-0818 jlirider@embarqmail.com www.rideragrisales.com	Jurop
See ad page 68	Robinson Vacuum Tanks 306 Runville Rd., Bellefonte, PA 16823 844-393-1871 • 814-933-0927 • (f) 844-857-0741 info@robinsonstanks.com www.robinsonstanks.com	Conde, Fruitland, Jurop, Masport, Moro, National Vacuum Equipment
See ad page 50	Specialty B Sales 2100 Booth St., Searcy, AR 72143 800-364-7307 • 501-279-0001 • (f) 501-279-0003 rstevens@cdlworld.net	Battioni, Fruitland, Jurop, Masport, Moro, National Vacuum Equipment
See ad page 81	Tank World Corp 12001 W Peoria Ave., El Mirage, AZ 85335 623-536-1199 • (f) 623-935-4782 tankworld01@gmail.com www.tankworld01.com	Conde, Jurop, Masport, Moro, National Vacuum Equipment
See ad page 94	TankTec 10100 Quinn St. NW, Minneapolis, MN 55433 888-428-6422 • 763-755-8075 • (f) 763-757-9788 snelson@tanktec.biz www.tanktec.biz	Conde, Masport, National Vacuum Equipment
See ad page 55	Transport Truck Sales, Inc. 6740 Kaw Dr., Kansas City, KS 66111 888-395-7551 • 913-334-2400 • (f) 913-334-4576 scott@transporttruck.com www.transporttruck.com	Jurop, Fruitland, Masport, Moro, National Vacuum Equipment, Wallenstein
See ad page 24	TSI Tank Services, Inc. PO Box 8136, Cranston, RI 02920 866-720-4999 • 401-688-0043 • (f) 401-383-7462 jerry@tankservicesinc.com www.tankservicesinc.com	National Vacuum Equipment
See ad page 31	VacutruX Limited 20 Martins Ln., Elmira, ON N3B 2A1 Canada 800-403-4305 • 519-669-1625 • (f) 519-669-8331 info@vacutruX.com www.vacutruX.com	Wallenstein
See ad page 31	Vacuum Sales, Inc. 51 Stone Rd., Lindenwold, NJ 08021 800-547-7790 • 856-627-7790 • (f) 856-627-3044 parts@vacuumsalesinc.com www.vacuumsalesinc.com	Fruitland, Gardner Denver Wittig, General, Masport, Moro, Myers, National Vacuum Equipment
See ad page 21	VARCo.  7489 Mason King Ct., Manassas, VA 20109 866-872-1224 • 703-334-5980 • (f) 703-334-5979 sales@varcopumper.com www.varcopumper.com	Battioni, Conde, Jurop, Masport, Moro, National Vacuum Equipment
See ad page 72	Wee Engineer, Inc. PO Box 39, Dayton, IN 47941 877-296-2555 • (f) 765-296-3027 weesales@wee-engineer.com www.wee-engineer.com	Masport, National Vacuum Equipment

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DODGE 5500 or FORD F-550

950/300 Aluminum Tank, Diesel..... **\$77,500**
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Jim Anderson, Ph.D.



Jim Anderson, Ph.D., is an emeritus professor at the University of Minnesota Department of Soil, Water and Climate and recipient of the pumping industry's Ralph Macchio Lifetime Achievement Award. Email Jim questions about septic system maintenance and operation at editor@pumper.com.

Know the Forces That Impact Water Movement Through Soil Pores

It's important to understand how water moves through different soils when diagnosing septic system performance issues **By Jim Anderson, Ph.D.**

A reader posed a question about water in the soil and how it moves. He asked: "Is it true that regardless of whether a lower soil is a sand or clay texture that water will not move into the lower layer until the layer above is saturated?" Yes it is true, and the answer has relevance to what we do in a couple of different ways. Before we discuss those, let me try to explain why the answer is true.

The ability of soil to conduct water is not controlled by the total porosity of the soil. This is called soil permeability or conductivity. It is controlled by size, continuity and what soil scientists call tortuosity of the pores. Tortuosity is a way to express that although pores may be continuous, they take twists and turns. A clay soil has more total pore space than a sand, but the amount of water that will move through sand over a given time period is much greater. This is because the pores in a sandy soil are larger and more continuous than in the clay. I liken this to comparing a 1-inch-diameter garden hose to a 4-inch fire hose. Which one will convey water faster? Hopefully the answer is obvious!

When I used to teach classes on this subject, I always asked which soil has more pore space, a sand or a clay? The class would usually choose sand because they knew from experience that water moved through sand faster. In fact, sands typically have about 35 percent pore space versus 50 percent for a clay.

TWO MAJOR FORCES

Water in soil pores is subject to a number of different forces, but two are predominant. The first is gravity, the natural pull toward the center of the earth. (This is why in our business we say sewage runs downhill!) The second is called matric potential, and is a result of the affinity water molecules have to each other and soil particles.

In soil pores, water molecules are attracted to other water molecules by cohesion and to the sides of the soil pores (particles) by adhesion. The result of these forces operating together is to draw water into and hold water in the pores against the gravitational pull. This is called capillary rise. If you can remember back to your high school science classes, this phenomenon is demonstrated by putting the ends of glass tubing with different diameters in a beaker of water. Water rose in the smaller-diameter tubing; this is cohesion and adhesion at work. When the weight of the water equals the gravitational pull the rise stops. Water is held tighter in the smaller pores.

In soils this means a couple of things. First, if soil is saturated and allowed to drain, it will drain out of the largest pores first because they have the weakest hold on water, and water is held in the finer pores because they can better retain water against the force of gravity.

If the upper layer has a significantly higher permeability, the water ponds because the lower layer cannot transmit water as fast as the upper layer delivers it due to the size of the pores.

Back to the question: Soil layers that have different pore sizes and permeability will interfere with downward flow of effluent because of these characteristics. Any abrupt change in permeability, as reflected by pore size and continuity, means that for water to move from one layer into another, the soil above the lower layer has to become saturated at the boundary before water will move across it.

If the upper layer has a significantly higher permeability, the water ponds because the lower layer cannot transmit water as fast as the upper layer delivers it due to the size of the pores. In our reader's question this would be where a sand layer overlies a clay layer. On the other hand, if the upper layer has the smaller pores (clay) the lower layer (sand) cannot absorb the water until the layer becomes saturated because the pores in the upper layer hold on to the water too tightly.

It is important to identify changes in soil layers to make sure there is enough distance between where septic tank effluent enters the soil and any saturated soil conditions caused by the layer change.

WHY THE PONDING?

For gravity distribution systems, these same principles apply. As a biomat forms in an operating trench, effluent ponds above the biomat. The soil underneath is unsaturated because the larger pores remain air-filled, since they cannot pull the water across the boundary, while the smaller pores are water-filled because they can pull the water down in conjunction with the hydrostatic pressure pushing downward from the ponded liquid above the boundary.

This is what sets up the unsaturated, well-aerated soil beneath the system that allows for efficient treatment. For gravity-fed systems we rely on this to occur to provide our desired level of treatment. This is also why our design soil-loading rates are based on development of the biomat.

Obviously, it is a bit more complicated than this, and it has some other implications for site evaluation methods and for system selection to be addressed in future columns. ■

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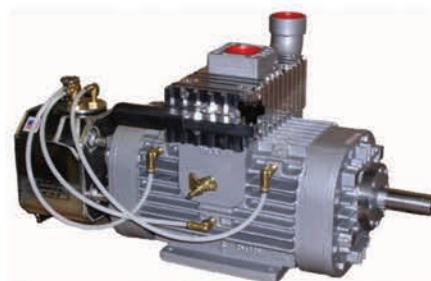
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Ronnie and Jennifer Tamez are owners of First Call Septic Services in Battle Ground, Washington. Send your Truck Corner questions to editor@pumper.com.

Entering a Tank: Proceed With Caution

Get the right equipment and follow these procedures to safely inspect the inside of your truck's vacuum tank

By Ronnie Tamez

From time to time we need to enter a truck's vacuum tank (or a septic tank) to clean and inspect it. That means we must understand working in "confined space" and necessary critical safety precautions before entering an unknown atmosphere. We've all heard the stories online and during safety meetings of workers going into tanks, passing out, and then others going in behind them and passing out too, eventually leading to multiple deaths. The danger is real.

Many workplaces include areas considered as "confined spaces." They are not necessarily designed for entry by workers, but entry is necessary sometimes for inspection, maintenance and repairs. A confined space also has limited or restricted means for entry or exit and is not designed for continuous occupancy. Confined spaces include, but are not limited to, tanks, vessels, silos, storage bins, hoppers, vaults, pits, manholes, tunnels, equipment housings, ductwork, pipelines, etc. For the pumper, septic tanks and truck tanks should be approached as confined spaces with a great potential for danger.

The Occupational Safety and Health Administration, or OSHA, uses the term "permit-required confined space" (permit space) to describe a confined space that has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere
- Contains material that has the potential to engulf an entrant
- Has walls that converge inward or floors that slope downward and taper into a smaller area, which could trap or asphyxiate an entrant
- Contains any other recognized safety or health hazard, such as unguarded machinery, exposed live wires or heat stress

TRAINING AND TOOLS

I am guilty of entering septic tanks without taking the appropriate measures. However, I am not a hypocrite. These instances were before my training at WOSSA (Washington On-Site Sewage Association). I had been working under the misconception that ventilating the tank for 15 minutes would "remove" the confined space criteria. Now, I don't know where I got that in my mind. Maybe I read it somewhere, and over time I believed this was the rule.

One of the keys to confined space safety is knowing what type of air is in the environment. Is it safe to breathe and enter? You need to pick up an air monitor to answer these questions. My air monitor was purchased at an Airgas welding supply store. They can be rented for about \$35 and cost about \$1,500 to buy. My monitor is the BW Gas Quattro. It tests for oxygen content, carbon monoxide, hydrogen sulfide, and lower explosive level gases. It is not required but recommended to get an Escape Breathing Apparatus or EBA. Depending on the model it can provide you with five or 10 minutes of air.

Always use a gas monitor and remember that continuous monitoring is required during work. Confined spaces are to be taken very seriously and all employees helping/assisting on site must be certified.

The EBA is required if you can't ventilate the tank to safe levels.

Following this web address will take you to a video of me demonstrating air quality sampling inside a septic tank: youtu.be/SILTCSkTt9Y. I have sampled the air from 1,000 septic tanks before entering. And 999 times the sample came back good, and no worries. Seldom is a problem encountered. But there is the one time, and the video proves that dangerous levels of gas are found inside a tank. I looked in this tank, like I do every time, and I didn't see anything wrong. But I ran my sample before entering, and it showed 2,600 ppm of CO.

Carbon monoxide is harmful when breathed because it displaces oxygen in the blood and deprives the heart, brain and other vital organs of oxygen. Large amounts of CO can overcome you in minutes without warning — causing you to lose consciousness and suffocate. Besides tightness across the chest, initial symptoms of CO poisoning may include headache, fatigue, dizziness, drowsiness or nausea. Sudden chest pain may occur in people with angina. During prolonged or high exposures, symptoms may worsen and include vomiting, confusion and collapse in addition to loss of consciousness and muscle weakness.

HIGH-RISK GROUPS

Symptoms vary widely from person to person, according to OSHA. CO poisoning may occur sooner in those most susceptible: young children, elderly people, people with lung or heart disease, people at high altitudes, or those who already have elevated CO blood levels, such as smokers. Also, CO poisoning poses a special risk to fetuses. CO poisoning can be reversed if caught in time. But even if you recover, acute poisoning may result in permanent damage to the parts of your body that require a lot of oxygen such as the heart and brain. Significant reproductive risk is also linked to CO.

Threshold limit value is the maximum concentration of a chemical allowable for repeated exposure without producing adverse health effects.

In the tank test mentioned above, my air monitor tested the CO concentration inside this tank at 2,600 ppm. It looked completely safe. If it wasn't for my air monitor, I would have gone inside. An Iowa State University report shows just how dangerous the conditions were inside that tank:

- More than 2 ppm raises questions about why CO is elevated; source should be identified and might be normal, such as traffic or kitchen range
- 9 ppm is the threshold limit value for an eight-hour period in any year
- 50 ppm is when most fire departments require self-contained breathing apparatus
- 800 ppm causes dizziness, nausea and convulsions within 45 minutes, unconsciousness within two hours and death within two to three hours
- 1,600 ppm causes headache, dizziness and nausea within 20 minutes, death within an hour
- 6,400 ppm causes headache, dizziness and nausea within one to two minutes, death within 10-15 minutes
- 12,800 ppm causes death in one to three minutes

So with my air monitor registering CO at 2,600 ppm, if I were to go in I would begin having symptoms in 10-15 minutes. If I didn't get out and be administered pure oxygen by a paramedic, death would result in about an hour or less. Maybe 45 minutes.

VACUUM TANK ENTRY

Properly ventilate your tank with an OSHA-approved ventilation fan and ductwork. The fan and ductwork we purchased for about \$150 delivers 1,590 cubic feet of fresh air per minute. Most vacuum truck units pull air in at 260-500 cubic feet per minute. Also remember that OSHA requires air to be forced into the confined space and not vacuumed out. Whatever you do, do not blow air in from your truck, as the oil in the air will be atomized and can coat your lungs, causing shortness of breath and could lead to death.

So let's do some math. A 1,000-gallon septic tank has approximately 140 cubic feet of volume. At 1,590 cubic feet of air transfer per minute, that air will be completely changed out in 8.8 seconds. It's pretty standard to let the ventilation system work for 15 minutes. How many times will that air have been changed out in 15 minutes? The air would have been changed out 102.3 times with 23,850 cubic feet of air that has been blown in.

When we enter a vacuum tank or a septic tank, we are using a tripod, harness, air monitors, air blowers, winches and rescue cables. There is an entrant, attendee and supervisor on site. My attendee has his hand on the winch and watches the gas monitor. The supervisor is there to bring tools or run errands while I'm in the tank.

Tripods are used in our septic tank entry. On vacuum tank entry we wear the harness and it's secured to a rope out of the 36-inch manway on the back of the truck. In case of an emergency, the attendee and supervisor will pull out the entrant.

You have to pay attention to how you'd get a worker out of a vacuum tank. Some trucks don't have a rear manway, only one on top of the tank. In that case, there needs to be a rescue system in place to be able to pull the entrant out from above.

SERIOUS BUSINESS

Always use a gas monitor and remember that continuous monitoring is required during work. Confined spaces are to be taken very seriously and all employees helping/assisting on site must be certified. Remember that this is just one example of the criteria and what can go wrong when entering a confined space. Get trained, get certified, and be safe.

Next month, we will explore the steps for a thorough vacuum tank inspection and how knowing these confined space entry rules plays an important role in the process. ■



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Laying the Groundwork for Time-of-Sale Inspections

Indiana's LaPorte County stands alone in the state in requiring repair or replacement of failing systems at home sales; works to build consensus with installers and real estate interests **By Peter Kenter**

Nestled along the southern shore of Lake Michigan, La Porte County is the first in Indiana to enact an official point-of-sale property transfer ordinance requiring that all septic systems be inspected by certified members of the Indiana Onsite Wastewater Professionals Association (IOWPA) and then repaired or replaced if necessary.

The primary push for the regulations came from Amanda Lahners, environmental health and food supervisor, La Porte County Health Department. She says that shepherding the concept to official status was a delicate balancing act that required the support of legislators, Realtors and the expertise of IOWPA members. The point-of-sale requirement has been on the books for a year, and Lahners explains how it came about and how it's been accepted:



Reach Amanda Lahners at 219/326-6808 or alahners@laportecounty.org.

Pumper: You've described yourself as a "septic nerd." What do you find interesting about this field?

Lahners: It's just so much more than digging a hole in the ground. I have a degree in biology, but septic relies on biology, chemistry, physics and engineering. I just love the complexity of the process.

Pumper: How common are septic systems in the county and how well are they maintained?

Lahners: We have 111,000 people in the county and other than a few larger centers like Michigan City, they're all on septic — about 60 percent of the county. The documentation on these septic systems isn't very strong. Many of them are between 20 and 60 years old, but we're not sure what shape they're in.

Pumper: What was the reason for introducing Ordinance No. 2016-02?

Lahners: There were several reasons. The first was environmental. Some voluntary inspections were taking place, but often the inspectors weren't pumping the tanks, checking the condition of the construction of the tanks or seeing what was below the surface. The county sits on two major watersheds, Lake Michigan and the Kankakee River, so if there were any problems with improperly functioning septic tanks, waste would eventually drain through the groundwater to one or the other. It was a good way for us to build better records of the county's septic systems and what condition they were in. It would also protect new homeowners by letting buyers know exactly what

they were purchasing. Some people moving here from the city aren't even aware that they have a septic system, let alone that it should be inspected.

Pumper: How was IOWPA's septic inspector certification program important to the ordinance?

Lahners: IOWPA began offering an inspector certification program for septic systems in 2013, but typically only offers the course once a year. I worked with IOWPA to bring the three-day training course to La Porte County to get local companies certified and ready for when the ordinance went into effect. Many local IOWPA members wanted to become certified for septic inspections. That put the last piece in place for going forward with the new ordinance.

“ We said that we had no right to tell a private contractor what they should charge for their time any more than we could tell a restaurant owner how much to charge for a cheeseburger. We tell homeowners that they should compare quotes for septic inspections. ”

— Amanda Lahners

Pumper: How was the ordinance designed to work?

Lahners: IOWPA has developed a detailed 12-page inspection report form for septic systems that ensures every inspection is on the same page. Once an IOWPA-certified inspector completes the report, they send that report to us. Based on that information, we would either certify the system as having passed, or issue a repair or replace order if it failed.

Pumper: Were there any roadblocks to getting the new ordinance passed?

Lahners: We're required to conduct three public readings of the ordinance before it can be signed off. Some legislators were slow to warm up to the idea. We also had some initial

pushback from the Realtors' groups we met with, because they were unhappy with the idea that the ordinance would hold up a sale. The ordinance covered both wells and septic systems. Our compromise was that if the inspectors found anything wrong with either system, the sale could still proceed. Based on the inspection report, we either issue a certificate that says the system is compliant or not compliant, but the new owner would be

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required to do any work under a repair order within a certain time frame.

Some of the Realtors thought it was a cash grab on our part, but we explained we receive no revenue from the inspection. The Realtor groups also wanted us to set a fixed price for an IOWPA inspection, but we said that we had no right to tell a private contractor what they should charge for their time any more than we could tell a restaurant owner how much to charge for a cheeseburger. We tell homeowners that they should compare quotes for septic inspections.

Pumper: Have you had any growing pains during the first year of the ordinance?

Lahnners: Initially we were issuing orders for failed systems and also for missing components including baffles, tank risers and gas deflectors. Inspectors were telling clients and Realtors that everything was fine and then we might still issue orders for those (components). The original intent of the ordinance was to identify failing septs, so last October we met with Realtors to iron out these details. I developed a summary page to accompany the 12-page IOWPA inspection report, which identifies what has to be fixed, such as failed systems or cracked tanks, and also what is recommended for the proper functioning of the system. A missing baffle is now identified as an item that is highly recommended for repair, but not required for compliance.

We've also had some homeowners decide they didn't want to sell their homes after their septic system failed an inspection. That doesn't change the fact that they have a nasty pool of sewage in their yard — they still have to fix it.

Pumper: Can you share any statistics about inspections since the ordinance took effect?

Lahnners: As of March 31, 2017, we have seen 499 septic systems inspected. We've had 34 systems failed and had 28 tanks and five distribution boxes replaced. We've closed four cesspools, one pipe going straight out to the lake, eight graywater systems used for a washing machine or sink, and two systems where washing machines were discharging straight to the ground.

Pumper: Has the ordinance attracted any attention in the rest of the state?

Lahnners: I've had other counties contact me to see how they could enact a similar ordinance and I've given presentations on that. What's particularly important to them is how we included stakeholders in developing the ordinance, so that everyone could feel they had some influence on the result. ■

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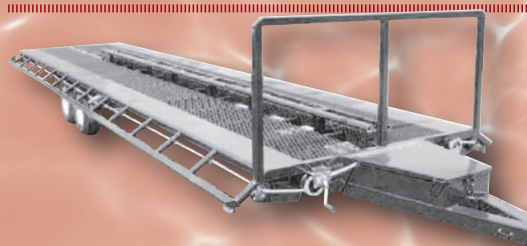
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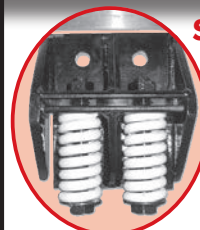


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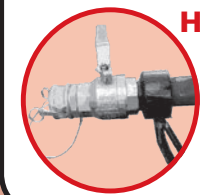
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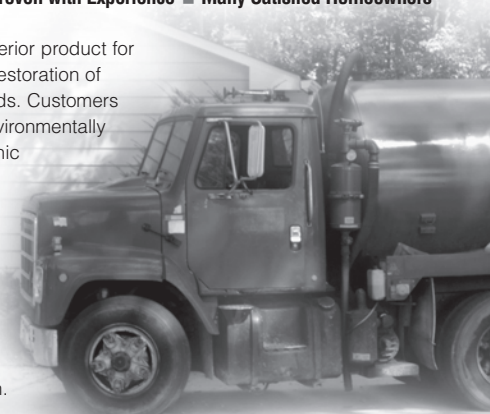
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Owners Dave and Dana Nau started their pumping company by putting together an all-white 1999 Sterling vacuum truck carrying a repurposed 2,600-gallon steel manure-spreading tank built by Badger Tank. T & H Welding shortened the truck frame, and mounted the tank and a Battioni 6500 pump. The truck is powered by a Cat 3126 engine tied to an Eaton six-speed transmission. The truck was painted by Franklin Refinishing with graphics by Admeyer Design. The truck features a top 20-inch manway, 3-inch intake, 4-inch dump valve and 2-inch sight glasses. The wheels are painted white to match the rest of the truck. The interior features air-ride driver's seat, AC, stereo and Garmin GPS. Dave Nau is the driver and uses the truck for residential septic pumping. ■

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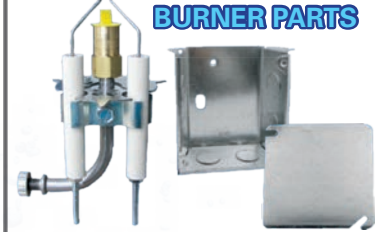
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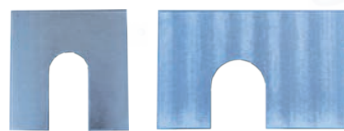
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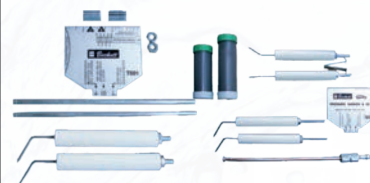
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Attend the 2017 NAWT Waste Treatment Symposium in Pennsylvania

By Dhru Bhatt

It's time to make your plans for the eighth National Association of Wastewater Technicians (NAWT) Waste Treatment Symposium. The Symposium will be held Aug. 23-24 in Monroeville, Pennsylvania.

This event will give you all you need to know about the decision-making process for taking charge of treating your own wastes. Highlighted at this year's symposium will be case histories of companies that have been through the same decision-making process. Presentations will be given by leaders in treatment processes and vendors sharing the pros and cons of various equipment. There will be ample time to network with attendees. There also will be two field trips:

- McCutcheon Enterprises Inc., Apollo, Pennsylvania, a treatment facility where septage, grease trap and industrial wastes are processed and the resulting water is discharged to a municipal sewer system.

- Kiski Valley Water Pollution Control Authority, Leechburg, Pennsylvania, a wastewater treatment facility where McCutcheon's discharged water ends up. You will also see various pieces of equipment working with septage, grease trap waste and sewage sludge.

Check NAWT's website at www.nawt.org for more information. This will be a real hands-on opportunity for those who want to take control of their disposal destiny. ■

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August 23-24, 2017

Apollo, PA

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RETS/NAWT - Septic Training

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Brian Murphy - 817-467-0213

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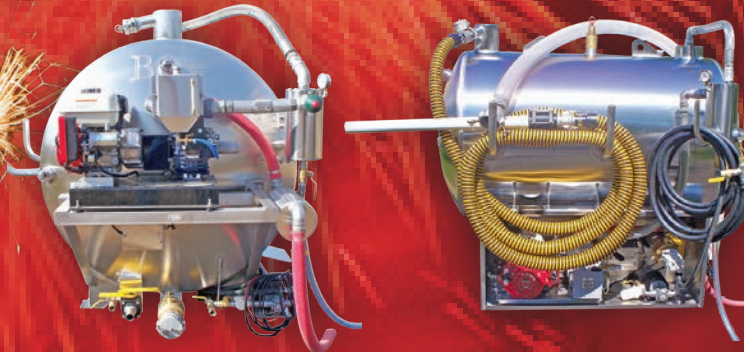


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Vacuum Pumps and Blowers

By Craig Mandli

POSITIVE DISPLACEMENT BLOWERS

NATIONAL VACUUM EQUIPMENT CHALLENGER 43 SERIES

The **Challenger 43 Series** hybrid blower from **National Vacuum Equipment** is available in the 4307, which moves 560 cfm, and the 4310, which moves 940 cfm. The sound enclosure allows the package to be compact, taking up only 36 inches of frame space, and quiet to allow for pumping at night in residential areas. The blower doesn't require oil, and will work continuously at high vacuum. It is designed for frame or top mounting to fit on most trucks, and for complete service from within the enclosure. Packages are offered in hydraulic, gearbox or belt drive to work with a variety of transmissions, both manual and automatic. **800/253-5500; www.natvac.com.**



VACUUM PUMPS

FRUITLAND MANUFACTURING RCF870

The **RCF870** vacuum pump from **Fruitland Manufacturing** is available in clockwise and counterclockwise rotations with top- and side-mount four-way valve locations. The pump is available with hydraulic, angle (gearbox) and belt-drive options. It can be mounted on all Eliminator-style packages. It is a true 4-inch pump with 4-inch pipe connections producing 512 cfm and weighing 575 pounds. It is fan-forced air-cooled with an available air injection cooling system (VACS) for continuous duty at higher vacuum. It includes an integral oil reservoir with low-consumption oil pump, an integral final filter and vane-wear test ports. **800/663-9003; www.fruitlandmanufacturing.com.**



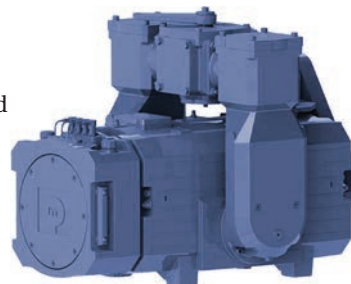
MASPORT TITAN

The **Masport Titan** vacuum pump offers 407 free air displacement, achieving a minimum of 27 inches Hg. It is fan-cooled, with precise machining and assembly, Viton oil seals for longer service life, and heat-stabilized Kevlar vanes. It has vane wear inspection ports, an integrated inlet filter with a washable stainless-steel design for long filter life, a mechanical oil pump with automatic oiling, and durable translucent high-temperature oil lines that make the flow of oil to the pump visible. Integral mounting bosses guarantee precise alignment for hydraulic- or gearbox-drive applications. End thrust protection prevents rotor-to-end cover contact. It has 3-inch NPT bolt-on valve flanges for ease of installation, a 1/4-inch NPT vane flush port, integral vacuum relief valve and integral valve that allows the pump to operate in vacuum and pressure mode. O-Ring end covers eliminate air or oil leakage. **800/228-4510; www.masportpump.com.**



MORO USA PM2000 STORM SERIES

The **PM2000 Storm Series** liquid-cooled vacuum pump from **Moro USA** is capable of pumping nonvolatile liquids and sludge from long distances. It includes an integrated check valve, changeover valve, automatic oiling system, industrial-duty bearings, Viton seals and high-flow-rate asbestos-free spark-proof vanes. Its onboard liquid cooling system incorporates a forced-circulation external water pump. It is capable of 43.5 psia and a continuous vacuum of 24 inches Hg, along with a flow rate of 824 cfm and 1,200 rpm rotation. It has a 4-inch flange connection. **800/383-6304; www.moroussa.com.**



PRESVAC PV750

The **Presvac PV750** rotary vane pump is designed for continuous full vacuum operation in extreme conditions. It offers 400 cfm at free air, 350 cfm at 15 inches Hg, maximum vacuum of 27 inches Hg and maximum pressure of 35 psi. Dual fans and twin ballast ports efficiently cool the pump. The solid housing with deep cooling ribs allows for greater heat transfer from the vacuum chamber. Aluminum fans and shrouding work like a heat exchanger to further aid in heat reduction. Multiple manifold and drive options are available for truck, trailer or stationary applications. **800/387-7763; www.presvac.com.**



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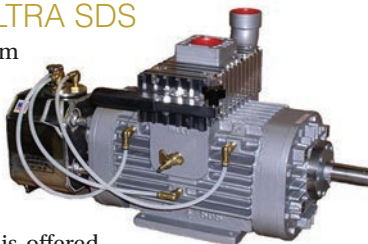
WALLENSTEIN VACUUM PUMPS 753 SERIES

The **753 Series** vacuum pump from **Wallenstein Vacuum Pumps** incorporates extra-wide vanes that allow up to an inch of wear, designed for longer service life and lower maintenance costs. It provides 422 cfm airflow at 1,200 rpm and is precision-machined to provide vacuum levels up to 28 inches Hg. Options include air, liquid or dual cooling systems where air injection is combined with liquid cooling. A pump-flushing port is included on the top valve for convenient routine maintenance. Oil lubrication is via a mechanical piston pump driven by shaft rotation or available with a sight-feed valve oil regulator system using vacuum/pressure to draw oil with no moving parts. **800/801-6663; www.wallenstein.com.**



WESTMOOR LTD. CONDE ULTRA SDS

The **Conde Ultra SDS** vacuum pump from **Westmoor Ltd.** pumps at 230 cfm, and has an automatic oiling system that never needs adjusting. It incorporates the Conde Slide Valve/Change-Over Valve, which is compact, low-profile and works easily, according to the maker. It is offered with either a pump-mounted or remote oil reservoir, with sealed high-temperature maintenance-free bearings. It can be driven by a variety of power sources including gas or diesel engines, PTO, right-angle drive or hydraulic pump. The unit is double shafted and can be set up for either clockwise or counter-clockwise rotation. **800/367-0972; www.westmoorltd.com.**



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PIK RITE ROLL-OFF VACUUM TANK OFFERS PUMPING AND STORAGE VERSATILITY

in the
SPOTLIGHT
By Anthony Drew

For the manager of a septic service company, it's not always easy to organize the pumping, storing and transportation of liquid waste. In this business, it's good practice to have storage and hauling options. **Pik Rite's** 3,600-gallon self-contained roll-off vacuum unit is designed to offer flexibility.

The unit can be dropped off at job sites to pump or store liquid waste. The multipurpose unit allows septic pumpers and portable restroom operators to reduce equipment inventory costs and keep fewer trucks on the road, according to Pik Rite sales representative Clint Morris.

"We've received very positive feedback overall," he says. Customers "like the 15-year warranty on the steel tank, flexibility and time savings, and lower equipment inventory costs."

Pumpers will find many uses for the roll-off tank, says Morris. "Our customers can use the chassis for multiple purposes, including wastewater storage, wastewater pumping, grease traps, portable toilet industry, residential septic pumping and energy services liquid waste," he says.

The unit is equipped with a Jurop/Chandler R260 vacuum pump, which is mounted on a front pump stand and powered by a Kohler 25 hp electric-start engine. The tank is set up with a float-ball level indicator, rear sight eyes, 36-inch rear manway, 20-inch top manway, 3-inch intake with an internal 3-inch stand pipe, 4-inch discharge and 50-foot grounding reel.

A low-profile 12-inch primary shutoff is paired with a 10-gallon secondary shutoff, while a spray-on liner under the hoses protects the tank from scratches. Work lights and a safety beacon are mounted on the rear tank head, and a side-mounted ladder offers access to the top manway.

Morris says the unit is built in the U.S. "There's an A-frame connected to the head, and the three-point connection gives this unit additional strength," he says.

Polished aluminum hose trays and custom paint finish come standard with the Pik Rite 3,600-gallon roll-off unit. "The final paint finish is top quality," says Morris. "It protects the tank from rust and promotes company branding."

The product has been on the market since the late 1990s and the design can be customized in various sizes and features. **800/337-5975; www.pikrite.com.**

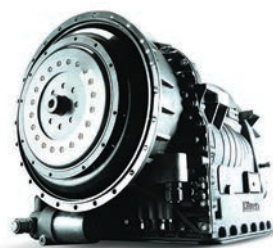
VACTOR MATTRACKS 400 SERIES TRACK CONVERSION SYSTEM

The extreme-terrain configuration of the Vactor HXX Paradigm features a Mattracks 400 Series rubber track conversion system for pipeline, utility and construction applications. Its hub-mounted design promotes fast conversion, approximately 45 minutes in a shop, from tires to tracks. It features a rubber torsion anti-torque system, a 20-inch-wide front track and a 30-inch-wide rear track, and has steering assist and a rocker suspension. **800/627-3171; www.vactor.com.**



KENWORTH ALLISON TC10 AUTOMATIC TRANSMISSION

Kenworth will offer Allison's TC10(R) fully automatic transmission as an option on its T680 on-highway and T880 vocational model tractors. It provides 10 forward and two reverse speeds. A torque converter and twin countershaft gearbox are designed to optimize acceleration while improving fuel economy through engine down-speeding and uninterrupted power shifting in all ranges. The transmission is integrated with multiple engine offerings and for applications requiring torque up to 1,850 ft-lbs and up to 110,000 GCW. **www.kenworth.com.**



SJE-RHOMBUS TANK ALERT SOLAR ALARM

A rechargeable battery via a 12-volt DC, 10-watt solar panel powers the Tank Alert Solar Alarm from SJE-Rhombus. In full alarm, the unit will run for about 24 hours. Idle use without any solar charging will run for about five days. It features a NEMA 4X indoor/outdoor-rated enclosure with integral mounting tabs for convenient installation and features LED indicators to show power on, reverse battery polarity and battery charging. Lithium-ion batteries provide backup power. **888/342-5753; www.sjerhombus.com.**

VACALL INDUSTRIES ALLVAC VACUUM TRUCK

The AllVac vacuum truck from Vacall Industries uses a twin cyclone filtration design that ensures wet, dry and fine materials are separated to create clean air. A single engine controls the chassis and vacuum system, and an air cannon cleaning system operates continually, resetting after every cycle. A hinged twin-cyclone top door offers access to ductwork for easy decontamination and a fail-safe tailgate design opens, closes and locks with one control. Oversized dump chutes allow materials to flow freely, and a safety prop allows engagement of the body prop by one person. **800/382-8302; www.vacall.com.**



PLASTIFLEX HI-VAC LTW SEWER/SEPTIC PUMPER HOSE

The Hi-Vac LTW Sewer/Septic Pumper Hose from Plastiflex is designed for moderate to heavy-duty suction service. Engineered with a new polymer resin blend and enhanced profile design, it provides durability for a variety of service applications, including sewer, septic, environmental and marine pumping. The over-molded cuff assembly offers direct cuff-to-hose mating for continuous leak-free performance. **423/534-2044; www.plastiflex.com.**

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Franklin Electric's SubMonitor Connect electronic motor protector provides three-phase protection and enhanced troubleshooting proficiency. Featuring the FE Connect app, the Sub-Monitor Connect offers real date- and time-stamped system monitoring to improve troubleshooting, while protecting three-phase systems from 1 to 700 hp, or those that require up to 1,000 amps. It protects against damage due to a variety of adverse conditions, such as low-flow wells, clogging, bound pumps, over/under power and voltage protection, voltage phase loss and unbalance, locked rotor, cycle fault and ground fault. **260/824-2900; www.franklinwater.com.**



FELLING TRAILERS BLACKWOOD DECKING



Felling Trailers added Blackwood Lumber to its trailer options. The lumber starts with treated southern yellow pine and each board has 1/4 inch milled out of the topside. Once milled, the rubber from reground tires is infused into the boards 6 mm thick. The rubber is above flush with the surface of the lumber so the rubber always makes the first contact with equipment. The rubber doesn't fade, crack or stain, and can be cleaned with water. **800/245-2809; www.felling.com.**

REELCRAFT'S SPRING- RETRACTABLE HIGH-CAPACITY HOSE REELS

G9000 Series high-capacity hose reels from Reelcraft are designed to be compact and allow for longer lengths of larger-diameter hose. The redesigned gooseneck can be removed from the reel for easier hose attachment. An external drive spring allows for convenient access to the spring components and improved servicing of the reel. The roller bearing inside of the pillow block produces a smoother spool rotation and easier operation. Models are available for 50-foot 1 1/2-inch I.D. low-pressure air and water hose, 75-foot 1-inch I.D. and 75-foot 3/4-inch I.D. medium-pressure oil hose. **800/444-3134; www.reelcraft.com.**



J&J CHEMICAL DISINTEGRATOR HOLDING TANK CLEANER

Disintegrator holding tank cleaner from J&J Chemical is a self-dissolving packet designed to clean restroom trailer holding tanks in as little as 12 hours. The concentrated formula contains natural enzymes that target and penetrate waste and paper



buildup on the interior walls of holding tanks. One packet is used per 100 gallons of water. **800/345-3303; www.jjchem.com.**

COXREELS PIN LOCK FOR CHALLENGER SERIES

The pin lock mechanism by COXREELS is available for the Challenger Series. The lock secures the drum and prevents the hose from unspooling when the reel is not in use. The assembly can be used on any of the Challenger models, including the 12- and 17-inch disks. **800/269-7335; www.coxreels.com.**



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INDUSTRY NEWS

Telular launches new fleet management portal from SkyBitz

Telular launched a new fleet management portal and mobile app from SkyBitz Local Fleets. The Ops Center portal and app deliver GPS tracking features and data including vehicle location, fuel usage, speed and mileage reports.

Kenney named Franklin Electric president

Franklin Electric appointed Donald Kenney as president, North America Water Systems. He is responsible for all aspects of the NAWS business that supports the sale of Franklin Electric products in Canada, the U.S., Mexico and Central America.



Donald Kenney

Hi-Vac hires industrial sales manager

Hi-Vac hired Dennis Zorn as the Western territory sales manager. He has more than 30 years' experience specifically with industrial vacuum systems, bulk material handling and process automation.



Elvin Stoltzfus

Pik Rite president wins award

Pik Rite president, Elvin Stoltzfus, has been named 2017 Small Business Person of the Year in Pennsylvania by the U.S. Small Business Administration.

Felling Trailers earns ISO 9001 in Minnesota locations

Felling Trailers received ISO 9001:2015 certification for its quality management system at its Sauk Centre, Minnesota, and Litchfield, Minnesota, operations. The certification process included a detailed assessment of the company's facilities.

COXREELS exceeds recommended salt spray testing hours

COXREELS exceeded 20 percent more hours than the recommended industry standard for salt spray testing for anti-corrosion coatings, the company announced. An independent lab test measured the corrosion and UV resistance of its powder-coated materials.

Hino Trucks adds dealers to Certified Ultimate network

Hino Trucks named new dealers selected as Certified Ultimate in its dealer excellence program. The dealerships are: H.K. Truck Services, Plainfield, New Jersey; Bentley Truck Services, New Castle, Delaware; Lynch Truck Center, Waterford, Wisconsin; Matheny Motor Truck, Mineral Wells, West Virginia; and Industrial Power Truck & Equipment, Fort Worth, Texas.

SJE-Rhombus receives ESOP award

SJE-Rhombus was awarded the 2017 ESOP Company of the Year award for the Minnesota/Dakotas Chapter of the ESOP Association. The award is presented to one of over 100 employee-owned companies in the local chapter for displaying a strong commitment to employee ownership and promotion of the benefits and unique culture common among successful employee-owned companies.

Armstrong Equipment announces new equipment

Armstrong Equipment, based in Santa Fe Springs, California, announced it now stocks Baja Designs LED lighting solutions. ■

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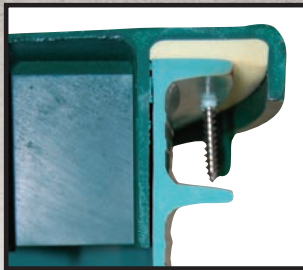
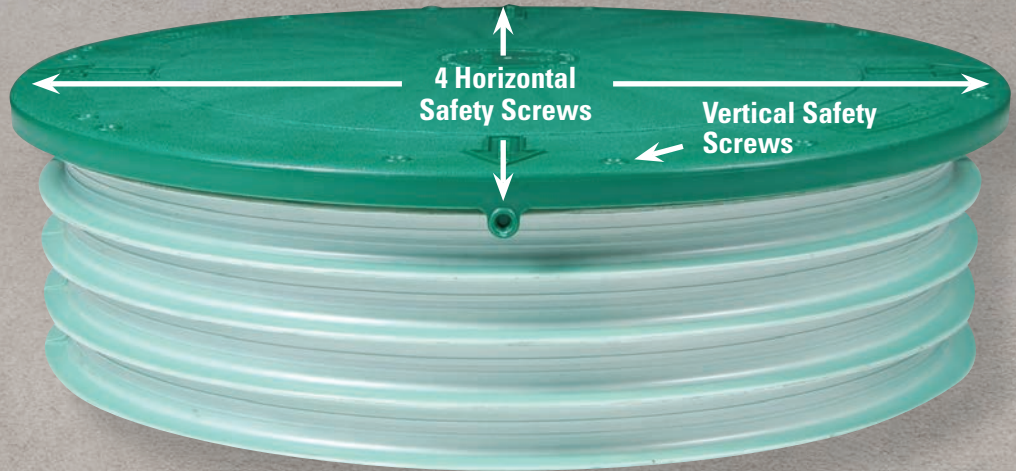
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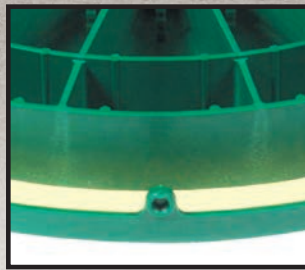
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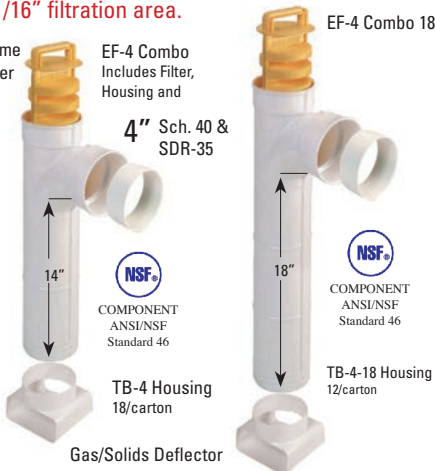


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4" Sanitary Inlet/Outlet T-Baffle™

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- Simple to install

- May also be used as Inlet & Outlet Tee

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6" Effluent Filter EF-6

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6" Sanitary T-Baffle™

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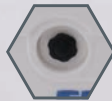
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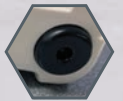
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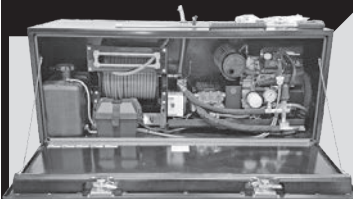
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Septic Business for sale in central Florida, truck and equipment, 40+ yrs., same phone # 352-429-2426. \$250,000. For more info, email tcraigseptic@gmail.com (P08)

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West Texas portable restroom business for sale, Odessa and Midland area. Small business has over 200 toilets and 3 new service trucks. We also carry trash trailers. I have 2 other businesses also and don't have the time to oversee this one. On pace to do close to a \$1,000,000 in sales for the year. Will sell with or without the yard. For questions please email: joe@gincocorp.com (P07)

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Three (3) NuConcept 4-Unit Trailers: Price per trailer - \$15,000 OBO. 2007 Ford F350 Stakebed - \$14,999. 818-585-8983. Here is a link to the manufacturer's product: <http://nuconcepts.wpengine.com/restroom-trailers/vip-classic-restroom-trailer/> (P07)

33-ft. toilet trailer: 2 stalls with dressing room in the women's; 2 stalls and 3 urinals in men's. Water heater, a/c, heat and (3) 250-gallon holding tanks. Call or email for pics 920-342-3251; dlamke@envspec.com. Watertown WI 53098 (P07)

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

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2012 Ford F550: 89,000 miles, stainless steel 400 waste/250 water, electric-start Honda PTO provisions. 2-unit carrier. \$48,000 OBO

715-425-1025, WI P07

2006 Hino 268 automatic portable toilet truck with 220,445 miles. 2010 Glendale Welding tank 400/1,000. Asking \$32,500. Call 254-534-5007. (P07)

1999 International 4700: 1,100 waste, 400 fresh. Dual side service with Masport. 223,610 miles. Call 843-283-3749 or email powellst@scoast.net (P07)

Retired: Selling (5) 2012, 2013 and 2014 F-550 pumper trucks 1,100w/400f, (2) slide-in tanks 300w/150f and 200w/100f and (1) storage rack for slide-in removal. Pickups for either slide-in, (8) blue PJ3 portable toilets with sinks, wash sinks for inside portable toilets and repair parts. 300-gallon holding tanks, small trailers to haul portable restrooms, 10-unit trailer carrier for portable restrooms, Mongo hauler and parts to accommodate all of above. Call 956-844-4100 or 956-842-3603 or 956-330-5476. Located in Edinburg, Texas. (P08)

2006 Ford F650 16' delivery truck: 115,785 miles. Powerstroke 6.0L, automatic. Tuck-under liftgate, 650-gallon (150/500) slide-in service tank system. \$27,500. 330-507-2299 (P07)

2007 Ford F550 4x4: New 11' flatbed, new 800-gallon portable toilet slide-in tank - 540/260. Conde Super 6, 70cfm, 5.5hp electric start Honda. Bucket fill, 30' Tiger Tail. Ready to work. \$27,995. Denver CO. 303-789-9440 Ask for Matt. (PBM)

2007 Isuzu NPR: 600-gallon waste compartment, 350-gallon freshwater compartment. 60 cubic feet of dry storage space. 108,000 miles. Can transport 4 portable restrooms. \$17,995. For more information please contact rauny@thejnet.com (P07)

2006 International 4300 SB truck, key-o-vac pump system, Fruitland farm 250 pump, 1,000 waste/500 fresh. 268k miles. Located in Texas. \$27,000 OBO. Email Desdoucet3d@hotmail.com or call 325-653-4975. (P07)

2006 Ford F550, Satellite-built truck, 6.0 diesel, automatic, 600 waste, 300 fresh. 2-unit carrier, Conde Super 6 pump. Excellent running truck, good shape. \$23,495 OBO. Call or text 712-433-1662 terryseptic@gmail.com (P07)

2006 Freightliner M2, C7 CAT, 6-speed manual, air brake, 26k GVW. 500/300 split aluminum Kee-Vac tank, 500-gallon plastic chemical tank, AMT washdown pumper. Carries 8 toilets, liftgate, Masport pump hydraulic drive, tool boxes. Low miles. \$37,500 OBO. Text or call for info. Richard 620-629-7212 (P07)

2014 International pump truck, Flow-Mark aluminum 1,850-gallon tank, 62,000 miles, \$85,000; 2007 International 4300 1,350-gallon, 265,000 miles, \$37,500. 256-757-9900 or www.pbsos.com (PBM)

2006 Ford F550 4x4: New 11' flatbed, new 950-gallon portable toilet slide-in tank - 650/300. Conde SDS6, 9hp electric start Honda. Bucket fill, 30' Tiger Tail. Ready to work. \$29,995. Denver, CO. 303-789-9440 Ask for Matt. (PBM)

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1999 Ford F450, 7.3 diesel, 124,000 miles. 315-gallon freshwater and 400-gallon waste tanks. Porta-pot carrier on back. \$13,995. Call/text 712-433-1662. (P07)

2004 Kenworth with 1,800-gallon Keith Huber tank. Service both sides, truck in good shape. 315,000 miles. Photos available. \$45,000. patrick@moorecans.com; 817-568-2333 (P07)

2005 Chevy Kodiak 4500: Duramax diesel, auto., 4x4, 13-ft flatbed, 52,000 miles. Like-new. Vacuum tank & pump can be added for additional cost. www.pumpertrucksales.com. Call JR. @ 720-253-8014, CO. (PBM)

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2016 Acro Vacuum Trailer: Stainless steel 6,000 gallon, DOT certified double conical with air-ride suspension. Aluminum wheels all positions, full hose trays, OSHA walkways and railings. Vacuum pump option either hydraulic or self-contained. KLM Rentals, Inc. 617-909-9044 (PBM)

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Call Tim 800-672-3402, NH P07



2008 Kenworth Paccar PX-8, 66,000 miles, air ride, 10-speed transmission, new tires. 90-barrel stainless steel tank, 4310 vacuum pump, National Vacuum Equipment. NVE blower pkg, 5,600 hrs., heated valves, digital tank level reader. \$68,000 FIRM

678-898-2928, GA

PBM



2000 Freightliner: 370hp, 10-speed Eaton manual transmission. Brand-new, never-used 3,600-gallon carbon-steel tank. Battioni vacuum pump, 467cfm. 411,000 miles. Well maintained, 2nd owner. \$28,900

612-559-3456, MN

P07



2011 International 7500: MaxxForce 350 10-speed. Full lockers, exhaust brake. 3,600-gallon aluminum tank, 6" and 4" valves. LC420 Jurop liquid-cooled pump. 38,000 original miles. ...\$88,000

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P08



1998 Ford septic truck with 3,500-gallon carbon-steel vacuum tank. CAT 350hp with Fuller 8-speed transmission. Rebuilt Presvac PV750 vacuum pump. Ready for work. \$38,500

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PBM



2002 International 7400, 4,000-gallon tank, Masport pump. Pusher axle, heated valves, good rubber, work hoses included. Ready to work. \$60,000

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P08



1996 Ford L8000: 2,300-gallon tank, MEC 8000 pump, heated valves, 33,000 GVW, air brakes and seat, 8.3L Cummins, 6-speed. Good rubber. Current DOT. Ready to work. \$22,000

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P07



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P07



2006 Freightliner: C-13 CAT, 425 horsepower, 10-speed transmission, a/c, cruise. 3,250-gallon Keith Huber tank with hoist and Fruitland 500 vacuum pump. Very nice unit! \$48,500

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Call/text 740-961-7431, OH P07



1996 Kenworth T800, Cummins M11, 370hp, 10-speed RoadRanger, air-ride suspension. 3,500-gallon tank, 367 Challenger pump, 3" and 4" valve, 6" dump, heated valves. \$30,000

Squires, Pierson and Sons, Inc.
631-283-1403, NY P07



2009 International WorkStar: International engine, 225,000 miles, 4,200-gallon Curry vac tank, Masport pump. \$62,500

248-431-5899, MI
davidjanette@comcast.net P07

1991 Kenworth T800: CAT 3406B, 13-speed, air suspension. 3,000-gallon tank, hoist, Jurop R260, 3" valve w/6" dump. 36" rear door. Located in central MN. \$27,500. 320-995-6546 (P08)

2010 International 4300: 179k miles. Brand-new 2,100-gallon tank, brand-new pump. Color: White. Automatic transmission. Good rubber. Very clean/strong truck. Located in central Arkansas. Can send pics on request. \$45,000. Call Caleb 281-914-1192. (P07)

1987 Mack 300. 3,000-gallon tank, 250k miles. Runs great. Newer tires, pump, manholes, secondary trap. \$10,000. Call John 978-587-1192, Wilmington, MA (P07)



2000 International: DT444 diesel, 125k miles, 6+1 transmission, a/c, cruise. New: 2,000-gallon tank, SS hose trays, Jurop PN84 vacuum pump. Very clean, low-mile truck. Under CDL. \$32,000

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936-641-3938
www.texlaservices.com P07



1994 Freightliner FL80 vacuum truck, ex-government owned, US Navy. Never used for sewer, only light bilge work. 2,000-gallon tank. 5.9 Cummins diesel motor, 5X2-speed transmission. Only 23,500 miles. \$34,995

Call Bob 619-540-4804, AZ P07

2004 Freightliner M2 with 2,500-gallon tank/100-gallon water tank. 367 Challenger. Automatic transmission. ~150,000 miles. \$43,000. Call 615-477-4741 (P07)

1987 Ford L8000 vacuum truck. 2,000-gallon tank. Ford 210F engine. 66,000 miles. New tires, hoses included. \$11,500. Call 203-376-0907 (P07)



1998 Mack TR600: 427hp Mack motor, Eaton 10-speed transmission. New 3,600-gallon tank (never been used), 500cfm Fruitland pump. \$45,000

763-218-8235 P07



2012 International 4300DT: 230hp, auto. Under CDL. New 1,850-gallon steel vacuum tank, new Masport pump.

www.pumpertrucksales.com
Call JR @ 720-253-8014, CO PBM

2002 Kenworth T800: 357k miles, 5,000-gallon Progress tank, Wittig 150 water-cooled pump, heated valves. Tri-axle, 10-speed, Jake brake, pre-emission, air ride, loaded. All new under carriage. One owner. \$65,000 OBO. 302-841-0323 (P07)

1999 International 8100, M-11 Cummins, Twin-screw, air-bag suspension. 2,683-gallon Imperial tank, Masport HXL400 pump. 3-stage hydro-hoist, 3 ft. hydro-manhole on back. Excellent condition. \$37,500. Call or text 712-433-1662. (P07)

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1995 Ford F800: 8.3 Cummins, 6-speed, 254k miles. NVE pump, 2,200-gallon tank. \$15,500. Serious inquiries only please. 951-830-4840 (P07)

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2006 Mack: 4,000 gallons, 495k miles, NVE Challenger pump, air-ride, 370hp, fully refurbished! Ready to work! Tarek 832-914-2855 oilfieldtruckworld.com (P07)

2007 Freightliner M2, C7 CAT, 6-speed manual, air shift, PTO shaft-drive Masport 75. 1,800-gallon tank. 22.5 tires. 110k miles. Send message for pictures. \$29,500 OBO. 620-629-7212 (P07)

2018 Peterbilt 348 with a new 4,000-gallon aluminum vacuum tank with Masport HX-L400w pump and jet unit. (Stock# 13725) **www.VacuumSalesInc.com (888) VAC-UNIT (822-8648)** (PBM)

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2011 International 4300: 230hp, diesel, auto. Under CDL. New 1,850-gallon steel vacuum tank, new Masport pump. **www.pumpertrucksales.com**. Call JR. @ 720-253-8014, CO. (PBM)

2013 International 4300DT: 245hp, Allison auto., 85,000 miles. Under CDL. New 1,850-gallon steel vacuum tank, new Masport pump. Like-new condition. **www.pumpertrucksales.com**. Call JR. @ 720-253-8014, CO. (PBM)

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1994 International, 60 Series Detroit, 3,200-gallon tank, Juro pump. \$20,000

Shannon 828-361-3390, NC P07



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Billy Johnson 850-336-4988, FL
JohnsonSepticTank@gmail.com P07

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2014 Freightliner 114SD with a Vacall AVR-18 industrial vacuum loader. (Stock# 9116C) www.VacuumSalesInc.com (888) VAC-UNIT (822-8648) (PBM)

1991 Western Star Model 4864F with a Cusco Turbo Vac 2127, carbon steel 3,000-gallon unit. (Stock# 8905) www.VacuumSalesInc.com (888) VAC-UNIT (822-8648) (PBM)

2009 Sterling LT9500 with a Vacall AVR-18 industrial vacuum loader. (Stock# 4792C) www.VacuumSalesInc.com (888) VAC-UNIT (822-8648) (PBM)

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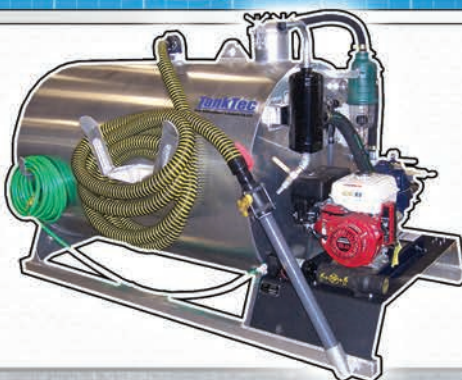
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