# 

Advances in pump systems Page 30 Installing sewage tanks Page 14 Keeping tanks watertight

Page 18

2011

March

PROMOTING WASTEWATER TREATMENT QUALITY AND PROFESSIONAL EXCELLENCE www.onsiteinstaller.com

# Beyond Digging Holes

Residential Sewage Treatment thrives on complete services for advanced onsite systems

Page 8

### contents March 2011

#### COVER STORY

#### 8 **Beyond Digging Holes** By Gil Longwell

ON THE COVER: Residential Sewage Treatment Co. in Grandview, Mo., provides advanced treatment systems and components but leaves the actual installations to others. Here, Jason Vaughn, onsite wastewater specialist, performs routine maintenance on an aeration unit from Norweco. (Photography by Chris Cummins)

#### 6 **Breaking Ground: Without the Toys**

Some onsite professionals succeed without investing heavily in earthmoving machinery. They essentially sell the expertise and leave the digging to others. By Ted J. Rulseh, Editor

#### 14 **Basic Training: Knowing Your Tanks**

Installation professionals must understand the roles and function of four kinds of sewage tanks: holding, septic, trash and processing. By Jim Anderson, Ph.D., and David Gustafson, P.E.

#### 16 System Profile: Saving the Wells

A recirculating gravel filter system with nitrogen reduction and drip dispersal serves a small residential community for a Native American tribe. By Scottie Dayton

#### 18 Tech Talk: Not Just Important — Critical

Watertightness is an essential trait of any onsite system tank. Here is a field-tested way to prevent leaks using a special clay called bentonite. By Brian Rabe

20 **Rules and Regs: Maryland Association Gears Up** to Address Proposed Septic System Ban By Scottie Dayton

#### 24 Notes from NOWRA: Go to the Summit

NOWRA, NEHA and SORA join forces to present a joint conference for onsite professionals in June in Columbus. By Eric Casey

- 26 **Product News**
- 28 **Association News** News; Calendar of Events; Training and Education
- 29 **Industry News**
- 30 **Product Focus: Pumps** By Scottie Dayton

# Beyond Digging

Holes



Published monthly by



1720 Maple Lake Dam Rd. • PO Box 220 • Three Lakes, WI 54562

Call toll free 800-257-7222; outside of U.S. or Canada call 715-546-3346 7:30 a.m.-5 p.m. Central Time, Mon.-Fri. Website: www.onsiteinstaller.com E-mail: info@onsiteinstaller.com • Fax: 715-546-3786

SUBSCRIPTIONS: A one year (12 issue) subscription to Onsite Installer™ in the United States or Canada is free to qualified subscribers. A qualified subscriber is any individual or company in the United States or Canada that partakes in the installation, design, maintenance, manufacture, treatment, consulting or sale of onsite wastewater treatment systems or supplies. Non-qualified subscriptions are available at a cost of \$60 per year in the United States and Canada/Mexico. Subscriptions to all other foreign countries cost \$80 per year. To qualify, visit www.onsiteinstaller.com/order/subscription or call 800-257-7222.

Our subscriber list is occasionally made available to carefully selected companies whose products or services may be of interest to you. Your privacy is important to us. If you prefer not to be a part of these lists, please contact Nicole at nicolel@colepublishing.com.

#### **CLASSIFIED ADVERTISING:**

Rate: \$1 per word, per month. Minimum of 20 words or \$20. All classified advertising must be paid in advance. DEADLINE: Classified ads must be received by the first of the month for insertion in the next month's edition. PHONE-IN ADS ARE NOT ACCEPTED. Fax to 715-546-3786 only if charging to MasterCard, VISA, Discover or AmEx. Include all credit card information and your phone number (with area code). Mail with check payable to COLE Publishing Inc. to the address above. CLASSIFIED ADVERTISING APPEARS NATIONWIDE AND ON THE INTERNET. Not responsible for errors beyond first insertion.

#### **DISPLAY ADVERTISING:**

Contact one of our sales staff below at 800-994-7990. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.



Kim McGee



Send to Editor, Onsite Installer, P.O. Box 220, Three Lakes, WI, 54562 or e-mail editor @onsiteinstaller.com

#### **REPRINTS AND BACK ISSUES:**

Visit www.onsiteinstaller.com for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or e-mail jeffl@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or e-mail nicolel@ colepublishing.com.

#### **CIRCULATION:**

Circulation averages 21,421 copies per month. This figure includes both U.S. and International distribution.

> © Copyright 2011 COLE Publishing Inc. No part may be reproduced without permission of the publisher.



#### **PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL**

www.pumpershow.com

Education Day: Feb. 27, 2012 Exhibits Open: Feb. 28 - March 1, 2012 Indiana Convention Center, Indianapolis, Indiana

#### Coming Next Month: April 2011

#### **Advanced Treatment Units**

- Profile: Bill Walter & Sons Septic Installation, LLC
- Product Focus: The latest in advanced and aerobic treatment units
- Breaking Ground: A tool for estimating community system costs
- Onsite Consortium: A behind-the-scenes force for industry progress







Victoria in Prince Edward Island, Canada. La Pradera in New Mexico. The Audubon Center in California. The EcoVillage at Currumbin in Australia.

The developers of these projects selected from among the best, most environmentally sustainable products in the world. And when they chose their wastewater system, they chose AdvanTex<sup>®</sup>.

The low-impact installation of Orenco's AdvanTex Treatment Systems preserves soil and undergrowth. Biosolids remain in watertight tanks, decomposing naturally. Treated effluent is clear as water ... so clear it's recyclable for irrigation, toilet flushing, and other water-conserving uses. Power usage is minimal, for a small carbon footprint. Plus all AdvanTex systems, commercial AND residential, come with a remote telemetry control panel, for invisible, 'round-the-clock supervision.

For more information, call Orenco Systems at 800-348-9843.

*Wherever you build, build responsibly. Build sustainably. Choose AdvanTex.* 

Victoria, PEI, won a Canadian award for its Orenco Sewer followed by AdvanTex treatment.



Changing the Way the World Does Wastewater®

800-348-9843 www.orenco.com



#### March 2011

COMPANY	PAGE
ALDENDH	
Alderon Industries, Inc	
ALTR	
Alita Industries, Inc	
AQUAWOT	
Aquaworx by Infiltrator	
BIO-MICROBICS	
Bio-Microbics, Inc.	
Seni-R	
BrenLin Company, Inc	
DIRTY BLED Septic Vent Concealer	
BS Design Corp	31
Champion Pump Company	13
Crest Precast, Inc	
elien	
Eljen Corporation	
Fergus Power Pump Inc	6

COMPANY	PAGE
J	
Jet. Inc.	
Liberty Pumps	9
Netafim USA	21
Orenco Systems, Inc	
POLYOK	
Polylok, Inc	
Presby Environmental	Inc.
Presby Environmental, Ir	1c 4
Salations	
RotoSolutions, Inc	
Salcor Inc.	
Salcor, Inc	
Sanitation Insurance Ser	vices 27
Septic Services Inc.	
Septic Services, Inc	

COMPANY	PAGE
Septronics, Inc.	
Septronics, Inc	
<b>Rhombus</b> SJE-Rhombus	21
SPI - Septic Products, Inc	23
T & T Tools, Inc	11
The Pagoda Vent Company	
The Shaddix Company, Inc.	
<b>MTUFIITE</b> Tuf-Tite, Inc	5
WIESER Wieser Concrete Products,	Inc 13
@Zonum	
Zoeller Company	7

### Enjoy this issue!

ADVERTISERINDEX

Established in 2004, Onsite Installer<sup>™</sup> fosters higher professionalism and profitability for those who design and install septic systems and other onsite wastewater treatment systems.

✓ FREE Subscription
Product Information
✓ Used Equipment
Discussion Forum
Article Reprints
Digital Editions
COLE Mart Superstore
✓ Editor's Blog
All at

onsiteinstaller.com

#### 4 | ONSITE INSTALLER March 2011





For a Complete Catalog and Pricing Call 1-800-382-7009

# **HEAVY DUTY MULTI-PURPOSE** FREE FREIGHT on Full Cartons!

#### Fits most commercially available:

- Risers
- IPEX PVC Ribbed Pipe
- Corrugated Pipe

#### LID MAY BE USED WITH OR WITHOUT CONCRETE CENTER



Secured by 6 Vertical and 4 Horizontal Safety Screws. Screws Included.



Horizontal

Safety Screws

Water-TITE Joint



Foamed-in Permanent Polyurethane Gasket.

**Corrugated PVC Pipe** 

Water-TITE

Joint



**4 Horizontal** 

Safety Screws

Holds up to 70 lbs of Concrete for Added Safety.

**IPEX Ribbed PVC Pipe** 

Horizontal

Safety Screws

Water-TITE

Joint



Vertical Safety

Screws

Water-TITE Vertical and Horizontal Safety Joint Screws



Joint









Tuf-Tite®, Inc. 1200 Flex Court, Lake Zurich, IL 60047 www.tuf-tite.com 800-382-7009

Horizontal

Safety Screws

0 2010 Tel-Tite<sup>1</sup>, In All rights raid



#### Feedback

Onsite Installer<sup>™</sup> welcomes your comments, ideas and suggestions on how we can serve you better. Call 800/257-7222; fax 715/546-3786; or e-mail editor@onsiteinstaller.com.



# Without the Toys

Some onsite professionals succeed without investing heavily in earth-moving machinery. They essentially sell the expertise and leave the digging to others. By Ted J. Rulseh, Editor

The typical (perhaps stereotypical) image of the onsite installer is a guy with a backhoe. More than ever these days we run across installers who do the business without the big-boy toys.

One of those is this month's featured contractor, Residential Sewage Treatment Co. of Grandview, Mo. Unlike a design firm, which essentially does the site evaluation, selects the system and configuration and draws the plans, Residential stays involved throughout the installation, although the company itself does no excavation.

The firm relies on installers to excavate for the tanks and drainfield. Then during construction, company personnel deliver treatment system components, install aerator assemblies, and in some cases also install pumps, control systems and panels. Each project is a close collaboration with one of several local installers with whom Residential has relationships.

#### Personal preference

There are variations on this theme in the industry. Some installers own only one or a few basic machines that they use on nearly every job, then either rent other equipment as needed or hire local contractors. And, for some installers, doing the digging is an enjoyable and rewarding part of the profession. If you doubt that, visit the annual Roe-D-Hoe competition at the Pumper & Cleaner Environmental Expo. You'll see some true artists at work on the machines and some

Let's start a discussion. How do you approach equipment? Do you prefer to own and operate all or most of what you need? Or do you limit your fleet and focus on the art and science of systems? And in either case, why?

It's an approach that makes plenty of sense. Is it "better" to operate this way than to own most or all necessary equipment? That depends. In part it's about personal preference. One clear advantage to owning equipment is the ability to sell and earn a profit on the machine work instead of handing that revenue off to someone else.



very engaged spectators.

One challenge of owning equipment is keeping it busy. Few can afford to have a costly asset sitting idle much of the time. That's why many installers maximize the use of their machinery by doing other kinds of excavation, which may include site work on the lots where they install systems, and completely unrelated projects.

#### A workable model

Then there are professionals to whom it's much more about systems than digging. They choose to sell their expertise in onsite and let others deal with the machines.

What are the advantages to this approach? Well, they can focus on treatment systems without having to scare up work digging basements or installing culverts. They don't have the headaches of maintaining equipment, storing it over the winter, and hauling it back out in spring. They don't need heavy trucks or trailers to move the machines around — a pickup truck or even just a car will do. Breakdowns and emergency repairs are someone else's problem (except to the extent that they affect progress on jobs).

Jobbing out machine work by definition means less revenue, but it also means fewer headaches and less financial risk. And if the work you really enjoy is designing the treatment scheme and making sure the equipment is installed right, this is the way to go.

#### What's your preference?

Clearly neither approach to the business is "right" or "wrong" other than for the parties deciding how to operate. But as a general trend, where are things heading in the industry? Are more professionals leaning toward right-sizing the equipment fleet — keeping the basics and renting the rest? Or is owning equipment just as integral to the business as it has been by tradition?

Let's start a discussion. How do you approach equipment? Do you prefer to own and operate all or most of what you need? Or do you limit your fleet and focus on the art and science of systems? And in either case, why?

Send a note with your perspectives to editor@onsiteinstaller.com. I promise to respond, and we'll share the comments we receive in a future issue. ■ quality service innovation integrity

# FAMILY OWNED. AMERICAN PROUD.

This is Zoeller Company. Established in Louisville, KY, we have been building on this foundation for four generations and seven decades.

You'll find quality, service, innovation and integrity reflected in every residential, commercial and municipal water solution we engineer and manufacture. We do this for one reason.

#### Your Peace of Mind is Our Top Priority™

John A. Zoeller, P.E. CEO/President





СОМРАNY

Zoeller Family of Water Solutions"



#### INSTALLERDFOIL

Alex Rice, a service technician for Residential Sewage Treatment Co., performs semi-annual maintenance for a client. (Photography by Chris Cummins)

# Beyond Digging Holes

Residential Sewage Treatment thrives on a complete menu of services for advanced onsite systems in support of installers and homeowners

#### Residential Sewage Treatment Co., Inc., Grandview, Mo.

OWNERS: Kathy Maguire, president; Tom Fritts, vice president of sales; Judy Furey, secretary

#### YEARS IN BUSINESS: 22

MARKET AREA: 100-mile radius (two states)

ANNUAL REVENUE: \$1.2 million

**SPECIALTIES:** Support for advanced-system installations, design, repair, service contracts

#### **EMPLOYEES: 8**

AFFILIATIONS: NOWRA, Missouri Smallflows Organization, Kansas Small Flows Association, Grandview Chamber of Commerce

WEBSITE: www.residential sewage.com

#### By Gil Longwell

Residential Sewage Treatment Co. has roughly 2,500 onsite systems under maintenance agreements, yet the company has never installed a system.

Residential Sewage has designed or provided advanced treatment components for nearly 7,000 systems since the doors opened in 1972. The business serves installers within a 100-mile radius of Grandview, Mo. Kathy Maguire, president, estimates that 90 percent of the business originates with 30 installers. The balance comes from a large number of smaller installers and a few do-it-yourself homeowners.

Residential Sewage is comfortable in the blended-niche market it created. Working from an office about 15 miles south of Kansas City and five miles east of the Kansas-Missouri state line, the company works with installers at the inception of their projects to assure a good match between the technology and the needs of the site. "We get the call as soon as the installer learns a conventional system will not work," Maguire says. "This is a call for help."

#### **Diverse services**

The roots of the company as it exists today go back to 1988 when Maguire, a banker, was looking for a career change. She bought Residential Sewage with her sister and brother-in-law, Judy and Mike Furey. The Fureys knew the industry and Maguire knew business. It was a good match. In 1991, when Maguire married Tom Fritts, he gladly gave up a traveling sales job to become company vice president.

Residential Sewage offers diverse services to installers. During construction, company personnel deliver treatment system components and install aerator assemblies. If the installer so desires, they install pumps, control systems and panels. "We buy our precast tanks from "Before and during installation, we help installers understand the regulations and associated requirements for siting, design and maintenance." Tom Fritts

Allied Concrete Products," says Maguire. That company and Residential Sewage share common ownership, and through the years the relationship has been strong.

"We place our equipment in holes someone else has dug for us," says Fritts. Once the company finishes work on its parts of the system, the job is turned over to the installer, who then completes the job.

Only when the system is turned over to the homeowner will Fritts return to provide an orientation. Because most of the technologies Residential Sewage provides are considered Class I aerobic devices, *(continued)* 

# EFFLUENT

Liberty introduces the **new line** of large effluent pumps.

### Available in 1 hp, 1.5 hp, and 2 hp.

· Heavy cast iron construction.

- Quick-disconnect power cord for easy field service. (25' length standard.)
- Dual shaft seals.
- Each pump supplied with dual-sized discharge in 1-1/2" and 2".
- Available in single phase and 3 phase power.
- Maximum total heads to 132 feet.
- Maximum flows to 130 GPM.
- 2 year warranty



Inc

One of Americas fastest growing,

privately owned companies

Liberty Pumps<sup>®</sup> 800-543-2550 www.libertypumps.com

Below: Onsite wastewater specialist Jason Vaughn performs routine maintenance. Right: Alex Rice prepares for the day's calls.



Fritts sees this orientation as essential. "It is usually the first opportunity to meet with the owners," he says. "We teach them the basic do's and don'ts. During the meeting, we explain the initial service period and the system's need for continuing service." That is an opportunity for a gentle sales presentation, as well.

#### The go-to guys

"Before and during installation, we help installers understand the regulations and associated requirements for siting, design and maintenance," says Fritts. "But we are not regulators." Installers are sometimes reluctant to ask questions of regulators, but they are comfortable asking Fritts or his crewmembers.

On the other hand, regulators are comfortable having Fritts and his team help out. "Sometimes I'm not sure of the answer, so I ask the regulator," Fritts says. "There is anonymity for the installer, who receives an accurate, regulator-validated answer. Everybody wins."

During construction and installation, when a system requires troubleshooting at a level above the installer's expertise, Residential gets the call for help. Fritts may respond himself, or he may call on one of the company's wastewater specialists, Jessi Wood or Jason Vaughn. Helping the installers strengthens ties with them and increases Residential's value.

Because of the complex systems the company provides and supports, Fritts wants homeowners to call Residential first when they have questions or performance issues. "Positioning ourselves between the homeowner and the installer makes us a buffer for the installer and a knowledgeable resource for the homeowner," he says.

Whether for homeowners or installers, Residential Sewage has positioned itself as the go-to source for every site on which one of its systems is installed.

#### Supporting installers

"The installer community is both consistent and ever-changing," says Maguire. Some businesses have been in the field for 20 or more years and have their menu of services in onsite to stay competitive. Others transition into the onsite realm as part of a diversification plan. Fritts sees his company as having a big advantage because of its institutional memory. Regardless why a business moves into the





"We want to be on the cutting edge of emerging technology in the field and in the office and we provide the training so that all employees can gain maximum benefit from the technologies that support them."

Kathy Maguire

Kathy Maguire, company president, and husband Tom Fritts, vice president, lead the team at Residential Sewage Treatment.

### Leaders for Change

The roles of resource specialist and traffic control director keep Residential Sewage Treatment Co. involved. The daily information flow from a large network of contacts helps vice president Tom Fritts recognize problems and, as appropriate, offer suggestions for change.

Fritts has a unique vantage point and contact network in the onsite industry. He is on the boards of the Missouri and Kansas Small Flows organizations and has served both as president. Adding a national perspective, he serves on the National Onsite Wastewater Recycling Association Board of Directors. To these forums, he brings real-time news of what does and does not work to the regulatory community and to those training field practitioners. From these same forums, he gains foreknowledge that benefits his business.

Maguire has served the local Cham-

ber of Commerce as president, where she led in creating a scholarship program.

Sometimes change means a new way of thinking, not doing new things. In discussions in industry forums, Fritts has become convinced decentralized systems have a long-term place in the nation's wastewater management infrastructure.

Whether that happens through single-home systems or through community or cluster systems is a local planning decision, but Fritts has no doubt that systems relying on soil for final treatment of effluent are here to stay.

Fritts believes the relationship between associations and their members is indispensable. In their respective professional and hometown communities, Maguire and Fritts see opportunities, in recognizing the need for change and in being able to help advance it.



# WEHAVE FLOATLESS UNDER CONTROL

and with Mountable and Removable Controller (MARC")

ore Intelligent Pump Control (IPC)

AQUAN

#### SMART TECHNOLOGY

Floatless, pressure transducer is accurate to 0.10 inches

Pressure Transduce

- Unique user-friendly interface with the Mountable and
- Removable Controller (MARC)
- Data logging provides easy access to historical data
- Saves time and money with a simple installation
- Liquid level displayed for draw-downs means no tape measure required
- Veto level override function allows for increased protections during peak flow
- More than 10,000 successful installations in North America since 2000

We are confident, that once you try our technology, you will not want to go back to the inherent challenges of floats. Contact us today!

AQUAWOrx

by INFILTRATOR

onsite area, the owners have a large body of knowledge to learn, and they must do so quickly.

Working with installers who have varying skills and knowledge brings Fritts and his team a variety of teachable moments. "Our most repetitive message to installers is: 'Don't cut corners,'" Fritts says. "Cutting corners may shorten time on a job, but shortcuts are not in the installer's or customer's long-term best interest."

As a distributor, Residential provides an unending and uniform level of support throughout the process. The relationship is built on mutual dependence. Residential will be on the property long after the contractor moves out, and Fritts and Maguire want that contractor to be successful, leaving behind a quality installation and a feeling of goodwill with the landowner.



Jason Vaughn is among company personnel who provide operations and management service for onsite systems.

#### **Resource pool**

Compared to an installer's broad equipment inventory, Residential Sewage has limited equipment. The company has no need for excavators, backhoes or other earth-moving devices.



Members of the Residential Sewage Treatment team include, from left, Jessica Black, intern/scholarship program; Brandi Crawford, customer service representative; Jessi Wood, wastewater specialist; Amanda Thornhill, customer service representative; Logan Huff, service technician; Alex Rice, service technician; Kathy Maguire, president/owner; Jason Vaughn, wastewater specialist; and Tom Fritts, vice president/owner.

"Our biggest resource investments are in our employees and the technology and training that supports them," Fritts says. "Every employee participates in task-appropriate training."

Service technicians Alex Rice, Logan Huff and Josh Johnson, along with the wastewater specialists, have attended training sessions from Norweco, for which the company is a distributor. Residential's preferred pump provider, Zoeller, also offers training, as do other manufacturers.

Office staff members wear many hats, including sales, customer contact and administration. In the office, the company has invested in technology that equips associates Brandi Crawford, Amanda Thornhill and Jessica Black for their roles. "We want to be on the cutting edge of emerging technology in the field and in the office, and we provide the training so that all employees can gain maximum benefit from the technologies that support them," says Maguire.

Because the company works in two states and as many as 20 counties, every employee must appreciate the expectations of the local regulators, whether health departments, sanitarians, or business licensing agencies. The Missouri and Kansas onsite associations offer training that Fritts and the field service delivery crew take part in regularly. Employees in customer contact positions benefit from skill-building classes, as well.

The company has been part of an employee scholarship program managed by the Grandview Chamber of Commerce. The program pairs employers and student employees. "Students are guaranteed 800 hours of work per year," Maguire says. "They gain experience that enables immediate application of skills learned in the classroom. A work ethic is nurtured, and the student earns a scholarship at a nearby community college." Jessica Black became connected with the company through the program.

Relationships with every employee are nurtured through an employer-funded 401(k) program, fully paid health insurance and paid vacations. Field employees have been with the company, on average, eight years.

#### Not all residential

Residential Sewage has a long history of providing technologies

and services to homes, but that is changing. State regulators are imposing stricter standards on nongovernment owners of decentralized systems, and Fritts and Maguire see a growing demand for third-party management of those systems. The company, through appropriately credentialed personnel, will soon operate wastewater systems with daily flows up to 50,000 gpd.

Regulations may be many things to different people, but Maguire and Fritts see them as income opportunities that many installers do not appreciate. The team Fritts and Maguire have assembled leaves the digging to others. They're content to provide technology and long-term management solutions in an exciting, ever-changing enterprise.

#### **MORE INFO:**

**Norweco, Inc.** 419/668-4471 www.norweco.com

Zoeller Company 800/928-7867 www.zoeller.com (See ad page 7)

# SALCOR UV DISINFECTION The Finishing Touch



#### Designed for Onsite Systems

Gravity Flow to 6 GPM

PERLET .

- Installed in Ground or Pump Tank
- Minimum (Annual) Maintenance
- NEMA 6P (Passed 30 Day Submergence Test by UL)

- Two Year UV Lamp Life
- NSF and Other Third Party Tests Confirm Superior Bacteria and Virus Kill
- UL and cUL Certified, Standard 979
- Multiple Units Economically Treat up to 100,000 Gal/Day

Salcor Inc. P. O. Box 1090, Fallbrook, CA 92088 (760) 731-0745 Fax: (760) 731-2405





Jim Anderson and Dave Gustafson are connected with the University of Minnesota onsite wastewater treatment education program. Dave is extension onsite sewage treatment educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor, as well as education program coordinator for the National Association of Wastewater Transporters. Readers are welcome to submit questions or article suggestions to Jim and Dave. Write to ander045@umn.edu.

# **Knowing Your Tanks**

Installation professionals must understand the roles and function of four kinds of sewage tanks: holding, septic, trash and processing

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

In our series of articles walking through the installation sequence from start to finish, we now turn to installing tanks. During a recent workshop, we were discussing the operation and maintenance of aerobic treatment units (ATUs). As we talked about the trash tank, a participant asked, "What in the world is this trash tank?"

We often take for granted that people know what we are talking about — because everyone is familiar with the industry, right? This case reminds us that often we need

There are three types of tanks used to separate, store, and treat the solids in the waste stream. While their overall purposes are similar, their uses and the ways they fit into the onsite treatment system are somewhat different.

to take that step or two back toward the beginning so everyone is on the same page.

So here, when we refer to sewage tanks, we're talking about the different tanks with different functions that professionals are called upon to install. Before we discuss the specifics of installing concrete, plastic, or fiberglass tanks, let's look at the most common types of sewage tanks and their functions.

#### Holding tanks

The first common type is a holding tank, commonly used as a last resort where a complete treatment system cannot be installed, during system startup, or where complete installation has been halted because of weather or other circumstances.

The tank materials can be concrete, polyethylene or fiberglass. The tank itself functions as a watertight vessel that stores several days of sewage flow. Holding tanks are periodically pumped based on the daily flows — they act as collection and storage devices. It is important when pumping that all liquid and solids be removed. Some settling may occur, so mixing the tank contents while pumping is important.

Then there are three types of tanks used to separate, store, and treat the solids in the waste stream. These are septic, trash or processing tanks. While their overall purposes are the same, their uses and the ways they fit into the onsite treatment system are somewhat different.

#### Septic tanks

Septic tanks are watertight and can be made of concrete, plastic or fiberglass. They collect wastewater and provide primary treatment by separating solids from the water: heavier solids sink to the bottom, and the fats, oils, grease and soap scum float to the top.

Inlet baffles direct the flow to

allow for separation, and the outlet baffles hold the scum in the tank. The process creates a clear zone of liquid that passes through an effluent screen and out to the soil treatment area for final dispersal.

Tank size is based on the daily sewage flow and the detention time needed to separate the solids. The septic tank provides the only pretreatment before final dispersal.

#### Trash tanks

Trash tanks are similar to septic tanks in construction and the materials and also need to be watertight. They are used before some type of advanced pretreatment unit, such as an ATU. Their function is not so much to separate solids as to serve as a collection point for the larger solids and other materials that may enter the waste stream, such as plastic products.

This protects the ATU by keeping materials out that might interfere with system operation. For this reason, these tanks are often half the size of the septic tank used for a similar flow. The size is usually specified by the ATU manufacturer.

Remember that while these tanks may be anaerobic, they do not function like septic tanks. So if the advanced system is taken offline, additional tank capacity is needed to get a septic-tank-quality effluent.

#### Processing tanks

Finally, there are processing tanks.



Installation of a two-compartment septic tank. Tank size is based on the daily sewage flow and the detention time needed to separate the solids. The septic tank provides the only pretreatment before final dispersal.

Again the tank is watertight and is made of the same materials as the other types. These special-use anaerobic treatment tanks are designed to increase nitrogen removal. They combine the functions of septic tank, surge storage tank, pump tank and recirculating tank.

In operation, aerobic effluent from an ATU or media filter is returned to the processing tank, where the



Sewage holding tanks can be made of concrete, polyethylene (shown) or fiberglass.

septic or anaerobic conditions exist. The water containing nitrogen as ammonia is pumped to the ATU and aerated, so that the nitrogen is converted to nitrate form.

The aerated effluent is then sent back to the processing tank, which is anaerobic. There, the nitrate is converted to nitrogen gas, which is vented to the atmosphere. This process, called denitrification, reduces levels of nitrogen introduced to groundwater in sensitive areas.

If too much circulation occurs,

the processing tank can be aerobic, and therefore the nitrogen reduction does not occur. Or, if there is too little circulation, not enough of the nitrogen is converted, and BOD and solids removal may be reduced. This is why it is so important to calculate recirculation ratios accurately (a subject for a future column).

So that's a brief primer on sewage tanks. Next month we will begin to describe what makes a good tank installation. ■





# Saving the Wells

A recirculating gravel filter system with nitrogen reduction and drip dispersal serves a small residential community for a Native American tribe

#### **By Scottie Dayton**

The Ho-Chunk Nation Environmental Health Department found rising nitrate levels in potable water wells serving the Blue Wing community in Tomah, Wis. The village has 20 homes, a day care center, a community center, and a meal center for senior citizens. A preliminary study by the Indian Health Service cited failing onsite systems, sandy soils, and shallow groundwater as contributing factors.

After a soil and site investigation, the Ayres Associates engineering firm of Madison, Wis., recommended a gravity collection system and recirculating gravel filter with denitrification and drip dispersal.

"We wanted to demonstrate nitrogen reduction with a modified gravel filter, and how the design performs in a northern climate," says project manager and designer Rick Apfel. Although the system is not operating at design capacity, BOD is less than 2 mg/l and TSS is 5 mg/l. Nitrate levels fluctuate from 14 mg/l in winter to 6 to 8 mg/l in summer, for a total nitrogen removal of 65 to 85 percent.

#### Site conditions

Soils are sandy with a loading rate of 0.5 gallons per square foot per day. The seasonal water table is 2 to 4 feet below the surface. Part of the five-acre site was a red pine plantation.

#### System components

Apfel designed the system to handle 20,000 gpd, including flows from three undeveloped multi-family dwellings, each with 18 bedrooms. Major components are:

### System Profile

Location:	Tomah, Wis.
Facility served:	Blue Wing Community, Ho-Chunk Nation
System designer:	Rick Apfel, Ayres Associates, Madison, Wis.
Installers:	Mike Stroik, Heartland Construction, Slinger, Wis.; Randy Rudisill, Heartland Utilities, Baraboo, Wis.
Site conditions:	Sandy soils, loading rate 0.5 gallons per square foot per day, seasonal water table 2 to 4 feet below the surface
Type of system:	Recirculating gravel filter with nitrogen reduction, drip dispersal
Hydraulic capacity:	20,000 gpd



The drainfield is left of the service road and the recirculating gravel filter is to the right. The structure is the control building. (Photos courtesy of Ayres Associates)

- 25,000-gallon two-compartment septic tank (all tanks from Wieser Concrete, Maiden Rock, Wis.)
- 20,000-gallon two-compartment septic tank
- 12,000-gallon denitrification tank with stacked media blocks from Petersen Products
- 18,000-gallon recirculation tank
- 15,000-gallon dose tank
- 7,040-square-foot recirculating gravel filter in eight 10- by 88-foot zones
- Perc-Rite drip system components from American Manufacturing include 20,160 feet of 1/2-inch pressure-compensating drip tubing, hydraulic unit with auto-backwashing disk filters, and PLC-driven combination pump control panel with Web-based telemetry. Equipment supplied by Petersen Products, Fredonia, Wis.

#### System operation

Wastewater flows from the sewer to a lift station and is pumped through a 3-inch force main to the first septic tank. It flows by gravity to the second septic tank and anoxic denitrification tank. Valving enables the operator to bypass the first tank for pumping and other maintenance.

A submersible circulation pump conveys mixed effluent and filtrate from the bottom of the denitrification tank to distribution pipes at the top of two 8- by 6-foot-square



The laterals in the recirculating gravel filter are covered with 6 inches of pea gravel.



A worker from Heartland Construction directs the crane operator as he lowers the bottom section of the dose tank. The first and second septic tanks are behind it. the pump runs for 40 minutes, drawing 835 gallons of filtrate through the filters and sending it to one of five active zones. The drip tubing, on 2-foot centers, has emit-



Workers from Heartland Construction construct the first drainfield bank with four 36- by 140-foot drip dispersal zones. The bulldozer operator prepares the sand for the second bank.



blocks of corrugated PVC crossflow media totaling 576 square feet of surface. All components are submerged to avoid introducing oxygen. The tank has a minimum 8-hour detention time.

Nitrified filtrate from the gravel filter supplements the effluent. "We want the bacteria to extract the oxygen from the nitrate," says Apfel. "The process produces nitrogen gas that dissipates to the atmosphere and reduces total nitrogen in the effluent."

Effluent flows from the denitrification tank to the recirculation tank. Alternating pumps cycle every hour, dosing the gravel filter with 2,080 gallons in 18 minutes. Electrically actuated butterfly valves in the control building sequence the dose through 2-inch distribution piping to the active zones.

Effluent drains through the gravel filter in about 30 minutes. A float in the recirculation tank controls a three-way plug valve that directs the filtrate to either the dose tank for dispersal to the drainfield or back to the denitrification tank for recirculation. Filtrate is recirculated through the gravel filter at 3:1 to 5:1 ratios.

The drainfield has two banks, each with four 36- by 140-foot zones. The hydraulic unit, with two 3 hp suction-lift alternating STA-RITE pumps (Pentair Water), 120 micron filters, and manifold, is in the control building. Every hour, ters 24 inches apart. Each one disperses 0.92 gallons per hour at 7 to 60 psi. The lines drain via gravity after every dose.

#### Installation

Mike Stroik of Heartland Construction in Slinger, Wis., installed the onsite system. Randy Rudisill of Heartland Utilities in Baraboo installed the 8-inch sewer mains and manholes.

Members of the Ho-Chunk community cut the timber. Stroik's crew cleared and grubbed the site in late October and, after scarifying the area, added 6 to 14 inches of mound sand to keep the required 3-foot separation to seasonal groundwater. They laid the drip tubing and covered it with 18 inches of sandy loam and 6 inches of topsoil.

Setting the tanks required trenching the excavations at a 1:1 ratio. The men also built the control building, formed the berm for the gravel filter, and installed the underground piping. "We needed three days above 40 degrees F to electrostatically weld the synthetic liner sheets, so we shut down operations until spring," says Apfel.

Rudisill completed the sewer work during winter. When Stroik's crew returned in April, they installed the liner with the edges keyed into the berm, added the underdrain piping on 12 inches of coarse stone, covered it with 24 inches of pea gravel, laid the laterals, and covered them with 6 inches of pea gravel.

The challenge was adding the media without damaging the liner or piping. "Mike's backhoe operator placed as much gravel as he could, and then they brought in a truckmounted telescoping belt conveyor with discharge chute," says Apfel. "It was slick. The operator spread the gravel in exactly the right places at the correct depth and discharged it from about three feet to minimize the impact of the weight."

"We wanted to demonstrate nitrogen reduction with a modified gravel filter, and how the system performs in a northern climate." Rick Apfel

The men covered the outside berm slopes with topsoil and seeded it, then built a 7-foot security fence with barbed wire and a locked gate around the system. Heartland Utilities abandoned the existing septic tanks, extended new 4-inch laterals from the houses, and connected them to the sewer.

#### Maintenance

A Class I wastewater operator from Petersen Management remotely monitors daily performance. Once a month, he collects data for analysis, checks all components, and evaluates sludge levels to determine if the tanks need pumping. Twice a year, he rotates the active zones for the gravel filter and drainfield and flushes the filter's laterals. ■

#### **MORE INFO:**

American Manufacturing Co., Inc. 800/345-3132 www.americanonsite.com

Pentair Water/STA-RITE 800/472-0884 www.pumps.com

Wieser Concrete Products, Inc. 800/325-8456 www.wieserconcrete.com (See ad page 13)

# **Not Just Important — Critical**

Watertightness is an essential trait of any onsite system tank. Here is a field-tested way to prevent leaks using a special clay called bentonite.

By Brian Rabe

The concept of watertightness in onsite system tanks is talked about in general terms quite often, and everyone would agree it is important. However, the specifics and details may not be getting enough attention.

Since I started working in this industry 24 years ago, I have seen too many instances where what looked tight during construction turned out to be less so when the rains started and the water table appeared. The testing criteria in the rules are focused on the tanks and piping, but the testing techniques and the consistency with which they are applied vary tremendously.

The impact of any leaks is potentially huge. Anyone who has worked with pressure distribution knows that a small hole (1/8-inch diameter) with only five feet of head will pass nearly half a gallon per minute. That is more than 700 gal-



A couple of seemingly minor air pockets in the epoxy resulted in leaks (at least two steady streams can be seen in the picture). This amounted to thousands of gallons per day for a couple of weeks when the water table temporarily rose during a period of heavy rainfall. lons per day, or about three times the average usage of a typical residential system.

Leaks that small can be hard to detect, but the impact on the system is tremendous. And the potential magnitude of the problem gets bigger in a hurry. I have seen leaks amounting to tens of thousands of gallons per day. Finding them can be a challenge.

Another point to remember is that places that allow water in during wet weather can let water out during dry weather. Exfiltration can represent as much of a risk to human health and the environment as infiltration.

#### A better approach

About 15 years ago, after seeing a number of tanks that leaked after initially passing a watertightness test, I developed an approach that I have used and expanded ever since. The initial experiences started with two-piece tanks that were assembled in the field.

Each manufacturer had its own seam design and sealing technique. Some worked better than others. But depending on workmanship and attention to detail, any one of them could turn into a leaker. I knew of a material commonly used in well construction, called bentonite, from working with my geologist colleagues.

Bentonite is a naturally occurring clay that has an extreme ability to swell when it absorbs water. It is used to create a seal along the well casing to prevent surface and near-surface sources of contamina-



Bentonite in place around riser connections and the field seam before backfill.

tion from short-circuiting down the borehole to the aquifer.

Initially, I started specifying a band (about 6 inches wide by 6 inches tall) all the way around field seams on tanks. This works great as an insurance policy against infiltration. I now also include specifications for factory seams (cold joints) and would recommend using it around any patches of cracks, rock pockets or other imperfections.

However, as one installer pointed out to me, it may not be as effective going the other direction (exfiltration). He is right. That is why the critical detail to remember is that bentonite is no substitute for proper initial construction (materials and workmanship). The bentonite is effective at sealing small cracks and other minor imperfections, but the



A good example of properly supported and bedded pipes with the risers and pipe penetrations reinforced with bentonite. Note that the field seam on the tanks has not yet had bentonite applied.

larger the opening and the greater the pressure, the less likely the bentonite will hold.

#### Eye on other components

Over time, I have seen numerous other instances where other underground elements of the system have experienced infiltration. Examples include pipe penetrations, both through the tanks and through the risers.

Grommets only start watertight if they are installed properly, and that includes creating a smooth hole of the proper dimensions, coupled with maintaining material cleanliness throughout the installation, followed by proper bedding take much time on a hot summer day for the material to become distorted (out of round) if lying on its side. This results in a tight fit for a portion of the joint, where there ends up being very little epoxy, coupled with very large gaps elsewhere that must be filled with epoxy.

#### Keep it shallow

It is also critical to allow enough time for the epoxy to cure to sufficient strength before applying sources of stress, such as installing splice boxes, installing hose and valve assemblies or backfilling. I also specify a ring of bentonite around riser joints and splices, just in case.

The impact of any leaks is potentially huge. Anyone who has worked with pressure distribution knows that a small hole (1/8-inch diameter) with only five feet of head will pass nearly half a gallon per minute. That is more than 700 gallons per day, or about three times the average usage of a typical residential system.

and support throughout the back-filling process.

It doesn't take much of an imperfection to have a grommet end up a potential leaker from the start, and a little differential settling after the fact will only make matters worse. This applies to gasketed joints and rubber couplers on gravity piping, as well.

I began specifying the placement of bentonite around pipe penetrations a few years ago as insurance, but again, it is no substitute for proper workmanship.

Risers are another potential source of leaks. Even PVC riser material can have imperfections. I have seen ribbed risers (spiral type) weep at the factory seams, although I think that is rare. More often, I have seen leaks through the epoxy at connection points and splice joints. This is most often due to poor workmanship.

Close attention to detail is necessary to make sure that any air pockets in the epoxy are sought out and addressed. It is far easier to get it right during the initial installation than to have to dig it up, often in less than ideal conditions, to fix it.

Care needs to be taken during storage of riser stock, since it doesn't

Another good reason to make sure the materials and workmanship are the best they can be, before applying bentonite for insurance, is repair conditions. If you ever have to dig into the area where the bentonite is, it will be a sticky, gooey mess. If you can, it is always best to install system components as shallow as possible to reduce the exposure of potential sources of leaks to the water table, and to limit the driving force (head or pressure) that affects the rate of flow.

#### About the author

Brian Rabe, CPSS, WWS, is a consulting soil scientist and system designer with Cascade Earth Sciences in Albany, Ore., and the immediate past-president of the Oregon Onsite Wastewater Association. He can be reached at brian.rabe@cascade-earth. com. This article first appeared in the summer 2010 issue of *I.N.F.O Industry News*, published by the Oregon Onsite Wastewater Association. ■

#### Pumper

THE LIQUID WASTE INDUSTRY'S MUST-READ PUBLICATION SINCE 1979 Subscribe now at pumper.com or 800-257-7222

# Don't Just Pump it, Fix It...*FAST*®

Ideal for new construction or renovations, our wastewater treatment systems offer versatility and consistent high performance over conventional septic systems or centralized sewering. Discover how a proven, affordable FAST<sup>®</sup> system can protect your customer's property.

Check out our Prevention-Remediation Program S.O.S.-Save Our Septic<sup>™</sup>



Visit **WWW.DIOMICTODICS.COM** or call 1-800-753-3278 for more information

© 2011 Bio-Microbics, Inc. • phone: 913-422-0707 • fax: 913-422-0808



### February 27 - March 1, 2012

Indiana Convention Center • Indianapolis, Indiana Monday - Education Day • Tuesday - Thursday - Exhibits

# Indianapolis 2012



### **TOP TEN REASONS INDIANAPOLIS IS THE BEST PLACE FOR THE 2012 PUMPER & CLEANER EXPO**

- 10. David Letterman is from Indianapolis, so Top Ten lists are everywhere.
- 9. If they can handle 80,000 Super Bowl fans, 15,000 Pumper & Cleaners should be doable.
- 8. 4,700 hotel rooms connected to the convention center that's nearly 2,000 more than Opryland.
- 7. Over 200 restaurants, bars, and entertainment options all within walking distance close walking distance.
- 6. Climate controlled skywalks mean never having to wear a coat - or scarf, or mittens, or stocking cap.
- 5. Send your significant other shopping the Convention Center is attached to a mall!
- 4. No matter what state you are from, there's only one way to pronounce "Indianapolis".
- 3. The last major crime spree in the city was by Indianapolis native John Dillinger in 1931.
- 2. 35 cities fly non-stop to Indy's brand-new airport opened in November 2008.
- 1. Horses don't race there, cars do!

#### BIOLINE® THE EASIEST, MOST ECONOMICAL DRIP DISPERSAL SYSTEM -PERIOD.

Stop disposing, start dispersing with Bioline® for a cleaner and greener tomorrow.

WWW.NETAFIMUSA.COM/WASTEWATER

installer



#### **REPRINTS AVAILABLE**

We offer: Hard copy color reprints Electronic reprints

Visit onsiteinstaller.com/order/reprint for articles and pricing Innovative <u>FLOATLESS</u> Technology

BALEVELSENS

# SJE-Rhombus® introduces the C-Level™ Sensor for use with select Installer Friendly Series® panels.

The simple and accurate **C-Level<sup>™</sup> sensor** converts water pressure in a tank into a **low-voltage electrical signal** and sends it to the IFS control panel, which displays this level (in inches or centimeters) for **easier constant level monitoring** of the system. Pump activation and alarm levels can be adjusted using the **IFS panel touch pad**, eliminating the need to go into the tank for manual adjustment.

#### **C-Level™ Features:**

- Compact design works well in confined space applications
- Operates on low-voltage
- One sensor can take the place of up to 4 floats
- Easy to install and adjust set points
- Works with select IFS panels:
  - IFS Single Phase Simplex Demand/TD
  - IFS Single Phase Duplex Demand/TD
  - IFS In-Site<sup>®</sup> Simplex Event Monitoring
  - IFS In-Site® Duplex Event Monitoring
- Three-year limited warranty
- Patent pending

#### Watch an introductory video on the C-Level™ floatless sensor at www.sjerhombus.com!



Float tree not included.



"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.

### Maryland Association Gears Up to Address Proposed Septic System Ban

#### **By Scottie Dayton**

The Maryland Onsite Wastewater Professionals Association has taken up the cause for the industry in the face of a proposal from Governor Martin O'Malley that would severely restrict development on septic systems.

O'Malley on Feb. 3 called for a crackdown on housing projects served by septic systems as part of an effort to control suburban sprawl and protect the Chesapeake Bay from nitrogen pollution. He made the proposal in his State of the State address.

As of Feb. 18 as this issue of *Onsite Installer* went to press, MOWPA had not yet formulated a position on the governor's proposed legislation, but the group had convened a meeting involving its board members with representatives of the Maryland Homebuilders Association and the Chesapeake Bay Foundation.

The *Baltimore Sun* reported, "Speaking to lawmakers, O'Malley said that pollution from homes being built with septic systems is undercutting Maryland's efforts to clean up the bay.

"While the state has moved to curb pollution from farms and sewage treatment plants, the governor said, 'There is one area of reducing pollution where so far we have totally failed, and in fact it has gotten much worse, and that is pollution from the proliferation of new septic systems — systems which by their very design are intended to leak sewage into our bay and water tables.'

"He urged lawmakers to enact a statewide ban on 'major' housing developments that use septic systems, calling it 'common sense' and 'urgently needed.' Administration officials said later that developments with as few as six homes would be affected by the proposed ban."

The newspaper reported that builders and some rural legislators said such a ban could stifle growth in rural areas and lead to layoffs among home builders, septic system contractors and other real-estaterelated businesses.

MOWPA president Dave Duree said the group was working with its members and industry allies toward helping to craft a fair and reasonable bill that would enable cost-effective wastewater treatment for rural developments while also protecting the bay.

#### Illinois

The state Environmental Protection Agency drafted a general NPDES permit to set water quality and management standards for direct discharge from 1,500 gpd buried or recirculating sand filters, waste stabilization ponds, and aerobic treatment plants listed by NSF for Class I effluent. If the state does not adopt the standards, the legislation will prohibit direct discharge from these systems on Jan. 1, 2013.

Direct discharging represents more than 40 percent of annual state onsite permits, and estimates place the number of existing systems at more than 150,000.

#### Colorado

The Gilpin County Board of Health adopted new onsite regulations that require more thorough site characterizations for system designs and time-of-sale pumping and inspection of systems more than five years old. Inspectors must be NAWT-certified or equivalent, and violations must be corrected before closing. That includes abandonment of cesspools and straight pipes when found. Extensive outreach is underway to inform local engineers and real estate associations of the new requirements.

#### Florida

The state legislature passed a bill that delayed implementation of Senate Bill 550 from Jan. 1 to July 1, 2011. The bill would require all of the state's estimated 2.6 million septic tanks to be inspected every five years and brought into compliance with strict health department regulations by 2016.

Lawmakers expect to repeal SB 550 in March. State Sen. Don Gaetz and Rep. Clay Ford fought to repeal inspections because most would be unnecessary. Rep. Marti Coley filed legislation to repeal inspections in the 2011 session. The decision also delays the Department of Health mandate to test water tables as part of the inspections.

#### South Dakota

The Rapid City council proposed changing the city's onsite system inspection program to mirror the one in Pennington County, thereby eliminating the overlap in city and county jurisdiction. If approved, the frequency of inspections and permit costs for onsite systems would be lowered to match those in the county.

The city operating permit fee is \$125 with inspections every three

years. Outside city limits, the fee is \$20 with inspections every six years. The city also charges \$150 to permit new systems and \$125 to repair systems, compared with the county's \$300 per system. The city oversees 3,150 onsite systems. If approved, the changes would go into effect 20 days after publication.

#### North Carolina

The state Environmental Management Commission approved regulations to reduce nitrogen and phosphorus pollution in Falls Lake, Wake County's largest source of drinking water. The law, which took effect Jan. 15, covers new and existing development with sewer and onsite systems discharging to the watershed. The two-stage program will put the lake in compliance within 30 years, time enough for local governments to determine whether the rules work as designed.

#### Michigan

City of Grand Rapids commissioners compromised with eight suburbs after consulting with onsite installers and well drillers. Instead of requiring residents within 200 feet of a municipal water and sewer line to hook to it if their well or onsite system failed, they now have the option to replace them if they fit on the property. The Utility Advisory Board also approved the rules. Installers and drillers objected to the original version, saying it would cost homeowners up to \$30,000 to tie into the city system.

### Introducing The Most Durable & Economical Septic Lid On The Market Buy Direct from the Source – No Middleman!



# Roto Solutions 800.868.0973 www.RotoSolutions.com

### Precast Concrete Tanks

Septic Tanks Nibbler Tanks Bio-Fast Tanks Pump Chambers Storm Water Vaults Grease Interceptors Recirculation Tanks



Water Tight Construction Tanks meet ASTM C1227 and C913

> 2,000 - 3,000 - 5,000 - 6,000 - 8,000 10,000 - 12,000 - 15,000 - 18,000 - 25,000

## **CREST** Precast Concrete

1-800-658-9045

EMAIL: info@crestprecastconcrete.com WEB: www.crestprecastconcrete.com

#### NPCA Certified Plant Nation Wide Delivery







March 2011 ONSITE INSTALLER | 23

www.septicproducts.com

NOTES FROM**NOW**CA

# Go to the Summit

NOWRA, NEHA and SORA join forces to present a joint conference for onsite professionals in June in Columbus

By Eric Casey

n Onsite Wastewater Summit sponsored by three major onsite associations will be held in conjunction with the National Environmental Health Association's 75th Annual Educational Conference (AEC) & Exhibition in Columbus, Ohio, June 18-20.

This specialty conference is sponsored by the National Onsite Wastewater Recycling Association (NOWRA), NEHA and the State Onsite Regulators Alliance (SORA). For the first time, decentralized industry professionals — site evaluators, designers, installers, local and state regulators, manufacturers, service providers and others will be able to meet in one place to exchange ideas, compare treatment technologies, and discuss topics such as regulatory practices, installation practices, system maintenance and management, and current research.

The organizations have discussed the potential for this event for a number of years. "It is exciting to see this partnership finally form," says Richard Otis, president of NOWRA. "With the demand for affordable decentralized wastewa-



ter systems that can effectively protect human health and our water resources, it is imperative that our organizations partner, work closely together and exchange ideas to



"With the demand for affordable decentralized wastewater systems that can effectively protect human health and our water resources, it is imperative that our organizations partner, work closely together and exchange ideas to meet the needs of the public we serve."

#### **Richard Otis**

meet the needs of the public we serve. I hope this is only the beginning of a productive partnership!"

Nelson Fabian, executive director and CEO of NEHA, adds, "We consider this event a breakthrough in that we're finally able to offer an educational and networking experience that draws from the collective intellectual capital that all segments of this important industry represent."

The Summit is designed to bring together regulators, installers, educational staff and industry representatives to collaborate, discuss, network, and exchange information, focusing attention on current wastewater issues and sustainable wastewater solutions.

The Summit offers a forum to educate, train and inform people who have an interest or career in distributed, rural, small-community, onsite wastewater treatment. It will also help participants build a professional network of colleagues and discover new and practical solutions to wastewater treatment issues. In addition to the educational presentations, the events being planned include:

• A field trip tour of local onsite treatment systems being built

in the Columbus area, followed by a networking evening at a local establishment.

- A roundtable open discussion of current hot topics, patterned after those NEHA and SORA have organized at their recent conferences.
- A focused track on funding programs that will explore what the industry can do to identify and obtain a share of federal funding for decentralized wastewater infrastructure.
- A contractor's track offering educational sessions where professionals will review design and installation issues and discuss solutions.
- A Skills Competition where teams of regulators, designers and installers compete for the best scores in quickness and accuracy in solving a problem.
- A Wastewater Alley in the exhibit hall where onsite-related venders will show and describe their latest innovations.

For more information about the Summit agenda and conference registration, visit www.nowra.org.

Eric Casey is executive director of NOWRA. He can be reached at 800/ 966-2942 or wecasey@comcast.net. ■

# BUSINESS BROKERAGE Marketing & Brokering

### **TRYING TO SELL YOUR BUSINESS?**

We can effectively market your business to more than 60,000 anything unless your business sells. To learn more about potential buyers in the liquid waste industry, your local markets, and other venues. No upfront fees - you don't pay

and the second second

brokering your business through B<sup>2</sup>, call 800-257-7222.

## Call us, and we can add you to our VIP Buyer List

# ISTINGS

Established portable restroom and septic service business located in central Virginia. Excellent gross each of the past 3 years with no decline in revenue makes this business recession-proof. Steady work including many contracts and repeat customers. Extensive equipment inventory, good revenue, and owner willing to train. Great opportunity for expansion or a new career. Asking price \$775,000.

Successful business with a large amount of equipment and inventory. Profitable sewer and septic business in central Pennsylvania. Increasing revenue over the past 3 years and a large amount of equipment and inventory. Equipment is a mix of old and new, but all is working and making money. Selling price \$349,000.

Well-Established and Profitable Texas Septic, Sewer & Installation Business For Sale. Price reduced. Grossing in excess of \$600,000 annually, customer list of nearly 2,000 accounts and 430 contracted customers. Includes nice late model equipment, most are 2007, 2008 model years. Owner retiring after nearly 40 years in business. Real estate available upon request. Reduced to \$450,000.

New Jersey VIP Restroom/ Portable Toilet Business. Servicing Metro Philadelphia and Southwest New Jersey with VIP restroom trailers and portables. Many late model assets including 2 nice service trucks, 1 back-up service truck, pick-up truck, 4 VIP restroom trailers, nearly 300 restrooms, sinks, holding tanks, slide-in unit, 2 forklifts, and more. Assets worth over \$300,000 - priced to sell at \$399,000.

Chicago-Area Biosolids, Land Application, Dredging and Industrial Services Business. Established in 1985, owner is retiring. Reputable business includes real estate servicing the entire Chicagoland area with sludge and biosolids disposal and treatment services. Real estate and shop included with sale valued at \$750,000, business grosses in excess of \$3 million annually, \$6.3 million in equipment and assets including several TerraGators, Vac Trailers, dump trailers, loaders and much more. \$4,900,000. Huge potential, good profit and priced right. Non-disclosure Agreement required, all P&L statements, list of assets, and financials available to qualified buyers.

WANTING TO PURCHASE. Serious buyer looking to purchase portable restroom and/or septic businesses in the North NJ or Hudson Valley NY area. All inquiries are kept confidential. (C611)

New Jersey/Pennsylvania drain cleaning and pipe service business has all the elements for an ample start to a new foundation or an addition to your existing business. Established in 1994, well-rounded client base, customer contracts, and owner is willing to train. Modern equipment and inventory. Real estate optional. Reasonably priced at \$425,000.

Amarillo, Texas sewer, drain & plumbing business established in 1976. Owner wants to retire, so take the keys to a 2004 Sprinter outfitted with all of the equipment you'll need to run this business. Price includes real estate with 80x100 shop/office on two city lots. Good gross, good profit, financials available with signed non-disclosure. Offered at \$495,000.

WANTED. Very serious and well qualified buyer looking for sewer, septic or industrial business in Dallas, Texas area. Must be grossing between \$500,000-\$1,000,000. All inquiries are kept confidential.

Dallas/Fort Worth Texas Area Sewer/Rehab Business For Sale. Drain Cleaning, TV inspection, Pipeline & Manhole Rehab/Relining, Municipal Cleaning and Maintenance business for sale. Excellent opportunity to expand or start your own business. Good revenue history and priced to sell. Includes all equipment to get started. Asking \$195,000.

### www.btwo.biz · jeffb@colepublishing.com · 800-257-7222

# PRODUCTNEWS

March 2011

The Great Basin grease inter-

#### Infiltrator Offers **TW Series Septic Tanks**

TW Series triple-wall septic tanks from Infiltrator Systems Inc. are designed for long-term, watertight performance. The low-profile,

plastic tanks feature factory-installed structural bulkheads and reinforced access ports. Sizes range from 300 to 1,500 gallons in single- and dual-compartment designs. No special installation, backfill or water filling required. 800/221-4436; www.infiltratorsystems.com.



#### SJE-Rhombus Introduces **CP3R VFD Panel**

The CP3R VFD control panel from SJE-Rhombus is designed for up to 5 hp simplex constant pressure applications. The panel is equipped with a variable-frequency

drive in a ventilated NEMA 3R-rated enclosure with 0-100 psi pressure transmitter. 888/342-5753; www.sjerhombus.com.

#### ✓ FREE Subscription

Product Information

- ✓ Used Equipment
- Discussion Forum

## ✓ Article Reprints

- ✓ Digital Editions
- ✓ COLE Mart Superstore Editor's Blog

All at onsiteinstaller.com



# One Complete Package

promonthly.com

cleaner.com

pumper.com

mswmag.com

#### onsiteinstaller.com

pumpershow.com

pumpertrader.com

septicyellowpages.com

sewerpages.com

gomcmag.com

tpomag.com

**COLE** Publishing 1.800.257.7222 715.546.3346

# **ARE YOU COVERED?**

Don't lose your business and life earnings to spotty insurance coverage

#### The majority of insurance brokers don't know your business as well as we do.

With an estimated 26 million septic systems serving U.S. residences, there's a considerable amount of work in the pipeline for septic contractors. However, until now, septic contractors haven't had an all-lines insurance solution that would cover all of their business exposure from design and installation to the rental of portable toilets.

To address this need, Sanitation Insurance Services specializes in offering a comprehensive insurance program specifically for septic contractors and portable restroom operators. While some policies provide coverage for pumping or portable toilet rental, our program addresses design, installation, inspection, service and repair, vandalism as well as pumping and portable toilet rental.

You need an insurance program that addresses the specific exposures you face, such as errors and omissions (E&O) coverage for the various services you provide.

WE HAVE YOU COVERED.





## ASSOCIATION

Onsite Installer invites your state association to post notices and news items in this column. Send contributions to editor@onsiteinstaller.com.

#### March 2011

#### By Scottie Dayton

#### **Guiding Code**

Wisconsin Onsite Wastewater Recycling Association board members Todd Stair and Sue Schambureck represent the organization on the Private Onsite Wastewater Treatment System (POWTS) Code Advisory Council. The state Department of Commerce convened the council because 2010 legislation allows counties a two-year delay in implementing a POWTS inventory and maintenance-tracking program, thus requiring a code change to reflect the new law.

Other items the council will consider for the code rewrite procedure include the concrete tank corrosion issue, requiring time-of-sale evaluations, establishing a minimum size for septic tanks, determining education requirements for maintenance providers, and requiring deeds to indicate the system's treatment capacity.

WOWRA member Richard Otis of Madison, was named president of the NOWRA board of directors. WOWRA board member Tony Birrittieri of Petersen Supply in Fredonia also joined the national board.

#### Updated Homeowner's Guide

NOWRA updated its *Homeowner's Onsite System Guide and Record Keeping Folder*. The publication explains what an onsite system is and how it works, provides a list of do's and don'ts, and includes a place to keep all critical information on the system. A free download in PDF format is at www.nowra.org. Print copies are available.

#### New Board Members

The Michigan Septic Tank Association elected Joe Hall, of Hall's Serv-All in Posen, president. Elected to the board of directors were Ken Goike, Rick Throop, Keith Chamberlain and Walt Steuer. Voters in the 33rd District chose Goike, a former MSTA director and president and owner of Goike Trucking in Ray, as their state representative.

Hall's Serv-All helped police investigate the death of a boy who drowned after falling into an open septic tank on property owned by the boy's grandfather. The tank had a screwed-on plastic cover that the owner removed when he experienced toilet problems.

"The screws were not attached, and we assume the boy stepped on the lid, which flipped, allowing the child to fall in and drown," says Hall. He recommends that pumpers constantly enlighten customers about the safety deficiencies in their systems, and to make sure all covers are adequately fastened.

#### **Multiple Roles**

The Connecticut Onsite Wastewater Recycling Association elected Douglas DiVesta, P.E., of DiVesta Civil Engineering Associates Inc. in Roxbury, to its board of directors. DiVesta also is on the state's Code Advisory Committee and is a COWRA onsite installer instructor.

#### Scholarship Winners

The Washington On-Site Sewage Association awarded a \$3,000 scholarship to Kendra Phillips, daughter of Leonard Phillips Spanaway. Kendra attends George Fox University in Newberg, Ore., and will graduate this year with a degree in elementary education.

Paige Bronson, daughter of Greg Bronson of Graham, received a \$2,000 scholarship. She attends the University of New Mexico in Albuquerque, is majoring in psychology and anthropology, and will graduate in 2013. Yuxuan Wang, the daughter of Menglou Wang of Seattle, received \$1,100. She attends the University of Washington and will graduate in 2012 with a degree in civil engineering.

#### **Conference at Risk**

The Texas Onsite Wastewater Association (TOWA) reports that it will lose its annual conference if the Sunset Advisory Commission disbands the 11-member Onsite Wastewater Treatment Research Council.

The commission identifies and eliminates waste, duplication and inefficiency in government. Its staff recommended that the Texas Commission on Environmental Quality (TCEQ) incorporate the council's duties, which include improving the state's onsite industry, organizing the association's annual conference, and providing low-cost continuing education credits.

The TCEQ in Austin has three full-time and one part-time people working in the onsite department. The advisory commission recommended that TCEQ sponsor the TOWA conference and consider combining it with TCEQ conferences. TOWA members began a letter-writing campaign to oppose the action.

#### Wastewater Summit

The National Environmental Health Association (NEHA), National Onsite Wastewater Recycling Association (NOWRA) and State Onsite Regulators Alliance (SORA) will present a joint Onsite Wastewater Systems Summit in conjunction with NEHA's 75th Annual Educational Conference and Exhibition June 18-20 in Columbus, Ohio. The summit is designed for regulators and industry representatives and will focus on wastewater issues and sustainable wastewater solutions. To register or for more information, go to www.neha2011aec. org/wastewater.html.

#### **Freak Accident**

Four workers suffered first-, second- or third-degree burns while decommissioning a septic tank in Camp Meeker, Calif. Two employees of Dale Homes Inc., a Redding general construction and demolition company, were trying to break the tank's concrete floor from outside using a sledgehammer and steel pipe. One employee then entered the tank with a jackhammer, while the other man stood outside and watched. Two employees from another firm also observed the workers' progress.

According to California Department of Occupational Safety and Health spokeswoman Krisann Chasarik, when the worker started the jackhammer, it triggered an explosion caused by leaking propane pipes nearby. The men were hospitalized, and one later was transferred to a burn center.

#### CALENDAR OF EVENTS

#### March 11-12

Oregon Onsite Wastewater Association Conference, Valley River Inn, Eugene. Call 541/389-6692 or visit www.o2wa.org.

#### March 22-23

Pennsylvania Septage Management Association Annual Training, Crowne Plaza Hotel, Reading. Call 717/763-7762 or visit www.psma.net.

#### April 3-5

Ontario Onsite Wastewater Association Conference and Exhibition, Deerhurst Resort, Huntsville. Call Denis Orendt at 905/372-2722 or visit www.oowa.org.

#### April 27-29

Georgia F.O.G. Alliance Conference and inspector training course, Merle Manders Conference Center, Stockbridge. E-mail Kemnetta Pillette at kpillette@atlantaga.gov or visit www.georgiafog.com.

#### **TRAINING & EDUCATION**

#### Arizona

The Arizona Onsite Wastewater Recycling Association in sponsorship with the University of Arizona Onsite Wastewater Education Program has these classes:

- April 14-15 Introduction to Designing Onsite Systems, Pinal County
- June 8 NAWT Inspection Training & Recertification, Radisson Suites Hotel, Tucson

Call Kitt Farrell-Poe at 520/621-7221 or e-mail kittfp@ag.arizona. edu or visit www.ag.arizona.edu/ waterquality/onsite.

#### California

The California Onsite Wastewater Association is offering these classes:

- April 8 Onsite Controls, Citrus Heights
- April 18 Principals of Plan Checking, Ventura
- April 19-21 California Environmental Health Association Conference Onsite Training Track: Biology of Wastewater Treatment, Science of Soils, Operations and Maintenance, and Regulatory Update, Ventura
- May 13 Science of Soils, San Luis Obispo

Call Kit Rosefield at 530/513-6658 or visit www.cowa.org.

#### Georgia

The Georgia F.O.G. Alliance has a training course for FOG inspectors April 27-29 at the Merle Manders Conference Center in Stockbridge. Visit www.georgiafog.com.

#### Minnesota

The University of Minnesota Extension has these classes:

- April 5-7 Basic Design of Onsite Systems, St. Cloud
- April 12-13 General Continuing Education, Rochester
- April 19-20 Design and Inspector Continuing Education, Hinckley
- April 19 Design Continuing Education, Hinckley
- April 20 Inspector Continuing Education, Hinckley
- April 22 Troubleshooting, St. Cloud
- April 25-27 Introduction to Onsite Systems, Grand Rapids
- April 28-29 Installing Onsite Systems, Grand Rapids
- May 2-4 Pumping and Maintaining Onsite Systems, Mankato
- May 2-6 Pumper/Maintainer/ Service Provider, Mankato
- May 3-6 Service Provider, Mankato
- May 10-12 Basic Design of Onsite Systems, Mankato
- May 18 Soils Continuing Education, Farmington
- May 24-27 Advanced Design on Onsite Systems, Mankato

Call Nick Haig at 800/322-8642 or visit www.septic.umn.edu.

#### Missouri

The Missouri Smallflows Organization is offering these CEU courses:

- April 5-6 Operations and Maintenance, St. Clair
- April 12 Media Filters, Camdenton
- April 13 Aerated Treatment Units, Camdenton
- April 26 Selling Systems, Hannibal
- April 27 Drainfields and Water Management, Hannibal
- May 10-11 Operations and Maintenance, Springfield
- Call Tammy Yelden at 417/739-4100 or visit www.mosmallflows.org.

#### New England

The New England Onsite Wastewater Training Center at the University of Rhode Island in Kingston has these courses:

- April 14 Designing
- Conventional Onsite SystemsApril 19 All About Series:
- April 19 All About Series: Septic Tanks
- April 21 Bottomless Sand Filter Design and Installation
- April 27 Conventional Onsite System Inspection
- April 27-28 Conventional Onsite System Inspection and Field Training
- May 5 Functional Inspections
- May 12 Innovative & Alternative Technologies
- May 19 All About Series: Sand Media
- May 26 Installing Conventional Onsite Systems Call 401/874-5950 or visit

www.uri.edu/ce/wq.

#### New Hampshire

The Granite State Designers and Installers Association is offering its Certified Septic Evaluator Training Program training on May 3 in Bow and on May 7 in Rochester. Call 603/228-1231 or visit www.gsdia.org.

#### Virginia

The Virginia Center for Onsite Wastewater Training has these classes at Pickett unless stated otherwise:

- April 25-29 Onsite Design Camp I
- May 9-13 Soils (Site Evaluation), Ashland

• May 23-27 – Onsite Design Camp II, Farmville

Contact Lydia Shepherd at 434/ 292-3101, e-mail lydia.shepherd@ southside.edu, or visit www.south side.edu.

#### Washington State

The Washington On-Site 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:

- April 6 Maintenance Basics
- April 13 Pumper Basics April 20 Design of
- Subsurface Drip Systems
- May 3-4 Basics of Electrical Applications in Onsite Systems
- May 11 Basics of Installing, Part 3
- May 25 Electrical Control Panels

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







#### Consortium Seeks U.S. Businesses for Global Projects Database

The Consortium for Global Development, through its Global Contractors Library database, seeks to match U.S. companies with projects in the \$130 billion global development market. The consortium is especially seeking small, medium and SBA 8(a) businesses. For more information on available projects and the free database listing, go to www.cfglobaldevelopment. com or www.global-contractors.com. ■

#### PRODUCT



#### **Durable aeration pump**

The **AL-80P** linear air pump from **Alita Industries** delivers a steady airflow of 3 cfm with low noise and uses only 80 watts. It is simple to install or maintain. Options include a 230V 50/60 Hz model and external-mount alarm package. **626/962-2116; www.alita.com**.





#### High-head effluent pump

The **CP1E5** series cast-iron 3/4-inch solidshandling effluent pump from **Champion Pump** has a 48-foot shutoff head and handles flows of 70 gpm. An internal seal and secondary V-cup exclusion seal with rotating components are in the motor housing. Filled with dielectric oil, the high-efficiency 115V or optional 230V 1/2 hp permanent-split capacitor motor has upper and lower ball bearings and a thermal overload switch. **800/659-4491; www.championpump.com.** 

#### Submersible effluent pump

The **Barnes EHV412** pump from **Crane Pumps & Systems** pumps 45 feet of total dynamic head and 45 gpm at 10 feet. The 1/2 hp 115V, single-phase permanent split capacitor motor operates in dielectric oil and has upper and lower row ball bearings. A vortex style impeller passes 3/4-inch solids and helps prevent clogging. Options include vertical,

> tethered and manual switching. 937/778-8947; www.crane pumps.com.

#### Large-horsepower effluent pumps

**Liberty Pumps** has expanded its line of **FL-Series** effluent pumps, now available in 1, 1.5 and 2 hp models for flows to 130 gpm and maximum heads to 130 feet. The new pumps are supplied with a dual-sized discharge of 1 1/2 and 2 inches for connection to either size pipe. They are available in single-phase and 3-phase. **800/543-2550; www.libertypumps.com.** 

#### Onsite system aerator

**Septic Services** offers the redesigned **Flagg**-**Air Model 340HP** aerator, designed by an installer for installers. The unit offers a low-rpm, high-torque, fully enclosed, continuous-duty motor with pre-lubricated sealed bearings. It has a protective motor cover with a built-in handle and cord stow. The aerator comes with epoxy-coated steel brackets, rubber vibration restrictors, a bronze counter shaft, an improved suds restrictor, and a higher-cfm aspirator mounted on a stainless steel shaft. The unit is easy to install and fits in place of most original manufacturers' units. **800/536-5564; www.septicserv.com**.



#### Eliminates pump tank Centrifugal pump models 51 and 142 from Clarus Environmental

eliminate the need for a separate pump tank when used with the Clarus 5040 filtered STEP vault. The pump's low-flow intake design ensures minimal disturbance in the septic tank, moving effluent at less than 20 gpm at heads of more than 50 feet. **877/244-9340**; www.clarusenvironmental. com.

#### Vibration free, oil free

The vibration-free **ET80** linear diaphragm **Zabel** air pump from **Polylok** provides a clean, oil-free air source that operates at 30 decibels. Housed in a portable weatherproof compact casing, it offers simple plug-and-run operation with flow rates from 8 to 32 gpm. A tool-free filter change is the only required maintenance. **800/701-3946; www.polylok.com**.



Specialized pump package

The **ProPak** pump package in a

box from Orenco Systems has an

Orenco-designed Franklin 1/2 hp high-head pump of stainless steel and engineered plastics rated for 1/8-inch

solids. It offers a minimum 24-hour

run-dry capability and a removable

intake screen to help extend pump life

beyond 20 years. The unit pumps from

septic tanks to eliminate the pump

tank. It is suitable for all onsite applica-

tions. The package has a Biotube filtering



pump vault, float and discharge assemblies, splice box and control panel. It is UL listed and CSA certified. **800/348-9843; www.orenco.com.** 

# installer. classifieds

#### AERATORS

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.septicserv.com. 1-800-536-5564 (IM)

#### **BLOWERS**

VFC200P-5T, FUJI Pumps, Regenerative Blowers, Ring Compressors. All models, accessories. Authorized distributor. Authorized parts and repair center. Call 888-227-9822. www.carvmfg.com. (IBM)

#### BUSINESSES

SEPTIC PUMPING BUSINESS FOR SALE IN COLORADO: Steady, recession-proof 35-year-old company in Denver/Colorado Springs with current owners retiring. Strong brand recognition with over 3,000 residential and commercial customers and 75% recurring sales. Meticulously maintained equipment including 3500 and 2500 gallon late model septic trucks. Asking \$350,000. Call Matt at 888-891-0097 or email info@ independencegroup.com. (103)

Chicago-Area Biosolids, Land Application, Dredging and Industrial Services Business. Established in 1985, owner is retiring. Reputable business includes real estate servicing the entire Chicagoland area with sludge and biosolids disposal and treatment services. Real estate and shop included with sale valued at \$750,000, business grosses in excess of \$3 million annually, \$6.3 million in equipment and assets including several TerraGators, Vac Trailers, dump trailers, loaders and much more. Offered at \$4,900,000 - huge potential, good profit and priced right. Non-Disclosure Agreement required, all P&L statements, list of assets, and financials available to qualified buyers. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. A B2 Business Brokerage Listing. www.BTwo.biz. (IRM)

#### Well-Established and Profit able Texas Septic. Sewer & Installation Business For Sale. PRICE RECENTLY REDUCED. Grossing in excess of \$600,000 annually, customer list of nearly 2,000 accounts and 430 contracted customers. Includes nice

late model equipment, most are 2007, 2008 model years. Owner retiring after nearly 40 years in business. Real estate available upon request. Reduced to \$450.000. E-mail jeffb@colepublishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. A B2 Business Brokerage Listing - www. BTwo.biz. (IBM)

#### BUSINESSES

Looking to sell your industrial cleaning, hydroexcavation or waterblasting business? We have buyers. Must have gross revenue in excess of \$1,000,000 annually. Nationwide interest. E-mail jeffb@colepub lishing.com or call 800-257-7222 and ask for Jeff Bruss for more details. A B2 Business Brokerage Listing. (IBM)

#### BUSINESSES WANTED

WANTED: Looking to acquire septic businesses in Massachusetts. All inquiries will be confidential. 508-868-7627. (IBM)

#### DRAINFIELD RESTORATION

DO YOU OWN A TERBALIET MACHINE? We have the beads in stock and we also have heavy duty 6' probes. Wanted: Used Terralift machines, working or not. Toll Free 1-888-252-1006. (107)

Soil Shaker 2000. Universal skid steer attachment for drainfield restoration. Buy factory direct \$6,250. www.soilshaker.com or call 320-293-6644. (P1-12)

2009 Terralift TL-2000 Style w/PS 180 Hammer in new condition. A new trailer with stainless steel tool box is included. \$45,000. 828-696-3370 NC. (P04)

#### HAND TOOLS

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

#### MISCELLANEOUS

Finally! One-man septic lid lifter. Lifts lids with incredible ease. Free shipping, lifetime warranty. Send check or money order for \$230.00 to Brindlee Mtn. Rooter, 130 Co. Rd. 1829, Arab, AL 35016. 256-586-5948. (P03)

#### PUMPS

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

**Place Your Classified Ad ONLINE** at www.onsiteinstaller.com

#### THE SHADDIX COMPANY



just struggle along on their own.

It's almost unfair! Extend your

hand and meet someone new.

PumperShow.com

## MARKETPLACE advertisi









To view our interactive version of this diagram visit: http://www.polylok.com/PolylokSystem/PLsystem.html

# THAT'S WHY THERE IS POLYLOK

With almost 100 years of combined experience Polylok, Zabel & Best offer a complete line of products to keep your customer's septic system working at its peak performance.





