

June

ON SITE

Installer™

Dewatering Sites
Page 10

Greening Machinery
Page 24

Effluent Filters
Page 20

2008

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

A photograph of a worker in a green shirt and high-visibility vest, wearing safety glasses and yellow gloves, working on a pipe. The worker is kneeling in a grassy area, possibly a construction site, and is focused on a task involving a pipe and some equipment. The background shows a line of trees and a green structure.

The Future Is Management

Septic Check builds a specialty in high-quality service

Page 16

contents

June 2008



16

COVER STORY

The Future Is Management

By Gil Longwell

ON THE COVER: Septic Check, based in Milaca, Minn., is building a business around advanced onsite systems and their maintenance. Here, team member Brian Koski back-flushes the aerobic treatment tank in a Multi-Flo treatment unit from Consolidated Treatment Systems Inc. (Photography by Paul Jackson)

6

Breaking Ground: Doing Good, Doing Well

Onsite professionals have a history of helping people in need of better sanitation. Is now a good time to step forward again?

By Ted J. Rulseh

10

Basic Training: In the Dry

Dewatering before tank installation is an essential step on sites where surface water or groundwater flows into the excavation.

By Jim Anderson, Ph.D., and David Gustafson, PE.

12

Industry News

14

Rules and Regs: New Mexico Eyes New Training Rules

By Scottie Dayton

20

Sentinels on Duty

Affordable effluent filters guard against solids carryover into drainfields, a common cause of premature septic system failure.

By Scottie Dayton

22

NOWRA Talks Nutrients

The 2008 annual technical conference features a symposium on nitrogen and discussions of how to deliver better service to affiliate groups.

By Gil Longwell

24

Machine Matters: Rewards of Recycling

Greener maintenance practices help contractors reduce their environmental footprint and make better use of non-renewable resources.

By Greg Northcutt

26

System Profile: Into Thin Air

An innovative non-discharging treatment system enables a New Mexico homeowner to remodel his fishing cabin on the Rio Pueblo River.

By Scottie Dayton

28

Product News

30

Association News

Coming Next Month: July 2008

Special Issue: Alarms, Controls and Monitoring Systems

- Profile: Graves and Son, Inc., Sunbury, Ohio
- System Profile: Geosynthetic aggregate pipe system in southwest Missouri
- Overheard Online: An aerobic solution for a failed system
- Basic Training: Using drain tile with high water tables

ONSITE installer

Published monthly by

COLE Publishing Inc.

1720 Maple Lake Dam Rd. • PO Box 220

Three Lakes, WI 54562

In U.S. or Canada call toll-free 800-257-7222

Elsewhere call 715-546-3346

www.onsiteinstaller.com

E-mail: info@onsiteinstaller.com • Fax: 715-546-3786

Office hours: 7:30 a.m.-5 p.m. Central Time, Mon.-Fri.

SUBSCRIPTION INFORMATION:

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 \$120 per year outside of the United States. To qualify visit www.onsiteinstaller.com/quality or call 800-257-7222.

CLASSIFIED ADVERTISING:

RATE: \$1 per word, per month. Minimum of 20 words or \$20. All classified advertising must be PAID IN ADVANCE. DEADLINE: Classifieds must be received by the 17th of the month for insertion in the next month's edition. PHONE-IN ADS ARE NOT ACCEPTED. Ads may be faxed only when charging to MasterCard, VISA or Discover. Please supply all credit card information with faxed ads. Be sure to include your phone number (with area code) in your ad. Make checks payable to COLE Publishing Inc. and mail with classified ad to the address above. CLASSIFIED ADVERTISING APPEARS IN ALL CIRCULATION REGIONS AND ON THE INTERNET. Not responsible for errors beyond first insertion.

DISPLAY ADVERTISING:

Call 800-994-7990, ask for Jeff, Jim, Kim or Winnie. Publisher reserves the right to reject advertising which in its opinion is misleading, unfair or incompatible with the character of the publication.

CIRCULATION:

Circulation averages 23,995 copies per month. This figure includes both U.S. and International distribution.

© Copyright 2008 COLE Publishing Inc.

No part may be reproduced without permission of the publisher.



PUMPER & CLEANER ENVIRONMENTAL EXPO INTERNATIONAL

www.pumpershow.com

Education Day: Feb. 25, 2009

Exhibits Open: Feb. 26-28, 2009

Kentucky Exposition Center
Louisville, Kentucky

2009

ADVERTISER **index**

June 2008

COMPANY	PAGE
A & M Bio-Filter LP	23
Alderon Industries, Inc.	15
 Alita Industries, Inc.	28
Almetek Industries, Inc.	3
Anchor Graphics	15
Aqua Test, Inc.	15
 Bio-Microbics Inc.	12
Bord na Mona	12
BrenLin Company, Inc./Seal-R Products	23
BS Design Corp.	23
 Clements Associates Inc.	11
Coon Manufacturing	25
 Eljen Corporation	31
Fergus Power Products	6
Hedstrom Plastics	4
 Hoot Systems, Inc.	7
Jet, Inc.	11
Orenco Systems, Inc.	13

COMPANY	PAGE
 Polylok, Inc.	32
Ring Industrial Group	19
Salcor, Inc.	29
 Septic Products Inc.	15
 Septic Services, Inc.	4
 Septronics Inc.	22
Shaddix Company (The)	3
Simple Solutions	23
 SJE Rhombus Controls	8
SludgeHammer Group Limited	4
Snyder Industries	5
 T&T Tools Inc.	19
 Tuf-Tite, Inc.	9
Water Cannon, Inc.	23
 Wieser Concrete Products Inc.	21
Xerxes Corp.	8

METAL SEPTIC TANK MARKERS A Great Way To Advertise And Grow Your Septic Service Business!



Adhesive or 6" PVC Ground Anchor Installation Available.

- 4" Disc - Aluminum or Stainless Steel 16 Ga.
- Deep 3D Embossed Copy for Permanent Legibility
- 10 to 30 Year Warranty
- Laser Engraved Custom Copy Insert

209



800-248-2080
www.almetek.com

908-850-9700
908-850-9618 Fax

Almetek Industries, Inc.
2 Joy Drive
Hackettstown, NJ 07840

The Shaddix Company

Don't Flip Past This Ad



Custom Built Hydraulic Set Beds

- Length
- Height
- Color

Septic Tank Forms built to your state's specifications.



VISIT OUR WEB SITE TO VIEW AVAILABLE TRUCK UNITS AND A LIST OF USED EQUIPMENT



For more information, contact Tommy Shaddix.
Phone: 256-338-4987
E-mail: tommy1850@adelphia.net
Web Site: www.theshaddixcompany.com

160

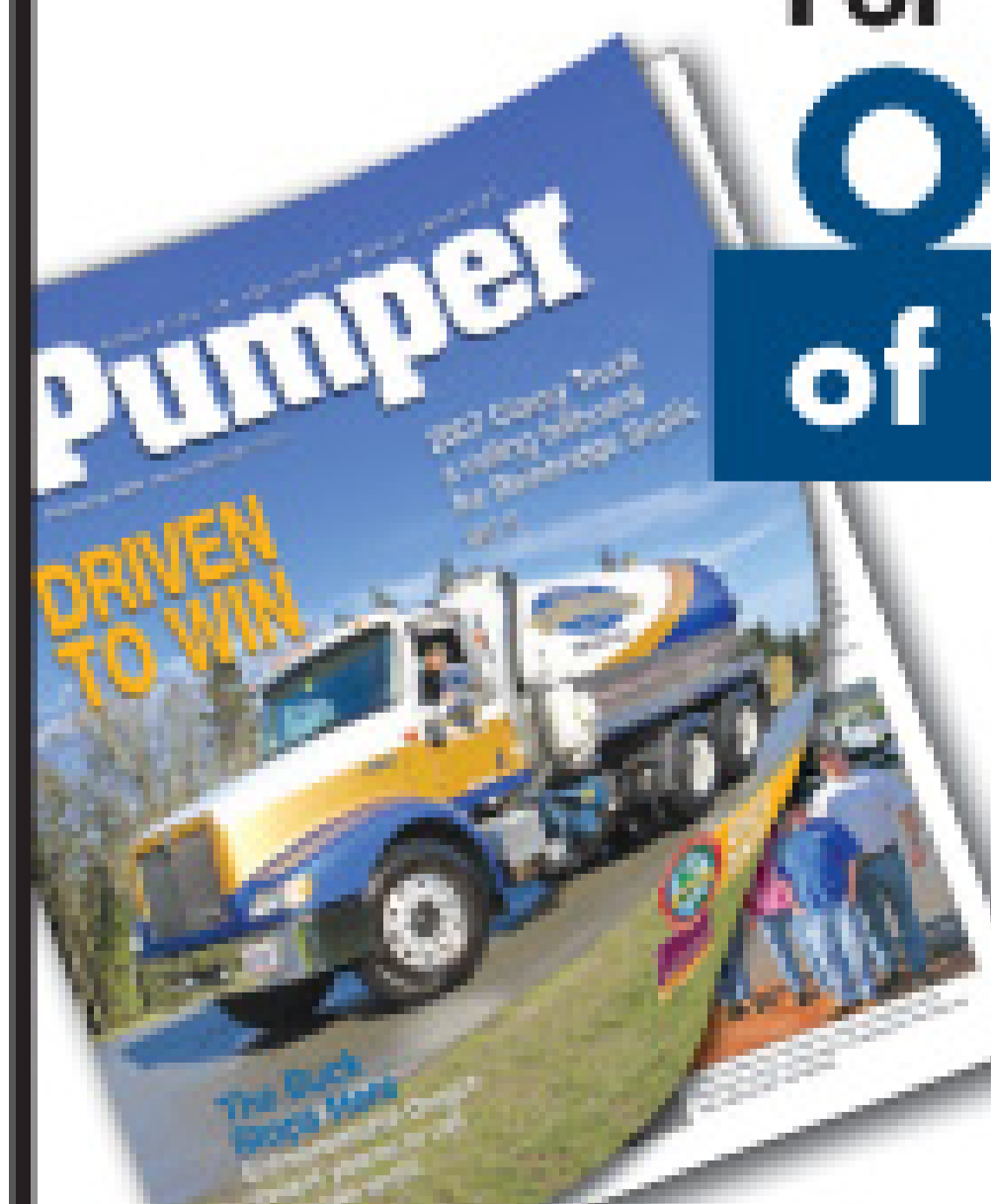
256-338-4987 • www.theshaddixcompany.com

ONSITE installer

Subscriptions are **FREE** to qualified industry professionals

To subscribe, return the attached Free Subscription card in this issue, visit onsiteinstaller.com, or call 800-257-7222

For the OTHER SIDE of Your Business



Does your business include services like septic tank pumping and maintenance? If so, then consider a subscription to **Pumper**® — the publication exclusively for septic business professionals. For nearly three decades, *Pumper* has been the definitive guide to the latest products, technologies and methods for the industry.

SUBSCRIBE TODAY. www.pumper.com or 800-257-7222



SludgeHammer®

nature called. we answered.



the results are clear

The latest advance in wastewater treatment

The second generation SludgeHammer® aerobic bacterial generator is here—tried, tested, and reengineered for commercial and industrial applications (and more power for residential use, too).

Our original ABG advanced bio-technology revolutionized the industry in 2000 providing a highly effective, all natural, non-toxic wastewater solution. For proven results, insist only on SludgeHammer® products!

- Retrofits into any system or tank
- Is working biologically in 12 hours
- The only IAPMO certified ABG
- New or old systems
- For environmentally sensitive areas



For info call 1 800 426 3349 or visit www.SludgeHammer.net

135

We've got your Septic Tank COVERED and Covered "RIGHT"

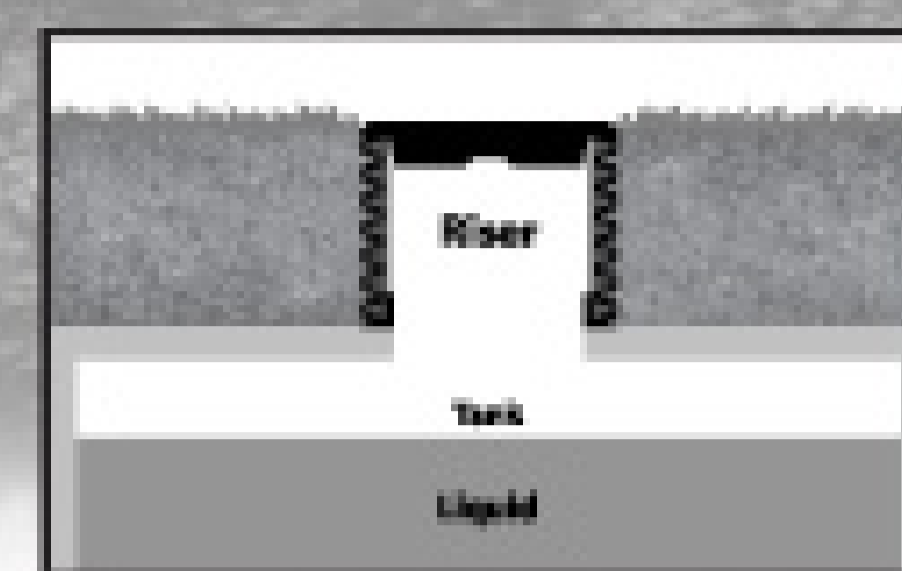


419-282-5559
CALL TODAY!



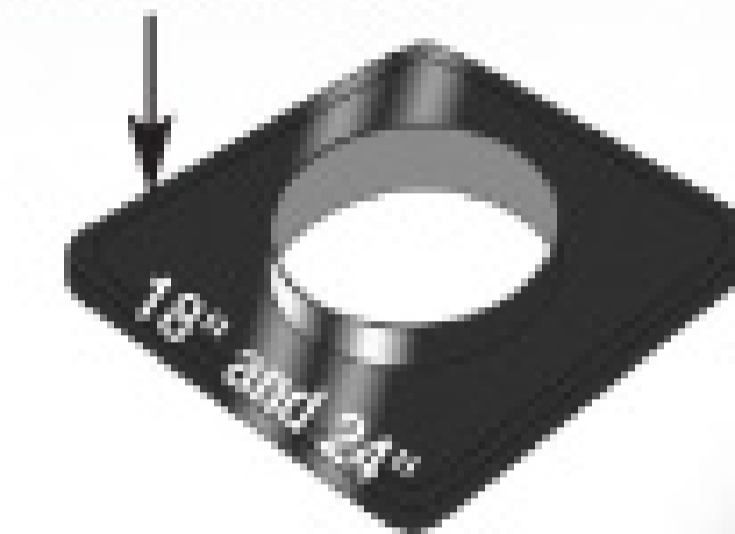
Now with Safety Screws

- Strong green heavy wall polyethylene yet lightweight
- Fits standard 18" & 24" double wall corrugated pipe
- Gaskets and safety hardware included with all covers
- Can be filled with sand on site for added weight
- Can be customized with your name embossed or stamped



Double wall pipe furnished by installer

Stop Infiltration with a New Tank Adapter



www.hedstromplastics.com



1401 Jacobson Avenue
Ashland, Ohio 44805

35

LIBERTY PUMPS



Omnivore LSG 200 Residential Grinder

We Carry a Full Line of **LIBERTY PUMPS** which come with a **2-year warranty**



280-Series Mid-Range Effluent Pump



MEDO Piston

LA-60B \$275
LA-80B \$300
LA-100B \$445



SECOH Diaphragm

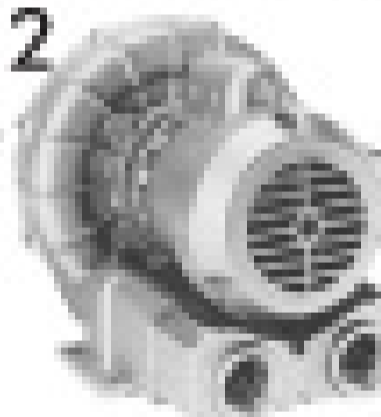
EL 60 \$255
EL 80 \$300



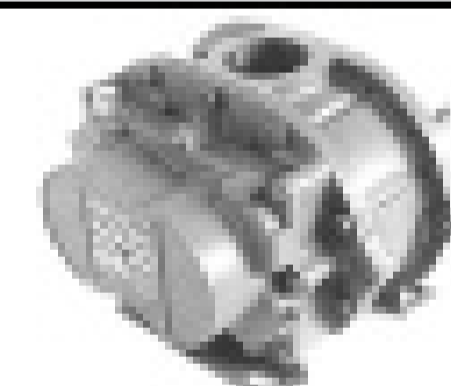
0523

Rotary Vane Compressor \$315

Regenair® **GAEST**
R3105-12 Blower \$425



Sutorbilt & Roots Blowers



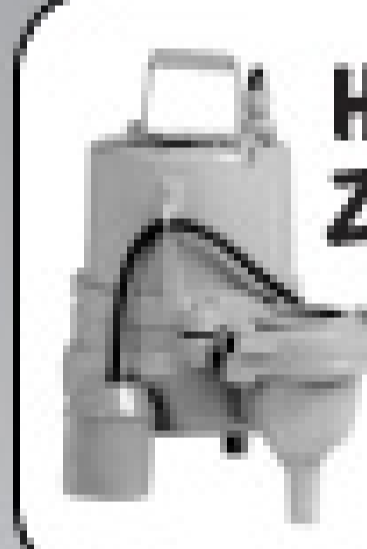
Heavy-Duty **MORO**
DC-STAINLESS Washdown Pump



MORO
Moro M3 176 cfm



Hydromatic, Zoeller, ABS, Liberty & Myers Pumps



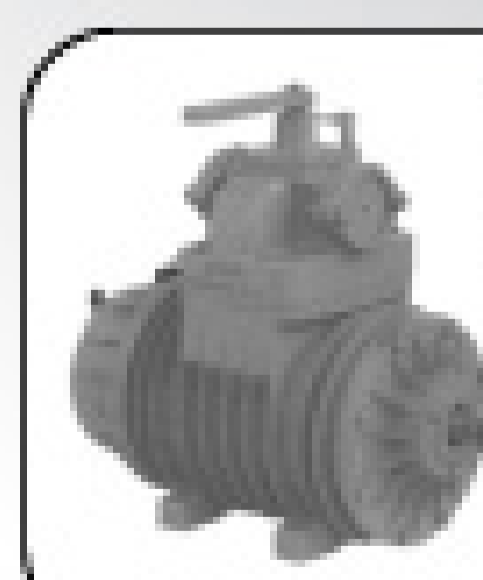
SDS **Comair**
From 70-180 cfm



MORO
Moro PM80 Turbo 350 cfm



MORO
Moro M-10 230 cfm



Moro Pumps: from 176 to 1642 cfm

Flagg-Air Model 340

\$325

- 3450 rpm
- 1/4 hp, 115V
- Enclosed motor
- Stainless steel shaft
- High impact plastic parts
- Operates quietly
- 2-yr. warranty
- Fits in place of most original manufacturers' units
- Replacement parts available



The Flagg-Air 340 does not carry the NSF seal. Check local and state regulations for approval in your area.



Septic Services, Inc.

toll free 1.800.536.5564 • 636.583.5564 • fax 636.583.6432
e-mail septic@fidnet.com • web www.septicserv.com



23

Snyder Industries offers the Broadest Range of Septic and Water Tanks on the Market - Making it easy to invest in the right tank, regardless of your application!



NUCONSEPT "PLUS"

Low Profile Septic Line



500, 750, 900, 1050, 1250, & 1500
Gallon Sizes.

Snyder offers a complete line of septic, cistern, and water tanks manufactured at multiple nation-wide plants capable of providing sufficient production capacity for even your largest jobs!



Celebrating 50 years of producing "engineered" plastic tank solutions.

602 Industrial Street • Marked Tree, Arkansas • 870-358-3400 • Fax: 870-358-3140

Corporate Offices: P.O. Box 4583 • Lincoln, Nebraska • 68504

Other manufacturing Locations: Lincoln, Nebraska • Philippi, West Virginia • Chowchilla, California • Mancelona, Michigan

www.snydernet.com

Feedback

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



Doing Good, Doing Well

Onsite professionals have a history of helping people in need of better sanitation. Is now a good time to step forward again?

By **Ted J. Rulseh**

It's an interesting thing about necessities: We don't appreciate them until we don't have them. Many of us therefore never appreciate them. We always have enough to eat, a roof over our heads, warm clothing, a reliable car.

And yet, in our wealthy nation, many people can't take the basics for granted. One of those basics is sanitation. There are whole communities in poorer rural areas where sanitary facilities — septic systems — are in deplorable shape. Isolated homeowners may have similar problems. Repairs are expensive, and the owners can't afford them.

That's where government programs and philanthropy come in. Helpful initiatives come in many shapes. Sometimes individuals step up. Mark Shepard, owner of Utilities Excavating Inc., Overland Park, Kan., and the subject of last month's *Onsite Installer* cover story, has been known to take things into his own hands — with help from his state association.

Close coordination

A landowner needed a new onsite system. Working with the Kansas Small Flows Association, Shepard coordinated donations of materials and labor for the installation. The owner is paying KSFA for the work in installations lower than he could have arranged with a bank. As if that wasn't enough of a win-win, Shepard invited area regulators to watch the installation, which included an advanced treatment unit.

Other initiatives involve non-profit agencies — often calling on volunteers for labor and donors for materials. One such agency is the North Carolina Rural Communities Assistance Project Inc. (NCRCAP), which recruits volunteers from all across the nation to install septic systems for low-income people in southern Appalachia.

Onsite Installer reported on NCRCAP in an article last year. In recent summers, technical assistance coordinator Rich Holder has worked with volunteers from a

church in Asheville to install free septic systems — usually by hand.

Going to camp

Other charitable projects reported on these pages include the Minnesota Onsite Wastewater Association's efforts last summer on behalf of the Singing Hills Girl Scout Camp, where volunteers installed six advanced treatment systems as part of the association's annual summer seminar.

their businesses healthy?

Well, perhaps so. On the other hand, what better time to invest some energy than when things are less busy than usual? Remember, too, that when the economy slows down, it's often people at the bottom of the income ladder who feel it first, and feel it most acutely.

What's more, as the projects just described demonstrate, charitable work can have tangible rewards for those who do it.

Remember that when the economy slows down, it's often people at the bottom of the income ladder who feel it first, and feel it most acutely.

Besides helping the Scouts, the event gave onsite professionals hands-on training and experience installing new technologies. Many manufacturers and material suppliers donated to the project.

In April 2006, the Iowa Onsite Wastewater Association worked with Habitat for Humanity on a project to install an onsite cluster system with an aerobic treatment unit and drip irrigation for four homes on a property in Waterloo. Sanitarians, contractors, service providers, and pumpers from around the state earned educational credits by helping out.

Time may be right

Why mention this here? And why now? Aren't times a little difficult in the industry with new housing construction in a slowdown? Don't installers have enough to worry about just trying to keep

Donating some of your time to the right project can mean a learning experience for yourself and your employees. Good publicity will probably go with the job.

The real reason to do it, of course, is to help someone in need. Whether or not a charitable project ever brings material benefits, at the end of the day you'll feel good about the work you did.

So, give it some thought. Consider pitching in on your own for a worthy project. Join a larger initiative someone else is organizing. Or pull together something bigger and more ambitious yourself. Involve your association, local builders, material suppliers, and anyone connected to the industry who is willing and able to lend a hand.

Remember the words of Winston Churchill: "We make a living by what we get, but we make a life by what we give." ■



"Duel Power Lid"

Plugs, Lids & Adaptor Rings

Sizes Available: **18", 24", 30" & 36"**



Fergus Power Products 190
Providing "Environmental Products"

The Company who maintains a pulse on the environment!

Toll Free **1-800-243-7584**
E-mail **fpproducts@prtcl.com**



HOOT SYSTEMS, LLC.

www.hootsystems.com



Certified to NSF/ANSI Standard 245



Certified to NSF/ANSI Standard 40



Onsite Monitoring Ready

Total Nitrogen Below 10 mg/L, No Matter the Influent Strength?

Now that the manufacturing community has begun to embrace On-Site Nitrogen Reduction, Hoot would like to educate you on what they have done.

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

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

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



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

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

WASTEWATER TECHNOLOGY

NSF/ANSI Standard 245 - Nitrogen Reduction Wastewater Treatment Systems

Final Report:

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



NSF International
793 N. Dixboro Road
PO Box 130340
Ann Arbor, Michigan 48111-0340 USA

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

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

The Hoot-ANR is just one of a series of three treatment systems by Hoot that perform <10 CBOD₅ & <10 TSS at the lab and in the field. Additionally, Hoot offers two Nitrogen Reduction Technol-

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

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

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

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

When the environment demands this level of treatment and performance, Think Hoot.

If you need this level of performance now, Hoot is looking for local precasters and installers to cover the country.

**Hoot Systems, Working Today ToTM
Protect Tomorrow's Environment.**

■ Serious About Watertight Tanks? ■

When it comes to wastewater tanks, watertight design is gaining a lot of attention. The benefits of installing a watertight tank are numerous, and, with changing regulations; it's often mandatory. So, if you're serious about watertight tanks, consider what Xerxes fiberglass wastewater tanks have to offer:

- ❑ **One-piece construction** - no field installation of components requiring seams/seals to complete the tank.
- ❑ **Factory manufactured** - no need to form and fabricate a tank in place with unpredictable weather conditions, field crews and completion dates.
- ❑ **Proven track record** - Xerxes tanks have been used for nearly three decades for storage of petroleum products where watertight is the only design standard that is acceptable.
- ❑ **Strong design** - standard tanks are designed for burial depth to 7 feet, water table to grade **AND** an H-20 load rating.



So, if watertight design and ease of installation is important, consider Xerxes fiberglass tanks for your next project. Prices are competitive, even with tanks offering far less.

www.xerxescorp.com • (952) 887-1890 phone • (952) 887-1882 fax

101

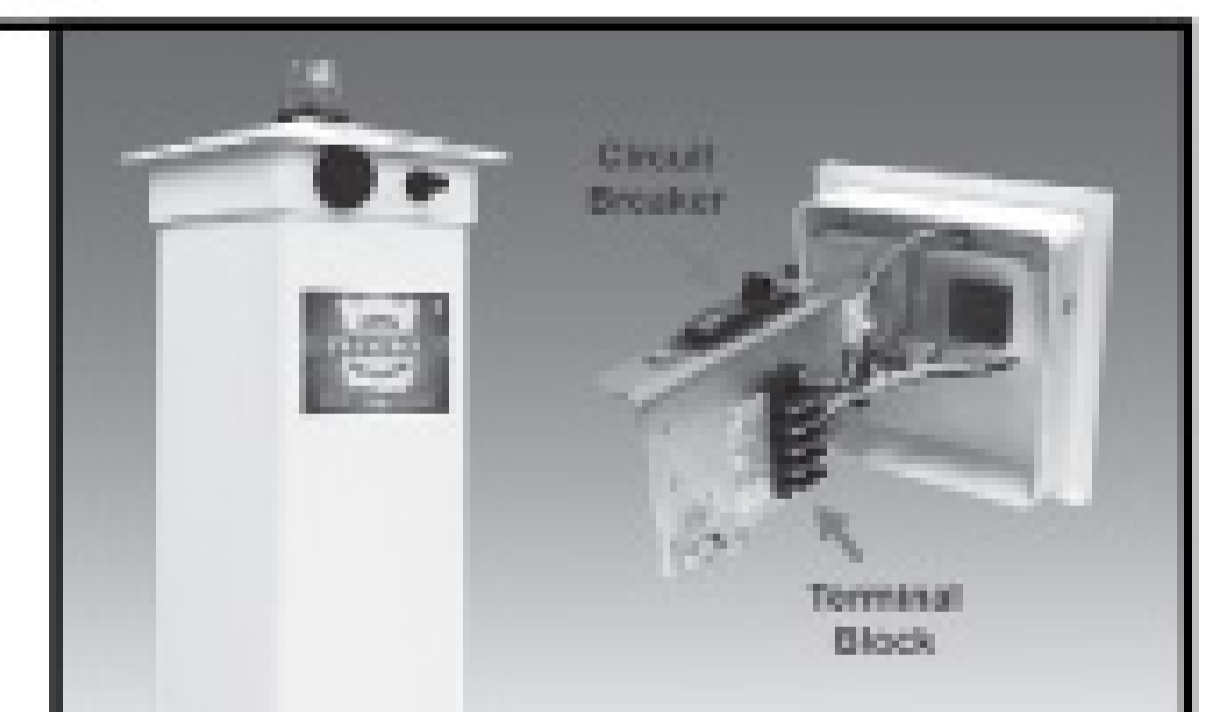
XERXES[®]
CORPORATION

Peace of Mind

With Reliable On-Site Controls from SJE-Rhombus

For over 30 years, SJE-Rhombus has provided contractors, like yourself, with **reliable, trouble-free controls** for even your toughest on-site jobs. With easy-to-install products, exceptional customer service support and a three-year limited warranty, SJE-Rhombus offers you **peace of mind** for on-site installations.

The **PS Patrol™** pedestal system features a **built-in** high water alarm and provides a convenient location to connect all wiring for pump station applications. Cords are routed through a **weather-proof** post for protection from the elements. **PS Patrol™** is now available with factory-installed circuit breaker/terminal block option. **CSA Certified.**



Installer Friendly Series™ control panels feature a **simple, easy-to-use touch pad** on the inner door for programming and monitoring pump and float operation. Simplex, duplex, demand, timed dose, capacitor start/run and drip irrigation models available! **UL/cUL Listed.**



SJE-Rhombus[®]

1-888-DIAI-SJE (1-888-342-5753) ■ www.sjerrhombus.com

41



New SJE-Rhombus
Introductory Product
Training CD-ROM!
Call for your FREE copy
or download it at
www.sjerrhombus.com
(high speed internet connection required)



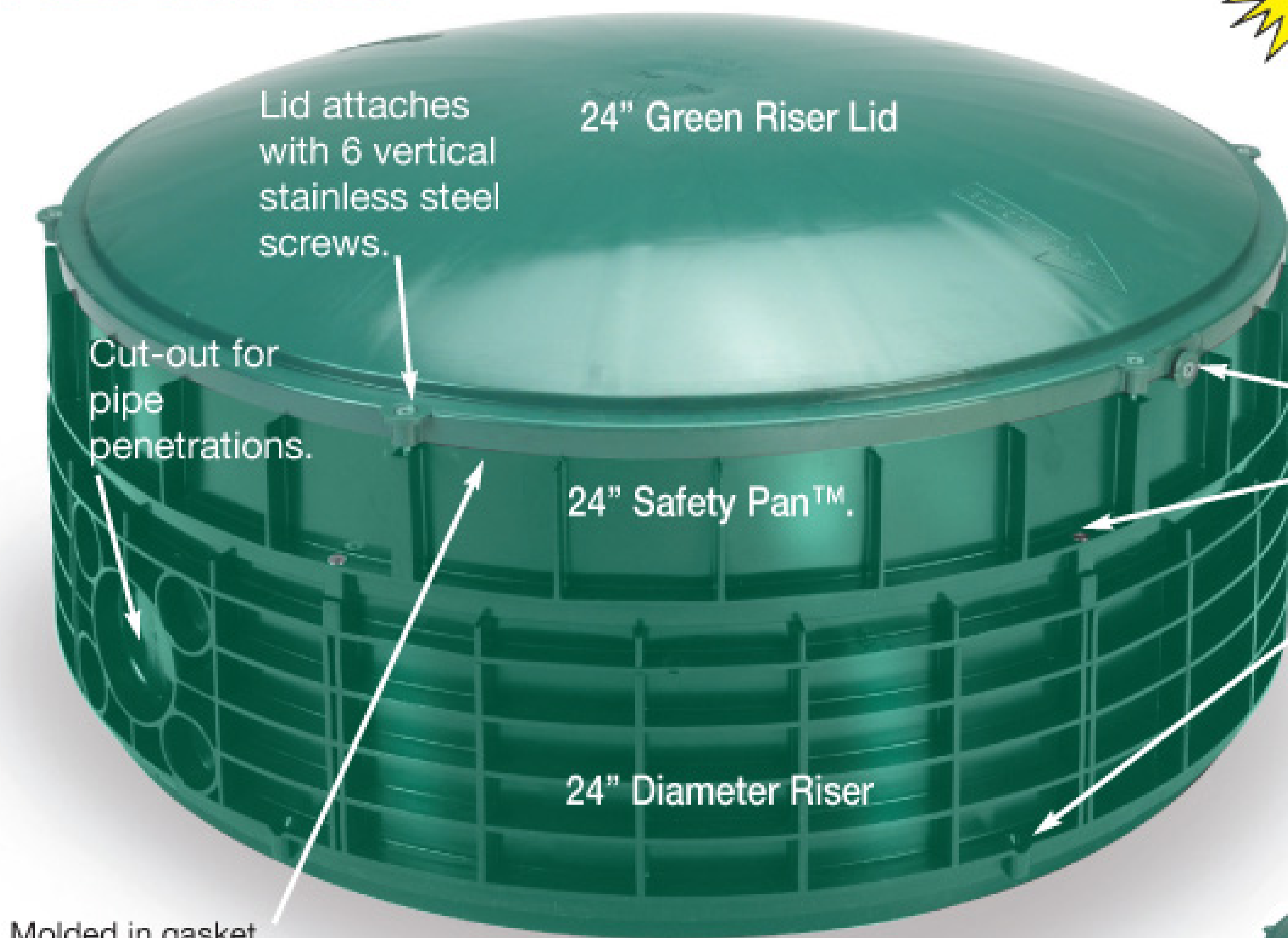


TUF-TITE®

For Samples & Pricing
Call: 800-382-7009

Septic Tank Riser, Lid & Safety Pan™

FREE FREIGHT ON FULL CARTONS!



Lid attaches with 6 vertical stainless steel screws.

24" Green Riser Lid

Cut-out for pipe penetrations.

24" Safety Pan™

24" Diameter Riser

Molded in gasket.

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



Tank Adapter Ring

New - Horizontal Safety Screw.

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

Riser to Riser attachment with 6 vertical stainless steel screws.

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

Riser Lid

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

Concrete Lid w/handle

Safety Pan™

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

Riser

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

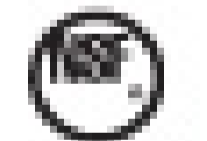
Tank Adapter Ring

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

Effluent Filters

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

800 GPD
ANSI/NSF
Standard 46

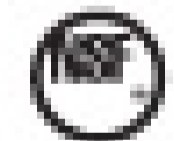


4" Sch. 40 &
SDR-35

EF-4
4" Filter



1500 GPD
ANSI/NSF
Standard 46



4" Sch. 40 &
SDR-35

244 ft. of
1/16" filtration
area.

EF-6
6" Filter

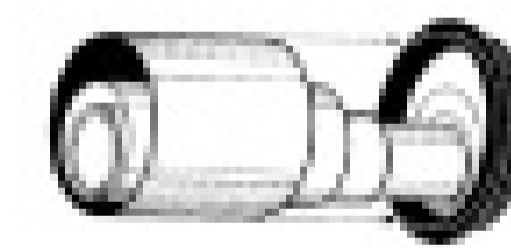
Gas/Solids
Deflector

One-Piece Tank Seal

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

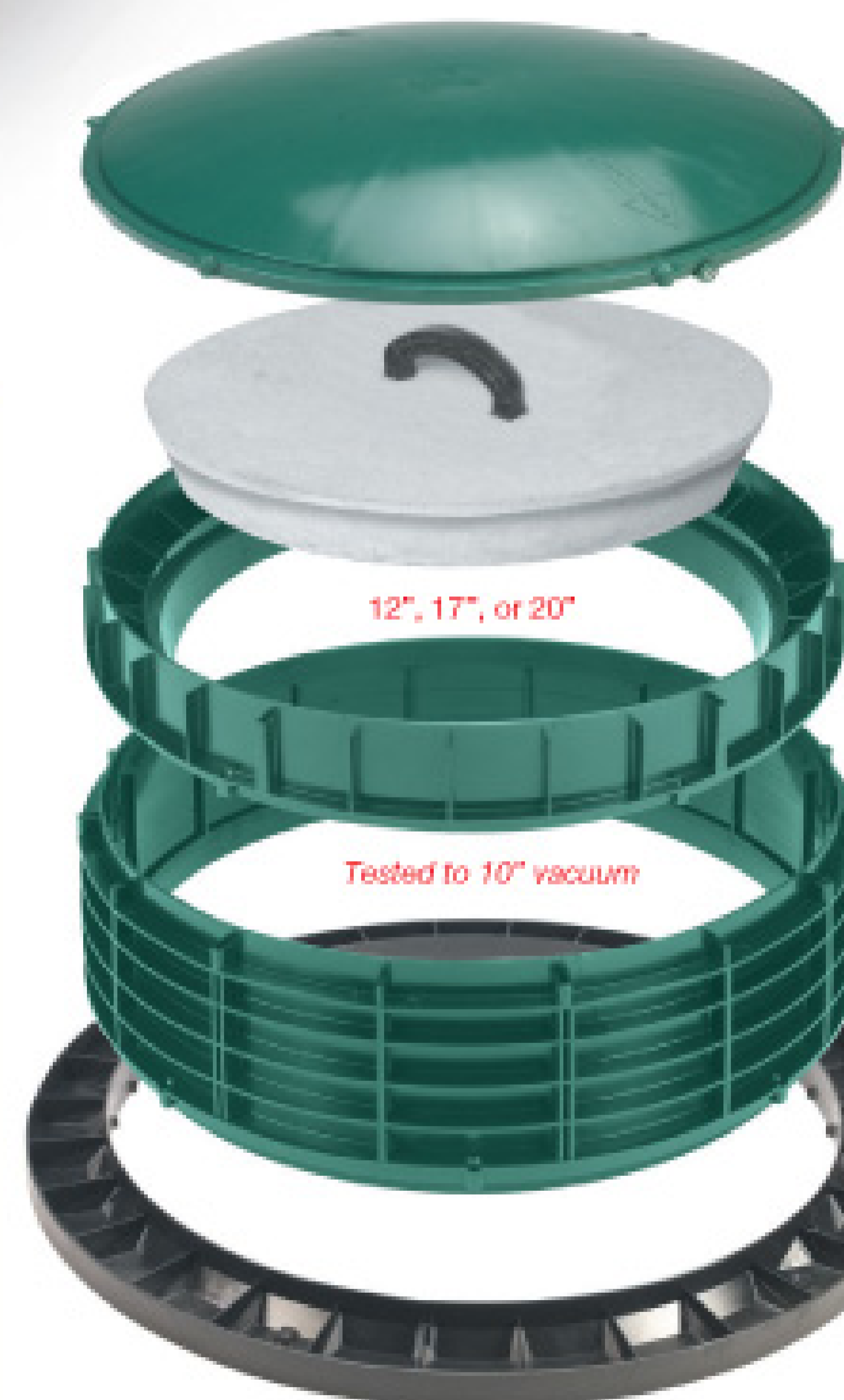


TS-4-RUBBER TANK SEAL
(will hold 10psi)
TS-4PRO TANK SEAL
(will hold 5" vacuum)



Free Freight: 32c

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



12", 17", or 20"

Tested to 10" vacuum



Jim Anderson and David Gustafson are with the University of Minnesota's widely recognized onsite wastewater treatment education program. Anderson is Director of the university's Water Resources Center and Gustafson is the university's Extension Onsite Sewage Treatment Educator. Readers are welcome to submit questions or article suggestions to them at ander045@umn.edu.

In the Dry

Dewatering before tank installation is an essential step on sites where surface water or groundwater flows into the excavation

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

The project design tells you the septic tanks need to be placed in a wet site. The excavation for the tank is almost finished when water starts to enter the hole through the side face.

This means it will be difficult to set the tank level and keep it stable without some additional work. You will have to bring in a solid coarse base to set the tank on and dewater the site. But what does it mean to dewater the excavation?

Dewatering is the removal of ground or surface water from a construction site to allow work to be done "in the dry," as opposed to under wet conditions. Water is usually removed using well points and power-driven pumps.

The way to do this depends on the site-specific conditions. The key to selecting the right method is to understand the different applications and to know where the water is coming from that is entering the excavation.

Wait and see

If the water is due to recent heavy rainfalls and is flowing in from surface soil layers, the first choice is to wait. It may be possible to just wait a day or two until the flow stops and water drains lower than the bottom of the excavation.

The design should have identified the elevation of seasonal or periodic saturated conditions in the soil, and if so, that will help you

decide if waiting is realistic. If you have taken a soils course or know the relationship between soil color and saturated soil conditions, you can make the decision at the site.

By carefully evaluating the soil colors, you can estimate how long the saturated conditions will last and how long it will take for the site to dry out. Of course, this means you need to have flexibility in scheduling, and you need to watch the weather. A good, soaking rain can move this plan from a good idea to a bad one. The good news is that you can move to one of the other choices.

Pump or well points

In general, the two other choices are to pump the excavation as water enters the hole, or to install well points off to the side of the excavation to physically lower the water table. The key to either of these choices is the soil texture and structure in the area. These characteristics will determine which method you should use to keep the water out of the excavation and allow proper tank installation.

When working in an area of sandy soils with high water tables, water movement through the soil can be quite rapid, and trying to keep ahead of the flow with a pump set next to the excavation can be difficult. In this case, well points can be more effective.

The design of the dewatering



An example of a dewatering manifold fed by small-diameter well points.



system will be based on the specifics of the site. Dewatering contractors are experts at this, and it is essential to use a contractor to design and conduct the dewatering effort.

Typically, the contractor will come to the site and evaluate the conditions, then design the dewatering system. The key is that this takes time. Proper planning and scheduling is critical to making it work.

If the soils have a finer texture, the groundwater flow will tend to be slower. By creating a drainage path for the water entering the excavation and placing a pump, you may be able to stay ahead of

the flow and keep the working surface dry. In many cases, it is desirable to provide the ability to dewater in the area of the tank for the long-term.

By placing pipe with rock surrounding, and connecting to the pump at the surface, you can allow for backfilling with the dewatering system still operating, and you can enable connection in the future if necessary. When using a drainage

material as the base material, this long-term sump design can help protect the integrity of the tank.

Watch the flow

You must watch the water you remove from the excavation to make sure it does not become a problem. Dumping the water on the neighbor's yard is not an option, and neither is dumping it into the ditch and creating erosion. Be very aware of where the excess water is going and what the potential impacts are, or you may get some very unwelcome visits from inspectors and neighbors.

Water leaving the excavation cannot be too dirty. It is necessary to apply minimum controls like filtering or barriers to meet sediment control requirements. A common method now is to filter the water removed from the excavation through a geotextile fabric bag. The requirements in your area may be stricter, so check before you create a problem for yourself.

Dewatering is the removal of ground or surface water from a construction site to allow work to be done "in the dry," as opposed to under wet conditions. Water is usually removed using well points and power-driven pumps.

The other consideration is where the water is coming from as it enters the excavation. If the groundwater is generally above the bottom of the excavation, it will be entering from all sides. This means you will have to use wells to keep the excavation dry.

Extra precautions

Remember that OSHA standards identify these excavations with water entering as Type C soils. If the water is entering at the bottom of the excavation, the entire depth is considered a Type C, and you must follow the required trench safety precautions. This means either using shoring boxes or sloping the sides of the excavation at

a ratio of 1.5 to 1. This becomes a very large excavation very quickly!

Water entering the excavation also means taking extra precautions

in installing the tanks. These include laying down a coarse drainable base, testing the tanks in place for watertightness, and using curbs and tie-downs or some other method to keep the tank from floating when it is emptied. These are all critical for the long-term performance of the system. ■



Sample Drainfields Quickly and Accurately!

Our lightweight & Portable JMC Backsaver Handle:

- Gathers soil samples down to 4 feet
- Allows quick visual inspection of soil mottling & particle size
- Reveals drainfield composition in minutes
- Eliminates guesswork & minimizes property disturbance
- Improves accuracy of septic system inspections
- SAVES YOU TIME!!

ORDER PRODUCTS ONLINE @ www.jmcsoil.com

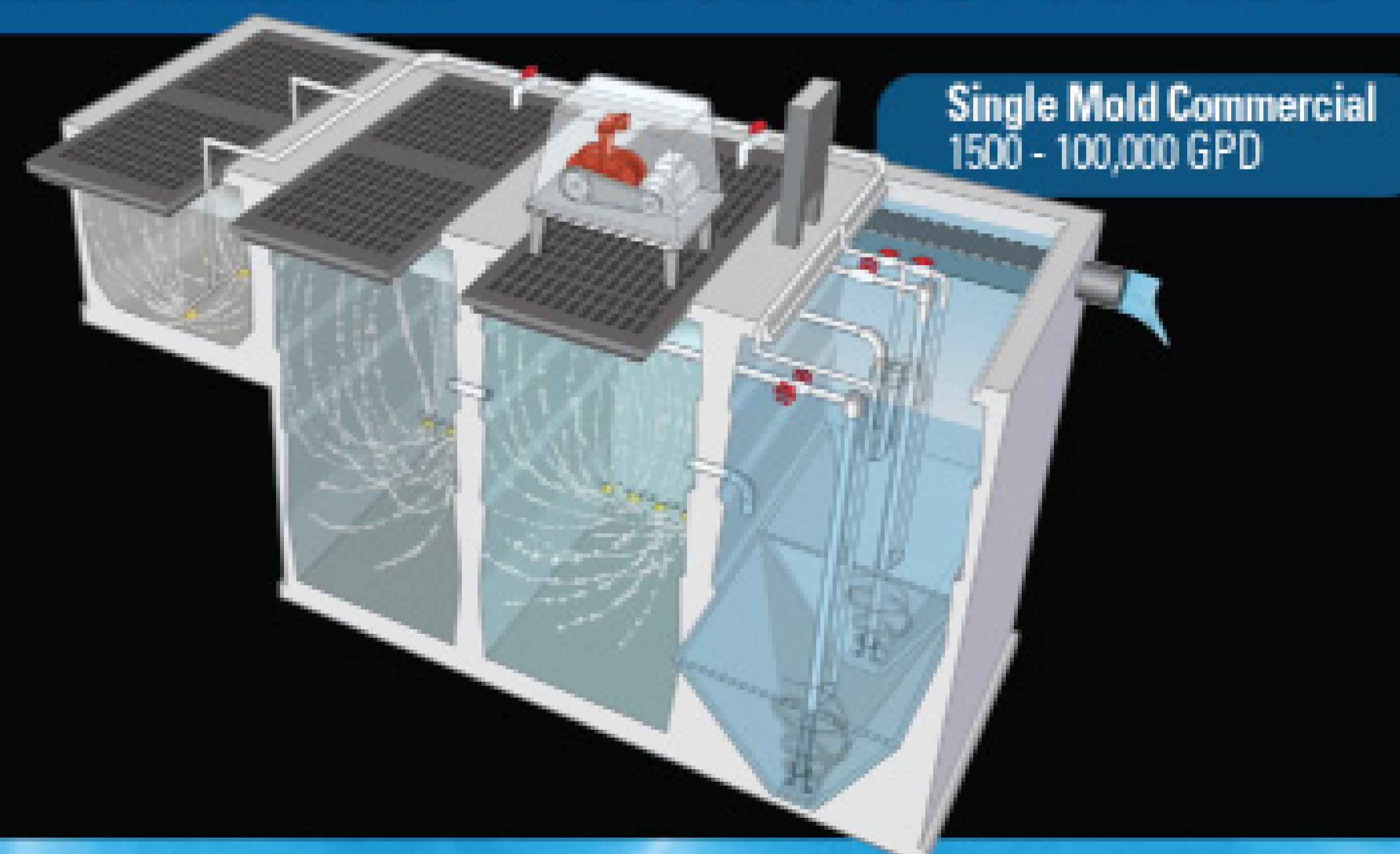
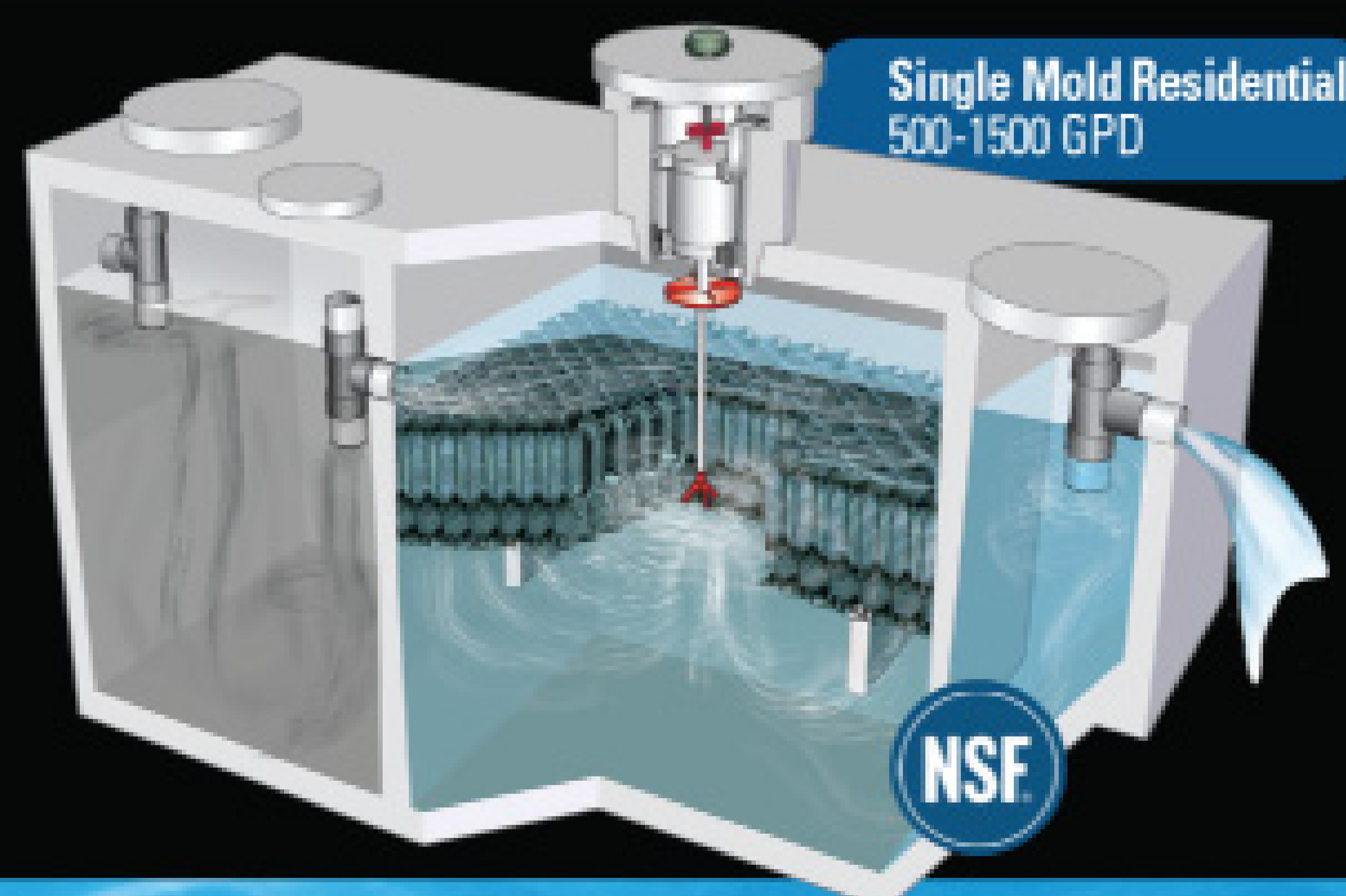
Clements Associates Inc. • 1992 Hunter Avenue • Newton, IA 50208
Phone: 641-792-8285 • Fax: 641-792-1361 • jmcsoil@jmcsoil.com



SIMPLY Better™

Pioneers in Advanced Wastewater Treatment since 1955.™

Better For Precasting • Better For Installation • Better For Service



1-800-321-6960

www.jetincorp.com

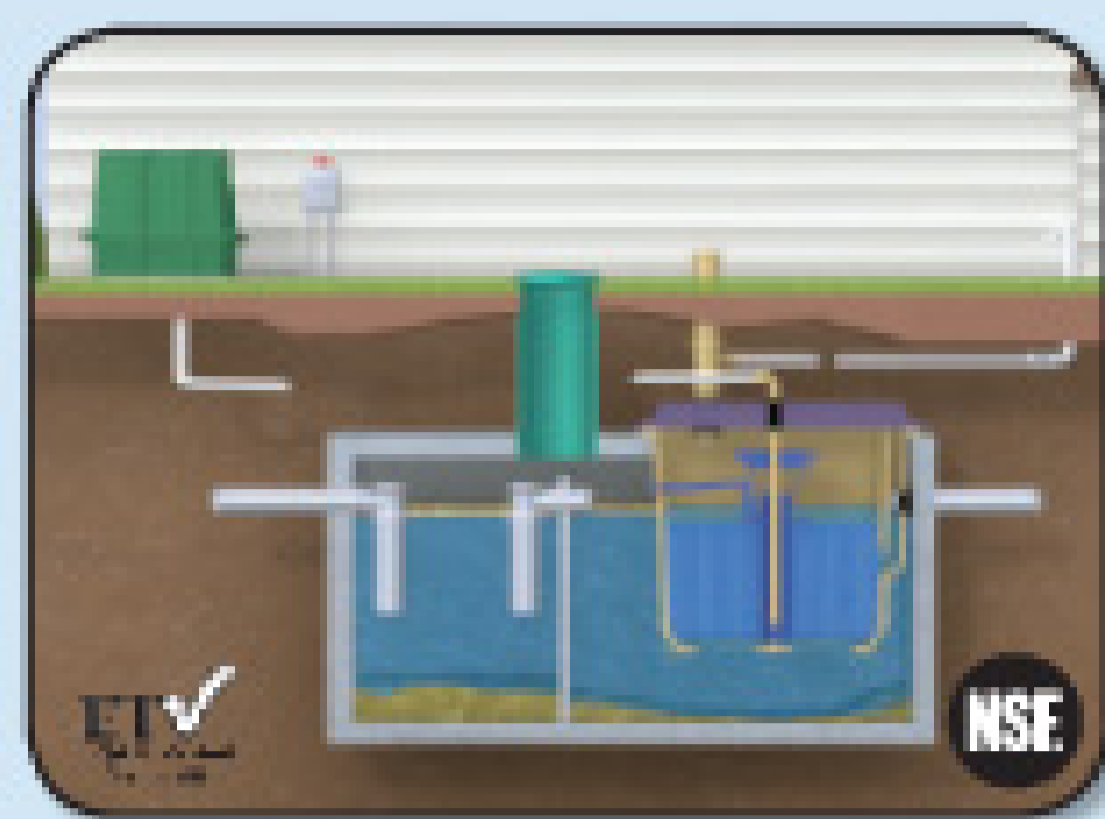
email@jetincorp.com

109

Innovative On-Site Wastewater Products *with the Installer in Mind*

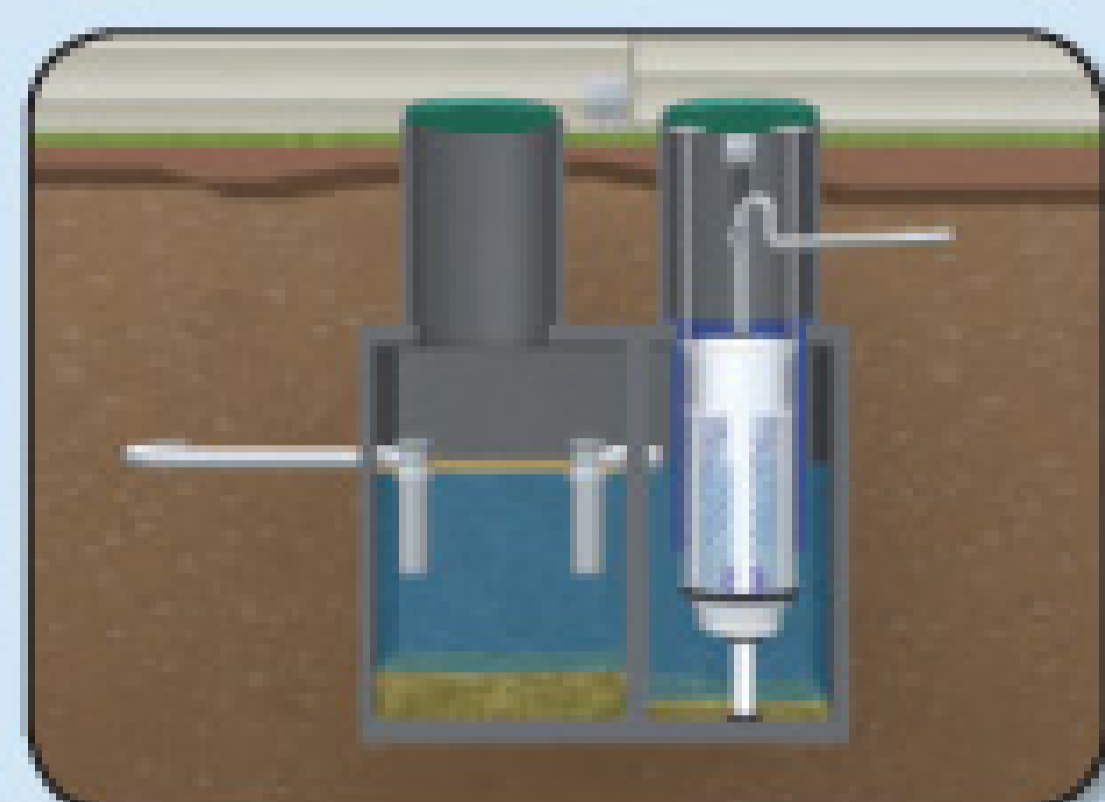
FAST® Wastewater Treatment Systems

Ideal for single-family homes, clustered subdivisions, high-strength commercial and renovation of failed septic systems.



BioSTEP® Screened Pumping Systems

An ideal, low-maintenance system for clustered subdivisions.



For more information on these and other Wastewater Treatment solutions, visit us at www.biomicrobics.com

Call Bio-Microbics at 800-753-3278 today for a FREE information packet



Better Water. Better World.



2008 © Bio-Microbics, Inc. All Rights Reserved.

NSF Developing Septic Tank Protocols, Standards

The NSF Wastewater Technology Joint Committee is developing language to address the design of access ports, a protocol that will establish field performance results for secondary treatment devices serving single-family homes, and is considering a new standard to address septic tank watertightness and structural integrity through an audit program that verifies the manufacturing process.

The committee also is developing a performance standard for reusing onsite effluent. In addition, the group has formed a task group to address certification of technical components and retrofit applications for advanced onsite treatment systems.

Individuals may participate in the Standards and Protocol development process by contacting Sarah Kozanecki at Kozanecki@nsf.org or visiting <http://standards.nsf.org/public/stds>.

Peat Joins Premier Tech Environment

Raymond L. Peat has been named commercial and community market development director for the Environmental Technologies Group at Premier Tech Environment. Peat served as president of the National Onsite Wastewater Recycling Association from 2004 to 2006 and has a degree in chemistry from Emporia State University in Kansas. ■

installer Online Discussion Forum
Subscribe at www.onsiteinstaller.com

PERFORMANCE WASTEWATER SOLUTIONS manufactured by

BORD NA MÓNA

ENVIRONMENTAL PRODUCTS U.S. INC.

INTRODUCING NEW PRODUCTS FOR COMMUNITY & COMMERCIAL APPLICATIONS

Puraflo

PEAT FIBRE BIOFILTER



- High quality effluent, guaranteed performance
- Minimal operating & maintenance costs
- Superior Solution for Difficult Soils, Shallow Water Tables, and Size Restrictive Sites
- Best solution for intermittent flows, including holiday homes
- Single house & community application

PuraMAX

MOVING BED BIOLOGICAL REACTOR



- Specifically designed for the community & commercial sectors
- More compact & lower energy requirements than conventional activated sludge systems
- Simple reliable operation
- Suitable for high strength effluents
- Design flows from 1,000 gpd

PuraM

MEMBRANE BIOREACTOR



- Specifically designed for the community & commercial sectors
- Compact footprint incorporating flat plate design
- Superior quality effluent
- Low operation & maintenance compared to other membrane systems
- Design flows from 5,000 gpd

P.O. Box 77457, GREENSBORO NC 27417 | TEL 1-800-PURAFLO | FAX 336.547.8559 | WEB: www.bnm-us.com



Think outside the riser!



Orenco's new NEMA 6P **External Splice Box** mounts outside the riser and is accessible from the surface. The External Splice Box makes it easier to install and maintain pump system wiring. And since it's outside the riser, it's out of the way of other pump system components.

Other benefits include ...

- At-grade installation, eliminating unsightly above-ground splice boxes
- Completely watertight, so ideal for wet conditions and high groundwater
- Bottom entry design, so easier to keep conduit below minimum burial depth
- Resistant to ultraviolet radiation

Contact your Orenco distributor or call **800-348-9843** for more information.



Orenco Systems®
Incorporated

*Changing the Way the
World Does Wastewater®*

800-348-9843
www.orenco.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.

New Mexico Eyes New Training Rules

By **Scottie Dayton**

The Training and Certification Program required by the Liquid Waste Disposal and Treatment Regulations becomes operational on July 1. Certification is required no later than July 1, 2009.

Those who must complete the training are homeowners installing their own onsite systems, installers with valid Construction Industries Division licenses or professional engineers conducting property transfer inspections, and Installer Specialists, a proposed, voluntary certification level for qualified installers. Installer Specialists would be pre-authorized to inspect the systems they install or modify.

The program also requires manufacturers of approved advanced treatment systems to provide training and certification for installers of their systems once per year. A training schedule is at www.nmenv.state.nm.us/fod/LiquidWaste/training.schedule.html.

Oklahoma

The Department of Environmental Quality is changing its procedures for obtaining or renewing individual licenses and certifications for onsite installers and soil profilers. In response to the state's new immigration law and Taxpayer and Citizen Protection Act, U.S. citizens older than 14 must provide a photo ID and birth certificate to DEQ to apply for or renew licenses and certifications.

Non-U.S. citizens must provide both and a signed and notarized Affidavit Regarding Citizenship. Additionally, DEQ is required to enter all non-U.S. citizens into the Department of Homeland Security's Systematic Alien Verification for Entitlements program to verify eli-

gibility for agency-issued licenses and certifications.

The state's Administrative Code and Register is now online. It offers easy access to a centralized database of Oklahoma's rules and executive orders, and a listing of adopted rules that become effective 10 days after publication in the Register. Go to www.sos.state.ok.us, then click the Office of Admin. Rules tab.

Wisconsin

A new law restricting county septic regulators from soil testing and the installation, design, maintenance, repair, and sale of onsite systems takes effect on Nov. 1. The Department of Commerce is drafting rules on how to enforce the law.

Proposed code changes redefine occasional occupancy as occupying a building served by an onsite system for less than 120 days per year. County regulators may establish an alternative maintenance program for these systems or owners may provide regulators with written notices of occasional occupancy and a management plan.

The Wisconsin Onsite Water Recycling Association is concerned that seasonal properties should be maintained to higher standards, due to sporadic use and shock loads during peak periods.

The department also intends to increase plan review and sanitary permit fees, and raise the management license from \$60 every four years to \$90, and the soil tester license fee from \$240 to \$300.

Ontario

The Ministry of Municipal Affairs and Housing (MMAH) proposed changes to the Building

Code that would introduce administrative requirements to support the maintenance or inspection of onsite systems, and regulate tertiary treatment disposal beds. The Ontario Association of Sewage Industry Services is writing a position paper on the proposed changes. Look for it at www.oasisontario.on.ca.

Pennsylvania

The Department of Environmental Protection (DEP) has proposed new onsite guidelines for land development, site suitability, and alternatives analysis. The document will require townships and municipalities to adopt ordinances to oversee operation and maintenance of onsite systems when subdivisions or land developments are proposed. The guidelines will apply to subdivisions that have been exempt from planning.

The Pennsylvania State Association of Township Supervisors (PSATS) and Pennsylvania Association of Sewage Enforcement Officers encouraged the DEP to not release the guidance document until its new regulations are revealed and their effect can be determined. The DEP has not yet published a draft of those regulations.

Opponents argue that the cost to municipalities, developers, landowners, and taxpayers could be high. Townships would have to inspect about one-third of their onsite systems yearly, besides keeping track of them and permitting all repairs. Townships that have not adopted a sewage management ordinance have the authority to do so under the current regulations. View the document and PASEO's comments at www.pa-seo.org.

Florida

A recent complaint investigation of alleged unlawful septic tank contracting revealed a misunderstanding centering on the licensing requirements for tank certifications and measuring tank volume.

According to Ed Barranco's article in the March newsletter of the Florida Onsite Wastewater Association, existing system and repair evaluations may be conducted by state-licensed engineers, Department of Health employees, registered and master septic tank contractors, and private certified environmental health professionals.

Only registered or master septic tank contractors or licensed plumbing contractors who also are DOH-permitted septage cleaning services can conduct and give tank certifications. The department's new language clarifies these requirements and is ready for incorporation into the next version of the Florida Statutes.

FOWA is supporting three bills before the legislature that would:

- Continue research on cost-effective methods to reduce nitrogen in springs.
- Direct the DOH to evaluate onsite nitrogen reduction systems and alternative nitrogen reduction media in drainfields.
- Require onsite systems installed before 1983 to be pumped and inspected every five years. ■

Pumper

THE LIQUID WASTE INDUSTRY'S
MUST-READ PUBLICATION SINCE 1979

Subscribe now at pumper.com
or 800-257-7222

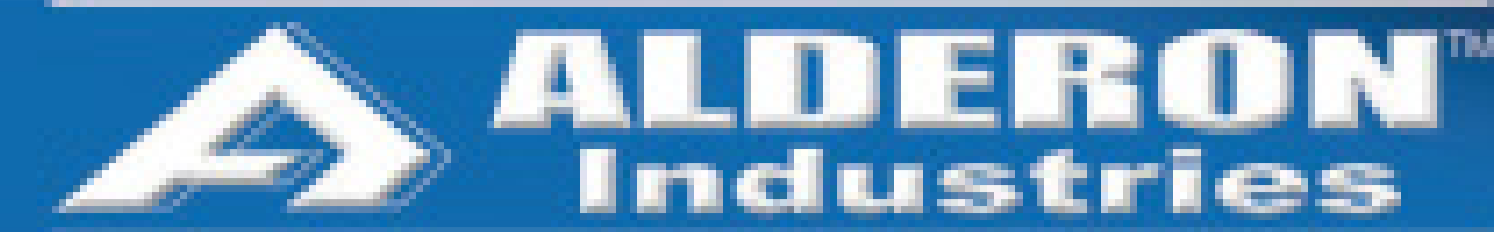


The most complete line of...
System Alarms
Float Switches
On-Site Accessories
Control Panels



Call Today
419-282-5933
www.septicproducts.com
sales@septicproducts.com

38



Leading Edge Control Products

NEW UNIVERSAL FILTER SWITCH
USE WITH ANY BRAND OF EFFLUENT FILTER

Features and Benefits

- #1. Universally attaches to any filter system.
- #2. Filter switch clamp is attached to the side of the filter or Tee.



- #3. Fits in a 1" hole.
- #4. Seats in a 1" PVC pipe or hole. Also inserts into a 1.25" or larger PVC pipe.



Works on high or low voltage from 12vac/dc to 240ac, 50 VA
 To learn more about Alderon's Universal Filter Switch, or for information about new local codes, please call or E-mail greg@alderonind.com

Alderon Industries - www.alderonind.com - 218-483-3034

222

LABELS & DECALS

We Specialize in Waste Management Labeling Solutions

- Service Records
- Logo Signs
- Lock out Tags
- Gender Signs
- NRC Records
- Service Call Forms
- Warning Decals

All Printing & Signs Can be Customized at No Additional Charge



Tele: 972-422-4300
 1-800-875-7859
 Fax: 972-422-4311
www.anchorgraphics.com

244

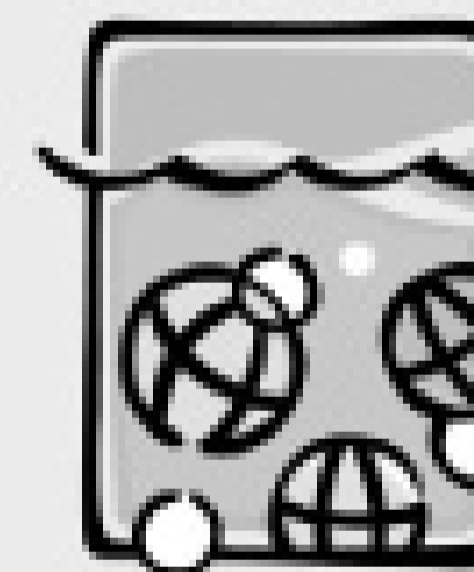
One Complete Package

- promonthly.com
- cleaner.com
- pumper.com
- mswmag.com
- onsiteinstaller.com
- pumpershow.com
- pumpertrader.com
- septicyellowpages.com
- eq-mag.com
- sewerpages.com

Cole Publishing
1.800.257.7222
715.546.3346

It's time
 for our industry to realize
 that all waste is not created equal!

The NIBBLER®



Aqua Test's Rules:

- Never repair a system unless you know why it failed
- Never design or approve a system that doesn't address mass load, peak flow, and recovery features

Aqua Test has a full line of NIBBLER® CBP & SBP products to address waste strengths from residential to commercial.



AQUATEST
 For more information: 1.800.221.3159

28

The Septic Check team (from left) includes co-owners Shelley and Eric Larson, Kevin Newgard, part-owner Brian Koski, and Jared DeBoer. (Photography by Paul Jackson)

The Future Is Management

Septic Check serves customers across Minnesota with specialties in challenging sites and high-quality service for advanced systems

By Gil Longwell

Septic Check Inc., Milaca, Minn.

OWNERS: Eric Larson, Shelley Larson, Brian Koski

YEARS IN BUSINESS: 12

EMPLOYEES: 4

MARKET AREA: 250-mile radius

BUSINESS MIX: 45 percent management, 25 percent design, 20 percent installation and repair, 10 percent inspections

SPECIALTY: Challenging site conditions

AFFILIATIONS: NOWRA, Minnesota Onsite Wastewater Association, Consortium of Institutes for Decentralized Wastewater Treatment

WEB SITE:
www.septic-check.com

Eric Larson is perfectly able to design and install onsite treatment systems. He still does that work, but it's not where he sees his business growing.

"We are building ourselves into our future," says Larson, co-owner of Septic Check Inc. in Milaca, Minn. "We recognize the greater revenue that installations generate, and we are grateful for it, but our company's future is in system management. We are building that future with every system we or others install."

From Milaca, in central Minnesota, the entire state is within a three-to-four-hour drive of Septic Check's headquarters. "This location lets us install and service systems in a 250-mile radius," says Larson, who with co-owners Shelley Larson (his wife) and Brian Koski are three of the four full-time employees. In the business since 1995, Eric and Shelley founded Septic Check in 2004.

"We specialize in difficult sites and systems with high-strength waste," Larson says. Those include small lots with failing systems, small lots never tested with modern site evaluation methods, failed drainfields that were themselves replacements for failed absorption areas, sites with limited soil depth or high seasonal water tables, and just plain tiny lots.

And then there are even bigger challenges. "In rural Minnesota, we encounter group camps and restaurants that generate atypical waste streams, far stronger than those from single-family dwellings," Larson says. "High-strength waste brings a different set of challenges to the receiving systems."

Top-down approach

In the early days of the business, Larson focused on repairs and inspections. He soon learned about

"One day we visited four systems. Each had problems and for each a repair strategy had been proposed. In every case, we felt the proposed action did not properly address the problem."

— Eric Larson

soil fracturing. Uncertain whether it was appropriate, he investigated and found that it was legitimate and often helpful. The company started offering the service and performing minor repairs, such as fixing or replacing access covers and risers, or adding them where none existed. That made up most of the service menu.

That changed as Larson took a personal interest in onsite treatment quality. "One day we visited four systems," he recalls.

"Each had problems, and for each a repair strategy had been proposed. In every case, we felt the proposed action did not properly address the problem. I was troubled when I spoke to landowners who had exhausted two or three absorption areas, and the best 'solution' they were offered was a new one like the old one."

That led the company into system design, which in turn led to discovery of various advanced treatment devices and systems. Once the company was designing systems, it was natural to add system installation and maintenance as lines of business.

A broader menu

Septic Check is authorized to install and maintain a wide range of treatment devices, including AdvanTex trickling filters manufactured by Orenco, FAST units from Bio-Microbics Inc., Puraflo peat media filters from Bord na Mona, Multi-Flo and Nayadic advanced treatment units from Consolidated Treatment Systems, and several different UV disinfection devices.

Working across a state as big as Minnesota, "The soils we encounter vary greatly, and there is no shortage of those challenging sites," says Larson. The variety of systems in Septic Check's tool box enables installations on small sites and on sites with shallower soils, whether predominately clay, glacial till, or sandy loam. Advanced technology brings long-term success to the system and the property owner, and long-term relationships with property owners are where this company sees its future.

At the same time, impervious, watertight tanks are an essential component, especially on sites where the tank may be placed in an area with high seasonal groundwater.

The company uses some plastic and fiberglass tanks and chooses concrete tanks made by successful manufacturers with track records for quality. "Watertight tanks have eliminated a common source of system distress — surface and subsurface water that enters the tankage and overloads the system," Larson says.

Growth brings change

In past years, the company has



Workers prepare to install a sewer line that will link the cabins at Rutger's Bay Lake Lodge near Deerwood, Minn., transporting waste under a road and golf course to a drainfield nearly a half-mile away. Septic Check began work on the project last year.

designed as many as 150 systems in-house. Last year, that number dropped to about 50. From time to time, and to meet demand, Septic Check subcontracts design work. That allows the staff to focus on work that generates more dollars or is closer to the company's march toward a focus on management services. System inspection is also in decline, by design (it now accounts for only 10 percent of revenue).

"As our management segment grows, installation work will decline as well," says Larson. But, that decline will not lead to a yard sale of excavation equipment. "We have a conservative approach to capital investments," he says. "We buy only the equipment we can keep busy on a regular basis.

When we need specialty or large machines, we rent them or subcontract that portion of the job. Controlling overhead frees resources and lessens pressure to take on less-profitable jobs simply to keep a machine busy.

The owners have taken a similar approach to a vacuum truck. "One of us is a properly credentialed vacuum truck operator, but we do not own a vacuum truck," Larson notes. "Because of the language in our state's regulations, we need this license to cover some of the work we do." The company subcontracts pumping service.

The modest roster of company-owned equipment includes a 2005 Chevy Silverado HD 2500 pickup, a 1997 Chevy 3500 service truck, a

Brian Koski performs a microscopic analysis of effluent.



Named By a Friend

Ken Olson has a long history and good reputation in the Minnesota onsite community. Working for the Extension Service at the University of Minnesota, he has been a great educator for this industry and all the various publics that it serves. "Over the years, I've had many long, valuable informal conversations with Ken," says Eric Larson, co-owner of Septic Check Inc.

About the time Larson and his co-owners were setting up their "enterprise, Olson suggested Septic Check as the name. He pointed out his continual message to homeowners: "Get your septic system checked-up."

The founders felt the name Septic Check was forward-looking and it captured the essence of a quintessential service provider. "We chose Septic Check because this is the message we want our business name to convey," says Larson.

1994 Ford dump truck, a 277 Cat multi-terrain loader, Kobelco SK60-III and 135 excavators, a 16-foot trailer, and a 26-foot flatbed trailer.

While managing machinery is not a heavy load, managing human resources is a top priority. Here, too, the goal is to use in-house talent to the fullest. In addition to the three owners, Jerod DeBoer works full-

time as a general laborer, and is being groomed to become a designer and a maintenance technician. As needed, the company calls on four part-time employees for casual labor.

Shelley Larson's roles are diverse. As office manager, she has multiple daily customer, employee, subcontractor and vendor contacts. Perhaps most important, yet least formal, is her role in processing and sharing the knowledge she gains with her team.

Qualifying customers

The greatest opportunity for Septic Check in managing systems lies in caring for those installed by others. Many installers prefer not to provide management services. In Larson's eyes, not every system owner is a suitable management services customer. "We use a checklist to screen potential customers," he says.

Septic Check wants customers who will participate in management. "Our best customer is an informed, knowledgeable individual who wants to keep his system in good working order," Larson observes. He calls systems that use advanced technologies "performance systems."

A typical Septic Check customer could have spent less on a system but chose to spend more to gain a specific advantage: cleaner effluent, longer life, a commitment to green living, or a need to make an under-sized or shallow-soil site suitable. Regardless of the reason, the owner shares Septic Check's commitment to the system's success.

The company does more than its share to educate homeowners, buyers, lakeshore associations and anyone who will listen. "Word-of-mouth marketing is the company's greatest promotional tool," Larson believes. Of course, the company's billboard does its part to get the word out.

Focusing on details

Co-owner Koski, a licensed treatment plant operator, is a key player in the day-to-day operation, monitoring maintenance and management of the advanced treatment units Septic Check is contracted to service. "It is not unusual to see Brian looking through a microscope



Kevin Newgard uses a remote control to maneuver a portable earth mover/soil compactor during installation of a sewer line at Ruttger's Bay Lake Lodge.



From left, Brian Koski, Kevin Newgard and Jared DeBoer replace the filter socks in a Multiflo aerobic treatment unit from Consolidated Treatment Systems Inc. Septic Check has a laundry that it uses to wash and reuse the socks, which are replaced about every five years.

on a jobsite," chuckles Larson. He uses the microscope to check the health of bacteria that should be thriving in the treatment units.

When Koski sees problems, he asks, "Why?" Here, too, homeown-

ers are essential, both as detectives helping identify changes in system use and as an implementer of solutions. "When we tell them, some customers are shocked to learn that the residuals from their antidepres-

"We have a conservative approach to capital investments. We buy only the equipment we can keep busy on a regular basis. When we need specialty or large machines, we rent them or subcontract that portion of the job."

— Eric Larson

sant medications have a stimulating effect on the bacteria in their onsite system," Koski notes.

While helping customers operate their systems effectively, Larson also works on behalf of the onsite industry. He is active in the Minnesota Onsite Wastewater Association (MOWA) and other local, state and national groups. He recently testified on Minnesota regulatory proposals put forward by the Minnesota Pollution Control Agency.

Larson is part of a committee that creates Need to Know (N2K) knowledge banks, which become the basis for designing licensing tests. The N2K resource also becomes the foundation for training offered by MOWA and the University of Minnesota.

On the national level, Larson is a contractor-reviewer for the Consortium of Institutes for Decentralized Wastewater Treatment. Whether on a jobsite, in a classroom, testifying at a government meeting or speaking to property managers or homeowners, Larson is committed to higher standards. He sees higher standards for the industry, for himself and for his business as the key to growth and prosperity.

He sums it up nicely: "We are all about value." ■

MORE INFO:

18 Bio-Microbics Inc.
800/753-3278
www.biomicrobics.com

64 Bord na Mona
336/547-9338
www.BNM-US.com

12 Consolidated Treatment Systems Inc.
937/746-2727
www.consolidatedtreatment.com

5 Orenco Systems Inc.
800/348-9843
www.orenco.com

FLEXIBILITY

Install with Confidence. Install Blue.



Whether you're an installer or a Regulator, **EZflow** is a name you can trust. **EZflow** is engineered to make your job and your life easier. So it's no wonder we have established a benchmark of performance, ease of installation, and value in the drainfield industry. **Flexibility. EZ does it.** For more information about **EZflow** drainage systems, call 800-649-0253 or go to RingIndustrial.com.

22

T&T TOOLS

T&T TOOLS, Inc.

FAX: 800.521.3260 | EMAIL: sales@TandTtools.com

800.521.6893

www.TandTtools.com

CALL FOR A FREE CATALOG!

CALL FOR A FREE CATALOG!

PROBES...

Insulated, standard, and specialty soil probes. Special 3/8" metal alloy shafts. Threaded and hardened tips.

HOOKS...

Specially designed Top Poppers make opening manhole covers a cinch. Try the Handy Hook for opening septic tank covers.

24

Sentinels on Duty

Affordable effluent filters guard against solids carryover into drainfields, a common cause of premature septic system failure

By **Scottie Dayton**

Installed at the outlets of septic tanks, effluent filters provide an economical way to trap suspended solids or particles reintroduced from scum or sludge layers before they discharge to drainfields. Clogged filters cause poor performance of the septic tank, but they create a problem far easier and less expensive to solve than restoring or replacing a soil absorption system.

"A clogged filter is a good thing," says Peter Gavin, president of Polylok Inc. in Wallingford, Conn. "Homeowners are protecting the most expensive portion of their on-site systems. What ultimately makes leachfields fail is solids plugging the pores of the soil, preventing water from percolating down. Toilets gurgling and sinks draining more slowly are passive warnings to homeowners that their septic tanks need servicing."

When designing his company's first effluent filter, Ted Meyers, president of Tuf-Tite Inc. in Lake Zurich, Ill., aimed to keep people interested in their septic tanks. "The original purpose of effluent filters was to trap large, inorganic objects such as cigarette butts, prophylactics, and feminine hygiene products, as it's difficult to remove them once they enter the drainfield," he says.

Over the years, filters have morphed to trapping smaller solids and hair and lint particles bigger than 1/16 inch. "Some people want to make openings smaller than that, but they will clog faster in normal septic tanks," Meyers observes.

Matt Byers, on-site wastewater

manager for Zoeller Pump Co. in Louisville, Ky., believes filters are great because they protect pumping systems and signal potential homeowner abuse. "If a 4-inch filter plugs up in less than three months, something is going on at that house," he says.

Design basics

In an effluent filter, wastewater flows by gravity through slot-configured orifices. Manufacturers agree that effluent filters have more similarities than differences. Their designs work like draining pasta in a colander, except that the screen and mesh openings aren't round, they're linear. To determine linear inches of filtration, manufacturers

of filtration and a flow rate of 1,000 gpd. The deluxe residential-commercial filter has 528 feet of filtration and handles 4,000 gpd. Both filters are polypropylene.

Tuf-Tite's 4-inch-diameter EF-4 residential series has 86 feet of 1/16-inch filtration area and handles 800 gpd. The 6-inch-diameter EF-6 commercial series has 244 feet of filtration and handles 1,500 gpd. Both have high-speed, injection-molded sanitary tee housings with solids deflectors.

How high is the water?

Several manufacturers, including Zoeller, recommend not cleaning the filter if the water level in the tank is above the invert of the out-

let. Even if a pump truck were on site, however, many consider the labor-intensive task unworthy of 50 or 100 gallons. In most cases, the filter is simply pulled, allowing material on it to rush out the tank with the excess water.

Polylok's solution to that problem is a built-in, automatic shut-off ball. When the filter is removed, the water level in the tank pushes up a 4 1/2-inch ball that allows only 1/16-inch filtration. "One of the first things we did after buying Zabel's line of effluent filters was to incorporate the ball into the 12- by 20-inch A100, A300, and A600 series commercial filters as an option," Gavin says.

Zoeller developed the bypass system for its filters — a slotted, 4-inch PVC secondary screen that remains in the sanitary tee to catch chunks when the filter is removed. Maintainers merely rinse the material back down the tee and into the tank.

Polylok's Zabel A100, A300, and A600 residential series uses disc dam technology. According to Gavin, solids collect on horizontal discs as water flows up the filter to the outlet of the cartridge. In front of the outlet is a vertical disc or dam, and above it are 1/16-, 1/32-, or 1/64-inch vertical slots of various lengths. "Solids slough off the dam and fall back into the tank, while effluent flows through the slots," Gavin says.

Manufacturers also use components to set their filters apart. For example, Polylok has a dedicated filter cartridge and polypropylene housing that prevents the cartridge from being installed incorrectly. The PL-122 has a bushing that accepts 3- or 4-inch Schedule 40 or SDR 35 pipe. The PL-125 accepts 4- and 6-inch Schedule 40 pipe.

"We also can retrofit Zabel and Polylok filters with an optional high level alarm that alerts homeowners to service the tank because solids have built up in the filter," Gavin says. The alarm paid big dividends for a woman who, during the bitter

"A clogged filter is a good thing. Homeowners are protecting the most expensive portion of their on-site systems. What ultimately makes leachfields fail is solids plugging the pores of the soil, preventing water from percolating down."

Peter Gavin
Polylok Inc.

multiply the number of slots by their length, usually 1 1/2 inches.

For example, Polylok's most popular filter, the PL-122, handles residential and commercial flows of 1,500 gpd. Its screen filter has 122 feet of 1/16-inch filtration (the industry's standard width). The PL-525 residential-commercial filter has 525 feet of filtration and handles 10,000 gpd.

Zoeller's WW residential series has deep-pleated slots with 132 feet

Connecticut winter, was recycling her newspapers in the garbage disposal.

Meyers says that Tuf-Tite's filters differ in that the slots are on the horizontal plane to create more surface area in a given space. Byers says that Zoeller's deep-pleated, slotted design retains big chunks.

Pressure filters

According to Gary Koteskey, president of Sim/Tech Filters Inc. in Boyne City, Mich., pressure systems that cycle or time dose to evenly distribute the effluent must be

ifices, dispersing an average of one gallon per square foot per day. "Drip systems require filtration because the emitters are so small, but many states don't specify filtration for mound and sand filter systems because their manuals were written years before pressure filters were available," Koteskey says.

The small disc or spin-clean filters used in drip and spray irrigation systems are inappropriate for high-volume systems because they create head pressure, necessitating an increase in pump size to push the effluent through the filter.

"Maintenance contracts are a sound idea, but whoever inspects and maintains those systems should be licensed. Some regulators expect effluent filters to be a cure-all or substitute for advanced treatment units. Expecting filters to do things they were never designed to is a problem in education."

Ted Meyers
Tuf-Tite Inc.

protected with pressure filters, because gravity filters are designed for septic tanks. "Many in the industry still make this mistake," he says. "Inappropriate use of gravity filters allows debris in the dosing tank to reach the dispersal bed, and just a small handful can plug the entire system."

The most common scenario, Koteskey says, is maintenance contractors removing plugged effluent filters, thereby permitting water above the invert of the outlet to escape. An influx of 25 gallons per inch churns up everything in the dosing tank including electrical tape, butyl ribbon, tie straps, and organic material. When the pump cycles, the debris enters the distribution system.

"When 5 or 10 percent of the orifices are plugged, the biology doesn't have enough time to treat the concentrated wastewater coming out the remaining holes," Koteskey says. "Systems may function like that for years, sending untreated effluent into the groundwater and creating environmental hazards."

Properly functioning systems discharge evenly through all the ori-

"Because of that, filters plug quickly," Koteskey says. "To achieve low head pressure, our 85 gpm A2 residential series has 70 square inches or 41 percent open area, producing two-tenths-of-a-pound head loss." The 3-inch-diameter by 18-inch-long stainless steel filter has more than 22,000 round holes 1/16 inch in diameter.

The filter's one-piece, injection-molded PVC housing screws to the discharge port of the pump, and connects to the force main with a Schedule 80 PVC union. The scrubbing action caused by the pump prevents the filter from plugging easily.

Koteskey encourages installing gravity effluent filters in septic tanks, as they increase the longevity of pressure filters. "It's a win-win combination for the on-site system," he says. To eliminate residual toilet tissue, lint, and hair reaching the drainfield, he recommends adding a filter sock inside the pressure filter screen. Socks also are necessary in situations that dump large volumes of water into the septic tank and roll up the settled solids. Socks have 600 micron (0.024 inch), 150

micron (0.005 inch), or 100 micron (0.004 inch) filtration.

On the horizon

Manufacturers agree that maintenance is a huge issue. "Maintenance contracts are a sound idea, but whoever inspects and maintains those systems should be licensed," Meyers says. "Some regulators expect effluent filters to be a cure-all or substitute for advanced treatment units. Expecting filters to do things they were never designed to is a problem in education."

Given the complex nature of today's waste stream, Byers believes it is essential for the majority of on-site systems to have filters, annual inspections, and the documentation. "A paper trail would be a boon to consumers and Realtors," he says.

Byers wants manufacturers to establish effluent filter guidelines that present what few facts are known, then let health departments use them to educate home-

owners. "We have no published scientific studies on effluent filters," he says. "We need funded definitive research on septic tank and effluent filter systems, then use that information to develop the next generation of filters." ■

MORE INFO:

- 6 **Polylok Inc.**
877/765-9565
www.polylok.com
- 16 **SIM/TECH Filter Inc.**
888/999-3290
www.gag-simtech.com
- 10 **Tuf-Tite Inc.**
800/382-7009
www.tuf-tite.com
- 25 **Zoeller Pump Co.**
800/928-7867
www.zoeller.com

LARGE PRECAST TANKS TO 40,000 GALLONS



- ◆ Septic, Grease Interceptors, Holding Tanks
- ◆ Available in Sizes 750 to 40,000 Gallon
- ◆ Extra Heavy Duty Tanks—HS20 Loading
- ◆ Bituminous Coating, Fast, Efficient Setting
- ◆ Vacuum Tested, Water Tight Structures
- ◆ Tanks for Bio-Microbics and Nibblers, Sand Filters
- ◆ Nationwide Delivery • Custom Sizes for Any Project

WIESER

CONCRETE PRODUCTS, INC.

Website: www.wieserconcrete.com

1-800-325-8456



42

NOWRA Talks Nutrients

The 2008 annual technical conference features a symposium on nitrogen and discussions of how to deliver better service to affiliate groups

By Gil Longwell

A day-long Nitrogen Symposium was a highlight of the 2008 NOWRA Annual Technical Education Conference and Exposition, held April 7-10 in Memphis, Tenn.

Some 450 attendees selected from more than 50 training sessions, from the popular A to Z basic education series, to case studies exploring entrepreneurial and government programs, to primers on advanced technologies. They also visited 63 exhibits of the latest in onsite technologies.

Nutrient news

The Nitrogen Symposium, held April 7, was designed for all attendees — regulators, academics, field practitioners and vendors.

Among attendees was Bob Guthrie, P.E., a consulting engineer with Guthrie & Associates Inc. of Birmingham, Ala. His firm has designed a variety of systems from large municipal treatment works to small individual systems.

"The nitrogen topic grabbed my attention and prompted my partici-

pation," he says. "The symposium was a great way to invest a day focused on the different processes that directly affect nitrogen removal. Next year, I'd like to see the session expanded to include a practitioner's round table discussion."

His son Jeff, a hydrogeologist, said the session served two purposes. "First, it validated many of the practices that we have been implementing," he observes. "Second, it gave us some new methods and processes to explore for future projects."

Tim Smith, sales manager for Onsite Solutions of Virginia Inc. in Warrenton, Va., says his company finds the commercial market holding steady and the residential market contracting. "This session will help us shift to that new opportunity," he says.

"The knowledge I gained brings a new comfort with the calculations and processes needed to achieve nitrification, then denitrification of the wastewater. Also, I got a better handle on how alkalinity fits into the process. The knowledge I gained I was able to put to use the day I got back."

New directions

The conference site is also

where NOWRA committees conduct business, focusing on topics such as education, model codes, membership, and affiliate relations.

The board of directors, responding to committee input, is refocusing on the needs of affiliate groups based in numerous states and Canadian provinces. The addition of member benefits and general support to affiliates is already off the drawing board and into early implementation stages.

Hilary Moore, past president of the Delaware On-Site Wastewater Recycling Association, chairs the local affiliate leaders' committee, charged with defining the needs for affiliate support. Mark Hooks of the Florida Onsite Wastewater Association chairs the government affairs committee, which tracks federal legislation and regulatory proposals, and educates members of initiatives worthy of members' action.

The organization's leadership changes at the late fall installer training event in Las Vegas. In preparation for that election, nominations are being sought and a ballot will be distributed to all members in early fall. ■

You've got the JOB

We've got the Package

Onsite Component Packages

Everything you need is in one package for the job.

120V and 230V Exterior Pump Controls w/ Alarms

- Includes Control Switch, Removable Terminal Board, NEW Corded Pump/PumpSwitch Receptacle, Cord Seals, Hi Impact Poly Pedestal, Pipe Nipple
- Options: Pump Switch, Circuit Breaker, Wall Mount

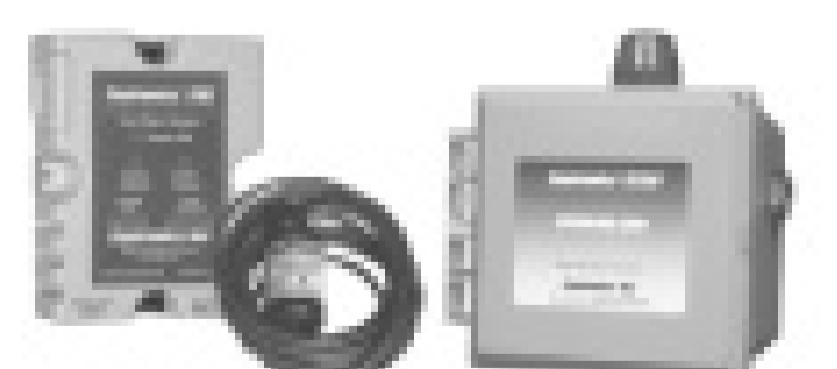


120V and 230V Exterior Pump Controls w/ Interior Alarms

- Includes Removable Terminal Board, NEW Corded Pump/PumpSwitch Receptacle, Cord Seals, Poly Pedestal & Pipe Nipple or Low Profile Nema 4X Box, Interior Alarm System
- Options: Pump Switch, Event Counter, Alarm System



Exterior and Interior Single & Dual Alarm Systems



Mechanical Control & Pump Switches

Simplex, Time Dose, & Duplex Panels

Septronics, Inc.

602 E. Union St. • Oconomowoc, WI 53066 • Ph: 262.567.8908

www.septronicsinc.com

40

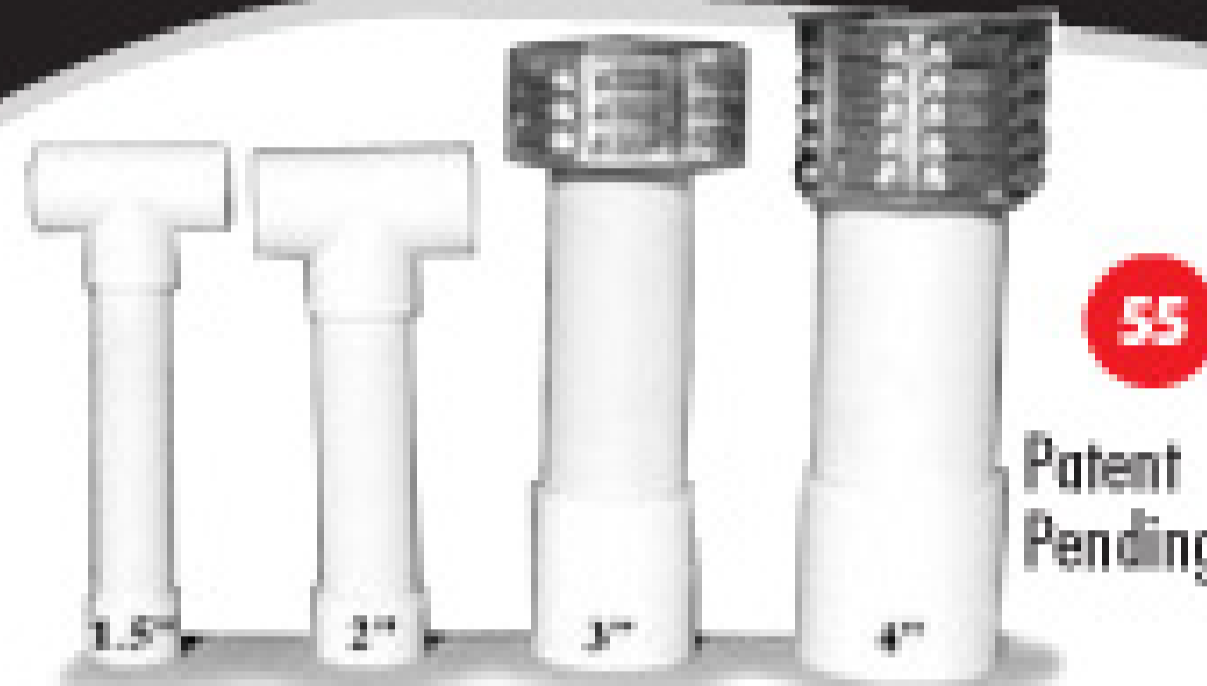
onsiteinstaller.com

- > Classifieds
- > Used Equipment
- > E-zines
- > Product Categories

MARKETPLACE advertising

SEPTIC ODOR PROBLEM?

ODORHOG™ Charcoal Activated Vent Pipe Filters Remove Sewer & Septic Odors from Plumbing Vents



ODORHOG™ Filters Come in 5 Standard Sizes or Any Custom Size You Specify

SAME DAY SHIPPING & PRIVATE LABELING AVAILABLE

A&M BIO-FILTER, LP
1.800.963.6746
www.odorhog.com

**30% OFF FOR ALL ORDERS
OVER \$2000**

1-800-333-9274
www.watercannon.com

Pressure Washers

HONDA @ 2700PSI \$377
HONDA @ 3000PSI \$416
HONDA @ 4000PSI \$859



We Customize
high pressure pumps

Honda Engines



5Hp GC **\$199**
6.5Hp GX **\$349**
8Hp GX **\$459**
9Hp GX **\$489**
13Hp GX **\$589**
18Hp GX **\$1,099**

BEST Sellers ALWAYS on Sale

5.6GPM @ 4000PSI **\$399**
8.0GPM @ 3500PSI **\$499**
7.0GPM @ 5000PSI **\$599**



Call For Free Quotation.
We Also Stock Pumps With Left Hand Drive,
Tapered Shaft, Car Wash Duty,
316 Stainless Steel and Unique Applications
1-800-964-9274

Water Cannon - 5 Offices Nationwide,
Repair Parts Specialists Since 1981

Seal it Tight! Seal it Easy! Seal it Fast!



- Easy 10 minute installation!
- Secure fit for all systems!
- Made & sold by septic installers!
- Prevent ground water infiltration and save money at the same time!

Are you tired of using risers that are too tall or too short for the job you are completing? Plastic riser pipe will give an exact height each time. Try our system and you will never have to carry concrete pipe and lids again. Save time by not having to assemble multiple sections.

Seal-R™ Lids can be personalized. Seal-R™ Lids are manufactured with UV additive to resist degradation from exposure to sunlight.



BrenLin Company, Inc.

Herman, MN
888-606-1998
Fax: 320-677-3001
E-mail: brenlin@frontiernet.net
Web Site: seal-r.com

Simple Solutions DISTRIBUTING LLC

Wolverine Brand Vent Filters
Stop the Stink Guaranteed!

UPC Certified
APPROVED LID 708880
Model WLV-4

Color Adsorption Filters For: Plumbing and Septic Vents, Lift Stations, Sewer Line Vents, Manholes and Industrial Applications

Introductory Price On WLV-4 Vent Filter

Save 25% Per Case • Save 40% On 10+ Cases



Also Available,
Manhole
Odor Inserts



973-846-7817

Toll Free:
866-667-8465

www.IndustrialOdorControl.com

www.StopSepticOdor.com

ONSITE installer MARKETPLACE advertising

Onsite Installer Marketplace gives you nationwide exposure to thousands of industry professionals.

Layout and design is included **FREE**, and we can fax or e-mail you a proof for final approval!

Now Available In 4-Color Or Spot Colors

Choose a size that works best for you!

Call 1.800.994.7990

Size A: \$309^{00*}

1.875" W x 4.875" H

This size is great for two photos!

Size B: \$209^{00*}

1.875" W x 3.2" H

Perfect size for one photo!

Size C: \$109^{00*}

1.875" W x 1.5" H

A great value!

*Black and white prices, call for 4-color pricing.

Send ad materials and payment to:

COLE PUBLISHING INC. • P.O. BOX 220 • THREE LAKES, WI 54562

THE DIRTY BIRD 45
Septic Vent Concealer

Converts your ugly septic vent into an attractive bird bath and controls odor too!

Installs in Easy Steps!

1.866.968.9668
1.781.793.9334
www.thedirtybird.com

White Space Works

This space available

800.994.7990

Rewards of Recycling

Greener maintenance practices help contractors reduce their environmental footprint and make better use of non-renewable resources

By Greg Northcutt

To prevent oil from being dumped on the ground or poured down drains and polluting soil, surface and groundwater, state and federal laws require proper disposal of used oil. In most cases, that means recycling it.

But staying legal isn't the only reason for restoring life to old oil. Conserving this non-renewable resource reduces dependence on imported oil. In fact, producing 2.5 quarts of new, high-quality lube oil requires 42 gallons of crude, but just one gallon of used oil. Recycling oil reduces waste, saves natural resources, and helps create jobs, too.

Oil recycling may even put some money in your pocket. Safety-Kleen, the largest oil re-refiner in the United States, collects and processes 200 million gallons of used oil a year. Customers range from small construction contractors and owners of equipment fleets to national auto supply retailers and quick-lube shops.

"In many of our markets, we're paying customers to collect their used oil," says Sean Spaziani, marketing director of Safety-Kleen's commercial segment. "With oil recycling, you get peace of mind knowing you are doing your part to help preserve a precious natural resource."

Other items needed to keep your construction equipment operating, including oil filters, anti-freeze and batteries, can also be recycled. Here are some ways in which recycling can help reduce your impact on the environment.

Closing the oil loop

Lube oil does not wear out with use — it just gets dirty. Used oil drained from a crankcase, hydraulic reservoir or other lubricated component can be re-refined into lubricants, processed into fuels, and used as raw material for the refining and petrochemical industries, closing the recycling loop.

Processors and re-refiners, like Safety-Kleen, remove water, dirt, heavy metals, nitrogen, chlorine, and oxygenated compounds from the used oil. The process is similar to the way in which crude oil is processed, but it uses one third less energy. The recycled oil is then combined with a fresh additive package.

The resulting product must meet the same strict refining, compounding and product specifications as lube oil produced from virgin crude oil for use in automotive, heavy-duty diesel, and other engines, and in hydraulic fluids and gear oil.

Extensive testing has found that the quality of API-certified re-refined oil equals or exceeds that of oil made from virgin stock. API-licensed re-refined oils must pass the same cold start, pumpability, rust corrosion, engine wear and high-temperature viscosity tests as lubricating oil produced from virgin crude.

If you chose to recycle used oil yourself, waste management experts say you should store the oil in an empty steel or plastic container — but not one that was used previous-



Recycling used oil filters helps reduce the load on landfills while providing a source of steel for new cans, cars, appliances, and construction materials. (Photo courtesy of Parker Hannifin's Racor Division and the Filter Manufacturers Council)

ly to store chemicals — and take it to a local service station, retail outlet or special waste recycling center that accepts used oil.

Reclaiming filters

Recycling used oil filters helps reduce the load on landfills while providing a source of steel for new cans, cars, appliances, and construction materials. Some states have banned used oil filters from landfills. Others restrict how they can be discarded.

Specific requirements for your



Before discarding or recycling oil filters, the U.S. EPA requires draining them of all free-flowing oil. (Photo courtesy of Denso Oil and the Filter Manufacturers Council)

state, a list of companies that collect used filters, and locations of recycling centers are available by calling the Filter Manufacturers Council Used Filter Recycling Hotline at 800/993-4583. Infor-

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

A Safety-Kleen truck transports used oil to the company's facilities for recycling into re-refined oil. (Photo courtesy Safety-Kleen Oil Recycling)



Greener Operations

Equipment manufacturers are helping contractors reduce machinery impacts on the environment. Case, for example, is among equipment makers who approve the use of higher levels of biodiesel in their engines. The company recently announced approval of B20 diesel fuel, a blend containing 20 percent cleaner-burning biodiesel.

The company is also reducing emissions of greenhouse gases by improving fuel efficiency. The new Case 580 Super M Series 3 loader backhoes use electronic control, high-pressure common rail, and variable-flow hydraulics to achieve a 15 percent increase in fuel economy, reports company spokesman Rick Hall.

Extended service intervals for oil changes and lubrication and easier-to-reach oil drains and grease fittings on the latest models are reducing the risk of environmental damage from accidental spills during servicing. Meanwhile, the industry is working on developing water-based, biodegradable hydraulic fluids.

mation is also available online at www.filtercouncil.org

Before discarding or recycling oil filters, the U.S. EPA requires draining them of all free-flowing oil. Most states follow this require-

ment. Jeremy Denton, executive director of the Filter Manufacturers Council, recommends puncturing the dome of the filter or the rubber anti-drain back valve inside the other end of the filter using a screwdriver or other suitable tool.

This breaks the vacuum that otherwise keeps oil from draining back into the engine when it is not running. Then, turn the filter upside down in a drip pan or other collection container and let it drain for at least 12 hours at about 60 degrees F.

Re-using antifreeze

Although there are no federal requirements for disposing of used antifreeze, most states regulate its disposal. Ethylene glycol, the most common antifreeze material, is toxic to humans and animals. Propylene glycol, also used to make some antifreeze, is much less toxic. However, once antifreeze has been used it may contain metals such as lead, cadmium, and chromium, and that makes it a hazardous waste subject to regulation.

Processors recycle antifreeze by removing contaminants like emulsified oil and heavy metals and restoring critical properties, such as pH, rust and corrosion resistance, with additives. Recycled antifreeze is less expensive than new. Also, recycling saves ethylene glycol, which is produced from natural gas, a non-renewable resource.

You can recycle used antifreeze

using a recycling service, such as Safety-Kleen, or by taking it to a local collection center. Waste management authorities warn against pouring antifreeze into sewers, on the ground, into floor drains, or mixing used antifreeze with any other waste. Also, do not collect antifreeze in containers that have been used to hold other substances, such as gasoline, unless the containers have been thoroughly cleaned. Antifreeze can leach substances from the walls of a container.

Recycling batteries

The lead in lead-acid batteries used in construction equipment, trucks and cars can contaminate the environment. As a result most states require retailers that sell lead-acid batteries to collect them for recycling.

When recycled, the batteries are crushed into small pieces and the plastic and lead components are separated. The purified lead is used to manufacture new batteries, while the plastic is reprocessed and

made into new plastic products. A typical lead-acid battery contains 60 to 80 percent recycled lead and plastic.

Rebuilding parts

Replacing worn or broken parts and components, including engines, axles, transmissions, hydraulic pumps and valves, with re-manufactured ones can also benefit the environment.

"This helps reduce consumption of basic raw materials, and many remanufactured components can also be recycled, depending on scrap prices," says Rick Hall, vice president of product management for Case Construction Equipment. "Re-manufactured parts that meet OEM specifications provide the same performance as originals and usually offer about 80 percent to 90 percent of the useful life of the original part."

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

Rotationally Molded Septic Tanks by Coon Manufacturing



Distributors Wanted!

FACTORY DIRECT TRUCK LOAD PRICES AVAILABLE!

TANK SPECIFICATIONS

Tank Size:	Dimensions:
500 Gallon	59"H x 52"W x 60"L
1000 Gallon	59"H x 52"W x 120"L
1500 Gallon	64"H x 60"W x 125"L

(Complete w/lids and pvc pipe)

Easy to Install!

Holding Tanks

Available in 32 sizes ranging from 12"H x 2' x 4' to 24"H x 4' x 8'-call for current pricing!

- **Easy to TRANSPORT to job site**
- **SQUARE SIDES for easy installation**
- **Molded and shaped for STRENGTH and DURABILITY**

Approved in the following States:

MO, AK, GA, IL, IA, KS, KY, ME, NH, NY, NC, OH, PA, RI, SC, TN, TX, WI
Application Pending in Several States • Territories Are Available

Coon Mfg. Inc.
P.O. Box 108
78 N.E. 115th St.
Spickard, MO 64679



Phone: 660-485-6299
Toll Free: 800-843-1532
Fax: 660-485-6122
www.coonmfginc.com

Into Thin Air

An innovative non-discharging treatment system enables a New Mexico homeowner to remodel his fishing cabin on the Rio Pueblo River

By **Scottie Dayton**

The owner of a concrete block fishing cabin on the Rio Pueblo River near Sipapu, N.M., wanted to remodel it and build a 3,000-square-foot, three-bedroom year-round home. The 1950s cesspool, however, was unacceptable.

Michael Montoya of the state Environment Department struggled to find an onsite solution. His only option was a holding tank, which the onsite regulatory code did not allow. He called around and was directed to Link Summers, president of Link Summers LLC in Taos.

"I had to meet 50-foot setbacks from the wells and river," says Summers. "The property had one little triangular space that met those requirements, but wasn't large enough for a typical advanced treatment system with drainfield."

His non-discharging solution



The first of two 20-mil black plastic liners is installed in the 16-foot-square by 4-foot-deep solar evaporation bed.

includes advanced oxidation, solar evaporation, chlorination, irrigation, and splitting of the black and graywater flows. The system can recapture and reuse treated water,

although that capability has not been activated.

Site conditions

The flat, 100- by 125-foot lot extends to the river. The property, at 7,000 feet above sea level, has a mountain behind it. Soils are silty loam and rocks (riverbed) with 2-square-feet-per-gallon absorption area. The water table is four feet below grade.

System components

The blackwater system is sized for 60 gpd; the graywater for 315 gpd, equaling 375 gpd. The major components are:

Blackwater

- 1,000-gallon rotationally molded polyethylene two-compartment septic tank. All tanks made by AK Industries, Plymouth, Ind.

"The unit combines ozone and UV light to create a physical chemical reaction similar to igniting a blowtorch underwater."

Link Summers

- 300-gallon round treatment tank.
- UltraViox advanced oxidation system from UltraViox LLC, Taos.
- 30-gallon pump basin.
- 1/3-hp Grundfos effluent pump.
- 7,000-gallon solar evaporation bed, Link Summers LLC, Taos, N.M.
- 1,500-gallon overflow tank.
- Audio and visual high water alarm, SJE-Rhombus, Detroit Lakes, Minn.

System Profile

Location:	Sipapu, N.M.
Facility served:	Three-bedroom home
Designer/installer:	Link Summers, Link Summers LLC, Taos, N.M.
Site conditions:	Silty loam and rocks (riverbed) with 2-square-feet-per-gallon absorption area; water table four feet below grade
Type of system:	Non-discharging evaporation bed, synthetic drainfield media
Hydraulic capacity:	375 gpd

- Telecommunication system, Link Summers LLC.

Graywater

- 300-gallon pump tank with chlorine tablet disinfection.
- 1/3-hp Grundfos pump
- Subsurface drip irrigation line
- Two EZflow geosynthetic aggregate drainage tubes, Ring Industrial Group, Oakland, Tenn.

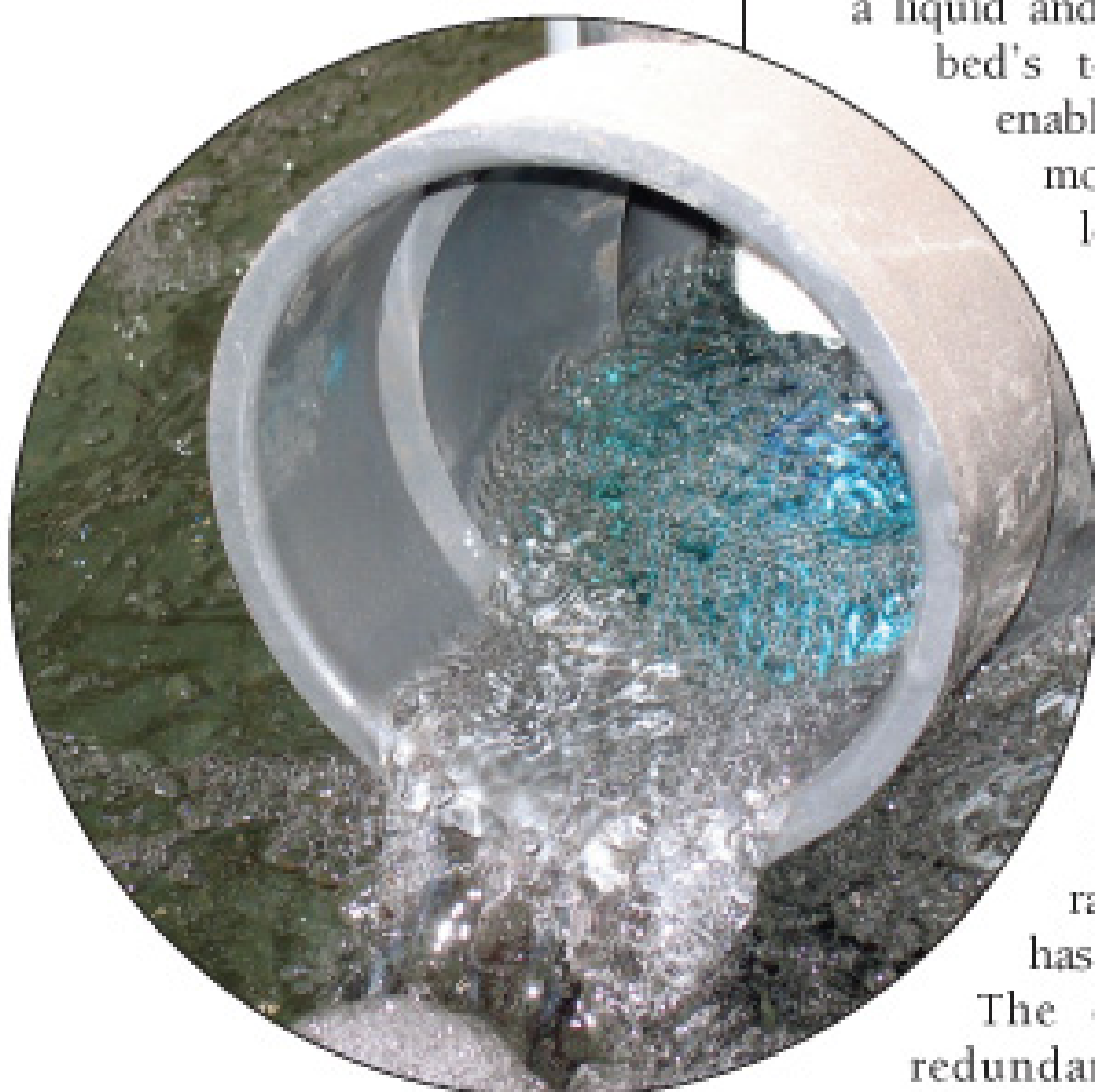
Blackwater system operation

From the house, blackwater flows through a 4-inch PVC pipe to the septic tank. The second compartment is aerated to start biological activity. Effluent gravity flows to the treatment tank, where the advanced oxidation system consumes remaining solids. "The unit combines ozone and UV light to create a physical chemical reaction similar to igniting a blowtorch underwater," says Summers, who invented the system.

Clean water gravity flows to the pump basin, which doses the solar evaporation bed on demand. An overflow tank eliminates discharge. Temperatures inside the bed reach 180 degrees or higher. At an altitude of 7,000 feet, such temperatures are close to boiling, producing a high rate of evaporation.

A 4-inch duct fan operated by a dual-control temperature and humidity switch exhausts water

Water flowing out of the UltraViox advanced oxidation unit.



"Advanced oxidation produces more inorganic solids than organic solids, so the septic tank will probably need a pump-out every two years. We really don't know yet. It depends what the occupants put into the tank."

Link Summers

vapor into the air during warm months or into the ground through a drain pipe in winter. "The Environment Department considers the evaporation bed to be a solar still, meaning the condensate produced from the water vapor is distilled," says Summers. "We can do what we want with that water, including recovering it for any use."

The bed's black liners absorb heat, and eutectic salts — roughly 10 times more efficient at holding heat than water — store some of it. "Eutectic salts shift from a solid to a liquid and back again in the bed's temperature range, enabling us to store a lot more heat with a lot less volume," says Summers. "At night, they prevent the bed from cooling by releasing the heat created as the salts shift from a liquid to solid state."

On cloudy days, water can be stored in the evaporation bed, which has a 116-day capacity. The overflow tank, a redundancy feature, plugs

into the septic tank to continue running water through the loop.

Graywater system

Water gravity flows through a 3-inch PVC pipe to the pump tank with chlorine tablet disinfection. During warm months, the water is pumped to a subsurface drip line for irrigation. When the water isn't used for irrigation or during winter, it gravity flows to the 40- by 8-foot drainfield.

The Environment Department tested graywater and proved that it contained no BOD or nitrogen, the principal contaminant of concern. Consequently, the state passed a graywater bill allowing subsurface discharge if the liquid is pathogen-free. "Disinfection is easy, but we're still required to test quarterly for pathogens," says Summers.

System installation

The only unknown was the height of the sun on the shortest day of the year. It remained slightly above the top of the mountain, ensuring that the evaporation bed had solar exposure. The first earthly obstacle was the architectural plan specifying a two-story house. "It would block sunlight to the evaporation bed, so the structure was

At left, the interior of the solar evaporation bed with evaporation curtain along the sides. Below, the 300-gallon graywater pump tank has chlorine tablet disinfection.



lowered to one story," says Summers.

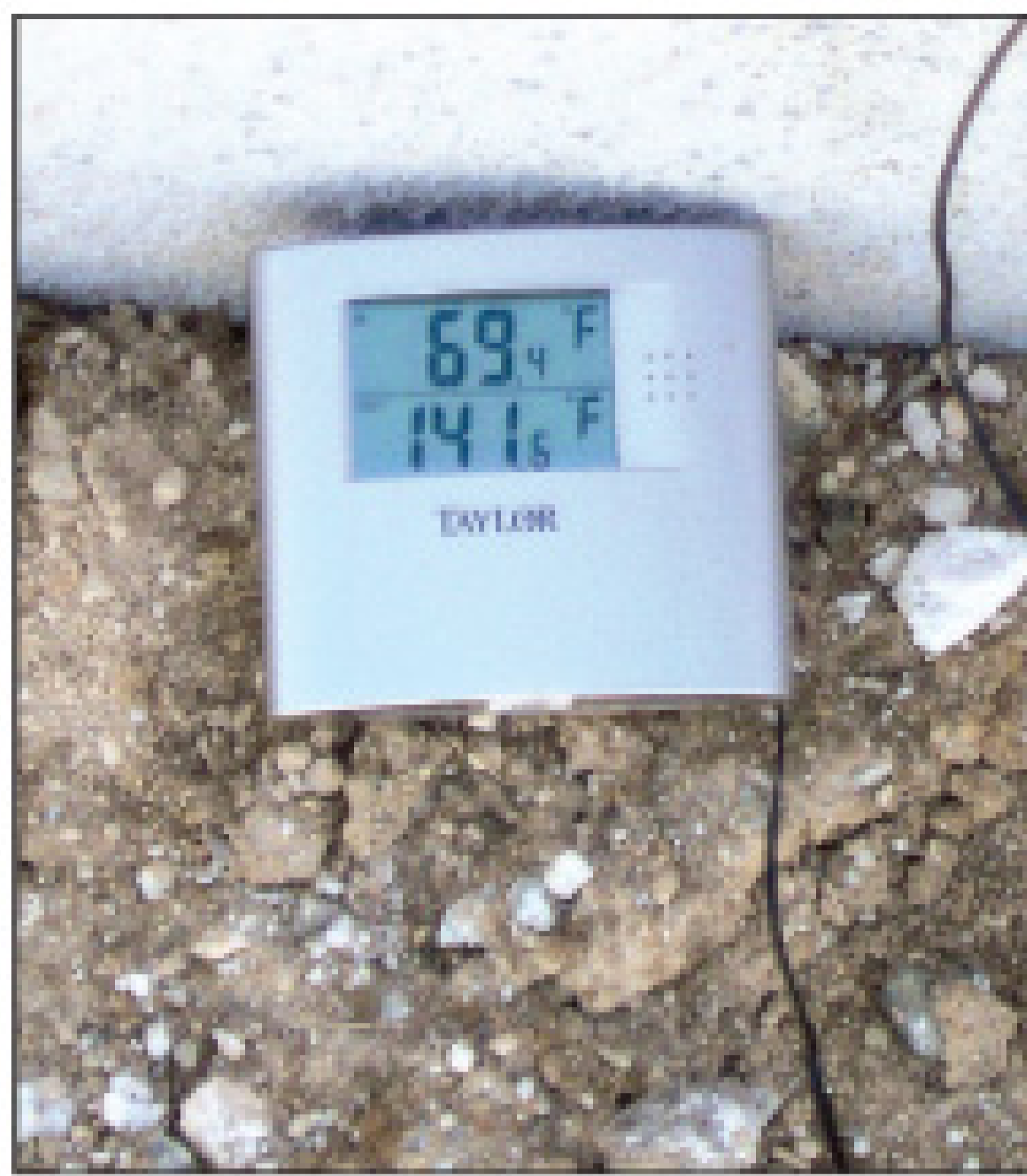
The second obstacle was the boulders and every size rock in between that thwarted the backhoe's progress. "Excavation was the hardest part of the project," says Summers. "We pulled out two tandem loads of boulders."

The cesspool was pumped, disinfected, collapsed, and partially removed to make room for the septic tank. Building the 16-foot-square by 4-foot-deep solar evaporation bed was the second hardest part of the installation. After excavating the hole, the crew sank the 6-inch-thick expanded polystyrene foam forms into the ground and filled them with concrete. "The foam has an insulation factor that stops cold transferring into the tank from the outside," says Summers.

Six inches of prewashed sand created the bottom of the bed, followed by the first 20-mil black plastic liner. Two perforated 2-inch PVC pipes equally spaced lay on top of it. They run with a slight slope to viewing ports. "We should not see water in them," says Summers. "If we do, we have a leak."

A second 20-mil liner covers the pipes. Penetrations in the liners for the influent line from the pump basin, viewing ports, and outlet line to the overflow tank are sealed and clamped. The tops of the liners are secured beneath an aluminum L-channel lag-bolted to the concrete frame.

Covering the bed is an assembly



Thermometer displays the evaporation bed's exterior (69.4 degrees) and interior (141.6 degrees) temperatures. Temperatures inside the bed reach 180 degrees or higher.

maintenance contract for the life of the system. Environmental Monitoring and Testing in Taos checks the system quarterly to make sure the UltraViox, pumps, and duct fan are running. The firm also samples the graywater for fecal coliforms. "Advanced oxidation produces more inorganic solids than organic solids, so the septic tank will probably need a pump-out every two years," says Summers. "We really don't know yet. It depends what the occupants put into the tank."

Summers' non-discharging system enabled the homeowner to build his year-round house and triple his property value. ■

of triple-wall Lexan attached to a 1-inch-square aluminum frame that drops into the L-channel. "We used triple wall because it adds insulation value," Summers explains. Because the graywater effluent was treated, the state code allowed Summers to reduce the size of the disposal field. His crew dug two 1-foot-wide trenches on 6-foot centers for the 40-foot-long drainage system. They buried the tubes four feet deep.

Maintenance

The manufacturer requires a

MORE INFO:

- 193 Grundfos**
913/227-3400
www.grundfos.com
- 36 Hydro-Action Industries**
800/370-3749
www.hydro-action.com
- 22 Ring Industrial Group**
800/649-0253
www.ezflowlp.com
- 41 SJE-Rhombus**
218/847-1317
www.sjrhombus.com

Niche Products Offers Muck Truck Dumper

Designed to prevent back pain and injuries due to heavy manual work, the Muck Truck pedestrian dumper from Niche Product Sales LLC features a tipping hopper that empties with the release of a handlebar lever and a ball hitch for maneuvering trailers. The four-wheel-drive truck can carry up to 1/4 tons in its 6-cubic-foot hopper. The unit is powered by a Honda engine and has four forward gears and one reverse. **For more information: 772/621-3951; www.mucktruckamerica.com.**



City Meter Designs Septic Tank Flow Monitor

The Sewer Service Meter flow monitor from City Meter Inc. measures 15.32 inches by 42.39 inches by 14.62 inches high and has a flow measurement range of 0-15 gpm and accuracy of +/- 2 percent at 0-10 gpm. The meter requires no periodic recalibration and is powered by a 3.6V D-cell lithium-thionyl battery, estimated to last 32 years. **For more information: 803/533-1681, www.city-meter.com.**

Griffin Offers Electric Submersible Pumps

Electric submersible pumps from Griffin Pump and Equipment are designed for flows from a few gallons to several hundred gallons per minute.

The fully self-priming pumps are available in 120-volt single-phase or 460-volt 3-phase and feature run-dry capability on some models. **For more information: 866/770-8100; www.griffinpump.com. ■**



Does your business include services like septic tank pumping and maintenance? If so, then consider a subscription to **Pumper**® — the publication exclusively for septic business professionals. For nearly three decades, *Pumper* has been the definitive guide to the latest products, technologies and methods for the industry.

SUBSCRIBE TODAY. www.pumper.com or 800-257-7222

NEW & Improved ALITA® LINEAR AIR PUMP

- ✓ Full range of efficient and reliable aeration pumps for Aerobic Treatment Unit
- ✓ Low energy cost and quiet operation
- ✓ 3 Years Manufacturer Limited Warranty
- ✓ Parts and repair available for variety of brands of linear air pumps

☎ Call 626-962-2116 for more information

ALITA INDUSTRIES, INC.
P.O. Box 660923, Arcadia, CA 91086-0923, USA
phone: (626) 962-2116 fax: (626) 962-2177
on-line: www.alita.com e-mail: sales@alita.com

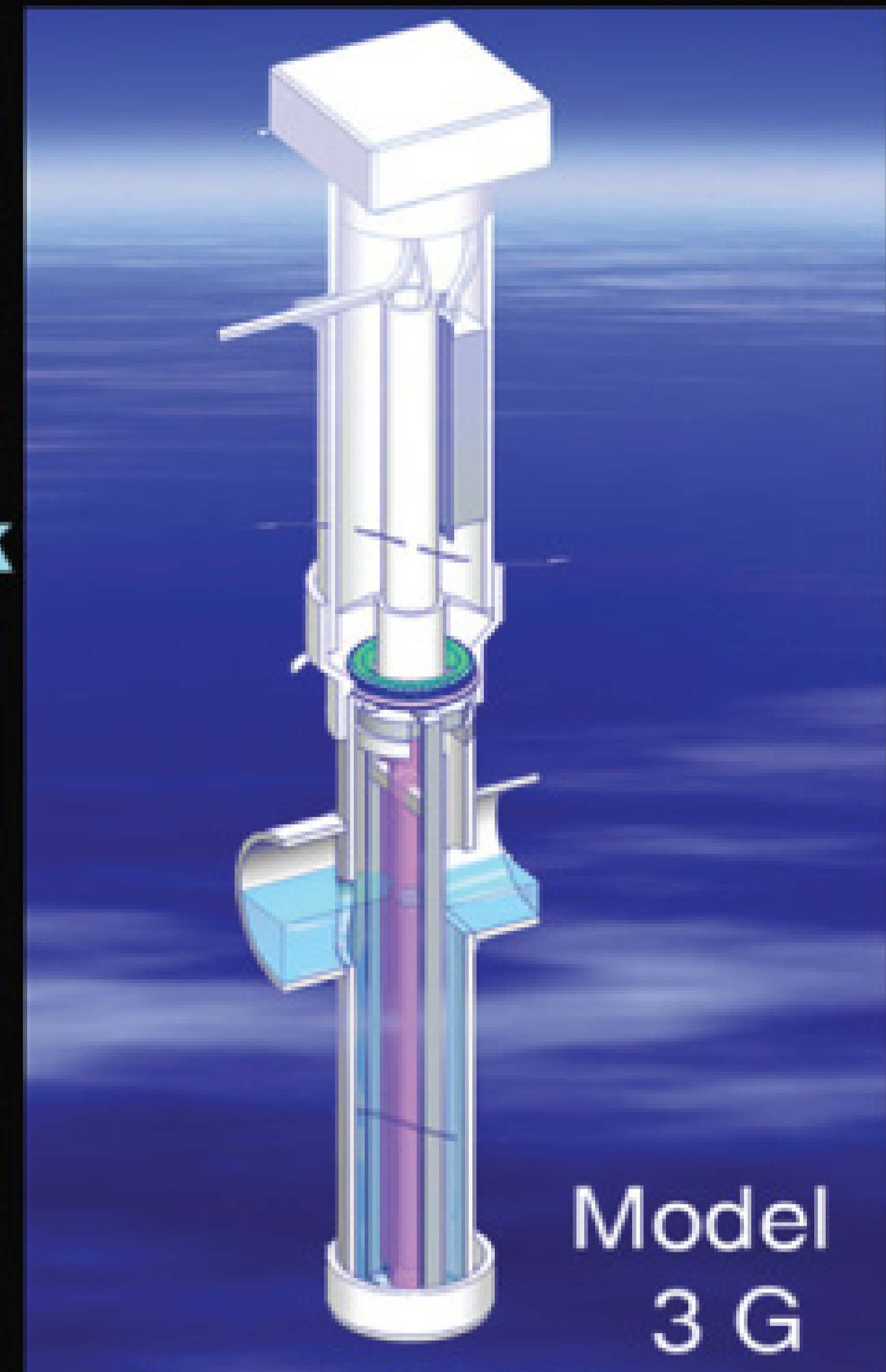
Come In We're OPEN

www.onsiteinstaller.com

SALCOR UV DISINFECTION

The Finishing Touch

- Designed for Onsite Systems
- Gravity Flow to 6 GPM
- Installed in Ground or Pump Tank
- Minimum (Annual) Maintenance
- Two Year UV Lamp Life
- NSF and Other Third Party Tests Confirm Superior Bacteria and Virus Kill.



Model
3 G

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

126

ONSITE

installer classifieds

June

2008

www.onsiteinstaller.com

- Aerators
- Blowers
- Businesses For Sale
- Business Opportunities
- Computer Software
- Drainfield Restoration
- Excavating Attachments
- Excavating Equipment (backhoes/tracks/skid steers)
- Hand Tools
- Lease Financing
- Levels & Transits
- Miscellaneous
- Positions Available
- Pumps (effluent/sump sewage)
- Septic System Components
- Septic Tanks
- Service & Repair
- Trailers
- Trucks (dump/septic misc.)
- TV Inspection
- Wanted

AERATORS

Septic Solutions, Inc. We sell linear and rotary vane air pumps, rebuild kits and repair parts. Gast, HiBlow, Secoh, Alita and more! Check out our online store full of septic products at www.septicsolutions.net or 1-877-925-5132. (IM)

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

BLOWERS

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

DEWATERING

2000 Flo Trend 12-yd. box mounted on 5th wheel trailer with 100 gallon liquid polymer injection system. Also Honda 3" trash pump. Top totally enclosed with 3 hatches. \$15,000. 803-385-8681. (I6)

DRAINFIELD RESTORATION

1996 Terralift, low hours, well maintained, updated control box; \$12,000. 251-209-6031. (PI5)

HAND TOOLS

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

MISCELLANEOUS

LBC Mfg. is making aerobic disinfection simple and inexpensive. Adaptable to any wastewater pump tank and the only NSF approved liquid chlorinator on the market. Check us out at www.liquidchlorinator.com. (I7)

POSITIONS AVAILABLE

HELP WANTED: Bookkeeping, home workers, part-time or full-time. Earn \$6,000 to \$10,000. Age 19 and up. No experience necessary. Email for details. shco47@gmail.com. (I5)

PUMPS

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

SEPTIC TANKS

1000 gallon two-compartment Septic Tank Molds, mfg. by Bethlehem Mfg. In good condition. Call David @ 864-630-4118. (I5)

TRUCKS: BOOM

1986 GMC C7 with Cook & Ingle septic tank set bed, runs and works, looks great. \$5,800. Call John 931-526-2964 or 931-261-2331. (I6)

It's **EASY** to submit your classified **ONLINE!**

Just go to:
www.onsiteinstaller.com

Fill in the
Online Classified Ad Blank!

Discussion forums

The Virginia Onsite Wastewater Recycling Association Community Bulletin Board System is now online. The need for a discussion forum became critical during last year's legislative session, when e-mail distribution lists failed to keep members abreast of what was happening. Access the bulletin board from www.vowra.org.

Change in leadership

Ken Walsh and Jim Williams are president and vice president of the Delaware Onsite Wastewater Recycling Association through 2009. Walsh (302/436-8822) owns Multi Koastal in Ocean View and has more than 20 years of experience in the wastewater industry. Williams (302/492-3915) is a service manager and salesman for Freemire & Associates and has more than 15 years of experience in the industry.

Death toll too high

Deputy Fire Chief John Andersen with the Chippewa Fire District stated in Wisconsin newspapers that eight to 12 residents die in septic tanks each year. Members of the Wisconsin Onsite Water Recycling Association believe the actual number is much lower.

Andersen's quote was part of a news report about an 82-year-old man who, while doing repairs on his septic tank, fell head first down the riser and drowned. WOWRA asked area media to follow up and review the statistic and stress septic tank safety.

Board member Bill Bergh did a follow-up interview with the newspaper, advising people to keep the tank covers locked and encouraging them to let licensed professionals do maintenance. WOWRA sells brochures on how to maintain onsite systems and advising people never to enter a septic tank. Call 608/256-7757 for more information.

Business and private lives

Psychologists claim that busi-

ness owners are twice as likely to be unable to separate their business and private lives. Sara Bertran of Black Tie Event Services Inc. wrote in the March newsletter of the Florida Onsite Wastewater Association that a steady diet of long hours can produce poor mental nutrition and reduce efficiency. When 12- to 14-hour days begin piling up, she says to ask yourself:

- Is everyone in the business pulling his or her weight?
- Can tasks be restructured so I don't have to be involved at every step?
- Can I hire more help?
- Can I occasionally outsource overloads?

Bertran suggests setting boundaries, such as leaving work at 5:30 twice a week, having lunch with a friend once a week, setting a week-day family night, working in the garden with your spouse once a week, or helping a child with homework twice a week.

"Make quiet time at work for overtime tasks like e-mails and paperwork, rather than taking time away from yourself or your family," Bertran says. "Get a biannual or annual physical to make sure that work pressures aren't triggering health problems."

CALENDAR OF EVENTS

Aug. 22-23

Wisconsin Liquid Waste Carriers Association Summer Convention, Radisson Paper Valley Hotel, Appleton. Call 608/255-2770 or visit www.wlwca.com.

Sept. 10-11

Septage/Grease Trap Waste Treatment Symposium, Holiday Inn at Six Flags, Eureka, Mo. Call 800/236-6298 or visit www.nawt.org.

Oct. 12-15

Virginia Onsite Wastewater Recycling Association Conference and Trade Show, Blacksburg. Call Trapper Davis at 804/966-9190 or visit www.vowra.org.

Oct. 14-15

Delaware Onsite Wastewater Recycling Association Conference and Exhibition, Dover Downs Hotel and Casino, Dover. Call 302/739-9331 or visit www.dowra.org.

Oct. 23-26

Ontario Association of Sewage Industry Services Conference and Exposition, Best Western Conference Centre, Orillia. Call Don Kelloway at 877/202-0082 or visit www.oasisontario.on.ca.

Jan. 13-15, 2009

Michigan Onsite Wastewater Conference, Kellogg Hotel and Conference Center, East Lansing. Many sessions count for required CEU hours. Call Mark Scott at 989/275-5011 or e-mail mscott@i2k.com.

Jan 30-31

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

TRAINING & EDUCATION

National Association of Wastewater Transporters

NAWT has scheduled these training sessions:

- June 5 – Inspector Training and Certification, Flagstaff, Ariz. Contact Kitt Farrell-Poe at 928/782-3836; kittfp@ag.arizona.edu.
- July 17-18 – Operation and Maintenance Training, northern Calif.; Call 707/579-4882; www.cowa.org,
- Aug. 6-7 – Operation and Maintenance Training, central Calif.; Call 707/579-4882; www.cowa.org,
- Aug. 26-27 – Inspector Training and Certification, Tucson, Ariz. Contact Kitt Farrell-Poe at 928/782-3836; kittfp@ag.arizona.edu.

Alabama

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

- June 11-13 – Basic Installer

- June 26-27 – Continuing Education, Dothan
- Aug. 7-8 – Continuing Education

Call Allen Tarrt at 205/652-3803 or visit www.aowatc.uwa.edu.

California

Certification courses are sponsored by the California Onsite Wastewater Association and NAWT. Check the web site for locations.

- June 12 – Soils
- July 17-18 – Operation and Maintenance, Part 1
- Aug. 6-7 – Operation and Maintenance Part 2

Call Cliff Trammel at 707/579-4882 or visit www.cowa.org.

Florida

Courses are at the Florida Onsite Wastewater Association's Training Center in Polk City unless stated otherwise.

- June 10 – Management of Decentralized Systems, Jacksonville
- June 11 – Management of Decentralized Systems, Daytona Beach
- June 16-17 – Master III-Basic Florida Soils
- June 18-19 – Master I-System Design and Function
- June 19-20 – Master II-System Materials and Regulation Requirement
- July 8 – Master IV-Design Considerations and Dosing Systems, Jacksonville
- July 9 – Master IV-Design Considerations and Dosing Systems, Tallahassee
- July 15 – Septage and Grease in Florida, Sarasota
- Aug. 7 – Enhanced Nutrient Reduction, southeast Florida (TBD)
- Aug. 18-19 – Master III-Basic Florida Soils
- Aug. 20-21 – Master I-System Design and Function
- Aug. 21-22 – Master II-System Materials and Regulation Requirement
- Aug. 25 – Aerobic Treatment Units, Part I
- Aug. 26 – Aerobic Treatment Units, Part II
- Aug. 27 – Artificial Media Treatment Technologies
- Aug. 28 – Natural Media Treatment Technologies
- Aug. 29 – What's New at the

Training Center?

Contact FOWA at 407/830-4381 or www.fowaonsite.com.

Iowa

The Iowa Onsite Wastewater Training Center has the following courses:

- June 19 – Basic Soils, TBD
- Aug. 21 – At-Grade and Mounts, Ankeny

Call Annette Adams at 800/362-2127, ext. 6464 or e-mail Dennis Hayworth at dahayworth@dmacc.edu.

Michigan

The Michigan Onsite Wastewater Training and Education Center at MSU Tollgate Center in Novi is offering these courses:

- Aug. 12-13 – Existing Systems Evaluator Training
- Aug. 20 – Pumped Systems Evaluator Training

Contact Barb DeLong at 517/355-4720 or visit www.egr.msu.edu/age, then Extension & Outreach.

Minnesota

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

- June 2-4 – Designing Onsite Systems, Mankato
- June 5-6 – Soils, Mankato
- June 10-11 – Soils, Sartell
- June 12-13 – Inspecting Onsite Systems, Waseco
- June 20 – Soils-Continuing Education, Sartell
- June 26 – Soils-Continuing Education, North Branch

Call 800/322-8642 (612/625-9797) or visit www.extension.umn.edu.

Missouri

The Department of Health and Senior Services is offering the following training professional CEU courses:

- June 17-18 – Operation and Maintenance, Hannibal
- June 24-25 – Operation and Maintenance, St. Louis

Call 573/526-6095 or visit www.dhss.mo.gov/Onsite

North Carolina

North Carolina Soils and On-Site Wastewater Training Academy is offering the following courses:

- June 10-12 – Subsurface

Wastewater Operator Training, Fletcher

- June 25 – Soil Survey in the 21st Century, Raleigh
- June 26 – Installation of Pump Systems, New Bern
- June 27 – Installation of Advanced Systems, New Bern
- July 16 – Installation of Pump Systems, Williamston
- July 17 – Installation of Advanced Systems, Williamston
- July 18 – Installer/Inspector Exam, Williamston

Call Joni Tanner at 919/515-1678 or visit www.soil.ncsu.edu/training.

Pennsylvania

The Pennsylvania Septage Management Association offers the following training:

- July 16-17 – Advanced Onlot Wastewater Treatment System Inspection, Chester County
- July 16-17 – Basic Onlot Wastewater Treatment System Inspection, Bordentown

New Jersey Septage Management Association members qualify for PSMA member tuition fees. Call Jackie at 610/350-0590, press 3, or visit <http://psma.net>.

Rhode Island

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

- June 4-5 – Innovative and Alternative Systems Operation and Maintenance
- June 18 – Soils Basics for the Onsite Wastewater Contractor
- June 25 – Bottomless Sand Filter Design and Installation
- July 10 – Innovative and Alternative Systems Field Tour
- July 15 – Surveying Techniques for the Wastewater Professional
- July 17 – Microbiology for Wastewater Professionals
- July 30-31 – Advanced Soil Morphology: Understanding wet soil conditions
- Aug. 7 – Surveying Basics for the Onsite Wastewater Contractor

Call Holly Meehan at 401/874-5950 or visit www.uri.edu/ce/wq.

Virginia

The following courses by the Virginia Center for Onsite Wastewater Training (VCOWT) and Southside Virginia Community College are in Blackstone. Those labeled VOWRA are through the Virginia Onsite Wastewater Recycling Association.

- June 4 – A to Z of Onsite Wastewater, Charlottesville (VOWRA)
- June 18-19 – Wastewater 101
- July 16-17 – Effluent Dispersal Systems

- July 23-24 – Basic Installation Practices for Conventional/Pump OWTS
- Aug. 5-6 – National O&M Training
- Aug. 12-13 – Designing with Easy/Fast CAD

For VCOWT classes, contact Debbie Campbell at 434/736-2011 or visit www.southside.edu/programs/wastetreat. For VOWRA courses, contact Trapper Davis at 804/966-9190 or visit www.vowra.org. ■

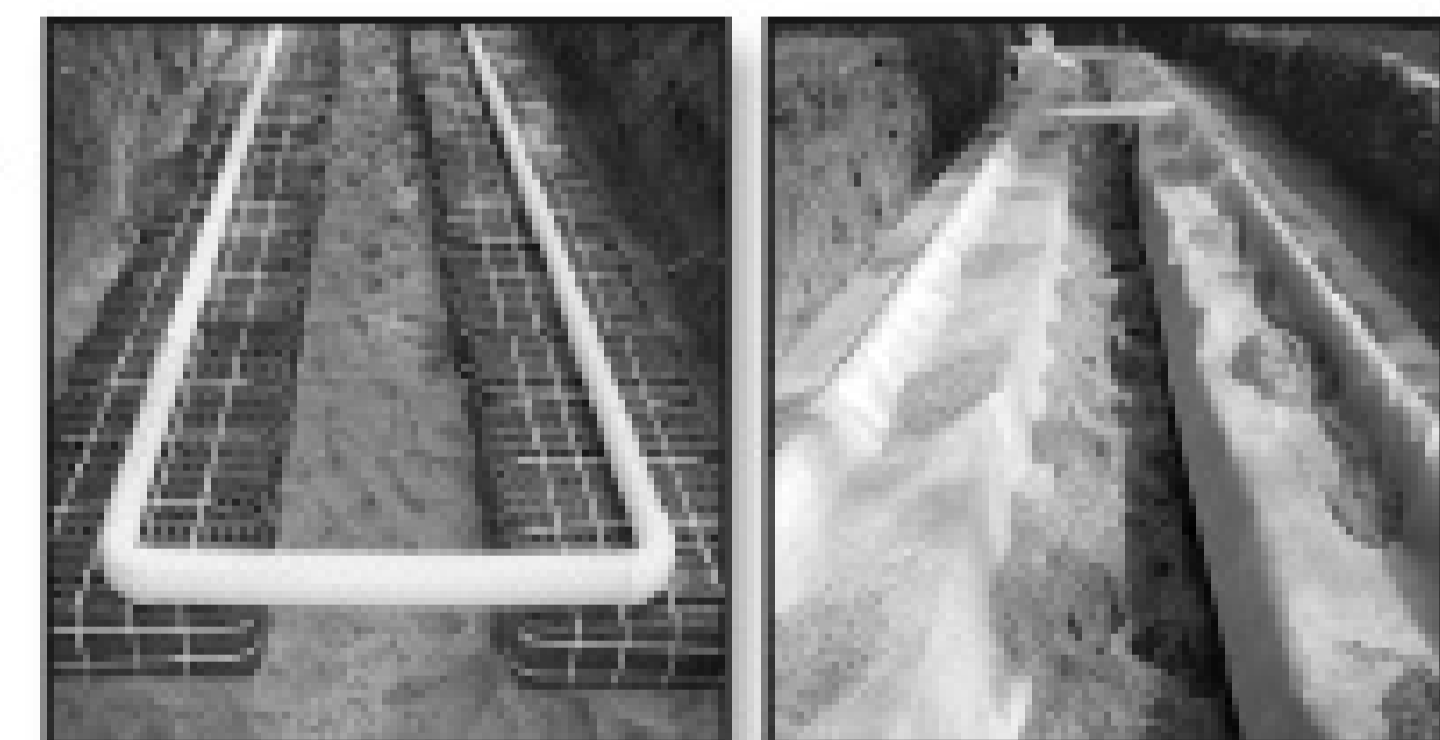
HAVE YOU SEEN THE LATEST
MONTHLY E-NEWSLETTER
OF ONSITE
installer?
IF NOT, SEND AN E-MAIL TO:
info@onsiteinstaller.com

ONLINE

Eljen GSF Geotextile Sand Filter

Passive Advanced Treatment Technology

- Independent 3rd party testing confirms BOD and TSS <5 mg/l and Fecal Coliform reduction of 99.9%
- Much smaller installation area
- Greater long term performance capability...lasts indefinitely
- Good for sensitive lakeside and restricted building sites
- Lightweight recycled materials



FLEXIBLE SITE INSTALLATION

- Trench or Bed layouts
- Level or Sloped sites
- At Grade or Mound
- Serial & Pressure distribution
- Fast or Slow soils
- Clean & easy installation!

TIME
PROVEN
FOR OVER
25 YEARS

eljen
CORPORATION

Innovative Products and Solutions Since 1970
125A McKee St., E. Hartford, CT 06108
860-610-0426 • Fax: 860-610-0427
Email: info@eljen.com

eljen.com
800-444-1359

Green since 1959!

For all your Onsite Wastewater Needs



Effluent, Grinder, Sewage & High Head Turbine Pumps



Filter Alarms and Control Panels



High Pressure Filter



1-800-701-3942

For a Free catalog or to see other products call or visit our website: www.zabelzone.com