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# Not Standing Still

**Megeath Contracting embraces change to keep the business growing and work life exciting**

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**24** **COVER STORY**  
**Not Standing Still**

By Gil Longwell

**ON THE COVER:** To Art Megeath, owner of Arthur Megeath Contracting in Front Royal, Va., change is an ally. He embraces it as a way to grow his skills and his business and to keep life interesting on the job. Here, his employee son Evan works on a control panel as part of an advanced system installation. (Photo by Gil Longwell)

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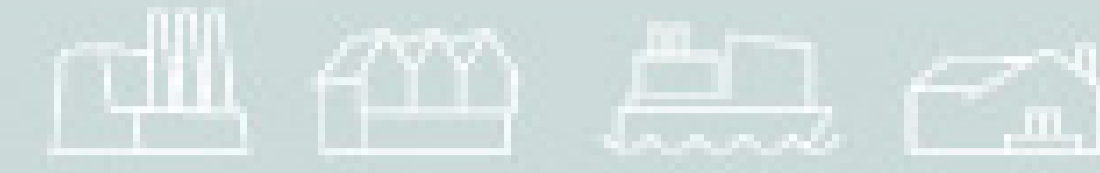
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2008 Pumper & Cleaner Environmental Expo International.

# Extend Your Hand

The people you meet at the Pumper & Cleaner Expo might help you solve a nagging problem or give you business ideas worth their weight in gold

By Ted J. Rulseh

A friend of mine calls it the Three-Foot Rule. It means that when he's at a trade show, if you come within three feet of him, he's offering to shake your hand.

It's a good rule to observe at the 29th Annual Pumper & Cleaner Environmental Expo International, Feb. 25-28 in Louisville, Ky. You don't go to the Expo (or any other trade show) just to take classes and kick tires. A big reason to go — maybe the biggest — is to meet people who can help your business and who may become your friends.

The most helpful person you meet at the Expo may not be an exhibitor or a seminar presenter. He or she may be another attendee you meet while standing in line, grabbing lunch at a food stand, or enjoying an evening meal at a downtown nightspot.

You'll have lots of chances to extend your hand at the Expo,

which again includes more than 600,000 square feet of exhibit space, a full education lineup, top-quality entertainment and tailor-made opportunities for networking.

## All-day networking

"The great thing about a trade show is that you get to meet people who are in your business, but are not your competitors," says Bob Kendall, owner of COLE Publishing. "You'll meet people from other states or even other countries who have the same challenges and the same problems as you do."

"The person standing next to you at an exhibitor's display may have the answer to a problem you've been struggling with for years. Or maybe an idea that you can put to work when you get back home and start earning more profit. You'll never know unless you introduce yourself."

Networking starts on the exhibit

**"The person standing next to you at an exhibitor's display may have the answer to a problem you've been struggling with for years. Or maybe an idea that you can put to work when you get back home and start earning more profit. You'll never know unless you introduce yourself."**

— Bob Kendall

floor, where you can meet the people who design and build the equipment you use and the new technologies you're considering. A member of an exhibitor's team could become an informal advisor who helps your business for years.

On Education Day and at other seminars, don't just walk out when the presentation is over. Stick around for the questions and answers. Then go talk one-on-one with the presenter.

All day, whatever you're doing, take every reasonable chance to say hello. Don't just hang out with your

own team. Mingle. Shake hands. Sit down at a lunch table with someone you've never met. Start a conversation. See where it leads.

## The places to be

Besides on-the-fly networking, the Expo gives you venues made for bringing business people together.

**COLE Pub.** This popular feature of the 2008 Expo is back, better than before. Here, in the open space outside the exhibit hall, you'll find a perfect place to share a snack and refreshments after show hours and

before you head back to the hotel.

A bar will encircle the custom-built Whiskey Runner truck with its 2,000-gallon wooden bourbon barrel. Vendors will serve a variety of finger food and appetizers. Seating will be set up in clusters. It's an inviting place to strike up a conversation.

**Industry Appreciation and Networking Party.** This Expo tradition opens after show hours on Thursday evening in the COLE Pub area. For two hours, you can enjoy beverages, light snacks and entertainment while meeting up with interesting people in our industry.

**Wine and Cheese Party and Fashion Show.** Designed for women, this first-time event will be held on Thursday afternoon in a meeting room on the upper floor of the convention center. It's a chance to share the special challenges of being a woman business owner or manager, or working in a business with a spouse.

**Hospitality events.** Many Expo exhibitors hold private hospitalities throughout the days of the

show. Most are by invitation only — but if you're invited, by all means, go. You can bet that most invited guests are leaders in their fields. Enjoy their company, find out what they can teach you, and share your secrets, too.

**Remember the rule**

The Expo is the largest annual show of its kind for environmental service professionals, and it only comes around once per year.

"Networking helps you make the most of the time and money you spend," Kendall observes. "In fact, just one good contact can return your investment many times over. Many regular Expo attendees know this from experience."

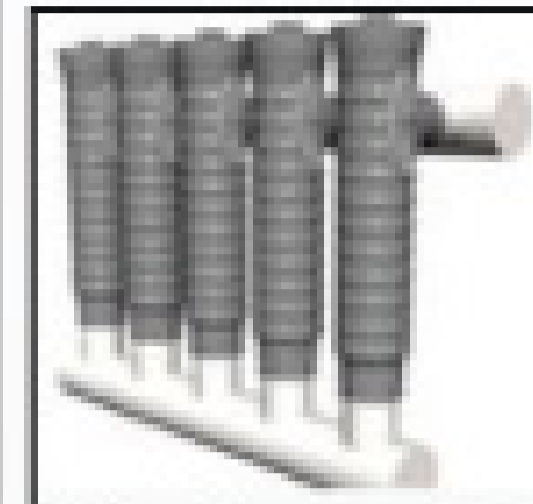
Look for details about the Expo in the special pages in this magazine. The early Expo registration fee of \$40 applies until Jan. 23. Registration at the door is \$60. To find out more, visit [www.pumpershow.com](http://www.pumpershow.com) or call 800/257-7222.

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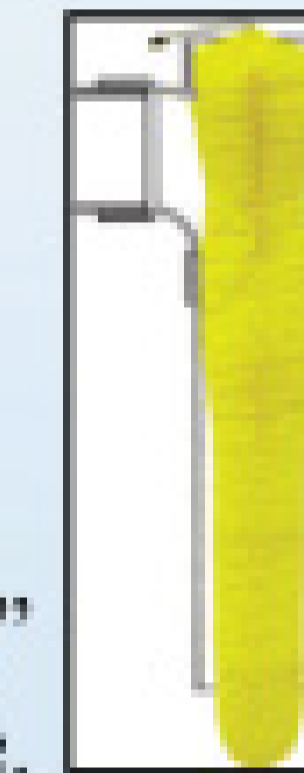


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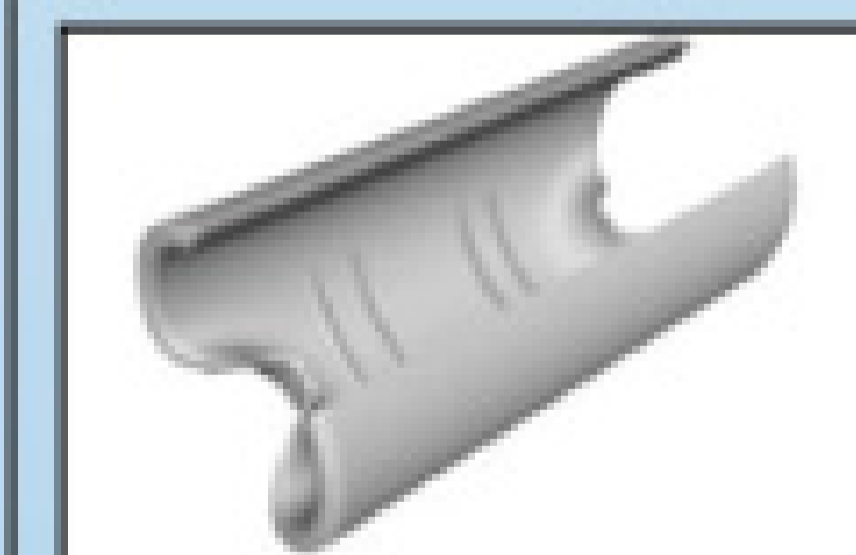
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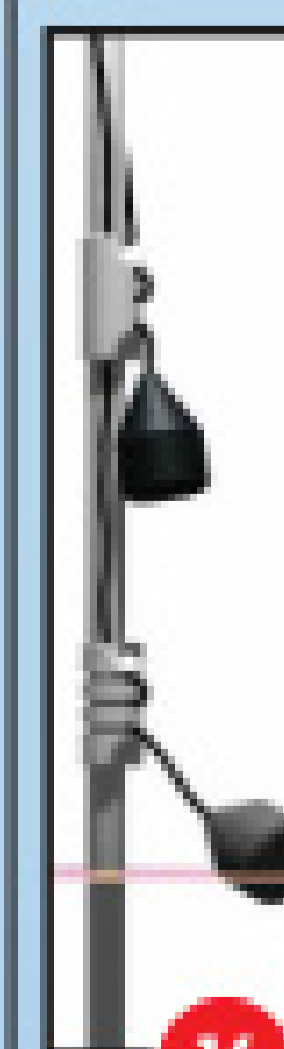
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## Simple Tools, Simple Truths

Some of the most obvious methods for improving onsite treatment systems are by no means universal in their application. Why should that be?

By Ted J. Rulseh

Everyone seems to know it: Effluent filters at septic tank outlets help extend drainfield life. And a water meter upstream in the house can provide information that helps the owner prevent hydraulic overload.

But does anyone care to guess what percentage of onsite treatment systems have effluent filters? Water meters? Both? My hunch is that the rough answers would be: A fairly high number, mighty few, and next to none.

Why should that be?

### Proven benefits

This issue of *Onsite Installer* includes separate articles that make a compelling case for both these simple tools. Matt Byers and Randy Dyer argue that the industry needs to promote effluent filters to homeowners and regulators alike.

Albert Royster, meanwhile, looks beyond water meters that simply measure total mass flow into the home toward newer technologies that could measure actual flow down the house sewer lateral. That's obviously a truer way to measure what actually flows to the septic tank and ultimately to the drainfield.

The technology Royster talks about is perhaps somewhat futuristic. The basic concept of water meters in homes with septic systems has been around for years. It just doesn't seem to get applied very often in practice.

So one has to ask: Why would an installer who wants to serve customers well *not* install an effluent filter and a water meter? Two of the greatest dangers to an onsite

system are drainfield plugging and hydraulic overload. A filter helps prevent one and a water meter helps prevent the other. Neither is costly. So why not include them?

### Social resistance

Byers and Dyer argue that many homeowners consider effluent filters a nuisance — they can plug prematurely and they require maintenance. As for water meters, I can't prove it, but I believe many home-

**It therefore seems the resistance to effluent filters and water meters has to do not with science or technology but with social factors. That doesn't make the resistance less real. In fact, it probably makes it tougher to overcome. We human beings are stubborn creatures, especially when it comes to being asked to change our comfortable habits.**

owners want no part of anything that restricts their water usage. They never had such restrictions when they lived in the city (unless they lived in an arid, water-scarce region). So why should they have them in the country?

It therefore seems the resistance to effluent filters and water meters has to do not with science or technology but with social factors. That doesn't make the resistance less real. In fact, it probably makes it tougher to overcome. We human beings are stubborn creatures, especially when it comes to being asked to change our comfortable habits.

So what's to be done? It's hard to argue with what Byers and Dyer suggest, which is that the onsite

industry has to take the lead. Why the industry? Because who else will? There is no possibility of anyone else taking up this challenge.

### Who is the industry?

And what does taking up the challenge mean? It means industry members and associations working to move regulators in the direction of these simple accessories. But it also means individual installers showing leadership in their markets.

care his industry recommends, and if they didn't want to accept that, they could find another dentist. So it's two checkups and cleanings per year, X-rays when warranted, and so forth. His way or the highway. His practice does fine — better than before he took the hard line.

Where are the installers who will draw that sort of line? It's in the customer's interests to filter effluent and monitor water usage. So every system gets a filter and a meter. A tough sell? Maybe. Effective? In the hands of a good communicator, probably. If a dentist can do it, why not an onsite professional?

As it stands, many onsite professionals give in to their customers' resistance, or don't bring the issues up at all. Which is another way of saying that instead of taking care of customers' systems as they know they should, they leave those customers to their own devices. That in turn leads too often to neglect.

Why should that be? Why indeed? ■

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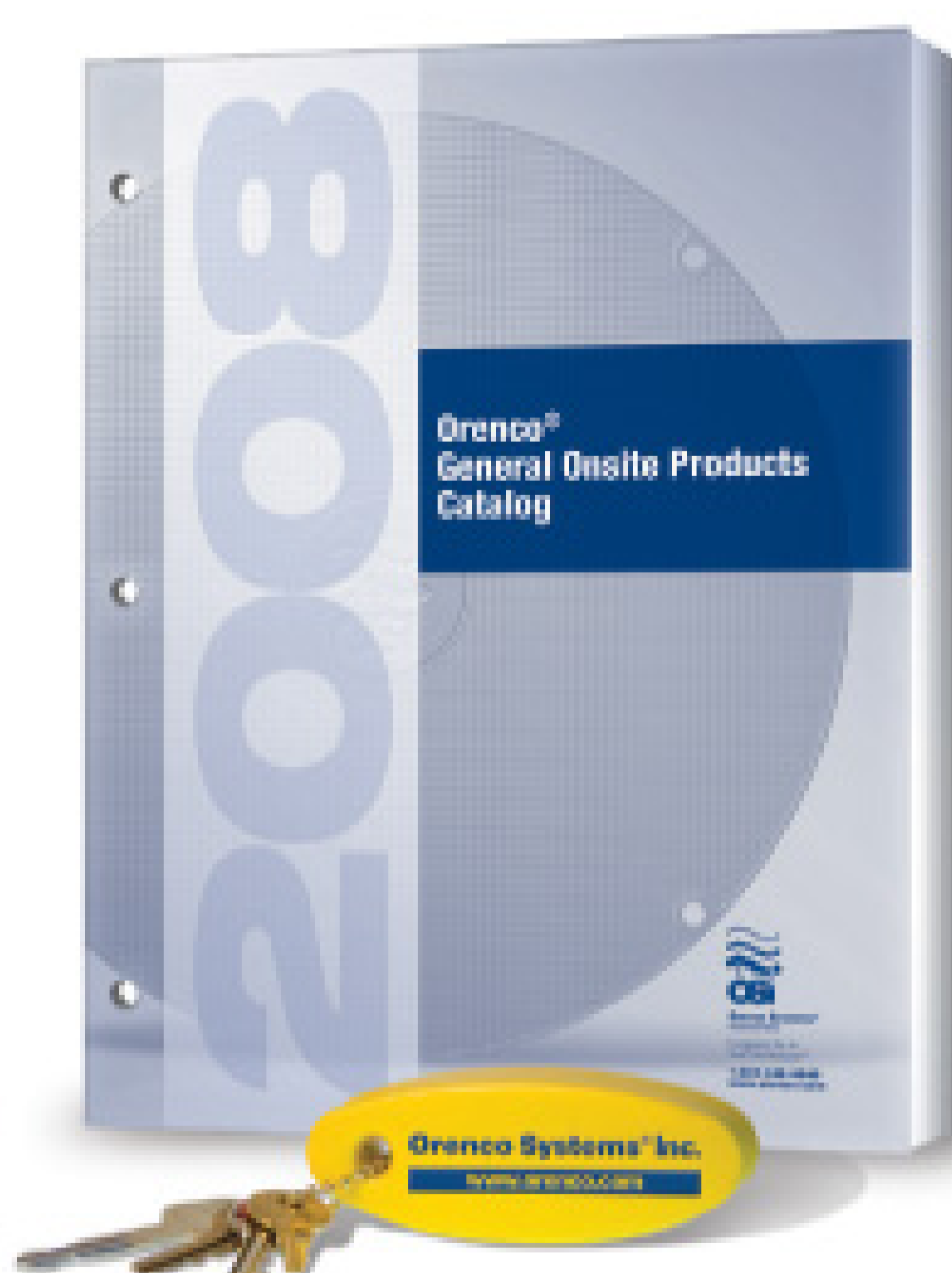
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*Jim Anderson and David Gustafson are with the University of Minnesota's widely recognized onsite wastewater treatment education program. Anderson is director of the university's Water Resources Center and Gustafson is the university's extension onsite sewage treatment educator. Readers are welcome to submit questions or article suggestions to them at [ander045@umn.edu](mailto:ander045@umn.edu).*

# Working With Inspectors

**It's all about being a professional, which means doing good work, understanding the rules and technology, and keeping a cool head**

**By Jim Anderson, Ph.D., and David Gustafson, P.E.**

**T**he crew is finishing up the system and the new inspector shows up for the final inspection. This can be a time of stress and worry, because you are not sure what this inspector knows and doesn't know, or how he or she will react to necessary changes you made during the installation.

At this point, the inspection can go in a number of directions, and many times you may feel you have no way to avoid a problem. Being the professional at all times is the first step. It is also good to remember that inspectors, too, have a job to do and will try to do it to the best of their ability.

## **Inspector's goal**

The first thing to realize is that you can make yourself part of the problem if you try to sneak changes to the system past the inspector. The goal of the inspection is to make sure the system is installed according to the rules and regulations and in a manner that will ensure its long-term operation.

If you are an installer who only works on the weekends to avoid inspectors, the advice presented here will have little value. In fact, in that event, you are a big part of the problem, and you really need to move into another line of work.

You need to follow the rules for the installation — the location, sizing and design — that are established by the state, enhanced by the local government, and approved by the

local inspector. If the system doesn't meet the setbacks on the site, crossing your fingers and hoping the inspector doesn't notice is not a good plan for resolving the issues.

As a professional installer, you should meet the requirements as a matter of course, and the inspector should not even have to worry about deviations at your sites. He or she should have confidence that you pay close attention to details and always do things right. It only takes one instance of trying to sneak something through to damage a relationship with your inspector for a long time.

That means even on jobs where you have done everything according to the book, you are in line for extra scrutiny. Instead, you and your crews should set an example for what systems should be like after every project is finished.

## **Involve designers**

If you cannot follow the original design, you should contact the designer for the changes. We have seen a situation where the installer called about the property lines on a site. The owner and the county had identified that the lines were just south of the big oak tree, and the design had used that information to locate the system.

As the installer started working on the site, he saw he would be tight to the property line and recommended it be surveyed. There was no survey available for this



**Working with an inspector can help ensure that proper setbacks are maintained and followed when a system is installed. (Photo courtesy of Arizona Department of Environmental Quality)**

smaller lake property. The county inspector said not to worry, since the county had just added GIS capability (a computer-generated survey). Still, the installer was concerned and actually volunteered to pay for the survey in the event he was proven wrong.

The owner paid for the survey, and it showed that the property line was really north of the tree. The system as designed would have been on the neighbor's yard. And we all know how expensive an issue like that can become.

The installer here was the hero for all involved. The key to avoiding problems was his professionalism

in verifying the property line and coming up with a solution by offering to cover the costs if it had turned out the survey had not been necessary. The local inspector still thanks this installer — and this happened five years ago. Professionalism is noticed, appreciated and rewarded.

## **Knowing the rules**

All of these concerns start with understanding the rules and regulations. This used to be much easier, as the codes were simpler and more straightforward. Available sites were limited, and the choices for systems were fewer. Many see that as the



“good old days,” and they may be right, but there is no going back.

Working through the implications and applications of new codes is important. More important is your company working out where you fit within the new regulations and becoming experts in applying them.

For example, if your company is going to focus on difficult small-lot systems, you must work with the inspector to understand how your systems fit into the rule and, more importantly, how your systems solve the problems. If inspectors can understand your approach, it becomes much easier for them to approve your solution.

Remember also that if the rules have changed, the inspector may be learning right along with you at the site. Being patient and clear with your answers can go a long way for a positive outcome.

Another critical skill is to completely understand the design and treatment process involved with the kinds of systems you install. This

means being able to describe the operation to the owner and the inspector. Many times, the inspector has heard about the technology or system but has not seen it installed.

This design-to-field implementation is an important step that is difficult for many people to understand. Taking the time to help the inspector understand the system can pay dividends in the long run,

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**We like to remind people that swearing and yelling do not make you right, and if you are right, a clear explanation will bring this to light faster than cursing.**

---

as the inspector becomes better at reviewing similar systems on other sites. The time you invest pays off for everyone in the industry.

#### **Knowing personalities**

The last part of the discussion is the multiple personalities at the site. Realize that everyone has a

personality, and the rub where yours and theirs come together can be a problem. Stepping back from who is there and focusing on the system and site can minimize the friction.

We like to remind people that swearing and yelling do not make you right, and if you are right, a clear explanation will bring this to light faster than cursing. The other side of this was brought home

recently when we met an inspector on a site who was carrying a weapon for his work.

Just this spring here in Minnesota, a person entered a planning and zoning meeting with a gun and held the board hostage until the SWAT team could enter the building. This is not where we want to be

as an industry or as professionals — where we have intimidated people to fear for their safety!

The local inspector packing heat just highlighted that it is critical to work professionally with these people, and that this is essential if the industry is to move forward. A big part of being a professional means doing good work, understanding the rules and technology, and being part of the solution by keeping a cool head at inspections or other interactions. ■

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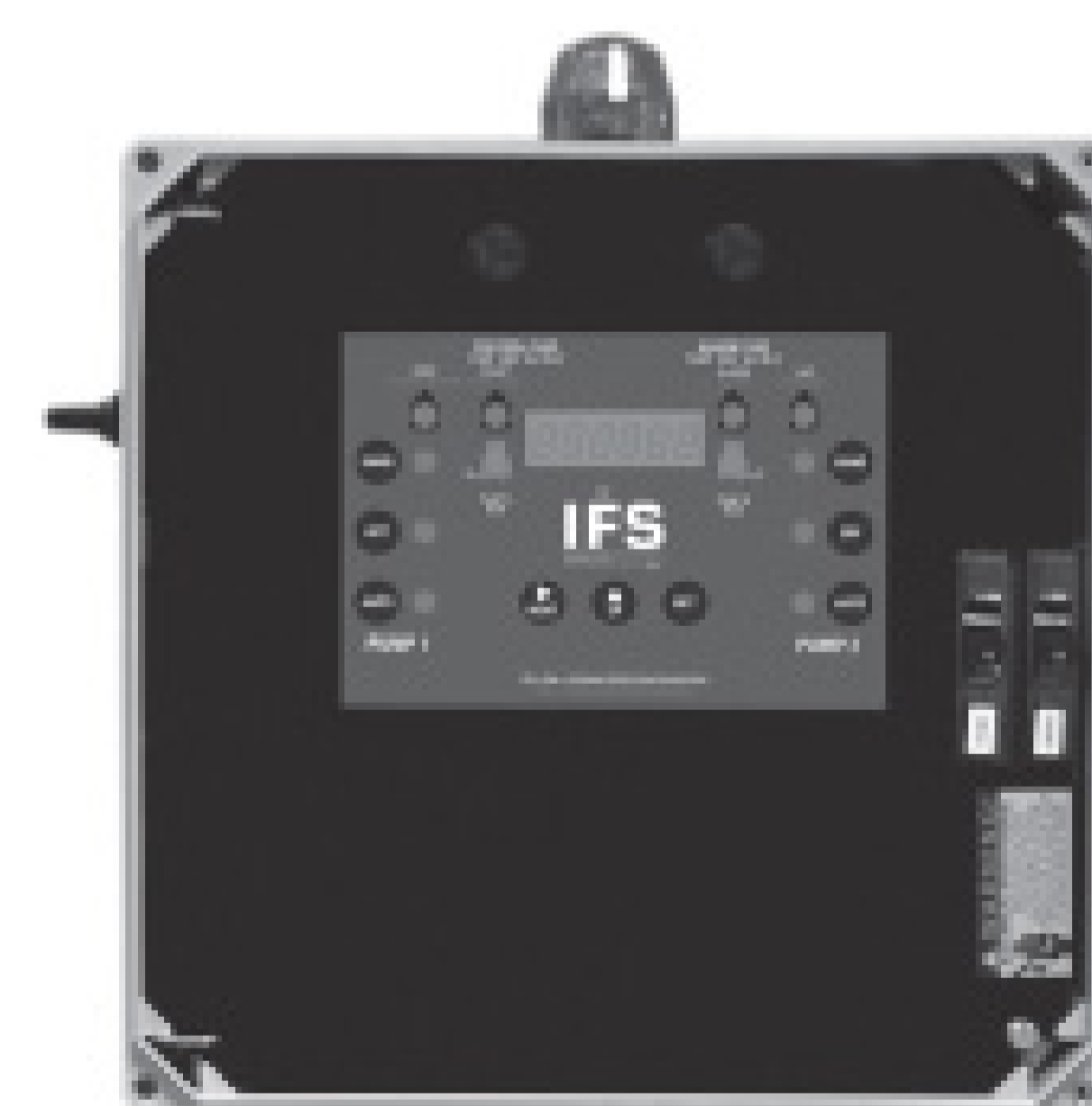
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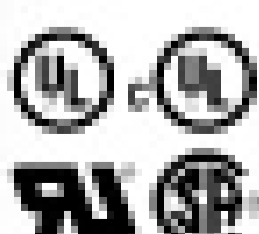
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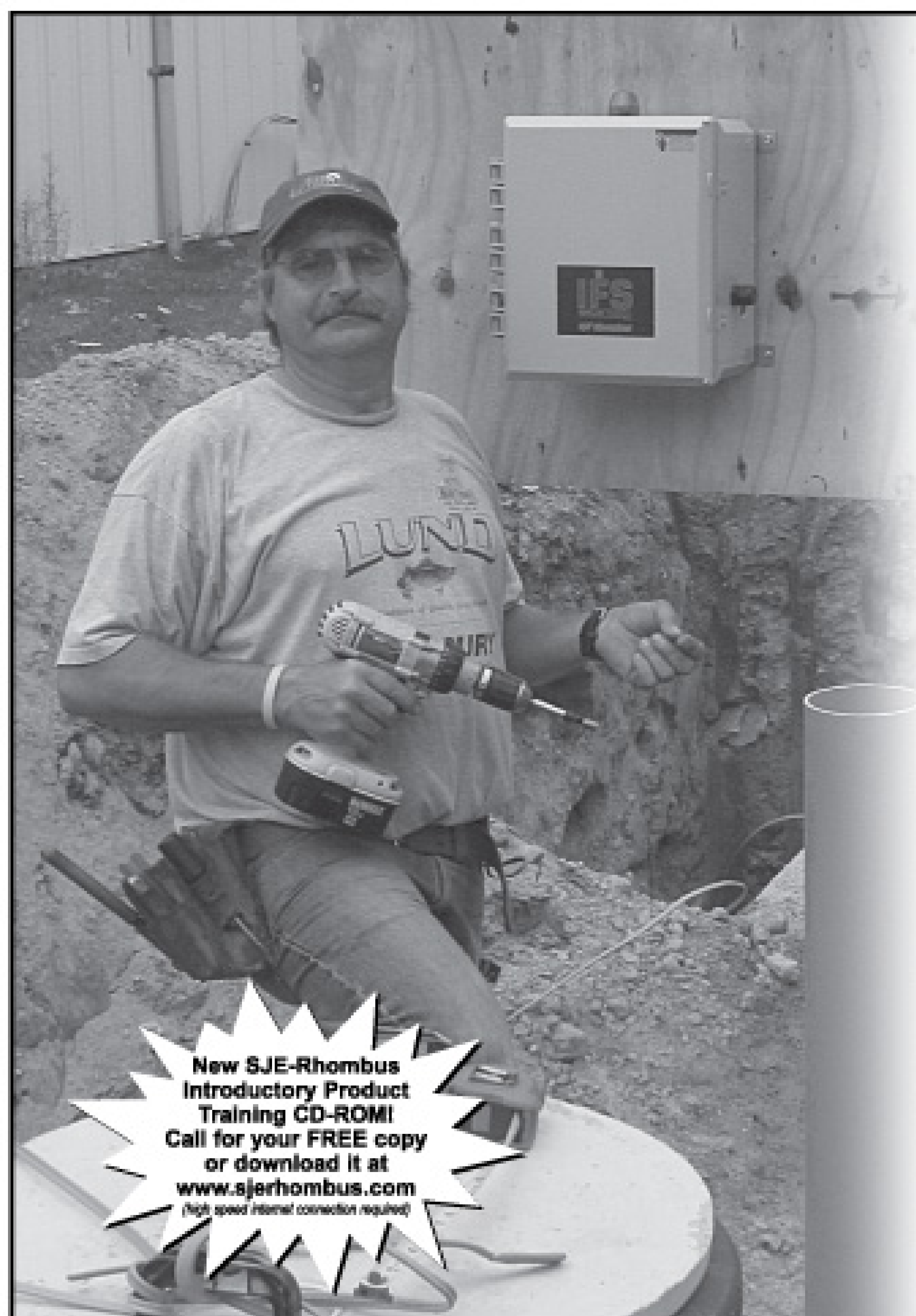


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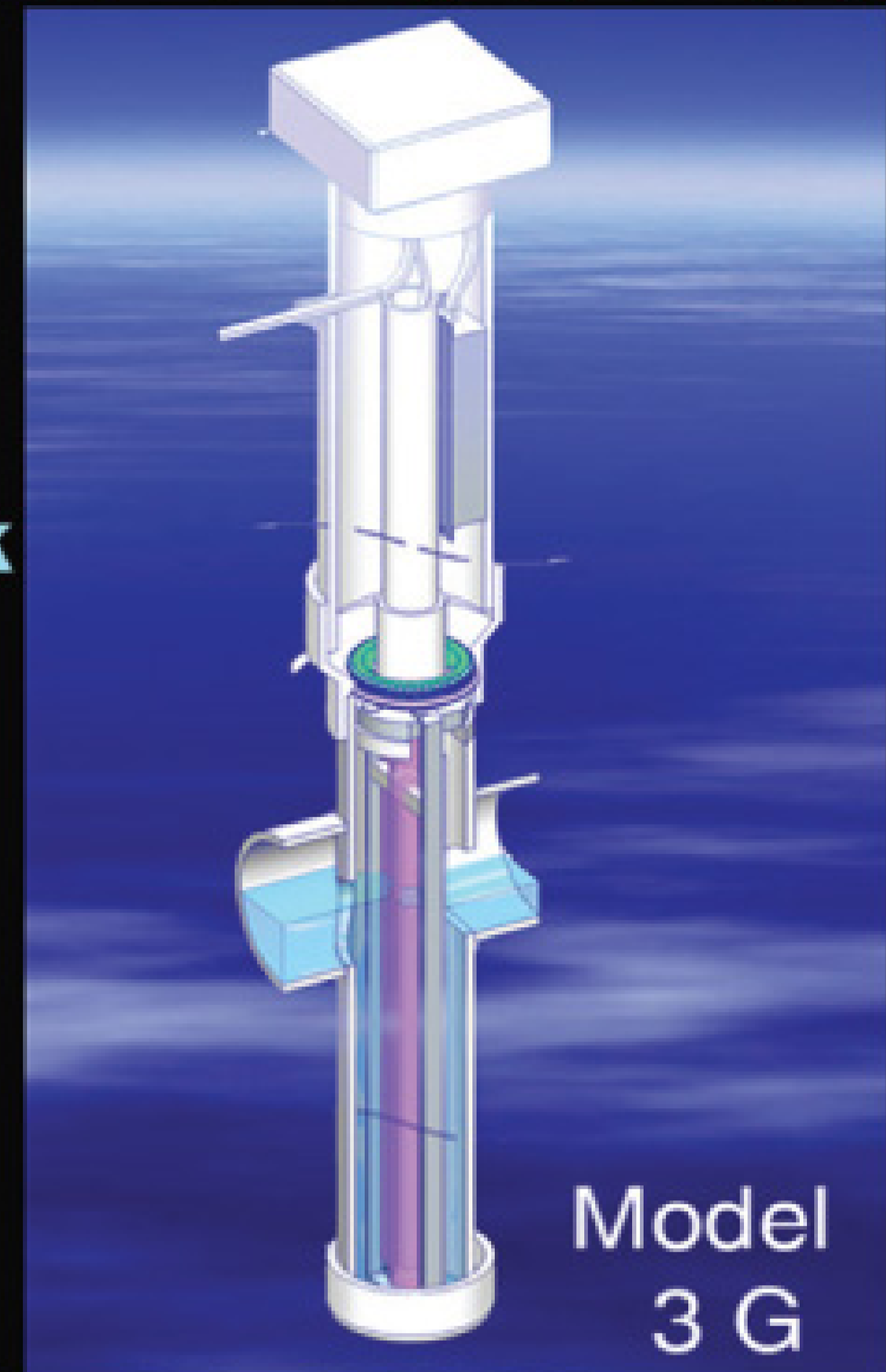


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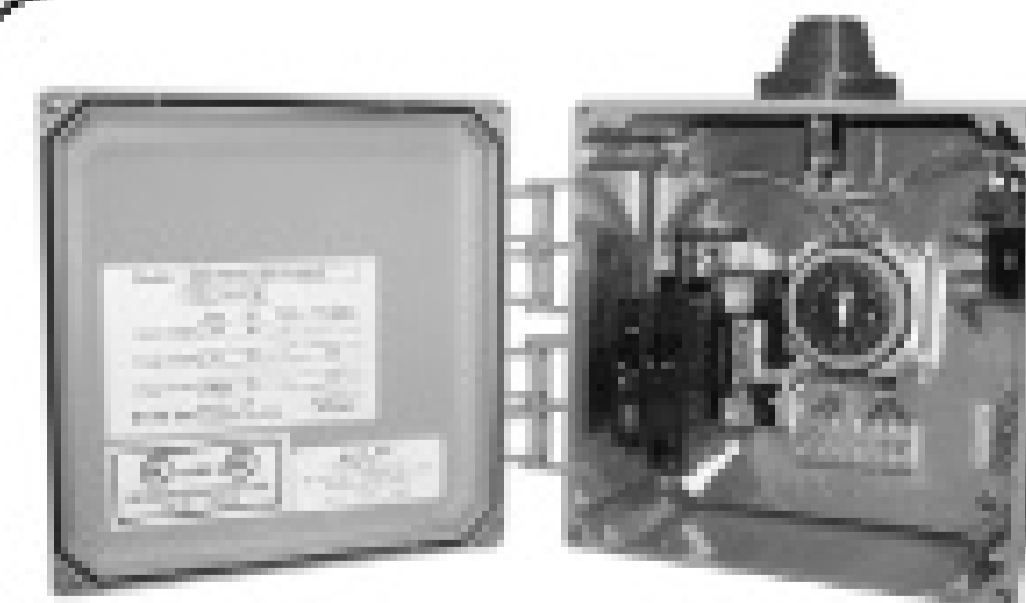
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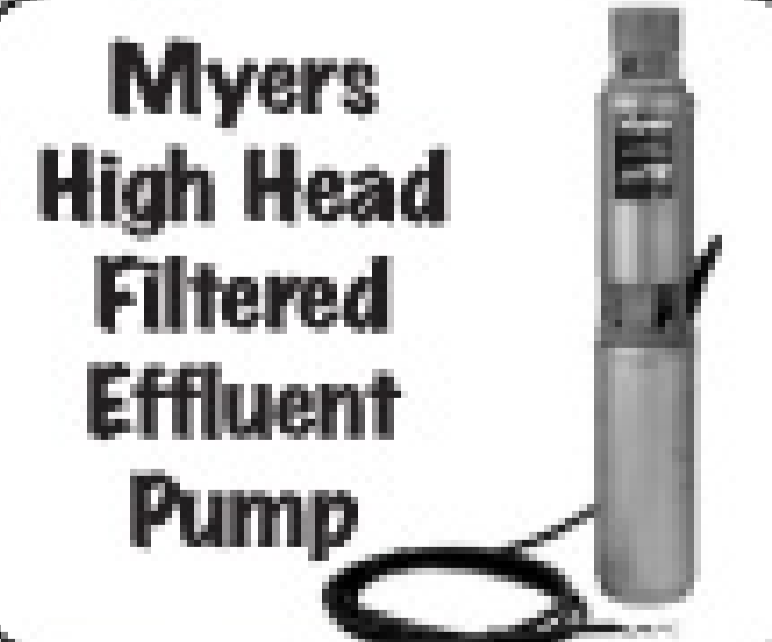
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*"Rules and Regs" is a monthly feature in Onsite Installer™. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to editor@onsiteinstaller.com.*

# Virginia Tightens Certification Rules

By **Scottie Dayton and Doug Day**

**A** Virginia law requiring mandatory maintenance for all alternative onsite systems activates on July 1, 2009. According to K.R. "Trapper" Davis of Coastal Plains Environmental Group in New Kent, alternative technologies include aerobic treatment units, peat biofilters and soil-based systems such as drip dispersal, low-pressure pipe, or mounds used with septic tank effluent.

On that date, certified maintenance operators, installers, soil evaluators and designers must be licensed by passing a test and showing experience. Licensed alternative onsite system evaluators (ASOE) and designers (ASOD) may design systems of 1,000 gpd or less for single-family homes. Anything above that requires an engineer stamp. The Department of Professional and Occupational Regulation recognizes that engineers typically do not have the education and experience to perform soil and site evaluations, and must therefore be licensed AOSEs, too.

Davis says installers can no longer operate on a company business or contractor's license after the

effective date. The project supervisor must be a licensed conventional or alternative onsite sewage system installer. Operation and maintenance technicians will have to pass an approved training course and an exam, and show documentation of experience to qualify for an alternative onsite sewage system operator's license.

Even holders of wastewater operator licenses to run large plants do not automatically qualify. Onsite systems greater than 10,000 gpd will require a licensed wastewater operator with an alternative onsite sewage system operator license.

## Florida

Officials in Charlotte County say aging septic systems have polluted a beach and are causing ground contamination. County health department administrator Herman Velasco told a local TV station that many of the septic systems in Port Charlotte are more than 25 years old and his agency is finding corroded lids and outlets that allow septage to get into the soil, groundwater and a canal that runs through the area into the ocean. The Port

Charlotte Beach Complex was closed to swimmers from June 12 until July 1 due to contamination.

A program to service and inspect septic systems began in August 2007 after an order from the Florida Department of Health. The Managed Septic Systems program must continue until all residences are hooked up to a sanitary sewer system, according to the county health department Web site. The county's ordinance requires an operating permit every five years at a cost of \$115, including proof of a pump-out as well as verification of tank integrity and inspection by the county.

## Idaho

The Department of Environmental Quality has been holding hearings on a proposed change to the method of estimating wastewater flow from single-family homes and how soils are classified. The final proposal was expected in October or November with an effective date of July 1, 2009.

The agency says the revisions are needed to make regulations consistent with domestic water use in the state. Increased flow estimates will require an increase in the minimum size for a standard drainfield. Changing the soil classification from three soil types to six will allow more precise sizing of drainfields. The new regulations will also add definitions of the terms "bedroom" and "module." View the proposed rule online at [http://www.deq.idaho.gov/rules/surface/58\\_0103\\_0801\\_proposed\\_rule.pdf](http://www.deq.idaho.gov/rules/surface/58_0103_0801_proposed_rule.pdf).

## Maine

The Department of Health and Human Services is expecting draft

changes to the Subsurface Wastewater Rules, perhaps by the end of 2008. A task force has been meeting for about two years. The task force of site evaluators, plumbing inspectors, installers, inspectors and representatives of regulatory agencies and equipment suppliers published several position papers that have been distributed for review and comment. If all goes according to schedule, the department expects the new rules to become effective on April 1, 2009, after public hearings and a public comment period.

## Maryland

The Department of Environment is still offering grants to cover most of the cost to upgrade septic systems through the Bay Restoration Fund. The grants fund the purchase, engineering, installation, inspection and electrical connection costs, and the first five years of an operation and maintenance contract.

According to the grant application, the property owner pays for all other sewage disposal system costs including conventional tank, distribution network or effluent dispersal method replacements encountered or required by the local authority.


The grant has been available since 2005 for individual septic systems, small and large multiple residential units, and small and large commercial systems. The department says 20 percent of property owners in Maryland use septic systems. The grant program is part of the Chesapeake Bay Restoration Act. A \$30 annual septic tank fee provides the funds to upgrade about 600 systems every year. ■

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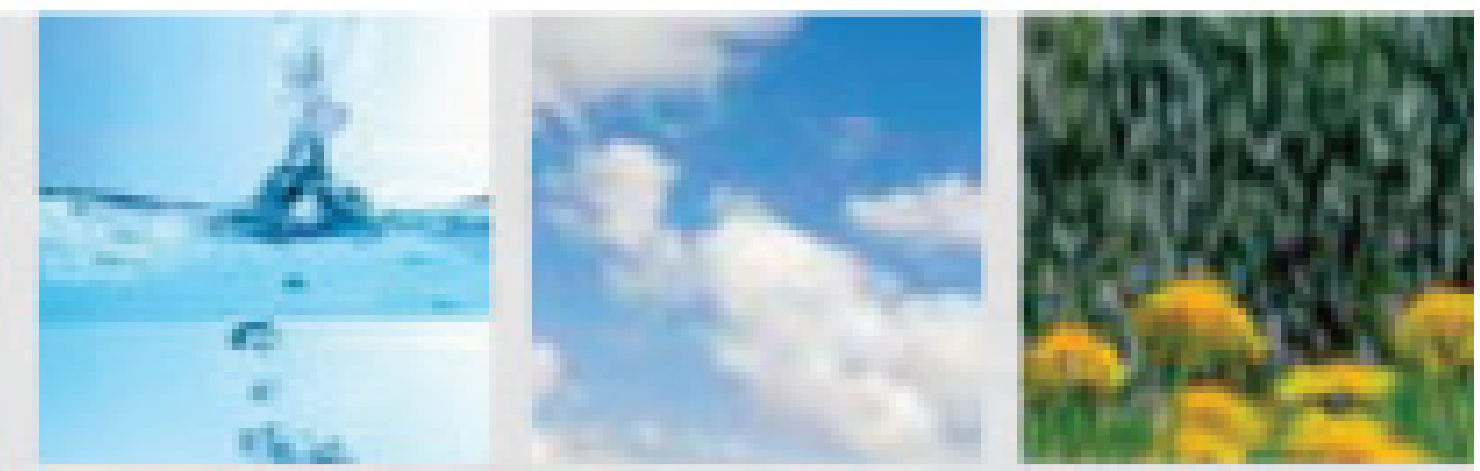
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# Multiple Benefits

Simple effluent filters offer advantages far beyond their basic ability to trap solid particles and help extend soil treatment system life

By Matthew E. Byers, Ph.D., and Randall J. Dyer, MS, MBA

**E**ffluent filters in the outlets of septic tanks keep particles larger than the filter's slot, hole or opening from reaching the drainfield. These filters are designed for residential and commercial use, gravity flow applications and pressurized systems. But screening of large solids is just one of their jobs.

Data from informal and unpublished studies yields many important clues about filters, heightening confidence in their use. For example, if the septic tank precedes a dosing tank containing a centrifugal effluent pump, an effluent filter can retain solids such as feminine hygiene products.

An effluent pump will pass these solids through the pump housing, but usually not through the impeller, and that creates the need for a service call. Evidence proves that effluent filters prevent these and other large solids from affecting distribution boxes and any downstream components.

Effluent filters also may contribute to BOD and TSS reduction in septic tanks, although no sound published data confirms this belief. Besides their screening and potential treatment benefits, filters warn homeowners of septic tank problems (often associated with waste streams), and promote maintenance to help avoid expensive system replacements.

## Kill the messenger

The idea of effluent filters acting as sentinels is not new. However, they communicate the warning by clogging frequently, causing some people to surmise — incorrectly — that the filter is the

problem, and throw it away.

The fact is that waste stream quality and quantity can affect treatment and system longevity. A filter that clogs often is likely telling the owner and maintenance provider that something is amiss, and they should figure out what factor or combination of factors is causing the problem. Listening to the filter's warning and being skilled enough to understand the nature of the problem will conserve homeowners' money and ultimately the value of the property.

The industry believes effluent filters promote system maintenance, resulting in a higher probability of treatment success for the life of the system. Most owners, unwilling to spend the money, do not share this belief. They don't understand that maintenance visits cost far less than replacing the system. But another benefit of effluent filters is that they remind owners about maintenance because the access point to them is visible.

Manufacturers generally recommend cleaning effluent filters annually, but the frequency varies depending on load. For example, a system serving a home with four teenagers likely will require more frequent cleaning than a home with a pair of empty nesters. When maintenance is required, qualified professionals can clean or replace the filter and inspect the other components in the system.

Maintenance providers should leave a maintenance report at the residence. A complete record of those visits has great value when the property is sold. The onsite system is no longer a black box of

potential liability because the owner has a description of its fitness.

Today, high fuel costs and long commutes often make rural property less attractive and perhaps less valuable than a comparable home in the city or suburbs. An onsite system with an unknown service history can contribute to a buyer's angst, but one with maintenance records isn't scary anymore.

## Toward guidelines

Industry professionals need to work together to promote effluent filters and onsite system maintenance to regulators and homeowners. Creating a generic guideline would be a good start. It could list the benefits of filters, give basic maintenance instructions, and state that filters need cleaning once or twice a year.

The industry needs to push the filter, access and maintenance theme hard by educating homeowners, regulators and installers. Doing so will create a fresh economic opportunity for onsite professionals.

To grow, the industry needs to

promote well-designed and well-funded research on the various waste streams and their filtering needs. Data might reveal that certain applications need specific filters and that one size does not fit all.

Once research establishes criteria, manufacturers can respond with products to meet the need. Another benefit of strong, peer-reviewed research papers is that they put onsite systems on the same plane as municipal collection systems. Such papers give engineers the support they seek when designing onsite systems.

In conclusion, quality filter products are available for various general applications. They screen solids, promote maintenance and warn system owners of trouble, thereby promoting the value of the property on which they are installed.

Matthew E. Byers, Ph.D., ([mattb@zoeller.com](mailto:mattb@zoeller.com)) is onsite manager with Zoeller Co. in Louisville, Ky. Randall J. Dyer, MS, MBA, ([randy@tuf-tite.com](mailto:randy@tuf-tite.com)) is a territory manager for Tuf-Tite Inc. in Lake Zurich, Ill. ■



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In 1999, Hoot began their Nitrogen Reduction work in response to regulatory concerns they identified in Florida. There was a "Key's Standard" that was being largely ignored.

Since then, no less than 10 companies have tried to enter that market, some with as few as 6 samples to "Justify" system performance to below 10 mg/L TN, the level determined necessary to protect the critical springs area's.

Initial research at Baylor University focused on utilizing 4 different configurations of Hoot systems.

### WASTEWATER TECHNOLOGY

NSF/ANSI Standard 245 - Nitrogen Reduction Wastewater Treatment Systems

Final Report:

Hoot Aerobic Systems  
Hoot ANR-450 Wastewater Treatment System  
06/05/2015/000



NSF International  
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In 2006, Hoot began 3rd Party NSF testing to "Prove" what was previously discovered through research. Cost effective, efficient Nitrogen Reduction to below 10 mg/L can be achieved.

As result the first (and only) system certified below 10 mg/L was born.

The Hoot-ANR is just one of a series of three treatment systems by Hoot that perform <10 CBOD<sub>5</sub> & <10 TSS at the lab and in the field. Additionally, Hoot offers two Nitrogen Reduction Technol-

ogies; one utilizing timed recirculation and another that achieves the maximum Nitrogen Reduction, for the most sensitive environments, that reduces Total Nitrogen as far as possible (5.8 mg/L under the Standard 245).

The Hoot-ANR utilizes a "patent pending" process that adds a food grade additive to provide additional carbon necessary to off gas as much Nitrogen as possible. This process is controlled by a controller, not homeowners.

By monitoring flow through the system, it ensures flow proportional dosing to provide reliable performance. Additional set points can be selected by the maintenance provider for a range of influent from of 35 to 75 mg/L TN.

Some recently advertised studies, NOT certifications, have allowed for system performance to be ignored for the first 16 weeks of the study. The NSF Standard 245 allows a maximum of only a 3 week startup. At the end of week 4, the Hoot-ANR achieved a 92% reduction. (2.7 mg/L TN)

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Hoot has spent the last 6 years and millions of dollars in Research & Development working to get Total Nitrogen below 10 mg/L. During this time the Nitrogen issue has been marginalized and regarded by some as "less important than making sure a riser is screwed down."

Hoot set out to prove that cost effective Nitrogen Reduction could be achieved, and the technology made available at a price that people could afford.

*Machine Matters is designed to help readers get the most from excavators, backhoes, skid-steers and other mechanical equipment through proper maintenance, operation and financial practices. Readers are welcome to submit ideas for this column and can send them to Ted J. Rulseh, editor, by calling 800/257-7222 or e-mailing editor@onsiteinstaller.com.*

# Tracking Your Options

**Contractors have many options for outfitting machines with steel or rubber tracks that are gentler on soils and can boost productivity**

By Greg Northcutt

**W**hether mounted on skid-steer loaders, compact track loaders or compact excavators, tracks offer a number of advantages over tires.

They include more traction to keep working in soft or loose soil; lower ground pressure to increase flotation in soft or wet conditions and to reduce damage to sensitive surfaces; a smoother ride over rough or rocky terrain; and, of course, no costly downtime to fix a flat.

Rubber tracks designed for excavators and for compact loaders with track undercarriages consist of a layer of rubber compounds, reinforced with steel cords that run the length of the track. Nylon fabric covering

these cords protects them from guide lugs and other metal pieces. A final layer of rubber covers the steel cords, nylon fabric and metal pieces.

Tread designs range from angled lugs, designed for the smoothest ride, to aggressive patterns with deep, narrow lugs that run perpendicular to the length of the track for maximum traction.

Another type of track, available in rubber or steel versions, fits over the front and rear tires of a skid-steer loader, enabling the machine to keep working in conditions where it would otherwise spin its wheels. Unlike the sprockets, rollers and idlers that drive and guide an undercarriage track, this type of track is driven by the tires.

**The Grouser Bar Track from Grouser Products improves performance of skid-steer loaders while helping to protect the tires.**



## Rubber tracks for tires

The Solideal USA line of rubber tracks includes those designed for compact excavators built just to accommodate rubber tracks;

**“For owners who don’t require a full-time track loader, the much lower purchase price and operating costs of over-the-tire tracks compared to a compact track loader can make economic sense.”**

Jared Steier / Solideal USA

interchangeable rubber tracks that fit compact excavators configured for either steel or rubber tracks; and rubber tracks for compact track loaders. The company also makes over-the-tire rubber tracks with metal imbeds for added strength.

An experienced operator can install or remove a set of these tracks in about 30 minutes, reports Jared Steier of Solideal. “For owners who don’t require a full-time track loader, the much lower purchase price and operating costs of over-the-tire tracks compared to a compact track loader can make economic sense,” he says.

Tracks made from natural rubber are more resistant to cuts and tears and are more durable than

those made of synthetic rubber. “Natural rubber also offers a little more comfortable ride,” Steier adds.

The backs of the tread lugs on the Solideal rubber tracks have a stair-step profile from the side. “As the track comes around the tire, the steps on the back of the tread lug allow air to come between the mud and the track,” Steier says. “This helps prevent mud and dirt from accumulating between the tread lugs and keeps the tracks cleaner and working more efficiently.”

## Over-the-tire steel tracks

Steel tracks for skid-steer loaders offer a much longer life in abrasive conditions than tires or rubber tracks. In addition, the added



The Versatile Track System from Loegering is a rubber-track undercarriage that bolts onto a skid-steer loader’s hubs. It can be transferred from one machine to another.





Larry Lugs (shown in white) from Bair Products Inc. can replace damaged or missing lugs on rubber tracks of Caterpillar or ASV compact track loaders. The devices are shown on the underside of the track, which is on the upper rollers of the loader.

weight of the steel tracks improves traction, flotation and stability and even adds a little to lifting ability compared to a skid-steer loader without tracks, says Gary Luther, sales manager for Grouser Products.

"Customers tell us that steel tracks make a skid-steer loader twice the machine, in terms of performance, than running on tires," he says. His company offers three types of over-the-tire tracks.

The Bar Track has induction-hardened crossbars and traction bars that incorporate the tires for added performance and cleaning. "It is a run-loose design and also helps protect the tires from damage," Luther says. "The open side plate helps keep the pivot area clean by not giving mud an area to pack into. Each track pad has a built-in length adjustment and is made with contractor-grade and heavy-duty components."

The Hard Track with replaceable metal shoes and traction inserts adds durability in rough ground conditions and aggressive work applications. Similar in design, the Soft Track has replaceable nonmarking urethane shoes for use on pavement and other sensitive surfaces.

"Replacing a shoe is a matter of using an air wrench to remove two bolts, replacing the worn shoe with a new shoe, and retorquing the bolts," Luther says. "You can redo a set of tracks in about two hours."

#### Combination tracks

Combining the strength of steel with the advantages of rubber, hybrid tracks offer another option for compact excavators. McLaren

**"Because the rubber pads don't have to flex like a rubber track, they can be made with more durable rubber compounds to better withstand the impact of sharp objects or operator abuse that can reduce life expectancy of conventional rubber tracks."**

George Zafirov / McLaren Industries

Industries' HYBRID tracks are made of special-alloy steel with removable rubber pads bolted to each track section. They are designed to handle the most extreme ground conditions and can replace rubber tracks on many compact excavators with interchangeable carriage systems, reports George Zafirov, marketing manager.

"You can install them without changing sprockets, rollers or idlers," he says. "Because the rubber pads don't have to flex like a rubber track, they can be made with more durable rubber compounds to better withstand the impact of sharp objects or operator abuse that can reduce life expectancy of conventional rubber tracks. In fact, these hybrid tracks can last up to twice as long."

The rubber pads reduce damage to sensitive surfaces. "These pads can be taken off by removing two bolts from each pad to replace worn pads or to operate as an all-steel track when working in challenging environments," Zafirov says.

#### Undercarriage for skid-steers

Loevinger's bolt-on VTS-Versatile Track System is for those who want to operate a skid-steer loader either with tires or as a full rubber-track undercarriage machine with suspension, depending on the job. The rubber-track undercarriage bolts to the skid-steer's standard hubs in less than an hour with no modifications to the machine, the company reports. It operates with two-speed machines and adjusts to fit 35- to 85-inch wheelbases.

VTS can be transferred between different skid-steer loaders. Among the advantages, forward placement of the front idler maintains flotation and adds stability, while the rear idler is placed under the ballast for stability when grading up inclines and traversing on side hills.

The bidirectional suspension adjusts independently from one

side of the skid-steer loader to the other. This maximizes the track footprint, helps distribute horsepower evenly, and improves stability



A compact excavator equipped with HYBRID Tracks from McLaren Industries. These steel tracks, which feature removable rubber pads, reduce damage to sensitive surfaces.

on uneven terrain. All-steel idlers and sealed bearings help minimize maintenance costs.

#### Replacement drive lugs

Larry Lugs were developed by an excavating and site development contractor as an economical alternative to replacing rubber tracks because of broken, worn-out, torn-off or delaminated rubber-track drive lugs.

They can be installed in the field to replace damaged or missing lugs from Caterpillar and ASV compact track loaders without removing the track from the machine. Installation takes about 10 minutes per lug, notes Tonya Bair, operations manager for Bair Products Inc.

"You can replace all the original lugs if you want to maximize life of the track," she says. "And, you can remove Larry Lugs to reuse on another track."

Greg Northcutt is a freelance writer based in Port Orchard, Wash. He can be reached by e-mailing this publication at [editor@onsiteinstaller.com](mailto:editor@onsiteinstaller.com). ■

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- 9:30 - 10:30 Credit Collections: Getting Paid
- 11:00 - 12:00 The Value of Internet Marketing
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 2:00 Selling Value
- 2:30 - 3:30 How to Add Value to Every Customer You Have and Future Customers
- 4:00 - 5:00 How to Determine Your Operating Costs

ROOM C203

**WJTA / PSAI / CBSA**

- 8:00 - 9:00 What an Air Mover Can Do For You
- 9:30 - 10:30 The Basics of High Pressure Waterblasting
- 11:00 - 12:00 Waterjetting Applications
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 3:30 Understanding Your Cost to Insure Profitability (PSAI)
- 4:00 - 5:00 Cross Bores of Gas Lines in Sewers (CBSA)

ROOM C204 & C205

**SSCSC** Southern Section Collection Systems Committee

- 8:00 - 9:00 Trenchless Pipe Rehabilitation
- 9:30 - 10:30 CCTV Pipeline Inspections
- 11:00 - 12:00 The Nuts and Bolts of GIS
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 2:00 The Nitty-Gritty on Pipeline Cleaning
- 2:30 - 3:30 Confined Space and Protective Equipment Safety Requirements
- 4:00 - 5:00 Manhole Inspections

ROOM B101 & B102

**NAWT** National Association of Wastewater Transporters

- 8:00 - 9:00 What are My Disposal Resources
- 9:30 - 10:30 Treatment Processes, What is Out There?
- 11:00 - 12:00 Evaluating Costs as Part of the Decision Making Process
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 2:00 Meeting Part 503 Requirements
- 2:30 - 3:30 Turn Grease Trap Waste Into Gold
- 4:00 - 5:00 Developing a Business Plan

ROOM B103 & B104

**NOWRA** National Onsite Wastewater Recycling Association

- 8:00 - 9:00 NOWRA Overview & Industry Trends
- 9:30 - 10:30 Soil & Site Evaluation Overview
- 11:00 - 12:00 Septic Tanks: Function, Inspection, Installation & Trouble Shooting
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 2:00 Aerobic Treatment Units & Filters
- 2:30 - 3:30 Pumps & Controls
- 4:00 - 5:00 Operation & Maintenance of Systems

ROOM C101 - C104

**NASSCO** National Association of Sewer Service Companies

- 8:00 - 9:00 Robotics For the Future, What Does it Mean for You?
- 9:30 - 10:30 Small Diameter Epoxy Coatings
- 11:00 - 12:00 Root Control, How Does it Work and Why is it Needed?
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 2:00 OSHA Regulations
- 2:30 - 3:30 Choosing the Correct Chemical Grouts
- 4:00 - 5:00 Trained Technology Inspectors

ROOM C105 - C108

**NEHA** National Environmental Health Association

- 8:00 - 9:00 How to Work With Regulators and Regulations
- 9:30 - 10:30 Pumpers: Operation and Maintenance
- 11:00 - 12:00 Routine Maintenance Inspections
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 2:00 Using the Certified Installer Credential to Help Your Business
- 2:30 - 3:30 T.B.D.
- 4:00 - 5:00 T.B.D.

ROOM C109 - C112

**SCOTT HUNTER** Business Track

- 8:00 - 9:00 The Art of Personal Sales
- 11:00 - 12:00 The Art of Personal Sales (Part 2)
- 12:00 - 1:00 **Lunch Break**
- 1:00 - 2:00 Yes, We Have to Work Together, but Does it Have to be So Painful?
- 4:00 - 5:00 The Art of Being Outrageously Successful!

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## THURSDAY

February 26th, 2009

ROOM B101 & B102

### Portable Toilet Track

- 8:00 - 9:00 Portable Sanitation Start Up  
**Hampel**
- 9:30 - 10:30 Selling Portable Restrooms Services  
**Satellite Industries**
- 11:00 - 12:00 T.B.D.

## FRIDAY

February 27th, 2009

ROOM B101 & B102

### Sewer Cleaning Track

- 8:00 - 9:00 High Pressure Hose Safety & Proper Use  
**Spir Star**
- 9:30 - 10:30 The Better Jetter, Secrets to Jetting  
**US Jetting**
- 11:00 - 12:00 Chemical Root Control  
**Douglas Products**



ROOM C105 - C108

### Liquid Waste Track

- 8:00 - 9:00 Decentralized Wastewater Sustainability - **Aquatest**
- 9:30 - 10:30 T.B.D.
- 11:00 - 12:00 Modular Waste Water Treatment  
**Big Fish Environmental, LLC**

ROOM B103 & B104

### Business Track

- 8:00 - 9:00 Maintenance Agreements for Commercial Accounts  
**Spartan Tool**
- 9:30 - 10:30 First Rate Customer Service  
**RooterMan**
- 11:00 - 12:00 Insurance and Risk Management  
**Heffernan Insurance**



ROOM B103 & B104

### Municipal Track

- 8:00 - 9:00 Why Measure Sewer Flows from Private Services? - **City Meter**
- 9:30 - 10:30 Polymer Solutions for Wastewater Treatment - **Fort Bend Services**
- 11:00 - 12:00 Rotary Jets for Material Removal  
**StoneAge**

ROOM C109 - C112

### Miscellaneous Track

- 8:00 - 9:00 Keys to Proper Power Take-Off  
**Muncie Power Products**
- 9:30 - 10:30 Vacuum Tank, Chassis and Pumps  
**Anthor International**
- 11:00 - 12:00 Lateral Replacement Program  
**TT Technology**

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# EXHIBITING COMPANIES

Current list of exhibiting companies as of October 8th, 2008. List subject to change without notice.

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A Global Chemical Co.  
A.R. North America  
A.W. Cook Cement Products  
Abbott Rubber Company  
Abernathy Welding & Repair Inc.  
Accent Manufacturing  
ACE DuraFlo Systems  
Acro Trailer  
Adler Tank Rental  
Advance Pump & Equipment  
Advanced Containment Systems Inc.  
Advanced Drainage Systems  
Advanced Infrastructure  
Advanced Pressure Systems  
Advanced Tank Systems  
Advanced Wastewater Systems  
AGCO-Ag Chem Division  
AK Industries  
Allan J. Coleman  
AllGreen Manufacturing, LLC  
Allied Construction Products, LLC  
Allied Graphics  
Allied Tank Co.  
Alpha Mobile Solutions  
Alpine Leasing, Inc.  
AlturnaMats  
Ameri-Can Engineering  
Amerik Engineering  
AP/M Permaform  
Aqua Ben Corporation  
Aqua Blast Corporation  
Aqua Mole Technologies  
Aqua-Zyme Disposal Systems Inc.  
Arcan Enterprises Inc.  
Aries Industries Inc.  
Armal, Inc.  
Arthur Products  
Ashland Trap Distribution, Co.  
Ashtead Technology Rentals  
Atlanta Rubber & Hydraulics Inc.  
Avanti International  
Bad Dog Tools  
Badger Truck Center/Badger VACS  
Baker Corp.  
Bakers Waste Equipment  
Bandlock Corporation  
Banjo Corp.  
BASE Engineering  
BDP Industries  
Benjamin Franklin Franchising

Best Enterprises Inc.  
Betts Industries  
Big Fish Environmental, LLC  
Bio Clean  
Bio Microbics Inc.  
Black Tie Manufacturing  
Blasters, Inc.  
Blue Angel Pumps  
Boatman Industries  
Bord Na Mona  
Bowman Tool Co.  
Brenlin Co., Inc.  
Bright Dyes/Division Kingscote Chemicals  
Bright Technologies  
BW Technologies by Honeywell  
Cadman Power Equipment  
Cam Spray  
Canplas Industries Ltd.  
Cape Cod Biochemical Co.  
Capital Partners  
Capital Rubber Corp.  
Cat Pumps Corporation  
Center Capital Corporation  
Century Chemical Corporation  
Champion Pump Company, Inc.  
Chandler Equipment Inc.  
Chelsea Products/Div. of Parker  
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ChemStation International  
Cherne Industries Inc.  
City Meter, Inc.  
Clear Computing  
Clearstream Waste Water Systems Inc.  
Cloverleaf Tool Co.  
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Comforts of Home  
Community Leasing Associates  
Compliance Solutions  
Concentric Enviro Inc.  
Consolidated Treatment  
Containment Solutions Inc.  
Control Chief  
Cook Compression  
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Cougar Industries Inc.  
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CreteX Specialty Products  
Cross Bore Safety Association  
Crust Buster/Schmitz Bros.  
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CuraFlo Technologies Inc.  
Custom Biologicals Inc.

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 Septic Products Inc.  
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 Simple Solutions Dist. LLC  
 SJE-Rhombus  
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 Snyder Industries  
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 SRECO-FLEXIBLE, Inc.  
 Stamp Works  
 Stellar Industries Inc.  
 Stephens Technologies  
 Sto-Away Power Cranes Inc.

StoneAge, Inc.  
 Stormwaterworks.com  
 Sunbelt Rentals  
 Sunrise Environmental  
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 Wilco Supply  
 WinCan America Inc.  
 WMI, Inc.  
 Wolf Creek Company, Inc.  
 WolfCreek Jetting & Mfg., Inc.  
 Worldwide Organics  
 Xerxes Corporation  
 Zoeller Pump Company



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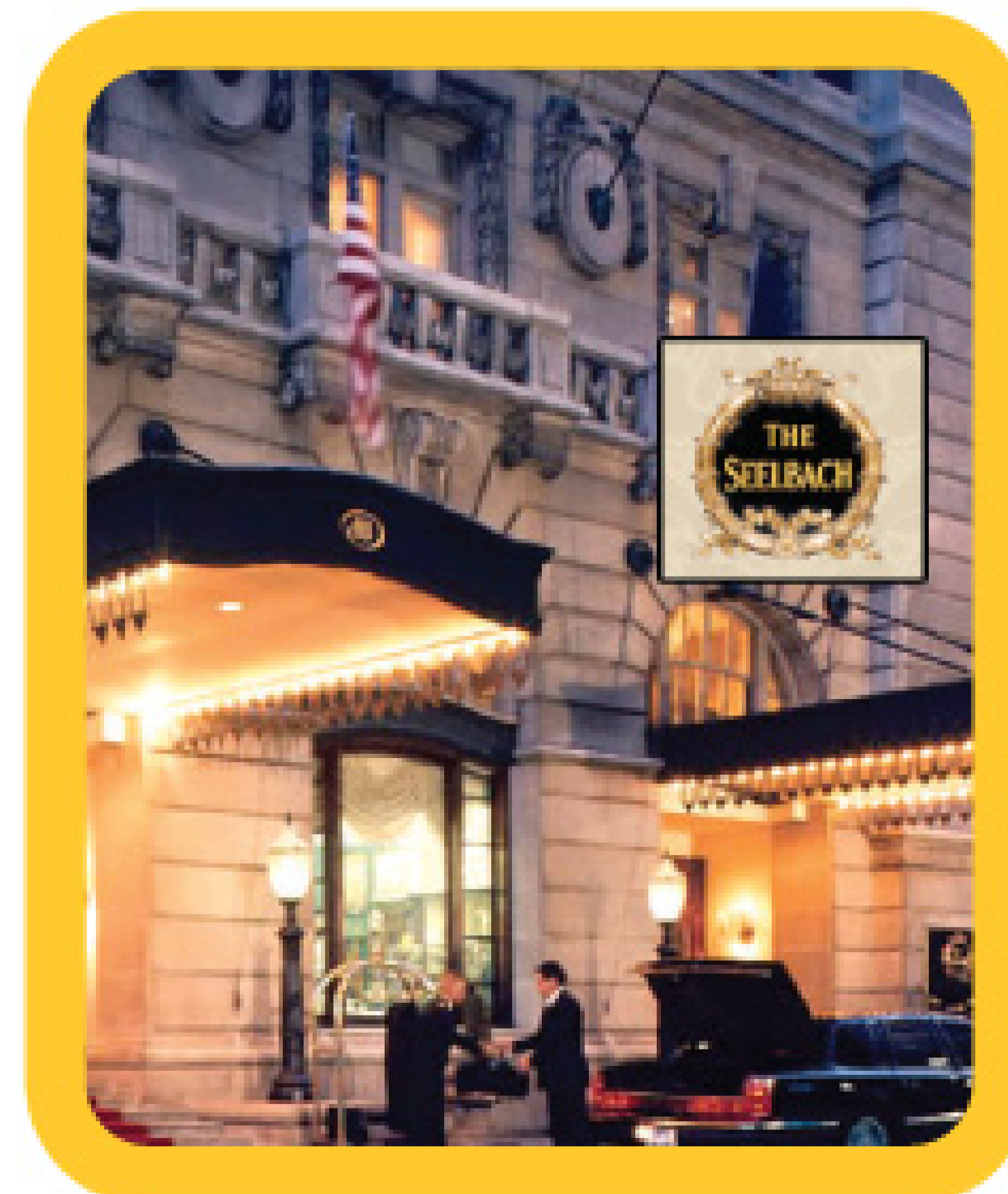
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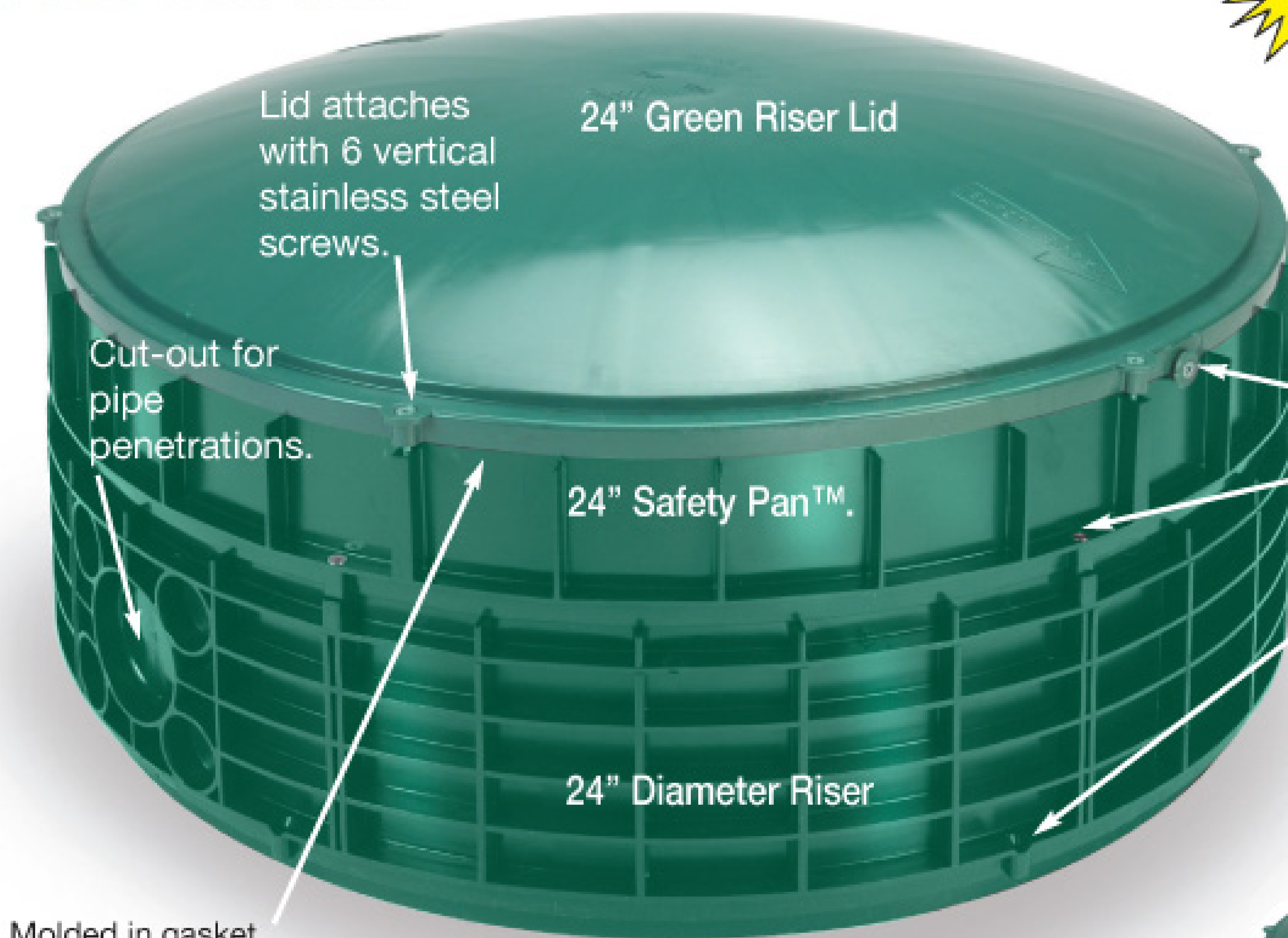


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## Septic Tank Riser, Lid & Safety Pan™

**FREE FREIGHT ON  
FULL CARTONS!**



Lid attaches with 6 vertical stainless steel screws.

24" Green Riser Lid

Cut-out for pipe penetrations.

24" Safety Pan™

24" Diameter Riser

Molded in gasket.

Available in 12", 16", 20" and 24" diameters.



### Tank Adapter Ring

New - Horizontal Safety Screw.

Safety Pan™ to Riser attachment with 6 vertical stainless steel screws.

Riser to Riser attachment with 6 vertical stainless steel screws.

Patent Numbers  
5,617,679 &  
5,852,901; other  
pats. pending.

### Riser Lid

with Molded-in gasket.  
Available in 12", 16", 20" and 24" diameters.

Concrete Lid w/handle

### Safety Pan™

Safety Pan™ available in 16", 20" and 24" diameters.

### Riser

For septic tanks. Stackable in 6" increments. Available in 12", 16", 20" and 24" diameters.

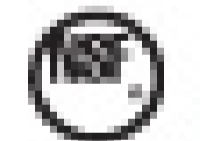
### Tank Adapter Ring

For mounting riser flush to top of tank when casting-in is not an option.

### Effluent Filters

Patent Numbers  
6,319,403; D 431,629; other  
pats. pending.

800 GPD  
ANSI/NSF  
Standard 46

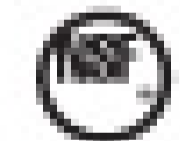


4" Sch. 40 &  
SDR-35

**EF-4**  
4" Filter



1500 GPD  
ANSI/NSF  
Standard 46



4" Sch. 40 &  
SDR-35

244 ft. of  
1/16" filtration  
area.

**EF-6**  
6" Filter

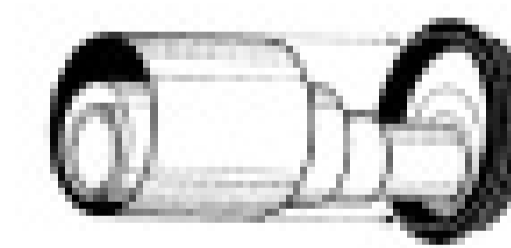
Gas/Solids  
Deflector

### One-Piece Tank Seal

For concrete Septic tanks and D-boxes.  
Accepts pipes from 1-1/2" to 4".  
Mounts with or without concrete flash.

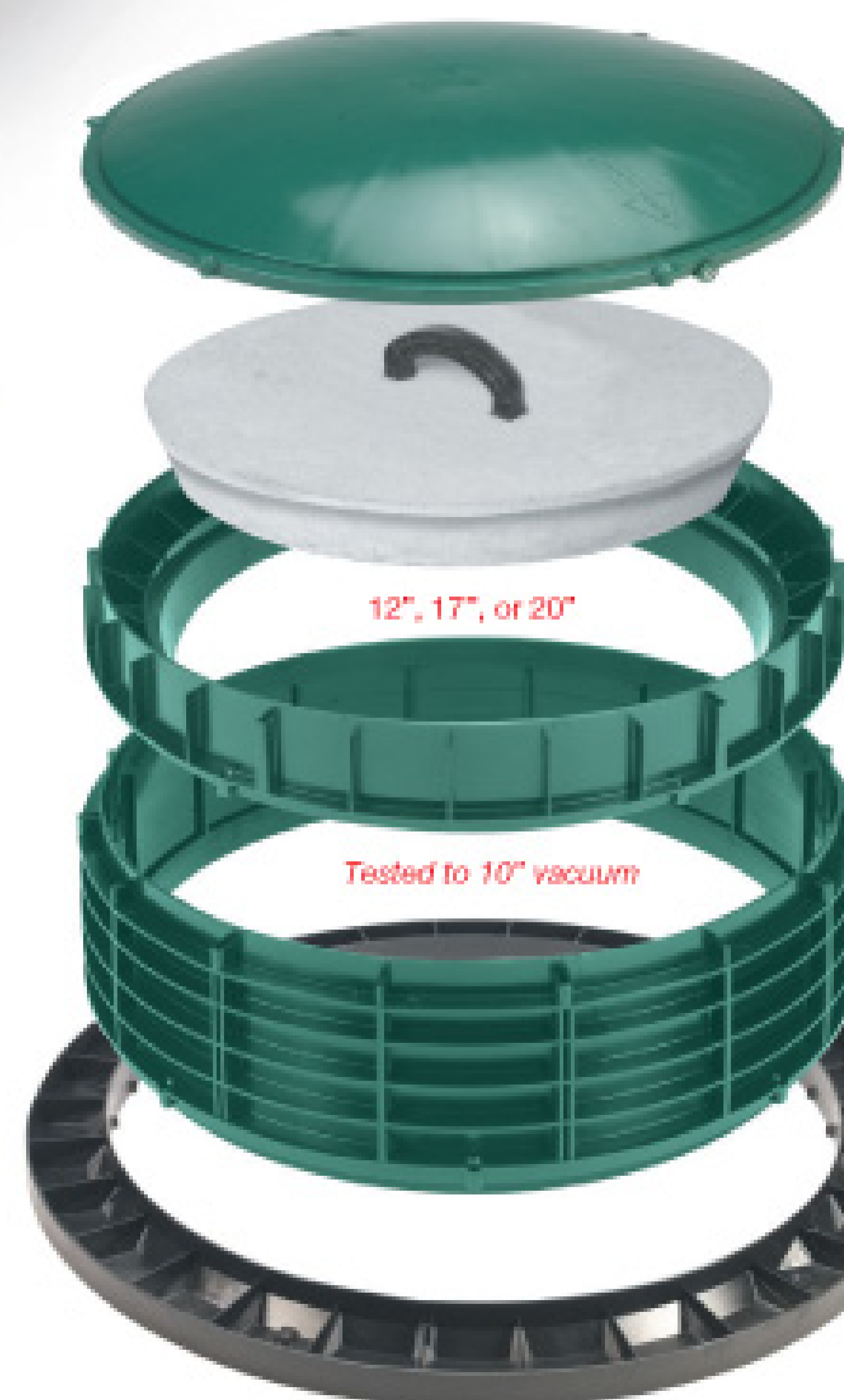


**TS-4-RUBBER TANK SEAL**  
(will hold 10psi)  
**TS-4PRO TANK SEAL**  
(will hold 5" vacuum)



Free Freight: 32c

Patent No's  
4,951,914,  
5,624,123  
& 5,711,536;



12", 17", or 20"

Tested to 10" vacuum





Evan Megeath works with a topsoil stockpile, created with prepared soil from previous jobs. The stockpile will be used when needed for future jobs, cutting costs for the business and for customers. (Photography by Gil Longwell)

# Not Standing Still

Art Megeath embraces change as a way to stay ahead in his market, keep his business growing, and keep work life exciting and satisfying

By Gil Longwell

## Arthur Megeath Contracting Inc., Front Royal, Va.

**OWNER:** Art Megeath  
**YEARS IN BUSINESS:** 22  
**MARKET AREA:** 10-mile radius  
**ANNUAL REVENUE:** \$550,000  
**BUSINESS MIX:** 80% new installations, 10% repairs, 10% general excavation  
**SPECIALTIES:** Advanced technologies for challenging sites  
**EMPLOYEES:** 3  
**AFFILIATIONS:** NOWRA, VOWRA



**A**rt Megeath declares he will do “whatever it takes to be on the leading edge of the onsite industry.” Owner of Arthur Megeath Contracting Inc. in Front Royal, Va., Megeath embraces change as an opportunity to grow his skills and his business. It also keeps him on that cutting edge.

To Megeath, change is not a catchy word. It’s an integral part of his business plan and he sees it as his friend.

Megeath came to the onsite business after working for an international chemical company, where he was on the plant maintenance crew and was the crew’s trainer. When faced with a new technology, “I put aside any feelings of insecurity or self-doubt and set out to learn all I could about the new equipment or process,” he says.

After graduating from Nashville Auto and Diesel College in 1978, he started a heavy equipment repair business on the side. Soon he had a

backhoe and was digging perc holes and doing other excavation. When asked to install a septic system, he dug right into studying the state regulations and system design, installation and operation. Only when he was comfortable with his knowledge did he go to work.

In his business, change and growth are ever present. “I choose to work in the public marketplace bidding on government projects,” Megeath says. “These jobs bring us into contact with new products and techniques and nurture our growth.” Public projects are larger and more complex, but Megeath likes it that way. “I want my name associated with large or innovative public projects,” he says. That approach positions him as the principal introducer of emerging onsite technologies in his market.

### Family adventure

Potential customers may not appreciate the fine points of the inno-

vative system Megeath is installing for a visitor center at the Andy Guest Shenandoah River State Park. Still, he sees value in those customers



The team at Megeath Contracting marks contour lines at an installation site in Andy Guest Shenandoah River State Park. Drip tubing will be placed on the site.





Art Megeath, owner of Megeath Contracting, goes over an onsite system's controls with the new owner, Jeremy Ramos.

**"We are a quality-conscious company that has a commitment to both the customer and to environmental protection. We educate each customer about their system, how it works and how as partners the customer and the system protect the environment."**

Art Megeath

knowing they can hire the state's contractor to install their residential system. "Connection to government contracts elevates our company in clients' eyes," he says.

Megeath and his two employees, son Evan and brother Monty, are well known around Front Royal, where they install 25 to 30 new systems per year. Father, son and brother grew up in the family homestead. Now Art and his wife, Lorraine, the company bookkeeper, live there.

"Working with my dad and uncle has been an adventure," says Evan, who left a job at a local engineering company to work in the business. "Dad and I don't always see eye to eye, but we get through it." Father and son share a vision of the company's future that includes new technologies, new directions and growth.

Monty, a former excavating contractor, is there when his brother needs extra hands, and the business has been there for Monty

when other opportunities were limited. All three enjoy outdoor work that brings them into contact with a variety of systems and people. "The smell of the soil and the freedom of the work get into your blood," Evan says.

The company's complete service package includes working with homeowners, site evaluators, designers and equipment manufacturers to match the system to the site. Virginia regulations require registered engineers to design advanced systems, but that does not keep Megeath from taking an active and vocal role in the design process. After installation, he blends systems into the terrain. "I do my best to use existing vegetation and topography to help in the concealment process," he says.

#### Role as educator

Art Megeath believes installing a system is a small part of his customer relationship. Education is critical. "We are a quality-conscious company that has a commitment to the customer and to environmental protection," he says. "We educate each customer about their system, how it works and how as partners the customer and the system protect the environment."

Education usually starts before site evaluation and continues long past system startup. "Once a system is buried, if it becomes a problem there is no chance for a do-over," Art says. Five years out, if there is a problem with a system he installed, he will be there to satisfy the customer. "I will not bill for my service time to diagnose the problem," he says. "Being prompt, prudent and honest in all our customer interactions is the only way I operate."

Art Megeath seeks out training for himself and his employees. He and Evan are regular attendees at NOWRA and VOWRA training events. "Installers need to understand the theory of onsite systems. To know too little is to shortchange your customer," Art says. "Self-doubt is a businessman's enemy. It often causes people in this industry to have an animosity toward their competitors, and it holds back growth and change."

Megeath says his occasional insecurity with the unfamiliar

causes him to dig deeper and learn about the issue. He has no animosity toward competitors, many of whom call him asking questions about sites and systems.

The firm is recognized by the manufacturers to install treatment

systems from Orenco Systems Inc. (AdvanTex), Ecoflo, Bord na Mona, Puraflow and Bio-Microbics Inc. It uses drip-system products from Netafim USA and Geoflow. Art Megeath has completed the Consortium of Institutes for Decentralized



From left, owner Art Megeath, son Evan, and Art's brother Monty Megeath are shown with some of their equipment.

## Industry Voice

Every month, Art Megeath is the voice of the industry at two important meetings. As chairperson of the Warren County Builders Association onsite committee, he educates builders, real estate agents and lawyers about emerging technologies and changing regulations.

"My role there is to help these folks understand the onsite system option and how these systems operate," he says.

A few years ago, Warren County created an ad hoc onsite system committee. In addition to Megeath, participants include the county administrator, the state sanitarian for the county and his county-level counterpart, the county building code department, a private-practice

professional engineer and the builders association's president and vice president.

In both forums, Megeath is an industry advocate, a knowledgeable information resource, and a two-way messenger, bringing industry concerns to the table and transferring messages from the meeting to the industry through his own informal network.

Art Megeath





Art, Evan and Monty Megeath review plans with Jeremy Ramos, the owner of a new onsite system.

Wastewater Treatment installer training course, and he has earned the Certified Installer of Onsite Wastewater Treatment Systems credential from the National Environmental Health Association.

These credentials lend confidence when he speaks and add

ment engenders operator pride. Well-maintained equipment seldom breaks down, and that keeps morale up and work moving along.

Megeath's equipment includes a 2000 Case 1840 Uniloader, a 1996 Cat D4 dozer, a 1998 Cat 953 loader, a 2005 John Deere excavator, a 2006 Case Super M backhoe, a 1997 John Deere farm tractor, and a 2002 Kenworth single-axle dump

**"Self-doubt is a businessman's enemy. It often causes people in this industry to have an animosity toward their competitors, and it holds back growth and change."**

Art Megeath.

credibility for those who hear his message or seek out his services. He has also trained employees of the Virginia Department of Health in advanced treatment technologies.

#### Controlling costs

Megeath Contracting is a general excavating contractor focused on the onsite market. Reliance on subcontractors for specialized equipment and skills helps reduce equipment costs. "I see no sense in buying equipment when I can get next-day service from reliable contractors," Megeath says. He regularly subcontracts blasting, hoe-ram work and treatment tank pumping.

Drawing on his early training, Megeath maintains his own equipment fleet and occasionally services other contractors' equipment. He believes clean, serviceable equip-

truck. Support or utility equipment includes a 2002 Eager Beaver low-boy trailer, a 2006 Vermeer chipper, and a 2006 Ford F350 service truck.

From surplus topsoil acquired on jobsites, and using a Leroy Screen Machine to separate clumps of vegetation and rocks, Megeath has created a stockpile of prepared soil that he keeps on his property. Many of his drip systems are placed on the prevailing grade. After the tubing is placed, it is covered with topsoil and seeded with suitable ground cover. Sites like this usually are short on topsoil and when there is no nearby source, he relies on his own stockpile, saving money for himself and clients.

#### Business slowdown

By June 2008, the housing slump was affecting Art Megeath and his

competitors. In the past, he could be selective about which jobs he took. As the slowdown continued, his phone still rang, although less often. With the work on the books and calls coming in, he kept his crew working full-time. While he likes to keep his single-family system service area within about a 10-mile radius, he was willing to travel a bit farther as the economy changed.

To get the large public sector jobs he likes, he has always traveled farther, and still does. Megeath reports that there were more than 600 brand new, unsold houses in Warren County at midyear. With that inventory unsold, he saw repairs becoming a bigger part of his business.

"I believe in what we are doing. We are right where we want to be," says Art Megeath. In five years, however, he sees the industry's emphasis shifting toward management, operations and maintenance, and expects a corresponding reduction in his equipment inventory. In spite of this, Megeath Contracting

will always do new system installations, always be learning about new technologies and always moving forward.

"If you fear change," Megeath says, "you just won't get any better." ■

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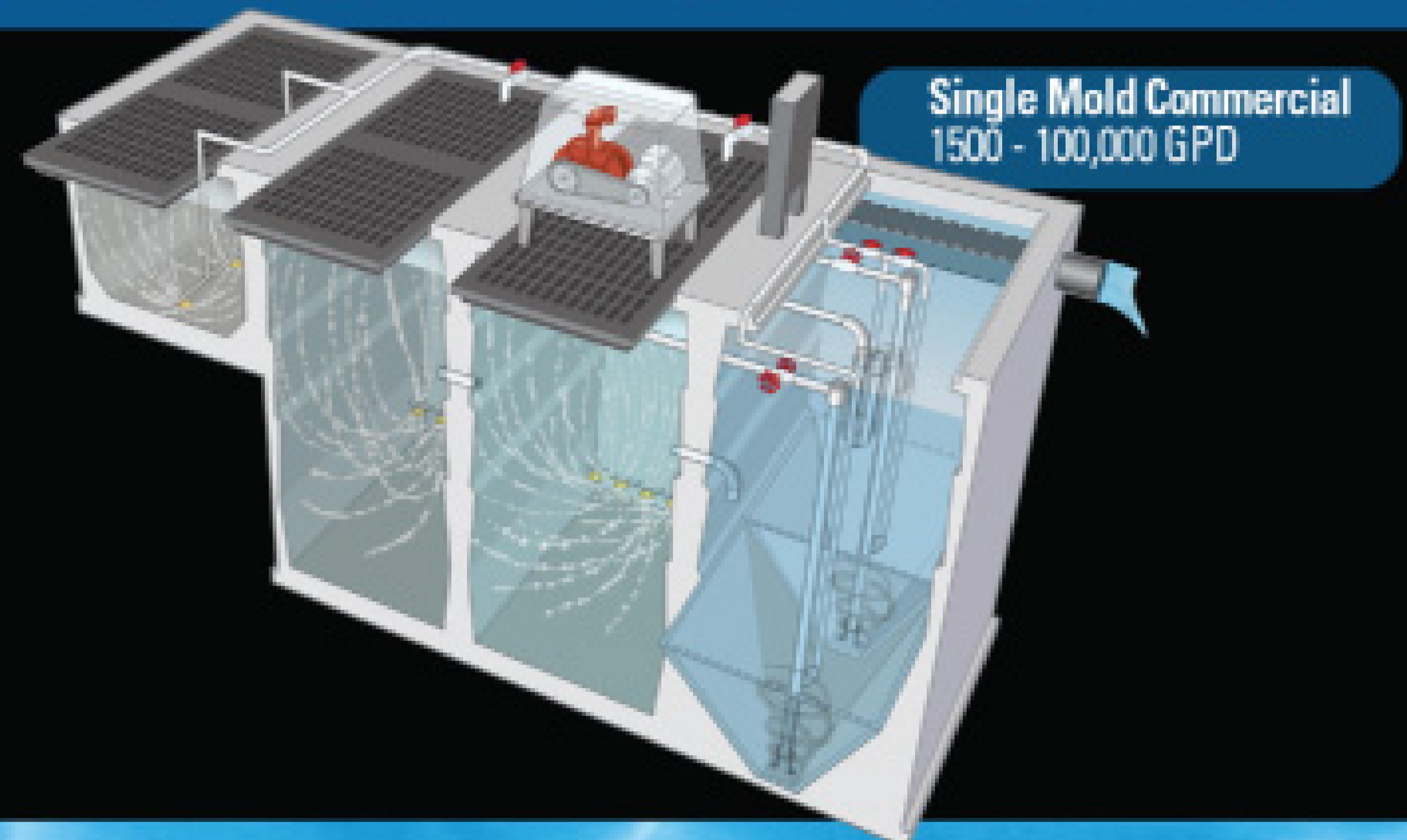
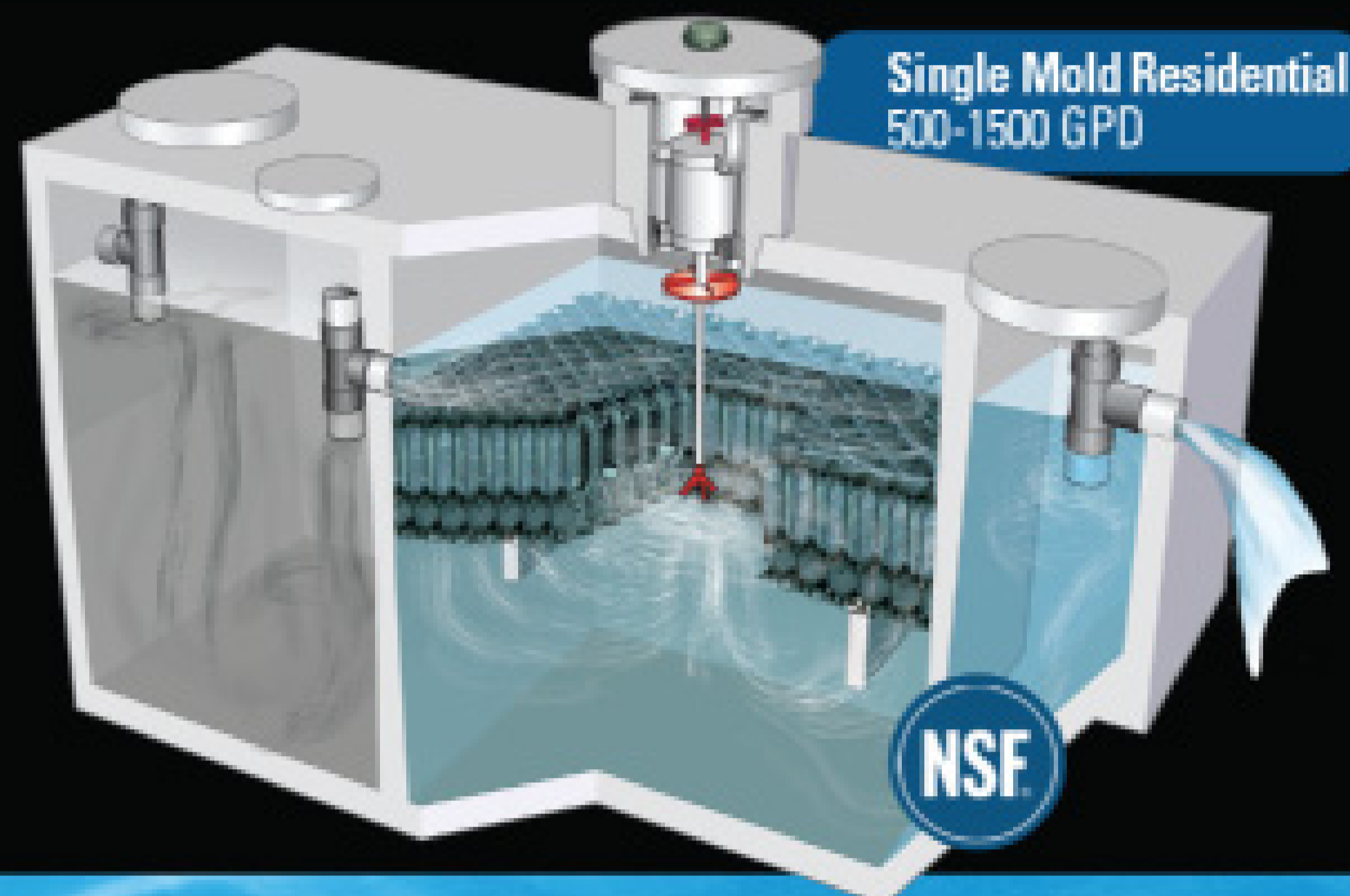
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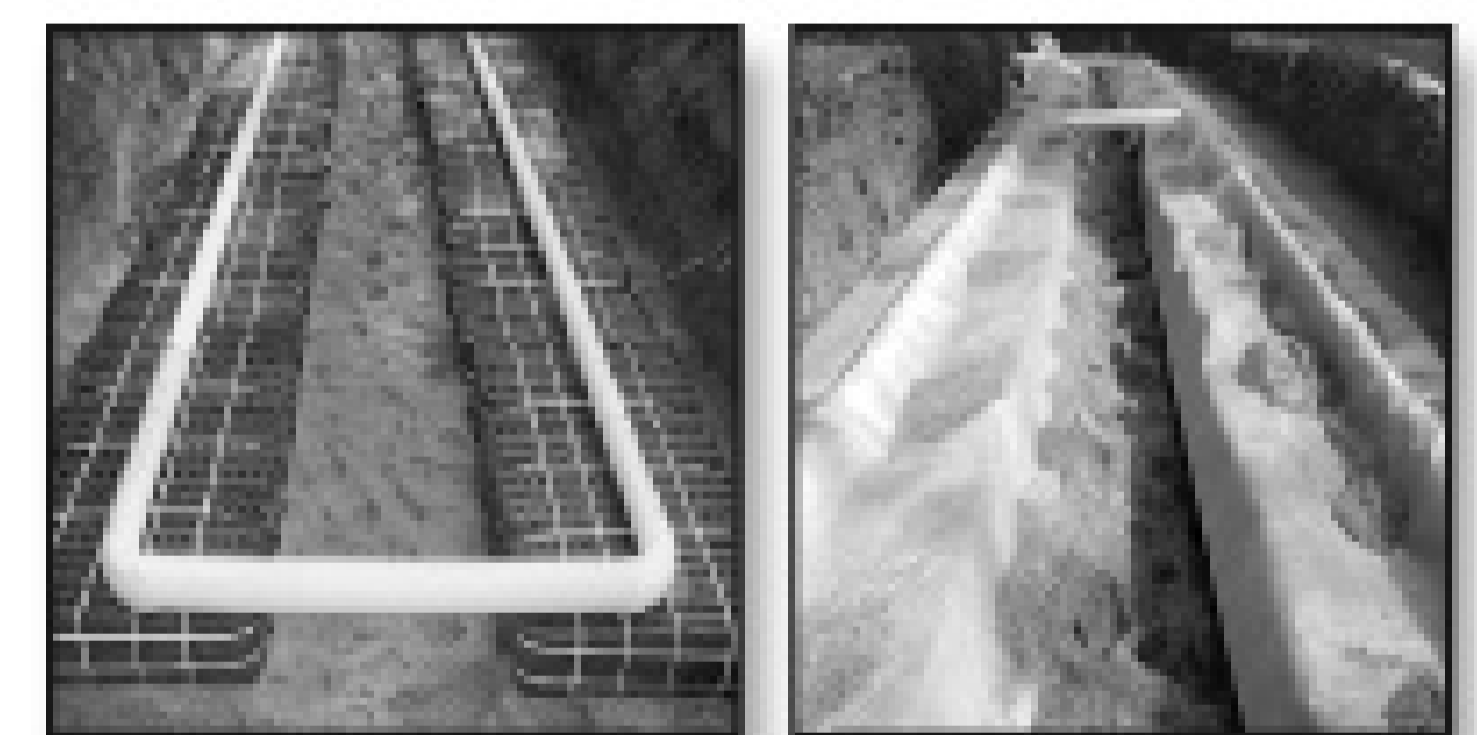


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# Missing Link

Direct measurement of flow to the septic tank can help in determining the reasons behind onsite system failure

By Albert Royster

**F**low measurement is a missing link in determining why septic systems may fail. Do we really know the flow entering a septic tank? Do we really know a way to document when a septic system is in a state of hydraulic overload?

Daily flow can exceed the design capacity of the system, resulting in frequent backups or

puddling of sewage on the surface. Is the guess of daily sewage flow based on an engineer's prescription? Or is it based on the number of bedrooms or, in the case of a restaurant, the number of seats?

Onsite codes in each state adopt a value for daily sewage flow. However, the value differs from state to state. Two state agencies may disagree on the estimated

value for the same size house. Is the value accurate enough to constitute reasoning? Or could a misdiagnosis of the estimated sewage flow affect system design?

## Need for design

A poorly designed system can lead to premature failure. Water usage records are an acceptable way to calculate average daily flow where septic systems have been repaired. This method may indicate whether hydraulic overloading has occurred and whether this condition is an ongoing issue in the system's performance.

At present, the only way to calculate water flow to the septic system is to subtract the water used for filling the swimming pool or for irrigating the yard from the total mass flow.

When a building served by an onsite system is not connected to a water meter, there is no way to verify above-normal flow. If in-line flow meters are used on drinking water systems, they also should be available for private water systems serving homes or businesses. Such a flow meter would register the mass flow used.

The mass flow includes usage from showers, bathrooms, toilet flushes, tooth brushing, dishwashing, laundry and other uses. Lawn watering and other outdoor uses are also part of the mass flow equation. As one septic tank contractor commented, "There would be no basis for an argument from the homeowner about water usage anymore," if water usage were metered.

## Break in the line?

Let's take that thought to the next level. Can we specifically measure sewage flow in a gravity sewer line? Infiltration, inflow and exfiltration can affect flow. Often these conditions are not considered when a septic system is sized. When there is a break in the sewer line, or if the sewer cleanout cap is missing, that can affect the flow entering a septic tank. So, do we really know the sewage flow of any system?

It should be possible to measure the flow of a single waste stream directly, without comparing the mass flow from water used for filling the swimming pool or for irrigating the yard.

The ability to meter sewage flow would benefit septic system utilities and septic tank contractors who manage onsite programs. Metered sewage flow should not be a mandate for every system in use. Instead, it should be available as a way to monitor systems where hydraulic overloading is suspected.

When that metering documents overloading, alternative measures to conserve water could be recommended to correct the problem. The system user should be advised that flow measurement can benefit the overall management of system performance. Homeowners should be able to monitor daily sewage flow accurately.

Albert Royster is an environmental specialist with Volusia County Health Department, Deland, Fla. He can be reached at [albert\\_royster@doh.state.fl.us](mailto:albert_royster@doh.state.fl.us). ■

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# What to Do Now?

## Installation professionals advise a peer faced with a saturated drainfield and the likely need for an aerobic treatment unit

### Question:

I have a septic system with lateral lines on a slight slope. In addition to the 1,000-gallon trash tank, I have a 1,000-gallon pump tank. I'm in Oklahoma, where we've had record rainfall over the last year. I now see water surfacing when the pump activates.

The septic guys I talked to say the field is saturated and I need to convert to an aerobic system. The three companies I talked to use all-in-one tanks but would use my existing trash tank and cave in my existing pump tank. In my research, it seems I might be able to drop in an aeration tank between the existing trash and pump tanks and add lines and sprinkler heads for distribution of the effluent. Does anyone have experience with this they can share?

### Answers:

Converting to aerobic bacteria is a fairly simple process. Aerobic bacteria are claimed to be faster-

acting and more aggressive than typical anaerobic bacteria. It is also claimed that when the aerobic bacteria get to the field, they will devour the biomat, which is a common cause of field failure.

Supporting aerobic bacteria requires an air infuser, also called an oxygenator. An air pump that sits outside of the tank pumps air to the infuser (an air bubbler) inside the clarifying chamber of a tank. The already-somewhat-clean effluent is "bubbled," and the fine particles fall to the bottom, super-cleaning the effluent.

Aerobic bacteria are manually added periodically, above the bubbler, and are mixed in by the bubbling action. Filters are optionally added at the tank's outlet. A riser above the bubbler is necessary for scheduled maintenance and for adding the aerobic bacteria packets.

It sounds like you have a "forced" system: In other words, it drains under pressure (with a pump) rather than by gravity. Although what you suggest may be helpful, I would also consider

installing a chamber system to add drainfield capacity. And protect the chambers from rain infiltration with the appropriate products.

If you're going to dig a hole, you may want to install the chambers and get it over with at the same time. And give the rainwater someplace to go instead of sitting on top of your field.

➔ If you have been experiencing record rainfall, your condition might be temporary, and you may need nothing more than time or a curtain drain around your drainfield to divert the groundwater. I'd get another opinion or two before I went to the expense of going aerobic.

➔ Curtain drains are just shallow French drains designed to drain off soggy backyards. It sounds as if this onsite system is pressurized (there is a pump.) The surface water may not be just rainwater. It could be mixed with effluent being pushed up to the surface. In addition, three companies have looked at it and say the field is saturated.

➔ Aerating the system gives you options on how to dispose of the effluent because it's much cleaner. I think sprinklers are problematic. Are you going to spray around remnants of household bleach and your latest medical prescriptions? Is it really safe for children and pets?

You're fighting nature: high water table and poor soil conditions. The effluent has nowhere to go. There may be two more alternatives to sprinklers. Ask about a backup mounded field. A separate pipe is brought from the existing

pump to a remote corner of the property. Favorable, good-draining soil is brought in and mounded.

Within the mound, chambers are installed. The idea is to get a second field above ground level. Sizing is up to you because the primary field has met local requirements (that would be my argument). On the pump outlet is a three-way valve where a homeowner can swing the handle to redirect the effluent to the original field, the mound or both.

➔ All this talk of adding things to the system, but nothing about how much it will cost. Mound systems are very expensive, tending to be \$3,000 to \$6,000 more than a typical tank and leachfield system. I like the aeration system solution the best, since it is a minor change to your existing system. Some companies advertise an aerator motor for an existing septic tank — then you wouldn't have any tank costs.

The problem you have is you're trying to put water into water. Septic systems don't work underwater. One of the best things you can do is conserve water. Turn off the water when you're brushing your teeth or shaving. In the shower, get wet, turn off the water, soap up, then turn the water back on to rinse off.

Replace an older top-load washing machine with a front loader, which uses nearly half the water of a regular machine. Replace all faucet aerators and showerheads with water-conserving devices. If you really want to get radical, replace your toilets with new water-conserving toilets. Bottom line: Less water will help your system. ■



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# An Answer for Rural Towns?

A cluster system in an Ohio hamlet shows potential as a model for other small communities far from big cities

By **Scottie Dayton**

**T**he unincorporated hamlet of Shenandoah, in northern Richland County, Ohio, has 35 homes, a church, general store and community center. A citizen's complaint about wastewater discharging to an open ditch led the local health department to 36 failed onsite systems. Most had small lots, preventing their replacement. In 2003, the Richland County Health Department told the county commissioners to acquire a decentralized sewer system as soon as possible.

The commissioners contracted Wayne Bishop, P.E., of K.E. McCartney and Associates Inc. in Mansfield,

Ohio. "We considered every possible treatment alternative," he says. "The solution had to be cost-effective for the residents, involve innovative technology to help acquire funding, satisfy Ohio EPA requirements, and meet criteria for grants being pursued. It was a difficult balancing act that finally came together in 2007."

Bishop's design combined low-pressure sanitary sewers (LPSS), conventional gravity sewers, settling tanks and peat biofilters discharging to elevated sand mounds. It became the first residential community decentralized household sewage treatment system in Ohio.



Effluent from each bank of 18 peat Puraflo biofilters flows from the bottom of the modules through 1-inch SDR 80 PVC to the 6-inch SDR 21 PVC force main. (Photos courtesy of Stillion Bros. Excavating Inc.)

Officials see the system as a possible answer for hundreds of small communities far from municipalities.

## Site conditions

Glacial till soils are Bedington and Cardington silt loam with an 18- to 30-inch seasonal high water table. The area has poor to severe drainage for effluent disposal. The agricultural land is flat to rolling (6 percent slope).

## System components

Bishop designed the system to handle 10,000 gpd. Its major components are:

- 15 E/One 2000 grinder pumps from Environment One Corp., Niskayuna, N.Y.
- 6,400-gallon settling tank. All tanks are single-compartment and made by United Precast Inc., Mount Vernon, Ohio.
- 6,300-gallon settling tank
- 6,100-gallon settling tank
- Three A300 effluent filters from Polylok of Wallingford,

Conn. (one per tank)

- 7,000-gallon dosing tank with three 3-hp Model 6123 pumps from Zoeller Pump Co., Louisville, Ky.
- Three STF-100A3 effluent filters from Sim/Tech Filters Inc., Boyne City, Mich., one per pump
- 54 Puraflo peat biofilters from Bord na Mona Environmental Products, Greensboro, N.C.
- 7,000-gallon sand mound dosing tank with five 3-hp Model 6123 pumps
- Five 463-foot elevated sand mounds
- Six 1,500-gallon septic tanks with effluent filters
- Six AX20 AdvanTex units, Orenco Systems Inc., Sutherlin, Ore.
- Six 150- to 200-foot off-site elevated sand mounds.

## System operation

North-south Route 13 intersects Route 603 in the middle of town,

## System Profile

<b>Location:</b>	Shenandoah, Ohio
<b>Facility served:</b>	Rural community
<b>Designer:</b>	Wayne Bishop, P.E., K.E. McCartney and Associates Inc., Mansfield, Ohio
<b>Installer:</b>	Don Stillion, Stillion Bros. Excavating Inc., Perrysville, Ohio
<b>Site conditions:</b>	Glacial till with 18- to 30-inch seasonal high water table; poor to severe drainage
<b>Type of system:</b>	Puraflo peat biofilters, Bord na Mona Environmental Products, Greensboro, N.C.; AX20 AdvanTex units, Orenco Systems Inc., Sutherlin, Ore.
<b>Hydraulic capacity:</b>	10,000 gpd



dividing Shenandoah in half. Wastewater from 15 homes on the west side flows through 4-inch laterals to individual grinder pump stations that discharge to 1.25-inch pipe connected to a 2-inch SDR 21 PVC low-pressure sewer collector. Pump stations on the opposite side of the road discharge to a 1.5-inch LPSS that ties into the larger line at a manhole.

"It was cost-effective to put an 8-inch SDR 35 PVC gravity sewer on both sides of Route 603 on the east side of town," says Bishop. "The LPSS ties in just after it crosses Route 13." The 8-inch pipe discharges to three septic tanks in series. Effluent flows through a 6-inch SDR 21 PVC pipe to the dosing tank, where three alternating pumps cycle every 42 minutes, sending 216 gallons per dose to a bank of biofilters 34 times per day. A separate valve box determines which group is dosed.

The biofilters are arranged in three banks of 18 modules served by a common header. Every unit has a spray manifold that evenly doses the peat. Purification occurs as the liquid percolates through the media. Peat also suppresses odor. Treatment performance averages less than 5 mg/l TSS and BOD, and 99 percent reduction for fecal coliforms with no pathogens.

Two weep holes topped with clean stone on one side of each module drain effluent into 4-inch pipes. Drainage pipes, with sampling port and cleanout, flow to two 6-inch SDR 21 PVC pipes that discharge to the sand mound dosing tank. An external valve box alternates the five pumps in the tank. An 8-minute dosing cycle

sends 98 gpm every 12 hours to the pump's dedicated sand mound.

Each mound has two 1.25-inch PVC drip laterals 430 feet long on 1-foot 9-inch centers, with 1/4-inch emitters every 5 feet. Weeps in the pipes enable liquid to drain back to the dosing tanks when the pumps shut off.

was straightforward."

The second half of the project involved the eight properties not discharging to the sand mounds. Stillion pumped the two good septic tanks. The six failed systems were on large parcels. These households received 1,500-gallon septic tanks with effluent filters.

**"We considered every possible treatment alternative. The solution had to be cost-effective for the residents, involve innovative technology to help acquire funding, satisfy Ohio EPA requirements, and meet criteria for grants being pursued. It was a difficult balancing act that finally came together in 2007."**

Wayne Bishop

### Installation

Don Stillion of Stillion Bros. Excavating Inc. in Perrysville, Ohio, was the general contractor. His crew staked out the contoured drainfields, then scarified the soil using a small tractor with chisel plow. "We trucked in a lot of concrete fines sand, which is coarser than silty fines sand," he says. "The mounds run parallel to the contour and rise 3 to 6 feet above grade depending on the slope."

The drip laterals were installed with emitters down on 6 inches of prewashed gravel over 3.25 feet of sand. Stillion covered the distribution system with 2 inches of aggregate, then a synthetic fabric topped with 18 inches of topsoil to insulate the biological growth.

"The highway department wouldn't allow us to open cut along a state route, so we directional drilled the low-pressure and gravity sewers," says Stillion. "We used open cut and directional drilling 50/50.

The system's installation

An AdvanTex secondary treatment unit sits atop the septic tank. As effluent trickles down through and between sheets of textile media, microorganisms provide treatment. When the effluent reaches a preset level, the recirculating splitter valve sends half the volume back to the septic tank, and half to the 150- to 200-foot sand mound.

"Our original design called for three sand mounds and three leachfields, but poor soil permeability and a seasonal high water table pushed us to substitute elevated sand mounds at all six sites," says Bishop. "The big challenge was limiting disturbance to the terrain and not compacting the mound basal area."

### Maintenance

Richland County Sewer District (RCSD) operates and maintains the cluster system and eight onsite systems. The county health department monitors everything. The project was 64 percent grant-funded.

The remaining \$295,000 was covered by a no-interest loan, which divided into \$7,763 per property. To collect the money, the county added a \$25 per month user fee adjustment to the 38 homeowners' sewer bills. The fee also connected them to the system. Shenandoah residents pay the same rates as other RCSD customers. ■

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Workers install effluent sampling ports in the first bank of 18 peat biofilter modules.

Workers from United Precast Inc., Mount Vernon, Ohio, set the bottom half of the first of three septic tanks in series.



# Making Work Easier

Basic hand and power tools and accessories are part of the installer's arsenal. Here are a few devices that can help projects go smoothly.

By Ted J. Ruiseh

**F**rom tools to keep components level, to lights that help the job go on after dark, manufacturers have installers covered. Here is a sampling of tools and accessories that can help make installations go smoothly.



Ardisam earth auger from Northern Tool & Equipment

## Perc Test Auger

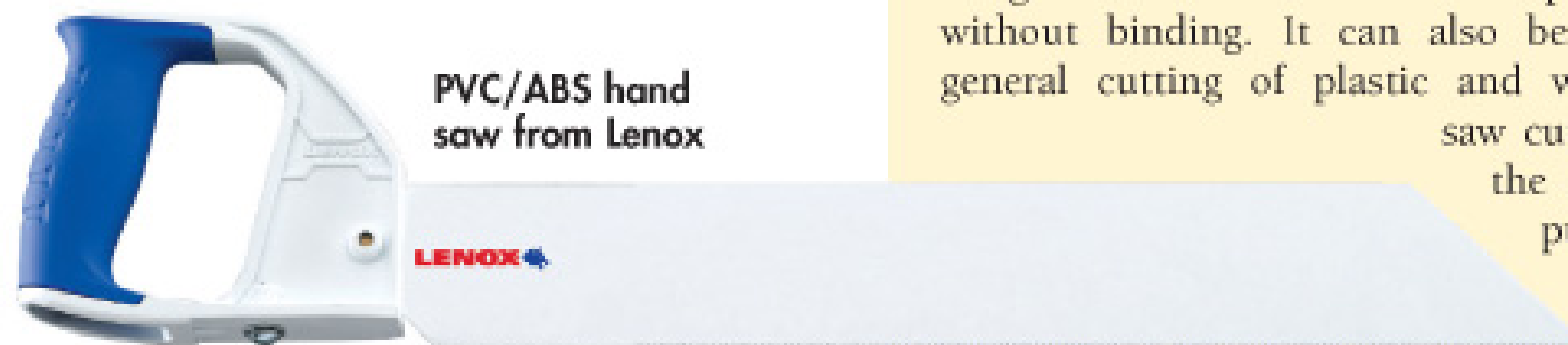
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ALH Series laser level from CST/berger



PVC/ABS hand saw from Lenox

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HI 93732N dissolved-oxygen meter from HANNA Instruments

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## System Troubleshooting

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M12 work light from Milwaukee Electric Tool Corp.

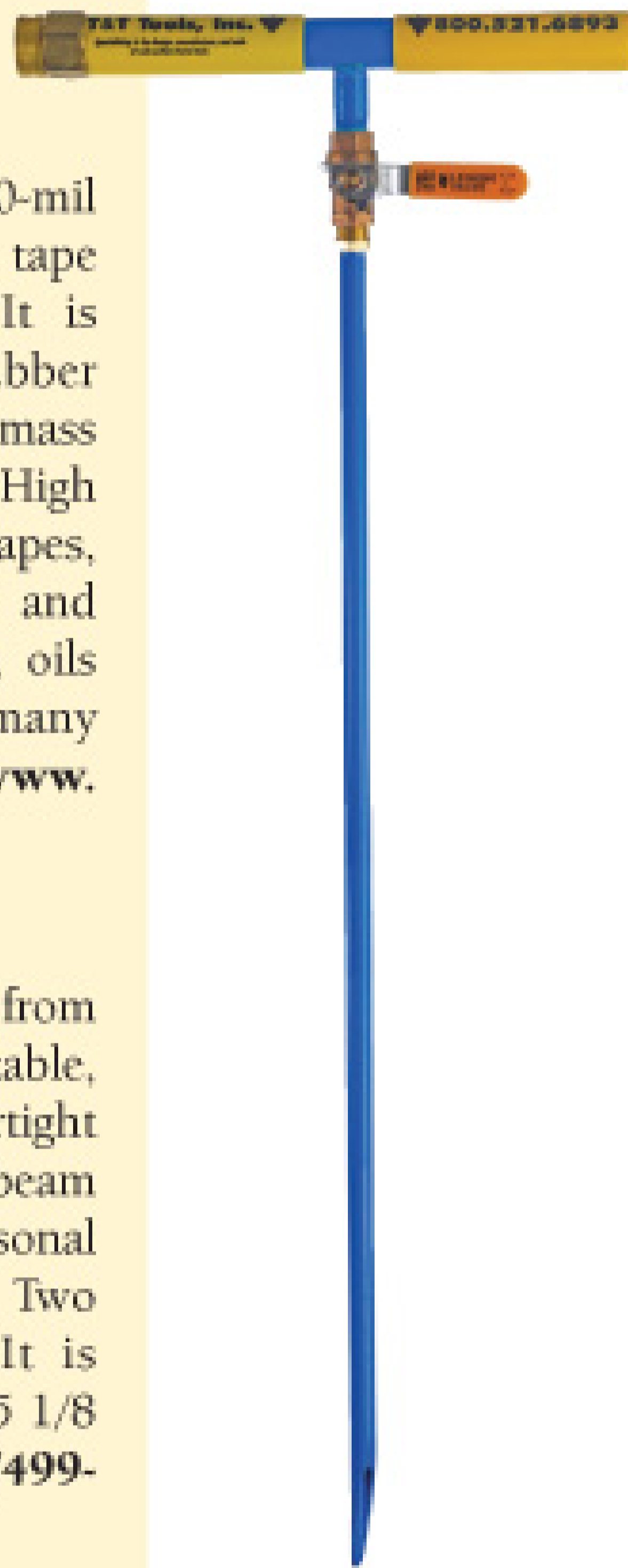


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Water Probe from T&T Tools



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### Working at Night

The **Mitylite Magnum flashlight** from Code Red Safety is made of an unbreakable, chemical-resistant Xenoy resin and is watertight to 500 feet. A focused Xenoy modified spot beam is 600 percent brighter than ordinary personal lights. The unit comes with a shirt clip. Two AA alkaline batteries provide power. It is available in black and yellow and measures 5 1/8 inches long by 1 7/8 inches in diameter. 800/499-5253; [www.coderedsafety.com](http://www.coderedsafety.com). ■

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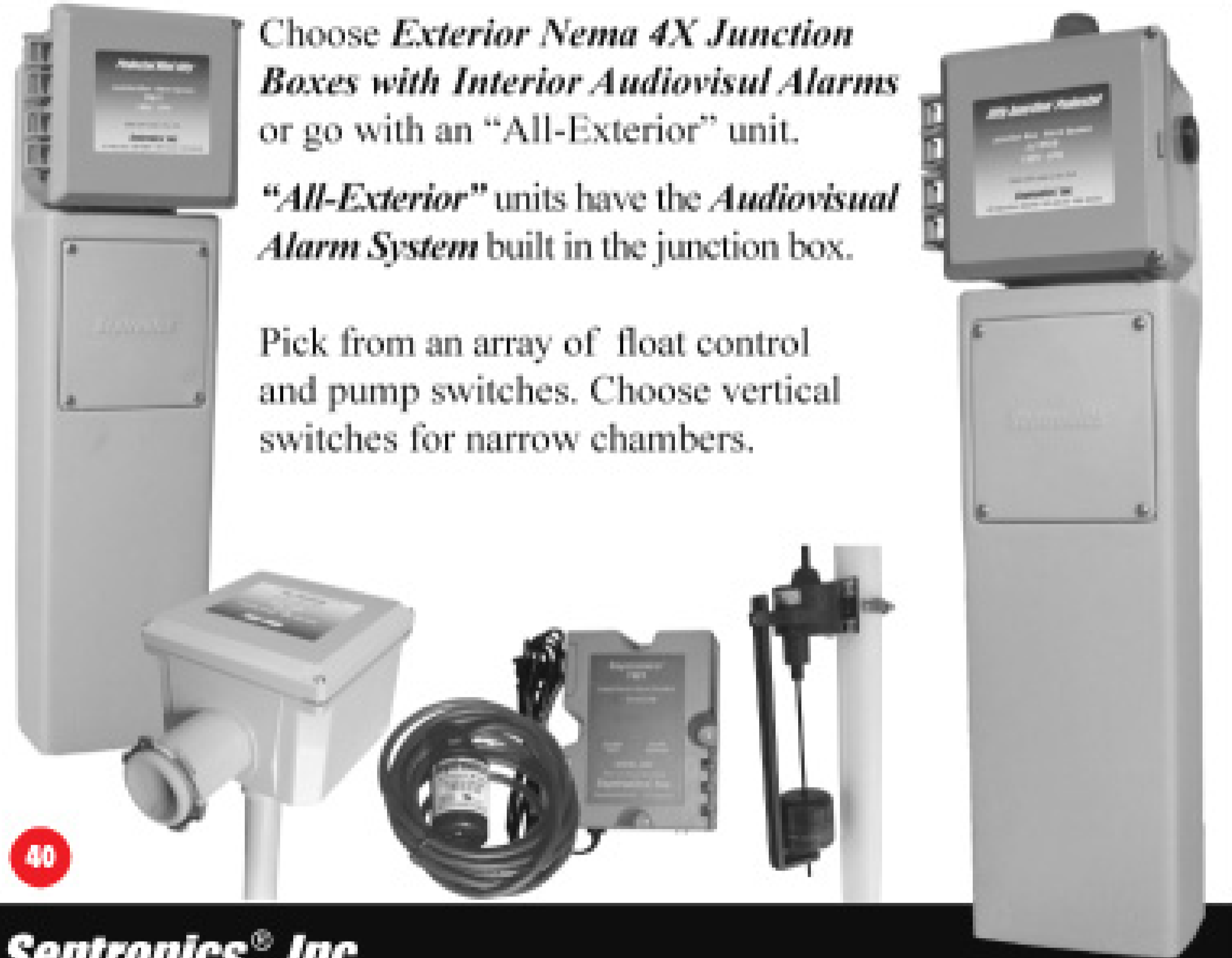
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## Raven Designs Portable Sludge-Level Meter

The portable, hand-held Sludge Interface Detector SID-10200 from Raven Environmental Products Inc. uses an infrared probe to penetrate the settled sludge, while an online device sends ultrasonic signals to detect the sludge level. The unit features audio and visual LED indicators visible in direct sunlight, sensitivity adjustment, low-battery indicator and cable stowage brackets. **800/545-6953; www.ravenep.com.**

## Bio-Microbics Introduces Leachfield Rejuvenation System

The RetroFAST 0.150 septic enhancement system is the latest addition to the Bio-Microbics family of retrofit products. Designed for existing septic systems or as an alternative to failed systems, the unit generates dissolved oxygen in the wastewater, promoting aerobic bacteria growth and natural digestion of the biomat. Made to handle 150 gallons per day, larger 250-gallon and 375-gallon units are also available. **913/422-0707; www.biomicrobics.com.**

## Liberty Designs Macerating Toilet System

The Ascent macerating toilet system from Liberty Pumps is designed for bathrooms where gravity drain lines do not exist and without breaking floors. The system features an elongated ADA comfort toilet with a macerating pump that conveys waste to an existing gravity sewer line. The pump can perform to vertical heads of 15 feet and runs up to 150 feet horizontally. **800/543-2550; www.libertypumps.com.**



## Vermeer Introduces RTX750 Quad-Track Tractor

The RTX750 tractor from Vermeer Corp. features a quad-track system for improved flotation, reduced surface damage and greater stability.



Available with either quad tracks or rubber tires, the tractor is powered by a 74-hp Tier 3 Cummins engine, delivering up to 209 foot pounds of torque. Equipped with planetary axles, the ground drive system operates at low torque levels. When added traction is needed, the operator can engage the differential locks with

the push of a button. Attachment controls are located on the right side of the operator's station, which rotates 90 degrees. The one-piece automotive-style hood is designed to maximize visibility during backfilling and transport. **888/837-6337; www.vermeer.com.**

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We sell Flagg-Air 340, Secoh, Gast and Medo Linear, FPZ and Gast Regenerative, Thomas and Gast Rotary Vane aerators, rebuild kits and alarms at wholesale prices. Septic Services, Inc. [www.septic-serv.com](http://www.septic-serv.com). 1-800-536-5564. (IM)

## BLOWERS

We sell Roots & Sutorbilt Rotary Lobe blowers. We also sell linears, regenerative, rotary vane aerators and alarm kits. Septic Services, Inc. [www.septic-serv.com](http://www.septic-serv.com). 1-800-536-5564. (IM)

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FOR SALE: Sunny South Florida. Full service septic tank business established 20 years. Great potential; great records. Owner retiring. Call Chris 305-297-2171. (PI12)

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2-Septic tank delivery trucks; 1-ready mix truck; 7-Celico septic tank forms (1000-1500 gallon); misc. drop box, riser forms, lift tank forms. Trucks and loaders in good condition. (In service in 2007) All forms in good or better condition. (Used in 2007) Package price \$70,000. 218-829-9678 or 800-829-5755. (IBM)

FOR SALE: Established 15 years, septic pumping business in Eastern Massachusetts. Excellent reputation, 3000+ client list includes residential and commercial customers. Solid income, excellent growth potential. In the midst of busy season now. Sale of business includes a 1995 Ford L-9000 vacuum truck with 330 hp Cummins engine, 3600 gallon tank, 4 years new. Serious inquiries only @ [masepticco4sale@gmail.com](mailto:masepticco4sale@gmail.com). (CPT112)

FOR SALE: Established company in Florida specializing in the following services: onsite septic installation service & repair, septic pumping & cleaning, portable chemical toilet service. Turnkey operation! Equipment, trucks, accounts. Serious inquiries only. Call TLS 1-352-428-5939. (PBM)

## COMPUTER SOFTWARE

WINTAC is the #1 software for scheduling, CRM, billing, service tracking, accounting, marketing, vehicle management. FREE demo at [www.wintacpro.com](http://www.wintacpro.com). 1-800-724-7899. (PI02)

## DRAINFIELD RESTORATION

1997 TERRALIFT, 341 hours, 4' and 6' probes. Excellent condition. \$11,000. 804-492-4826. (CP12)

## DRAIN/SEWER CLEANING EQUIPMENT

All equipment needed to start sewer and drain cleaning company. Equipment includes: Spartan Model 2001, Mainline machine, Spartan 100, Spartan 81, 2-3000 psi jetters, 1 electric, 1 gas misc. augers, heads, cables, tapes, etc. Complete Ridgid camera and locator equipment. Large utility truck. Take all or none. Call Tom 303-591-0980. (CMIPT11)

## HAND TOOLS

**Crust Busters** - Portable, lightweight machine guaranteed to mix up septic tanks and grease traps! Save time and money! [www.crustbusters.com](http://www.crustbusters.com), 1-888-878-2296. (IM)

## MISCELLANEOUS

One 2005 Septic Tank Truck: Non-CDL, 7 septic tank molds from 1000 gal. to 2250 gal., distribution box forms 6-hole to 13-hole, 2 tank flippers, spreader box for drainfield, all Virginia approved. Call 804-892-2466. (IBM)

## PUMPS

Hydromatic, Zoeller, Liberty, ABS, Myers, Grinder and Effluent pumps. Lift station packages and high water alarms are also available. Septic Services, Inc. [www.septic-serv.com](http://www.septic-serv.com). 1-800-536-5564. (IM)

## SEPTIC TRUCKS

2007 Mack CTP713B pump truck. 20 front and 44 rear, 5,363 miles. AM/FM, CD player. 4000 gallon tank with 506 Challenger pump. \$145,000. Kevin 850-333-1651. (PTIM12C01)

## TRAILERS: VACUUM/TANKER

**Absolute Public Auction** surplus from Metropolitan Sewer of St. Louis on November 20th including vac-trucks, jetters, compost turner and other heavy equipment. [www.jjkane.com](http://www.jjkane.com). (CMPT11)

## TRUCKS MISC.

1992 MACK - ALL Mack with Del Zotto side shift monorail septic tank hauler. One owner. \$25,000 USA. 314-220-8676. (I12)

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SEPTIC TANK SET TRUCK: 1994 Freightliner, Cummins 330E, 20,000 lb. winch, excellent set truck. \$37,500 OBO. 903-818-3307. (I01)

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## Installer Academy in December

The NOWRA Installer Academy is Dec. 8-10 at the Riviera Hotel in Las Vegas, Nev. Attendees can earn CEUs in the new practitioner education and training program, business management sessions, and manufacturer product-training workshops. The event also has the NEHA Installer Credential examination, NAWT vacuum truck technician training, and a Roe-D-Hoe contest. Industry experts will give programs titled:

- New Consortium Installer and Advanced Training
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- Watertight Septics – Holding and Dose Tanks
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## Lakes Community Promotes Onsite Maintenance

An article in the Indiana Onsite Wastewater Professional Association newsletter states that a group of concerned property owners in the lakes community of Cordry Sweetwater Conservancy District formed the Septic System Evaluation Committee to promote onsite maintenance.

Many owners had added onto their cabins or built larger homes on the small lots without upgrading the onsite systems. The committee's goal is to provide residents with a five-year maintenance schedule. The Brown County Health Department and the state Department of Health sanitary engineering

department are supporting the program. For information, call Joe Quackenbush at 317/933-2893 weekdays 8 a.m. to 4 p.m.

## Change of Leadership

Cliff Trammel has retired as director of the California Onsite Wastewater Association, and MaryAnne Bobrow of Bobrow and Associates has assumed management of the organization. Contact her at 916/722-8168 or e-mail [maryanne@bobrowassociates.com](mailto:maryanne@bobrowassociates.com).

## Warning Labels Available

The Wisconsin Precast Concrete Association has warning labels to replace those missing from septic tank covers. They cost \$1.05 per label plus shipping. Call 608/256-7701 to order.

## Dinner with Pump-out

The Lake of the Ozark Watershed Alliance (LOWA), A&A Septic Pumping Service in Linn Creek, Mo., and the Missouri Department of Natural Resources are offering free dinners and a septic system maintenance seminar to homeowners. Moving county to county and using local restaurants, the demonstration teaches residents how to care for their systems and spot the early warning signs of failure. Those who register for a pump-out receive a rebate through a DNR grant.

The program begins and ends with a test to evaluate what attendees learned. "We've seen a 20 percent increase in knowledge," said LOWA president Donna Swall. "If homeowners can't attend a dinner, they still can register for a pump-out through us and receive a \$25 discount." Call Swall at 573/374-8360 or go to [www.soslowa.org](http://www.soslowa.org).

## Soils Exhibit at Smithsonian Institution

A new free exhibit on soils is at the Smithsonian Institution's National Museum of Natural History in Washington, D.C. Through dioramas, cross sections, multimedia programs and hands-on activities,

"Dig It! The Secrets of Soil" examines the physical and biological characteristics of soils, the processes that transform rocks to soils, the uses and benefits of soils, and the many ways soils touch people's daily lives. The 5,000-square-foot exhibit travels to various cities starting in spring 2010.

## CALENDAR OF EVENTS

### Nov. 12-13

North East Residuals & Biosolids Conference & Exhibit, Nashua, New Hampshire. Call Ned Beecher at 603/323-7654 or visit [www.newea.org](http://www.newea.org).

### Dec. 4-5

Kentucky Onsite Wastewater Association Conference, Sloan Convention Center, Bowling Green. Call 270/715-0043 or visit [www.kentuckyonsite.org](http://www.kentuckyonsite.org).

### Dec. 8-9

NOWRA Installer Academy, Riviera Hotel, Las Vegas, Nev. Call 800/966-2942 or visit [www.nowra.org](http://www.nowra.org).

### Jan. 8-10

Michigan Onsite Wastewater Recycling Association Conference and Exhibit, Kellogg Hotel and Conference Center, East Lansing. Call Chanin Frank at 989/773-6985, ext. 258, or visit [www.mowra.org](http://www.mowra.org).

### Jan. 13-15

Iowa Onsite Waste Water Association Conference, Polk County Convention Center, Des Moines. Call 515/225-1051 or visit [www.iowwa.com](http://www.iowwa.com).

### Jan. 13-15

Ohio Onsite Wastewater Association Conference and Trade Show, Ramada Plaza Hotel and Conference Center, Columbus. Call 866/843-4429 or visit [www.ohioonsite.org](http://www.ohioonsite.org).

### Jan. 19-21

Missouri Smallflows Organization Conference and Exhibition, Holiday Inn Select, Columbia. Call 417/739-4100 or visit [www.mosmallflows.org](http://www.mosmallflows.org).

### Jan. 22-24

Alberta Onsite Wastewater Management Association Conference, Deerfoot Inn and Casino, Calgary. Call 780/489-7471 or visit [www.aowma.com](http://www.aowma.com).

### Jan. 23-24

Washington Onsite Sewage Association Conference, Vancouver. Call John Thomas at 253/297-2837 or visit [www.wossa.org](http://www.wossa.org).

### Jan. 26-28

North Carolina Septic Tank Association Conference and Exposition, Hickory Metro Convention Center, Hickory. Call Connie Stephens 336/416-6394 or visit [www.ncsta.net](http://www.ncsta.net).

### Jan. 30-31

Wisconsin Liquid Waste Carriers Association and Wisconsin Onsite Water Recycling Association Joint Convention, Marriott West Hotel, Madison. Call 608/255-2770 or visit [www.wowra.com](http://www.wowra.com).

### Feb. 11-12

Nebraska On-site Waste Water Association Conference. Call Lee Orton at 402/476-0162 or visit [www.nowwa.org](http://www.nowwa.org).

### Feb. 14-15

Utah On-Site Wastewater Association Conference, Expo Center, West Valley City. Call Carmell Burns at 435/797-3174 or visit <http://uwrl.usu.edu/partnerships/training/uowa.html>.

### Feb. 25-28

Pumper & Cleaner Environmental Expo International, Kentucky Exposition Center, Louisville, Ky. Call 800/257-7222 or visit [www.pumpershow.com](http://www.pumpershow.com).

### March 1-4

Ontario Onsite Wastewater Association Conference and Exhibition, Sheraton Conference Centre, Richmond Hill. Call Denis Orendt at 905/372-2722 or visit [www.oowa.org](http://www.oowa.org).

### March 8-10

Pennsylvania Association of Sewage Enforcement Officers Conference, Grantville. Call 717/761-8648 or visit [www.pa-seo.org](http://www.pa-seo.org).

### March 18-19

Tennessee Onsite Wastewater Association Continuing Education Workshop and Annual Meeting, UAW Union Hall, Spring Hill. E-mail Scott Fellwock at [scott.fellwock@nashville.gov](mailto:scott.fellwock@nashville.gov) or visit <http://onsite.tennessee.edu/TOWA.htm>.

## April 6-9

NOWRA Technical Exhibition and Conference, Midwest Airlines Convention Center, Milwaukee, Wis. Call 800/966-2942 or visit [www.nowra.org](http://www.nowra.org).

## TRAINING & EDUCATION

### NAWT

The National Association of Wastewater Transporters has scheduled sessions in the following locations:

- Nov. 12-13 – Operation and Maintenance Part 2, Mill Valley, Calif. Call MaryAnne Bobrow at 916/722-8168 or e-mail [maryanne@bobrowassociates.com](mailto:maryanne@bobrowassociates.com).
- Dec. 9 – Vacuum Truck Training, Riviera Hotel, Las Vegas, Nev. Call NAWT at 800/236-6298 or visit [www.nawt.org](http://www.nawt.org).

### Alabama

Licensing classes are the joint effort of the Alabama Onsite Wastewater Association (AOWA) and University of West Alabama (UWA). Courses are at UWA's Livingston campus:

- Dec. 4-5 – Continuing Education
- Dec. 10-12 – Advanced Installer Level 2

Call Allen Tarrt 205/652-3803 or visit [www.aowatc.uwa.edu](http://www.aowatc.uwa.edu).

### Minnesota

The University of Minnesota Extension has these hands-on workshops:

- Dec. 2-3 – General Continuing Education, Brainerd
- Dec. 12 – Troubleshooting, Owatonna
- Dec. 17-18 – General Continuing Education, Mankato

Call Nick Haig at 800/322-8642 (612/625-9797) or visit <http://septic.umn.edu>.

### Missouri

The Missouri Smallflows Organization is offering these CEU courses:

- Dec. 2-3 – Lagoons and Drainfields/Curtain Drains, Springfield
- Dec. 9-10 – Operation and Maintenance, Warrenton
- Dec. 16-17 – Lagoons and Drainfields/Curtain Drains, Ironton

Call Terri at 417/739-4100 or visit [www.mosmallflows.org](http://www.mosmallflows.org).

### Nebraska

The Cooperative Extension at the University of Nebraska is offering the following certified course for CEUs:

- Dec. 10 – Extension Pumps & Controls, Mead

Call the Nebraska On-site Waste Water Association at 402/476-0162 or the university at 402/472-9614.

### North Carolina

North Carolina Soils and On-Site Wastewater Training Academy has the following courses at Raleigh unless stated otherwise:

- Dec. 1 – Flow Equalization and Timed Dosing
- Dec. 2 – Pump System Design
- Dec. 2 – Low Pressure Pipe System Design
- Dec. 9-10 – Drip Dispersal Design for NC Proprietary Systems
- Dec. 11 – Large Drip Dispersal System Designs
- Dec. 12 – Soils of the Outer Banks, Manteo
- Dec. 17 – Remote Systems, Greensboro
- Dec. 18 – Basic System Troubleshooting, Greensboro

Call Joni Tanner at 919/513-1678 or visit [www.soil.ncsu.edu/training](http://www.soil.ncsu.edu/training).

### Rhode Island

The University of Rhode Island's Onsite Wastewater Training Center offers these professional development workshops at its Kingston campus:

- Dec. 4 – Regulatory Setbacks and Buffers
- Dec. 18 – Nitrogen Dynamics in the Environment and Onsite Wastewater Systems

Call David Kalen at 401/874-5950 for onsite courses, Mark Stolt at 401/874-2915 for soils courses or visit [www.uri.edu/ce/wq](http://www.uri.edu/ce/wq).

### Virginia

A course by the Virginia Center for Onsite Wastewater Training (VCOWT) and Southside Virginia Community College is in Blackstone:

- Dec. 10-11 – Wastewater 101

Contact Debbie Campbell at 434/736-2011 or visit [www.southside.edu/programs/wastetreat](http://www.southside.edu/programs/wastetreat). ■

November 2008



## Lenzyme Publishes Maintenance Brochure

Lenzyme has designed a homeowner education brochure on the importance of regular cleaning and maintenance of septic and plumbing systems. The brochure includes information on how systems work through bacterial action and a calendar reminding homeowners to maintain their systems. For more information, call 800/223-3083.

## Liberty Among Fastest Growing Companies

Liberty Pumps has been named one of *Inc.* magazine's fastest growing businesses for the second straight year. Located in Bergen, N.Y., Liberty ranks 4,848 on the magazine's Top 5,000 list. Founded in 1965, the manufacturer of sump and sewage pumps showed a 45.3 percent increase over the three-year period from 2004-2007, growing from \$20.9 million to \$30.4 million. The company also has been cited as one of Rochester's Top 100 companies for eight out of the past 10 years. It recently broke ground on a \$4 million, 64,000-square-foot expansion project. ■

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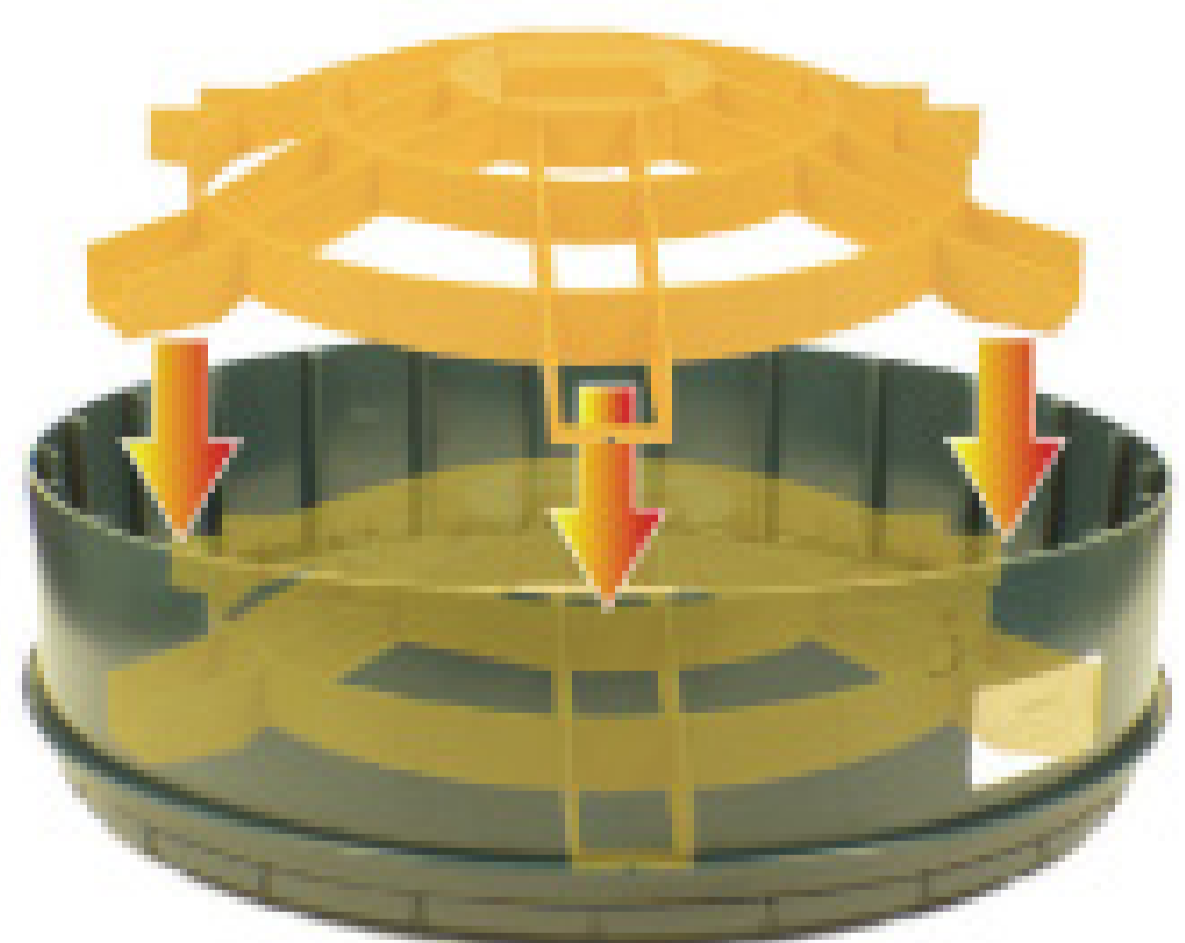
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