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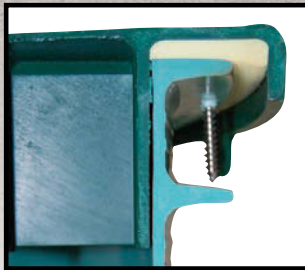
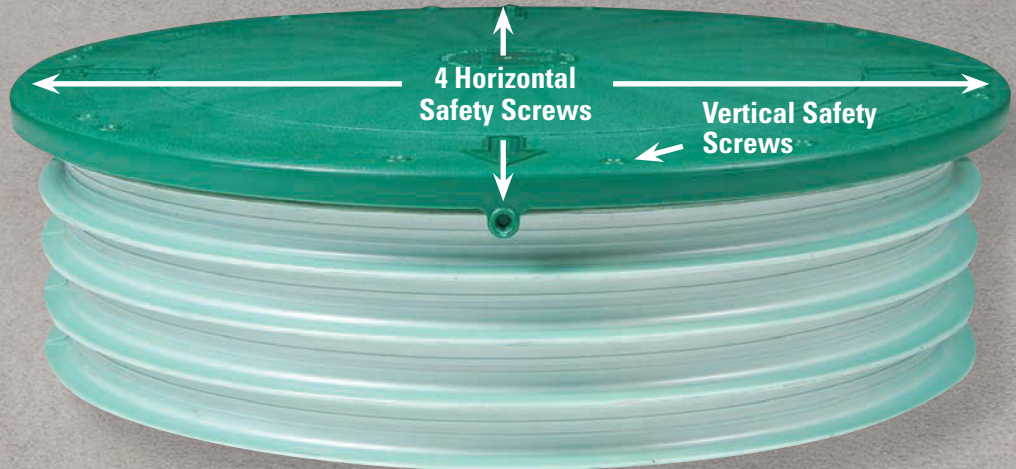
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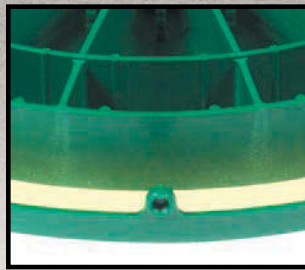
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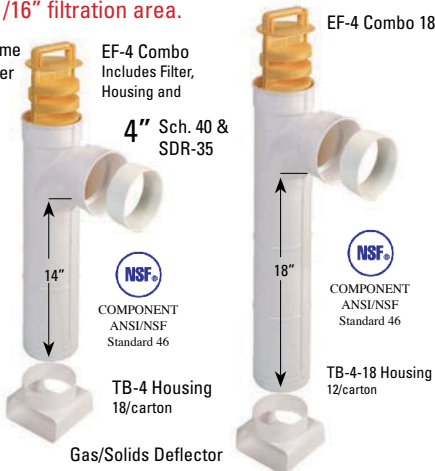


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# A Sound Investment

Residents in a small Iowa town are rattled by the projected cost of a new community onsite system. How do we convince them of the value of wastewater treatment?

By Jim Kneiszel



Some homeowners need to adjust their priorities. Case in point is the community of Alexander, Iowa, in the north-central part of the state, where residents have been warned for years of the need to upgrade their onsite wastewater systems. Faced with a threat of a \$5,000 per day fine for failing to upgrade their wastewater disposal, the townsfolk gathered recently to rail over their plight.

From an account published in the local *Belmont Independent* newspaper, this small Iowa town doesn't sound anything like that quaint, fictional River City from *The Music Man*. Residents sounded a whole lot more ornery and ignorant about the importance of advanced wastewater handling.

"People move to small towns because it is inexpensive to live here," local Council Member Tom Schear was quoted as saying during a three-hour meeting. "Do we save money for our kids' college education, or pay it to flush our toilets? The damage caused by the DNR is worse than a tornado. They are a sociopathic, criminal organization. We can never get out from under the DNR. We'll die first."

## COST AN ISSUE

Rather than a patchwork of outdated and poorly performing septic systems, the state would like to see Alexander build a community system where pipes connected to each house pump waste to a sewage lagoon. Not an uncommon solution in rural Iowa, this plan was proposed in 2010, but then no action was taken. The lagoon system is seen as more cost-effective and viable than replacing all the individual inadequate onsite systems.

Cost appears to be an issue for some residents. The group was told the median household income in Alexander is just under \$31,000. With federal grants paying part of the bill, the 65 to 70 users would pay \$40 to \$45 per month to pay for the remainder of the price of the estimated \$1.6 million system.

To gain an understanding of the situation in Iowa, I called Kenn Deike, of Deike Inspections, located about an hour east of Alexander. Deike is past president of the Iowa Onsite Wastewater Association (IOWWA) and works as a maintenance provider, mostly for advanced onsite systems requiring annual inspections and maintenance.

Deike explained that systems meeting safe standards in Iowa are allowed to discharge effluent to the surface rather than a drainfield. It's common for treated wastewater to flow from the septic tank right out into a dry ditch at the road. So it's not unusual for homeowners to expect to incur

little cost for wastewater disposal.

"When it comes to wastewater, it's not supposed to cost anything," Deike related. "You hear it ... Oh my gosh, it's going to cost \$12,000 to put in a septic system, but they'll spend \$30,000 to put in kitchen cabinets. Years ago they could buy a septic tank for \$1,000, run a line to a road ditch and never have to worry about it."

**A few hundred years ago, folks in crowded cities used a bucket that they dumped out on the street, not making the connection between unsanitary conditions and death and disease. A properly functioning onsite system is a blessing and arguably the single most important feature of your home.**

## COMMON COMPLAINTS

When it comes to consumer education, Deike voices frustrations commonly heard in the onsite industry. He says many people expect they should never have to maintain a septic system and that people who move from the city to the country ignore that they should change their water usage habits.

He talks about a customer whose system failed a point-of-sale inspection.

"We haven't done anything for 30 years, by god, I don't understand why we have to do anything with it," the homeowner said incredulously. When Deike walked him to the road to show him feces and toilet paper rolling out of the pipe, the man said, "I guess I've got a problem, don't I?"

"They think the septic system is just going to digest everything and it's not going to fill up," Deike said. "It's just in their minds that a septic system shouldn't cost anything ... Grandpa had a system for 40 years and never did anything to it. Why do I need to now?"

Ask Deike how to get homeowners interested in their septic systems, and he doesn't know what to say. His state association has held workshops and they've expected hundreds to attend. But only a handful show up.

"I don't have an answer for you ... Just keep talking, I guess," Deike said.

That's what Deike plans to do in the future. When he eventually leaves the IOWWA Board, his mission will be to visit health department officials in



all of the state's 99 counties and try to convince them to sign on to the association's certification program. That he wants to spend his days promoting industry professionalism and communication is to Deike's credit, and I wish him luck with that mission.

### WE'RE INDUSTRY ADVOCATES

In the spirit of continuing a dialogue, I'll share a few talking points you can use with current or prospective customers to drive home the value of proper wastewater treatment. You may not turn them around overnight, but maybe we can make some headway.

#### Sanitation is the single biggest advancement in human history.

Where would we be without modern wastewater disposal? It wasn't so long ago that my mother was born and raised on a farm and her bathroom was an outhouse behind the barn. A few hundred years ago, folks in crowded cities used a bucket that they dumped out on the street, not making the connection between unsanitary conditions and death and disease. A properly functioning onsite system is a blessing and arguably the single most important feature of your home.

#### You'll recoup a portion of the cost when you sell.

People invest big dollars in their homes all the time, justifying the expense of a new kitchen or three-season room addition, for instance, by factoring in a return on that investment when they sell the house. Heck, watch the shows on cable network HGTV for five minutes and you'll see folks who think nothing of dropping thousands of dollars on something as frivolous as a granite countertop.

What's more important to you, a granite countertop or the ability to flush away your wastes? It would be refreshing if people thought of their septic system as an asset when it comes time to sell the house. Because that's what it is. Did you ever try to sell a house without functioning toilets? Can you imagine what those hypercritical TV *House Hunters* would say when they tour a house with nonworking toilets?

#### Compare your costs to friends in the city.

Spread the cost of your new onsite system over its life span. If you paid \$10,000 for the system and it will last 20 years, the cost is \$500 per year, or less than \$42 per month. Throw in an occasional inspection and tank pumping and it's maybe \$60 per month. Ask your friends or relatives in the big city what they pay for a sewer and water bill. You might be surprised how economical your onsite wastewater treatment is.

#### You are the protector of your drinking supply and recreational watershed.

Do your customers think of themselves as environmentalists? Maybe not in the sense of a "tree hugger," but I'll bet they care about the environment around them. Everyone wants to ensure clean, safe drinking water for themselves and their neighbors. And what about the streams and lakes in your hometown? I'll bet people want to preserve those bodies of water for swimming, fishing and boating. Homeowners are responsible for their onsite system and need to be diligent to make sure it functions properly. Each onsite system owner is an important link in a community chain that preserves local water. If your link breaks, everyone suffers.

### MORE MONEY TALK

This month and next I'm like the stewardship committee at your local church. I'm talking money, money, money. This month we're helping the public understand the value of investing in onsite system improvements. Next month I'll share advice on how to justify your professional service fees to homeowners, some who might not understand the value of your expertise.



# Call for WWETT Show presenters

Do you have an educational message to share with other onsite installer professionals? Why not propose bringing it to the biggest stage in the wastewater industry, the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show?

COLE Inc. is accepting proposals for seminars to be presented at the 2016 WWETT Show, slated for Feb. 17-20 at the Indiana Convention Center in Indianapolis. Proposals must be received by Aug. 1. The Call For Papers forms may be completed online at [www.wwettshow.com/cfp](http://www.wwettshow.com/cfp). Or the forms may be filled out and sent by email to [Julie.gensler@colepublishing.com](mailto:Julie.gensler@colepublishing.com), or mailed to Julie Gensler, COLE Inc., P.O. Box 61, Three Lakes, WI 54562.

Submissions are being accepted covering these topics:

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- Septic collection, treatment, and disposal
- Business – marketing, financials, and social media
- Safety
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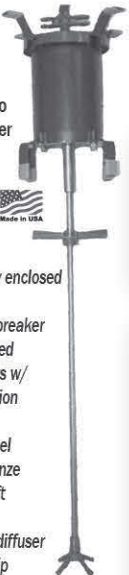
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## CUSTOMER CONVERSATION

### Septic Basics

Your job probably often involves some interesting conversations with homeowners. There is a lot a homeowner should know about caring for their system and they are foreign concepts for most people unless you are helping them out. Here we discuss tips for filling homeowners in on the basics. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)



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How's your pressure distribution system knowledge? When determining materials and size for pumps and controls for a system, performance requirements need to be accounted for. If you're a little iffy about the requirements, read up on these expert tips. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

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# Discussing Point-of-Sale Inspections

Onsite wastewater professionals agree that better real estate inspections will help homebuyers avoid costly surprise repairs

Jim Anderson, who co-writes the *Basic Training* column in *Onsite Installer*, received thoughtful feedback to a column in *COLE Publishing's Pumper* magazine earlier this year where he advocated for thorough point-of-sale inspections. Because these inspections have become a hot topic to the system installer community, we wanted to share the reader responses. You can read Anderson's column regarding inspections by following this link: [http://www.pumper.com/editorial/2015/02/promote\\_real\\_estate\\_point\\_of\\_sale\\_inspections\\_to\\_protect\\_your\\_customers](http://www.pumper.com/editorial/2015/02/promote_real_estate_point_of_sale_inspections_to_protect_your_customers)

## Look out for the homebuyer's interests

I have read articles over the years regarding different aspects of our septic industry, and this particular article about real estate inspections is one that conjures up a lot of passion for me.

To the point of home-sale inspections of septic systems, we find that for the most part the only party who really wants to know the condition of the entire septic system is the buyer, and then only if they know or have been told by their Realtor what to ask.

It is the seller's responsibility to pay for the inspection, and the seller typically will rely on their Realtor to hire the inspector. Guess whom the Realtor hires? The inspector who will not mess up the home sale and may be half the price of others.

We pride ourselves at performing very thorough inspections, but this has led to a decline in our home-sale inspections because the Realtors gravitate toward inspectors who will not find anything wrong, do incomplete inspections, offer a cheaper price, etc. This is all because the Realtor does not want the sale (their profit) to be put at risk, and more importantly, no one is held responsible for a complete inspection. The Realtor and seller can't disclose what they don't know, right?

We have provided numerous examples to our county sanitarians regarding inadequate inspections that have led to thousands of dollars in repairs paid for by the new homebuyer because the inspection done by "the other guy" said the system was "OK."

In one example, we just repaired a system at a cost of \$9,000 to the homebuyer just after it was inspected (at the point of sale). Originally installed in the 1990s, the septic system was inspected a few years ago. The septic report at the time shows only a septic tank and the system was marked that all was OK, "no deficiencies."

The septic system actually included the septic tank, pump tank, sand filter, alarm(s), drainfield, pump tank pump, sand filter pump, floats and sewage pump in the basement. The new homeowner called us to see if we could increase the size of the system. We pulled the as-built drawing and the inspection report only to discover there was a discrepancy in components listed in the time-of-sale inspection, and we recommended another inspection.

Our inspection revealed a failed sand filter; missing alarms; no inlet baffle coming into the septic tank; incorrectly sized piping; flooded inlet baffle; corroded, exposed electrical connections; root intrusion in laterals; and sludge in a manifold preventing equal distribution of effluent.

We continually find inadequate inspections by several licensed septic companies, but they continue to get the calls



1. During a follow-up inspection, Alan Chapin found an interior electrical box used outdoors and no cover over a makeshift wooden frame, exposing tank access lids.

2. A follow-up inspection showed a very low flow rate to the drainfield. The culprit was heavy root intrusion.

3. According to Alan Chapin, this tank received an OK from a previous point-of-sale inspection. The inlet baffle was missing and an inadequate 3-inch ABS pipe was used.

4. The second inspection turned up questionable wiring in a sand filter system that was short-circuiting. (Photos courtesy of Alan Chapin)



because they don't find problems that could jeopardize the sale and they are cheap. There is shared responsibility from the Realtor, inspector, seller, county and homebuyer to ensure what is being sold and purchased has a properly functioning septic system that is safe.

I am working with my local county to standardize the inspection process and provide consequences for poor work, but have yet to see anyone held responsible. The unaware buyer who thought the inspection report was complete ends up paying the bill for the repairs.

We are a full-service company and have a very high standard for all work we perform, and it is part of our strategy to educate the county, homeowners, Realtors and other licensed professionals on best management practices and to encourage "septic success" for our industry. When any of the points of contact involved in the septic inspection process fail to have integrity, honesty or the experience to perform the work, it only makes our job more difficult when trying to convince the owner of a septic system to take care of it.

**Alan Chapin**  
**Envirotek, LLC**  
**Camano Island, Washington**

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## Find ways to encourage better inspections

Thank you for bringing this subject matter to the table. This has been a hot topic in Maryland and a topic in which I have been very vocal. The Maryland Department of the Environment recently came out with a policy mimicking this inspection procedure, which we instruct in our Maryland certification course through MOWPA.

First, let me agree with you that there is no consistency with septic evaluations for real estate transfers. This is true in Maryland where we see dye tests, septic cleanings being disguised as inspections, drainfield evaluations by probing, camera inspections and everything in between. I have voiced my opinion for the need of a more standardized inspection procedure helping give better consistency to the market, while improving the quality of standards within our industry. The lack of consistency is confusing to customers and creates hostility among competing septic inspection professionals.

"What should be performed for real estate transfer septic inspections?" We must consider market conditions. A major difference with our customers is that they are not the homeowner; they are prospective homebuyers performing due diligence to make an educated and always risky decision. This puts constraints on the resources that a buyer feels comfortable allocating toward a particular inspection or test.

Leaving no stone unturned proves to be an inspection where any problems that can be found will be found. This is great advice to new septic inspectors or septic companies that want to offer to do a few septic inspections outside of a regulated market. However, it's unfair to suggest that this is the only correct septic inspection to a full-time septic-inspection company that depends on fulfilling the needs of their customers. The question of what type of septic inspection should be performed cannot be answered with only considering one variable: the number of potential problems to be found.

Many variables need to be included in the equation: type of system, age of septic, expenditure to customer, damage to property, if there are accurate septic records on file, etc. Another market constraint we run into is the law of diminishing returns. Sooner or later in the sequence of turning stones, a stone will eventually be too costly to overturn as its benefit decreases, making that added expenditure equal to dollars wasted. A company should not be frowned upon for providing the best septic inspection the prospective homebuyer's dollar can buy.

The obvious question is at what point, or added service, is it going to stop being an added benefit and start being a waste of money? This can't be answered by a regulator, real estate agent or septic inspector. It can only be answered by the prospective homebuyer, given their understanding of their risk aversion, disposable income and many, many other factors. What septic inspectors, regulators and real estate agents can do to help prospective homebuyers is to educate them truthfully and honestly.

Here lies a deeper problem with septic inspections, as your article brings to light: Are we educating our homebuyers accurately? I do not believe so. I believe septic inspection companies have incentives to push for profitability over value, or cut services to compete for price. Real estate agents have an incentive to close a deal, which generally would suggest a lighter evaluation is their incentive. It's hard for regulators to give good information because they simply do not do the work in the marketplace. They speak to the supply side of this economic question: What problems can be found with each service? But they can't speak to the demand side: what an average, prospective homebuyer wants given their finances, risk aversion, etc.

For structural permitting purposes, our local health departments do not inspect systems with the same high standards for permits and repairs. Why is it only important during a real estate transfer? The real estate marketplace is much more complex than a market where the homeowner pays for their own inspection for their own benefit. Why aren't we asking every homeowner to do an inspection for a property they own every seven years? The septic companies should already be selling this to current homeowners to protect their investment.

It would make much more economical sense to encourage (or force) a homeowner to pay for an inspection, versus to continuously depend on the real estate industry to perform inspections and tests that prospective homebuyers simply do not want. That this service is not being provided to existing homeowners goes to prove that the cost is not perceived to be worth the benefit.

In a perfect world all components should be located and viewed. However, in Maryland, even if a buyer does want a higher-quality inspection they may not be able to purchase it! This is because the home seller is also a deterrent to allowing this type of evaluation on their property. In certain septic addendums on contracts, the sellers have the right to forbid excavation. Also, in Maryland – and I'm sure many other states – regulations allow for buried manhole access lids and distribution boxes. If septic inspectors are to prosper from doing a more comprehensive inspection, we need prospective homebuyers who are willing to pay for it. For this to be more prevalent, we simply just need access. I don't know of another industry that hides important system components beneath the ground.

In short, regulators, septic inspectors and the real estate industry need to work together for a better septic evaluation to be more cost-effective (access requirements), easy to perform (real estate contracts) and more consistent (quality companies doing quality work). The other alternative is regulation.

**Timothy M. Shotzberger**  
**Home Land Septic Consulting**  
**Essex, Maryland**

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## Educate the consumer

I read your article on inspections. You are so right. We have performed inspections for 10 years and have pumped for over 20. Our neighboring county has what's called a property transfer inspection. We locate all drawings of the system before we arrive. We take pictures of the front of the house, well, tanks before we pump, after we pump, sludge depth, hose in

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tank as we pump, and measure distance from well to septic and drainfield.

When we first pull up we always expose the tank and ask the customer to add approximately 50 gallons of water to the system, either through the house or by hose. We check for a rise in the tank or high water marks, probe the drainfield and try to locate the D-box and document all findings. A Sludge Judge or core sampler removes the guesswork.

I have a lot of customers who say the last pumper "said my tank was OK." I ask how they knew. Did they pull a sample? The answer is always no! So I pull a sample, then explain why we are doing this. We are certified inspectors through the Indiana Onsite Wastewater Professionals Association (IOWPA) and signed up for the inspection course as soon as it was available. Finally, my wife contacts the customer before we inspect to ask questions, such as how many bedrooms, water supply, if the house is occupied and how many people in home, last time it was pumped, and any repairs to the system.

**Jon Houseknecht**  
**Sunset Septic & Excavating**  
**La Porte, Indiana**

## I will share point-of-sale advice

I read your article in the February 2015 *Pumper* and really liked it; very informative for the home consumer. I am going to share it with many of my Realtor friends. There are one or two engineers/sewage enforcement officers who perform their own hybrid real estate inspection. There are some home inspectors performing awful "imitation" inspections, while others are totally out in left field with their inspections.

Most septic service companies do perform a version of the PSMA (Pennsylvania Septage Management Association) inspection. However, I am always baffled why many do not reference they are actually performing a PSMA inspection on their report. I don't know if it is fear of liability? I think it brings legitimacy if one references their source, and the consumer realizes it. In addition, using your association source, whether it's the PSMA, NAWT (National Association of Wastewater Technicians) or NSF, builds respect for the association and the industry as a whole.

**Rob Bowie**  
**Bux-Mont Inspections Inc.**  
**Sellersville, Pennsylvania**

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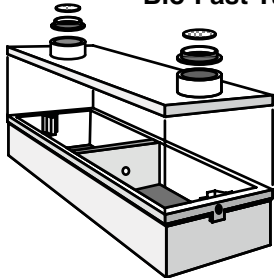
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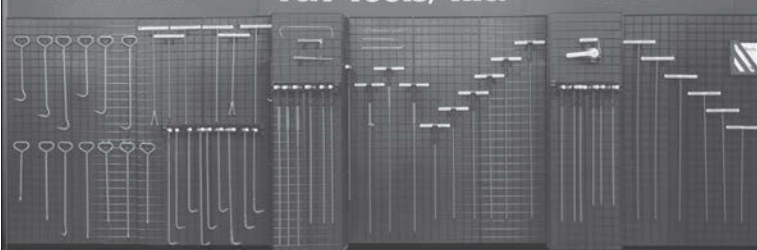


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# COMMITTED TO PERFECTION

**In the sensitive environment of northwestern Washington, Bay Shore Construction takes pride in doing great work for customers and protecting water resources**

**By Ted J. Rulseh**

**B**ay Shore Construction faces ever-tougher onsite system regulations designed to protect Washington's Puget Sound and other high-quality waters.

Owner Brandon Thompson doesn't mind at all. In fact, he welcomes the close scrutiny his company receives operating in five counties around Olympia, the state capital. "There's tremendous knowledge locally behind all the lakes, streams and inlets," says Thompson, who has owned the company since 2004, when he was just 24 years old. "There are always research and projects underway to better the Sound. Every four years there's a new code book that determines how we install septic systems.

"I understand that. I get it. I've lived here my whole life and I want to help keep the waters clean. Ultimately, that's our job. The state and county restrictions make our company all the more important. Without them, anybody could be doing this work."

Of course, the direct beneficiaries of the company's work are customers – some 50 to 100 homeowners who receive new or replacement onsite

systems each year, installed in conditions that range from plain sand to volcanic basalt rock.

**"Every four years there's a new code book that determines how we install septic systems. I understand that. I get it. I've lived here my whole life and I want to help keep the waters clean. Ultimately, that's our job."**

**Brandon Thompson**

## **STARTING YOUNG**

Bay Shore Construction was founded in 1989 by Ron Thompson, Brandon's father, who had been in the logging industry around Aberdeen, Washington. He moved the family to Summit Lake, near Olympia, with plans to start a mini-storage business. Along the way he learned the onsite installation business and built a prosperous company around it.





**<< OPPOSITE PAGE:** The Bay Shore crew includes, from left, Fred Cady, Brandon Thompson, Ron Thompson, Robert Mykleby (on truck), Ron Funderburk, Sam Hyatt and Kenny Casassa.

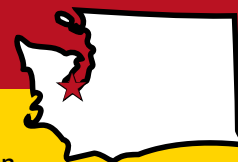
**ABOVE:** Technicians Robert Mykleby and Fred Cady drop a Zoeller 220V pump into a sand filter basin. Effluent will be moved uphill to a drainfield manifold. (Photos by Mark Mulligan)

In 2002, Brandon was working as a supervisor at a Costco warehouse when his father asked if he wanted to take over Bay Shore. “I said I had no interest in doing that,” Brandon recalls. “I was living a pretty good life. About a year later he asked me again if I had any interest. I said no, not even a little bit.”

Not long afterward, Brandon got married and started a family. Suddenly, he saw his father’s business as a good opportunity. “I went to my dad and told him I was interested in being a part of the company. And he said, ‘No, I gave you two opportunities, and you’re out.’ I said ‘OK,’ and left with my tail between my legs.”

Instead of giving up, though, he changed his days off at Costco to weekdays and showed up one morning to work with his father. “He said, ‘I don’t have anything for you.’ I decided that didn’t matter – I was going to help him one way or the other.” He worked for no pay for six months, at which point his father hired him for half his Costco salary. Six months after that they negotiated a sale of the business, with its two crew members, a backhoe, a bulldozer and a dump truck.

## Bay Shore Construction, Olympia, Washington



<b>FOUNDED:</b>	1989
<b>OWNER:</b>	Brandon Thompson
<b>EMPLOYEES:</b>	7
<b>SERVICE AREA:</b>	Northwestern Washington (5 counties)
<b>SPECIALTIES:</b>	Installing multiple types of onsite treatment systems
<b>AFFILIATIONS:</b>	Washington On-Site Sewage Association, All-American Water Association
<b>WEBSITE:</b>	<a href="http://www.bayshoreconstructionoly.com">www.bayshoreconstructionoly.com</a>

### TRIAL BY FIRE

Soon after that, the elder Thompson announced he was taking a long vacation in Arizona. “He left me in charge,” Brandon says. “I was 24, and I was in charge of all the bidding, organizing the jobs, getting everybody together – all with little or no knowledge.” So began a steep learning curve that lasted several years.





Brandon Thompson secures an Orenco lid on a system at the Olympia Tennis and Athletic Club that includes a 1,500-gallon septic tank, a pump chamber, 680 feet of 2-inch force main and two 10- by 50-foot drain beds.

His father came back after about four months and helped him out, but mostly, he learned by doing. With a newly minted installer's license, he began forging connections, contacting local builders and onsite system designers. "I looked at every opportunity and I talked to every person I could," he says. "The obstacle I had to overcome was my youth. People didn't want to hire a young kid, and I looked and acted like a young kid. But somehow it worked out."

**"We're about an hour from Seattle and an hour from the ocean shore. We're near the state capital, where all the major state agencies are based, so we're under a microscope. Our standards are substantially higher than in much of the state."**

**Brandon Thompson**

Today, in addition to onsite installation and repair work, Bay Shore offers structure demolition, trenchless technologies, utility boring and trenching, and general excavation. Thompson also owns All-American Underground, which builds small-community potable water distribution systems and service lines and does leak detection and pipe bursting for line repairs.

The team includes Sam Hyatt, project manager; Fred Cady, equipment operator and site development specialist; Ron Funderburk, water distribution manager and cross-connection control specialist; Kenny Casassa, equipment operator; Robert Mykleby, dump truck driver and equipment operator; and Jaime Sparks, office manager. Cady was Ron Thompson's first employee and his right-hand man; he has been with the business for 18 years.

Brandon's wife, Amber, helps with the company's social media and represents the business in charity endeavors that include service on the board of the local Big Brothers Big Sisters of America chapter. She spends most of her time caring for the couple's three sons.

The company's major equipment includes a 2003 Case 580 Super M backhoe, a 2007 John Deere 35D excavator, a 2002 John Deere 450G dozer, and a 2004 Kubota KX-121-3 excavator, plus a 2007 VACMASTERS SPV 800 vacuum trailer. The inventory also includes three dump trucks, a step van, two utility trucks, a pipe truck and a service truck.

### **TACKLING SITE CHALLENGES**

As challenging as it was to take over the business, Thompson and his team face challenges daily with soils

## **Building a reputation**

Brandon Thompson didn't fully appreciate the reputation Bay Shore Construction had built until he took a friend's advice and attended a networking group meeting for business owners.

"I decided to attend because I'm all about finding new avenues for marketing," says Thompson, company owner. "At the start of the meeting, every person in the group had to stand up and give a 30-second pitch on themselves and their company."

"When my turn came, I told them exactly who we are and what we do, and it changed the room. Every other person who stood up after that said, 'I know who you are because you did my septic system, and I vouch that you are a good company.' About 30 guys said, 'Oh, yeah, I know you.' Half of them knew me, and half of them knew my dad, which was even cooler. It made me super proud of what my dad and I have done over the years."

There's another sign of the company's good name: Real estate listings for homes often mention, as a selling point, *New septic system installed by Bay Shore Construction*. "We get that all the time," says Thompson. "We don't want to get a big head over it. It's a reputation we've earned by doing the right thing. Septic work kind of gets pushed under the rug. People don't think it's important — until they need it. This company touches so many lives, and that becomes really, really fun."





**"We're never going to be the cheapest installer ... We want to be sure we put the system in correctly. The work is going to take some time and require some real due diligence."**

**Brandon Thompson**

and topography: "We're about an hour from Seattle and an hour from the ocean shore. We're near the state capital, where all the major state agencies are based, so we're under a microscope. Our standards are substantially higher than in much of the state.

"Since we work in five counties, the soils are all over the board. Near the ocean it's sandy. Around the inlets in Thurston County, it's very clay-based. It's not uncommon for us to do a system where we take out 10 to 15 feet of clay until we hit sand. We fill that bed back up with sand to within 3 feet of the grade, and then add a foot of drain rock (or install chambers) followed by 2 feet of cover. To the south in the Yelm area in Thurston County, it's sandy loam with big rocks."

Most challenging are waterfront lots on Summit Lake. "There it's all basalt rock," says Thompson. "A lot of times there isn't enough room on the lot to put in a complete septic system. So the owner has to get an easement for the property across the road, or actually purchase that property for the drainfield."

They hammer through the rock to install the septic tank on the lakefront side, lining the bottom of the hole with sand, placing 4 inches of foam board around the tank sides and backfilling with sand over the top. Then they tunnel under or cut across the road to where there's a little soil. Sometimes the native soil is enough for a drainfield; other cases call for a mound or an aerobic treatment unit.

## MULTIPLE APPROACHES

In general, site conditions and designer preferences dictate the treatment approach. Bay Shore installs conventional gravity systems, pressure distribution systems, sand filters and mounds, as well as ATUs including

**ABOVE:** Technician Robert Mykleby installs a Zoeller pump in a sand filter pump basin.

**BELOW:** This is a view of an Orenco P5005 all-in-one pump system installed at the Olympia Tennis and Athletic Club.



FAST systems (Bio-Microbics), Jet Inc. systems, ECOPOD units (Delta Environmental) and Glendon Biofilter systems. "There isn't an ATU we haven't installed that is approved in this area," Thompson says.

While the company works with designers, Bay Shore personnel serve as



Kenny Casassa uses a John Deere 35D excavator to dig a utility trench.



the customers' point of contact. "We incorporate the designer in the deal," Thompson says. "We control the job. The designer works for us so we can maintain the quality we want. We maintain the relationships with the customers and make sure they're happy with what's going on."

For drainfield media, Thompson uses gravel on occasion but prefers chambers from Infiltrator Water Technologies for their ease of handling and long life. The company installs both concrete and plastic septic tanks – the preference is for plastic because delays in delivery of concrete tanks to the job site can hinder project efficiency. For plastic tanks, the company uses IM-Series two-piece units (Infiltrator Water Technologies), always anchoring them in position.

Quality components are a priority. "We buy pumps that have longer warranties and that we believe in," Thompson says. "We don't want to be out replacing a pump on Thanksgiving Day. We use Hydromatic and Zoeller pumps. These are cast iron pumps with stainless steel impellers. They're expensive, but they're going to last 15 to 20 years.

"We're never going to be the cheapest installer. I tell people the minute we walk in: 'If you're looking for the cheapest guy, it's not me.' We want to be sure we put the system in correctly. The work is going to take some time and require some real due diligence."

## GETTING THE BUSINESS

That kind of care and quality leads to good word-of-mouth, which accounts for about 40 percent of new leads. The rest come mainly from builders and designers. For promotion, Bay Shore has backed away from full-page telephone directory advertising in favor of social media and guerilla marketing.

"In every county where we work, we have 8- by 4-foot double-sided signs along freeways," says Thompson. "Past clients who enjoyed our work have given us permission to place signs on their properties. That gives us a lot of freeway exposure."

The company also sends thank you cards to customers and cards offering incentives for providing referrals. Occasionally, Bay Shore installs systems at far below cost for families in need. In such cases, Thompson offers a story about the project to the community newspaper: "If we're going to install a septic system for little or no money, we want to gain some advertising value from it. Do the papers take the stories every time? No, but we offer them up."

In leading his team, Thompson emphasizes training: "All our people are experienced. They're all licensed through the wastewater world or the water world. Training is a big deal. Putting the time and effort into your team is going to help you every time."

Team members are cross-trained. They take training through the Washington On-Site Sewage Association (WOSSA), from local water associations and from equipment distributors. Thompson and colleagues attend the annual WOSSA conference and other industry meetings.

For his approach to leadership, Thompson relies on his experiences with Costco: "A lot of the things we do as a company are based on their values and work ethic. The approach is very simple. Their mission statement is among the simplest in the world: Obey the law. Take care of our members

(or in our case customers). Take care of our employees. Respect our vendors. It just rounds everything off."

## UPS AND DOWNS

The past 10 years have not been all roses. "When times are good, you're living the dream," says Thompson. "When the times are bad, you persevere."

Still, Bay Shore came through the 2008 recession almost unscathed: "Septic systems fail no matter what. The number of systems that fail and result in repair work doesn't change, no matter how good or bad the housing market is. New construction went down. Our numbers had to get a little tighter, just like everybody else's."

The company continues to thrive on quality workmanship and communication with customers. "The more information people have the easier it is for them to make decisions," says Thompson. "It really helps us out long term. Ultimately it's communication. It's value. It's longevity in business and it's referrals. That's the story." □

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# 'I'm Afraid I Have Bad News'

How do you know when a routine service call turns into a big bill for your customers?

By Jim Anderson and David Gustafson

**H**ow many times have you responded to a routine septic tank maintenance call only to find a problem that requires a significant repair or tank replacement? How do you as a service provider approach this situation with the homeowner? The homeowner first needs to be convinced further action must be taken; and once you get that far it is all about fixing the problem at the least cost, time and effort.

We are interested in hearing about some of your experiences in cases like these.

We'll share a few of our thoughts on repairing or replacing septic tank components. Some of these we feel are common-sense solutions while others are in a gray area with probably no right answer.

**The exposed rebar would indicate the tank is not structurally sound. If you find hairline cracks but no evidence of root penetration or deterioration of the concrete around the cracks, concrete repair products can be used to fill the cracks.**

## ACCESS ISSUES

As you excavate a concrete tank and remove the lid, concrete falls off the bottom of the lid into the tank and exposes the rusting rebar. At the very least, the lid needs to be replaced with one that is structurally sound. Similarly, if the manhole lid is cracked or splits into two pieces during removal to pump the tank, it should be replaced and not just set back into place and covered up when the pumping is finished. This would be a good time to talk with the homeowner about a system upgrade in terms of risers to the surface if they are not already present.

After pumping and upon inspection of the tank, check for cracks, deteriorating concrete and rebar in the tank itself. If these conditions are evident on the inside of the tank, it probably needs to be replaced. The exposed rebar would indicate the tank is not structurally sound. If you find hairline cracks but no evidence of root penetration or deterioration of the concrete around the cracks, concrete repair products can be used to fill the cracks. Whether this is your approach depends on the cost of taking the

cover off the entire tank and executing the repairs compared to the cost of installing a new, up-to-date tank.

It is important to highlight for the homeowner that the tank needs to be watertight to function properly, and it will not do so if the tank has cracks. Of course, there is also the possibility the tank will collapse, causing a safety hazard as well as probably coming at the worst possible time, such as a family reunion.

## DEFORMATION

For polyethylene or fiberglass tanks, any deformation or loss of shape indicates structural instability and necessary replacement. You'll identify this problem when removing the lid and finding the area around the manhole is not in the proper shape or the tank sidewalls are bowed in. Part of what makes these tanks structurally sound is their designed shape. If they are not holding that shape, it is time for replacement. The deformed tank is probably not watertight, the baffles are probably not in the right position and there is risk of collapse. No one wants to go by falling into a septic tank!

The "when to repair or replace" question becomes a little tougher when the only issue is deterioration or loss of either the inlet or outlet baffle. To answer the question, we need to consider the purpose of the baffles in the tank. The inlet baffle is critical for proper tank operation by directing incoming wastewater flow downward to the level of the clear zone. This dissipates the energy on the incoming flow, preventing turbulence that could put the settled solids back into suspension. It also ensures the wastewater has to flow in a circuitous path through the tank, allowing time for solids to settle. For that reason the inlet baffle should extend to a depth of at least 6 inches below the liquid surface in the tank but not more than 20 percent of the operating depth.

Outlet baffles must keep the floating solids or scum in the tank, preventing them from flowing directly to the next component in the system. Effluent screens are required in most places to trap larger solids in the tank. The outlet baffle also needs to extend down into the clear zone so outgoing effluent is drawn from the clear zone. This is generally thought to be a distance of 40 percent of the operating depth.

## BAFFLES BY THE NUMBERS

Both the inlet and outlet baffles must extend upward at least 6 inches



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and no closer than to within an inch of the tank lid. This keeps the scum in the tank and from clogging the inlet while allowing room for exchange and venting of gases.

Any problem with the baffles that interferes with these functions is cause for its repair or replacement. In older concrete tanks, this may be a difficult task, while at the same time keeping the tank watertight. If the tank is not watertight, it needs to be replaced. Simply replacing the baffles is not good enough. ❑

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# Onsite Reboot

The owners of an elementary school building repurposed as an assisted living facility require a creative solution for an aging septic system

By David Steinkraus

It was past time to replace the aging onsite system at an assisted living facility in Auburn, Michigan. The building had been constructed as a grade school. The original system was pressure distribution on demand, says Joel Kwiatkowski, a registered sanitarian and the sewage treatment and water supply coordinator for the Bay County Health Department.

The old system had a drainfield made of bottomless concrete infiltration chambers, with pipes inside it and stone around the pipes. “And they collapse, and then the pipes plug up. And it’s an old, old system. I don’t even have plans on it.” The county’s oldest plans date to the late 1960s. He found one permit for the property dated 1971.

In 2013, the original system probably began failing. That’s Kwiatkowski’s guess, because it didn’t come to the county’s attention until a couple of months later when effluent began flowing into a ditch. Until a proper replacement could be designed and installed, the drainfield was abandoned. The septic tank was used as a holding tank, and wastewater was pumped out when the tank was full.

## NEWER AND SMALLER

This was a relatively small project, so Kwiatkowski designed most of the replacement system himself, set the size parameters and then local engineering firm Axiom Consulting completed the drawings and detail work.

## SYSTEM PROFILE

<b>Location:</b>	Auburn, Michigan
<b>Facility served:</b>	Assisted living facility for up to 24 residents
<b>Designer:</b>	Joel Kwiatkowski/Axiom Consulting
<b>Installer:</b>	Walt’s Trucking, Pinconning, Michigan
<b>Type of system:</b>	Eljen Geotextile sand filter system
<b>Site conditions:</b>	Minimal slope, fine sand
<b>Hydraulic capacity:</b>	800 gpd

The collection pipe emerges from the south side of the facility, runs about 50 feet and discharges into two existing tanks, 3,000 gallons and 1,500 gallons. These tanks are connected by gravity flow and provide initial



**<< Opposite Page:** Eljen GSF B-43 units lie on top of a sand bed at the assisted living facility in Auburn, Michigan. Sand was placed directly on top of the grass after it was cut very short. At right is the 4-inch pipe that holds the 1 1/4-inch distribution pipes. The arrangement allows for easy access.

**RIGHT:** Marty DeRocco of Milan Supply Co., left, helps out with a junction box at one of the pump vaults for the assisted living facility. Members of the crew from installer Walt's Trucking and Excavating are Gary Garbulinski, second from left, Brian Garbulinski and Butch Lee. (Photos courtesy of Joel Kwiatkowski)



settling and treatment. Water flows out of the second tank through an Orenco Biotube filter and by gravity about 80 feet to a pair of 1,500-gallon Infiltrator poly tanks connected in series. These are for dosing and equalization.

A pair of Orenco Systems PF5005 vertical turbine pumps are set in the second of these two tanks and controlled by an Orenco panel set for time dosing. Kwiatkowski's goal is 15 to 16 doses per day with a four- to six-hour rest period overnight. A 2-inch force main takes effluent to a Zoeller mechanical valve with four outlets. Only two are in use at the moment, with the remaining two available in case of future need. Pipe diameter drops to 1 1/4 inches coming out of the valve and heading to the manifolds. The Eljen units are fed by that 1 1/4-inch pipe placed inside perforated 4-inch pipe on top of the units.

The filter is composed of 48 Eljen GSF B-43 units divided into two zones and placed on top of 12 inches of 2NS coarse sand. The zones are placed 2 feet apart, 5 feet on center. On top of the zones and pipes is a layer of Eljen's Geotextile fabric. On top of the fabric is 6 inches of sand, and on top of the sand is 4 inches of topsoil. The zones occupy a rectangle 18 feet wide by 48 feet long.



A pair of 1,500-gallon Infiltrator IM-1530 tanks serve as equalization and dosing tanks for the Eljen sand filter installed at an assisted living facility in Auburn, Michigan.

## FROST LINE

Because this property is in the east-central part of Michigan's lower peninsula, pipes are laid to drain so no water remains inside them to freeze. The Zoeller valve is above the manifold so it also drains. Any components that hold water above the frost line are insulated, Kwiatkowski says.

**"There was a lot of water coming in by the septic tanks because the water table is high there, but it was all surface water."**

**Brian Garbulinski**

The Eljen system works well in his area, Kwiatkowski says. The seasonal water table is only 12 to 18 inches below grade. Stone beds require a great deal of hauling and must be very large because the soils are mostly fine sand and of poor quality. The Eljen units provide treatment, and the sand below them provides more treatment, he says. Moreover, the units and poly tanks can be brought in on a trailer. Heavy equipment is not required except for moving the sand, and this system requires smaller beds so there is less transportation cost. They must be installed properly, he says. Their bottoms cannot remain wet, or anaerobic digestion begins and sand filters may become plugged.

The work was done by Brian and Gary Garbulinski, who are with their father's company, Walt's Trucking and Excavating, in Pinconning, Michigan. They used a Komatsu PC40 excavator and a Case 580L backhoe on the job.

"There was a lot of water coming in by the septic tanks because the water table is high there, but it was all surface water," Brian says. They dug a wider hole and tapered the sides for safety, then pumped it out. Once the hole was dry, there weren't any more issues complicating the installation.

"Everything went in easily. The digging wasn't bad because it's a sandy soil," Gary says.





**ABOVE:** The crew from Walt's Trucking and Excavating drops an Orenco Systems pump into place at the assisted living facility in Auburn, Michigan. In the black jacket at center is Joel Kwiatkowski, system designer and part of the Bay County Health Department.

**BELOW:** The crew from Walt's Trucking and Excavating installs an adapter ring for a riser and pump chamber in one of the tanks.



He says he'll be interested in seeing how the valve works placed above the frost line. "We packed foam peanuts in there for insulation, and it shouldn't freeze."

## CONSERVING FIRST

One preventive measure that took place above ground was a change in the facility's fixtures. At the time the system failed the facility was using about 3,000 gallons of water per day, as measured by a flowmeter Kwiatkowski required on the well serving the building. He suggested low-flow toilets,

faucets and showerheads. The owner installed those, and consumption dropped to 800 gallons per day. By spending a couple thousand dollars on new fixtures, the facility owner saved thousands of dollars on the project because the footprint of the new drainfield could be reduced, Kwiatkowski says.

The system is also slightly larger than would otherwise be called for because of the nature of the facility. The people served there take medications, and that means pharmaceutical traces in the wastewater. Kwiatkowski says he took that into account, used slightly larger Eljen units and generally increased the size of the system to process the pharmaceutical waste.

Kwiatkowski's design provides flexibility. If the facility expands or one of the zones partially fails, another zone can be easily added and connected to one of the unused outlets on the Zoeller valve. Laying the 1 1/4-inch pipe inside 4-inch provides easy maintenance access. Replacing a pressure line requires opening just the end of one zone, not opening the entire filter.

Kwiatkowski calls this a forever system. The components are less subject to failure than older systems, and anything that does fail can be easily replaced. "And we're providing treatment. Instead of getting rid of water, we're treating it." □

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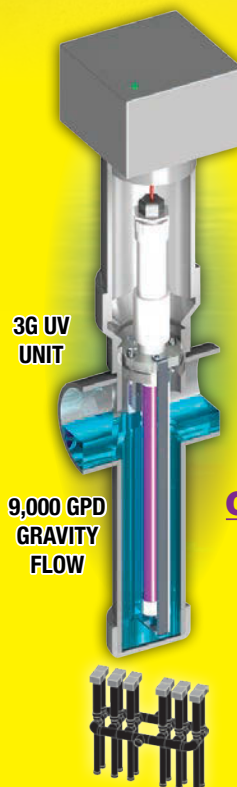


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# Louisiana Supreme Court: Restroom Rentals and Service Won't Be Taxed

By Doug Day

**T**he Louisiana Supreme Court has ruled in favor of a portable restroom company in a dispute over sales tax. Under the state's sales tax code, the lease of property is a taxable transaction, but waste collection and cleaning services are not taxable. Pot-O-Gold Rentals was assessed sales tax on the full value of contracts that involved both portable restroom rentals and cleaning/hauling services. The company had been charging the sales tax only on the leasing portion of such contracts.

A trial court issued a summary judgment in Pot-O-Gold's favor. That ruling was overturned by the Court of Appeals, which determined the entire transaction was taxable due to the "intertwined relationship" between the leasing and cleaning services. The Supreme Court, stating that tax laws should be interpreted liberally in favor of the taxpayer, overturned the Appeals Court, ruling the bundled rental and service transaction was not taxable at all. It supported its ruling by citing a state tax regulation dealing with garbage dumpsters in which neither the dumpster rental nor collection of waste is taxable.

"It is difficult to determine why one situation is treated differently than the other," the court stated. It also noted, "...to hold that providing cleaning services for portable toilets is not a taxable event if the toilet is owned by someone else, but is a taxable service if the toilet is owned by the lessor, creates an absurd result."

## MARYLAND

To help fund its Chesapeake Bay cleanup effort, Maryland already has a rain tax (stormwater) and a flush tax on both sewer and septic users. Next up could be a chicken tax of 5 cents on every bird placed on farms by poultry companies. Supporters say the proposal would help fund septic system improvements, the cover crop program and other measures aimed at improving water quality in the bay. Opponents say it singles out poultry companies and would cost five large poultry companies \$15 million and could hurt poultry farmers who raise the animals. A similar bill last year failed due to a veto threat from then-Gov. Martin O'Malley, who could not seek re-election due to the state's term limits.

## WISCONSIN

A provision in the Wisconsin state budget would end a program designed to help low-income people and small businesses replace or repair their failed septic systems. The Wisconsin Fund provided \$2.3 million in 2014 to help 654 property owners. All but five of the state's 72 counties participate in the program, which began in 1978. The proposal in Gov. Scott Walker's budget is subject to approval by the state Legislature.

## MISSOURI

Taney County spent \$73,335 in 2014 to pay for the pumping of 500 septic tanks and will continue the program. It was the first year the county offered to cover the full cost, an average of \$145, to make sure septic systems were being pumped properly. The fund utilized 1 percent of the revenue from a county .5 percent Wastewater Capital Improvements Sales Tax. The county has renewed an agreement with a local pumping company for 500 pumpouts again in 2015 with 70 homes already signed up due to a backlog from last year. A homeowner can only access the program every four years. The free pumping applies only to single-family residential properties.

## ALBERTA, CANADA

Helping homeowners manage their septic systems is the goal of a pilot program launched in early 2015 in the province of Alberta. "Septic Sense: Solutions for Rural Living" is sponsored by the Land Stewardship Centre and the Alberta Onsite Wastewater Management Association. The one-year program will implement, test and evaluate the feasibility of developing a full-fledged septic system operation and maintenance workshop program in Alberta.

According to an announcement of the program, it will "offer a range of educational opportunities and resource materials for landowners, including a workshop and a homeowner's guide developed by wastewater management experts that covers various types of ways to cost-effectively maintain a septic system." It is based on a similar program offered for years for private well owners. □

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# Need a Lift in the Shop?

When choosing a hoist to get under vehicles and equipment, let safety and ideal lifting capacity be your guide

By Ed Wodalski

**Y**ou've been using floor jacks and jack stands to work on your trucks and compact equipment. Tired of squeezing beneath vehicles, you're thinking about moving up to a lift. But how do you know which one to choose? Will a less expensive lift perform as well as a higher-priced model? What about a used lift? Are they safe? What should you look for?

Lifts come in various styles – in-ground, two-post surface-mounted, multi-post runway (four-post surface-mounted), low/mid-rise frame engaging, drive-on parallelogram, scissors and moveable wheel-engaging – and can vary in price from hundreds to thousands of dollars.

Before investing in a lift, determine how the lift will be used and where it will be located. Can your garage floor support the weight, is there enough ceiling height and how close is your power and air supply?

## LIFTING POWER

Certified in-ground and four-post above-ground lifts, designed to do so, can hoist their rated capacity, including a 33,000-pound vehicle. Certified mobile-column lifts, heavy-duty scissor lifts or parallelogram lifts are equally suited to the job.



Four-post surface-mounted lift. (Photo courtesy Mohawk Lift)

“Typically, when someone has buyer’s remorse it’s because they didn’t do their homework upfront,” says R.W. “Bob” O’Gorman, president of the Automotive Lift Institute in Cortland, New York. “For example, they purchased a 7,000-pound lift when a 12,000-pound lift was really needed. Perhaps a decision was made to buy a 12,000-pound lift when they needed an 18,000-pound lift. Examples like these are probably one of the biggest consumer issues we see. People buy a lift not really considering the capacity and application they will need.”

O’Gorman suggests visiting the institute’s FAQ ([www.autolift.org/faq.php](http://www.autolift.org/faq.php)) and Buyer Beware ([www.autolift.org/buyer\\_beware.php](http://www.autolift.org/buyer_beware.php)) pages to become better educated.

**“Typically, when someone has buyer’s remorse it’s because they didn’t do their homework upfront ... People buy a lift not really considering the capacity and application they will need.”**

R.W. “Bob” O’Gorman

## SAFETY FIRST

Unlike other tools in your shop that get used and abused, a lift is a safety item and should be viewed in this manner by the user, O’Gorman says. With thousands or tens of thousands of pounds overhead, you don’t want your lift to be a hazard. And while most lifts look the same, that doesn’t mean they are, even to the trained eye.

“In the U.S. and Canada we have the International Building Code, the National Electrical Code, health and safety regulations and product safety standards to help manufacturers address known hazards, such as electrical and mechanical safety considerations that should be built into the product before it leaves the factory,” says Dale W. Soos, senior project engineer for the Automotive Lift Institute.

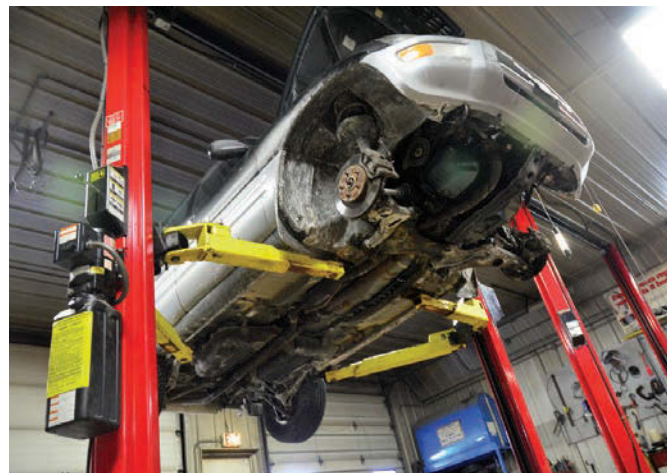
“A mandatory requirement compelling manufacturers to comply simply is not the case in some industries – automotive lifts are one such example. Therefore, if you are not careful, you get what you pay for in this market,” he





**LEFT:** Telescoping in-ground lift. (Photo courtesy Rotary Lift)

**BELOW:** Above-ground, surface-mounted lifts, typically bolted to the garage floor, are among today's most popular styles. (Photo by Ed Wodalski)



says. "Speaking as an engineer and a car guy, steel is a commodity. With this in mind, lower price most likely means less steel to some degree. That may be OK if the design is solid and the quality or quantity of the steel is not lower than that required by the design."

O'Gorman says one way to ensure the lift you are considering will perform as claimed is to look for the Automotive Lift Institute's Gold Certification Label.

ALI's vehicle lift certification program utilizes OSHA's Nationally Recognized Testing Laboratories to conduct its product safety evaluations and tests every lift model it certifies and deems eligible to bear ALI's certification label.

ALI's mission is to promote the safe design, construction, installation, inspection and use of automotive lifts. It is not involved in the pricing or sales of lifts.

## COUNTRY OF ORIGIN

When deciding on a lift, keep in mind that above-ground lifts sold in North America are manufactured in Canada, Europe, China and other Asian countries, as well as the United States. Rather than base your choice on country of origin, O'Gorman suggests focusing on important aspects of product performance and design, as well as material used, stress calculations and adherence to national requirements for safety and quality control, including a model's accessories and subcomponents.

"For those interested in the country of origin, a label declaring this information is mandatory for all lifts that comply with the ANSI/ALI ALCTV safety standard that is recognized throughout North America as the industry standard," he says.

## SECONDHAND OPTIONS

If you're considering a used lift, make sure it's in working condition and that it operates as intended by the manufacturer. For many, this might require obtaining the opinion of an experienced lift inspector. You don't want a safety hazard that puts you or your employees at risk.

"Was the lift removed after being found no longer fit for duty as a result of wear or some form of damage?" Soos says.

Depending on the age of the secondhand lift, it might not include some of today's safety features or meet installation code requirements. Before

relocating a lift or purchasing a used one, it's best to check with local code officials first – even if you're moving the lift from one location in the shop to another.

## INSTALL AND INSPECT

Installing a lift, especially an above-ground model, might seem like a weekend project; however, ALI recommends consulting a professional installation company before attempting to install a lift. If you are confident in your abilities and find local codes don't require a professional, proceed with caution and safety in mind, while following the manufacturer's instructions.

"We are aware of at least one professional installer with years of installation experience who was seriously injured after being pinned during a routine installation that was expected to be fairly easy," Soos says. "Save yourself the headache and obtain the services of a professional who has experience with the lift model you select."

Once installed, be sure you and your employees are properly trained on use and maintenance. Perform a daily check of fasteners and anchor bolts. Look for cracks in the concrete floor and for fluid leaks. And, at a minimum, have your lift safety inspected at least once a year.

## LIFT TYPES

Until the 1980s, most lifts were of the in-ground type. Today, surface-mounted lifts are a popular choice. Typically bolted to the floor, they are powered by an electric motor that operates either a hydraulic pump or screw drive. Here are a few models:

### Two-post, surface-mounted

The most popular type of surface-mounted lift purchased today, arms ride up each column and are synchronized mechanically, hydraulically or electronically.

### Multi-post runway

Commonly configured as a four-post, surface-mounted lift, the vehicle is driven onto two runways and lifted by the tires.

(continued on page 31)



# Submerged fixed film treatment system suits a wide range of flows

By Craig Mandli

**T**he ECOPOD-D advanced wastewater treatment system is versatile. That is the idea the staff from Pentair Flow Technologies wanted attendees at the 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show to take away after learning about the unit. According to Tim Smith, a regional sales manager with Pentair Flow Technologies, the unit can be used in many applications, from residential duplexes to large schools, subdivisions and even wastewater treatment for small communities.

“This is a system that can treat anywhere from 1,500 all the way up to 100,000 gallons per day,” says Smith. “It’s a great fit for an application that doesn’t have an operator looking it over daily. It only requires periodic attention.”

The ECOPOD-D is simple in design, requires minimal maintenance and is effective in treating BOD, TSS and nitrogen, according to Smith. The system is a larger, commercial version of Delta Environmental’s NSF-certified ECOPOD single-family residential unit.

“It is basically taking a proven system for residential wastewater treatment and expands the technology into larger applications,” says Smith. “It’s an all-in-one system that can be installed quickly and easily. It’s designed to serve as a replacement for standard package plants.”

It reduces nutrients in the wastewater as well as BOD and TSS in a single tank. The intra-tank bioreactor can be integrated into typical wastewater tanks, including steel, stainless steel or concrete structures. Its submerged fixed film process is marketed as stable, reliable and sturdy. It has an efficient removal process and is simple to operate, with no valves or controls to manage, Smith explains. It produces a low amount of sludge, helping reduce sludge-removal costs, he says. In addition, the unit produces no mixed liquor suspended solids, eliminating possible washouts. One unit can be installed to handle smaller, intermittent flows, while units can be installed in series to handle large flows.

“Because we’re talking about a modular unit, operating multiple ECOPOD-D units in succession can be a nice solution for larger flows,” says Smith. “Pentair feels that the decentralized wastewater treatment market has large growth potential, so our goal is to provide products that fit the largest need.”

Smith says development of the ECOPOD-D is a direct result of customers asking for a product that requires little operator oversight, and is equipped to meet the needs of changing discharge requirements. “Basically, as the laws change, a lot of people are looking for other options to adapt wastewater treatment,” he says. “This unit is great for them because of its



Tim Smith, right, a regional sales manager with Pentair Flow Technologies, talks about the features of the ECOPOD-D advanced wastewater treatment system with two attendees at the 2015 WWETT Show. (Photo by Craig Mandli)

high removal rate of BOD, TSS and nitrogen. When the company built this product, it not only looked at where the regulations are now, but where they’re predicted to go in the future.”

Smith was enthused by the traffic Pentair’s WWETT Show display received, and was especially excited by the number of installers who expressed interest in the ECOPOD-D unit. “We’ve had a lot of great questions this week, which tells me that this crowd likes to keep their fingers on the pulse of the industry,” he said during the show. “Those questions are great for our staff, too, because it gives us the chance to think about some custom solutions that may not necessarily be in our typical wheelhouse.”

Smith says Pentair is at work designing new products to tackle increasingly stringent regulations across the country. “Lately we are seeing a huge increase in the importance of phosphorus reduction, in addition to increased nitrogen reduction,” he says. “I think that’s the direction everyone is headed.” 800/219-9183; [www.deltaenvironmental.com](http://www.deltaenvironmental.com). □



(continued from page 29)

#### Low/mid-rise frame engaging

The lift operates in either a parallelogram style (fore or aft as it raises and lowers) or a scissors style that moves in a straight vertical direction. Lifts might be electric-hydraulic or powered by compressed air.

#### Drive-on parallelogram

The surface-mounted, drive-on lift (except low rise) raises the vehicle with two runways using a mechanism that moves a short distance fore or aft when raising or lowering, depending on how the lift is mounted.

#### Scissors

Using a mechanism similar to the parallelogram, the scissors lift raises and lowers the vehicle in a straight vertical path rather than fore or aft.

#### Moveable-type wheel-engaging

Traditionally used with longer, more unconventional vehicles, the lift utilizes individual columns in sets of two, four, six or more. A master control synchronizes the columns to operate in unison.

#### In-ground

Still a popular choice, pistons raise the vehicle with the lifting assembly located below the garage floor. ■

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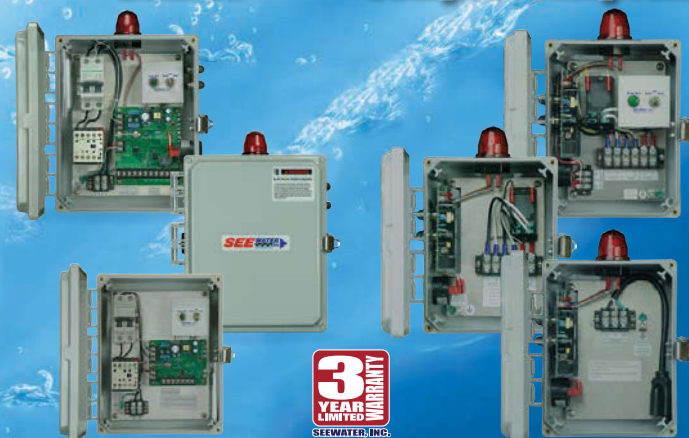
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# Changes Coming in Michigan

Preserving land application and retooling the sanitary code are on the agenda for two state wastewater associations

By Doug Day

**A**fter more than two years of work, onsite wastewater professionals in Michigan have a new law dealing with septage disposal. The law was signed by Gov. Rick Snyder in January and continues an exemption so haulers with certain storage tanks can continue to land-apply septage rather than having to use a local municipal treatment plant.

More changes are possible with an effort underway to pass statewide onsite wastewater rules. Joe Hall, president of the Michigan Septic Tank Association (MSTA), is one of those keeping an eye on proposals. Another is Ron Lindsay, vice president of the Michigan Onsite Wastewater Recycling Association (MOWRA).

The 65-year-old MSTA has about 240 members, mostly pumpers with some installers, portable restroom companies, vendors and equipment manufacturers. MOWRA started in 1995 and consists of installers, designers, service providers, inspectors, academics and regulators. In a given year, membership will range between 30 and 75, depending on the current hot issue affecting the industry, according to Lindsay.

## How does the new septage law help the industry?

**Hall:** It will take away a deadline for those who have a storage facility of 50,000 gallons or more and operate in a service area for a septage receiving facility. If that storage tank was erected or authorized before the service territory was created (a requirement for new receiving facilities), you do not have to take your septage to that facility and can continue to land-apply. The exemption had a sunset provision in 2025, so the bill takes away that sunset and allows land application to continue. (Current law also requires local governments that ban land application to offer a septage receiving station.)

The second half of the bill allows pumpers to take septage to a receiving facility in any service area in which they operate. There was a loophole in the law that allowed receiving facilities to require septage in their service area to be disposed of only at their facility.

To get the bill passed, we agreed to an amendment to allow mandatory disposal for existing plants until their debt is paid off. Grand Traverse County has an ordinance that any septage pumped in that county has to go to their facility. When they first built it, they had some construction problems, a holding tank wall collapsed, and they had to rebuild it. The disposal cost was 12 cents a gallon when they opened and has gone up to 18 cents. Jackson County has a similar ordinance and their cost is 21 cents.

**Joe Hall,**  
Michigan Septic Tank Association at  
989/808-8648 or  
[www.msta.biz](http://www.msta.biz)  
**MSTA**



**Ron Lindsay,**  
Michigan Onsite Wastewater Recycling  
Association at 989/205-2187 or  
[www.mowra.org](http://www.mowra.org)  
**MOWRA**

## There has also been talk of a new statewide sanitary code. Is that making any progress?

**Hall:** That should be coming up and hopefully passed this year. Some committees have formed and it's being talked about. Every local health district has its own sanitary code; there is no statewide code for them to follow. Installers are concerned because they have a different set of rules from county to county (and) that makes it confusing.

**Lindsay:** There has been talk for a number of years and it keeps getting stalled. It's a big initiative for this year. There's a lot of politics and various stakeholder groups involved. I think we do have a little bit better chance this time around. MOWRA is providing technical information. There is a need for uniformity as designers and installers work across county lines. Secondly, there is a big need for maintenance requirements for onsite systems in Michigan.

## What do your groups provide in the way of training?

**Hall:** Our biggest thing is education. Our annual wastewater conference in January offers continuing education credits toward the 30 needed for your pumper license renewal every five years. The conference is sponsored by our groups, along with the Michigan Department of Environmental Quality, the Department of Ecosystems and Agricultural Engineering, Michigan Water Environment Association, and Michigan Environmental Health Association.



**Lindsay:** The annual conference is MOWRA's biggest initiative. This last one was the 64th. We had about 500 attendees; about 120 regulators, 200 pumpers, 80 installers, 40 vendors and a mix of service providers, time-of-sale inspectors and system designers. Unlike the pumpers, the rest of the onsite wastewater professionals don't have requirements for certification and continuing education. We would like to see that as part of the bill for the statewide standards.

Some of our members serve with the Michigan State University Extension providing onsite wastewater training for onsite professionals. They just started that last year, primarily over the winter months at about a half dozen locations across the state. They also provide educational workshops for homeowners and other users of onsite systems.

Once or twice a year, MOWRA hosts educational field trips to various decentralized wastewater treatment/collection sites. Onsite professionals can learn about various advanced treatment systems firsthand by asking questions of the professionals that were involved with the project.

MOWRA will also help fund public service announcements by the Extension to help the public understand the importance of wastewater management and the need for a statewide code. That is just getting underway.

**"Talking to some of the health departments recently, they see the next year to be very strong. They're seeing a lot of activity as far as soil evaluations and so forth right now, so they anticipate an increase in work."**

Ron Lindsay

#### Is there any other legislation you are following?

**Hall:** House Bill 5939 was introduced last November by the Farm Bureau Association. MSTA opposes this bill that would allow farmers to service their own portable restrooms without having to obtain a Michigan Septage Haulers License. We're opposed because it would be more competition for haulers, and if we have to be licensed and go through all the education, farmers should have to do the same thing.

The bill didn't go anywhere in the last session and will have to be reintroduced. We've been in contact with the DEQ and the Farm Bureau and are going to set up some meetings to hash things out a little and hopefully get everybody on the same page.

We heard about the bill from DEQ. They wanted to know our opinion. I think there's probably some room for negotiation, but we definitely want them to get a license. Hopefully we can come up with something that is agreeable to everybody.

#### What does the future hold for the onsite industry?

**Lindsay:** With the economy, we're one of the first ones to slow down and one of the last to recover. During the last five years there has been a reduction in the number of onsite firms, and many of those that are still around downsized significantly. This past year has been tremendous for installers and designers. Most have been overwhelmed with the workload. People are kind of standing on the fence right now. Is this a trend that is going to continue or is it just pent-up demand? Talking to some of the health departments recently, they see the next year to be very strong. They're seeing a lot of activity as far as soil evaluations and so forth right now, so they anticipate an increase in work. □

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# Alarms, Controls and Monitor Systems

By Craig Mandli

Onsite systems can sometimes require alarm systems and level controls to warn homeowners of potential issues. Here are several options to ensure normal system operation.

## ALARMS

### Blue Diamond Pumps EnviroSure

Designed for biological aeration in domestic wastewater treatment units and ATUs, the EnviroSure alarm from Blue Diamond Pumps can be fitted or retrofitted to an aerator to detect low pressure or power outages. It has compact and lightweight housing and low power consumption to minimize operating costs. The alarm helps ensure systems meet wastewater flow regulations and avoid environmental hazards and fines, according to the maker. It comes in multiple versions, with options including a bright LED beacon, plug-in or hardwire to allow for versatile installation. 770/831-1122; [www.bluediamondpumps.com](http://www.bluediamondpumps.com).



### Polylok Filter Alarm (Smart Alarm)

The Filter Alarm (Smart Alarm) from Polylok is a wired indoor/outdoor filter alarm that activates when the filter cartridge is near capacity (approximately 90 percent full) on solids buildup. The switch, installed in the filter, sends a signal to the alarm panel, activating the audible and visual alarm to alert the home or business owner of needed servicing. It has a manual alarm test switch and horn silence, alarm horn rated at 82 decibels at 10 feet, and 15 feet of cable (with longer lengths available). It will fit Polylok, Zabel or Best filters. 800/701-3946; [www.polylok.com](http://www.polylok.com).



### Septic Products Observer 400

The Observer 400 indoor/outdoor high-water alarm from Septic Products includes a NEMA 4X polycarbonate, durable, weather-resistant enclosure, 360-degree red alarm light, alarm horn and an alarm test-normal-silence toggle switch and automatic alarm reset. It comes with an internal terminal block to connect incoming power, pump, pump float, alarm float and auxiliary contacts. A 6-foot 120 VAC power cord is optional. A mechanical float with a 15-foot cord and tie strap is standard, with other cord lengths and mercury floats available. It is UL-listed. 419/282-5933; [www.septicproducts.com](http://www.septicproducts.com).



### SJE-Rhombus Tank Alert EZ

The Tank Alert EZ indoor/outdoor alarm system from SJE-Rhombus has a removable cover that provides greater access for field wiring while the internal circuitry remains protected. The two-color molded enclosure integrates the red translucent LED beacon; the upper half illuminates and the horn sounds when an alarm condition occurs. Once the condition is clear, the alarm automatically resets. The enclosure meets Type 3R watertight standards and has a sound chamber to amplify the horn while helping prevent moisture from entering. External mounting tabs offer quick, easy installation. The alarm includes an alarm test/horn silence switch, green LED power-on indicator and auxiliary contacts for remote devices. It is CSA-certified. 888/342-5753; [www.sjerrhombus.com](http://www.sjerrhombus.com).



### Sump Alarm

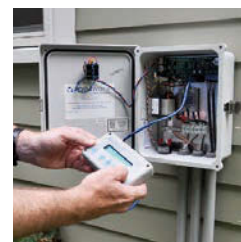
The Sump Alarm weatherproof high-water alarm is designed for simple and fast installation with no onsite wiring for septic tanks, lift stations and outdoor pump stations. Simply position the float switch, mount the head unit and plug into an outlet. It has a 1-inch LED pilot light visible from a distance with an integrated 90 dB alarm. It is available with a mercury-free float and cords in 10-, 16-, 33- and 100-foot lengths. This allows the alarm to be positioned near a secondary power source in a highly visible area, ideal for line-of-site installations. Units are available in 120 or 220 volt and are preassembled and suitable for extreme temperatures. Low-level models are also available. 314/787-8059; [www.sumpalarm.com](http://www.sumpalarm.com).



## LEVEL CONTROLS

### Aquaworx by Infiltrator IPC Panel

The Intelligent Pump Control (IPC) Panel from Aquaworx by Infiltrator leverages simple pressure transducer technology for the enhancement of pump system performance and ease of installation. Relying on an embedded microprocessor in the pump controller and a floatless pressure transducer in the pump chamber,





it monitors liquid levels, controls pumping time intervals and logs events in real time. The panel will store up to 4,000 events and calculate daily system flow. It uses the MARC user interface, a hand-held device designed to program the panel. Installers and service providers have the option of removing the unit to use on multiple panels. 800/221-4436; [www.infiltratorwater.com](http://www.infiltratorwater.com).

### Clarus Environmental timed-dose control panel

Timed-dose control panels from Clarus Environmental provide residential and commercial customers with a reliable means of controlling single-phase pumps in onsite installations. A programmable timer activates a magnetic motor contactor to turn the dose pumps on and off. A high- or low-water condition will override the timer to turn the pump on or keep the pump from running dry. An alarm float activates the audio/visual alarm system, indicating a high liquid level. Simplex or duplex models are available. Panels include a Test/Normal/Silence switch, which allows the horn and light to be tested or silenced in an alarm condition. 800/928-7867; [www.clarusenvironmental.com](http://www.clarusenvironmental.com).



### CSI Controls RK Series

RK Series control panels from CSI Controls have a NEMA 4X panel design incorporating common features onto the circuit board, sub-door and raised back panel. They offer increased user safety through a nonconductive molded polycarbonate inner sub-door, which provides space savings and convenient operator controls while isolating the user from electrified components. The sub-door control center includes LED indicators for control and alarm circuit power, pump-run indicator light, float status, external touch-to-silence pad and push-to-run hand button. They have a red flashing alarm beacon and horn, separate control and alarm fuses, lockable hasps, and raised terminal strip for easy installation. Simplex and duplex models are available for demand dose and timed dose applications, with options including digital display centers. They are UL/cUL-listed. 800/363-5842; [www.csicontrols.com](http://www.csicontrols.com).



### Jet Inc. Model 197

The Model 197 control panel from Jet Inc. can monitor single or dual aeration systems with selectable high- and low-amperage monitor settings. The panels have dedicated alarm and control circuits with separate power circuits for aeration devices. The panel contains three auxiliary 120-volt output circuits for external device control relays. They include three low-voltage auxiliary input circuits selectable for N/O or N/C alarm inputs. An integrated pump power control relay is automatically disabled in an auxiliary device alarm condition. A signal array includes a power indicator LED and four additional equipment alarm indicator LEDs. The integrated alarm buzzer has an output for an optional remote-mounted audible alarm. An external reset and internal master reset switch are standard. The panel has an alarm mode auto dialer and control interface, NEMA 4X enclosure and primary circuit fuse. 800/321-6960; [www.jetincorp.com](http://www.jetincorp.com).



### Orenco Systems 4-in-1 Controller

The 4-in-1 Controller from Orenco Systems supports numerous electrical configurations and dosing schedules within a single panel. Both simplex and duplex models are available and can be configured in the field for timed or demand dosing. While the control circuit operates on 120-volt power, the pump circuit is dual-rated for 120- or 240-volt power. The panels include a programmable logic controller (PLC) with multiple timing intervals for changing flow conditions and a built-in elapsed time meter and counter. The PLC displays float position and has a float error indicator. Each panel includes a reference chart to assist with troubleshooting during installation and testing, as well as wiring diagrams. 877/488-3594; [www.orenco.com/controls](http://www.orenco.com/controls).



### RH2O North America Click+Clean Control Panel

Click+Clean Control Panels from RH2O North America offer a remote monitoring solution using a cellular or Ethernet connection. Users can remotely monitor floats, level sensors, flowmeters, dissolved oxygen sensors and current draw of powered equipment. All data is logged in an online management system designed to manage multiple treatment plants. Periodic status updates and immediate alarms are reported to users via email. Data regarding flow rates is graphed to diagnose potential flow problems. Users can remotely control run modes and times for up to eight powered devices and configure alarms. 519/648-3475; [www.rh2o.com](http://www.rh2o.com).



### See Water Simple Simplex 3 (SSP-3) Plugger

The Simple Simplex 3 (SSP-3) Plugger control panel from See Water includes a 120-volt receptacle for quick and easy installation of the pump/pump switch. It includes an 8- by 6- by 4-inch NEMA 4X indoor/outdoor enclosure, red beacon alarm light, 85 dB buzzer, alarm test and silence buttons. 888/733-9283; [www.seewaterinc.com](http://www.seewaterinc.com).



### Septronics exterior pump control

Septronics offers an exterior pump control with an interior alarm that comes with a hand-off auto switch. Operators can turn the power to the pump totally off and run the pump manually with the flip of the toggle switch, or put it on automatic to run via the float switch in the tank. Plug in the pump, plug in the pump switch (single or double float) and wire the automatic reset interior alarm low-voltage line to carry the alarm float information back to the main power supply along with the power line supply for the pump. It's kept safe in a NEMA junction box mounted on the pedestal and includes a hook-up package for the tank. 262/567-9030; [www.septronicsinc.com](http://www.septronicsinc.com). □



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Arkansas Onsite Wastewater Association;  
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## California

California Onsite Wastewater Association;  
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Delaware On-Site Wastewater Recycling Association;  
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## Florida

Florida Onsite Wastewater Association;  
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Onsite Wastewater Association of Idaho;  
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## Illinois

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## Indiana

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Michigan Septic Tank Association;  
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## Missouri

Missouri Smallflows Organization;  
[www.mosmallflows.org](http://www.mosmallflows.org);  
417/739-4100

## Nebraska

Nebraska On-site Waste Water Association;  
[www.nowwa.org](http://www.nowwa.org); 402/476-0162

## New Hampshire

New Hampshire Association of Septage Haulers;  
[www.nhash.com](http://www.nhash.com); 603/831-8670

Granite State Designers and Installers Association;  
[www.gsdia.org](http://www.gsdia.org); 603/228-1231

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Professional Onsite Wastewater Reuse Association of New Mexico;  
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Long Island Liquid Waste Association, Inc.;  
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North Carolina Septic Tank Association;  
[www.ncsta.net](http://www.ncsta.net); 336/416-3564

North Carolina Portable Toilet Group;  
[www.ncportabletoiletgroup.org](http://www.ncportabletoiletgroup.org);  
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North Carolina Pumper Group;  
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## Ohio

Ohio Onsite Wastewater Association;  
[www.ohioonsite.org](http://www.ohioonsite.org);  
866/843-4429

## Oregon

Oregon Onsite Wastewater Association;  
[www.o2wa.org](http://www.o2wa.org); 541/389-6692

## Pennsylvania

Pennsylvania Association of Sewage Enforcement Officers;  
[www.pa-seo.org](http://www.pa-seo.org); 717/761-8648



**Pennsylvania Onsite Wastewater Recycling Association;**  
www.powra.org

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

## Tennessee

**Tennessee Onsite Wastewater Association;**  
www.tnonsite.org

## Texas

**Texas On-Site Wastewater Association;**  
www.txowa.org; 888/398-7188

## Virginia

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

## Washington

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

## Wisconsin

**Wisconsin Onsite Water Recycling Association;**  
www.wowra.com; 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

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

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## Manitoba

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www.mowma.org; 877/489-7471

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www.owsim.com; 204/771-0455

## New Brunswick

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

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## Clarus recirculating media filter

The recirculating media filter from Clarus Environmental Products is designed for use in decentralized wastewater treatment applications where the effluent quality must meet or exceed secondary treatment standards. Treatment occurs below grade as fluid trickles through pore spaces in the media where aerobic organisms feed on nutrients. Treatment capacities range from 450 gpd to over 36,000 gpd. Multiple RMFs can be used together when greater capacities are needed. Effluent can be discharged above or below ground. 800/928-7867; [www.clarusenvironmental.com](http://www.clarusenvironmental.com).



## LiftGator removable lift gate

The LiftGator removable lift gate from Superior Solutions Mfg. attaches to the hitch receiver of a truck. Powered by the 12-volt truck battery and 3.9 hp motor, the folding, 48-inch aluminum gate can be installed by an individual in about three minutes. Capable of lifting 1,000 pounds with the push of a button, the wheeled, freestanding gate can be rolled into place for easy installation. 805/448-7183; [www.liftgator.com](http://www.liftgator.com). □



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## SJE-Rhombus acquires ICS Healy-Ruff

SJE-Rhombus acquired ICS Healy-Ruff, manufacturer and integrator of control systems for municipal water and wastewater. ICS Healy-Ruff will become part of PRIMEX, the SJE-Rhombus business dedicated to engineered water control systems.

## VARCo adds vacuum pump repairs, rebuilds

VARCo, supplier of hose, valves, vacuum pumps, restroom chemicals and vacuum truck components for the liquid waste industry, has added vacuum pump repairs and rebuilds.

## Jet director of product development passes away

Trent Lydic, 40, director of product development at Jet Inc., passed away June 7 from a heart attack. Lydic was president of the Ohio Onsite Wastewater Association, a frequent participant in National Onsite Wastewater Recycling Association conferences and served on industry committees including the National Sanitation Foundation Joint Committee for Wastewater Treatment, the National Precast Concrete Association Onsite Wastewater Product Committee, the State Onsite Regulators Alliance Captains of Industry Forum, the Ohio Sewage Rule Advisory Committee and the Ohio Department of Health's Technical Advisory Committee.

"He was one of the greatest minds and kindest personalities in our industry," says Chris Mandich, sales manager, Americas at Jet Inc. "He will be missed by many."

He is survived by his wife, Beth, and children Charlie, Tommy and Penny. A scholarship fund to assist the family has been established at [www.gofundme.com/lydicfamilyfund](http://www.gofundme.com/lydicfamilyfund). □



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The industry leader in effluent filter technology is pleased to introduce our latest effluent filter offering. The new PL-250 6" Effluent Filter is now available. This filter was designed using our more than 90 years of combined effluent filter experience. Our 6" filter offers greater surface area to handle more gallons per day while also extending the time between tank cleanings. The PL-250 offers 250 linear feet of filtration. Like our other filters, installation is easy!

Polylok, Inc. is recognized as the industry leader in effluent filter technology. With our proven track record, you can't go wrong. We offer three unique filter lines: Polylok, Zabel and Best. All of our filters are designed with functionality and longevity in mind. The PL-250 incorporates nearly a century of experience in its design.



## FEATURES & BENEFITS

- Accepts 1" PVC handle
- 250 linear feet of filtration
- 6" diameter
- Rated for 3,000 GPD
- 550 SQ.IN. of total surface area
- "W" design prevents solids from settling
- Can not be installed incorrectly



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