

February

2009

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**EXPO
ISSUE**

Quality First

C. White & Sons delivers onsite systems with a do-it-right-the-first-time commitment

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By Gil Longwell

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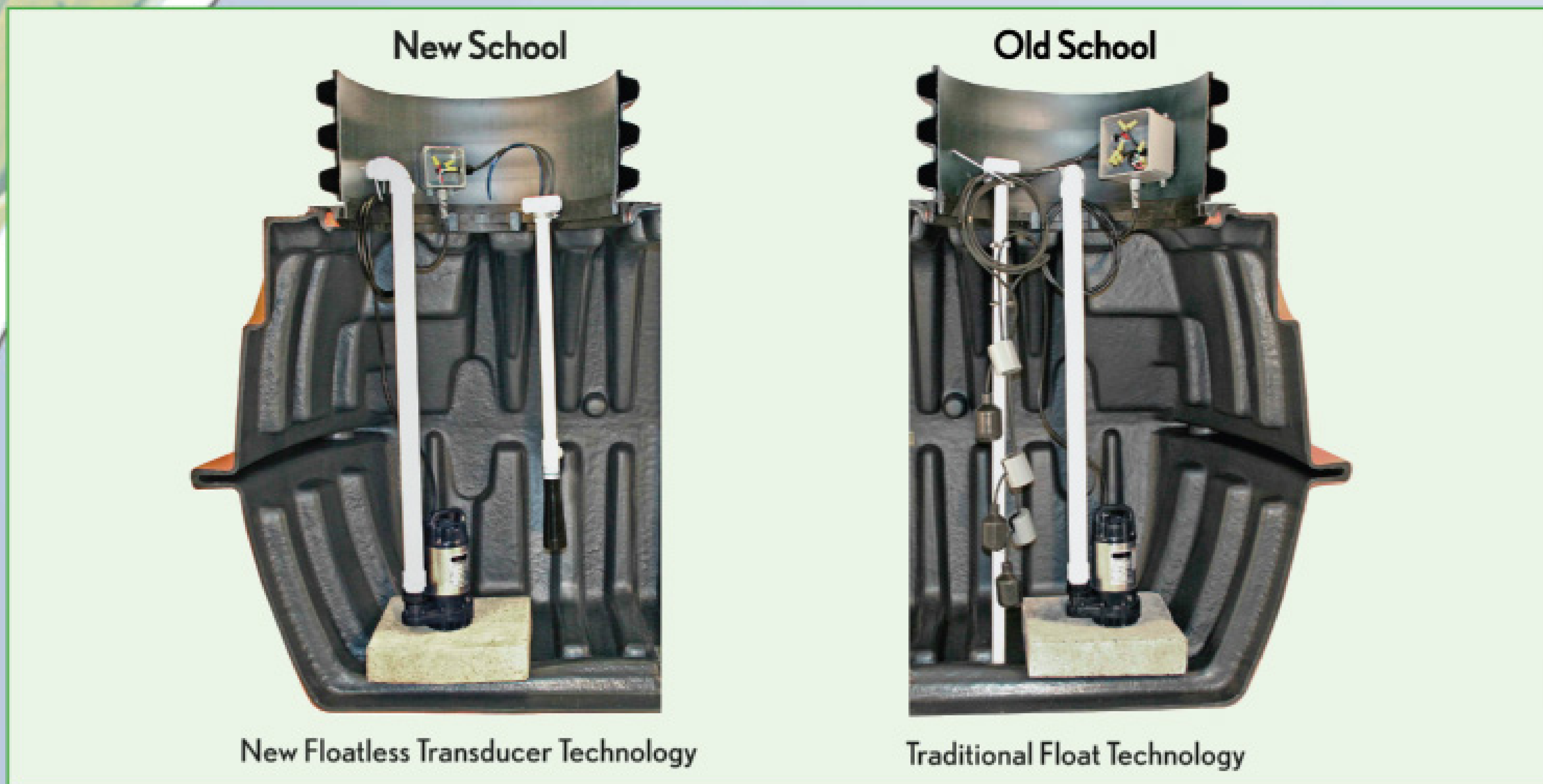
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“I Can’t Afford It”

Of all excuses for not attending your industry’s major trade show, this one is the most ill-considered and, in the end, the most harmful

By Ted J. Rulseh

While I was working on one of my first jobs and trying to keep a young family afloat, a dentist I met at a meeting asked how long it had been since my last checkup.

“I can’t afford to go to the dentist,” I replied.

“You can’t afford *not* to go to the dentist,” he said, a look of utter shock on his face. He was right, of course. And what he said is true of many things we all claim at some point that we “can’t afford.”

Allow me to suggest here that you can’t afford *not* to go to your industry’s leading trade shows. Of course it’s true your business won’t dry up and blow away in the wind just because you fail to attend the 2009 Pumper & Cleaner Environmental Expo Feb. 25-28 in Louisville, Ky., or NOWRA’s 2009 Annual Technical Exhibition and Conference April 6-9 in Milwaukee, Wis. But if you don’t go, you could be leaving an awful lot of money on the table.

Adding it up

I know it’s easy for me to say that because I work for the company that puts the Expo on each year. But I say it because I’ve seen the benefits of attending trade shows in general. Case in point: In a past life I published books as a sideline business. Before putting out my first book, I went to a publishing trade show.

There, the first seminar I attended was an introduction to book printing. The things I learned there ultimately

saved me, conservatively, \$2,000 on my first press run. Attendance at the show cost me — including all travel expenses — some \$600. So after my first hour, I was \$1,400 ahead.

And that was just the beginning. I learned techniques about book design and marketing that not only saved me money but helped me sell more books, once I had them printed, than I would have otherwise. I estimate that what I learned at that one show paid back my investment ten times over — at least.

Of course, at the time I was a raw recruit, so almost everything I saw and studied was brand new. And of course I might have been able to learn just as much, by other means, if I had skipped the show and saved the \$600. But somehow I doubt it.

It’s the venue

There’s something about a trade show that makes it more conducive to learning than any other kind of venue. You have a full slate of seminars, some undoubtedly on topics that affect you very directly. You have multiple vendors all in one place. For example, I was able to meet several book printers and find out in short order which ones might serve me best.

More than that, you have rooms full of people with the same interests as yours, many of them more experienced and smarter than you are, and many of those willing to answer questions and give advice. You won’t find that anywhere but at a show, and especially not if you

decide instead to stay home and keep the nose to the grindstone.

As with any other expenditure, you have to look at the price of a trade show — in registration fees, travel, lodging, food, incidentals — from both sides of the ledger. There is how much you pay out, and there is how much you get back. To look only at the outgo is, to put it bluntly, cheating yourself.

who did attend the show, has it. Wouldn’t it be better if you were the one who came home with that new tool and started putting your competitor, who stayed home, on the defensive?

It’s true that the Pumper & Cleaner Expo covers a much broader spectrum of business than onsite installation. It’s also true that the annual NOWRA conference deals

As with any other expenditure, you have to look at the price of a trade show — in registration fees, travel, lodging, food, incidentals — from both sides of the ledger. There is how much you pay out, and there is how much you get back. To look only at the outgo is, to put it bluntly, cheating yourself.

Lasting annuity

Remember also: Things you learn that improve your business stay with you for years. Suppose you learn a tip on pricing that’s worth \$1,000 per year in added profit. You don’t get that dividend just once — you get it every year thereafter. And then the next year you learn something else, and that stays with you. And so it goes.

If you haven’t been to a major trade show yet, then going for the first time is, as they say, a no-brainer. If you’ve attended before, the temptation might be to say: Been there, done that. But have you really?

Things change rapidly. The year you skip the show could be the year that some exciting new technology arrives. And now your competitor,

to a great extent with academic and regulatory issues that may not touch a typical installer’s daily work life.

Still, there’s a lot to be said for going to these shows if only to get a full perspective on the size and sweep of the industry you belong to. While there, you can then focus on the exhibits and seminars that do relate directly to your business, and in the process meet a lot of people who have things to teach you.

It’s not too late to revisit your trade show plans for the year. Consider a visit to the Expo and the NOWRA show, and to any other shows related to your lines of business. It’s a safe bet you’ll see your investment in time and dollars repaid handsomely. ■

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Jim Anderson and David Gustafson are with the University of Minnesota's widely recognized onsite wastewater treatment education program. Jim is director of the university's Water Resources Center, and Dave is the university's extension onsite sewage treatment educator. Readers are welcome to submit questions or article suggestions to Jim and Dave. Write to ander045@umn.edu.

Staking the Site

By clearly marking the location of the septic system before construction begins, you can prevent activities that compact the soil and ruin the site

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

Imagine this scenario: You are meeting at the site with the local inspector, looking at tire tracks left by the cement truck that was pouring the floor and footings.

The area you had counted on as an uncompacted and natural site for the soil treatment system is now a mess. Even worse, this was the only place the system would fit. Now you face the expense of some type of alternative system, or with trying to rehabilitate the site.

So even though you both agree the mistake was made by the cement company, that is of little or no consolation. There are some things that you could have done to avoid this problem, and that you should implement for the future.

Marking it off

One of the big steps would have been to stake the site for the owner and other contractors. Ideally, you should do this in the presence of the owners or discuss it with them after the staking is complete.

The clear identification of the onsite system's location helps all the other contractors or subcontractors involved in the home construction to avoid damaging the area. This includes keeping contractors from parking trucks and vans there, and preventing the stockpiling of heavier building materials and the spoil pile from the excavation.

All these events can create compaction in the soil. If a soil is com-

pacted, 70 percent of the damage in the soil is caused by the first pass of the vehicle tires. So there is no free pass on the part of anyone to drive over the site "just once."

Identifying the location to keep all the traffic off is critical for long-term system performance. If everyone understands the importance of staying off this area, many problems can be avoided.

When the site is on a small lakeshore lot (as shown in the photo at right), this becomes all the more critical, because one of the excavator's main problems will be what to do with the excess soil. It is only human nature to put it in the closest open spot available. It may cost more to move the material or even haul it away, but that expense will pay off down the road in improved system performance.

Lasting damage

We often hear statements from professionals, including engineers, to the effect that this type of compaction is not important as long as the system goes through a freeze-thaw cycle. That is not true — it takes many years for the soil to recover the ability for water and air to flow through and enable proper treatment of wastewater and effective operation of the system.

Some same the compacted soil can simply be removed. That is another idea, but leads to an expensive solution and requires a specific choice for the soil that is used as a



System locations staked in a small lot area. (Photography by Dave Gustafson, P.E.)

The clear identification of the onsite system's location helps all the other contractors or subcontractors involved in the home construction to avoid damaging the area. This includes keeping contractors from parking trucks and vans there, and preventing the stockpiling of heavier building materials and the spoil pile from the excavation.

replacement. Only clean sand — sand with less than 5 percent fine particles (silt and clay) — should be used. This is the only replacement soil that will maintain the ability to transmit water and air consistently.

Another benefit of staking is that it enables the owner to visualize the location and layout of the

soil treatment system. It is a way to compare some different layout options, and it can allow the owner to have input to the system location. This may mean talking with the owner, and for some installers that may be a big change for the better. The owner now gains the ability to see where the system, including the tanks, will be located,

and how that may affect traffic patterns on the property.

We recently visited a site where the location of a woodpile created the need for a path over the piping to the soil treatment area, raising the potential for freezing. This led to the owner considering a different route for firewood hauling to minimize the traffic over the piping and reduce the freezing concerns.

Checking elevations

Staking is also a great time to set or verify system elevations. If gravity will be used to distribute effluent between parts of the system, now is the time to make sure there is enough elevation difference to install the system where you intend — while still maintaining the required separation from the saturated soil to the bottom of the system.

Typically, for sewage to run freely from the house to the septic tank, you need an elevation drop of 1 inch per 8 feet of piping. An additional 2 to 3 inches is required for the fall through the tank. This, coupled with the required depth of rock in the trenches, gives a quick estimate of the necessary elevation drop in the system.

Consider a system where the septic tank is 10 feet from the home, the soil treatment area is

another 20 feet from the tank, and there will be 12 inches of rock in the trenches. For gravity to work, the system needs:

- 2 inches of drop from the house to the tank
- 3 inches of drop in the tank
- 15 inches of drop to the bottom of the soil treatment area.

This is a total of 20 inches from the invert of the outlet of the house sewer to the proposed depth of the soil treatment area. By checking this before all the equipment is operating, you can avoid problems. It is better to know the right answer than to have to dig to make gravity work.

The staking of the system location has many advantages and can be a helpful step in proper installation. Planning and communication all make the system installation easier and long-term performance of the system more reliable. ■



At right, a stake with the system elevation indicated. Below, an example of staking a system with a notice to keep off the area to prevent compaction.



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SCHEDULE OF EVENTS

Schedule subject to change without notice.

WEDNESDAY February 25, 2009

- Education Day - All Day - No Exhibits
- More than 40 Educational Sessions
- Networking 5-7 p.m.

THURSDAY February 26, 2009

- Certified Onsite Installer Course
- Exhibits Open: 9 a.m. - 5 p.m.
- Educational Seminars: 8 a.m. - 12 p.m.
- Women's Wine, Cheese and Fashion Show
2 p.m - 4 p.m.
- Industry Appreciation Party
5 p.m. - Refreshments Available

FRIDAY February 27, 2009

- Exhibits Open: 9 a.m. - 5 p.m.
- Educational Seminars: 8 a.m. - 12 p.m.

SATURDAY February 28, 2009

- Exhibits Open: 9 a.m. - 3 p.m.
- Saturday Evening Jam
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7 p.m. - Montgomery Gentry
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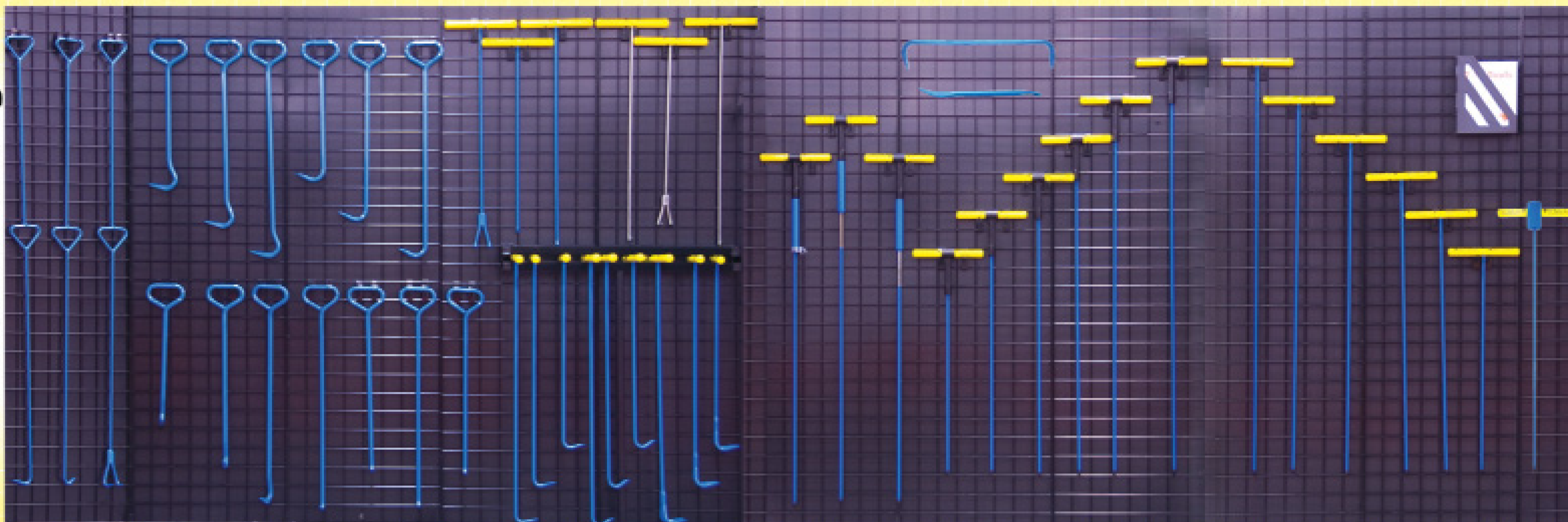
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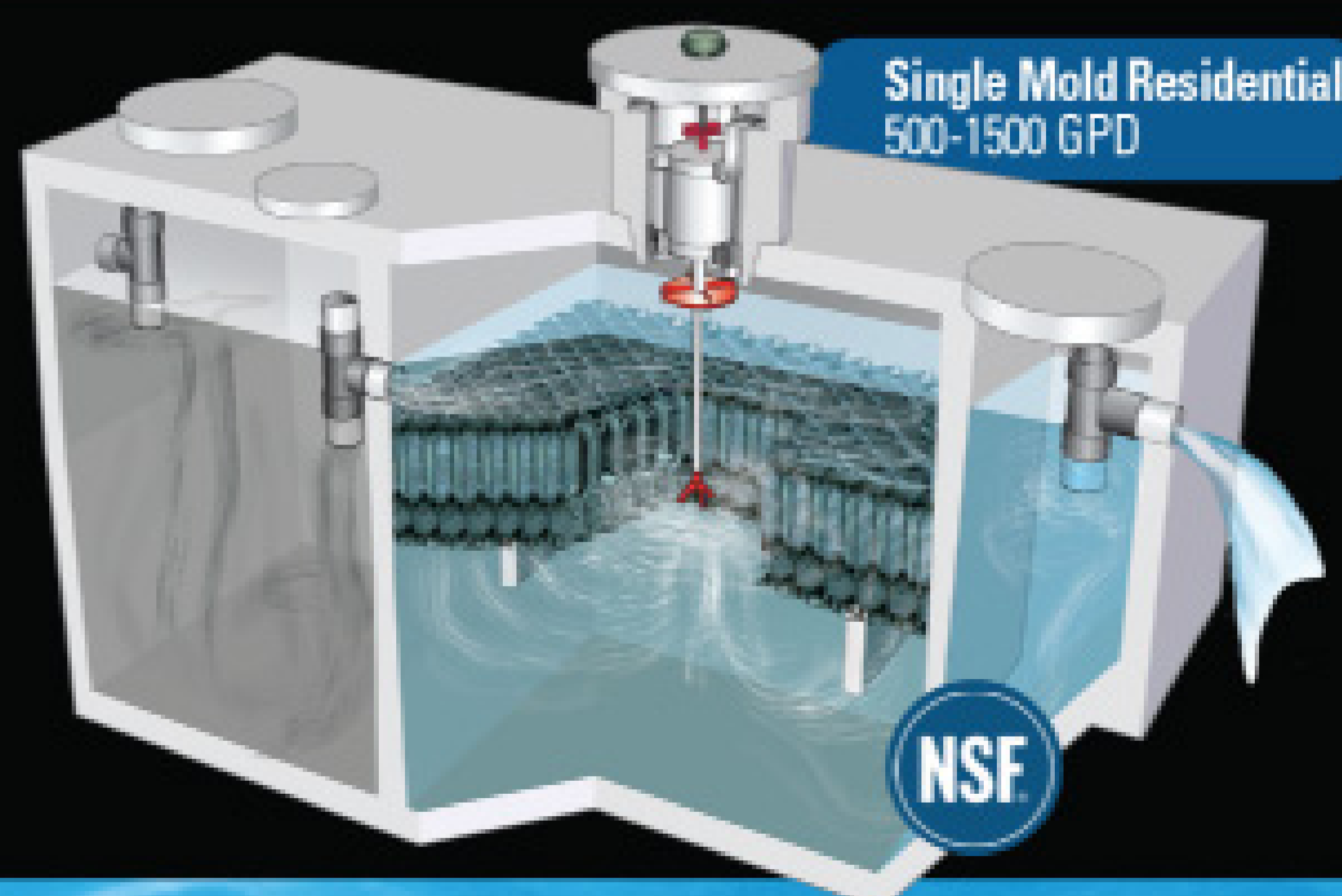
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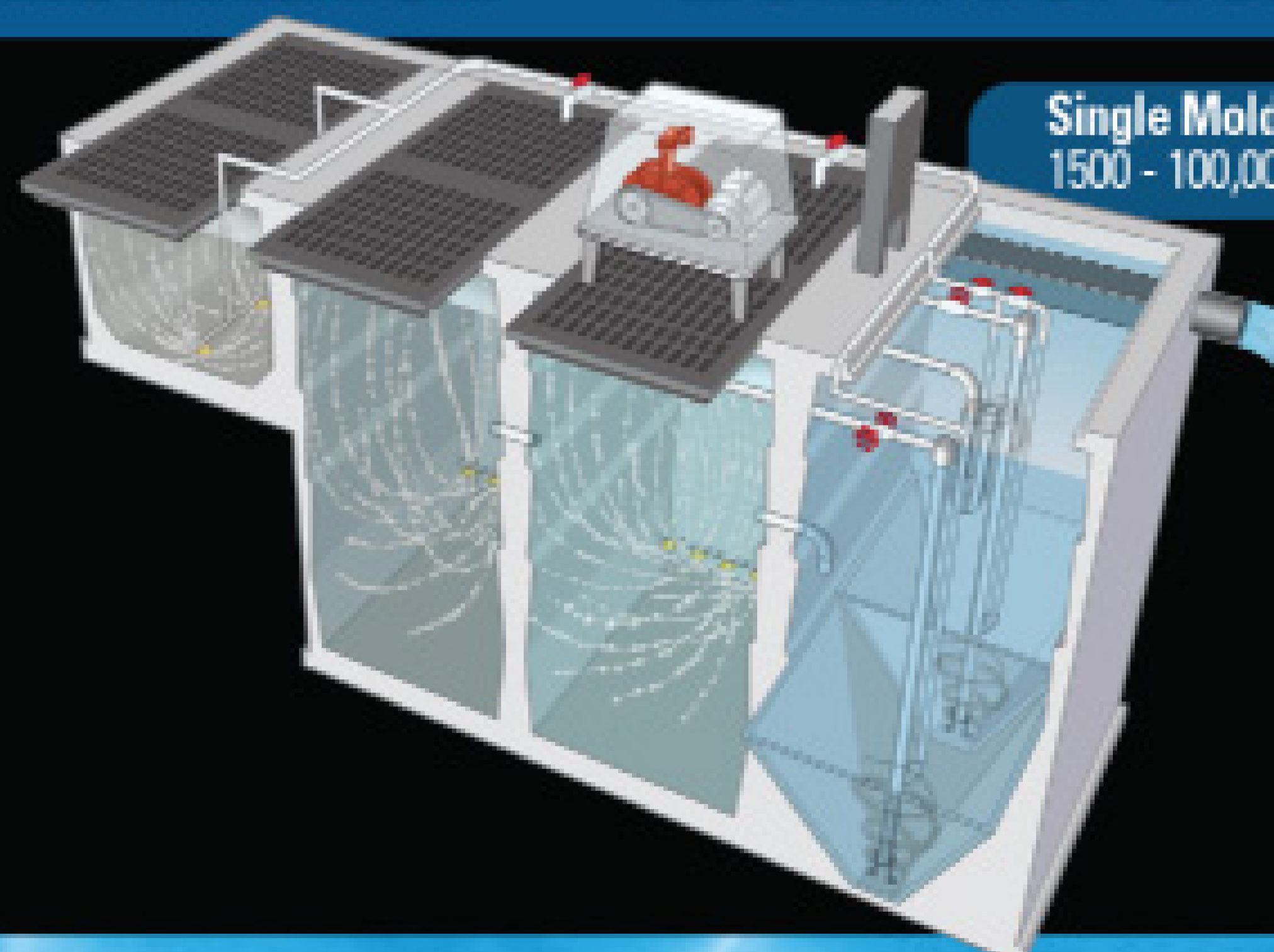


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"Rules and Regs" is a monthly feature in Onsite Installer™. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to editor@onsiteinstaller.com.

Alberta Group Looks at Regional Association

By **Scottie Dayton**

The Alberta Onsite Wastewater Management Association (AOWMA) board of directors is examining the feasibility of forming the Western Canada Onsite Wastewater Management Association (WCOWMA). The decision was motivated by multiple developments affecting onsite professionals across Western Canada. These include:

- The Canadian Standards Association is drafting a national onsite installation standard.
- Alberta and British Columbia signed an agreement recognizing each other's onsite

training and certification standards. This agreement could extend to Saskatchewan and Manitoba.

- Increased rural development in Western Canada is strengthening the onsite industry's position as an essential infrastructure element.
- Demand for the AOWMA training program is strong in Saskatchewan and Manitoba.

WCOWMA would represent a large portion of Western Canada's onsite professionals, resulting in a significant voice contributing to the national standards. The board feels

that the initiative represents a tremendous opportunity to ensure the long-term success of the industry and deliver more benefits to its members.

Florida

Legislation passed last June directs the Department of Health to contract, by request for proposal, for Phase I of an anticipated three-year project to develop passive strategies for nitrogen reduction using conventional onsite systems.

The project includes a review of existing or ongoing studies on passive technologies, field-testing of nitrogen-reducing technologies, and development of a simple model for predicting nitrogen fate and transport from onsite systems.

The department also must identify how much it will cost to implement a mandatory statewide five-year septic tank inspection program, phased in over 10 years. Besides fees to offset costs, the state gave the department \$150,000 to enforce the inspection program, if one is created.

North Carolina

The North Carolina Septic Tank Association (NCSTA) is asking the state to revise its septic tank regulations. Instead of separate construction requirements for precast concrete tanks versus tanks of other materials, the organization wants all tank makers to meet the same test limits for structural design.

Using the required strength times a 1.4 safety factor, the one-

time vacuum test would be 7 inches of mercury. NCSTA also wants all tank manufacturers to have a state-approved quality-assurance plan. The plan would include testing of tank inventories at least twice per year by approved third-party inspectors. Out-of-state tank manufacturers would be sampled at dealer-inventoried yards or jobsites. NCSTA believes strengthening the construction rules keeps them current with national standards.

Nebraska

In the August 2008 Rules and Regs column, the June 21 date for the increase in the system registration fee from \$50 to \$140 and the addition of the \$25 late fee happened in 2007. The late fee was amended in December 2007 to a two-tiered fee of \$150 for system registrations submitted between 45 and 90 days late, or \$450 for registrations submitted 91 or more days late.

According to Gary Buttermore, P.E., onsite wastewater unit supervisor for the state Department of Environmental Quality (DEQ), new fees for permit applications and subdivision approval applications also became effective in December 2007. Permit applications are required for systems that can't meet designated setbacks or other regulatory requirements, those that handle 1,000 gpd or more, or those that receive other than typical household wastes. Subdivision applications are for properties with onsite systems on lots less than 3 acres. ■



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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.

Make Your Machine More Useful

Attachments are great for saving time, money and labor with your excavator or loader backhoe. Here are some choices to add even more productivity.

By Greg Northcutt

Thanks to a variety of attachments, like augers, hydraulic hammers, grapples and pallet forks, there's more than one way to make money with your excavator or loader backhoe besides digging a trench or scooping out a hole in the ground.

But, as good as these attachments are in adding to your job prospects, you can enjoy even more profit possibilities by outfitting your machine with tools that increase the versatility of many types of attachments or that offer a more cost-effective twist on several conventional attachment designs.

For example, mechanical quick couplers can save time and effort by eliminating the need to pound out pins that hold attachments to the

arm of your machine when changing from one attachment to another. Instead, you simply operate a hand lever to activate a spring-loaded mechanism that secures or releases the attachment.

Hydraulic couplers go one step further, eliminating the need to even get out of the cab of your excavator or backhoe to engage or disengage the attachment mounting mechanism. Instead, hydraulic power takes care of that task.

Fully automatic

In either case, however, if you're operating a hydraulically powered attachment, you still have to exit the cab to connect the auxiliary hydraulic lines of your machine to the attachment. But, now, even that

is a thing of the past, if you have an excavator equipped with Liebherr's optional Likufix hydraulic quick-change adaptor.

Available for Liebherr and other makes of excavators in the 39,000- to 112,000-pound range using mechanical and hydraulic attachments with Liebherr quick-coupler adapters, it allows you to grab or release a bucket or other attachment and connect or disconnect any hydraulic lines from the operator's seat.

"Everything is controlled with a simple press of the button, while you sit in the cab," says Bret Jacobson, a product manager for Liebherr Construction Equipment Co. "The entire process of detaching and connecting to a new hydraulic tool only takes seconds. All hydraulic connections are made automatically and use a hydro-mechanical seal to prevent leaks."

The Likufix quick-change adaptor consists of a two-part hydraulic valve block. The top female half mates with the bottom male half to connect the hydraulic lines when the locking pin of the quick-change adapter engages the attachment. This locking pin is also visible from the cab. A warning light and audible alarm in the cab activate when using the quick coupler.

The Likufix includes a standard feature, called Tool Control, that allows you to program up to 10 hydraulic flow rates and pressures to match specific types of hydraulic

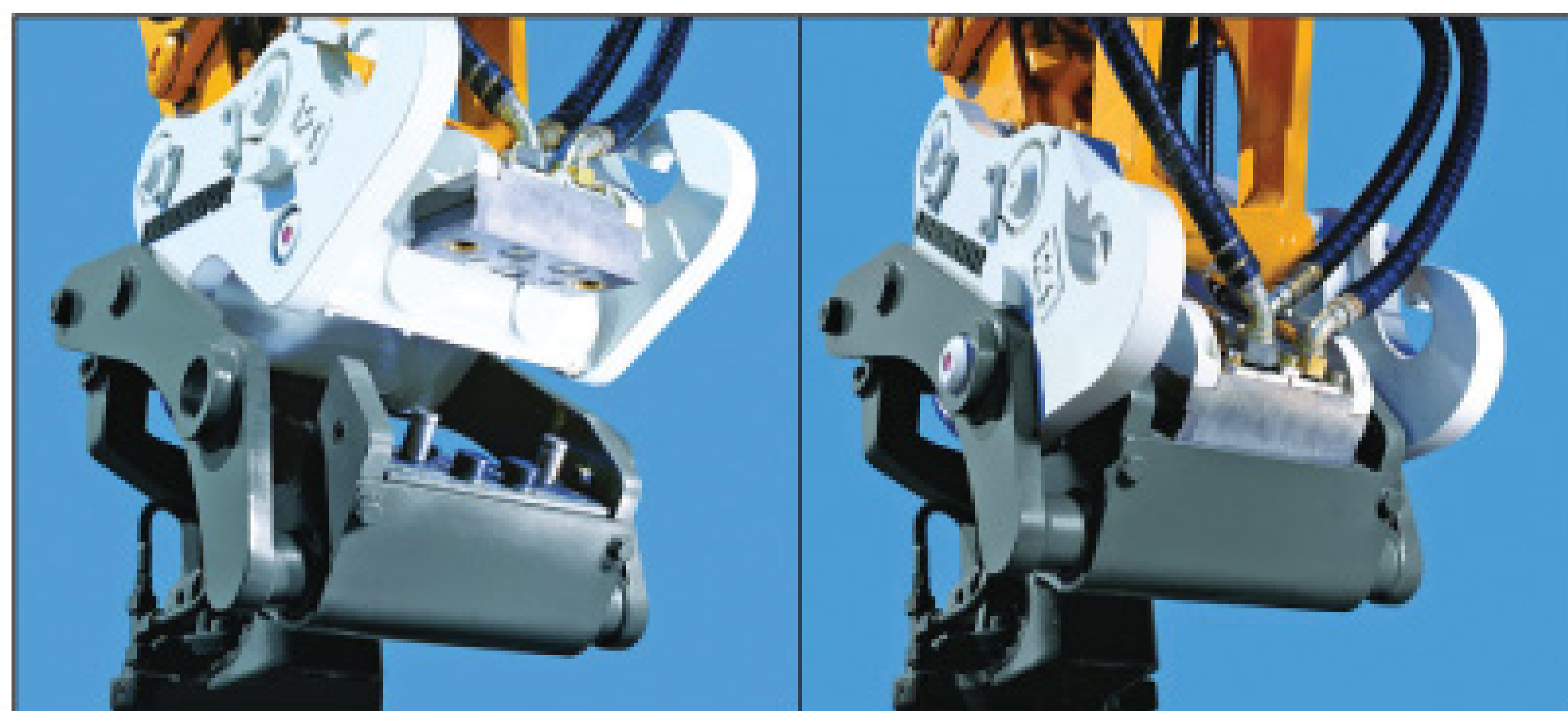


Designed for backhoes with extendible inner sticks, the hydraulically operated Smart Thumb from Rockland Manufacturing handles bulky objects and requires no additional hydraulic plumbing.

attachments. You select the desired setting by pressing a button on the display panel's touch screen. An optional feature uses a radio-frequency transmitter to automatically select the appropriate hydraulic flow and pressure for a given attachment.

Cost-effective alternatives

Many backhoe owners and operators have used hydraulically operated thumbs to save time and effort in handling rocks, logs and other odd-shaped materials. However, the Smart Thumb, made for backhoes with extendable inner sticks by Rockland Manufacturing, provides fast hydraulic clamping action without the costs of adding a hydraulic cylinder and lines or other control valves.



At left, the hydraulic valve block of the Likufix quick-change adaptor from Liebherr Construction Equipment Co. includes the female top part and the bottom male part. At right, as the locking pin of the Likufix adaptor engages the attachment, the two parts fit together to connect the hydraulic lines, eliminating the need for the operator to leave the cab to make the hydraulic connection by hand.



The Klac mechanical quick-coupler system from Rockland Manufacturing allows an excavator or backhoe operator to latch onto an attachment without leaving the cab.

The strut of the thumb bolts onto a pad welded to the outer stick, while the bottom half of the thumb mounts on the bucket pins of the inner stick. You control the thumb with the cab lever that operates the inner or extendable stick. "As you curl the bucket, you also extend the stick to rotate the thumb to clamp onto an object," says Bo

second time, as is the case with other mechanical couplers."

The simple system contains only five parts and, because of the wedge design, the latching mechanism remains tight, eliminating any jiggling of the attachment as the mechanism wears over time.

Also, the Klac coupler maintains OEM breakout force, unlike the pin-grabber style of mechanical couplers used with compact and smaller excavators. "Because of the way pin-grabber couplers work — by grabbing the original bucket pins — they extend the bucket tip radius of the bucket about 6 to 12 inches," Pratt explains. "That disrupts the original machine geometry and reduces digging ability."

Tilting and gripping

Mounted at the end of a backhoe or excavator arm, Helac Corp.'s PowerTilt allows you to adjust the angle of a bucket or other attachment. It provides as much as 180

This pin-on bucket attachment provides 120 degrees of jaw movement. It offers a more versatile alternative to a grapple or hydraulic thumb and provides a more durable, obstruction-free alternative to a cylinder-operated clamshell bucket. It can also be used as a trenching or grading bucket.

The PowerGrip's rotary actuator also exerts a consistent holding force and equal torque on both ends to keep the jaws from twisting if the operator clamps an object unevenly between the bucket and jaw. Because the jaw function is part of the bucket, less operator skill is required to open and close it independently of the bucket curl function. This makes it easier to pick and place objects.

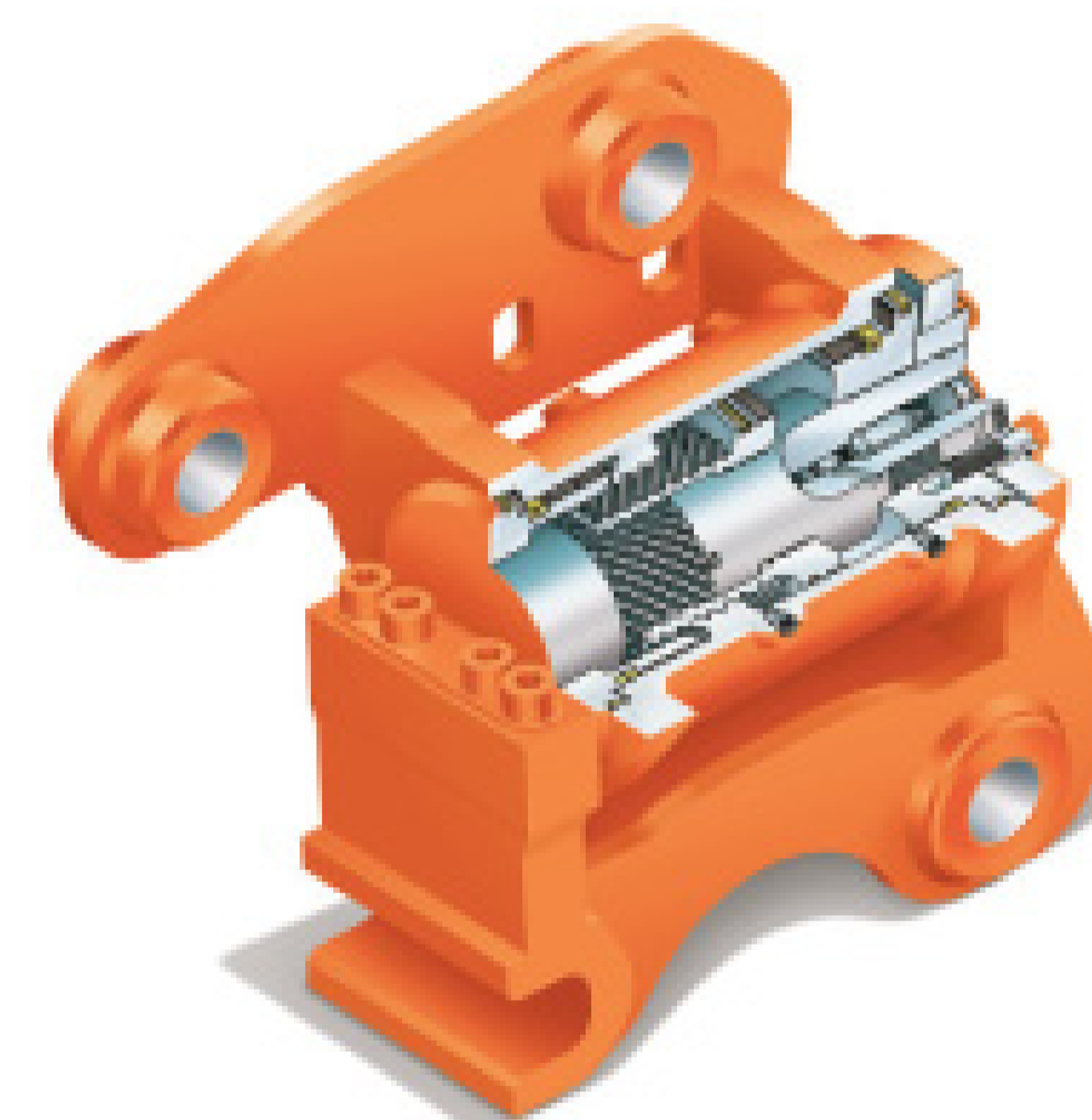


The PowerGrip multipurpose jaw bucket from Helac Corp. offers an opening as wide as 120 degrees, providing a more versatile alternative to a grapple or hydraulic thumb and a more durable, obstruction-free alternative to a cylinder-operated clamshell bucket for picking up and placing odd-shaped objects like boulders. It can also be used as a trenching or grading bucket.

Three models of PowerGrip fit backhoes and excavators up to 45,000 pounds. They can also be used with the PowerTilt for a wide range of positioning possibilities.

PowerTilt and PowerGrip attachments require auxiliary hydraulics with two-way flow. Both can be added to backhoes and excavators with or without extendable dippersticks or couplers. Both Helac products are equipped with onboard hydraulic relief protection that simplifies hydraulic circuit requirements. Controlled with a single lever, they offer easier operation than a conventional thumb, which uses one control for the bucket and another for the thumb.

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



Helac Corp.'s PowerTilt mounts between the end of the dipper stick of an excavator or backhoe and an attachment, like a bucket or hydraulic hammer. It allows operators to adjust the angle of the attachment, as when digging on the side of a slope, without having to reposition the machine to get at the work.

"The entire process of detaching and connecting to a new hydraulic tool only takes seconds. All hydraulic connections are made automatically and use a hydro-mechanical seal to prevent leaks."

Bret Jacobson / Liebherr Construction Equipment Co.

Pratt, the company's sales manager.

The Smart Thumb, which limits extension of the inner stick to about half its full length, folds back tight against the stick when not in use. "If you want to use the full extension capability of the stick, you can remove the thumb in about five minutes by unscrewing two bolts," Pratt adds.

Another Rockland time-saver is the new-to-North America Klac mechanical quick-coupler system for 2,200- to 22,000-pound excavators and backhoes. It allows you to connect and disconnect attachments in one motion of your hand.

"It's the only mechanical coupling system that allows you to leave the cab once instead of twice," Pratt says. "You get out of the cab to manually release the locking mechanism. Then, you get back into the cab to move the arm and hook onto another attachment. The coupler automatically latches. You do not have to leave the cab a

degrees of side-to-side angling motion, eliminating the need to reposition the machine itself.

The unit is designed as a more productive alternative to standard buckets or cylinder-style buckets that tilt up to 90 degrees, says Mike Peil, attachment sales manager. Uses of PowerTilt range from cleaning ditches, digging beveled trenches and spreading riprap to positioning brush cutters, mowers and hydraulic hammers.

PowerTilt is available in eight models to fit backhoes and excavators up to 75,000 pounds with or without quick couplers. Unlike attachments built with an exposed hydraulic cylinder and rod that are vulnerable to environmental damage, PowerTilt is powered by a helical, hydraulic rotary actuator located inside the mounting bracket housing. This reduces maintenance costs.

The same rotary actuator technology is also used in Helac's PowerGrip multipurpose jaw bucket.



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From left, truck driver John Webb and repair technician Jeff James, along with owners Charles White, Bryan White and Mike White show off some of the equipment owned by C. White & Sons. (Photography by Todd Dudek)

Quality First

C. White & Sons stays focused on customer needs and on delivering conventional and advanced systems with a do-it-right-the-first-time attitude

By Gil Longwell

C. White & Sons LLC, Seaford, Del.

OWNERS: Charles, Bryan and Mike White

YEARS IN BUSINESS: 52

MARKET AREA: 50-mile radius

SPECIALTY: Installing advanced and alternative onsite technologies

EMPLOYEES: 6

AFFILIATIONS: DOWRA, NOWRA

WEB SITE:
<http://cwhiteandsons.com>



When Chris White started his business more than 50 years ago, he painted two words on his first truck: Quality Work.

"He believed that attitude is what you create, and it is about how you live your life," says Charles White, the second generation owner of C. White & Sons LLC, who owns the business in Seaford, Del., with his own sons Mike and Bryan.

Charles White's daughter, Julie Condos, runs the office, and his wife, Joyce, is a fill-in there as needed.

"We are constantly focused on meeting our customers' expectations and needs," Charles White says. "This is our calling in life. It is what we do. It is our mission." The family's can-do, do-it-right-the-first-time attitude is one of several attributes that sets the company apart from other installers.

Quality means the company is always on the leading edge of onsite

innovations and practices. Drip irrigation systems are a good example. Many competitors do not install drip systems. A few years ago, White and his sons took the initiative to learn the technology, and their knowledge of it has put them out in front.

Today, the business focuses almost exclusively on system installation, but it is working its way into operation and maintenance as a new service line. The workload includes about 65 percent conventional systems and 35 percent alternative and advanced technology, including about 10 percent drip irrigation. About half the installations are new systems, and the balance is repairs and replacements.

Standing apart

Landowners' and regulators' demands for more effective onsite systems make continuing education high priorities for White and his sons.

"We are environmental stewards at several levels," Mike White says. "We must find affordable ways to protect our water resources while supporting new and existing homes and businesses."

Seaford lies in the middle of the Delmarva Peninsula, and the firm's 50-mile service radius includes both farm homes and upscale houses in coastal areas. On the job, the Whites are never far from water, and they appreciate the need to protect the saltwater estuaries and the groundwater aquifers.

For customers who do not understand the permitting process (most do not), the Whites bridge the gap in creative ways. They offer a complete package of design consultation, assistance with system selection and permitting, installation, and operation and maintenance. They tailor the services to the customer's need.

After an initial customer consultation, White or one of his sons

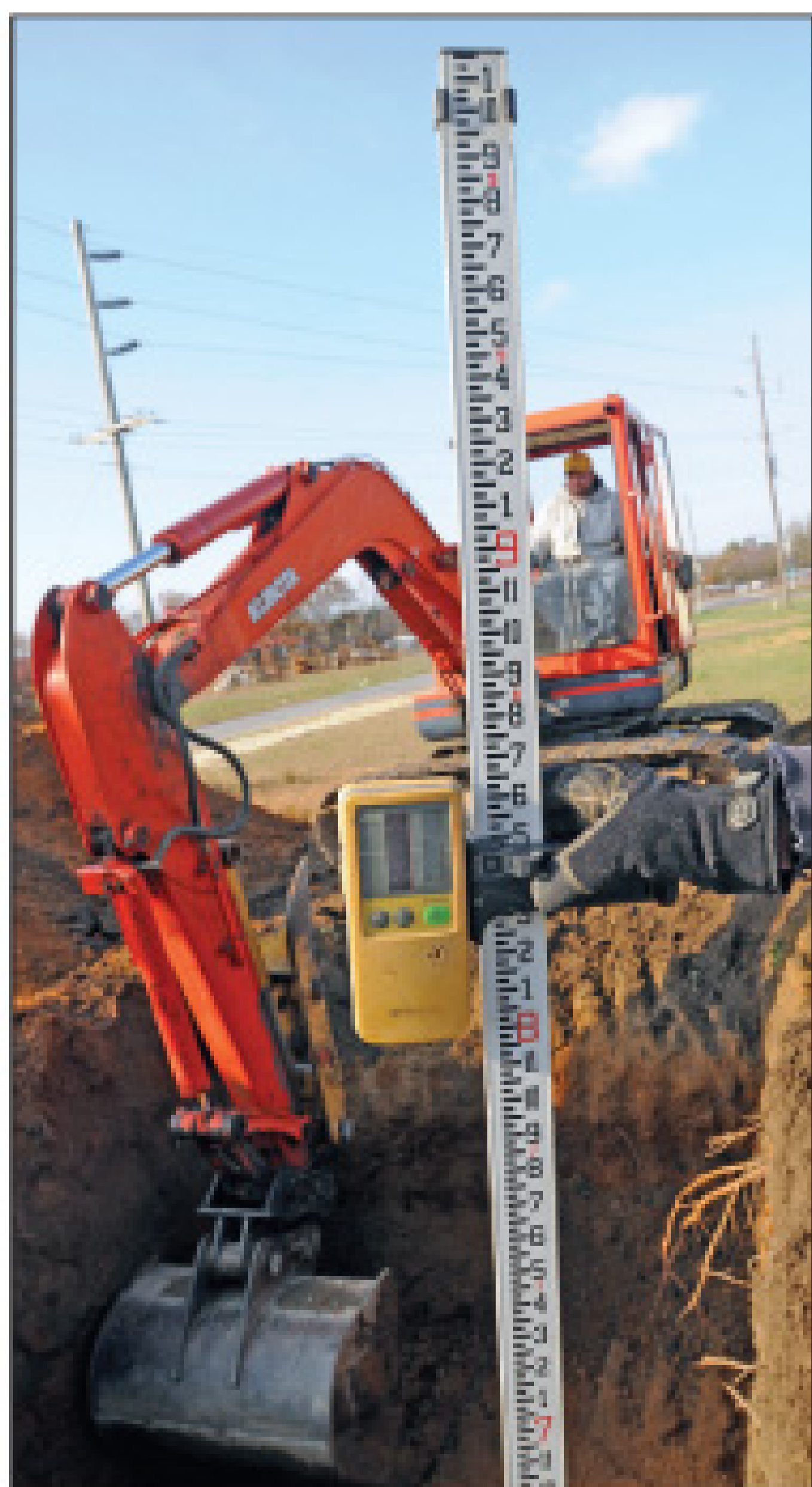
works closely with the site evaluator, designer and regulator. The first step is for the evaluator to identify the system alternatives for the site conditions.

"Before taking the list of options to the customer, we find the best products available for the site," Charles says. "We then help the customer understand the technology choices, how they work, what the finished system will look like, and what the operation and maintenance requirements will be. Ultimately, the landowner makes the call, and does so from a strong position of knowledge."

Homeowners usually view the best system as the one that is the least intrusive in appearance. "If the choice is between a drip system and an elevated sand mound, usually they choose the drip system, with its ability to 'disappear' into the site," Charles says. The company also provides a well package that includes drilling (subcontracted) and pump and water delivery line installation.

Changing markets

The company's business mix is changing. In the recent past, about 75 percent of the work was for contractors and 25 percent for homeowners. In 2008, that split changed to 60-40. The company works in Maryland and Delaware. Because of regulatory requirements, the Whites



Bryan White uses a Bobcat skid-steer to cover a septic system with pea gravel.

"We are constantly focused on meeting our customers' expectations and needs. This is our calling in life. It is what we do. It is our mission."

— Charles White

see price differences across state lines. There are streets where one side is in one state and the opposite side is in the other.

"If we were to install two identical systems on two identical sites, we could expect to see a 10 to 15 percent higher price tag for the system in Maryland," Charles says. While the states' siting and system requirements may not be too different, White observes that things seem to run a bit more smoothly in Delaware.

By moving toward systematic management of systems that use advanced treatment, both states are creating new opportunities. "Management is the next logical step for our business," Mike says. "It is the

Jeff James holds a grade stick while Bryan White operates a Kubota excavator during installation of a 1,000-gallon tank.

Slow Learners

People are slowly understanding and accepting the need for advanced treatment, but they are not as quick to grasp the intricacies of these systems and the role the various automatic controls play in the system's daily operations.

That's the observation of Charles White, who leads the C. White & Sons installation firm. "It is funny how many times we go back to the same house and find, over and over again, that the owner has caused his own problem," White says.

This is especially true in regard to advanced treatment systems. Many sys-

tems the firm installs are designed to limit the daily flow to the absorption area. For a three-bedroom house, 360 gallons is the typical limit. This flow is regulated by timer-controlled, pump-enabled switches. Designers sometimes specify larger tankage to further equalize peak flows over a day or more if the homeowner's lifestyle suggests such a need.

"Homeowners will override timers or other controls for no apparent reason," White says. When the high-level alarm signals, they call C. White & Sons in a panic. Then the education process resumes.

natural follow-on to installations."

The company is taking steps to be well-positioned for that change. C. White & Sons has established partner relationships with several equipment manufacturers and has formed a new business, Del-Mar Onsite Solutions LLC, to sell Delta Environmental Products technologies to other installers. This also brings additional management opportunities to C. White & Sons.

As the number of alternative systems increases, Bryan White expects to see more and more management work. "It could increase to as much as 25 percent of our work," he says. "It is hard to make

that call just yet, but it is headed in that general direction."

Industry leadership

As part of the firm's effort to stay in the lead, Mike White is a member and past board member of the Delaware On-Site Wastewater Recycling Association (DOWRA). He started attending DOWRA meetings out of curiosity. "When I saw how well DOWRA kept me connected in the industry, I realized that this was something I could not do without," he says.

DOWRA has definitely helped the business, especially as a venue for networking with other installers.



From left, Jeff James, Mike White and John Webb of C. White & Sons cover a drainfield with synthetic fabric and soil.

"Before taking the list of options to the customer, we find the best products available for the site. We then help the customer understand the technology choices, how they work, what the finished system will look like, and what the operation and maintenance requirements will be."

— Charles White

"DOWRA's relationship with the Delaware Department of Natural Resources (and Environment Control) is not, as I understand it, typical," Mike says. "Individual DOWRA members have a voice in the way regulations are written. It is a collaborative relationship. DNREC wants to hear what we have to say while they are writing the regulations."

Together, DOWRA and DNREC reach out to the community at large. For example, they share a booth at the Delaware State Fair, educating homeowners about onsite systems. "This joint appearance helps build the industry's credibility with the public and has been well received," Mike says.

Family business

The Whites hold installer licenses

in Maryland and Delaware. Delaware's tiered program requires them to be licensed separately for installation, operation, inspection and management. If required by regulation, employees are manufacturer-trained and certified or state-licensed, or both. To offer well services in Delaware, they are licensed water pump installers. The company also holds business licenses in both states.

Mike is the primary person dealing with alternative and advanced systems. Bryan focuses on large installations and all conventional systems. Repair technician Jeff James concentrates on service and maintenance. John Webb is the company's primary truck driver and is also a general laborer. Each team member can fill in for others as needed.

To keep the business moving, the Whites install and service a wide range of alternative systems, including low-pressure systems in elevated sand mounds, traditional gravity systems, and drip irrigation systems. They install Ecoflow (Premier Tech) and Puraflo (Bord na Mona) peat biofilters. When they need a complete packaged treatment unit, they look to Delta Environmental.

The company can call upon a diverse equipment roster to meet any installation task. Four GM pickups move the men, materials and supplies. Two Mack dump trucks transport aggregate, fill and cover.

For the heavy lifting, they use two Bobcat Model T190 loaders, three excavators (two Kubota KX161 models and a Cat E110B), a JCB 214 Backhoe and a 1994 Kubota 3450 tractor. They also can deploy a locally manufactured four-line drip plow.

Well recognized

The business is well established and recognized in the community. In 2006, C. White & Sons received an Exceptional Customer Service award from the Seaford

Chamber of Commerce.

"It was a good feeling knowing that other businesses in the area recognized our outstanding customer relationships," Charles says. "We didn't even know we were in the running." Customers have mentioned that they heard about the Chamber's recognition.

Beyond the White family, there is a feeling of family in the onsite installer community. "There are a lot of good installers in this area, and we have a good rapport with them," Charles says. "When one of us gets busy or the job is not something we normally handle, we freely make referrals back and forth."

Charles does not know if there will be a fourth generation in the business, but with 15 grandchildren, that seems likely. "I so appreciate my sons and daughter," Charles says. "On a weekly basis, customers tell me how helpful they all are."

Over three generations, C. White & Sons has maintained countless customer relationships. Recently the firm was called out to look at a repair job. "We were met by the landowner and her dad," Charles says. "He remembered when our dad installed the system for him years ago."

"When dad painted 'Quality Work' on his trucks, he committed to living up to that standard. We have done that for three generations and we will keep that commitment for generations to come." ■

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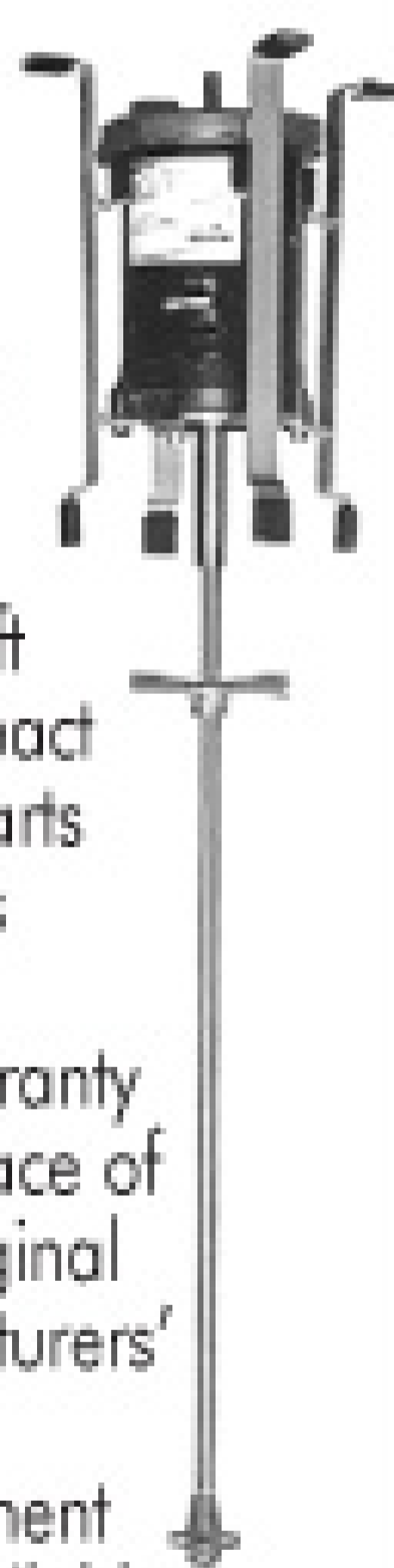
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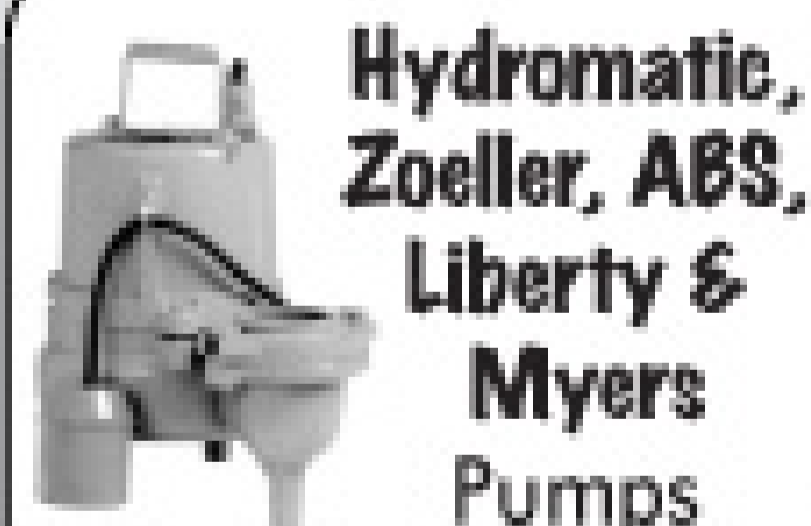
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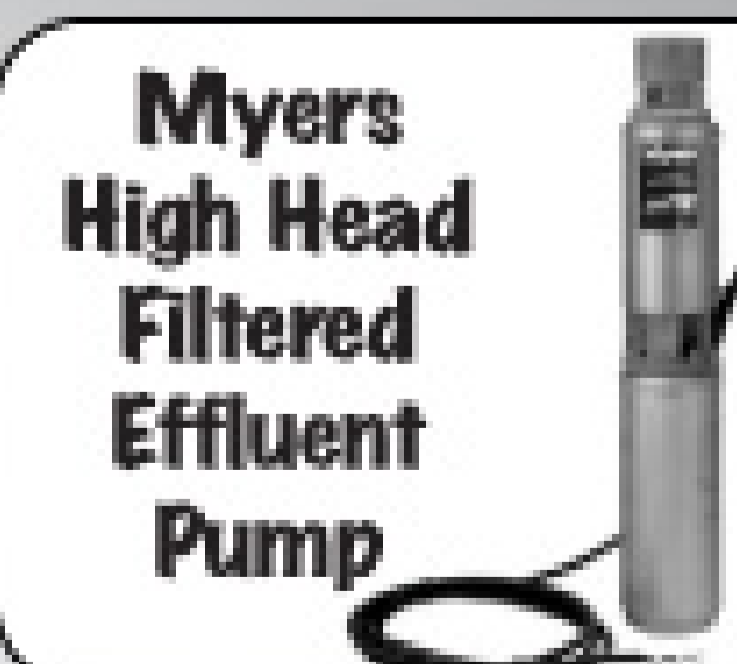
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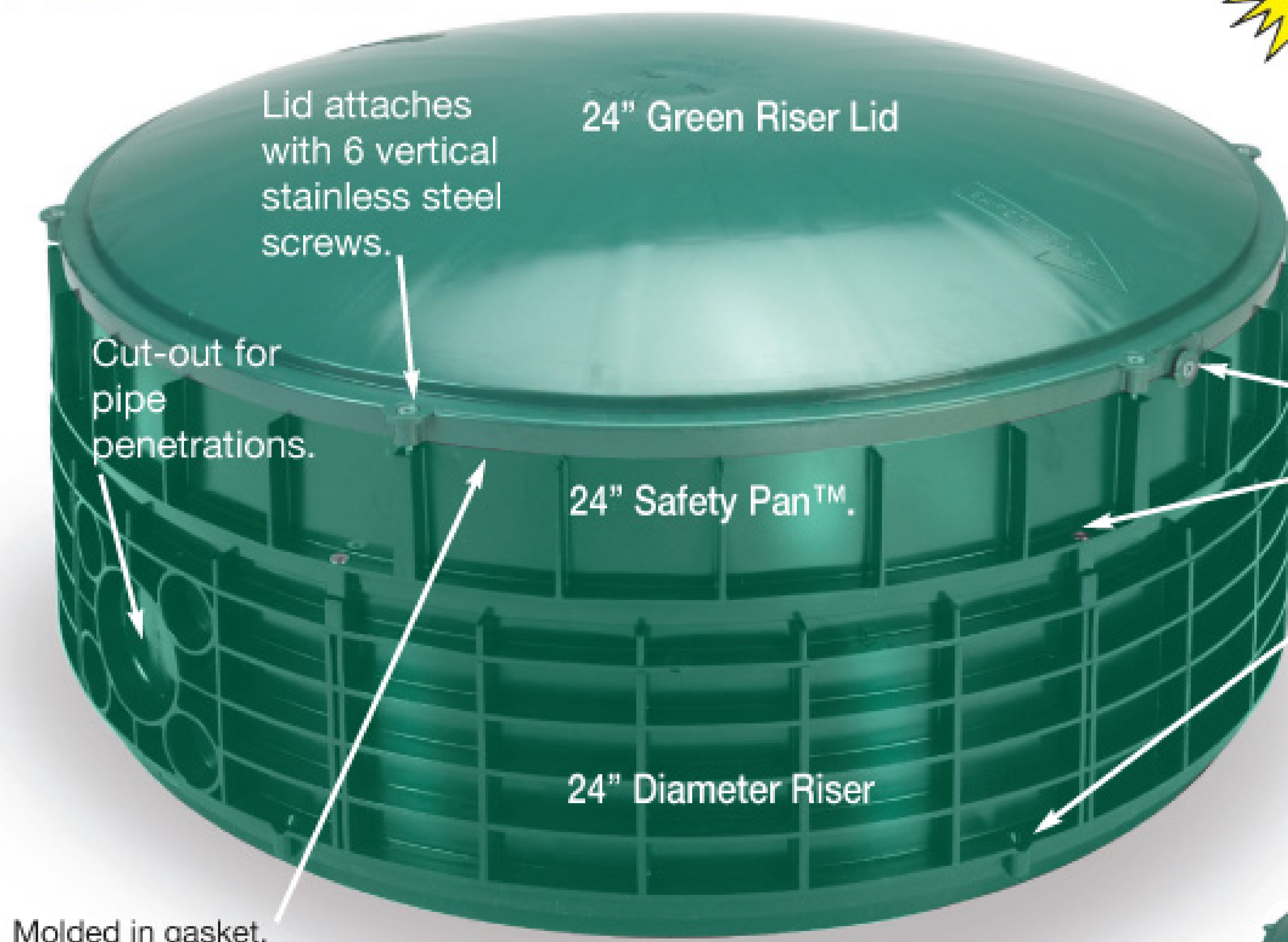
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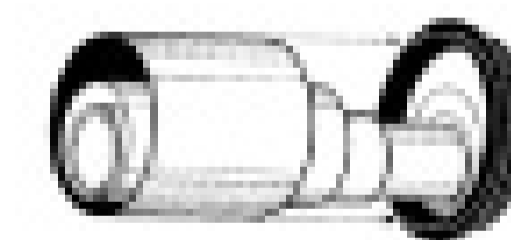
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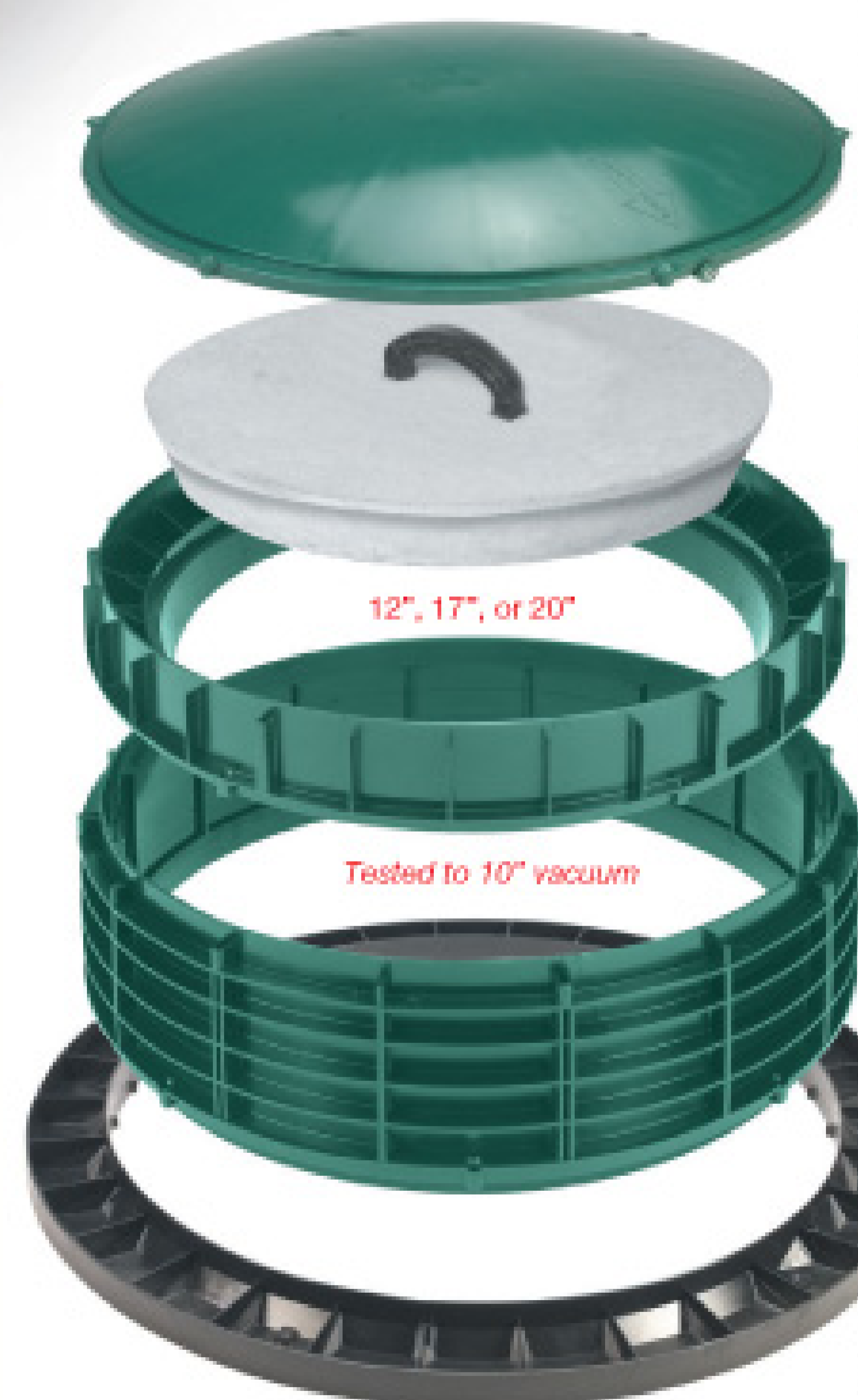


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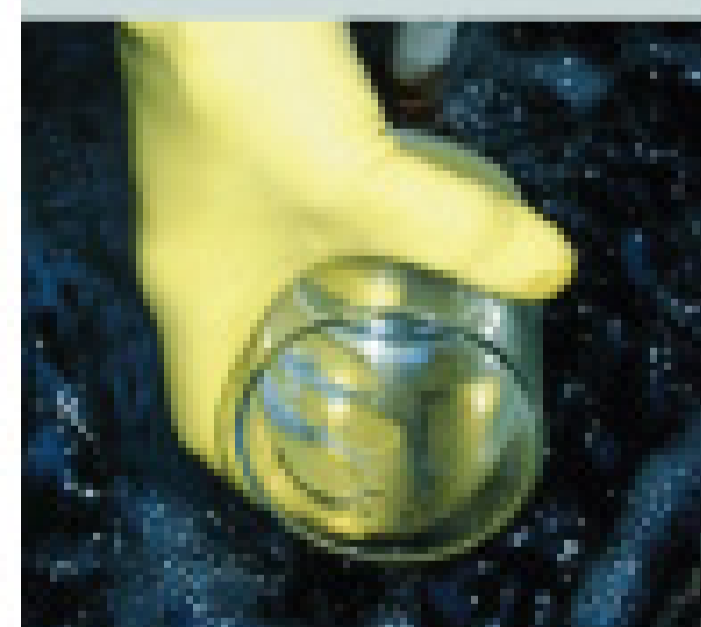
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The National Onsite Wastewater Recycling Association (NOWRA) will present the NOWRA 18th Annual Technical Education Conference in Milwaukee, Wisconsin on April 6–9, 2009.

Milwaukee will serve as an ideal location due to its position in the center of the Midwest, in the southeast corner of Wisconsin, on Lake Michigan's western shore. There is no shortage of water issues to talk about here!

Exciting tours will take you out and about in Milwaukee!

- Four decentralized systems featuring ATU's, mounds, constructed wetland and drip distribution systems in residential, commercial and school wastewater applications.
- Tour of Water Reclamation Facility of the Milwaukee Metropolitan Sewerage District that produces Milorganite a high quality, Class A/ Exceptional quality Biosolid that is marketed around the country.

Things to do and see in Milwaukee

- Milwaukee Public Museum: Always something exciting going on, including the NOWRA's offsite reception!
- Miller Brewery Tour: Take a tour through the famous Miller brewery.
- Milwaukee Art Museum: Located on Lake Michigan the museum has a beautiful display of art in perhaps the prettiest building in Milwaukee.

Don't miss the Symposium on Pharmaceuticals & Personal Care Products

NOWRA will host a pre-conference workshop on April 6th focusing on Pharmaceuticals and Personal Care Products in Wastewater, Surface Water, and Groundwater. A full day's line up of speakers will present the latest research on this issue.



NOWRA 18th Annual Technical Conference & Expo

The NOWRA annual conference serves as the premier conference for the conveyance of new research, regulations and policy, experience and practices in the decentralized wastewater industry.

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- Innovative Products, Technologies, and Solutions
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- NOWRA's premier program, "The Basics of Onsite Systems –A to Z"



Check the NOWRA website at www.NOWRA.org for more details on the exciting educational and networking opportunities!

Saving the Cottage

An innovative onsite system with high-water shut-off enables a Wisconsin couple to enlarge a summer cottage

By **Scottie Dayton**

A couple remodeling a summer cottage in Hatfield, Wis., into a two-bedroom retirement home asked Rich Halverson of Halverson Plumbing in Black River Falls, Wis., to replace the holding/trash tank he had installed 10 years earlier with an onsite system.

A soil analysis on the 10-acre lot revealed that groundwater had reached the surface in spring. State code requires 3 feet of separation between the bottom of the drainfield and the seasonal high water table. When dry, the site had 36 inches of drainage.

"The water table was our stumbling block," says Halverson. "A mound system with pretreatment would work most of the year, but I knew the state wouldn't accept that." Frustrated by the lack of commercial answers, Halverson

designed a solution that deactivated the system during high groundwater events, yet protected the environment.

Site conditions

Soils are sandy with sandstone bedrock 3 feet below. A layer of blue clay covers the bedrock. The wooded lot is at the base of a 2-mile-long gradual slope.

System components

Halverson sized the system to handle 300 gpd. Its major components are:

- 2,000-gallon one-compartment concrete holding/trash tank made by Crest Precast, LaCrescent, Minn.
- Effluent screen, model ES1548FB, Orenco Systems Inc., Sutherlin, Ore.
- Two 4/10-hp pumps, Sta-Rite, Delavan, Wis.



Above, the Multi-Flo aerobic treatment unit is to the right, the MF-080D4BR control panel is in the middle, and the pump chamber is to the left. Below, a shut-off device being installed. (Photos courtesy of Halverson Plumbing)

- High-water alarm, SJE-Rhombus Controls, Detroit Lakes, Minn.
- 500-gallon Multi-Flo aerobic treatment unit, Consolidated Treatment Systems Inc., Franklin, Ohio.
- 30- by 60-inch fiberglass pump chamber, Topp Industries Inc., Rochester, Ind.
- Control panel, MF-080D4BR, Consolidated Treatment Systems Inc.
- EZflow geosynthetic aggregate drainage tube, Ring Industrial Group, Oakland, Tenn.
- Three WL15 water-level dataloggers, Global Water Instrumentation Inc., Gold River, Calif.

System operation

Wastewater flows through a 4-inch PVC lateral into the holding tank. A pump inside an effluent



screen sends 20 gallons every 30 minutes to the suspended-growth/ fixed-film (ATU). The unit sits higher than the holding tank, enabling 17 gallons to drain back, preventing liquid from freezing in the 2-inch PVC pipe.

An aerator near the bottom of the ATU draws air into the reactor chamber. Mixed with wastewater,

System Profile

Location:	Hatfield, Wis.
Facility served:	Two-bedroom home
Designer/installer:	Halverson Plumbing, Black River Falls, Wis.
Site conditions:	Sandy with sandstone bedrock three feet below; high water table at grade
Type of system:	High-water shut-off; synthetic drainfield media
Hydraulic capacity:	300 gpd



A test pit shows wet soil conditions. "Black over gray, walk away" is a soil tester's phrase referring to very wet sites.

no liquid reaches the mound, a high-water alarm signals when the holding tank needs pumping.

Testing performance

Building the mound required roughing up the soil and adding 15 inches of washed sand. However, the backhoe tore fibers off the roots and stumps. "We used a salad rake, a tool that attaches to the backhoe and removes vegetation," says Halverson. After placing Type-R fiber over the drainage tube, the crew added 12 inches of sandy loam fill.

Down slope and just off the toe of the mound, Halverson sank a 3-foot-deep fiberglass riser surrounded by and seated on 12 inches of

one in the center and one toward each end — and installed a slotted 2-inch PVC pipe in a gravel pack at each location. "The water level dataloggers have a collar that fits over the pipe and prevents them from falling down," says Halverson. "The instrument has a 9-volt battery on top and a 36-inch-long tube with a stainless steel sensor on the bottom. It's slick."

Halverson set the dataloggers to take a measurement every 12 hours. Twice, at six-month intervals, he visited the site and downloaded the data into his Palm Pilot. The study proved that the separation factor was correct.

The homeowners moved into the remodeled home in late spring 2006. A local septic service pumped the holding tank once in the spring of 2007 and 2008.

Maintenance

Halverson Plumbing holds the two-year renewable maintenance contract. Every six months, a technician services the ATU, cleans the filter socks, and checks the float that activates or deactivates the system. ■



One of two PVC monitoring tubes near each end of the mound.

design team for review. Two months later, Halverson had his approval.

The homeowner cut down the necessary trees but left the numerous stumps flush with the ground.

"The state wanted to know if we had the correct separation between the high groundwater and the base of the mound. If the water level was higher than anticipated, we could set the shut-off float a little lower."

Rich Halverson

the air sustains bacteria that consume organic materials. Suspended in the tank are 30 filter socks, each with 100-micron filtration, that prevent solids from reaching the drainfield. The process reduces BOD and TSS to 5 mg/l.

Treated effluent gravity flows through a 4-inch PVC pipe to the pump chamber. The 0.4-hp effluent pump, with on-demand dosing, sends 50 gallons to the mound. Its 3- by 75-foot disposal bed has a 1 1/2-inch drainage tube down the center. Effluent, flowing out 60 1/8-inch holes spaced 15 inches apart seeps through the tube's surrounding aggregate, trickles through the mound sand, and enters the environment.

Installation

Plan approval began as a variance to put a system on a site with less than 6 inches of soil. However, the design set a precedent and was sent to the state's individual site

Ripping them out would create channels for the groundwater.

Halverson's crew remodeled the holding tank by installing the pump inside an effluent screen, then set the ATU and pump chamber. They used 10 bags of concrete mix to encase the antifloat foot at the bottom of the chamber.

The pump chamber has limited reserve capacity. "We didn't want a big one shooting 200 or 300 gallons of wastewater to the mound when the system activated," says Halverson. "Our goal was to send a small dose."

Halverson's solution was to drill a 4-inch hole in the pump chamber just above the activation float. Should the pump fail or during shutdown, the effluent drains into a 4-inch pipe, loops back to the house lateral, and enters the holding tank. Recirculation eliminates the need for large storage capacity and feeds the bacteria in the ATU when the system is inactive. Since

gravel. Inside is a float rod with a backward-operating float (the switch is normally closed). When groundwater rises to 10 inches of grade, the switch shuts off the system. When the water level drops to 16 inches below grade, the switch activates the system.

"The ATU gave us 12 inches of separation," says Halverson. "Putting 15 inches of sand under the mound and shutting off the system at 10 inches gave us 25 inches. That's 37 inches of separation, or one inch above code."

The individual site design team required Halverson to monitor groundwater levels twice per day for a year. "The state wanted to know if we had the correct separation between the high groundwater and the base of the mound," he says. "If the water level was higher than anticipated, we could set the shut-off float a little lower."

Halverson selected test sites just down slope of the mound —

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System Inspections

Installation professionals share information about onsite inspections and some cautionary words about suspicious conditions in a customer's septic tank

Question:

Can someone tell me the steps to performing a septic system inspection that would certify a system's working condition? Inspections are being required by lending institutions before they allow a mortgage. From what I've seen, the procedures seem to be arbitrary and determined by the contractor. How does it work?

Answers:

I'm actually pleasantly surprised someone has asked this question. The very first step should be a visit or call to the local health department to get a copy of the sewage and well permits (and location drawings). In over 20 years, I have never known a real estate inspector to ask the local health department for records!

The next step is a visit to the site. Yes, there are those who don't even do this. Locate the septic tank. A soil probe is very useful for this. Locate the well. Be sure you understand the kind of sewage treatment system you are evaluating. I had a real estate inspector dye-check an aeration system and fail it because dye appeared in the ditch.

We don't certify anything. Our letter to the lending institution or buyer is a clear description of what we found, where it is located relative to the house and other landmarks, and lastly a disclaimer that this is simply a snapshot of what we found on the day of the inspection.

"This report indicates the condition of the above onsite wastewater treatment system at the time of the inspection. It does not guarantee that it will continue to function satisfactorily." There is no guarantee that the system will not fail tomorrow. No one can make those kinds of guarantees.

This University of Minnesota onsite program Web site provides a great deal of worksheets and information about onsite system inspections. Visit <http://septic.umn.edu/professional/worksheets/index.html>.

➔ We dig up the tank, then find the distribution box and do a water test on laterals to see if they are working. We pump the tank and box and put a filter in the tank — we have to bring the system up to code — and then call for the inspection. Those are the rules here; otherwise the bank won't take the loan.

Question:

I have a customer with some major issues with his septic system. Lab tests of his septic tank show a pH of 4.9, traces of red phosphorus, and ammonia at 350 ppm. He swears there is nothing unusual entering his system, but clearly something is up. Does anyone have any ideas what might cause these readings?

Answer:

Those ingredients aren't from natural events. I'm not trying to be a wise guy, but you may have stumbled onto a meth lab. These are typical byproducts of making methamphetamine. Be careful. ■



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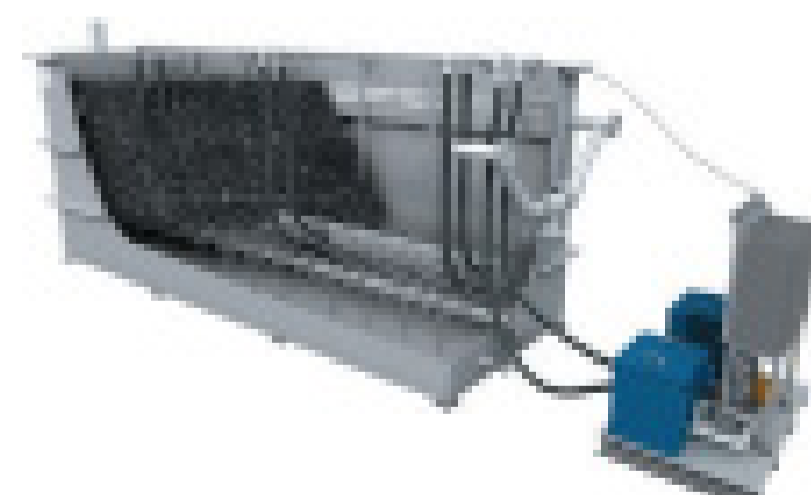


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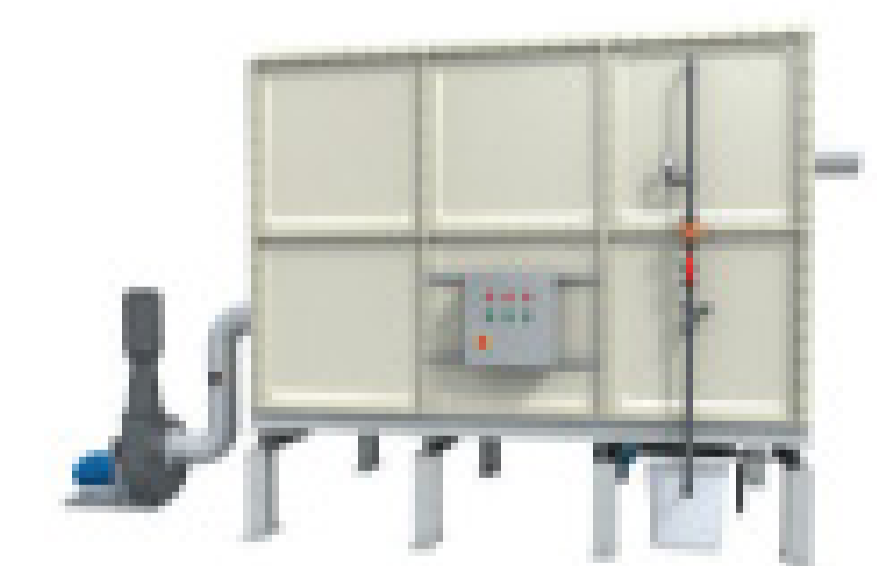
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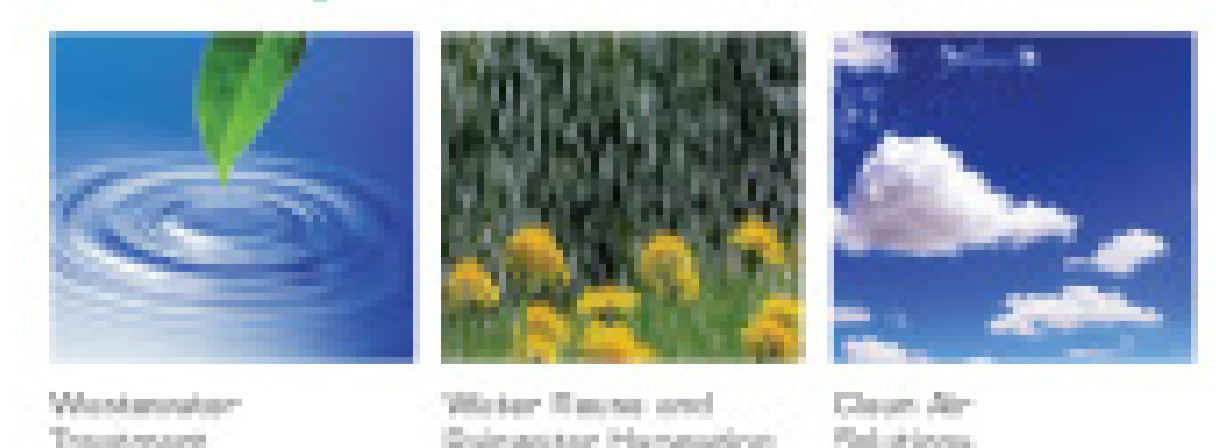
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Green By Nature



Installers Dig It

Annual NOWRA Installer Academy continues its growth as industry professionals seek more knowledge and proficiency

By Gil Longwell

NOWRA's fourth annual Installer Academy attracted more than 180 industry professionals and vendors to Las Vegas, Nev., for three days of learning and friendly competition Dec. 8-10.

In collaboration with NOWRA, the Consortium of Institutes for Decentralized Wastewater Treatment presented a two-and-a-half-day course for installers. The Consortium is a coalition of 26 colleges and universities that have combined resources to offer a wide range of onsite educational programs.

Broad reach

The Installer Academy, a how-to event, is a product of this collaboration. Product-focused training was provided by Eljen Corp., Infiltrator Systems Inc., Bio-Microbics, Inc., Jet Inc., Aqua-Test and Bord na Mona. Presenters brought their in-the-field knowledge to the participants in a comfortable training environment.

The Academy was the first NOWRA event convened by Tom Groves, the newly installed president. "NOWRA has focused this annual session on the installer segment of its membership," says Groves. "At the Installer Academy, members can find information not available at the state level." This event attracted participants from 34 states and the District of Columbia.

Under Grove's leadership, the association is positioned to raise a louder voice for the entire industry in Washington generally, and with the EPA in particular. Groves believes a more proactive organization will attract new members to

continue the growth trend seen in recent years. Other officers include:

- Richard Otis, vice president and president-elect
- Brian McQuestion, secretary-treasurer
- Jerry Stonebridge, past president.

Backhoe Roe-D-Hoe

In keeping with the fun nature of the Las Vegas venue, 24 installers competed in the annual Backhoe Roe-D-Hoe. One event featured a 5-gallon pail filled with sand, upon which a golf ball was placed. Contestants had to lift the ball from the top of the sand, turn about 100 degrees, and drop the ball into a different 5-gallon pail or an orange traffic safety cone, using a soup spoon taped to a bucket tine on a Bobcat mini-backhoe.

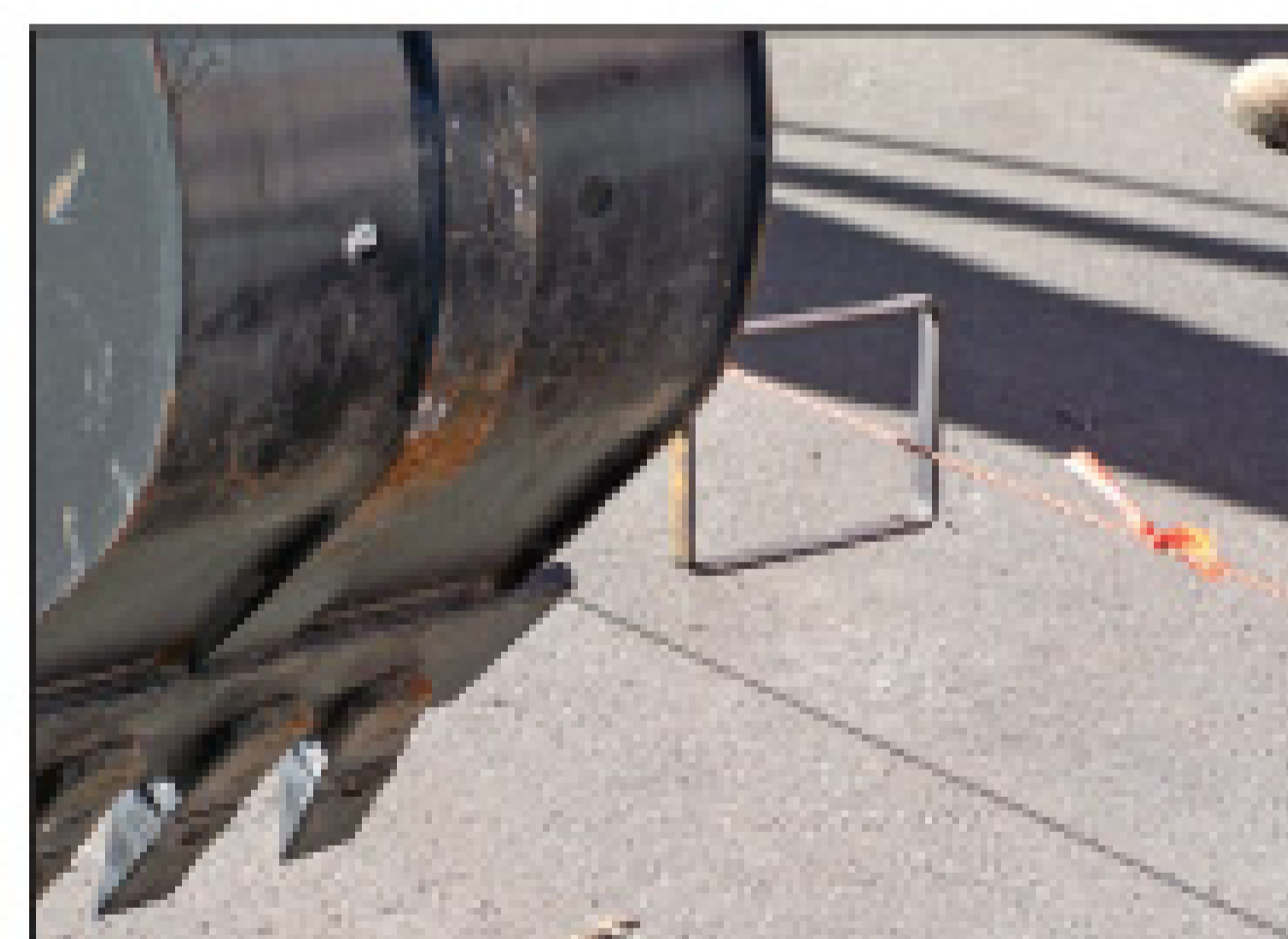
The "threading the needle" event required operators to move a 6-inch-square metal frame along 10 feet of electrified wire. If the frame contacted the wire, a loud horn sounded. Both events were scored on the operator's elapsed time. Points were deducted if the ball was lost and every time the horn sounded. There were additional events as well.

The Washington Onsite Sewage Association (WOSSA) sent its state champion, Andrew Gunia, to the Academy for the sole purpose of entering the Roe-D-Hoe. Gunia, owner of Advanced Septic Services Inc. in Puyallup, did his home state proud.

In addition to the \$1,000 cash prize, Gunia took home bragging rights and right to wear the NOWRA



Andrew Gunia, the Washington OnSite Sewage Association (WOSSA) Roe-D-Hoe state champ, did his home state proud. Gunia, owner of Advanced Septic Services Inc. in Puyallup, won \$1,000 and a bucket-full of braggin' rights. (Photography by Gil Longwell)



The "threading the needle" event requires the operator to move a six inch square metal frame attached to the bucket of a mini excavator along ten feet of electrified wire.

Roe-D-Hoe Grand Champion belt, styled after belts worn by professional wrestlers. The belt will be displayed at the WOSSA onsite training facility, "so that all members can share in the braggin,'" Gunia says. ■

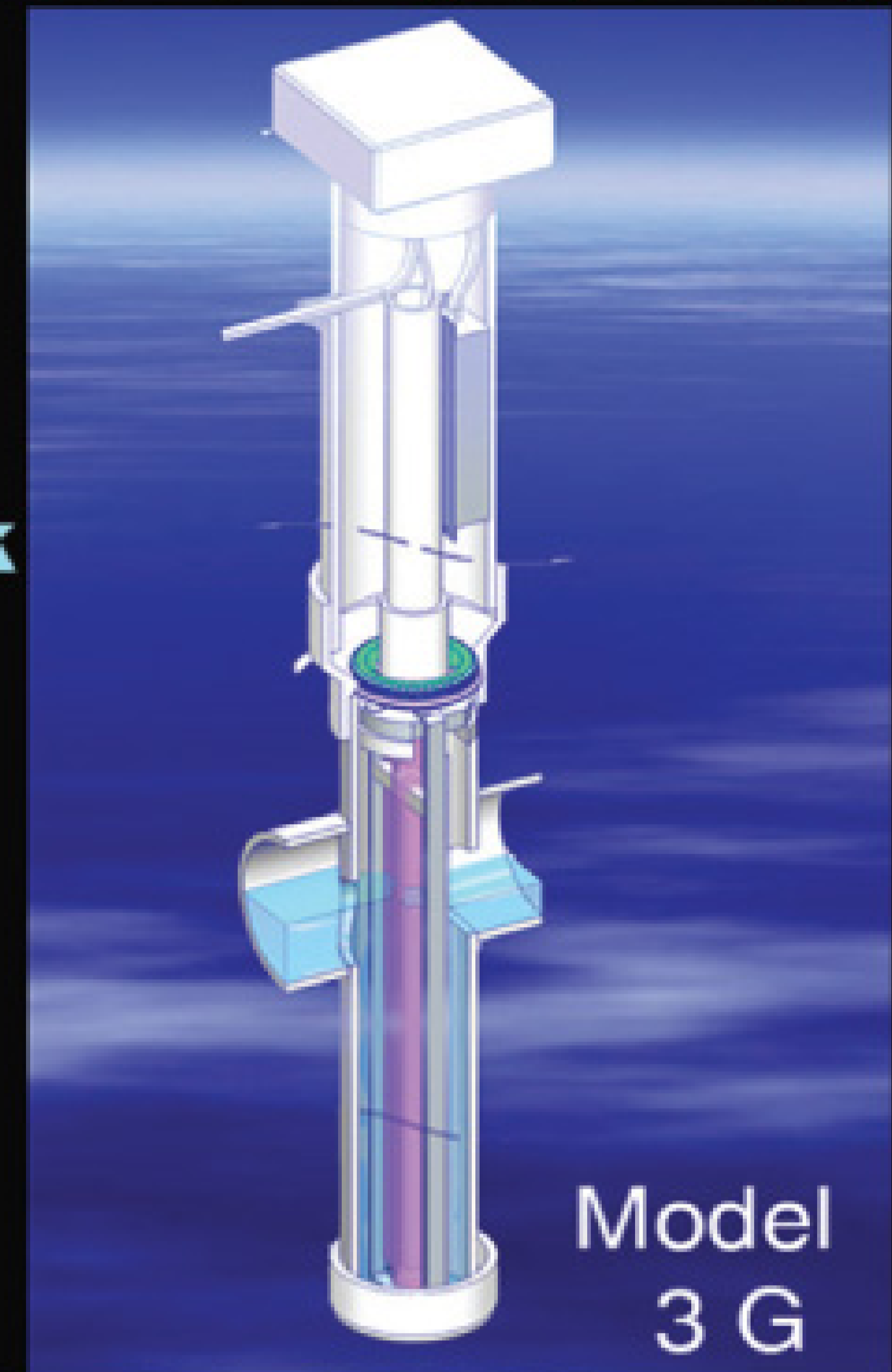


One of the Roe-D-Hoe events challenges contestants to precisely place a golf ball using a spoon attached to the bucket tine on a mini-backhoe.

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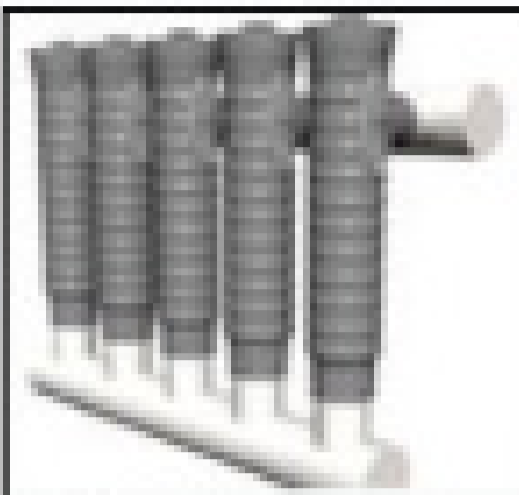
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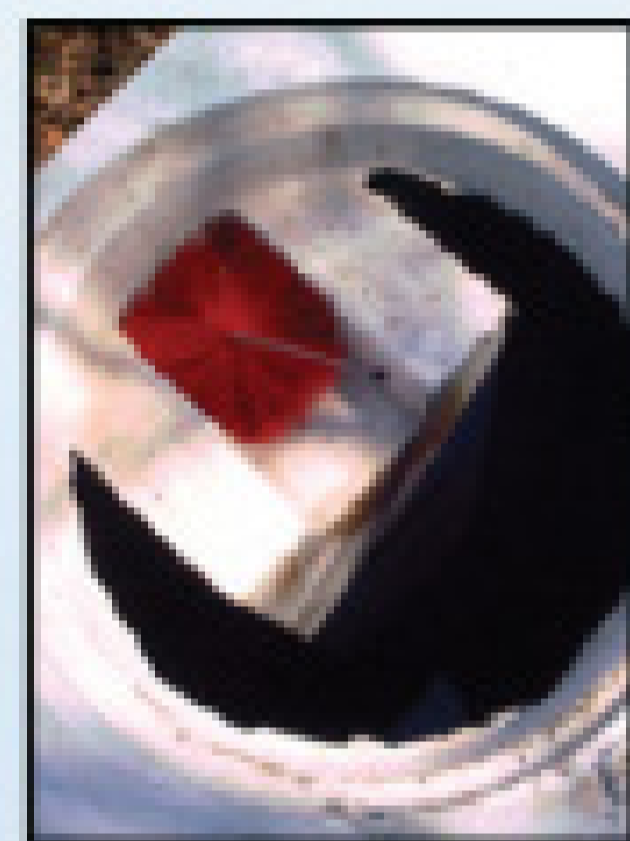
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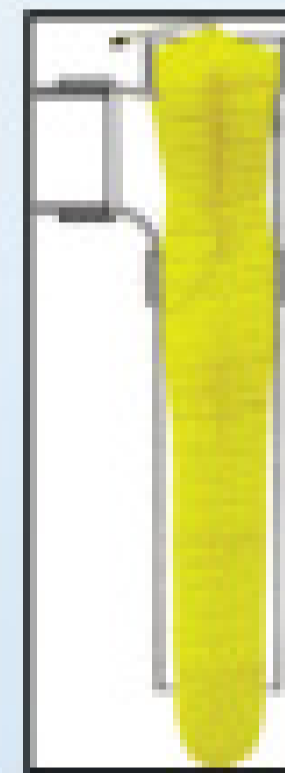


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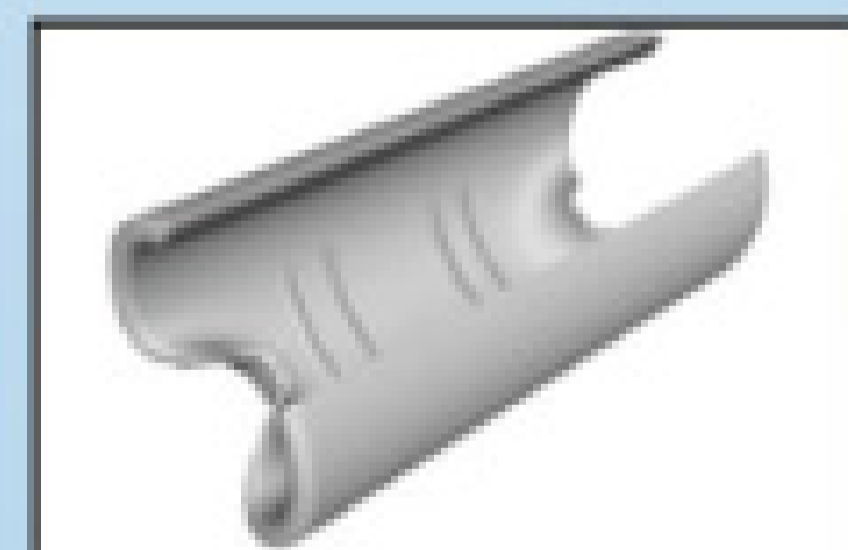
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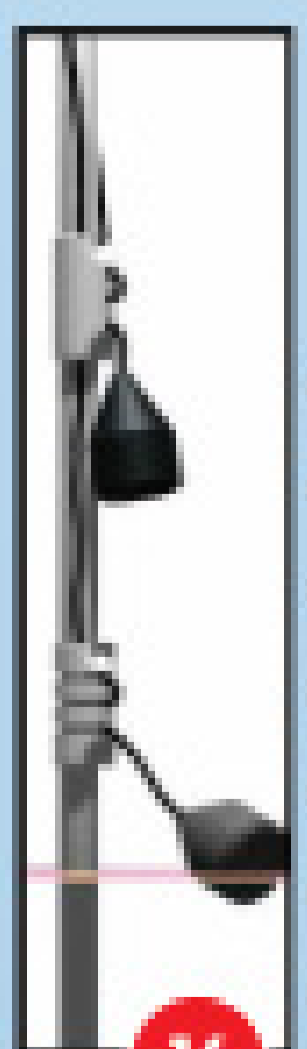
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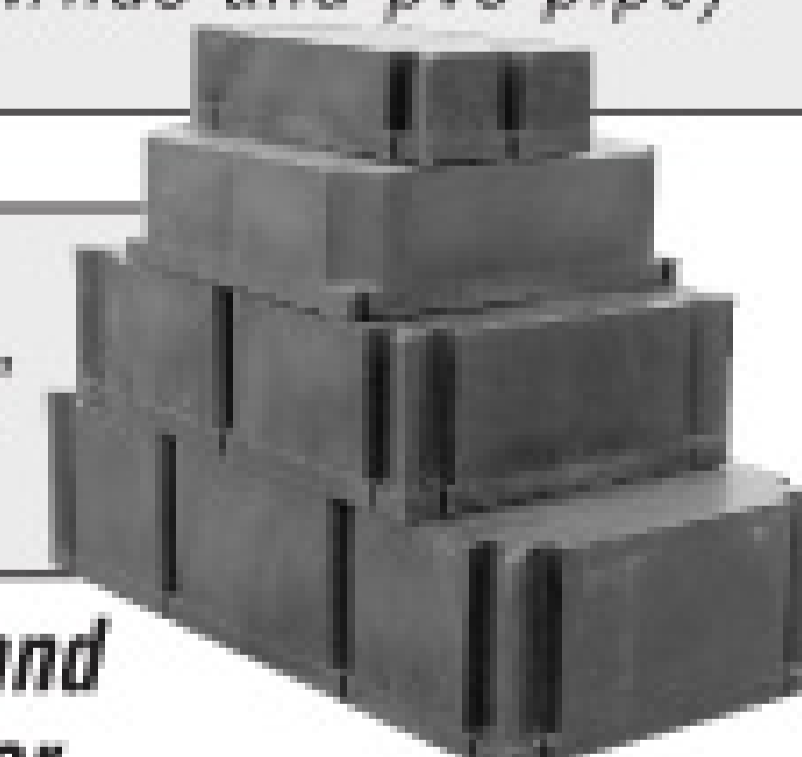
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New NOWRA Director

Jessica Finney has replaced Alan Gale as executive director of the National Onsite Wastewater Recycling Association (NOWRA). Since March 2008, she had served as the NOWRA account manager through the BTF Enterprises management company, which still serves the association.

Finney has 10 years of experience in organization management, project management and event planning. She has handled member service management and event planning at the Vacation Rental Managers Association and for the Public Health Institute in Oakland, Calif. She also held a position on the management team of a statewide public health initiative in California.

A native of Sacramento, Finney holds a master's degree in public health from San Francisco State University. She also is an alumna of the Women's Health Leadership, a program of the Center for Collaborative Planning, and a member of the American Society of Association Executives.

Low-flow Toilet Rebate

The newsletter of the Wisconsin Onsite Wastewater Recycling Association reports that the Waukesha Water Utility has introduced a \$25 rebate to homeowners who replace their 3.5-gallon per flush toilets with models that use 1.28 gallons or less. Water-saving toilets can save a family of four more than 20,000 gallons annually, a \$2,000 savings over the lifetime of the toilet.

NAWT Training

After an inquiry from Mark Scott of the Michigan Septic Tank Association (MSTA), the National Association of Wastewater Transporters (NAWT) began obtaining approval for its courses from the state's Department of Environmental Quality. Once approved, the courses qualify for license-required continuing education units.

The courses under considera-

tion are vacuum truck technician, introduction to and inspection of onsite systems, operation and maintenance of onsite systems, and waste treatment. NAWT is working with Onsite Wastewater of Northwest Michigan (OWNM) to submit grants that will bring NAWT training to locations around the state. NAWT also is working with MSTA and OWNM to develop and enhance the materials to make them Michigan-specific.

Waste Management Lab Proposed

A combined wastewater center/classroom facility is being planned by the University of Wisconsin-Stevens Point. The 10,000-square-foot laboratory and resource recovery center will have a pilot wastewater treatment plant, composting and microbiology labs, and an adjoining materials recycling center.

The treatment plant will include an activated sludge process, air-supply system, controlled input feed system, solids settling tanks, feed and storage tanks, solids dewatering apparatus, aerobic and anaerobic solids stabilization units, and an air emission control system. The Wisconsin Onsite Wastewater Recycling Association is encouraging the center to be a resource for the onsite industry as well.

Free Septic System Upgrades

In an effort to remove nitrogen from effluent, the Maryland Department of the Environment is offering onsite owners free upgrades that include new equipment, installation and five years of maintenance. Expenses are paid through the Bay Restoration Fund that onsite owners finance via a \$30 per year user tax.

The state has some 420,000 onsite systems serving about 20 percent of residences and a few businesses. More than 150 Maryland property owners have participated. For more information, call MDE at 410/537-4195.

CALENDAR OF EVENTS

Feb. 5-6

Ohio Water Quality & Waste Management Conference, Holiday Inn on Lane, Columbus. Call 614/292-8571 or visit <http://setll.osu.edu>.

Feb. 11-12

Nebraska On-site Waste Water Association Conference. Call Lee Orton at 402/476-0162 or visit 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.

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.

March 3-4

Texas On-Site Wastewater Association Conference, Waco. Call 888/398-7188 or visit www.txowa.org.

March 8-10

Pennsylvania Association of Sewage Enforcement Officers Conference, Grantville. Call 717/761-8648 or visit 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 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.

TRAINING & EDUCATION

National Environmental Health Association

NEHA is offering the exam for Certified Installer of Onsite Wastewater Treatment Systems national credential at the Pumper & Cleaner Expo on Feb. 25-28 in Louisville, Ky. Contact Carol Newlin at 303/756-9090, ext. 337, or at cnewlin@neha.org.

Pipelayer Certification

The University of Minnesota Extension is offering a three-hour workshop to accommodate a change in the state plumbing code that requires all onsite system installers must be certified pipelayers, licensed plumbers or registered apprentices to install sewer or water pipes outside of a building.

- March 12 – Owatonna
- March 27 – Willmar
- April 17 – Sauk Centre

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

National Association of Wastewater Transporters

NAWT has scheduled sessions in the following locations:

- March 5-6 – Onsite Inspector Training and Certification, Southern Calif.
- June 16 – Inspector Recertification Training, Flagstaff, Ariz.

Call 800/236-6298 or visit www.nawt.org. For Arizona classes, contact Kitt Farrell-Poe at 928/782-3836 or e-mail kittfp@ag.arizona.edu.

California

The training schedule for the California Onsite Wastewater Association is:

- March 4 – Pumper Training, Sacramento
- March 5-6 – NAWT Onsite Inspector Training and Certification, Southern Calif.
- May 8 – Science of Soils and Onsite Wastewater Disposal, Southern Calif.

Call MaryAnne Bobrow at 916/722-8168 or e-mail maryanne@bobrowassociates.com.

Florida

Courses are at the Florida Onsite Wastewater Association's Training Center in Polk City:

- March 16-17 – Master III, Basic Florida Soils
- March 18-19 – Master I, System Design and Function
- March 19-20 – Master II, System Materials and Regulations
- March 24-26 – Onsite Technologies from A to Z

Contact FOWA at 407/937-2228 or www.fowaonsite.com.

Minnesota

The University of Minnesota Extension has these classes:

- March 10 – Design Continuing

Education, Hinckley

- March 11 – Inspector Continuing Education, Hinckley
 - March 12 – OSHA Competent Person/Pipelayer Certification, Owatonna
 - March 24-25 – Continuing Education, Hinckley
 - March 26-27 – Installer Continuing Education, Willmar
 - March 27 – Pipelayer Certification, Willmar
- Call Nick Haig at 800/322-8642 (612/625-9797) or e-mail haigx003@umn.edu.

New York

The New York Onsite Wastewater Treatment Training Network Inc. is offering an Alternative Onsite Wastewater Treatment Technology course May 27-28 in Skaneateles. Call SUNY-Delhi at 800/963-3544 or visit www.delhi.edu/bcs/otn_wastewater.

Texas

The Texas On-Site Wastewater Association is offering a Basic Maintenance Provider course on March 1-2 in Waco. Call 888/398-7188 or visit www.txowa.org.

Washington

The Washington Onsite Sewage Association and Washington State Department of Health in cooperation with Washington State University are offering these certification courses at the training center in Puyallup:

- March 12 – Troubleshooting
- March 18 – TBA
- March 25-26 – Competency Exam Review

Call WOSSA at 253/770-6594 or visit www.wossa.org. ■

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INDUSTRY NEWS

February 2009

Bord na Mona Installs Bioreactor System

Bord na Mona Environmental Products U.S. Inc. has installed a PuraM Membrane Bioreactor wastewater treatment system at the Laurel Cove Golf & Country Club in College Grove, Tenn. The \$1 million plant was designed to treat a Phase One flow of 250,000 gpd and achieve a final effluent quality of 10mg/l BOD; 20mg/l TSS; and 10 mg/l TN. The design allows the final effluent to be used as irrigation water on the golf course.

Infiltrator Adds Design Tools to Web Site, Unveils New Logo

Infiltrator Systems Inc. has added downloadable design tools to its Web site, www.infiltratorsystems.com, and unveiled a new company logo. The support design applications focus on the full line of TW Series septic tanks and Aquaworx Intelligent Pump Control panels. ■



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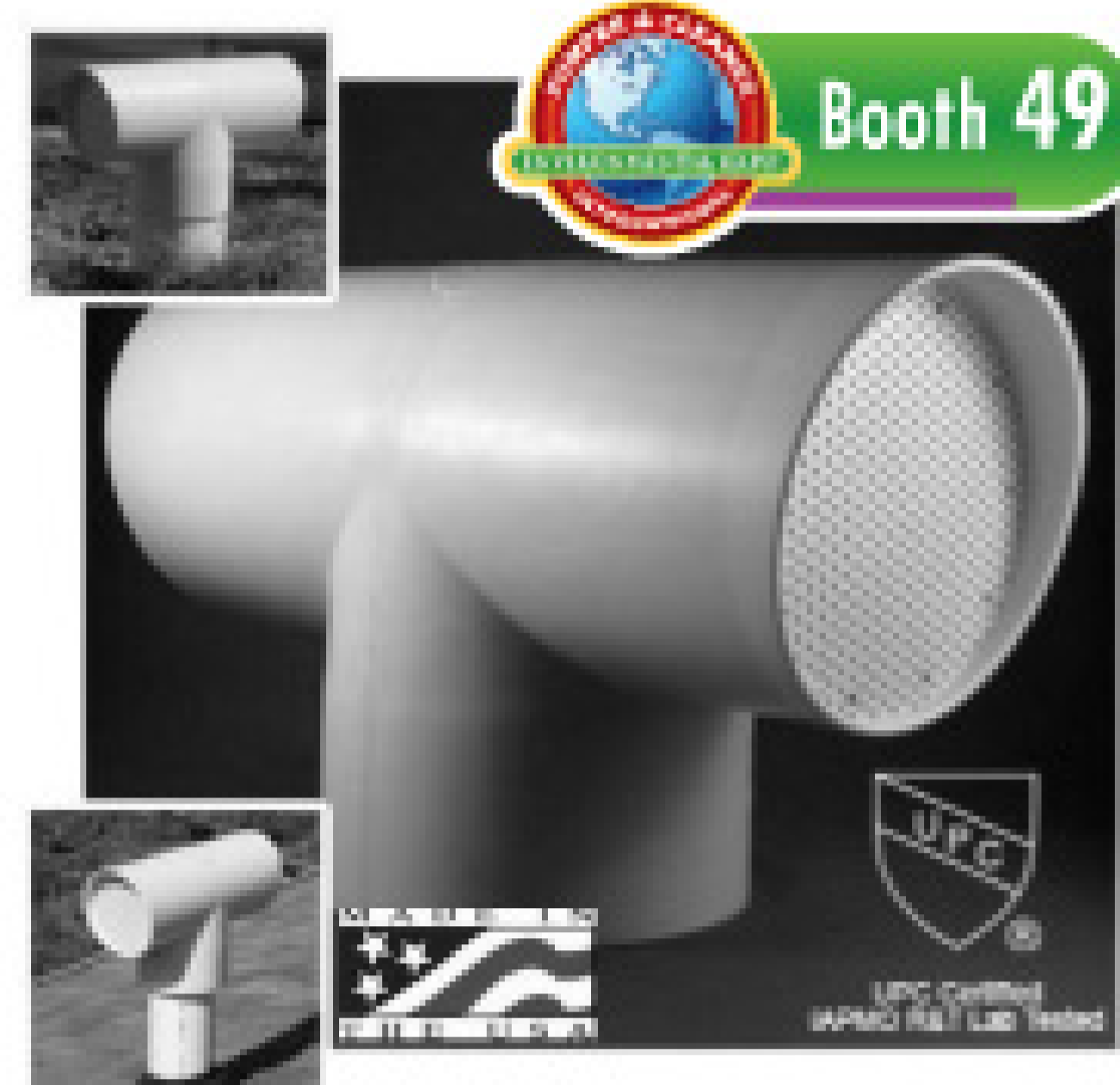
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