February
2012

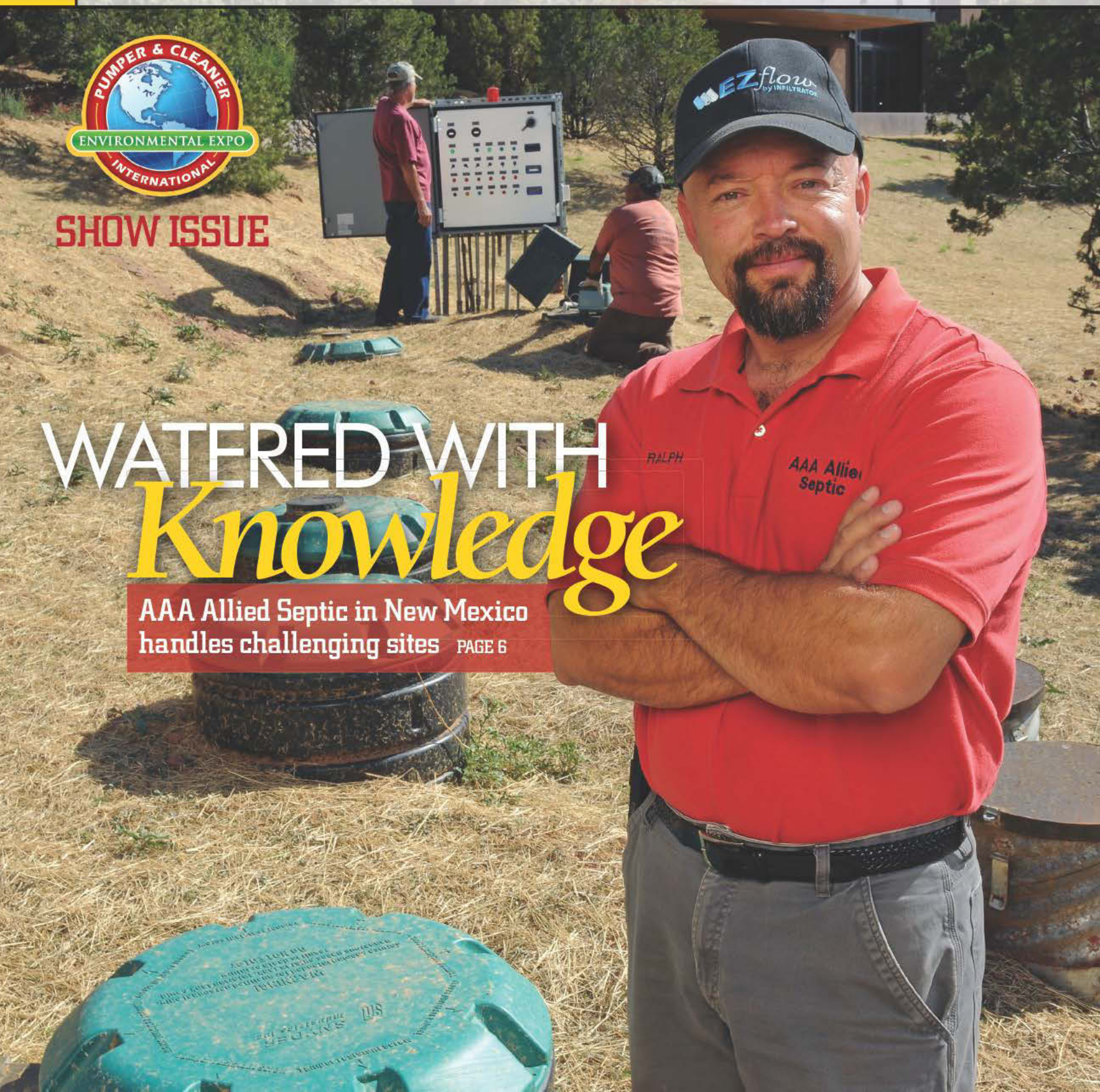
# ONSITE installer™

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



PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL

SHOW ISSUE




## WATERED WITH *Knowledge*

AAA Allied Septic in New Mexico handles challenging sites PAGE 6

# contents

February 2012




ONSITE installer

Published monthly by
COLEpublishing
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
Email: 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**
Minimum rate of $25 for 20 words; $1 per each additional word. 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 Winnie May 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.


Winnie May

**EDITORIAL CORRESPONDENCE**
Send to Editor, *Onsite Installer*, P.O. Box 220, Three Lakes, WI, 54562 or email 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 email jeffl@colepublishing.com. To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email nicolel@colepublishing.com.

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





## Coming Next Month: March 2012

### Issue Focus: Pumps

- Profile: Turner's Septic Service, Bunnell, Fla.
- Tech Talk: Software for designing pressure distribution systems
- Basic Training: Installing distribution boxes
- System Profile: Microbial generator for drainfield restoration

# Now Available in

## S, M, L, and XL


** Prepackaged. No Recirc Tank Required.*

# One size doesn't fit all.

Orenco's AdvanTex filters are now available for flows from 500 to 15,000 gpd. (That's our new AX-Max, the big guy, in the back.)

Small flows or big flows. Residential or commercial. Tight lots or generous lots. In-ground or above-ground. Single filters or multi-filter arrays. We have a model — and a configuration — that will work for you.

Regardless of size, though, ALL AdvanTex systems treat wastewater to better than secondary standards. Quietly. Without odors. While using hardly any electricity.

ALL AdvanTex systems are modular. All use Orenco's watertight fiberglass tanks. And all are easy to maintain.

Don't oversize or undersize your system. To get the right fit for the job, plus the name of an AdvanTex Dealer near you, call Orenco at 800-348-9843. We've got a lot more to talk about!

See us at Pumper Booth 6040

AdvanTex® Treatment Systems

*Manufactured by* **Orenco Systems®, Inc. • 800-348-9843 • 541-459-4449 • www.orenco.com • www.vericomm.net**

# advertiserindex

FEBRUARY 2012

# Norwesco Has Been A Leader In Poly Septic Tanks For Over 30 Years

## Wait Till You See What We Unveil On Feb. 28th

To learn more about Norwesco's new low profile septic tanks and to enter to win a $500 Cash gift card, please visit us at **Booth #10028** in Indianapolis.

www.norwesco.com

NORWESCO

Ralph Baker Dotson, right, and Richard Jennings, owners of Water Management Associates, check an alarm panel designed by Jennings and manufactured by SJE-Rhombus. (Photography by Gene Peach)

# WATERED WITH *Knowledge*

**Detailed understanding of technologies and site conditions keeps AAA Allied Septic thriving in a slow economy and on challenging sites in the dry lands of New Mexico**

By Gil Longwell

A two-generation installation, pumping and management company in Santa Fe has found opportunities and sustained growth by staying ahead of the knowledge curve.

## AAA Allied Septic Tank Service, Santa Fe, N.M.

| | |
|---|---|
| **OWNER:** | Ralph Baker Dotson |
| **YEARS IN BUSINESS:** | 58 (second generation) |
| **EMPLOYEES:** | 5 |
| **MARKET AREA:** | 125-mile radius |
| **SPECIALTIES:** | Advanced treatment systems, alternative disposal, wastewater reuse |
| **AFFILIATIONS:** | Professional Onsite Wastewater Reuse Association of New Mexico, NAWT, NOWRA |
| **WEBSITE:** | www.aaasepticservice.com |

In this dry, soil-challenged area of New Mexico, where summer and winter temperatures are often at opposite ends of the scale, survival in business depends on mastering an equally broad range of technologies. Matching technology to site to aesthetics, Ralph Baker Dotson, owner of AAA Allied Septic Tank Service, succeeds by continuously acquiring and sharing onsite knowledge across his service area, which covers a 125-mile radius from his home base.

> **"If I do my job right, all parties are protected from future loss and everybody benefits."**
>
> **Ralph Baker Dotson**

AAA Allied handles tank pumping, system design and installation, and repairs. To accommodate diverse customer needs, Baker Dotson formed Water Management Associates six years ago to provide maintenance, management and operation services. That business focuses on management of advanced treatment systems using technologies such as Geoflow drip systems, SludgeHammer bacterial generators, Koi trickling filters, and a wide

*(continued)*

**GWTC**
GLOBAL WATER TREATMENT CHEMICALS

*GWTC strives to be the leader in Water Treatment Chemicals Distribution by providing superior products with exceptional customer service to our domestic and International customers.*

# PRO CHLOR TABS

## Waste Water Septic Treatment Tablets

NSF APPROVED


- Cost effective and reliable
- Minimum 65% Available Chlorine
- 2 5/8 inch Diameter
- Tablets dissolve gradually
- Kills Bacteria effectively and economically
- Impedes bacteria re-growth
- Safer Alternative to liquid or gas chlorine
- No chemical mixing required
- 2, 5, 10, 25, 50, 100 lbs sizes available

- 47C02 – 2 lb / case - 20 cases per pallet
- 47005 – 5 lb unit - 100 units per pallet
- 47010 – 10 lb unit - 60 units per pallet
- 47025 – 25 lb unit - 36 units per pallet
- 47050 – 50 lb unit - 24 units per pallet
- 47100 – 100 lb unit - 18 units per pallet

Pre Paid freight on multiple pallet orders.
Net 30 day terms available on approved accounts.


To learn more about Global Water Treatment Chemicals, to place an order, or speak to a representative about becoming a GWTC Authorized Distributor, please contact us at: **www.gwtcinc.com**

**Corporate Headquarters:**
GWTC INC.
PO Box 2380
Weatherford, TX 76086
Phone: 888-202-5650
Fax: 888-578-4473
Email: orders@gwtcinc.com

variety of aerobic units.

No matter who installed a given system, Water Management will take it on. The business is also a comfortable home for orphaned systems, which often need more intensive care to bring them back to optimal performance before the monitoring mode kicks in.

The businesses can refer work to the other. "We look at the expected type and likely duration of an ongoing relationship when we guide work to one or the other," says Baker Dotson.

"Because we service a broader range of technologies than we install, we must become more than competent at understanding every technology we encounter. It is usually the orphan systems that bring the greatest challenge, as manuals and parts may no longer be easily located."

## Starting young

Baker Dotson got an early start working beside his dad, Carl, when he was 13 years old. "That first year, I was basically hanging out with my dad," he says. "But when I was 14, I started paying attention." When his dad died suddenly, Baker Dotson stepped up and, with his mom, Florence, kept the business going. A few years after high school, he bought out his mom.

"What sets us apart is that we know and understand wastewater treatment and dispersal technology," Baker Dotson says. "We understand the statewide regulations, and we consistently follow them, along with related manufacturers' standards."

Consistency in approach and practice is also something customers want, and that explains why, even in slow times, business for AAA Allied is strong.

AAA Allied works across the spectrum of onsite services. About 35 percent of the business comes from new installation and modifications, 20 percent from repairs and service, 30 percent from pumping, and 15 percent from inspections for real estate sales.

When it comes to inspection, Baker Dotson observes, "The standard is the standard." He adheres to it whether he's working for the buyer or seller; in either case, the information he gathers about the system determines his report's conclusions. "If you want a system passed just to make a sale, you won't call me," he says. "If I do my job right, all parties are protected from future loss, and everybody benefits."

## Impatient for Education

"Everyone in the onsite industry needs continuing education," says Ralph Baker Dotson. That includes new employees, old hands, regulators, legislators, and customers/system users.

Active in the Professional Onsite Wastewater Reuse Association of New Mexico and a member of two national associations, Baker Dotson sees a strong role for these organizations in providing training. Sometimes the education can be as fundamental as teaching legislators and regulators why mandatory education is empowering to the industry. Sometimes it is as focused as a microscope looking at the life forms in a sample from a treatment tank.

Baker Dotson has freely given his knowledge during legislative committee hearings and while sitting on advisory committees. He regularly educates employees and competitors about onsite issues. Competitors recommend his company, AAA Allied Septic Tank Service, because of the knowledge base it has assembled.

"Too often, small businessmen see education as an obstacle to earning money rather than a door to better opportunities," Baker Dotson says. He believes the industry will grow more or less at the pace of education. Baker Dotson is, among other things, impatient for education.

Service technician Steve Sandoval services a SludgeHammer treatment unit.

Describing his inspection philosophy, he returns to the critical necessity of understanding the system. "It is easier to fail a system and sell a 'repair' than to take the time to discover and understand the hidden system and what its condition is telling you," he says. A typical inspection details

**"Because we service a broader range of technologies than we install, we must become more than competent at understanding every technology we encounter."**

**Ralph Baker Dotson**

the system for the customer and, if needed, proposes an appropriate solution that fits the technology, the site, and the level of need.

## Essential certification

His faith in standards extends to certification for installers, except that here he sees certification as a step in the learning process, not its end. He believes too many installers, inspectors and management service providers see certification or state licensure as a final step.

"The idea that a document lets the holder stop learning is too common

*(continued)*

TUF-TITE®

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

New 20" Available

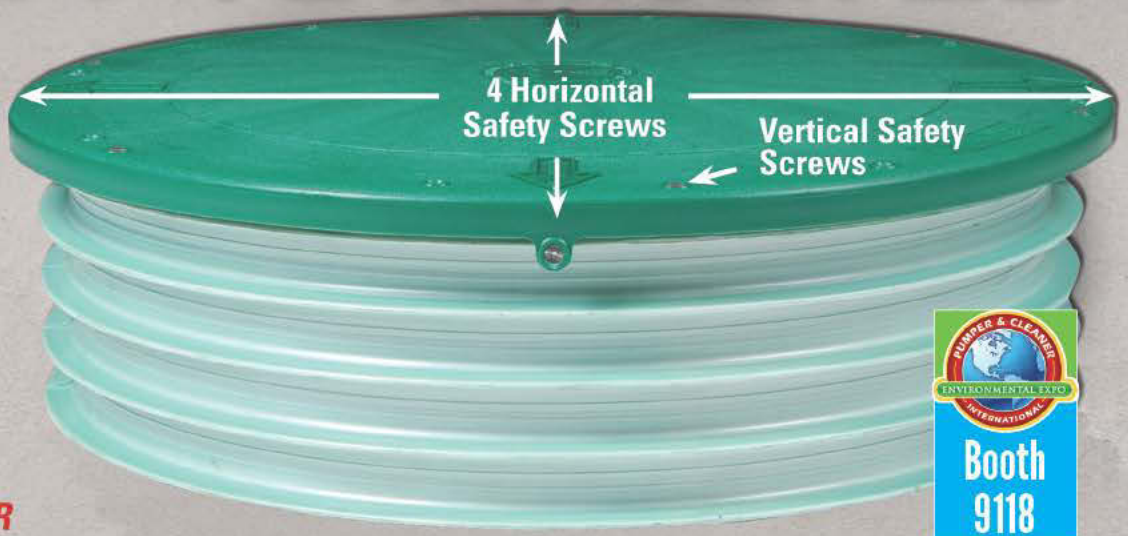
# 20" & 24" HEAVY DUTY MULTI-PURPOSE FLAT RISER LID

**Fits most commercially available:**

- Risers
- IPEX PVC Ribbed Pipe
- Corrugated Pipe

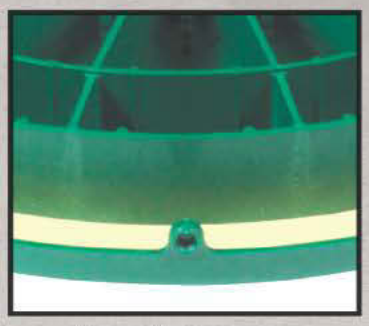
***FREE FREIGHT ON FULL CARTONS!***

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




Booth 9118

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



Foamed-in Permanent Polyurethane Gasket.


Holds up to 70 lbs of Concrete for Added Safety.


Water-**TITE**™ Joint

Vertical and Horizontal Safety Screws


Water-**TITE**™ Joint

Horizontal Safety Screws


Water-**TITE**™ Joint

Horizontal Safety Screws


Water-**TITE**™ Joint

Horizontal Safety Screws


Water-**TITE**™ Joint

Horizontal Safety Screws

TUF-TITE®

Tuf-Tite®, Inc. 1200 Flex Court, Lake Zurich, IL 60047

www.tuf-tite.com | 800-382-7009

in this industry," he says. "The professionals in this industry want to learn and grow." As president of the Professional Onsite Wastewater Reuse Association of New Mexico, Baker Dotson has leveraged the association's respected position, turning it into a kind of soapbox from which to deliver his message of progress to regulators, legislators and industry peers.

The industry benefits from a single statewide set of onsite siting, design and management regulations. "That consistency keeps costs down by avoiding multiple sets of regulation books and the need to say to myself, 'OK, what county am I in today and what are their regulations on this matter?'" says Baker Dotson.

Education is a two-way street, and AAA Allied employees are as skilled at educating customers as they are working in the field installing, evaluating and maintaining systems. Education begins with a customer's first phone contact with Gina, office manager and Baker Dotson's wife. The education doesn't stop with the final handshake and wave goodbye.

Throughout the relationship, the customer receives a steady stream of detailed information about the site, the system, and how to care for it. Here, too, thorough information sharing is part of every employee's job description.


The AAA Allied Septic Service team includes, from left, partner Orlando Sanchez, office manager Gina Dotson (Ralph's wife), owner Ralph Baker Dotson, service technician Steve Sandoval, and installer and service technician James Payne.

Gina joined the business about six years ago. "She could see that I was overwhelmed and decided to join the team," Baker Dotson says. The first voice customers hear is hers, not a recorded greeting. She can stand toe-to-toe with the other employees in delivering accurate system information to callers. She also shares with her husband the passion for the business that he got from his parents.

## Conservative designs

That passion helps AAA Allied deal with the two basic challenges local geography presents for designing and constructing successful systems.

Ralph Baker Dotson, right, and Richard Jennings check soil moisture levels on a wastewater reuse system.

Impervious layers in the soil profile obstruct downward water movement on some sites, while on many others, soil and geologic conditions let water move downward too quickly. In either case, soil treatment of the effluent is

**"You must constantly outgrow the limitations of your knowledge in order to succeed. When you think you know it all, you stop being a resource and become an obstacle to success."**

**Ralph Baker Dotson**

severely limited. While Baker Dotson occasionally works with nice, level sites with deeper soils, they are the exception.

Understanding customers' predictable behavior, Baker Dotson makes it a practice to incorporate reserve capacity in most systems. He calls it a "redundancy that anticipates emergencies." The designs let systems tolerate short-term, heavy-loading events that occur during holidays and family gatherings.

Many designs incorporate features that facilitate later maintenance, or even make system repairs easier. He likes EZflow from Infiltrator drainfield media in the belief that it provides more surface area to support microbial life than does mineral aggregate. He prescribes 1.5-inch low-pressure laterals in each run of media, feeling that provides better distribution.

This also enables easier pipe replacement in case that becomes necessary at some future time. He fits a screw-in end cap at the above-grade terminal end of every lateral. Then, by replacing a cap with a pressure gauge, he can measure pump performance in individual laterals. The screw-in fitting also enables easy access for jetting or vacuum cleaning.

Although not required by regulation, Baker Dotson installs valves at the manifold end of every lateral. "The valve lets us isolate a single lateral, taking it out of service without shutting down the entire system," he says.

*(continued)*

# Clean Solutions, Clear Results

- NSF Standard 40 Certified
- Perfect for substandard soils
- Minimal operating cost
- Easy installation and maintenance
- Five year limited transferable warranty
- Over thirty years of manufacturing experience

PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL

Booth 2001

hydro-action®

*green from the ground up*

**1-800-370-3749 • www.hydro-action.com**

"The valve also isolates the lateral for jetting and vacuuming, making individual lateral cleaning more efficient."

## Natural management

The arid conditions in his service area let Baker Dotson reuse treated effluent to support decorative vegetation. When the site's size, slope and soil conditions limit the absorption area, he can compensate by using plant uptake, aided by the area's natural high evaporation rate. This approach is especially handy on repairs.

Some reuse areas he has built are the most aesthetically pleasing aspects of an entire property. "Just because we are building a wastewater system, there is no need for it to look like one," he says.

"We can never take the adequacy of soil renovation or the soils' water dispersal capacity for granted," he adds. "That is why we look to vegetation as a water management tool." Baker Dotson wants plant uptake not simply to remove soil moisture but also to sequester nitrogen in the vegetative material. He believes nitrogen capture is the more important of the two.

When he needs to add plants, he looks first to the site's natural species, reasoning that more of the same will have the greatest chance of survival. When no plants exist, matching the plants to the landscape is the guiding principal. Pinon trees thrive when watered. He stays away from grasses, which need far too much water to survive.

Baker Dotson dislikes the term "wastewater." He states, "In this climate, we cannot waste water. But to reuse it rather than disperse it in an absorption area, the water must be treated to secondary standards." That means BOD and TSS of 30 mg/l or less. To protect groundwater quality, when the aggregate soil interface is less than 10 feet above the seasonal high water table, the discharged effluent must be disinfected.

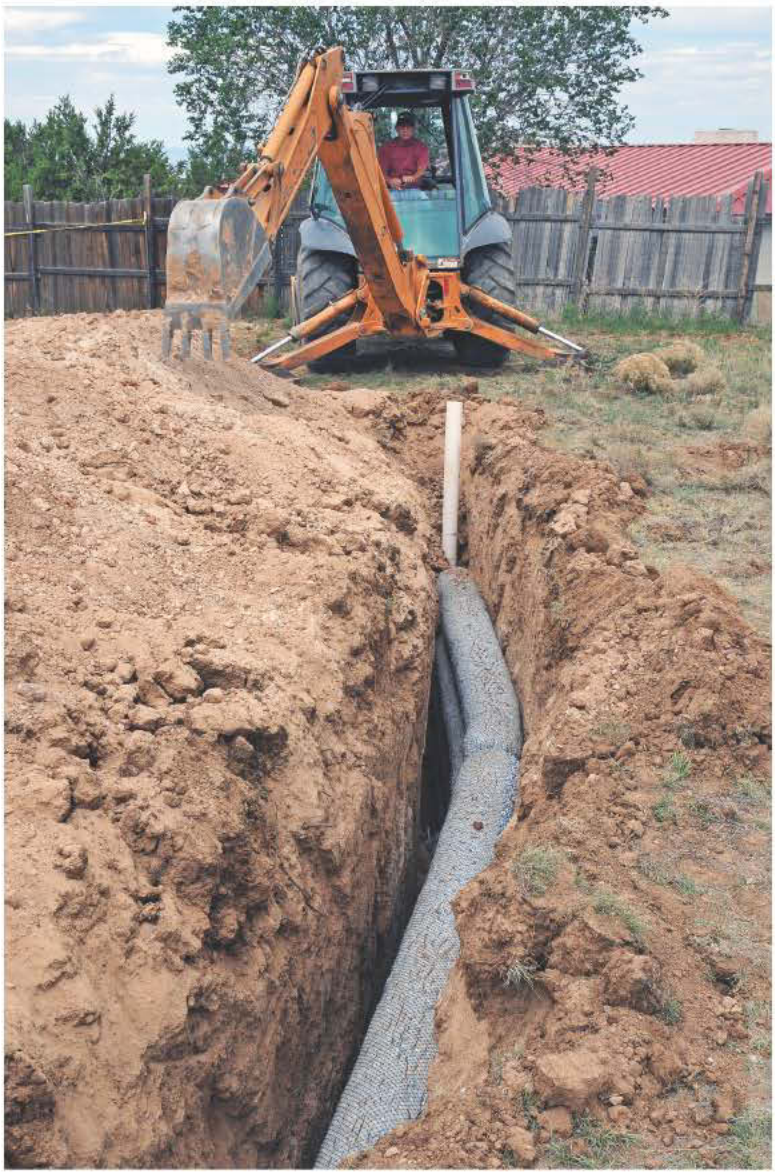
## Limitations of knowledge

Knowledge of technologies and of the industry in general is essential to growth, Baker Dotson believes. "If we are not constantly learning, we are losing ground," he says. He shares his knowledge freely, knowing that builds a stronger industry and tighter customer connections.

Understanding mechanical components is not enough. "When all the hardware is sound and working properly, yet the system is in an upset condition, I still must be able to determine why it is failing," he says.

Each employee has focused responsibilities and must occasionally help out in a variety of roles when needed. Orlando Sanchez, who married Baker Dotson's aunt, is the primary installer and a partner in the business. Steve Sandoval operates the vacuum truck and handles most real estate inspections. James Payne is an installer. Supporting these team members are a 2007 Freightliner truck fitted with a 2,500-gallon vacuum tank, an International two-axle dump truck, a pair of service trucks, and a 2003 Case 580 Super L wheeled backhoe.





Orlando Sanchez installs EZflow drainfield media from Infiltrator Systems.

In five years Baker Dotson sees a growing and robust business. "Onsite systems are not glamorous, nor are they a luxury," he says. "They are essential systems that sustain livability, and this business is essential to their continued operation."

Baker Dotson has always been part of the solution. He has recognized that knowledge is as essential as water for an onsite system to perform properly. "You must constantly outgrow the limitations of your knowledge in order to succeed," he says. "When you think you know it all, you stop being a resource and become an obstacle to success."

## MORE INFO:

**Geoflow, Inc.**
800/828-3388
www.geoflow.com
*(See ad page 38)*

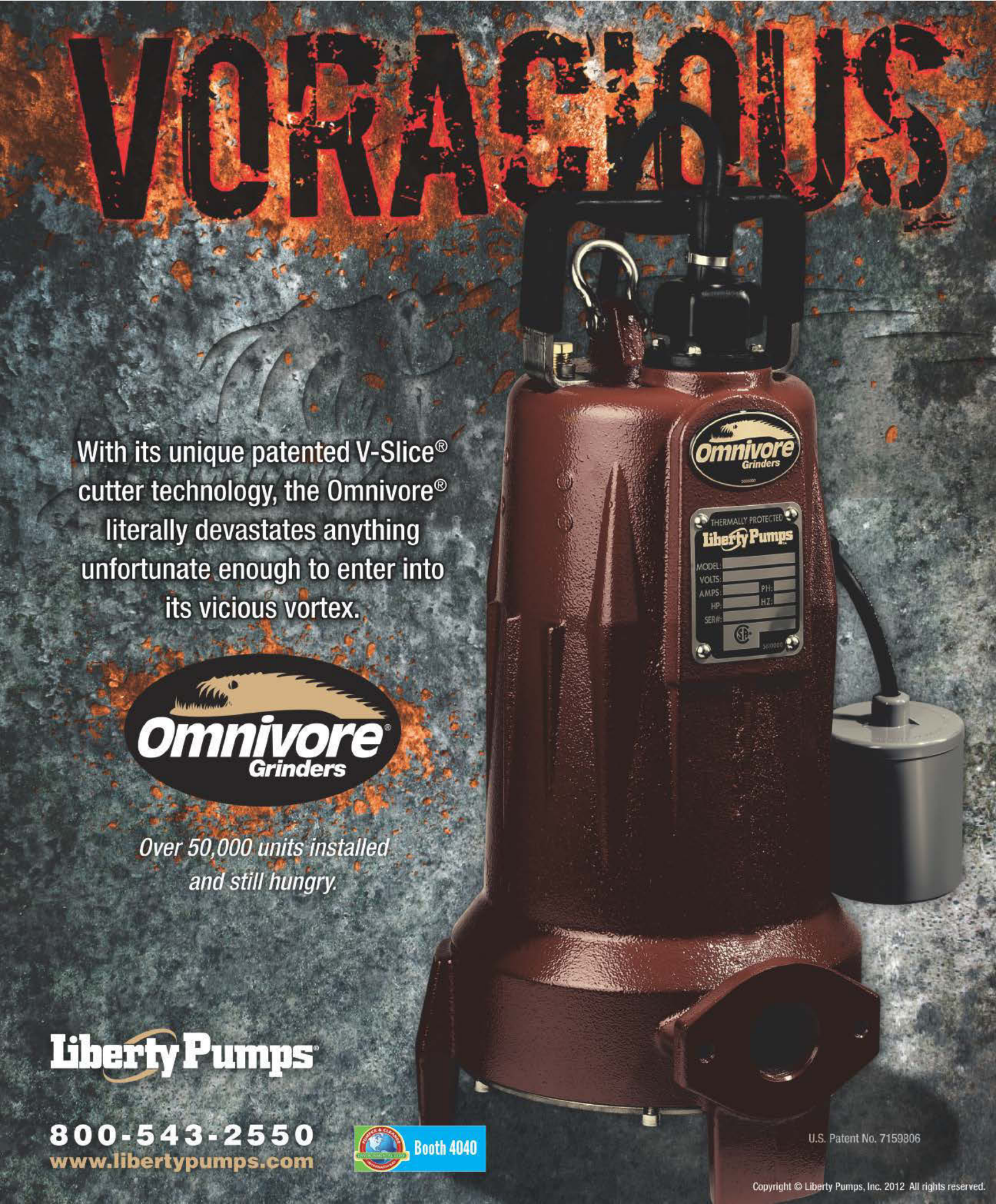
**Infiltrator Systems, Inc.**
800/221-4436
www.infiltratorsystems.com
*(See ad page 17)*

**Koi Environmental, Inc.**
800/980-9898
www.koienvironmental.com
*(See ad page 33)*

**SJE-Rhombus**
888/342-5753
www.sjerhombus.com
*(See ad page 33)*

**SludgeHammer Group, Ltd.**
800/426-3349
www.sludgehammer.net
*(See ad page 27)*

# VORACIOUS




With its unique patented V-Slice® cutter technology, the Omnivore® literally devastates anything unfortunate enough to enter into its vicious vortex.

**Omnivore® Grinders**

*Over 50,000 units installed and still hungry.*

**Liberty Pumps®**

**800-543-2550**

**www.libertypumps.com**

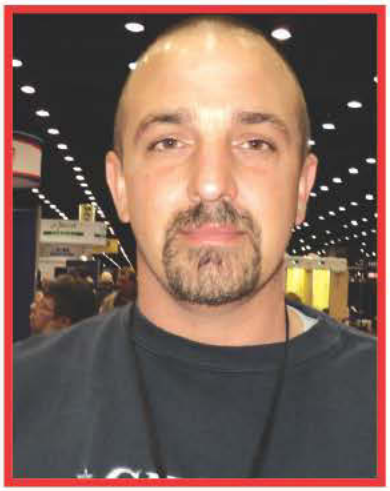
Booth 4040

U.S. Patent No. 7159806

PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL

# Indianapolis 2012

# Welcome!



## Billy Bell

Utility Supervisor II – City of Raleigh, N.C.

## "I came back with some really good ideas."

The 2011 Expo was Billy Bell's first, and he attended with five colleagues. "The most impressive thing was the new technology – the cameras, sewer cleaning equipment and rehab equipment on the exhibit floor," he says. "New technology has helped us tremendously. It's amazing how far it has come from the past. The sales representatives were very helpful. Any questions about the products, they could answer. You really have to see this for yourself."


## NOT ABLE TO JOIN US IN INDIANAPOLIS?

**Be sure to check www.pumpershow.com daily during the Expo for live updates, photos and videos uploaded directly from the show floor!**

# February 27th – March 1st, 2012

Indiana Convention Center • Indianapolis, Indiana

# 2012 EXHIBITOR LIST

**Current list of exhibiting companies as of January 20, 2012.**
**List subject to change without notice.**

A Corp/Rooter-Man
A.R. North America
ABBA Pump Parts & Service
Abbott Rubber Company
ABCO Industries Limited
ACE DuraFlo Systems
Acro Trailer
Advance Pump & Equipment, Inc.
Advanced Containment Systems, Inc.
Advanced Drainage Systems
Advanced Pressure Systems
Advanlink International Corp.
Aero-Tech
AerraTech, LLC
Aglow Industries
Air-Weigh Scales
AK Industries
All Star Equipment Sales, Inc.
Allan J. Coleman
Allied Forward Motion LLC
Allied Graphics
Allied Tank Co.
Alpha Mobile Solutions
Alpine Leasing, Inc.
AlturnaMats
Ameri-Can Engineering
American Highway Products
American Liquid Waste Magazine
Amerik Engineering
Amthor International
Anua
AP/M Permaform
Aqua Blast Corporation
Aqua Mole Technologies
Aqua-Aerobic Systems, Inc.
Aqua-Zyme Disposal Systems Inc.
Arcan Enterprises Inc.
Arctic Heat
Aries Industries Inc.
Armal, Inc.
Art Co. LLC
Arthur Products
Ashland PolyTrap
Atlanta Rubber & Hydraulics Inc.
Avanti International
Bad Dog Tools
BakerCorp
Bandlock Corporation
Banjo Corp.
Barnett
BDP Industries
Bear Onsite
Best Enterprises Inc.
Betts Industries
Biffs Pathfinders
Bio Clean
Bio-Microbics Inc.
BlackGold Biofuels
Blasters, Inc.
Blood Hound Underground
Blue Angel Pumps
Boerger LLC
Bowman Tool Co.
Brenlin Co., Inc.
Bright Dyes, Division of Kingscote Chemicals
Bright Technologies
Brudon Air Vac / Kay International
BS Design Corp.
Bullseye Pipe Supply
BW Technologies by Honeywell
Cam Spray
Canam Equipment Solutions Inc.
Canplas Industries Ltd.
Cape Cod Biochemical Co.
CAT PUMPS
CEMTEC / A.W. Cook Cement Products, Inc.
Century Chemical Corporation
Century Paper & Chemical
Champion Pump Company, Inc.
Chandler Equipment Inc.
Chelsea Products/Div. of Parker
Chempace Corporation
Chempure Products Corp.
Cherne Industries Inc.
Chief Environmental Products
CIPP Services, LLC
CityWide Sewer & Drain
Clarus Environmental/Zoeller Pump Company
Clear Computing
Clearstream Wastewater Systems Inc.
Cloverleaf Tool Co.
Cobra Technologies
Columbia Southern University
Comet USA, Inc.
Comforts of Home
Compco Industries
CompuLink Cable Assemblies, Inc.
Conegtec-Universal, Terramite
Containment Solutions Inc.
Control Chief
Cosmic Tophat LLC
Cougar Vibration a Division of Martin Engineering
Coxreels
Crescent Tank Manufacturing
Cretex Specialty Products
Cross Bore Safety Association
Crown Tank
Crust Buster/Schmitz Bros.
CSI Controls
CST Storage
CUES Inc.
Cusco
Custom Biologicals Inc.
De Neef Construction Chemicals
DekoRRa Products
Del Vel Chemical Co.
Delta Environmental
Ditch Witch
Downey Ridge Environmental Company
Dr. Shrink, Inc.
Dragon Products
Drainbo Products
Draincables Direct
Dultmeier Sales
Duracable Manufacturing
Durand-Wayland, Inc.
Dyna Flex Inc.
Dyna-Vac Equipment
Dynamic Decals & Graphics, Inc.
E-Tank, Ltd.
E.H. Wachs Company
Easy Liner
Ecoflow - Sustainable Water Solutions
Ecological Laboratories Inc.
Electric Eel Mfg. Co., Inc.
Electro Scan Inc.
EleMech, Inc.
Eljen Corporation
Engineering Technologies Canada Ltd.
Environmental Products and Access.
Envirosight LLC
Envirotub
Enz USA Inc.
Ergos Software
Explorer Trailers
Exprolink
EZ Trakr
Fabulous Fungi The Waste Decomposer
Federal Signal Environmental Solutions Group
Fergus Power Pump Inc.
Fisher Research Laboratory
Five Peaks Technology
FKC Co. Ltd.
Flint Industries
Flitz International Limited
Flo Trend
Flow Link Manufacturing
Flow-Liner
FM Manufacturing
Footage Tools, Inc.
Force America Inc.
Formadrain Inc.
FoundOPS LLC
Fournier Industries Inc.
Fruitland Tool & Manufacturing
FW Murphy
Gamajet Cleaning Systems
GapVax Inc.
Gardner Denver Inc.
Gardner Denver Waterjet. Sys. Inc.
GE Energy
GEA Farm Technologies Inc. / Houle USA
General Pipe Cleaners
General Pump
GeoFlow, Inc.
Giant Industries Inc.
Global Pipeline Systems
Global Pump / Mersino
Go For Digger
Godwin Pumps / ITT
Goldak Inc.
Gorlitz
Gorman-Rupp Co.
GP HydroFlow
GPK Products Inc./Indiana Seal
GPM Pump & Truck Parts, LLC
Granite State Collectibles
Green Leaf Inc.
Green Turtle Americas Ltd.
Greenovative Technologies
Hackney - Division SVC
Hammelmann Corp.
HammerHead, An Earth Tool Company
Hannay Reels
Harben Inc.
Hathorn Corporation
Hedstrom Plastics
Heffernan Insurance Brokers
Helix Laboratories Inc.
Hella, Inc.
Hi-Vac Corporation
Hibon, Inc./Div. of Ingersoll Rand
Hino Motor Sales U.S.A., Inc.
House of Imports
Hurco Technologies Inc.
Hy-Flex Corporation
Hydra-Tech Pumps
I.E. Monitoring Instruments Inc.
I.S.T. LLC
ICC Technologies
IHI Compact Excavator Sales
Imperial Industries Inc.
In The Round
Indiana Onsite Wastewater Professionals Assoc.
Infiltrator Systems Inc.
Infrastructure Repair Systems, Inc.
Infrastructure Technologies
Infratech
InSight USA - StreetEagle GPS Tracking
Insight Vision
ITI Trailers & Truck Bodies, Inc.
Ituran USA Inc.
J&J Chemical Company
Jack Doheny Supplies, Inc.
Jag Mobile Solutions, Inc.
Jameson LLC
Jet Inc.
Jetter Depot
Joe Johnson Equipment, Inc.
Johnny's Choice by Chemcorp Industries Inc.
Juggler by Labrie
Kar-Tech
KeeVac Industries Inc.
KEG Technologies, Inc.
Keith Huber, Inc.
Kentucky Tank, Inc.
Kerneos, Inc.
Kewanna Screen Printing
Kroy Industries
Kuriyama of America Inc.
L.M.T.
La Place Equipment Co Inc.
Lansas Vanderlans & Sons Co.
LaPorte & Associates Insurance
Ledcor Environmental Solutions
Lely Manufacturing
Lenzyme Incorporated
Liberty Financial
Liberty Pumps
Lining Success International
Liquid Environmental Solutions
Liquid Waste Technology
LiquidFrameworks
Little Giant DBA Franklin Electric
LMK Enterprises, Inc.
Lock America, Inc.
Lodar
Logiball Inc.
Longhorn Tank & Trailer
M.A.R.S. Workwear/Communications
Madewell Products Corp.
Mainline Backflow Products, Inc.
MARTON, Inc.
Masport Incorporated
Max-Life Mfg.
MaxLiner
Merrell Bros., Inc.
Mid-State Tank Co., Inc.
Midwest Truck Sales
Miller Pipeline
Milliken & Co.
Milwaukee Rubber Products Inc.
Mody Pumps, Inc.
Money In Motion
Mongoose Jetters
Moro USA
Mr. Rooter Corp.
MSB Corporation
MTech
Muncie Power Products
Myers
Myers-Seth Pump Inc.
MyTana Mfg. Company Inc.
NASSCO
National Environmental Health Association
National Vacuum Equipment
NAWT Inc.
NBB Controls
Netafim USA
Nexstar
Niles Safety Service
NILodor Inc.
NLB Corp.
Norweco Inc.
Norwesco
NovaFlex Hose
NOWRA
NozzTeq™ Inc.
NSF International
NSPG
Nu Flow Technologies, Inc.
Nuhn Industries Ltd
Oceanquip, LLC
Ohio Electric Control, Inc.
OMI Industries
OmniSite
OMSI Transmissions Inc.
One Biotechnology
Orenco Systems, Inc.
PA SpA
Parson Environmental Products Inc.
Party Time, Inc. / TTC System
Pat's Pump & Blower
Patriot Pumps
Pearpoint, Inc.
Peinemann
Pelican Worldwide
Penny Pockets
Pentair Flow Technologies
People's United Equipment Finance Corp.
Perma-Liner Industries, Inc.
Petersen Products
Piccadilly Concepts
Pik Rite Inc.
Pipehunter
Pipeline Analytics
Pipeline Renewal Technologies
PipeLogix Inc.
PipeTech Software
Piranha Hose
Point of Rental Systems
Poly-Flow
PolyJohn Enterprises Corp.
Polylok/Zabel
PolyPortables Inc.
Porta Pro
Portable Sanitation Assoc. Int'l.
POSM Soft LLC
Pow-R Mole
Power Line Industries/Hot Jet USA
Powertrack International Inc.
PPG Industries Inc.
Premier Tech Aqua
Presby Environmental, Inc.
Presvac Systems, Ltd.
Prime Resins, Inc.
Prime Solution, Inc.
PrimeLine Products
Progress Tank
Protective Liner Systems
Prototek
PUMPTEC
PURE Software Solutions, LLC
Quadex Inc.
Quik-Lining Systems, Inc.
Rabco
RapidView IBAK North America
Ratech Electronics, Ltd.
Rausch Electronics USA LLC
RC Industries Inc.
Reckitt Benckiser
RedZone Robotics
REED Manufacturing Company
Reelcraft Industries Inc.
Reline America Inc.
Rich Mobile Restroom Mfg.
RIDGID
Ritam Technologies, LP
RKI Instruments
Robinson Septic Service, Inc.
Robuschi USA
Rock Mills Enterprises, Inc.
RODDIE Inc.
Roebic Laboratories, Inc.
RootX
Roth Global Plastics
Rothenberger USA
Roto-Rooter Corporation
RotoSolutions
RouteOptix Inc.
RS Technical Services Inc.
Rush Refuse Systems
Sabre Manufacturing
SAERTEX multiCom LP
Safety Corporation of America
Safety Sewer Drain
Sakor, Inc.
Satellite Industries, Inc.
Sattler Pump Solutions
Sauereisen, Inc.
Savatech Corp.
Schieffer Co. International L.C.
Schier Products
Screentech, a div. of Roeda
Sealing Systems Inc.
Sekisui SPR Americas, LLC
Septic Drainer / Municipal Sales, Inc.
Septic Services Inc.
Septicover
SeptiTech
Septronics
Servant Products
Sewer Equipment Co. of America
Sewer Seal Technologies, LLC
Shark Pressure Washers & Jetters
Sherwin Williams
ShuBee
SIM/TECH Filters
SJE-Rhombus
SludgeHammer Group Limited
Smart Service
Southland Tool Inc.
Southwest Products Corp.
Spartan Tool LLC
Specialty B Sales
SpectraShield Liner Systems
SPI - Septic Products Inc.
SPIR STAR
Stamp Works
Standard Equipment
Sto-Away Power Cranes
StoneAge, Inc.
Storm Trucks, LLC
Subsurface Instruments
Sunbelt Rentals
Sunrise Environmental
Super Products
Superior Signal Company LLC
SuperVac 2000
Surco Products Inc.
SVE Portable Roadway Systems, Inc.
Synergy Insoles by V.P. Marketing
T & T Tools Inc.
TankTec
TCF Equipment Finance
The Strong Company
Thermaco, Inc.
Thompson Pump
TimeKeeping Systems, Inc.
Toico Industries
Topp Industries, Inc.
TopScape
Tracker Solutions
Transway Systems Inc.
Trelleborg
Trenchless Technology Magazine
Tri State Tank LLC
TRIC Tools Inc.
Trillium Environmental Services
Trio-Vision USA
TRY TEK Machine Works, Inc.
TSF Co. Inc.
TT Technologies Inc.
Tuf-Tite Inc.
Turbo-Fog, Division of Kingscote Ind.
TV Ferret
U.E.M.S.I.
U.E.M.S.I. TUFF TUBE-ZIPTUBE
Udor USA
Under Pressure Systems, Inc.
US Jetting, LLC
USA BlueBook
USB-Sewer Equipment Corporation
Vac-Con, Inc.
Vacall
Vacutrux Limited
Vacuum Truck Rental
Vaporooter
VAR Co.
Vermeer
Vivax-Metrotech Corp.
Vogelsang
Vu-Rite Video Inspection Systems, LLC
Walex Products Co.
Wallenstein Vacuum Pumps
Warren Environmental
Wastequip/Cusco
WasteWater Education 501(c)3
Water Environment Federation
Weber Industries, Inc. (Webtrol)
Webster Capital Finance, Inc.
Wee Engineer Inc.
Wells Cargo Ultralav Mobile Restroom Trailers
Wells Fargo Equipment Finance
Western Equipment Finance
Western Mule Cranes
Westmoor Ltd.
Wieser Concrete Products Inc
WJTA-IMCA
Wohler USA
Xerxes Corporation
Yodle

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

# Failures: How Prevalent?

Results from a South Dakota county's septic system inspection program raise a question: How common, in general, are deficient and broken systems?

By Ted J. Rulseh, Editor

There's an ongoing debate in the world of septic systems about how well they work and how often they fail. Of course professionals know they work fine, and last long, if they are installed correctly, and if they are maintained properly.

That second "if" is the big one, and it's at the heart of controversies over local ordinances to require homeowners to have their septic systems inspected and cleaned periodically. There seems to be almost a frontier mentality that says if I live in the country and own a septic system, no one should be able to tell me what to do with it.

## A look at the data

Well, South Dakota's Pennington County recently collected some data that shows what can happen when septic system owners are simply left to their devices. According to the Rapid City Journal, a county ordinance regulating septic systems, passed in July 2010, came with controversy. "Opponents said there's no proof that septic systems were polluting groundwater and, besides, owners are capable of maintaining their own systems without inspections," said an editorial in that newspaper.

But after the ordinance was adopted, the county sent letters to the owners of about 750 systems – out of the 5,000 total systems in the county – saying those systems were on the schedule to be pumped and inspected.

The inspections found 56 systems that needed minor repairs and 105 that needed major repairs, including 10 systems with overflowing drainfields. That first set of systems inspected focused on those closest to streams and groundwater.

The newspaper's editorial board concluded that this data justified the ordinance – that clearly many people were not taking care of their systems, and therefore the ordinance was not just a "costly intrusion on private property" as its opponents claimed.

## How about elsewhere?

A logical question is: What sort of results would be typical if all counties' systems were inspected? What do you think the results would be in the counties where you work?

The intent here clearly is not to cast an aspersion on onsite systems. The intent simply is to portray reality. We must accept that many septic systems are old and were built before the onsite industry was regulated as strictly as it is today. We also must accept that a certain number of people neglect their systems, calling for service only when they encounter a messy problem.

As a journalist I remember covering a story about residents on a Wisconsin lake opposing a planned expansion of a state park, on the grounds the increase in visitors would add to water pollution. During the debate, a regional planning commission report surfaced showing that at least half the lake residents' septic systems were in soils classified as "limited or severely limited" for their use.

That doesn't mean all those systems were polluting the lake, but it does give any reasonable person pause.

## And your county?

Reliable statistics on deficient or failing septic systems is just about impossible to come by. In most cases we have to rely on anecdotal data. So let's try to create some of that here – data that, while certainly not rock solid, at least would come from professionals in a reasonably good position to know.

**A logical question is: What sort of results would be typical if all counties' systems were inspected? What do you think the results would be in the counties where you work?**

Please ask yourself this question: If my county did what Pennington County, S.D., has just done, what percentage of septic systems would be found in need of repair? What percentage would likely be found failing?

Would you care to hazard an estimate? Or a guess? I think the results would be interesting and, considering the sources, reasonably credible. If you have an impression you would like to share, send a note to editor@onsiteinstaller.com. And explain briefly how you arrived at your estimate.

I promise to respond to all comments, and we will publish the overall results in an upcoming issue of *Onsite Installer* magazine. ☐

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.

# More Basic Principles

## Good practice calls for the soil treatment unit of an onsite system to be kept natural, level and shallow

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

Before we move on to more specific discussions of installing soil treatment units in the coming months, we want to finish our review of basic installation principles.

Last month we explored the principle: Keep It Dry (KID). Our next principle is: Keep It Natural (KIN). All excavation of trenches or surface preparation of at-grade or aboveground systems must be done so that the original soil structure is exposed without smearing and without compaction. Then, as the installation continues with addition of media and backfilling, keeping the soil in this natural condition should be a major concern.

### Keep vehicles away

If you have taken care not to work the soil when it is too wet, the protection of the soil needs to carry over to keeping excavation equipment and other vehicles off the excavated area. One reason to use trenches instead of beds for the soil treatment area is that trenches discourage others from driving on the exposed area. You should also minimize foot traffic after excavation. In particular, you should resist the temptation to walk on the excavated surface during placement of the trench media.

**One of the most common mistakes with trench installations on slopes is the trench not being level and on the contour. With today's laser levels, there is no excuse for not having the infiltrative surface and the top of the media level.**

You will often read in articles or manuals that you should rake the sidewalls of trenches to help expose the natural soil structure. We have found this to be generally ineffective in reducing smearing from the backhoe bucket and reducing compaction from foot traffic on the trench bottoms.

It is important when placing the trench media to avoid compaction. When using rock as the trench media, this means placing the media working upslope and, if possible, using equipment with low ground pressure to distribute the weight over as large an area as possible.

In cold climates, the soil infiltrative surface should not be frozen when the trenches or beds are excavated. The frozen soil generally comes out in large clumps or clods, and this can result in significant compaction. More important, if that material is used as part of the backfill, there will be uneven settling and the presence of large voids. This can lead to freezing during winter and can provide space where excess water can enter the trench in spring, causing hydraulic failure.

No matter which type of trench media is used, trenches should be be installed according to the same basic principles: they should be shallow, on the level, and on the contour, and the soil must be kept natural.

## Level installation

The third basic principle is: Keep It Level (KIL). In the soil treatment area, this means the bottoms of the trenches or bed excavations must be level, and the top of the distribution media should be level along the slope contour.

One of the most common mistakes with trench installations on slopes is the trench not being level and on the contour. With today's laser levels, there is no excuse for not having the infiltrative surface and the top of the media level. It is also important in gravity distribution for the distribution box or drop box to be installed level. Obviously, this principle also applies for other parts of the system, such as septic tanks and media filters.

In pressure distribution systems such as at-grade or mound systems, the bottom of the distribution media and the piping must be installed level to achieve equal distribution, unless the difference in elevation has been factored into the design. We recommend that no more than 1/2-inch elevation difference be allowed across the entire distribution network. Of course, as always, check on your local or state codes.

## Shallow is better

The fourth and final basic principle is: Keep It Shallow (KIS). Generally, the best soil for installation of a soil treatment unit is at or near the surface. This part of the soil usually has the best infiltration rate and the best structure for oxygen exchange. In addition, evapotranspiration and natural biotic activity on the part of soil bacteria is higher. There is also less likelihood of encountering seasonally saturated soil or other limiting layers.

On sloping sites, you must identify the elevations of the bottoms of the trenches in relation to any limiting condition, including bedrock, before construction begins. You then use these elevations during the excavation to ensure that the required separation is maintained. To maintain level and keep the separation distance, wheeled backhoes can self-level through use of stabilizers.

If the slope is too steep, or if you use tracked equipment, you may need to make a bench for the equipment by cutting out soil on the upslope of the first trench and placing the excavated material downslope to create a bench for the second trench.

Next month we will look at gravity distribution and installing drop and distribution boxes. We will also look at trench media choices and media installation.

# Membrane Solution

## Bioreactor technology enables a couple to build a system for a dream home in an environmentally sensitive area of western Idaho

By Scottie Dayton

A couple wanted to build their five-bedroom dream home on the Payette River in Emmett, Idaho. The Gem County Health Department mandated pretreatment due to high groundwater and nitrogen limitations, and provided a short list of approved products.

The couple contacted Ryan Spiers of Alternative Wastewater Systems in Caldwell. "I had recently installed the first BioBarrier membrane bioreactor from Bio-Microbics and knew it would work well at this site," he says. The agency agreed. The unit is certified NSF/ANSI 40 Class 1, NSF/ANSI Standard 245 (nitrogen reduction), and NSF/ANSI Standard 350 Class R (water reuse).

### Site conditions

Soils are loamy sand with the water table 36 inches below grade. The house, on a 5-acre lot, is 200 feet from the Payette River, a major tributary of the Snake River.

Trevor McCallahan of Spiers Construction prepares to level one of two 60-foot laterals in the drainfield. (Photos courtesy of Spiers Construction)

### SYSTEM PROFILE

| | |
|---|---|
| **Location:** | Emmett, Idaho |
| **Facility served:** | 5-bedroom home |
| **System designer:** | Ryan Spiers, Alternative Wastewater Systems, Caldwell, Idaho |
| **Installers:** | Darren Spiers, Spiers Construction, Caldwell, and Ryan Spiers |
| **Site conditions:** | Loamy sand with the water table 36 inches below grade |
| **Type of system:** | BioBarrier from Bio-Microbics |
| **Hydraulic capacity:** | 500 gpd |

### System components

Spiers designed the system to handle 500 gpd. Major components are:

- 1,500-gallon single-compartment concrete septic tank with Sani-tee-418 4-inch effluent filter from Bio-Microbics. Tanks made by Valley Precast in Caldwell.
- 1,500-gallon, two-compartment concrete treatment tank with 1/3 hp Goulds Water Technology effluent pump in the first chamber and Bio-Barrier 0.5 bioreactor in the second
- 720-square-foot drainfield with two 6-foot trenches
- Control panel from Bio-Microbics

### System operation

Wastewater from the house and a bathroom in the garage drains by gravity through 4-inch PVC Schedule 40 line to a wye, then to the septic tank. Effluent passes through the angled slots in the sides of the effluent filter and then to the treatment tank.

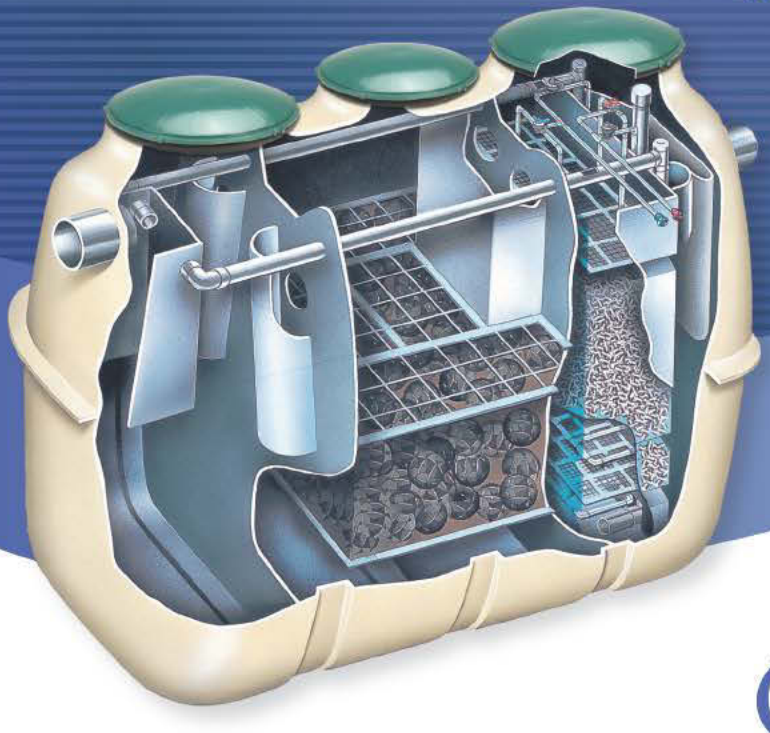
*(continued)*

quality
service
innovation
integrity

# BRINGING IT ALL TOGETHER

## Eco friendly wastewater treatment

Clarus Environmental's **Fusion Series** combines anaerobic, aerobic, recirculation, fixed film and backwash processes to provide a superior wastewater treatment system. Pre-assembled, drop-in systems with only four piping connections make residential and commercial installations simple. Fusion Series units are **easily adapted to work with existing systems** and do not require septic tanks unless mandated by local regulations. Fusion is a collaboration with Fuji Clean.



## Your Peace of Mind is Our Top Priority®

1-877-244-9340
www.clarusenvironmental.com

Like us on Facebook!
facebook.com/ZoellerPumpCompany

CLARUS™
ENVIRONMENTAL
Zoeller Family of Water Solutions™

Booth 9054

Ryan Spiers of Alternative Wastewater Systems plumbs the 60-pound membrane unit.

Darren Spiers uses a Case 225 tracked excavator to lower the 1,500-gallon treatment tank as Trevor McCallahan monitors the placement.

"It's important that the compartments share the same water level for efficient circulation, so I core drilled a few holes in the middle of the center partition," says Spiers.

The effluent pump in the 750-gallon anoxic chamber runs 30 minutes on and 30 minutes off to keep solids in suspension. The bioreactor in the 750-gallon aerobic compartment attaches to an aeration grid with a 2-inch blower line. Aeration scours the membranes and facilitates the breakdown of nitrogen.

The bioreactor's flat-sheet membranes in a double-plate configuration provide high surface treatment while acting as a physical barrier for most wastewater pollutants. An on-demand transfer pump draws 250 to 300 gallons per dose through the pores to the space between the films and into the 4-inch gravity discharge line. Retention time in the treatment tank is 12 hours for 500 gpd. The system requires no backwash.

A tee in the discharge line splits the flow to two 60-foot laterals in the drainfield 25 feet away. The 4-inch laterals have 1/2-inch predrilled holes every six inches.

"The advantage of membranes is that the direct discharge permeate numbers remain identical no matter the installation," says Spiers. "Samples average less than 2 mg/l BOD and TSS, less than 1 mg/l ammonia, less than 5 mg/l total nitrogen, and less than 10 *E. coli* colonies per 100 ml. Phosphorus is less than 0.1 mg/l."

**"The advantage of membranes is that the direct discharge permeate numbers remain identical no matter the installation."**

**Ryan Spiers**

Ryan Spiers draws a sample of mixed liquor from the treatment tank.

## Installation

Darren Spiers and Trevor McCallahan of Spiers Construction in Caldwell installed the sewer lines, tanks and drainfield. "The homeowner imported 2,000 yards of gravel for a 4-foot-high pad that elevated the house above the floodplain," says Ryan Spiers. "We located the system 15 feet behind the home – the side facing the street – in an area that shouldn't flood."

Darren Spiers used a Case 225 tracked excavator to dig 5-foot-deep holes that then filled with 12 inches of groundwater, causing the walls to become unstable. He moved the machine 10 feet from the excavations to set the tanks, filling them with enough water to prevent flotation. They protruded 18 inches aboveground, enabling Spiers to later mound them with soil and smooth it into the home's gravel pad.

Ryan Spiers reduced the 2-inch discharge on the effluent pump to 3/4-inch to lower amperage. "If 1/3 hp pumps run without head, they draw 15 amps," he says. "Necking them down drops the amperage to 10 or 11." A separate dosing tank was unnecessary because the bioreactor pump handles elevation requirements up to five feet. Spiers ran the discharge line up through the 30-inch plastic riser, then installed a union two feet down from the lid and plumbed the discharge line to the drainfield.

Spiers pumped out the ballast water in the treatment tank, drilled holes for the piping, and meticulously vacuumed the tank to remove concrete chips and plastic shavings. To prevent debris and rocks from falling on the sensitive membranes, Spiers plumbed the 60-pound unit, then he removed it to a safe location until the system was ready to activate.

"At startup, I installed the BioBarrier, filled the two compartments with water, and seeded them with activated sludge from a wastewater treatment plant," he says.

Spiers Construction used the excavator to remove 24 inches of soil for the drainfield, then placed 18 inches of ASTM sand followed by six inches of washed drain rock using a Caterpillar 297 tracked skid-steer. Workers ran the laterals, covered them with six inches of rock, protected the drainfield with geotextile filter fabric, and backfilled with 12 inches of sculpted native soil.

## Maintenance

Alternative Wastewater Systems maintains the system. Spiers draws permeate samples annually and reports results to the state. Because the membranes keep microbes and solids in the tank, pumpouts are annual or every other year.

### MORE INFO:

**Bio-Microbics, Inc.**
800/753-3278
www.biomicrobics.com
(See ad page 19)

**Goulds Water Technology**
866/325-4210
www.completewatersystems.com/brands/goulds

# Thank You.

"People appreciate me, and I think highly of that.
I'm not afraid to tell people what I do for a living.
I'm a wastewater treatment professional."

Emphasis on professional.

Thank you.

PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL

For the True Professionals

February 27th - March 1st • Indiana Convention Center • Indianapolis, Indiana

www.pumpershow.com

"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.

# Michigan Supreme Court Accepts Appeal of Public Sewer Requirement

By Scottie Dayton and Doug Day

The Michigan Supreme Court has accepted an appeal of a lawsuit claiming the state's Department of Environmental Quality does not have the power to force a township to install a public sewer system.

Worth Township filed the case after the DEQ ordered the installation of a sewer system to keep failed private onsite systems from discharging to Lake Huron and its tributaries. A circuit court had upheld the order, but the Court of Appeals in 2010 disagreed. A Supreme Court decision was expected in early 2012.

The state House of Representatives passed a bill requiring local governments to provide a receiving station if they ban land application of septage.

The Grand Traverse County Board of Public Works considered assessing septic system and holding tank owners $35 a year to cover the $400,000 in annual revenue lost at the Grand Traverse County Septage Treatment Facility.

Officials say the plant costs more to operate than anticipated and receives about 4.5 million gallons of septage a year instead of the estimated 19 million gallons it would need to remain solvent. Just a month after the $7.8 million plant opened in 2005, a concrete holding tank collapsed, causing $2 million in damage.

## California

The State Water Resources Control Board proposed new rules that would eliminate mandatory solids testing for septic tanks and allow regional water-quality control boards to adopt programs tailored to local conditions. If adopted, the new policy would affect about 5 percent of homeowners with systems that are malfunctioning or near water the state identified as having high levels of bacteria and nitrates.



## New Mexico

The New Mexico Environment Department held public hearings on possibly replacing its one-size-fits-all onsite regulations with permitting requirements to fit hydrogeologic conditions. The proposed amendments also would grant installers the authority to inspect their own installations and, in some cases, replace mandatory laboratory testing of systems with field measurements.

## South Carolina

A state Department of Environmental Management regulation requires residents in coastal areas to upgrade failing onsite systems and cesspools when doing minor renovations to their homes, such as extending a deck or adding a door overhang. Town councils asked the General Assembly to adopt legislation requiring the DEM to approve cost-effective onsite systems instead of the mandated alternative technology systems, and to waive the requirement for renovations that do not add bedrooms.

## Texas

As of September 2012, onsite systems must include risers and covers with fasteners to limit access. The amendment to the Health and Safety Code came after a child drowned in a septic tank with a flimsy cover that had no screws holding it in place.

## South Dakota

Under a Pennington County ordinance, the county's 5,000 onsite systems must be inspected every six years. Since August 2010, 750 inspections of crucial sites, such as homes on smaller lots or close to water, revealed 161 violations. Inspections by pumping companies found 56 systems with broken baffles, 10 with ponding drainfields, 40 with pit privies, more than 30 leaking septic tanks, and some 20 inappropriate steel septic tanks.

## Indiana

The Department of Environmental Management warned more than 100 communities that they must work to eliminate discharge of untreated sewage into waterways. Health Department statistics showed that about 75 percent of onsite systems in Allen County, half the systems in DeKalb County, and some 2,000 systems in Williams County, Ohio, were failing.

## Washington

A Cowlitz County Superior Court judge denied a state Department of Ecology motion to void a Wahkiakum County ordinance that banned biosolids for use as farm fertilizer. Only Class A biosolids, comprising 10 percent of the fertilizer applied, were not banned. The agency argued that the county restriction overrides state regulations. □

# "Our job is cleaning up sewage, so why are we so concerned about air quality?"

*- Dr. Dan Wickham & Buzz Jenks -*
*SludgeHammer Co-founders*

Booth 511

It's the environment *within* the SludgeHammer that makes the difference. To be specific, an air diffuser that forms much finer bubbles. It costs us more, but oxygen transfer is dramatically improved and back-pressure is eliminated. The air pump doesn't work so hard, so it lasts longer and uses less electricity. No other ABG provides as much air volume and circulation.

Our unit's specially designed bottom makes maintenance easier too. And our patented bacterial blend is the most effective there is. We spend more on R&D than our competition, but it has paid off with **NSF-40, MARPOL** and **IAPMO** certifications.

So why do we go to all this expense and trouble? To eliminate your expense and trouble.

NSF-40 Certified S-400 & S-600

MARPOL Global Maritime Standards Lloyd's Certified

IAPMO IGC-180-2003 Remediation Certification

**SludgeHammer®**
**800-426-3349**

**nature called. we answered.**
**www.SludgeHammer.net**

# Understanding ATUs

Aerobic treatment units work on the same basic principles as municipal wastewater treatment plants. They require special knowledge and good maintenance.

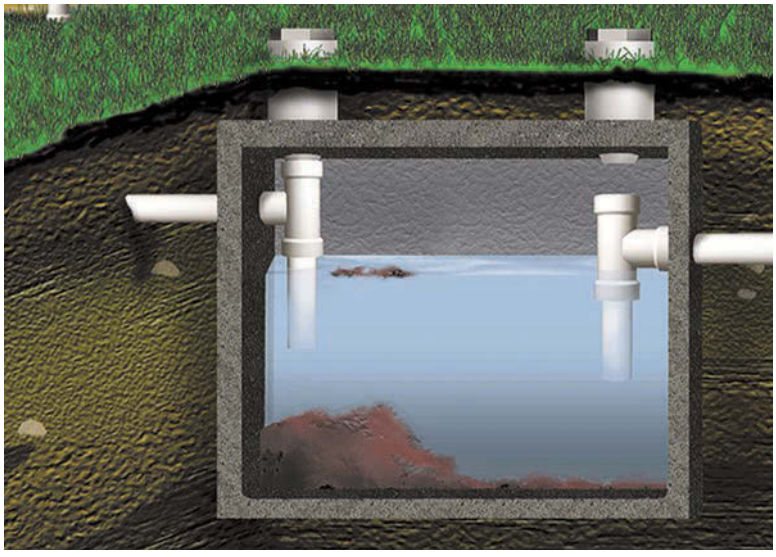
By Kit Rosefield

In September *Onsite Installer,* we discussed media filters as one advanced treatment option to deal with site and soil limitations. Now we will expand that topic to include the many configurations of aerobic treatment units (ATUs).

Before we get into the types of units, we need to look at the basic operating principles. Almost all ATUs operate with the common municipal wastewater treatment process known as activated sludge, where beneficial microbes live in a solution called mixed liquor. This is a combination of the microbes, oxygen and their food – pathogenic organisms and organic and inorganic compounds – biochemical oxygen demand (BOD).

## Two basic types

ATUs use two basic configurations: suspended growth and attached growth (or fixed film). Both involve fully saturated environments (submerged in liquid). In suspended growth systems, an air supply maintains the desired dissolved oxygen (DO) level and mixes the solution to maintain suspension of the activated sludge – the solids – during aeration.



Cross-section diagram of a typical single-compartment septic tank. (Photos courtesy of Kit Rosefield)

The activated sludge is formed as the beneficial microbes and food adhere to each other and become heavy. As the wastewater moves from aeration into a clarification phase, the heavy particles settle to the bottom and form a sludge blanket in the clarifier.

As the microbes and their food settle in the clarifier, now deprived of oxygen, they become stressed and in some cases die off. In a well-operated system, some of the sludge is returned (return activated sludge) to the aeration basin. There, the oxygen-deprived microbes begin eating again, and at a higher rate than normal. The clear liquid at the top of the clarifier (supernatant) either flows over a weir or is pumped off in a timed sequence.

In attached growth processes, the microbes attach to the surface of a submerged media, where they form layers as the food attaches to them. As these layers of activated sludge become heavy, they slough off and settle to the bottom. Many attached growth processes get their mixing and oxygen through an airlift function that moves the mixed liquor and some settled sludge up and over the media, creating a circulating affect.

In both suspended growth and attached growth processes, sludge accumulation needs to be managed to maintain the proper food-to-microorganism (FM) ratio. Periodic removal of sludge (wasting) is needed to keep the system in balance. The removed material is called waste activated sludge (WAS).

## Where it all begins

Aerobic microbes don't like old, stale food, so it is rare to see a full-sized septic tank at the head of an ATU treatment train. Many ATUs use a trash tank to collect the larger junk that gets flushed down the drain. Most trash tanks store no more than 24 hours of raw wastewater.

Maintaining these smaller tanks is important. Maintenance frequency totally depends on how well you educate the system user on what they can put down the drain. Talk dollars and cents – when you explain how much it costs to pump such a small component, the economics speak for themselves.

## Is there enough food?

In normal use (a home occupied full time), an ATU should need no attention beyond routine O&M. But if the unit is on a vacation property used part time, an alternate food supply or startup period might be necessary to keep the microbes healthy and active. It is best to check with the


TOP: Here is a meter that can be used to measure dissolved oxygen in an aerobic treatment unit. LEFT: Two jars show the results of a basic settleability test.

ATU manufacturer to see if they recommend supplemental feeding for partial occupancy. I have heard of adding dog food, corn syrup, or other carbon-based products to be sure the microbes get the nutrients they need.

## Is the chemistry in balance?

A couple of chemical balance considerations can make or break a healthy microbe population. One very important element for most life forms is oxygen. Most ATUs have air systems designed by the manufacturer to maintain a DO level of 2 to 6 mg/l. For most aerobic processes, 2 mg/l is the optimum DO level.

If DO levels fall much lower, microbes can die off or get sluggish. On the other hand, excessive oxygen can create conditions that encourage growth of other organisms that compete with the desirable microbes for the food. These include filamentous organisms, which look like a network of fine hairs in the mixed liquor and form a kind of net that keeps solids from settling, allowing them to pass through the clarifier and on to the next treatment train component.

If that happens to be a disinfection unit, the unwanted solids will impede disinfection. If the next component is the soil treatment unit, solids can foul the soil, pores, resulting in premature failure.

Higher oxygen levels can also cause bulking of the settled sludge, especially if excessive sludge is present. Bulking sludge rises to the clarifier surface, creating a gooey mat that typically has to be removed manually.

Another chemical consideration is pH, a measure of acidity or alkalinity. The range of pH is from 0 to 14. Seven is neutral, lower pH numbers are acidic, and higher numbers are alkaline. The lowest pH to which microbes should be exposed is about 5.5, and the highest is about 8.5. In a normally operated system, pH should not be an issue, but if users are sending inappropriate chemicals down the drain, things can go haywire pretty fast. This is where a residential evaluation survey is extremely helpful (visit the Consortium of Institutes for Decentralized Wastewater Treatment at www.onsiteconsortium.org).

## Managing solids

For evaluating and managing solids, there are two basic methods. The first, which relates to the volume of solids in suspension, is a 30-minute settling test. Here, we draw a sample from the aeration chamber, fill a 1,000 ml graduated cylinder or beaker, and set it aside where it won't be disturbed. It is a good practice to check and record the settling after about five minutes to get an idea how fast the solids are settling. After a half hour, the solids should be fully settled. We typically want to see no less than 20 percent and no more than 60 percent solids by volume.

If we are below 20 percent and no wasting has been done recently, we may have a low FM ratio. If we are above the 60 percent mark and it appears settling is complete, it is time to waste solids from the clarifier. If settling appears incomplete and there is still an undefined separation, there could be low oxygen or an unwanted condition such as filamentous growth. If filamentous growth becomes an issue, a thorough pumping and cleaning of the unit is recommended.

Another good way to decide when to waste is to use a sludge depth device. If the sludge blanket becomes deeper than 30 percent of the total clarifier depth, then wasting to achieve a 20 percent level is recommended. Wasting can be done with a submersible pump or a vacuum truck. If a truck is used, that's a good time to clean the trash tank and possibly the discharge pump tank.

## Servicing the air supply

ATUs use many types of air supplies, including diaphragm and rotary vane compressors, ring blowers, and submersible vacuum aspirators. The air supply is usually coupled with a fine- or coarse-bubble diffuser, air injection via an aspirator, or airlift and cascade air transfer.

Each option has different service needs, specified by the manufacturer. Some have air intake filters and some have air exhaust filters. Whatever the configuration, get trained by the manufacturer and be clear on what the unit is supposed to be doing. Airflow and air pressure tests are valuable to see if the air supply and distribution systems are performing as designed. Some ATUs have high- or low-pressure alarms or high-liquid-level alarms.

So, let's summarize what we've covered.

1. ATUs are similar to small-scale municipal treatment plants.
2. They can be susceptible to underloading or overloading of BOD.
3. Keeping the proper oxygen level is critical to supporting a good microbe population.
4. High or low pH can adversely affect the biological process.
5. Managing solids is important to controlling a number of factors, including oxygen levels, undesirable organisms such as filamentous, and bulking of sludge.
6. Know the type of air supply and its maintenance requirements.
7. Learn how to test and verify alarm and monitoring systems.
8. Be properly trained by the ATU manufacturer.
9. Educate your users and yourself.

The next O&M Matters will feature disinfection, then keep an eye out for the final article on drip dispersal. For information on O&M training programs, visit www.nawt.org.

**About the author**

Kit Rosefield is an adjunct instructor at Columbia Community College and a trainer for NAWT and the California Onsite Wastewater Association. His company, Onsite Wastewater Management in Mi Wuk Village, Calif., has a consumer education service at www.septicguy.com. Reach him at 209/770-6760 or kit@septicguy.com.

## Making Sense in the Onsite Field

To the Editor:

I really enjoyed your article in the December *Onsite Installer* (Breaking Ground, "What Doesn't Make Sense?"). You hit the nail on the head with three of my pet peeves!

**Trials of technology.** This goes back to the EPA's 1997 Report to Congress, which says we have the technology to put a septic system anywhere, but regulations generally haven't caught up with the technology.

**Local control.** This is my biggest peeve. Pennsylvania went to a state code in 1972. Local ordinances can always supercede the state regulations, but they never do! They don't have to because the state code is sound and, contrary to other arguments, works across the state in all types of soils and terrain.

**Credentialing.** Although I like the Pennsylvania state code system, ironically we have no credential requirements. The hodgepodge of different credentials sure helps keep our industry looking like a bunch of fly-by-nighters.

I think the local control issue is the root of most of the problems. County health departments who continue to do things as they have for the past 50 years with their heads in the sand don't have the interest or motivation to keep up with the new. I think when we go to events such as the SORA and NEHA conferences, we surely see the cream of the crop, because most of these people seem to want to learn – although none of them want to give up their control.

On a negative note, I thought the Pennsylvania state code would be managed by a brain trust of highly technical and interested individuals who would keep the state's onsite program on the leading edge. That has not happened. Sometimes things seem more based in politics than in science. Pennsylvania does accept any NSF-approved equipment, but the process to get something approved that is not an NSF device is mind-boggling.

Please note all the above comments are mine personally and should not be taken as representing the opinions of NAWT or any other organization with which I am or have been affiliated. Again, thanks for a great article. Now, who helps us fix all this?

Tom Ferrero
Chief Operating Officer
Franc Environmental
Horsham, Pa.

---

To the Editor:

I have a few comments on your column, "What Doesn't Make Sense?"

On trials of technology, while NSF testing protocol is a place to start, it is not, from my more than 35 years of field experience in the residential wastewater industry in Arizona, fairly reflective of the relative BOD influent strength of raw sewage most NSF treatment devices receive.

Moreover, this influent is not the homogeneous product used by NSF taken from a municipal sewer line. This influent is highly irregular, as there are days when the influent is extremely high (such as on laundry day) and highly chemical (as when the household toilets are sanitized). Under actual field conditions I have not found even one NSF treatment plant that consistently produces secondary treated effluent.

On state and local regulations and their differences, my comment is that tradition and regulatory power are at stake, and I have not found any regulatory body willing to give up jurisdiction on anything once it has attained that power.

On the subject of local jurisdictions, perhaps if I lived in a state where voters adequately funded their state's Department of Environmental Quality and Enforcement, I could be amenable to one-size-fits-all approval.

In 2001, Arizona instituted what was to be precisely that: statewide rules and regulations for the design, installation, operation, maintenance and sale of all residential onsite wastewater treatment and effluent disposal systems. That lasted until the ink dried. Then the 15 individual counties found out they were stuck with the program but were not given funding to provide the manpower necessary to implement the program.

Fast forward to 2011, and Arizona has 15 separately orchestrated jurisdictions, policies and practices, and all the while the state agency, Arizona DEQ, is further curtailed as our legislature cut its funding, making it essentially dependent upon those they regulate to support it – the fox guards the henhouse.

I believe that if county environmental departments were adequately funded and provided with sufficient manpower, they most likely would be amenable to implementing a state standard. There is one caveat: In a state like Arizona, with extreme topographic conditions and elevations, devising a one-size-fits-all set of rules and regulations would be extremely difficult, and in the end might well require some flexibility in decision-making by the county environmental agency.

Paul F. Miller
Phoenix, Ariz.

# An Old-Time Twist on Bowling

## Duckpins, ball & biscuit and the Black Market all bring a bit of the past to present Indy hot spots

By Ted J. Rulseh

Fountain Square Theatre, a two-minute cab ride from downtown Indianapolis, only a mile and a half from downtown Indianapolis at the intersection of Virginia Avenue at Shelby and Prospect streets, was the first commercial historic district in Indiana. Its buildings span more than a century from 1871 to the present.

Extensively renovated starting in 1993, the building houses entertainment and events in the Fountain Square Theatre, art galleries and studios, two restaurants, seasonal rooftop dining, a cocktail bar, and duckpin bowling in either of two vintage alleys.

Duckpin bowling was born in Baltimore in 1900 and was a favorite of Babe Ruth. It uses smaller balls and pins and has different rules. The Action Duckpin Bowl has been restored with authentic 1930s vintage bowling equipment and eight lanes. A café area seats up to 120 guests, and surrounding windows give a great view of downtown.

The Atomic Bowl Duckpin, in the building's basement, has seven lanes with authentic 1950s and 1960s bowling equipment, along with displays of mid-century bowling collectibles. A café seats up to 90 guests. **Visit www.fountainsquareindy.com.**

### Bar and lounge

The **ball & biscuit**, two minutes from downtown at 331 Massachusetts Ave., is a bar and lounge set in the cultural corridor of the Mass Ave neighborhood. True to its eclectic surroundings, it has the laid-back atmosphere of a Prohibition-era speakeasy.

From the 150-year-old quarter-sawn wood floor, to the distressed leather chairs, the exposed brick walls and the tin ceiling, the place is a neighborhood bar at heart. The menu includes craft beers, boutique wines and unique cocktails that range from pre-Prohibition classics to modern concoctions. Unique bar foods are served in an atmosphere of background music conducive to good conversation. **Visit www.ballandbiscuit.com.**

### Casual dining

**Black Market** is a new gastro pub at 922 Massachusetts Ave., four minutes from the Convention Center. It serves up "comfort food" with an Indiana flavor along with local beers and wines. Foods made with old-fashioned pickling and preservation methods often appear in the restaurant's dishes. Entrees like ale steamed mussels, rainbow trout, mushroom dumplings and the Black Market burger are served in a casual atmosphere where diners in a suit or jeans are equally welcome. Entree prices range from $12 to $22. **Visit www.blackmarketindy.net.**

### Historic site

Dominating the five-block picturesque setting of War Memorial Plaza in downtown Indianapolis, the **Indiana World War Memorial** sits 210 feet above street level. This mausoleum-style limestone and marble memorial honors Hoosiers killed during World Wars I and II, the Korean War and the Vietnam War.

The memorial, at 431 N. Meridian St., includes multiple standing figures that symbolize courage, memory, peace, victory, liberty and patriotism. The Shrine Room, with 24 stained glass windows, provides the setting for a 17- by 30-foot American flag suspended from the ceiling. A military museum in the basement follows the history of Indiana soldiers from the Battle of Tippecanoe through the most recent conflicts. **Visit www.in.gov/iwm.**

### Shopping

**Midland Arts & Antiques** in downtown Indy can keep you occupied for hours with four floors full of art and antiques from more than 200 dealers from around the Midwest. Located at 907 E. Michigan St., four minutes from the Convention Center, the market has been a destination for more than 15 years. Merchandise includes decorative items, works by local artists, furniture, pottery, vintage jewelry, 1950s collectibles, china and a great deal more. **Visit www.midlandathome.com.**

# A New Way to Trade Show

## Technology and social media will help you make the most of the Pumper & Cleaner Environmental Expo

By Judy Kneiszel

Not long ago, all a trade show attendee needed to make the most of the event was a stack of business cards and a comfortable pair of shoes. But look around the 2012 Pumper & Cleaner Environmental Expo International and you'll see organizers, attendees and exhibitors armed with smartphones, tablets, notebook computers or laptops. They will be texting, tweeting, emailing, blogging, photographing and recording video. At the end of each day, complaints of tired, aching feet may be accompanied by complaints of tired, aching thumbs.

Like it is the other 51 weeks of the year, social media is a source of news and information during the Expo. But, during Expo week when so much is happening in one place at one time, social media can be even more crucial to your business communications. While attending the Expo you can use social media both to keep track of what is happening at the show and to share information with others at the show and back home.

**Suppose you see a product you like, but need authorization to buy it. Now you don't have to wait to discuss it after you get home. Simply snap some photos and email them to the boss. If he or she doesn't understand how the item works, make a video of the sales representative demonstrating it.**


### SOCIAL MEDIA AT THE EXPO

If you are on Twitter, search for comments about the Expo using hashtags and also use them in your own tweets so other people interested in the show can find them. The hashtag symbol (#) used before relevant keywords in a tweet categorizes the tweet to show more easily in Twitter search. Clicking on a hashtagged word in any message shows you all other tweets in that category.

Similarly on Facebook and LinkedIn, you can announce your company's attendance at the Expo as well as any related news and events. You'll also want to keep an eye on Facebook to see what's being posted at www.facebook.com/OnsiteInstaller and www.facebook.com/pumpershow, and share thoughts and impressions about the show.

COLE Publishing, which creates this magazine and organizes the Expo, will have a mobile site for attendees to use at the event. The site will feature a searchable list of exhibitors and booths, a general schedule, and a more detailed educational schedule. Check out the mobile site at http://m.pumpershow.com.

One thing you don't want to do is waste time at the Expo, so make sure your team has Internet-ready smartphones or tablets set up with the right applications for social media use. Be sure to bring chargers to power up devices at night and have a large enough memory card if you are going to take a lot of pictures or video.

In general, using social media at a trade show is easiest on a mobile device. A laptop computer can be inconvenient and cumbersome to carry around on the floor, but handy when you want to download photos off your phone at the end of the day.

While at the Expo, you can send out real-time updates of what's going on all around you using Facebook or Twitter. You can also use YouTube to stream videos and Flickr to upload photos.

Another use for technology on the Expo floor could guarantee you get the "show discount" on a purchase. Suppose you see a product you like, but need authorization to buy it. Now you don't have to wait to discuss it after you get home. Simply snap some photos and email them to the boss. If he or she doesn't understand how the item works, make a video of the sales representative demonstrating it.

### I SPY . . . QR CODES

While walking around the Expo, you may see QR codes on printed materials in some exhibitors' booths. QR stands for "Quick Response" and refers to those black and white squares that are really a two-dimensional

barcode readable by a variety of devices including smartphones.

The amount of information that can be contained in a QR code is about 4,300 characters. That's enough for a business professional to include contact information and some personal background or product information, which is more than will fit on a standard business card.

Newer smartphones come with QR code readers installed. If your phone doesn't have one installed, try Google Goggles or on an iPhone, the App Store to download a free reader.

Once you have the QR code reader installed, simply activate the application and take a quick snapshot of the data label with your camera.

If you'd like to use a QR code on your own company materials, the technology for creating them is usually free. There are also dozens of Web services that will create them for you.

There are plenty of places a QR code can be used, especially at a trade show. Try putting a code that contains all your contact information on your business card and then attach it to your show badge so people you meet can simply scan your card. If you want to be more memorable, have the QR code put on a baseball cap and ask people to scan you!

You can also put a QR code on flyers, brochures and other print collateral. That way, people have the option of scanning or taking these items with them. Those who are more technology oriented will appreciate you lightening their load. You may find after the show you've distributed fewer business cards, but made more contacts. And having your contact information scanned to someone's phone makes it much less likely to get lost.

## THE PARTY ISN'T OVER

When the show is over and you're back at the office, don't assume your Expo social media efforts are over. Follow up with the leads you generated by connecting with them on LinkedIn or sending follow-up notes via email. Upload more media and recap the event for those who couldn't make it this year.

And then … begin planning your social media strategy for next year's Expo. Did you observe other attendees using technology and social media applications in ways you hadn't thought of but would like to try? Could some of the things you tried have been done more effectively or efficiently? You've got a year to gear up for next year's Expo!

NOWRA
National Onsite Wastewater Recycling Association

**ABOUT THE AUTHOR**
Eric Casey is executive director of the NOWRA, the national organization that represents all segments of the onsite wastewater industry. For more information, visit www.nowra.org or call 800/966-2942.

# Do You Roe-D-Hoe?

## NOWRA again sponsors the national backhoe skills competition during the 2012 Pumper & Cleaner Expo

By Eric Casey

Who's the best backhoe operator you know? Do you see yourself as the best? Well, there's a way to prove your chops: Compete in the National Backhoe Roe-D-Hoe at the 2012 Pumper & Cleaner Expo, Feb. 27-March 1 at the Indiana Convention Center in Indianapolis.

**The venue may be new, but the skills you need to become the next Casey Mallon remain the same: Calmness under pressure, accuracy, a feel for the controls, and the ability to put it all together when it's on the line.**

This skills competition takes place in the exhibit hall, where a new national champion will be crowned again this year. The venue may be new, but the skills you need to become the next Casey Mallon remain the same: Calmness under pressure, accuracy, a feel for the controls, and the ability to put it all together when it's on the line.

### Challenging course

Those are the skills Mallon demonstrated by following up his Roe-D-Hoe victory earlier in the year at the Iowa Onsite Waste Water Association with the national championship at the 2011 NOWRA competition.


The 2011 Roe-D-Hoe drew numerous spectators as well as some 200 entrants.

Mallon beat out more than 200 competitors at the 2011 Expo in Louisville, Ky. It was the largest group of competitors in the event's history. About 100 people tested their skills in each of the first two days of last year's Expo. Competition was spirited, as each participant tried to complete the course fast enough to qualify for Saturday's finals.

It wasn't easy, as the course was set up by "Mr. Backhoe Roe-D-Hoe," Mick Heibert of IHI Compact Excavator Sales. Various competitors came up with high-risk strategies to complete the three events – basketball, bowling and golf.


2011 champion Casey Mallon

For example, in the basketball event, the goal was to pick up three basketballs with the backhoe bucket and drop them through a hoop. The safe route was to go for the balls one at a time. Several competitors tried to pick up two or three at once and drop them through. Those who succeeded (not many) shaved precious seconds off their times. Those who failed lost any chance of a good score, since dropping even one ball meant a do-over.

### Volunteer support

By Saturday morning of the Expo, the pretenders were gone and the bleachers were filled with spectators cheering on their favorites. Champions

from NOWRA-affiliate state associations that held sanctioned Roe-D-Hoe events automatically qualified for the finals, so 11 finalists competed for the $1,000 grand prize and the Roe-D-Hoe Championship Belt.

The tension was thick as the score to beat went lower and lower. In the end, Mallon came up with the best time, followed by Josh Reading of Illinois, and Timothy Boswell of Virginia.

In addition to the support provided by IHI, which supplied the electric backhoes, the Roe-D-Hoe was also supported by NOWRA Business Benefit Program partners Jet, Bio-Microbics, Infiltrator Systems, Norweco and Presby Environmental.

Volunteers also spent considerable time helping: Tom Fritts (who organized the overall event), Jessi Wood and Jason Vaughn from Residential Sewage Treatment Company; Allison Blodig of Bio-Microbics; Greg Graves of Norweco; and Dr. Randy Miles of the University of Missouri. Jennifer Cisneros of Bio-Microbics put together the electronic leaderboard and related graphics. Finally, the support and space provided by COLE Publishing was invaluable.

The 2012 competition promises to be even bigger. Competition will likely be tougher with more competitors and more state champions. To get a better sense of what's involved in the Roe-D-Hoe, visit the NOWRA YouTube page (www.youtube.com/user/NOWRAVIDEO) for scenes from 2011, including the finals.

Join NOWRA in Indianapolis for the 2012 National Backhoe Roe-D-Hoe!

# industrynews

## SSPMA Offers Pump Sizing Guidelines

The Sump and Sewage Pump Manufacturers Association released a free downloadable PowerPoint presentation covering sizing guidelines for new or replacement sewage pumps. Subjects covered include pump capacity, total dynamic head, solids-handling requirements, basin, simplex or duplex system and sizing example. The presentation, available in either PowerPoint or PDF format, can be accessed at www.sspma.org.

## Infiltrator Acquires Advanced Drainage Systems

Infiltrator Systems Inc. acquired the assets of Advanced Drainage Systems Inc. and its subsidiaries. As part of the acquisition, ADS entered into a long-term, non-exclusive distribution agreement with Infiltrator Systems and will continue to market and sell its Arc and BioDiffuser product lines. Terms of the transaction were not disclosed.

## NSF Publishes Water Reuse American Standard

NSF International published an American national standard for commercial and residential onsite water reuse treatment systems, NSF/ANSI 350. The standard establishes criteria to improve awareness and acceptance of water reuse technologies that reduce impacts on the environment, municipal water and wastewater treatment facilities and energy costs.

# productnews

## DuPont Landscape Systems

GroundGrid soil stabilization from DuPont Landscape Systems is a geotextile that uses a three-dimensional honeycomb grid structure to provide ground stabilization for landscape and construction projects. 302/999-2709; www.dupont.com.

## SJE-Rhombus Vario Speed Drive

The Vario Speed HMI variable-frequency drive for pressure control applications from SJE-Rhombus is pre-programmed, meeting specific irrigation needs up to 500 hp. 888/342-5753; www.vfdpanels.com.

## Charles Austen Air Pumps

Envir-o Linear air pumps from Charles Austen and distributed by Blue Diamond Pumps are designed for use with advanced treatment units. Featuring a weatherproof compact alloy casing, the frost and rainproof pumps have an electromagnetically operated diaphragm that eliminates sliding parts, keeping wear to a minimum. Powered by an electric motor, the pumps operate at 40 dBA. Models range from 30 lpm (7.93 gpm) to 200 lpm (52.84 gpm). 770/831-1122; www.bluediamondpumps.com.

# February 27th – March 1st, 2012

Indiana Convention Center • Indianapolis, Indiana

# Education Day

## Monday, February 27th

### SSCSC — Southern Sections Collection Systems Committee

| | |
|---|---|
| 8 a.m. | Rust into Gold |
| 9:30 a.m. | Maintaining Collection System Easements |
| 11 a.m. | Sanitary Sewer Overflows: What To Do When It Is Flowing Down the Street |
| 1:30 p.m. | Finding Success and Growth in the Pipeline Cleaning Business |
| 3 p.m. | Evaluating and Optimizing the Efficiency of a Combination Truck |
| 4:30 p.m. | CCTV Inspection Essentials |

### NAWT — National Association of Wastewater Transporters

| | |
|---|---|
| 8 a.m. | What I Need to Know About Trucking Safety |
| 9:30 a.m. | Setting the Dose, Establishing the Pump Delivery Rate & Relative Control Sensor Adjustment |
| 11 a.m. | Certification and Septic System Inspections |
| 1:30 p.m. | Is There Value in Processing My Own Sludge? |
| 3 p.m. | Maintenance Frequency Standards and Requirements |
| 4:30 p.m. | Working with Small Communities: System Management |

### NASSCO — National Association of Sewer Service Companies

| | |
|---|---|
| 8 a.m. | Sewer Ops and CMOM - Leveraging the CMOM Process for Operational Benefit |
| 9:30 a.m. | Larry Keist - Developments in Water Main Linings |
| 11 a.m. | Culvert Rehabilitation: Have It Your Way |
| 1:30 p.m. | Manhole Lining: The Secret to a Successful Installation |
| 3 p.m. | Inspection of Pipelines Under Full Flow Conditions |
| 4:30 p.m. | Sewer and Industrial Equipment Rental - What are the Options? |

### WJTA — WaterJet Technology Association

| | |
|---|---|
| 8 a.m. | Accessorizing Your Vacuum Unit |
| 9:30 a.m. | Good Craftsmen Have Heavy Toolboxes |
| 11 a.m. | Waterjet Technology: Applications and Equipment |

### PSAI — Portable Sanitation Association International

| | |
|---|---|
| 1:30 p.m. | Cost Analysis: Delivery, Removal, Moves and Tip-Overs - Part 1 |
| 3 p.m. | Cost Analysis: Delivery, Removal, Moves and Tip-Overs - Part 2 |

### NOWRA — National Onsite Wastewater Recycling Association

| | |
|---|---|
| 8 a.m. | Aerobic or Anaerobic - Which One Is Better? |
| 9:30 a.m. | Mound Systems – Not Just for Wisconsin! |
| 11 a.m. | Dead Bacteria - How Overuse of Cleaners and Household Products KILL |
| 1:30 p.m. | Onsite Electrical |
| 3 p.m. | Managing Commercial Wastewater Treatments |
| 4:30 p.m. | Choosing the Right Float to Control Your Pump |

### NEHA — National Environmental Health Association

| | |
|---|---|
| 8 a.m. | Promoting Competence: What's in It for Me? |
| 9:30 a.m. | Septic Tank Science |
| 11 a.m. | Advanced Treatment - What Does That Mean? |
| 1:30 p.m. | Successfully Dosing Pipe Networks |
| 3 p.m. | Pump Replacement |
| 4:30 p.m. | The State of the Industry: The Forecast, The Strategy, The Tools |

### BUSINESS TRACK — General Business - Scott Hunter

| | |
|---|---|
| 8 a.m. | Keeping Employees and Customers Happy - Part 1 |
| 9:30 a.m. | Keeping Employees and Customers Happy - Part 2 |
| 11 a.m. | Keeping Employees and Customers Happy - Part 3 |
| 3 p.m. | How to be Successful and Profitable in Any Economy - Part 1 |
| 4:30 p.m. | How to be Successful and Profitable in Any Economy - Part 2 |

### WASTEWATER EDUCATION — in Association with NOWRA

| | |
|---|---|
| 8 a.m. | Social Media: Friend or Foe? |
| 9:30 a.m. | Taking it to the Web, Infinity and Beyond! |

**DETAILED SESSION INFORMATION AVAILABLE AT:**

**WWW.PUMPERSHOW.COM**

# Pumper & Cleaner Environmental Expo International — Indianapolis 2012

## Tuesday Sessions

**February 28, 2012**

### MUNICIPAL TRACK

| | |
|---|---|
| 8 a.m. | Inspecting and Locating Laterals<br>*Edward A. "Digger" Diggs – CUES, Inc.* |
| 9:30 a.m. | Get Quality Results From Your Inspection Management Program!<br>*Rod Thornhill, Cori Criss – Infrastructure Technologies* |
| 11 a.m. | Using Chemical Grouts to Protect Mainlines, Laterals, Manholes and Lift Stations<br>*Daniel Magill – Avanti International* |

### SEWER AND DRAIN TRACK

| | |
|---|---|
| 8 a.m. | Contractors Need to Improve Jetting Sales<br>*Nick Woodhead, Ken Bryson – US Jetting* |
| 9:30 a.m. | Lift Station Backup Pumping<br>*Majid Tavakoli – Thompson Pump* |
| 11 a.m. | Optical Advancements Improve Range and Clarity of Pipeline Zoom Inspection<br>*Richard Lindner – Envirosight* |

### BUSINESS TRACK

| | |
|---|---|
| 8 a.m. | Market Like the Green Bay Packers<br>*Jerard Nighorn – Lenzyme, Inc.* |
| 9:30 a.m. | Training is the Key to Unclogging a Messy Business<br>*William Raymond – Nexstar Network* |
| 11 a.m. | How to Make Profits That Drop Straight to the Bottom Line<br>*Jenny Alday – One Biotechnology* |

### PORTABLE RESTROOM TRACK

| | |
|---|---|
| 8 a.m. | How Your Portable Toilet Company Can Save Money By Saying "No"<br>*Joel Smith - Clear Computing* |
| 9:30 a.m. | New Emission Standards for Service Trucks<br>*John Olson – Satellite Industries* |
| 11 a.m. | New Portable Restroom Products<br>*David Roncadori – J&J Chemical Co.* |

### LIQUID WASTE TRACK

| | |
|---|---|
| 8 a.m. | What You Should Know About ATUs and How to Evaluate and Service Them<br>*Doug Dent – Ecological Labs* |
| 9:30 a.m. | From the Kitchen to the Grease Trap to the Landfill<br>*Dennis Brunetti – FloTrend* |
| 11 a.m. | The Evolution of Effluent Filters<br>*Theo Terry – Bear Onsite* |

### ADVANCED INSTALLER COURSE

**8 HOURS • ROOM 130-132**

*Jim Anderson and Dave Gustafson*

Sponsored by: COLE Publishing

## Wednesday Sessions

**February 29, 2012**

### PIPE RELINING TRACK

| | |
|---|---|
| 8 a.m. | Advances in Monitoring Technology Help Ensure Proper Liner Cure<br>*Jake Wells – Pipeline Renewal Technologies* |
| 9:30 a.m. | UV Cured Fiberglass Pressure Liner<br>*Richard Montemarano – LightStream* |
| 11 a.m. | New Braunfels Utilities Performs Manhole-to-Manhole Lining in-House<br>*Travis Bohm – Perma-Liner Industries* |

### INSTALLER TRACK

| | |
|---|---|
| 8 a.m. | Installation and Operation of Float Switches<br>*Brett Wilfong – SJE-Rhombus* |
| 9:30 a.m. | STEPping Up<br>*Dennis Hallahan P.E. – Infiltrator Systems* |

### BUSINESS TRACK

| | |
|---|---|
| 8 a.m. | Septic, Sewer & Portable Business Valuation Basics<br>*Jeff Bruss – COLE Publishing* |
| 9:30 a.m. | Inexpensive Marketing, Promotion & Advertising Ideas for Septic, Sewer & Portable Companies<br>*Jeff Bruss – COLE Publishing* |
| 11 a.m. | Making the Most of Mobile Marketing<br>*Jeff Bruss – COLE Publishing* |

### GAS, OIL AND MINING TRACK

| | |
|---|---|
| 8 a.m. | Vacuum Equipment in the Marcellus Shale Region<br>*Mark Nixon – MORO USA* |
| 9:30 a.m. | How to Vacuum More Efficiently with a Positive Displacement Blower<br>*Jeff Peterson – Hibon, Inc., a division of Ingersoll Rand* |
| 11 a.m. | Why Choose Hydroexcavation? Opportunities in the Oil and Gas Exploration Industry<br>*Neil McLean – Hydro Excavation Consulting Unlimited* |

### INDUSTRY SAFETY TRACK

| | |
|---|---|
| 8 a.m. | Cross Bores, Deadly but Preventable – Your Actions Can Save Your Life<br>*Mark Bruce – Can Clay* |
| 9:30 a.m. | Is the Air in Your Manhole or Confined Space Safe to Breathe?<br>*Ed Fitzgerald – Jack Doheny Companies* |
| 11 a.m. | OSHA: Introduction to Soil Analysis<br>*Gary Hooks* |

**DETAILED SESSION INFORMATION AVAILABLE AT:**

**WWW.PUMPERSHOW.COM**

# associationnews

By Scottie Dayton

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

## Members' Voices Heard

Testimony and letters from members of the Oregon Onsite Wastewater Association were instrumental in having an improved onsite code approved by the state Department of Environmental Quality. Recommendations included filing annual maintenance reports on new sand filters and pressure distribution systems, creating a time-of-sale inspection program for the state's coastal zone, and improving the approval process for alternative treatment technologies.

An article in the association's summer newsletter by Yamhill County regulator Kim Aldrich tells of a giant root mass found by Dennis Gibbens, owner of Price-Rite Septic Tank Service in Newberg. Responding to a service call, Gibbens excavated to find a round, vertical septic tank with a 9-inch-thick root mat in the shape of the tank.

"It looked like an alien slug," writes Aldrich. Roots from a maple tree eight feet away had penetrated between the lid and base of the tank, then followed the piping to the drainfield. Aldrich invites other service providers with root stories to email them to aldrichk@co.yamhill.or.us.

## Legislators Educated

Michigan Septic Tank Association director Chris Sloan and family opened Sloan's Septic Tank Service in Oakley to legislators, enabling them to view proper procedures for land application of septage.

State Representative Ken Goike, a former MSTA director and author of a bill that would require local governments to provide receiving stations if they banned the practice, suggested the tour to satisfy his colleagues' concerns and set the stage for senate action on his legislation. MSTA and its legislative team also convinced the legislature to introduce a bill that would grant Michigan septic haulers a weight exemption during the spring weight restrictions.

## New Association Manager

Essie Consulting Group hired Kimberly Cunningham as the new manager of the Wisconsin Onsite Wastewater Recycling Association. Cunningham began her management career working for organizations such as the University of Wisconsin-Whitewater, Target Corp., and the Green Bay Packers.

## Advanced Certification Required

As of Feb. 4, Minnesota onsite professionals conducting design, inspection and service on Type IV or V systems and those with design flows greater than 2,500 gpd must have an advanced certificate. The Minnesota Pollution Control Agency will enforce the requirement. The two-part Advanced Design and Inspection course from the University of Minnesota Water Resources Center provides the proper certification.

## Taking Action

As members of a stakeholder's task group, Larry Stephens and Ron Lindsay of the Michigan Onsite Wastewater Recycling Association assisted the state Department of Environmental Quality with rewriting the 1994 Michigan Criteria for Subsurface Sewage Disposal, which provides guidelines for the design and approval of onsite systems above 1,000 gpd. The organization also formed a discussion forum in Yahoo. To subscribe, email MOWRA-subscribe@yahoogroups.com.

## Biggest Fine Yet

The Missouri State Attorney General's Office and the Missouri Department of Natural Resources filed a lawsuit against the owner of a bar for failure to renew an operating permit for its onsite system, unlawful discharge into state waters, failure to comply with discharge limitations, failure to submit annual sludge reports, and failure to submit discharge monitoring reports. The operating permit expired in 2007, but other violations date to 2004. The owner faces maximum fines of more than $97 million. A member of the state's Clean Water Commission said it would be unlikely for the state to fine the owner the full amount if he brings the system into compliance.

## CALENDAR OF EVENTS

**Jan. 30-Feb. 1**

Minnesota Onsite Wastewater Association Convention and Exhibitor Showcase, Sheraton South, Bloomington. 952/345-1145; mowacarla@aol.com.

**Feb. 6-9**

Onsite Wastewater Professionals of Illinois Annual Conference and Trade Show, Gateway Conference Center, Collinsville. Contact Steve Johnson at jswastewatersystems@mchsi.com.

**Feb. 8-9**

Utah Onsite Wastewater Association Conference, Northfront Business Resource Center, Davis Applied Technology College, Kaysville. Contact Judy Sims at judith.sims@usu.edu.

**Feb. 10**

Saskatchewan Onsite Wastewater Management Association Conference, Radisson Hotel and Conference Centre, Saskatoon. 877/489-7471; www.sowma.ca.

**Feb. 10-11**

Oregon Onsite Wastewater Association Conference, Seaside Civic and Convention Center, Seaside. 541/389-6692; www.o2wa.org.

**Feb. 21-22**

Texas Onsite Wastewater Association Conference, Waco Convention Center, Waco. Call Tim Taylor at 888/398-7188; www.txowa.org.

**Feb. 22-24**

Kentucky Onsite Wastewater Association Conference, Hyatt Regency, Louisville. 270/314-7110; www.kentuckyonsite.org.

**Feb. 27-March 1**

Pumper & Cleaner Environmental Expo International, Indianapolis, Ind. 800/933-2653; www.pumpershow.com.

**March 2-3**

Onsite Wastewater Management Association of British Columbia, Coast Capri Convention Centre, Kelowna. Call Lesley Desjardins at 877/489-7471 or lesleyd@shaw.ca.

**March 4-7**

Pennsylvania Association of Sewage Enforcement Officers Conference and Trade Show, Holiday Inn, Grantville. 717/761-8648; www.pa-seo.org.

**March 19-20**

Granite State Designers and Installers Association Spring Septic System Conference & Expo, Radisson Hotel and Conference Center of New Hampshire, Manchester. 603/228-1231; www.gsdia.org.

**March 29-30**

Alabama Onsite Wastewater Association Trade Show, Pelham Civic Complex, Pelham. Call Dave Roll at 334/396-3434 or visit www.aowainfo.org.

## TRAINING & EDUCATION

### Alabama

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

- March 7-9 – Advanced Installer I Class
- May 2-4 – Advanced Installer II Class
- May 23-25 – Basic Installer Class

The first day of classes is for installers and the second day is for pumpers and portable restroom operators. Call the training center at 205/652-3803 or visit www.aowatc.uwa.edu.

### Connecticut

The Connecticut Onsite Wastewater Recycling Association is holding its Installer School on Jan. 12, 19 and 26 and Feb. 2, 9 and 16 with a snow date of Feb. 23. The COWRA Pumper/Cleaner School is Feb. 16 with a snow date of Feb. 23. Classes are at Wesleyan University, Middletown. Call 860/267-1057 or visit www.cowra-online.org.

### Iowa

The Iowa Onsite Wastewater Association has these courses:

- March 16 – Operation and Maintenance Workshop, Coralville
- March 23-24 – CIOWTS Installation Overview and Test, Ainsworth
- April 27 – Operation and Maintenance Workshop, Emmetsburg

Contact Alice Vinsand at 515/225-1051, execdir@iowwa.com or visit www.iowwa.com.

### Minnesota

The University of Minnesota Water Resources Center has these classes:

- March 5-6 – General Continuing Education, Willmar
- March 7-9 – Advanced Design and Inspection of Onsite Systems, Part 1, St. Cloud
- March 14-16 – Maintaining Onsite Systems, Brainerd
- March 19-21 – Introduction to Onsite Systems, Farmington
- March 22-23 – Installing Onsite Systems, Farmington
- March 27-28 – Solutions for Difficult Sites, St. Cloud
- March 29-30 – Pumping/Maintainer Continuing Education, Brainerd
- April 2-4 – Introduction to Onsite Systems, Cloquet
- April 5-6 – Installing Onsite Systems, Cloquet
- April 11-13 – Basic Onsite System Designs, Brainerd
- April 18 – Design Continuing Education, Alexandria
- April 18-19 – Designer/Inspector Continuing Education Combo, Alexandria
- April 19 – Inspector Continuing Education, Alexandria
- April 24-27 – Advanced Design and Inspection of Onsite Systems, Part 2, St. Cloud
- April 30-May 2 – Maintaining Onsite Systems, Mankato
- April 30-May 4 – Maintainer/Service Provider Combo, Mankato

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

### New England

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

- April 12 – Bottomless Sand Filter Design and Installation
- April 19 – All About Series: Septic Tanks
- April 26 – Conventional Onsite Wastewater System Inspection
- April 26-27 – Conventional Onsite Wastewater System Inspection and Field Training
- May 3 – Functional Inspections
- May 10 – Innovative and Alternative Technologies
- May 17 – All About Series: Sand Media
- May 31 – Installing Advanced Onsite Treatment Systems
- May 31 – Innovative and Alternative Technology Field Training at Peckham Farm

Call 401/874-5950 or visit www.uri.edu/ce/wq. For soil courses, call Mark Stolt at 401/874-2915 or email mstolt@uri.edu.

### North Carolina

North Carolina State University has the following courses:

- March 13 – Basic Troubleshooting of Onsite System Malfunctions, Mills River
- March 14 – Advanced Troubleshooting of Onsite System Malfunctions, Mills River
- March 27 – Redoximorphic Features, Soil Wetness, and Water Table Relationships, Wilmington
- March 28 – Water Movement and Treatment Through Soils, Wilmington
- April 17 – Subsurface Wastewater System Operator Training School, Raleigh

Call Joni Tanner at 919/513-1678 or visit www.soil.ncsu.edu/training.

### Virginia

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

- March 20-21 – Wastewater Basics
- March 27-28 – Water Movement in Soils
- March 19-May 31 – Department of Professional and Occupational Regulation Test Review, Hybrid
- April 2-May 31 – Understanding the Septic Tank, Web based

Contact Lydia Shepherd at 434/292-3101 or lydia.shepherd@southside.edu or visit www.southside.edu.

### Washington

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 unless stated otherwise:

- March 7 – Troubleshooting and Repairs
- March 15 – Design of Subsurface Drip Systems, Bellingham
- March 28-29 – Exam Review for Designers
- April 4 – Maintenance Basics
- April 11 – Design of Subsurface Drip Systems
- April 18 – Pumper, Mount Vernon

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

### Wisconsin

The Department of Safety and Professional Services is offering a Plumbing and Private Onsite Wastewater Treatment System course March 6-8 at the Ramada Plaza Hotel in Green Bay. Visit http://dsps.wi.gov/sb/SB-DivContinuingEducation.html.

# ONSITE installer classifieds

Place your ad online at: www.onsiteinstaller.com

## 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)

## BUCKET MACHINES

Tired of welding a plate across your bucket teeth? You need to try a Hall's Grade Blade. On in 60 Seconds off in 5. No tools required. Call 1-319-470-3033 or go to www.gradeblade.com, IA. (I04)

## BUSINESSES WANTED

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

## DRAINFIELD RESTORATION

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)

## 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)

## JET VACS

**1988 Ford L8000 Vac:** Ford @ 210 hp, A/T, 81K miles, 6K hours, spring susp., spoke wheels, Vac-Con body, Cummins showing 1,292 hrs., s/n: V290T-0488186. .....$22,500
**715-546-2680 WI** BM

## 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)

## PUMPS -SUBMERSIBLE

Submersible and Progressive Cavity Pumps, replacement pump packages for Myers, Liberty, Delta, Environment-One, Goulds and others. Fiberglass pump stations. Simplex or duplex, residential, commercial, municipal. New pumps from 2 hp-100 hp. Factory pricing levels, not retail! We ship lower 48. American Pump Systems, 866-366-9545, Fax: 570-977-1207. (I03)

## SEPTIC TRUCKS

**2006 Sterling LT9500 Vac Truck:** Acert C-13, Fuller 8LL, lockers, 18/40 axles, 4x6 drive, air ride, 24K miles, 208" WB, 227" frame behind cab, 22.5 tires, engine brake, disc wheels, 2006 Presvac tank, s/n: APV-4000-0705-7052, 4,000 gal. tank, Masport pump.....$89,500
**715-546-2680 WI** BM

**1978 Mack Vac Truck:** Mack diesel, M/T, 10,500/19,040 axles, camelback susp., spoke wheels, 22.5 tires. .$24,500
**715-546-2680 WI** BM

**2003 Sterling L7500 Vac Truck:** Cat 3125 @ 315 hp, A/T, 55K miles, spring susp., 2003 Vac-Con V390LHAD, 3 compressor fans, 10' telescopic boom, HS drive, articulating hose reel, hi-dump debris tank..... $99,500
**715-546-2680 WI** BM

# POLYLOK™ Inc.

*Innovations in Precast, Drainage & Wastewater Products*

Zabel® A Division of Polylok Inc.

## Effluent Filters

800 GPD - 10,000 GPD

POLYLOK™ Inc. | BEST TECHNOLOGY

## STEP System

## Low Profile Filter Basin

## Odor Control

Solutions for venting & removing odor from septic systems.

6" Poly-Air™ Coming Soon!

**Poly-Air™**
Activated Carbon Vent Cover
6", 4", 3", 2" & 1.5"

15" & 30" Covers Coming Soon!

Activated Carbon Vented Covers
15", 18", 20", 24" & 30"

## Extend & Lok™

Before (Cast Iron Pipe)

After (4" Extend & Lok)

With PL-68 Filter & Tee

EASY AS 1 2 3

4" & 3"

## Alarms & Switches

## Pumps

Sump / Effluent / Air Pumps

## Pressure Filter & UV Disinfection Unit

## Covers & Grates

12", 15" & 30" Covers Coming Soon!

18" & 24" Heavy Duty Covers and Grates for corrugated / ribbed pipe.

## Hydroshields

360° equal distribution.

1", 1¼" & 1½"

New Size!

1", 1.5" & 2"

## Orifice Diffusers

- Fits securely onto either 3/4"-1" pipe or 1¼"-2" pipe.
- Can be installed facing up or down.
- 360° equal flow distribution with impeller.

## Septic Tank Risers & Covers

The only Riser on the market with factory installed gaskets.

Booth #200

# WE HAVE IT ALL!

**1.800.701.3946 / www.polylok.com**