

October

2015

# ON SITE installer™

PROMOTING WASTEWATER TREATMENT QUALITY AND PROFESSIONAL EXCELLENCE [www.onsiteinstaller.com](http://www.onsiteinstaller.com)

Study unfair to onsite industry  
Page 6

Do the math for flow equalization  
Page 20

Big-time spray and drip system  
Page 24



## DIGGING FOR DOLLARS

Show Me Soils thrives by providing timely, high-quality soil evaluations amid challenging site conditions in the counties surrounding St. Louis

**PAGE 10**



*Decrease fuel waste*

**INCREASE YOUR SAVINGS**

Reducing fuel costs helps keep your budget in check. Verizon Networkfleet can help your home services business save money with a fleet management system that keeps track of fuel consumption, idle time, engine diagnostics and wasteful driving behaviors. Get the eBrief “Six Steps to Cutting High Fuel Costs with Verizon Networkfleet” to find out how Networkfleet can help keep your vehicles running efficiently.

866.869.1353

| [www.Networkfleet.com/OIFuel](http://www.Networkfleet.com/OIFuel)

**Better.  
Faster.  
Stronger.**



**INFILTRATOR<sup>®</sup>**  
water technologies

Reimagining  
**Onsite Water Management**



800-221-4436 • [www.infiltratorwater.com](http://www.infiltratorwater.com)



### SUBSCRIPTIONS

A one year (12 issue) subscription to *Onsite Installer*™ in the United States or Canada is free to qualified subscribers. A qualified subscriber is any individual or company in the United States or Canada that partakes in the installation, design, maintenance, manufacture, treatment, consulting or sale of onsite wastewater treatment systems or supplies. Non-qualified subscriptions are available at a cost of \$60 per year in the United States and \$120 per year outside of the United States. To subscribe please visit [onsiteinstaller.com](http://onsiteinstaller.com) or send company name, mailing address, phone number and check or money order (U.S. funds payable to COLE Publishing Inc.) to the address above. MasterCard, VISA and Discover are also accepted. Supply credit card information with your subscription order.

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

### CLASSIFIED ADVERTISING

Minimum rate of \$25 for 20 words; \$1 per each additional word. All classified advertising must be paid in advance. DEADLINE: Classified ads must be received by the first of the month for insertion in the next month's edition. PHONE-IN ADS ARE NOT ACCEPTED. Fax to 715-546-3786 only if charging to MasterCard, VISA, Discover or AmEx. Include all credit card information and your phone number (with area code). Mail with check payable to COLE Publishing Inc. to the address above. CLASSIFIED ADVERTISING APPEARS NATIONWIDE AND ON THE INTERNET. Not responsible for errors beyond first insertion.

### DISPLAY ADVERTISING

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



Winnie May

### EDITORIAL CORRESPONDENCE

Send to Editor, *Onsite Installer*, P.O. Box 220, Three Lakes, WI, 54562 or email [editor@onsiteinstaller.com](mailto:editor@onsiteinstaller.com).

### REPRINTS AND BACK ISSUES

Visit [www.onsiteinstaller.com](http://www.onsiteinstaller.com) for options and pricing. To order reprints, call Jeff Lane at 800-257-7222 (715-546-3346) or email [jeff.lane@colepublishing.com](mailto:jeff.lane@colepublishing.com). To order back issues, call Nicole at 800-257-7222 (715-546-3346) or email [nicole.labeau@colepublishing.com](mailto:nicole.labeau@colepublishing.com).

### CIRCULATION

Circulation averages 21,954 copies per month. This figure includes both U.S. and International distribution.

© Copyright 2015 COLE Publishing Inc.

No part may be reproduced without permission of the publisher.



**WATER & WASTEWATER  
EQUIPMENT, TREATMENT &  
TRANSPORT SHOW**

[www.wwettshow.com](http://www.wwettshow.com)

EDUCATION DAY: Feb. 17, 2016 EXHIBITS OPEN: Feb. 18-20, 2016  
Indiana Convention Center, Indianapolis, Indiana

### COVER STORY

#### 10 Digging For Dollars By Ted J. Rulseh

**ON THE COVER:** Missouri's Show Me Soils provides the site evaluations property owners need to order onsite systems that function properly for the long haul. Now also doing point-of-sale system inspections, owner Chris Chapman is shown with his company's Yanmar ViO35 mini-excavator on a work site. (Photo by Whitney Curtis)

#### 6 Editor's Notebook: Michigan Watershed Study Unfairly Casts Blame on Septic Systems

Researchers who found human fecal bacteria in the state's streams should have clarified their blanket criticism of decentralized wastewater treatment.

By Jim Kneiszel

#### 8 @onsiteinstaller.com

Be sure to check out our exclusive online content.

#### 18 Rules and Regs: States, Ontario agree to reduce phosphorus levels by 40 percent in part of Lake Erie

By Doug Day

#### 20 Basic Training: Flow Equalization Revisited

Sharpen your pencil and do a little math to overcome lingering concerns about optimal tank capacities for every residential or commercial system design.

By Jim Anderson and David Gustafson

#### 24 System Profile: Primed For Expansion

Spray and drip irrigation provide final effluent treatment for a lagoon system serving a major resort community in the watershed of Tennessee's Obed River.

By Ted J. Rulseh

#### 28 Shop Talk: Video Tattler or Insurance Tamer?

Windshield cameras capture view of other motorists, have the potential to uncover and correct your drivers' bad habits.

By Ed Wodalski

#### 30 State of the State: A Broader Mission

California pumpers and installers take the 'waste' out of wastewater in their organization's name to promote solutions to the state's ongoing water crisis.

By Doug Day

#### 32 WWETT Spotlight: Fuji Clean Introduces Compact ATU to the US Market

By Craig Mandli

#### 34 Product Focus: Systems Repair/Drainfield Rejuvenation

By Craig Mandli

#### 38 Product News

#### 39 Industry News

#### 42 Associations List

### Coming Next Month: November 2015

#### ISSUE FOCUS:

#### New Technology/Installation Tools

- **Contractor Profile:** Networking in New Hampshire
- **Basic Training:** Avoid the deep freeze

### Get Social with *Onsite Installer*



[www.facebook.com/OnsiteInstaller](http://www.facebook.com/OnsiteInstaller)

[www.twitter.com/OnsiteInstaller](http://www.twitter.com/OnsiteInstaller)

[www.plus.google.com](http://www.plus.google.com)

[www.youtube.com/OnsiteInstaller](http://www.youtube.com/OnsiteInstaller)

[www.linkedin.com/company/onsite-installer-magazine](http://www.linkedin.com/company/onsite-installer-magazine)



# Presby Environmental

The Next Generation of Wastewater Treatment

## Advanced Enviro-Septic® (AES)

- ✓ Passive Non-Mechanical Process
- ✓ Proven and Reliable Track Record
- ✓ Treatment and Dispersal
- ✓ Affordable



*“An innovative, cost-effective and environmentally-friendly wastewater treatment system.”*

~The Guardian Newspaper, 2014

Find out why so many Designers and Installers rely on AES  
[www.PresbyEnvironmental.com](http://www.PresbyEnvironmental.com) • 800-473-5298

# advertiserindex

OCTOBER 2015

COMPANY	PAGE
Alita Industries, Inc.....	41
Bio-Microbics, Inc. ....	13
Brenlin Company, Inc. ....	7
Cam Spray .....	19
Crest Precast, Inc. ....	29
Eljen Corporation .....	15
Fergus Power Pump, Inc. ....	41
Fuji Clean USA.....	16
Infiltrator Water Technologies, LLC ....	3

COMPANY	PAGE
Jet Inc.....	19
Knight Treatment Systems .....	41
Liberty Pumps.....	9
MACBlowers by Fuji Clean of Japan.....	43
Netafim USA.....	31
Polylok, Inc. / Zabel.....	44
Premier Tech Aqua .....	8
Presby Environmental .....	5
Roth Global Plastics.....	21
RWL Water.....	16
Salcor Inc. ....	7
See Water Inc.....	21

COMPANY	PAGE
Septic Products, Inc.....	19
Septic Services, Inc.....	39
Septronics Inc. ....	27
Sim/Tech Filter Inc. ....	43
Simple Solutions Simple Solutions Distributing.....	43
SJE-Rhombus® .....	15
T&T Tools, Inc. ....	41
The Dirty Bird (BS Design Corp).....	43

COMPANY	PAGE
Tuf-Tite Inc. ....	17
Verizon Networkfleet.....	2
Water Cannon, Inc. - MWBE.....	43
Wieser Concrete .....	27

What you learn on these pages could be worth **\$1,000s.**  
 It's all yours for FREE!  
 Subscribe today.

[www.onsiteinstaller.com](http://www.onsiteinstaller.com)  
 800/257-7222

# Michigan Watershed Study Unfairly Casts Blame on Septic Systems

Researchers who found human fecal bacteria in the state's streams should have clarified their blanket criticism of decentralized wastewater treatment

By Jim Kneiszel



**A**s an old newspaper reporter, I know what you put in the lead of the story – the first few paragraphs – is critically important. In most cases, the reader will scan the first sentences of a story and move on to the next headline.

Leaving out one or two important words, readers may miss the whole point of a story. It's the reporter's responsibility to distill all the information to be presented and choose words carefully so the reader clearly understands the crux of any issue being covered.

That's where I believe the writers of a recent Michigan State University study about pollution in that state's waterways fell short ... and did a disservice to onsite system users and the hard-earned reputation of the onsite industry. Simply put, the trumpeted conclusions – and the headlines in MSU and other media coverage of the findings – generalize by saying that septic systems aren't keeping *E. coli* and the human fecal bacteria *B-theta* out of the state's watersheds.

**Users who rely on onsite systems don't always value the priceless service they provide. You can bet that folks who live on those tested waterways would rather spend their money on a new fishing boat than an effective wastewater system. But why?**

The study should have clarified that “failing, old and under-regulated” septic systems could be the cause of the pollution detected in October 2010 spot testing of 64 Michigan streams. The study authors indeed allude to this point after several pages of data:

“These results illustrate the importance and need for responsible development and septic system maintenance along lake and river riparian zones to protect water quality,” the report states.

## MAKING DISTINCTIONS

That's a far cry from the way the study is being sold by the university. This is the headline *MSU Today* ran to tout the study: “Septic Tanks Aren't Keeping Poo Out of Rivers and Lakes.” So much for a serious and scientific analysis. Again, buried below the headline, study author Joan Rose states:

“Better methods will improve management decisions for locating, constructing and maintaining onsite wastewater treatment systems. It's financially imperative that we get it right.”

How is this any different from what onsite professionals have been saying for years? The onsite wastewater industry strongly advocates for routine inspection and maintenance of septic systems. Further, manufacturers have responded to the call for more advanced treatment and have introduced many technologies that – when implemented – serve to improve water quality.

If you read between the lines – and if the study authors would have chosen their words more carefully – this study is not a blanket indictment of decentralized wastewater treatment. It's more of a validation, really, of the onsite industry's call for better system maintenance and regulation. Designers and installers know that millions of onsite systems are old and obsolete, and require repair or replacement.

## THE STUDY BASICS

MSU researchers drew grab samples from 64 streams in lower Michigan near where they empty into Great Lakes basins that surround the state. Samples from nine rivers (14 percent) exceeded the U.S. Environmental Protection Agency suggested levels for safe contact (swimming). Human fecal bacteria was found at some level in every sample, and watersheds that supported at least 1,621 septic systems showed higher levels.

The study further stated that multiple approaches were used to examine the impact of municipal wastewater treatment plants, and that “it was ultimately determined that WWTP were not a driving factor of microbial water quality in the studied watersheds.” So researchers placed the responsibility for pollution squarely on septic systems.

## QUESTIONING THE RESULTS

Experts in onsite wastewater were not involved in the study. And that's one reason it should be taken with a grain of salt, says Sara Heger, engineer in the Onsite Sewage Treatment Program of the Water Resources Center at the University of Minnesota. For a number of reasons, Heger questions the significance of the study findings:

- Heger says it appears the study involved taking a single water sample from each of the streams, at a convenient bridge crossing. Without multiple samples, she says one failing septic system near a test site could have caused the high levels of bacteria.



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

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.

- 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!

**BrenLin Company, Inc**  
Manufacturers of Seal-R™ Products  
888-606-1998 • www.seal-r.com

Seal-R™ Sizes:  
12", 15", 18",  
24", 30",  
36", 42"

RISER: Dual-wall plastic culvert pipe.

Inner safety lid.

- The samples were purposely taken at a time of low flow in the waterways, which Heger says could have concentrated the bacteria. Had samples been taken during periods of both high and low flow, the bacteria may have been diluted to an insignificant level.
- The study did not look at the age, performance or type of septic systems in each watershed, or site and water table conditions, which could have explained higher levels of pollution. Heger says Michigan is one of two states without a statewide code for onsite systems, indicating a concern about consistent regulation.
- Anecdotal evidence was thin. Heger notes the study mentioned one local health department that claimed 26 percent septic system failure rate to criticize onsite systems in general. She saw no evidence to support the study's claim that treatment plants were not a contributing factor to the pollution.
- While the study noted that 14 percent of the streams had bacteria levels too high for swimming, 86 percent would be fine for human contact. "It's making it out to be a larger problem than it is," Heger says. "We want (all streams) to be swimmable. We want that to be a goal, but it's not as big of an issue as they're making it out to be."
- The study was written from the perspective of fisheries and wildlife researchers rather than wastewater engineers, Heger says, and deeper research is needed. "I would guess that everyone involved in writing this knows little about septic system design, installation and management," she says.

### THE REAL MESSAGE

The study takeaway for Heger: "More than anything, this means we need to improve septic systems in this area," she says.

In my eyes, the research is more of an indictment of those who own septic systems than of the effectiveness of decentralized wastewater treatment in general. Users who rely on onsite systems don't always value the priceless service they provide. You can bet that folks who live on those tested waterways would rather spend their money on a new fishing boat than an effective wastewater system. But why?


Is there anything more important to the operation of a home than waste treatment? Without an onsite system, these folks would have no place to dock their new fishing boats. And without clean water, they'd have nothing to fish for and no place to swim.

If installers and designers bear any responsibility for the situation in Michigan or for failing systems anywhere else, it's to put more effort into customer education. Somehow, septic system owners must be made to understand the importance of routine inspections and be willing to repair or replace systems that threaten health or cause pollution. □


# SALCOR UV

Innovative Leader Since 1978

## Easy Installation/ O&M




## Preserves Environment



## Inactivates Life-Threatening "Superbugs"

EBOLA  
MRSA

## No Water is "Wasted"




UL LISTED  
3G UV UNIT

9,000 GPD GRAVITY FLOW


Made in the USA

- Ultimate Health & Environmental Protection
- Onsite Residential, Commercial & Municipal Uses, Up to 100,000 GPD
- Most Third Party Tested & Approved
- UL Certified NEMA 6P "Floodproof" (30-Days Underwater)
- NSF/Washington State 6-Mo Fecal Coliform Tests with 21 ATU Models


### Proven Water Reuse Applications



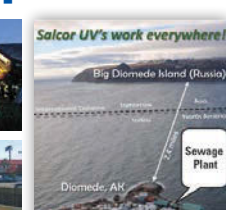
**Elementary School, MO**  
3 Salcor 3G UV Units in a Parallel Array



**Nursing Home, OH**  
2 Salcor 3G UV Units in Series with an Activated Sludge Plant. Replaces Chlorination



**Duke's Restaurant, CA**  
Malibu Oceanfront  
4 Salcor 3G UV Units in a Parallel/Series Array



**Sewage Plant, AK**  
Little Diomed Island  
Salcor 3G UV Unit with Lifewater Engineering

*Salcor UV's work everywhere!*

Big Diomed Island (Russia)

Diomedes, AK

Little Diomed Island (USA)

**Salcor Inc. 760.731.0745**  
F: 760.731.2405 • jsruver@aol.com

**NEW MODEL!**

# Ecoflo<sup>®</sup> Coco Filter

## ECOLOGICAL WASTEWATER TREATMENT SYSTEM

- ✓ No energy for the treatment
- ✓ 100% natural and recyclable filtering media
- ✓ Gravity or pumped discharge with integrated dosing volume



## SMALLER THAN EVER!

CURRENT MODEL  
5+ BR

NEW MODEL  
UP TO 4 BR

50%  
MORE COMPACT

Contact our regional supervisor!  
☎ 1 800 632-6356 | [ECOFLOBIOFILTER.COM](http://ECOFLOBIOFILTER.COM)



# @onsiteinstaller.com

Visit the site daily for new, exclusive content. Read our blogs, find resources and get the most out of *Onsite Installer* magazine.

## DO YOU HLT?

### The Art of Hydraulic Load Testing

While hydraulic load testing (HLT) of onsite wastewater systems isn't a requirement during the sale of a home, it's been a common practice in many areas. An HLT will answer three basic questions about the soil treatment area of an onsite system. Here's what you need to know.

>>> [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)



### Overheard Online

“Your employees work best when they are working together – not acting in self-interest but in a spirit of teamwork, communicating, collaborating and making progress toward shared goals.”

-7 Ways to Build a Team Mentality >>> [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)



## KNOW WHEN TO DIY Maintenance Guidelines

Truck maintenance is part of life for every pumper. But if you take on work you're not quite qualified to handle, it can backfire and cost you time and money. Here's some advice about what to do yourself and what to leave to a professional mechanic. >>>

[onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

## PRETREATMENT BASICS Media Filters 101

The term media filter covers a broad array of technologies specifically developed and used to provide additional pretreatment of septic tank effluent. This is done to address specific problems such as high-strength waste, or for nutrient or pathogen reduction. Continue reading our media filter series with this tutorial on single-pass media filters. >>>

[onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

## emails and alerts



Visit [OnsiteInstaller.com](http://OnsiteInstaller.com) and sign up for newsletters and alerts. You'll get exclusive content delivered right to your inbox, and you'll stay in the loop on topics important to you!

CONNECT WITH US

want more?



Find us on Facebook at [facebook.com/OnsiteInstaller](http://facebook.com/OnsiteInstaller) or Twitter at [twitter.com/OnsiteInstaller](http://twitter.com/OnsiteInstaller)



# Complete Systems. **ONE** Source.

# EPS

## Engineered Pump Systems

Now with QuickTree® Technology!

**Grinder Systems**

**Solids-Handling Systems**

**Effluent Systems**

**Simplex**

**Duplex**

Order a Liberty EPS and you'll get the assurance of the complete system arriving to the job-site with factory matched components – pump, panel, basin, internal piping, guide rails, floats - all from one source.

**All liberty EPS systems now feature QuickTree® technology for quick and easy access to the float switches!**

Need it fast?

Specify a pre-designed system from Liberty! Pre-designed simplex and duplex systems are available and ready to ship in 24 hours. Consult factory for more information on our pre-designed packages.

**800-543-2550**  
[www.libertypumps.com](http://www.libertypumps.com)



# Liberty Pumps

**50** years  
1965 - 2015

Copyright © Liberty Pumps, Inc.  
2015 All rights reserved.

**Inc.  
5000**

One of Americas fastest growing,  
privately owned companies.



# DIGGING FOR DOLLARS

Show Me Soils thrives by providing timely, high-quality soil evaluations amid challenging site conditions in the counties surrounding St. Louis

By Ted J. Rulseh

**C**hris Chapman grew up in the onsite treatment business, “dragging pipe” on his father’s installation projects from the time he was 10 years old. So it’s not surprising that he wound up in the industry, although the route he took to get there was a bit unconventional.

His company, Show Me Soils, specializes in soil evaluations for onsite systems in Franklin County and other Missouri counties west of St. Louis. It’s fully separate from the original family business, Chapman Contracting, founded by his father, John Chapman Sr.

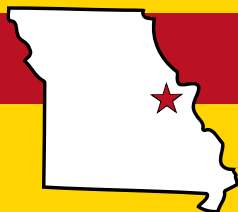
Show Me Soils does business with Chapman Contracting but also serves multiple other installation contractors and engineers. Chris Chapman built his 4-year-old business with aggressive Internet-based marketing and with quality, responsive service that quickly turns first-time callers into steady customers.

His business also includes onsite system inspections for real estate transfers, and he’s a licensed distributor for Norweco treatment systems. He sees a bright outlook for the business: “The housing industry has taken off around here. The home inspectors are as busy as they can be, so that means homes are selling. And we’ve been seeing a lot of new construction, which is the backbone of everything.”

### SUCCESS BY DEGREES

Chapman finished his business administration degree in management and marketing at Columbia College in Columbia, Missouri, at the height of the 2008 recession. Seeing that at the time his degree “wasn’t worth the paper it was printed on,” he went back to college to study soil science at the University of Missouri, ultimately becoming a state-certified onsite soil evaluator.

## Show Me Soils, St. Clair, Missouri



- FOUNDED:** 2011
- OWNER:** Chris Chapman
- EMPLOYEES:** 1
- SPECIALTIES:** Soil evaluations, septic system and well inspections, ATU maintenance
- SERVICE AREA:** 50-mile radius
- AFFILIATIONS:** NOWRA, Missouri Small Flows Organization, Eastern Missouri Small Flows Organization
- WEBSITE:** [www.showmesoils.com](http://www.showmesoils.com)

<< **OPPOSITE PAGE:** The Show Me Soils team includes, from left, Brenden Murphy, assistant manager; Chris Chapman, owner; and Amanda Arrington, vice president of marketing.

>> **RIGHT:** Brenden Murphy takes measurements at a property in Florissant, Missouri. (Photos by Whitney Curtis)

He chose to study soils because he knew from his father's experience that percolation tests were being phased out and systems were becoming more sophisticated, going from conventional septic to drip irrigation systems requiring week-long installations and backed by engineering drawings and soil science. "Dad saw an opportunity in soil evaluation, and he's the one who convinced me to go back to school," Chapman says.

He studied under Randy Miles, Ph.D., an associate professor of soil science at the university's School of Natural Resources and a leading figure in the onsite treatment field. "He somewhat took me under his wing," says Chapman. "I wouldn't have been able to do it if not for him."

After two years of soil science schooling, Chapman founded Show Me Soils in 2011. The company operates entirely independent of Chapman Contracting. "I started my own company so other contractors could work with me without fear of my being totally linked to my father's business," Chapman says.

### DEMANDING RULES

Show Me Soils works in a 50-mile radius from the home base in St. Clair, about 45 miles from St. Louis. That area encompasses mostly Jefferson, St. Louis, St. Charles and Franklin counties, which require all onsite systems to be engineered.

Heavy clay soils pose the most common system design challenge, although some areas have high water tables and Jefferson County is known for rocky terrain. "In Jefferson County especially, we see small lots with



Chris Chapman uses a Yanmar ViO35 mini-excavator in a customer's yard.

Chapman finishes the paperwork for a soil test in a customer's backyard.



horrible soils,” Chapman says. “There are some jobs where you can dig down and there will not be 2 inches of soil anywhere on the lot. Basically at that point you have to import soil. I’ve seen sites where the contractor had to completely import 30 inches of soil to make a system work.”

**“The housing industry has taken off around here. The home inspectors are as busy as they can be, so that means homes are selling. And we’ve been seeing a lot of new construction, which is the backbone of everything.”**

**Chris Chapman**

Replacements for failed systems on small lots tend to rely on drip irrigation: “It has a small imprint. You can fit it in tight spots.”

For most soil tests, Chapman meets with an engineer on the site. Sometimes the installation contractor and property owner are also present. Typically, the soil test quickly dictates the type, size and location of the system. “That way everybody knows exactly what’s going on right away instead of sitting in limbo for a week or two,” Chapman says.

Interacting on site with property owners can be difficult since most don’t enjoy learning that they need an advanced system that costs more

than they expected. “People don’t really care what kind of soil it is,” Chapman says. “They care about one thing: how much the system is going to cost. When I first started I would sugarcoat things. I’ve gotten completely away from that. I’m direct. I tell them how it is.”

“I pride myself on being frugal and practical, but I’m not going to recommend a system that I don’t believe will work. I’ve figured out how to tell people that trying to save \$1,000 here or \$500 there is going to backfire on them in the long run. I’m not about to let them get by with a conventional system that will be surfacing in their yard three years from now.”

#### **EQUIPPED FOR SUCCESS**

For soil tests, Chapman arrives on site with a Dodge 2500 pickup towing a Yanmar ViO35 mini-excavator, an 8,000-pound rubber-tracked machine with a 2-foot-wide bucket. “It’s much better suited than the rubber-tired machines some people use,” he says. “I can go on those tracks into subdivisions where the homes have \$50,000 worth of landscaping and you can barely tell where I came in and out. Yet the machine has enough weight so that in July, when it’s dry as a bone, I can still dig pits 5 feet deep.”

On each site, he digs three to six pits, depending on county regulations. Jefferson County requires two additional pits to evaluate a reserve drainfield area. Chapman uses a standard Munsell soil color chart to identify soil types. He marks the soil horizons with 6-inch concrete nails and measures them using a flexible seamstress-style tape ruler. He takes a sample from each horizon, sprays each sample with a water bottle to pinpoint its color,

*(continued)*

# Simple works on any scale.



FOR ONSITE WASTEWATER  
PROFESSIONALS

## Any size project. Anywhere.

Bio-Microbics FAST® and SeptiTech® STAAR™ systems are proven wastewater solutions. Universally adaptable, scalable, and connects people to their onsite water source. Whether a big project or small, we understand today's realities; and, we are ready to help.

## Simple, Low Cost, Robust

[www.biomicrobics.com](http://www.biomicrobics.com)

800-753-3278 (FAST)

[sales@biomicrobics.com](mailto:sales@biomicrobics.com)



© 2015 Bio-Microbics, Inc.



The company created clever promotional signage using PVC pipe. Shown is a Polaris Ranger UTV used by Show Me Soils.

## Wastewater industry roots

Chris Chapman's Show Me Soils business sprang from fertile ground in an onsite installation firm launched by his father, John Chapman Sr., in 1998.

Chapman Contracting filled what the elder Chapman saw as a void in the local market for a qualified onsite installation specialist. He had installed septic systems on weekends in the 1970s and 1980s while serving in the Missouri National Guard. A sergeant major attached to the Engineering Brigade, he supervised the equipment maintenance shop; he also had experience as a heavy-equipment operator and was a member of Local 513 Operating Engineers.

In March 2003, son John Chapman Jr. joined the company full time for the opportunity to serve the community, grow with the industry and work with family. He quickly gained experience in all aspects of the company, including estimating, job layout and onsite system service and repair. He now runs the day-to-day business as his father has semiretired. The company installs about 50 systems per year.

John Chapman Jr. sees a growing need for advanced treatment and dispersal systems because of soil and other site limitations. His Master Drain Layer Certification authorizes him to install systems in all counties in Missouri. "The septic industry isn't a part-time job anymore," he says. "It is becoming more and more specialized. The days of a guy hanging drywall one week and installing onsite systems the next are over."

Efficient and reliable equipment is a top priority. The inventory includes a Bobcat T550 compact track loader, Bobcat S250 skid-steer, Yanmar B7-5 excavator, Cat 303CR excavator, Hitachi Ex 100 excavator, Cat 420 IT 4 x 4 backhoe, Finn power mulcher/straw blower, Chevy G3500 cutaway high-cube commercial utility van, Chevy C4500 flatbed, Sterling A9500 road tractor with 25-ton lowboy trailer, and a Dodge 2500 pickup truck.

The company emphasizes quality at prices that are competitive but not the lowest. The elder Chapman often said, "We've never lost money on a job we didn't get," and that those who compete on price alone "don't stay in the phone book long."

As for John Jr., he is deeply committed to the industry and the business and hopes sons John III and Joseph will one day join him in it.

and checks each sample for texture, percent of coarse fragments, consistence, structure, roots/pores, and shrink/swell potential. From there an application rate is determined for each designated horizon.

Competition for soil evaluators is limited in the area. "There are only a few of us," Chapman says. "Having my own machine gives me a competitive advantage. Some of the soil evaluators don't have their own machine. They might only do evaluations on weekends, and they have to line up a contractor to dig the pits.

"These days it seems when anyone calls they need something done yesterday. I bring my own excavator and I do it all right there. If a contractor says he needs a soil test the next day, I might not get there that day but I'll be out there the following day."

### REACHING CUSTOMERS

Internet searches are also a source of leads for Chapman's system inspection business and savvy marketing helps him win ample opportunities to prove himself. "I am of the belief that the phone book is yesterday's news," Chapman says. "Others weren't taking advantage of Internet marketing. Thanks to my marketing degree, I was able to. There was really no strategy except spending hundreds of hours with my website, constantly changing things, doing research, using Google AdWords, figuring out what worked and what didn't.

"If someone's septic system has backed up and they're told they need a new system, contractors will often tell them, 'You need a soil test.' If they get on Google and type in 'onsite soil testing,' I'm going to appear as the top one on the page. I'm the first name they see, and that gives me an excellent chance to get the business.

"My reason for the website was to get people to call me. Once I get them on the phone and get a job, I rely on my work to speak for itself. I have tons of repeat customers who initially found me on the Internet. I get good customers and then benefit from their word-of-mouth. I still believe word-of-mouth is probably the best asset, but you have to get in the door first."

### POINT-OF-SALE PRO

Many older systems in the area need replacement or significant repair. "The biggest problem is homes that were built in the 1970s and 1980s with the expectation that sewers were coming," Chapman says. "Thirty to 40 years later, sewers are still not there. The onsite systems weren't intended to last that long, and there was never a plan to replace them.

*(continued)*

# ONSITE CONTROLS

No matter the application, we've got it under control, from float switches to event monitoring control panels, and everything in between. Now backed by our industry-leading five-year limited warranty!



www.sjrhombus.com



### New & Improved PS Patrol® System

The newly enhanced PS Patrol® system features a sleek angled clear enclosure with a removable cover for easy access for field wiring. All components are sealed within the cover for protection from the elements. Red LEDs illuminate cover for 360° visual of alarm condition.



### IFS Panels with C-Level™ Sensor

C-Level™ sensor detects the liquid level in the tank and sends a signal to the IFS panel. Pump activation and alarm levels are adjusted on the panel touch pad, eliminating the need to go into the tank. One C-Level™ sensor simulates up to four (float) levels.



### Tank Alert® EZ Alarm System

This new alarm is all about making installations easier! It features an innovative enclosure which integrates the red LED beacon, external mounting tabs for quick installation and a removable cover which allows greater access for easier field wiring.

# Your Wastewater Treatment System Shouldn't need Mission Control to run it!

## Eljen GSF... Affordable and Non-Mechanical Treatment Solutions

- Passive dual filtration equals affordable performance with little to no maintenance.
- Compliant with NSF/ANSI Standard 40.
- 30 Years of continued industry success.



Simple, Effective, Easy to Use.



Innovative Environmental Products and Solutions Since 1970

1-800-444-1359

eljen.com





During soil testing, Chapman takes a break to keep the homeowner informed about the soil evaluation process.

“I can get a pretty good idea what I’m going to find just by the age, the lot size and what county the home is in. If the sellers have updated the septic system, they usually brag about it. If they paid \$15,000 three years ago to update the system, that’s going to be in big, bold letters in the real estate listing. If I don’t hear anything about an update, I can assume it’s the original system. More than 60 percent of those need some major repair or updating.”

Chapman gets repeat business through connections with home inspectors, who largely prefer to delegate onsite system inspections, and

**“Having my own machine gives me a competitive advantage. Some of the soil evaluators don’t have their own machine. They might only do evaluations on weekends, and they have to line up a contractor to dig the pits.”**

**Chris Chapman**

with real estate agents. For his inspections, Chapman uses standard forms supplied by the state.

**SALES AND MAINTENANCE**

A small but potentially high-growth side of Chapman’s business is in sales and maintenance of Norweco treatment units through an exclusive distributorship in Franklin County and part of St. Louis County. He has sold about 50 of the systems in three years and handles the initial NSF-required two-year maintenance contracts. He is now training an employee, Brenden Murphy, to handle the maintenance side.

He sees reliance on advanced treatment systems increasing: “I think the lot sizes are going to get smaller and smaller, and the good building sites with great topsoil seem to be disappearing. We deal with more and more difficult sites on a daily basis.”

As those sites call for evaluations, local engineers and contractors can be sure Show Me Soils will be there to do the job. □

**MORE INFO:**  
**Norweco, Inc.**  
 800/667-9326  
 www.norweco.com



Maine distributor Elodie with her dad, Matt Page.

**FujiClean USA™**

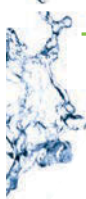
World’s #1 onsite treatment system.

U.S. distributor opportunities available. 207-406-2927 / 860-304-6110

www.fujicleanusa.com



**TORNADO® Self-Aspirating Aerator**



**TORNADO aerators** are powerful and reliable.

Tornados upgrade lagoon systems, expand treatment capacity and provide ice control.

- ▶ Available from 2 to 100HP
- ▶ Energy efficient motor
- ▶ Float-mounted or wall mounted units
- ▶ All stainless steel construction
- ▶ Made in the USA

Visit our website for spare parts, services and more information.

info@rwlwater.com • +1 800 879 3677

rwlwater.com



**RWL Water** SM



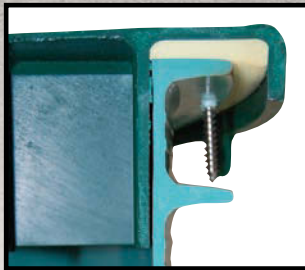
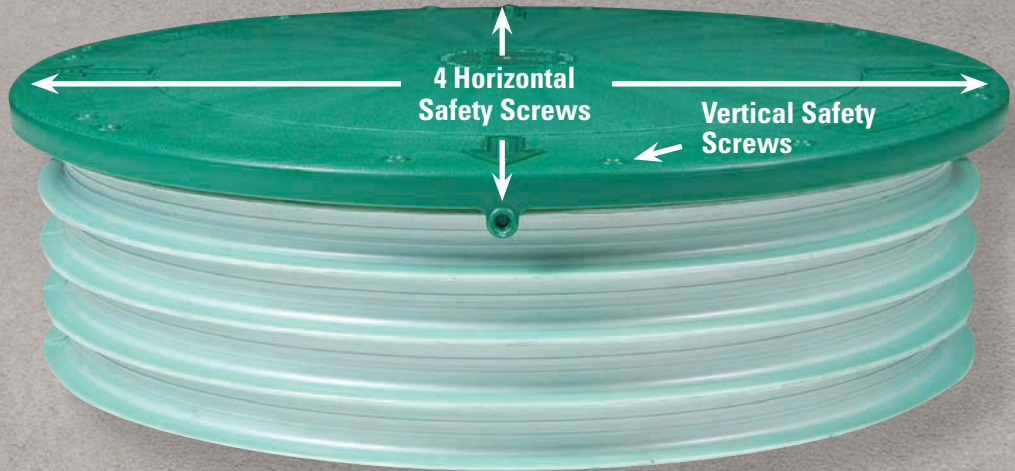
# 24" HEAVY DUTY MULTI-PURPOSE FLAT RISER LID

**FREE FREIGHT  
 on Full Cartons!**

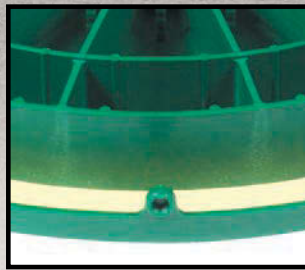
**Fits most commercially  
 available:**

- Risers
- IPEX PVC Ribbed Pipe
- Corrugated Pipe

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



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



Foamed-in Permanent Polyurethane Gasket.



Holds up to 70 lbs of Concrete for Added Safety.



Water-TITE™ Joint Vertical and Horizontal Safety Screws

## 4" Effluent Filter and 4" T-Baffle™

86 ft. of 1/16" filtration area.

Increases time between filter cleaning.



EF-4 Combo Includes Filter, Housing and

4" Sch. 40 & SDR-35

NSF®  
 800 GPD  
 ANS/NSF  
 Standard 46

NSF®  
 COMPONENT  
 ANS/NSF  
 Standard 46

EF-4 Combo 18

NSF®  
 COMPONENT  
 ANS/NSF  
 Standard 46

TB-4-18 Housing  
 12/carton

SD-4  
 Gas/Solids Deflector

### 4" Effluent Filter EF-4

One-piece effluent filter fits in 4" Sanitary Tee.

- Injection molded PolyPro
- Simple to install - Easy to clean

### 4" Sanitary Inlet/Outlet T-Baffle™

Injection molded T-Baffle™.

- Injection molded T-Baffle
- Fits 4" Sch. 40 and SDR-35 pipe
- Simple to install
- May also be used as Inlet & Outlet Tee

## 6" Effluent Filter and 6" T-Baffle™

244 ft. of 1/16" filtration area.

Increases time between filter cleaning.



EF-6 Combo Includes Filter, Housing and Bushing

4" Sch. 40 & SDR-35

NSF®  
 1500 GPD  
 ANS/NSF  
 Standard 46

NSF®  
 COMPONENT  
 ANS/NSF  
 Standard 46

TB-6 Housing

Gas/Solids Deflector

### 6" Effluent Filter EF-6

One-piece effluent filter fits in 6" T-Baffle™.

- Injection molded PolyPro
- Simple to install
- Easy to clean

### 6" Sanitary T-Baffle™

Injection molded T-Baffle™.

- Injection molded
- Fits 4" Sch. 40 and SDR-35 pipe
- Simple to install
- May also be used as Outlet Tee with Solids Deflector

# States, Ontario agree to reduce phosphorus levels by 40 percent in part of Lake Erie

By Doug Day

**M**ichigan, Ohio and Ontario, Canada, have signed a joint agreement to reduce phosphorus in the western Lake Erie basin by 40 percent by 2025. The chemical is blamed for algae blooms that degrade water quality in the lake, including one last year that cut off water supplies to about 400,000 people around Toledo and southeast Michigan. Ohio has already passed a new law banning spreading manure and other fertilizers on frozen ground. Michigan, which regulates the practice, will be looking at prohibiting the practice as well. Leaders of the two states and Canadian province signed the Western Basin of Lake Erie Collaborative Agreement in June. It calls for them to develop independent plans and timelines to meet the 40 percent goal, with an interim goal of a 20 percent reduction by 2020.

## CALIFORNIA

As the state suffers through a fourth year of drought, the California Onsite Water Association is publicly backing a bill to establish water-quality standards for recycling wastewater for use in internal plumbing of residential and commercial buildings. The measure, AB 1463, would promote the use of graywater, rainwater and other water captured on site for things like flushing toilets and urinals. It would require the state Water Resources Control Board to establish distribution, monitoring and reporting requirements. It would not include water from toilets, sewers or onsite wastewater systems unless the board establishes "requirements for that water necessary to protect public health, safety and the environment," according to the text of the bill.

In a letter to bill sponsor Assemblyman Mike Gatto (D-Glendale), COWA states, "Increasing the usage of recycled water for non-potable purposes is one way Californians can use water more efficiently and has the potential to play a significant role in our ability to maximize the sustainable yield for the waters of this state, a most precious resource."

Saying it is vital to reduce barriers to onsite water-recycling systems, COWA also called for allowing the use of water-saving technologies. "We encourage legislation that directs agencies to work together to break down the overly conservative barriers to reuse that currently exist within our state. Our reuse laws were originally drafted many years ago, before the 30-plus years of technological advances in this rapidly changing industry."

COWA also says it supports more opportunities to reuse black water.

## MICHIGAN

A failed septic system has forced 33 families to find new places to live after their mobile home park decided to close rather than hook up to the municipal sewer system. The Village on the Lake mobile home park in White Lake was ordered to either connect to the sewer system or vacate the property in a consent decree with the Oakland County Health Department.

Township officials say it would have cost \$400,000 to bring sewer service to the park. The owner decided to close the mobile home park after telling residents they either had to move or start paying \$2,000 a month rent, which was about \$500 per lot.

Health Department officials, who regularly monitor mobile home parks, noticed standing water on the property earlier this year and found it was contaminated water from the septic drainfield. It now appears the property will be the location of a new hotel, conference center and restaurants.

## HAWAII

A bill to provide tax credits for replacing cesspools has been signed by Hawaii Gov. David Ige. The last state still allowing new cesspool construction, Hawaii will provide up to \$10,000 in tax credits for converting to a septic system or aerobic treatment unit, or connecting to a sewer system. With about 90,000 cesspools in use and 800 new ones each year, the Department of Health has long faced opposition to a ban. It issued rules in 2014 to require the conversion of cesspools upon sale of property, but couldn't get then-Gov. Neil Abercrombie to sign them before he left office. So far, legislative efforts to ban cesspools have not succeeded, and a bill to do so appears to have stalled this year.

The tax credit is good through 2020, with priority going to homes near drinking water wells and within 200 feet of shorelines, streams and wetlands.

## MARYLAND

The Maryland Board of Public Works has approved \$14 million in grant funding to help upgrade septic systems in rural parts of the state. The money comes from the Bay Restoration Fund and is aimed at reducing the amount of nitrogen discharged to the Chesapeake Bay. Financial assistance for homes and businesses is based on a sliding income scale to cover up to 50 percent of the cost to replace a failing septic system. The funds can also be used for new construction. The program is administered by the state's 23 counties with a focus on upgrading systems located in critical areas – those within 1,000 feet of tidal waters, wetlands and tributaries that drain into the bay.

## ARIZONA

The Arizona Department of Environmental Quality has requested feedback about the future of its required inspection rules when properties change ownership. Current rules require an inspection within six months prior to transferring ownership. A department memo requested input about eliminating the state program or transitioning responsibility to interested counties over 12 to 18 months. ADEQ has said it doesn't have the staff or funding to properly administer the notice of transfer program and there are

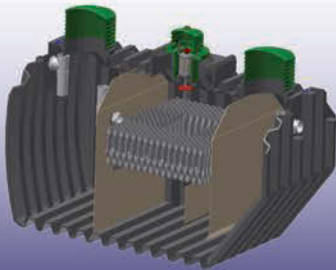


- Accu-Tab® Wastewater Tablets**
- U.S. made, recognized global brand with no imported ingredients
  - Chlorine tablet with beveled edges to minimize wicking
  - Consistent chlorine strength for reliable dosing control
  - No measuring, mixing, or spilling of chemicals common with granular and liquid chlorine
  - Stearate free formula with balanced pH

- Illumi-Jet UV Disinfection Unit®**
- UL listed as a NEMA 6p enclosure (watertight submergence test)
  - Install directly in ground or in pump tank on 4" effluent line
  - Complete disinfection without the use of chemicals
  - Hermetically sealed electrical components
  - High capacity disinfection reservoir
  - Kapton® seals improve serviceability



Wastewater Treatment Solutions



- Residential & Commercial Treatment Plants**
- Concrete and rugged polyethylene material
  - 500-1500 GPD Residential Systems
  - 1500-300,000 GPD Commercial Systems
  - Up to 800 GPD in plastic design
  - A single moving part
  - Innovative design for easy system servicing
  - No filters to clog
  - Lifetime exchange program



[www.jetincorp.com](http://www.jetincorp.com) • 800.321.6960 • [email@jetincorp.com](mailto:email@jetincorp.com)





**The Most Complete Line of**  
**SYSTEM ALARMS**  
**FLOAT SWITCHES**  
**ON-SITE ACCESSORIES**  
**CONTROL PANELS**

Call Today  
418-282-5933

[sales@SepticProducts.com](mailto:sales@SepticProducts.com) [SepticProducts.com](http://SepticProducts.com)



Working well under pressure!



## Pressure Washers and Drain Jetting Equipment



Skid and truck mount models up to 7000 psi





Portable Hot and Cold Water Diesel Powered Models





Hot and Cold Trailer Models  
 Up to 7000 psi  
 Flows up to 40 gpm  
 Powered Reels  
 Diesel powered models

We will custom build to your specifications

[www.camspray.com](http://www.camspray.com)    800-648-5011

sufficient environmental protections in existing onsite rules. The department held a listening session in July to receive feedback but has not said when it will make a decision.

### RHODE ISLAND

As of Jan. 1, 2016, existing cesspools in Rhode Island will have to be replaced within 12 months of a property changing hands. The state banned new cesspools in 1968, but 25,000 of them are still in use. A new law requires the replacement of cesspools with approved septic systems or sewer connections when a property is sold or ownership changes, other than between immediate family members. Low-interest loans and waivers will be available for low-income property owners. □

# Flow Equalization Revisited

Sharpen your pencil and do a little math to overcome lingering concerns about optimal tank capacities for every residential or commercial system design

By Jim Anderson and David Gustafson

In the past we've talked about the advantages of flow equalization strategies in residential or commercial systems to even out daily or weekly flows to a final soil dispersal unit or to pretreatment devices such as ATUs or media filters. This has led to some questions about tank capacities and necessary storage for flow equalization.

Consider three volume levels in flow equalization tanks: the minimum operating volume, the storage volume and the alarm volume. The alarm and storage volume will be determined based on the flow pattern from the residence or facility. The alarm volume is often designated by local regulatory requirements as a particular amount of reserve volume left in the tank after the alarm has been triggered. The minimum operating volume is dependent on tank characteristics, pump, pump discharge assembly and special site characteristics. The minimum volume level in the tank is heavily influenced by the pump intake. The pump intake must remain underwater to prevent air from being drawn into the pump and to provide for sufficient cooling of the pump's housing.

## DAILY USAGE RATES

For a residential system in Minnesota, for example, code requires a 1,000-gallon minimum tank or two times the estimated daily average flow rate. So we would estimate a three-bedroom house at 450 gallons per day  $\times 2 = 900$  gallons per day, or the 1,000-gallon minimum. It's straightforward as long as the tank allows the pump to be covered with water that is the minimum volume and any requirements for storage after a high-water alarm is triggered. Bottom line, regardless of the situation, we recommend designing on the basis of the peak measured flow and then build in safety capacity.

Storage and flow equalization are especially critical, for example, during peak summer usage periods at family summer lakefront cabins in our backyard in Minnesota. These properties have small lots and limited drainfield capacity, and onsite systems face severe overuse when everyone comes to the cabin to escape the heat in the cities.

In the absence of actual flow data, a design for capacity would be to look at the estimated daily flow handled by the drainfield and then look at the maximum weekend or four-day holiday stretch during a family reunion. Sum those estimated rates over the time period and add the daily flow estimated drainfield capacity, and you get the storage volume needed to handle the peak flow.

An example we use in workshops says we have 200 gallons per day acceptance in the drainfield, and over the four-day Fourth of July holiday we have 1,350 gallons over and above the daily average, which means we need 1,350 gallons plus 800 gallons – 2,150 gallons of storage capacity – to handle the peak weekends. If we had designed based on minimum usage, the family would be paying a premium for a pumper to visit at least twice on that weekend to remove the excess. Probably not a realistic expectation!

---

A series of tanks are buried at a resort where flow equalization is critical to proper wastewater treatment. (Photo courtesy of Jim Anderson)



**COMMERCIAL PROPERTIES**

Total capacity of a flow equalization tank used in a commercial treatment system can be calculated two different ways. The first method for calculating total capacity is to multiply the surge day-loading by 1 1/5. The other method is to add the surge day-loading volume to the average daily flow.

Again, depending on the type of establishment being considered, this can be straightforward or create some other interesting questions. For example, a fast-food restaurant or other franchise operation usually has solid information on peak days and has consistent flows, making establishing tank capacity a simple process.

**A fast-food restaurant or other franchise operation usually has solid information on peak days and has consistent flows, making establishing tank capacity a simple process.**

The other end of the spectrum is the tourist-area Wisconsin or Minnesota supper club. Often these restaurants are closed one or two days a week and the peak flows occur over the weekend from Friday night (fish fry night) to Sunday afternoon (everyone goes home). Finding information can be difficult, but owners of these businesses can tell you how many meals they serve and when their income is the highest. Multiplying the meals per day times 5 gives an estimated flow per day, which can be averaged and indicate the peak flow periods and estimates to base the tank size either by multiplying by 1 1/2 or taking the peak and adding the surge or peak loading volume to the daily average.

**ELEVATE THE INLET?**

The result of doing the math is often the need for a large tank capacity. Since the total operating volume of a flow equalization tank is calculated relative to the inlet pipe, the operating volume can be increased by elevating the tank's inlet. This allows for the entire tank volume to function as the operating volume. With this configuration, smaller tanks can be used because overall storage volume is increased and costs can be minimized. However, be aware code requirements in some states may prohibit this approach. If the inlet is raised, the installer must pay careful attention to the watertightness to avoid the risk of infiltration.

Another way to provide tank capacity is through linking multiple tanks. This allows for utilizing smaller tanks, which may be more readily available in some areas. The tanks are usually plumbed together at both the top and bottom. The top connection allows for airflow and the bottom connection is used to accommodate water flow.

When using tanks in series, it is extremely important that all of the tanks sit on a stable base. If the tanks are allowed to shift on their base, the connecting pipes will be strained and can fracture. Another installation consideration is to drop the elevation of the last tank in the series because its elevation sets the operating volume in all of the preceding tanks. By lowering the last tank, optimal operating volumes in all of the tanks can be preserved. □

**Simplex Control Solutions**

**Sim-A**

**Simple Simplex**



- Single & Three Phase
- Large Panel Selection
- 120/208/240/480 Systems
- Low Cost Solution
- Under 1 hp
- Single Phase 120V AC

UL 684A UL 508A UL US SP CE | [www.seewaterinc.com](http://www.seewaterinc.com) | Phone: 888-733-9283

**Roth**  
MULTITANK

**Septic Tanks • Water Cisterns  
Pump Tanks • Holding Tanks  
Rain Water Harvesting**

**Multi Usage      Multi Layer      Multi Coverage**

- Inner layer of FDA approved virgin HDPE, two inside layers of PE for improved stability, plus one outer layer of black and UV-stabilized PE
- Lifetime\* corrosion protection and 5 years of labor insurance
- Strongest & heaviest poly tank on the market
- No water for backfilling required
- Low profile
- 100% watertight

Our multi-layered tank construction, consisting of virgin material surrounded by 3 layers of protection.



**BEST TANK. BEST WARRANTY. BEST SYSTEM.**

Roth Global Plastics

[www.roth-america.com](http://www.roth-america.com) 866-943-7256

\*see warranty for details

wwettshow.com

Feb. 17-20, 2016  
Indiana Convention Center

# wwett<sup>TM</sup>16

Water & Wastewater Equipment, Treatment & Transport Show



## Act Now!

Make your plans early to attend  
the industry's largest annual event!

### Represented Industries

- Septic Pumping
- Onsite Installation
- Portable Sanitation
- Dewatering
- Grease Handling
- Sewer Cleaning
- Laterals & Mainlines
- TV Inspection
- Pipeline Rehab/CIPP
- Waterblasting
- Plumbing
- High-Pressure Cleaning
- Safety Equipment
- Confined Space
- Lift Stations
- Computer Software
- Industrial Vacuuming
- Hydroexcavation
- Trenchless Pipe Repair
- Utility Location

And Much More!



Register by  
**Nov. 15th**  
to receive  
the early  
bird rate of  
**\$40**  
per person!

\$100 per person at the door.  
Children 12 and under admitted free.

Register online at [wwettshow.com](http://wwettshow.com)  
or call 866-933-2653

The background of the entire advertisement is a wide-angle, high-angle photograph of the interior of Lucas Oil Stadium. The stadium is mostly empty, with rows of blue seats visible. In the center, the field is covered with a large blue tarp featuring the Lucas Oil logo. The stadium's architecture, including the brick facade and large glass windows, is visible in the upper portion of the image.

**WWETT SHOW**

**KICKOFF**

**LUCAS OIL**

**STADIUM**

**WEDNESDAY**

**5-8 P.M.**

**- Two Nights -**

**THURSDAY**

**5-8 P.M.**

***Free Welcome Reception!***

**Kickoff the 2016 WWETT Show in a big way—  
inside the enormous Lucas Oil Stadium!**

- Exhibitor Sponsors
- Beer, Wine, Soda
- Networking
- Snacks, Hor d'oeuvres

**Complete party details at: [wwettshow.com/kickoff](http://wwettshow.com/kickoff)**



Feb. 17-20, 2016  
Indiana Convention Center

**wwett<sup>™</sup>16**  
Water & Wastewater Equipment, Treatment & Transport Show

# Primed For Expansion

Spray and drip irrigation provide final effluent treatment for a lagoon system serving a major resort community in the watershed of Tennessee's Obed River

By Ted J. Rulseh

**T**he Fairfield Glade Community Club development is certainly big enough for a wastewater treatment plant with a conventional stream discharge. The trouble is that the resort community and its 4,950 homes and 400 timeshare units lie in the watershed of the Obed Wild and Scenic River. Creeks in the area flow to the Obed, and the Tennessee Department of Environmental Conservation (TDEC) won't allow discharge to them.

So Fairfield Glade developers turned to the soil. An extensive facultative lagoon series feeds a spray irrigation system and, more recently, a drip dispersal system cut into some 30 acres of forested land. The new drip system enables superior control of effluent dispersal and requires less maintenance than the spray system. Therefore, drip is the method of choice as the development grows toward its ultimate build-out at 18,200 housing lots.

## OUTGROWING THE OLD

Fairfield Glade, with its multiple amenities including lakes and golf courses, lies between Knoxville and Nashville, within the city limits of Crossville. Since development began in 1970, the community has been served by a private water district and a private wastewater treatment system fed by gravity and low-pressure sewers.

The original treatment plant, about 7 miles from the southernmost point of the development, used an extended aeration process and discharged to a stream called Bagwell Branch. By 1995, that system had become obsolete and undersized, according to Bruce Evans, wastewater system superintendent for the community for the past four years. It was replaced in 2001 by the lagoon

**ABOVE:** Some of the effluent is sprayed onto hundreds of acres, filtering through the soil and making its way to nearby streams and rivers. (Photo by Martin Cherry)

**BELOW:** Surface aerators (RWL Water) float on top of the complete-mix lagoon. (Photo by Glenn Marcum)







**ABOVE:** Harding Fox of Rutherford Utility Company; Bruce Evans, Fairfield Glade wastewater system superintendent; and Glenn Marcum of EcoStruct are shown at Fairfield Glade Community Club in Crossville, Tennessee. (Photo by Martin Cherry)

**RIGHT:** EcoStruct installed 6-inch and 4-inch mechanical joint gate valves and air release valves on mains. (Photo by Glenn Marcum)

system with 2.9 mgd design capacity and 0.86 mgd average flow. Spray dispersal replaced stream discharge, which was no longer allowed under TDEC regulations.

“We’ve got a headworks that consists of an automatic fine screen (Vulcan Industries),” says Evans. “We have a complete-mix lagoon that contains 4.63 million gallons. From there the water flows to a first partial-mix lagoon of 17.5 million gallons, and then to a second partial-mix lagoon of 17 million gallons. Finally, it flows to a storage lagoon containing just over 4 million gallons.

**“We have 350 acres inside the fence. The complete-mix lagoon does most of the work. That’s where most of the biological activity takes place and the CBOD and TSS are oxidized.”**

**Bruce Evans**

zones we reduce the NO<sub>3</sub>, the nitrate, to nitrogen gas,” Evans says. “We’re required to monitor for NH<sub>3</sub> (ammonia) and nitrate, and typically the combined concentration is less than 5 mg/L to the spray and dripfields.

“This plant was commissioned in 2001, and to date we have not had to remove any sludge at all. We have about 50 days of detention time. We operate under a state operating permit rather than an NPDES permit because we do slow-rate land treatment rather than stream discharge.”

**GOING TO THE LAND**

Initially the lagoons fed only a spray irrigation system with 420 spray heads (Rain Bird) in six major zones and 23 subzones on a 78-acre field. The 850,000 gpd design capacity was based on a soil evaluation, but in practice that volume of effluent caused ponding and runoff. “We determined that the spray system could handle 650,000 gpd,” says Evans.

“We have 350 acres inside the fence. The complete-mix lagoon does most of the work. That’s where most of the biological activity takes place and the CBOD and TSS are oxidized. We have created anoxic zones throughout the partial-mix lagoons by way of timers on our aerators (Jet Inc.)”

All told, the lagoons contain 19 Tornado Aspirating aerators (RWL Water, formerly Aeromix) that keep the contents mixed and oxygenated. “We nitrify in the complete-mix lagoon, and then through the anoxic



**SYSTEM PROFILE**

<b>Location:</b>	Crossville, Tennessee
<b>Facility served:</b>	Fairfield Glade Community Club
<b>Designer:</b>	SEC, Murfreesboro, Tennessee
<b>Installers:</b>	Rutherford Utility Company, Murfreesboro; EcoStruct Group, Pleasant View, Tennessee; and JNM Technologies of Bryan, Texas
<b>Type of system:</b>	Facultative lagoon and disc filtration with spray irrigation and drip dispersal
<b>Site conditions:</b>	Sandy loam with some areas of sandstone rock as a limiting layer; varied slope from 0 to 50 percent; selective tree clearing required
<b>Flows:</b>	2.9 mgd design, 0.86 mgd average



Fairfield Glade has three lagoons for wastewater at three different levels, from the influent water (far right) to the effluent water at the lowest point.

That left some 200,000 gpd in need of an alternate dispersal method, and that is where drip dispersal came in. Rutherford Utility Company of Murfreesboro and EcoStruct Group of Pleasant View jointly bid on and received the contract to build a drip system with 250,000 gpd capacity and telemetry controls. The design-build team also included SEC of Murfreesboro (design and engineering) and JNM Technologies of Bryan, Texas (computerized controls and drip dispersal equipment).

A drip dispersal system pumps effluent at low pressure through buried flexible plastic tubing in a dripfield. The tubing, containing evenly spaced emitters, distributes effluent uniformly through the field at a rate within the soil's capacity to absorb it. The technology was developed for large agricultural irrigation projects and has been widely used with wastewater applications such as small commercial and housing clusters. Over the last decade, drip dispersal has gained acceptance in municipal projects.

The Fairfield Glade drip system uses 250,000 feet of 0.61-inch-inside-diameter drip tubing (Netafim USA) buried 8 to 10 inches deep, with emitters spaced 2 feet apart. A 60 hp Deming five-stage vertical turbine pump (Crane Pumps & Systems) sends water from the storage lagoon to a basket strainer and then to an Arkal Filtration Spin-Klin 100-micron self-cleaning disc filter (Amiad USA) that removes TSS and prevents clogging of

the drip emitters. From there the water passes through a Netafim-ARAD Hydrometer flowmeter and a 6-inch force main to the dripfield.

The field consists of four main zones, each with eight subzones, individually controlled for fine regulation of effluent distribution. Each zone has a supply line and a flush line for periodically cleaning the emitter tubing.

### TOPOGRAPHIC CHALLENGES

Dripfield installation was a challenge because of uneven terrain and a TDEC mandate to install the

tubing in the woods as much as possible.

"Most of the soil was sandy loam, but in some areas sandstone rock was a restricting layer," says Glenn Marcum, owner of EcoStruct. "One of our big challenges was to do selective clearing of trees. Trees are your friend with drip irrigation because they provide substantial transpiration and evapotranspiration. So we wanted to leave as many big trees as possible, yet

**"One of our big challenges was to do selective clearing of trees. Trees are your friend with drip irrigation because they provide substantial evapotranspiration."**

Glenn Marcum

we had to be able to get in and plow the driplines in on contours. So there was a lot of clearing to do, and the terrain included slopes anywhere from 0 to 5 percent to 45 and 50 percent. We tried to stay under 30 percent slope."

A soil evaluation undertaken by McGill Associates identified the soils with the most favorable loading rates. "We chose the best soils and used them with a blanket loading rate," Marcum says. "If we encountered a soil that had clay or shallow depth to rock, we considered that a restrictive soil, and that was a soil we did not use."

### EXERTING CONTROL

Today, both the spray irrigation and drip dispersal fields are computer-controlled, although the dripfield control is more automated. The user-programmable system includes a PC that runs ICC software (Motorola). "I can go in and change the program as needed," says Evans.

The program communicates wirelessly to a programmable logic controller which in turn communicates wirelessly to five slave panels, four for the drip system and one for the spray. Each slave panel includes an IRRInet irrigation control panel (Motorola). Flow to each spray or drip zone is regulated by a hydraulic valve opened and closed by way of a 12-volt batching solenoid, which receives its commands by way of a solar-powered IRRInet-M remote telemetry unit.



Workers added a 6-inch Netafim-ARAD Hydrometer hydraulically controlled pulse flowmeter before effluent heads to the dripfield.

Before the computerized controls were installed, Evans or a team member had to manually open and close 10- or 12-inch valves in the sprayfield based on site conditions. "I used to do it every day, multiple times per day," Evans says. "Now it's simply with a click of a mouse or a text from my phone. It makes life a whole lot easier. Under our permit, we're required to inspect the sprayfield once a week, but I go out there five to seven times a day."

### DISPERSAL MADE EASIER

The drip dispersal field, now handling about 200,000 gpd, requires much less manual attention. "It's simply a land application process where we know we want to disperse an amount of water, we have so many acres on which to do it and we have a specific soil loading rate we want to use," says Marcum. "We divided it out and calculated out how many minutes each zone would have to run each day to disperse up to 250,000 gallons."

The zones operate on a rotating basis, 24 hours a day. Each major zone may contain three to four classifications of soils or depths to a restrictive layer. Evans observes, "Of the 32 subzones, we have no more than four dripping at any given time. We use a top-down method: We drip on the highest contour in all four major zones first and work our way down. Usually, it's a 15-minute cycle per subzone. That's based on an application rate of 0.21 gpd per square foot over 24 hours."

Evans can evaluate zones over time and adjust the cycle time if a zone becomes too wet. Each subzone can be programmed for the cycle time that delivers the optimum amount of water. "I can inspect the dripfield once a week and it's fine," says Evans.

"The drip system started up in May 2013, and the results are fantastic. I'm looking forward to putting more drip in and slowly backing off on the spray. Spray is much more maintenance intensive, and it's very weather-dependent. We have difficulty when it rains hard, and cold temperatures can cause freezing conditions. The drip system is not weather-dependent at all. As long as you keep up with the general maintenance, the equipment works perfectly."

The community's total 16,000 building sites include about 10,000 still available. About 100 new homes started construction in both 2013 and 2014, and building continues. That means growth ahead for the treatment plant and its drip irrigation system.

"We have another 100 acres set aside right across the road from the treatment plant that is being reserved for additional drip," says Evans. "We're having the soil mapping done on that property now. I believe that will get us through for another 30 to 40 years."



### MORE INFO:

**Amiad USA**  
704/662-3133  
www.amiadusa.com

**Crane Pumps & Systems**  
937/778-8947  
www.cranepumps.com

**Jet Inc.**  
800/321-6960  
www.jetincorp.com  
(See ad page 19)

**JNM Technologies, Inc.**  
979/779-6500  
www.jnmtechnologies.com

**Motorola**  
949/552-6552  
www.motorolairrigation.com

**Netafim USA**  
888/638-2346  
www.netafimusa.com  
(See ad page 31)

**Rain Bird**  
877/727-8772  
www.rainbird.com

**RWL Water**  
800/879-3677  
www.rwlwater.com  
(See ad page 16)

**Vulcan Industries, Inc.**  
712/642-2755  
www.vulcanindustries.com

**Junction Boxes, Alarms, Pedestals, & Pump Controls**

# Septronics® Inc.

**2015**  
Make it Your Record Year  
Septronics Will Help




- Exterior Pump Controls w/Exterior Alarms  
— Pedestal Mount or Wall Mounted
- Exterior Pump Controls w/Interior Alarms  
— Pedestal Mount or Wall Mounted
- Controls w/ Event Counters & Circuit Breakers
- Exterior & Interior Alarms  
— Single, Dual, or Auxiliary Options
- Mechanical Float Switches  
— Heavy or Standard Duty, Filter, Vertical, Hi Temp

**www.septronicinc.com**  
Ph: 262.567.9030 • Email: susan@septronicinc.com

## BUILD STRONG - BUILD SAFE


### WITH PRECAST TANKS TO 40,000 GALLONS




- ◆ Septic, Grease Interceptors, Aeration, Holding Tanks
- ◆ Available in Sizes 750 to 40,000 Gallon
- ◆ Extra Heavy Duty Tanks — HS20 Loading
- ◆ Fast, Efficient Settings

Visit us on the Web: [www.wieserconcrete.com](http://www.wieserconcrete.com)

- ◆ Vacuum-Tested, Water Tight Structures
- ◆ Tanks for Bio-Microbics and Nibblers, Sand Filters
- ◆ Custom Sizes Available to Fit Your Needs
- ◆ National Delivery and Setting



**WIESER CONCRETE**  
Innovation, Quality and Service since 1965



**1-800-325-8456**

# Video Tattler or Insurance Tamer?

Windshield cameras capture view of other motorists, have the potential to uncover and correct your drivers' bad habits

By Ed Wodalski

**Y**ou've probably seen the ads on TV claiming that good drivers can save up to 30 percent on their car insurance. All you have to do is plug a small tracking device into your vehicle's diagnostic port under the dash and drive.

Data such as sudden changes in speed, how much you drive – even where and when you drive – is transmitted to the insurance company and analyzed to see if you qualify for a lower rate – or not.

Of course, everyone believes they're a good driver and should pay less, which accounts for the growing popularity of Progressive's Snapshot, State Farm's In-Drive, American Family's mySafetyValet and similar programs.

Currently these discounts only apply to noncommercial vehicles, but that doesn't mean you and your business can't benefit from tracking driver habits.

## MANY BENEFITS

You're probably already aware of the many GPS and dash cam devices available and might even have one in your truck. In addition to creating some amazing YouTube videos, the technology has the potential to reduce collisions, save lives, resolve litigation, improve fuel mileage, reduce maintenance and, yes, lower insurance costs.

Among the devices most recommended by insurance brokers is DriveCam by Lytx, as in analytics.

"It's a combination of what I call a GPS on steroids and a video camera," says Mark Herring, senior vice president for Heffernan Insurance Brokers in Portland, Oregon, who insures about 4,000 trucks. "There's a camera that faces forward so you can see what happens in front of the truck and one that shows what's happening to the driver. You can tell if he's texting, on the phone, eating a burger or dropped a cigarette."

While most recording devices provide a continuous video loop, DriveCam delivers 12-second segments – eight seconds before and four seconds after an event – much like instant replay used by sports teams.

"Usually the base-base, where it's just the video, will be about \$15 to \$20 per truck per month, and the Cadillac version, where they do all the work for you and provide a report, is going to be upward of \$59 a month," says Herring, who believes every truck should have some type of recording device.

## FOR THE WASTEWATER INDUSTRY?

"If you have one or two trucks and it's all family, you probably don't need it for your guys, but you still need it for the other guys on the road who claim



**ABOVE:** The DriveCam from Lytx mounts to the windshield. **BELOW:** DriveCam customers receive a safety report, ranking above average, average and risky drivers and their behaviors. (Photos courtesy Lytx)



you did something,” he says. “I think it’s the best risk management tool that a business with more than 10 trucks can have.”

Some installers or pumpers may say they would never exchange the privacy of their cab for an insurance discount. Others, such as Janelle Kick, co-owner of Purple Pumper in Hinckley, Minnesota, say they might consider such a device if it lowered their insurance cost.

“Possibly,” she says. “I never really thought of it for our big trucks. I always thought of it for cars and more personal applications, so I guess I never even asked.”

Steve Mular, vice president of family-owned Parkway Services in Ypsilanti, Michigan, says his company has GPS and backup cameras on all its trucks.

“We save a little,” he says. “But it could also work against you in court if your driver was speeding.”

Herring says most good insurance companies will provide a 5 percent credit if you have some type of monitoring system and up to 10 percent if you have DriveCam, but it’s not something an underwriter is likely to offer – you need to ask.

### A DVR RECORDER

The DriveCam program by Lytx consists of a camera that’s attached to the windshield. It shows what’s ahead of the vehicle and what’s happening in the cab.



The split-screen camera captures the view in front of the truck and inside the cab.

**“What we’re looking for is the root cause of risky driving. We follow about 100 different behaviors from using the cellphone, to driving too fast, to not looking far enough ahead. We also have a lot of videos that show the driver doing some heroic things to avoid collisions.”**

Greg Lund

“It’s kind of like a DVR recorder,” says Greg Lund, director of corporate communications for Lytx. “It’s always recording but it doesn’t save until there’s what we call an event – a hard brake, a swerve. An example would be a driver going down the road and someone cuts in front and he has to brake real hard.”

Data is uploaded via a modem to reviewers at Lytx who send clips of significant events along with a report back to the customer. Event data can be used to resolve litigation and help employees become better drivers, Lund says.

“We look at which of the drivers are exhibiting behaviors that need coaching, which drivers are doing great and those in the middle,” he says. “What we’re looking for is the root cause of risky driving. We follow about 100 different behaviors from using the cellphone, to driving too fast, to not looking far enough ahead. We also have a lot of videos that show the driver doing some heroic things to avoid collisions.”

Each behavior is assigned a value and drivers are ranked according to those needing the most coaching and their likelihood of being in an accident.

### COSTS CAN BE OFFSET

The subscription service costs about \$50 per vehicle per month for most large fleets. Lytx also offers a less expensive program for fleets with 10 or fewer vehicles called DC (DriveCam) Protect.

“Anybody that wants to lower their risk, anybody that wants to improve driving behavior among their fleet, those are the clients that come to us,” Lund says. “Through better driving, we also feel you can save fuel costs by up to about 12 percent.”

Lund says fleets that have the most success with the DriveCam program are those that use it in a positive manner.

“By that I mean they don’t put the hammer down on a driver who might have a few behaviors that need to be fixed, but work with him to improve and then reward him when he does.” □

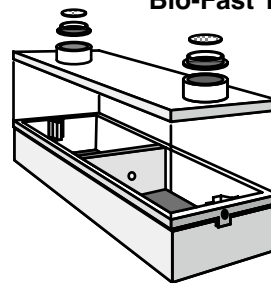
## Water Tight Structures 2 Compartment

### Commercial Sizes - Gallons

2,000 - 3,000 - 5,000 - 6,000 - 8,000  
10,000 - 12,000 - 15,000 - 18,000  
20,000 - 25,000 - 30,000 - 38,000 - 40,000

Water Tight Construction  
Tanks meet ASTM C1227 and C913

Septic Tanks - Sand Filters - Grease Interceptors  
Bio-Fast Tanks - Nibbler Tanks



Nationwide Service

**CREST** Precast, Inc.  
PCI & NPCA Certified Plant  
**1-800-658-9045**

www.crestprecastconcrete.com info@crestprecastconcrete.com

# A Broader Mission

California pumpers and installers take the 'waste' out of wastewater in their organization's name to promote solutions to the state's ongoing water crisis

By Doug Day

California is running out of water, and the state's onsite wastewater industry is poised to be a part of the long-term solution. Mark Adams is looking forward to the challenge as the president of COWA. While using the same acronym, the group has dropped the word "waste" from its name. Now the California Onsite Water Association, it is looking more broadly at the issue of reusing and conserving water.

While much of the West has seen abnormally dry weather for several years, California is in the midst of a four-year drought called the worst since recordkeeping began in the 1800s. The state declared a drought emergency in January 2014 and has since instituted many water-use regulations, and all communities have been ordered to reduce use by at least 25 percent.

The new direction for COWA comes as the man with a vision of a broader focus retires from the organization. Kit Rosefield was the face of the group for the last seven years as the lead trainer and coordinator of education and training. His wife, Evelyn, who was responsible for the day-to-day operation of the group, has also retired. Filling the void with Adams is Nick Weigel, who takes on the lead trainer role as well as administration and treasurer.

**A recent poll found that water and the drought are considered the most important issues in the state by 39 percent of people, and 69 percent say water supply is a big problem in their area. Water must be a daily topic of conversation in California.**

**Adams:** You have no idea. There's really a driving force to look at all aspects of water, not just wastewater. A few years ago, Kit and I spent a lot of time brainstorming about the future and came to the conclusion that as an organization and representatives of an industry, we need to look beyond wastewater.

We represent about 200 designers, installers, pumpers, regulators and service providers. Now the membership is starting to come from the other aspects of water. You can take a lot of the same tools we use for wastewater and apply them to graywater and stormwater to reuse, reclaim, restore – keeping water on the site and getting it back into the soil.

## How is that changing COWA?

**Adams:** We're trying to integrate with other people like the graywater crowd. They made terrific inroads in Sacramento (the state capital) so we're trying to combine our efforts so we can effect some change to the regulations.

**Mark Adams,**  
California Onsite Water Association  
530/893-1600 ext. 205 or  
madams@cowa.org.  
**COWA**



COWA and Occidental Arts and Ecology Center co-hosted the Localizing California Waters Conference last November. Our two organizations have supported the formation of the Decentralized Water Policy Council (DWPC) with experts in all aspects of water, including county regulators, academia and stakeholders across the state, to increase

**"They aren't taking advantage of the effluent and are pulling water from a local creek and the watershed. If we take a holistic look, we can capture rainwater, reuse the wastewater and modify the landscape to lessen the need for water."**

**Mark Adams**

the ability to reuse and conserve water with effective, integrated water management. There are policy groups addressing graywater, rain and stormwater, black water, and a group looking at things like composting toilets. Each is putting together a white paper talking about where things are now and making recommendations on how we can move ahead to most effectively change policy in each area. We will put those into an action plan to take to the regulators. You can find out more by visiting [oaec.org/water/why-california-is-localizing-its-water](http://oaec.org/water/why-california-is-localizing-its-water).

California has had graywater regulations since the 1990s but nobody took advantage of them because they were so tough. About six years ago there was an effort to loosen them, but the regulators said it wasn't safe. An inventory showed there were just a few hundred permitted graywater systems but estimated that there could be as many as a million actual

graywater systems in use. They couldn't find any health hazard, so the state decided that maybe it wasn't a problem and updated the rules. Now systems are going in all over the place.

COWA believes these graywater systems are just as important as the black water systems and should be designed, installed, maintained and monitored as long-term components of our infrastructure. This is where COWA plays an important role, providing educational opportunities related to these aspects of decentralized infrastructure.

But any beneficial reuse of wastewater has to comply with Title 22, which requires daily water samples and lab testing. You can do it at the municipal level but very rarely can we afford that at the decentralized level. It's one of the few places in the world that requires it, so we're trying to show that technology has improved so there are other ways to monitor effectiveness of the treatment systems.

Updating policies could save up to 14 million acre-feet per year. That's 35 percent of annual water use in California, and the equivalent of the water used by all of California's cities in a year.

We have 58 counties, throw in all the regional water quality control boards and a few other agencies – they all have their unique rules and regulations. Water is getting very, very expensive in California, and some agencies are spending 10 times what they spent a few years ago for water. So there are definitely areas where it becomes economical to save every drop possible and reuse it. We're trying to get some consistency that would allow us to put in systems that take advantage of all the water on a site.

### Do you have an example of what that might look like?

**Adams:** We're working with a school in a pretty arid region. They need a lot of water for the buildings and the land, and have an onsite treatment system. They aren't taking advantage of the effluent and are pulling water from a local creek and the watershed. If we take a holistic look, we can capture rainwater, reuse the wastewater and modify the landscape to lessen the need for water. The result can be that we can put water back into the stream that supports an endangered fish species. The school is really excited about it and wants to integrate it into its curriculum for students.

### How is this affecting pumpers?

**Adams:** Not a whole lot – they're being affected more on where and how they can dispose of septage. There are fewer locations and the regulations are getting more restrictive, the cost is going up, and they're having to haul grease farther. A lot of pumpers are also system evaluators, so they are benefiting from some areas requiring systems to be evaluated at time of sale and tanks assessed on a more regular basis. Some communities now have operation permits for systems, and I wouldn't be surprised to see more of that, which will be an advantage to the pumpers.

### How is this affecting installers?

**Adams:** It should open up new opportunities for our installers. The skills and technology for graywater reuse, black water treatment and reuse, rainwater catchment, dispersal to the site, etc., are all very similar to those that our installers have already mastered.

### Is this as daunting as it sounds?

**Adams:** No kidding. We have a bill going through our state Legislature right now to make it easier to reuse graywater within a building. It's a six-month to one-year process just to make that one little change – and nobody opposes it.

### Do you think California will end up, as it often does, as the trendsetter in water reuse?

**Adams:** We're seeing some leadership come out of individual communities, which is really interesting because it will impact the decentralized wastewater world. But there is some leadership coming from centralized water. The City of San Francisco is looking to mandate that all new construction be required to treat and reuse wastewater for things like toilet or urinal flushing. Our Department of Transportation has a pilot project testing the feasibility of this at a rest area. So we have a couple of larger agencies that are pretty inspired to start pushing the envelope. These are examples of decentralized technology in a very urban environment.

COWA is trying to represent a lot more people. Membership, a lot of times, is driven by a requirement for continuing education and training, and that's what we've provided for the state. That's why COWA started: We were convinced there was a lack of education about decentralized water and that better decisions could be made if education was provided. That's still what we're trying to do as an organization. The state has come to us for advice because they realize we know more about how to run these systems.

For me personally, it's a pretty exciting time. I like to think about the future and brainstorm and try to visualize ideal outcomes. We're really ripe for change here.

So I think California could be leading the nation and showing how we can do this safely and effectively. We have to. □

## TIRED OF DESTROYING LANDSCAPES JUST TO REBUILD THEM?

Answer - we think you are! Drip dispersal installations don't require heavy equipment and deep, wide trenches. The landscape isn't damaged and you're on to the next job faster. Stop disposing, start dispersing.



**BIOLINE® DRIP DISPERSAL**

[www.netafimusa.com/wastewater](http://www.netafimusa.com/wastewater)

**NETAFIM™**

# Fuji Clean Introduces Compact ATU to the US Market

By Craig Mandli

**J**apan has a bit different way of looking at residential wastewater treatment. Systems need to be efficient and effective, but most importantly small enough to fit into tight footprints with no space for leachfields.

For a decade, Fuji Clean has created systems that meet that demand in Japan. The company has brought the technology stateside with the idea that small, self-contained systems are needed in the U.S. as well. Fuji Clean brought its CE Series residential treatment system all the way from Japan to the 2015 Water & Wastewater Equipment, Treatment & Transport (WWETT) Show floor.

“Basically, Japan is out of space,” says Scott Samuelson, the principal of Fuji Clean subsidiary Fuji Clean USA. “These systems are ideal for homes with limited or no space for a leachfield, as they only need a small footprint to operate. We saw that need in the U.S. and decided to bring the technology here.”

The CE5 on display at the WWETT Show is Fuji Clean’s most compact system, designed to treat wastewater from up to a four-bedroom home. No preceding septic tank is necessary. The unit is contained in a footprint of 7 feet 1 inch by 3 feet 8 inches – and just less than 400 pounds. It is maneuverable and adaptable to tight, difficult-to-access sites. Designed to accommodate variable flows and shock loadings, the low-power-draw (54 watts) low-maintenance system is NSF 40 and 245 approved.

According to Samuelson, the unit produces a consistent effluent quality, with a pollutant removal ratio of around 95 percent. A majority of system cleaning is accomplished with simple turning of control dials that reverses the flow of air and water and internally breaks up and purges heavy biofilm growth from the contact media. A typical service visit that includes solids backwash cleaning takes about 20 minutes. Sludge needs to be pumped from the system approximately every three years, a typical time frame for traditional septic systems.

“It’s basically a system that provides service in a miniscule footprint compared to a regular septic system,” says Samuelson. “We are in the process of going state to state for approval to use it across the country.”

The system’s contact filtration principle uses a circuitous control flow train through multiple aerobic and anaerobic chambers in direct contact with three types of fixed film media where biological digestion and mechanical filtration occur. A continuous air pump introduces oxygen to the aerobic chambers and powers two internal air lift pumps: one carrying process water and solids back to the primary chamber, and the other regulating flow equalization and metering outflow of treated effluent. Enhanced nitrogen-removing models are also available. Fuji Clean also offers larger commercial systems that can be installed in succession.



Scott Samuelson, left, the principal of Fuji Clean USA, and Dr. Toshiro Otowa, right, the global director of International Business Overseas Business Division for parent company Fuji Clean, discuss the CE5 advanced wastewater treatment system with an attendee at the 2015 WWETT Show. (Photo by Craig Mandli)

“That way the system is almost modular, as you can set them up to handle anything from a small house to a large shopping complex,” says Samuelson. “It’s a treatment process with science that works.”

Samuelson says the company used its booth at the WWETT Show as an introduction to the market and let contractors know that as it gains state approvals, Fuji Clean provides another option for residential treatment in tight spaces.

“We came here this year hoping to fill our distribution network and determine the market for our products,” he says. “We want to tell the world that we are here.”

After the success of its 2015 WWETT experience, Samuelson says Fuji Clean will be back in 2016 with, he hopes, full approval for installation across the country along with new technology.

“Phosphorus removal is just starting to take center stage in the U.S., especially with waterfront properties,” he says. “Our products remove 50 percent of it already, and we’re looking at ways to remove even more. We feel that’s an issue we’re on the cutting edge of and something we are going to talk about even more.” 207/406-2927; [www.fujicleanusa.com](http://www.fujicleanusa.com). □





# Network.

 *10,000 Attendees from 53 Countries*



# Learn.

 *Over 80 Educational Sessions*



# Profit.

 *Ideas to Boost Profits*



[www.wwettshow.com](http://www.wwettshow.com) | 866.933.2653

 Feb. 17-20, 2016  
Indiana Convention Center  
**wwett™ 16**

Water & Wastewater Equipment, Treatment & Transport Show

# Systems Repair/Drainfield Rejuvenation

By Craig Mandli

The rejuvenation of failing septic systems can save homeowners substantial cost and frustration. Included here are additives, treatment units, jettors and pressure washers/sprayers that can help installers keep a struggling system working.

## ATUs

### Anua PekaSys Bubbler

The PekaSys Bubbler sequencing batch reactor from Anua batches treatment in cycles, including aerobic and anaerobic steps, to clean water and reduce total nitrogen. It allows nitrification and denitrification to occur in the same chamber, saving space. The smart controls adjust aeration for varying flows, eliminating excessive air that can lead to system failure through sludge bulking. Flexible tank configurations include the retrofit of existing tanks. The system can reduce BOD5 and TSS to less than 10 mg/L and provide greater than 50 percent total nitrogen reduction, according to the manufacturer. 336/547-9338; [www.anua-us.com](http://www.anua-us.com).



### Aquaworx by Infiltrator Remediator

The easy-to-install Remediator from Aquaworx by Infiltrator can help rejuvenate failing septic drainfields with minimal landscape disruption, according to the maker. Inserted into an existing septic tank, the aerobic bacteria will progress to the drainfield, reducing biological clogging and allowing the soil to infiltrate the effluent. The unit is designed to require nominal operation and maintenance cost. It introduces oxygen into a bacterial growth media column, allowing bacteria to thrive and consume organic matter. These bacteria combine with oxygen-rich effluent in the tank and move to the drainfield, reducing the clogging layer and the associated odors and wet areas in the yard. 800/221-4436; [www.infiltratorwater.com](http://www.infiltratorwater.com).



### Bio-Microbics RetroFAST

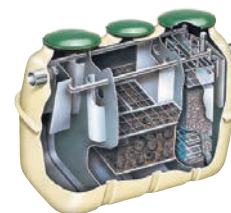
U.S. Environmental Protection Agency ETV tested, RetroFAST from Bio-Microbics is designed to be a permanent solution to deliver high levels of treatment and dissolved oxygen to the drainfield. It requires minimal cost to operate and maintain to enhance or repair existing septic systems that have biologically failed, according to the manufacturer. The residential systems use submerged fixed-film and aeration technology of the MicroFAST system in an expandable liner to install directly in the manhole of an existing tank. Without reducing pumpout



frequency, the system is easy to install (usually in less than half a day) and may not require a permit. It is available in three flow sizes. 800/753-3278; [www.biomicrobics.com](http://www.biomicrobics.com).

### Clarus Fusion

The Fusion Series drop-in wastewater treatment system from Clarus Environmental uses anaerobic and aerobic zones to produce secondary quality effluent. Filter media are never removed or replaced. Features include constant recirculation of treated wastewater and a twice-daily automatic backwash cycle that returns residual sludge to the head of the system. A programmable compressor delivers oxygen to aerobic zones, using about the energy consumed by a 65-watt light bulb. 800/928-7867; [www.clarusenvironmental.com](http://www.clarusenvironmental.com).



### Clearstream Wastewater Systems

The Clearstream Wastewater Treatment System is designed as an efficient, extended aeration sewage treatment plant. This system provides a proper environment for aerobic bacteria and other microorganisms to convert incoming sewage into clear, odorless and organically stable water. Test results taken from applications consistently fall below the U.S. EPA limits for direct discharge of treated effluent, according to the manufacturer. 800/586-3656; [www.clearstreamsystems.com](http://www.clearstreamsystems.com).



### Consolidated Treatment Systems M6-EV

The M6-EV from Consolidated Treatment Systems is designed to offer a complete treatment system in a single excavation. The system's three-in-one tank provides a 310-gallon pretreatment tank with sanitary tees, a 500 gpd Nayadic aerobic treatment unit, an 830-gallon pump tank with a control panel for dose or sprinkler applications, a compressor with optional internal or external housing, a mounted junction box for electrical connections, an effluent filter, and a high-head discharge pump. It is 8 feet 5 inches long, 6 feet 4 inches wide, and 82 inches tall, and weighs 1,220 pounds, making it usable in tight lots. Fiberglass construction eliminates the need for cranes or boom trucks to set the unit. 800/503-0163; [www.consolidatedtreatment.com](http://www.consolidatedtreatment.com).



## Eljen Corporation GSF

The Geotextile Sand Filter advanced wastewater treatment and dispersal system from Eljen Corporation is designed to provide treatment and dispersal in the same footprint, while keeping installations easy and maintenance minimal. Eljen cites independent testing showing its performance is compliant with NSF/ANSI Standard 40 and provides advanced treatment of septic tank effluent to better than secondary levels. 800/444-1359; [www.eljen.com](http://www.eljen.com).



## Hydro-Action Industries Set-N-Go

The Set-N-Go onsite wastewater treatment unit from Hydro-Action Industries utilizes an activated sludge treatment process to add oxygen to wastewater where aerobic bacteria metabolize the waste. Then it separates in a clarification chamber without the use of media filters or carbon additives. The three-tank combination operates as a single unit offering pretreatment, aerobic treatment and a pump tank. Systems are available as 72-inch-tall standard and 52-inch-tall low-profile models. They are NSF Standard 40 and 245 Nitrogen Reduction approved with testing results of an average CBOD5 of 4 mg/L (98.5 percent reduction), TSS 9 mg/L (95.25 percent reduction) and 5.1 mg/L dissolved oxygen. Nitrogen reduction averages less than 10 mg/L TN and 79 percent reduction in total nitrogen removal. 800/370-3749; [www.hydro-action.com](http://www.hydro-action.com).



## Knight Treatment Systems White Knight Microbial Inoculator Generator

The White Knight Microbial Inoculator Generator from Knight Treatment Systems is an enhanced form of aerobic treatment technology that introduces, cultivates and releases task-specific selected microorganisms. It is designed to be simple to install in most septic tanks. It can be used to retrofit outdated ATUs and package treatment plants and enhance the performance of community and high-strength wastewater treatment systems in addition to septage processing facilities. 800/560-2454; [www.knighttreatmentsystems.com](http://www.knighttreatmentsystems.com).



## Norweco Singlair Green

The Singlair Green advanced wastewater treatment system from Norweco quietly, efficiently and automatically treats all domestic wastewater in 24 hours, according to the manufacturer. The durable, watertight polyethylene tank may be used in new or replacement applications. It is easily installed and offers single-tank convenience. The system performs pretreatment, aeration, clarification, filtration, flow equalization and optional disinfection and dechlorination. Incorporating support ribs and an inherently strong arch shape, the tank provides treatment of wastewater flows up to 600 gpd, meeting or exceeding the strictest state and county requirements. It is certified by NSF International. 800/667-9326; [www.norweco.com](http://www.norweco.com).



## Orenco Systems AdvanTex AX-RT

The AdvanTex AX-RT Series of advanced wastewater treatment systems from Orenco Systems is designed for system repair and rehabilitation. All interior components are installed, plumbed and adjusted at the factory. Units

can be shallowly buried for use between a functional, watertight septic tank and a functioning drainfield. The three-in-one design includes recirculation, treatment and discharge in a single unit to simplify installation and eliminate the need for additional tanks, basins, risers and lids. The treatment system can be maintained with an annual service call. Filters and textile media are accessible and cleanable, and control panels use touch-safe components. No blower is needed for the passively vented system. An optional UV disinfection unit is available. 800/348-9843; [www.orenco.com](http://www.orenco.com).



## Polylok STEP System

The STEP (Septic Tank Effluent Pump) System from Polylok draws effluent from the middle layer (clear zone) of the septic tank, filters remaining unwanted solids, then pumps the effluent to either a dispersal field or a wastewater treatment system. It installs quickly in a 19- to 23-inch-diameter opening in new or existing concrete or fiberglass tanks. The easy-access dual-compartment design allows the filter cartridge to be removed without pulling the pump or the entire vault. The engineered system includes a polyethylene basin, effluent filter, 1/2 hp high-head turbine effluent pump with 10, 20 (standard) and 30 gpm versions, internal 1 1/4-inch piping and valves, float switches, and a control panel. 800/701-3946; [www.polylok.com](http://www.polylok.com).



## Premier Tech Aqua Ecoflo Coco Filter

The Ecoflo Coco Filter from Premier Tech Aqua uses a 100 percent natural, highly porous, coconut husk fragment-based filtering media capable of sustaining high organic loads. The polyethylene, ready-to-use, 450 gpd capacity unit is compact, light and durable. The 1,000-pound shell is easy to handle for a variety of machinery. It is suitable for three- to four-bedroom homes, small residential developments, small businesses and all site conditions, including high groundwater tables. It is available as a plug-and-play system with all the internal components and filtering media already inside, or as a kit integrated in concrete tanks from local precasters. Integrated dosing volume reduces the final footprint by eliminating excess tanks and unsightly lids. The media is recyclable as compost or a rich soil amendment at the end of its treatment life. 604/346-8199; [www.premiertechaqua.com](http://www.premiertechaqua.com).



## Presby Environmental AES System

The Advanced Enviro-Septic (AES) System from Presby Environmental is designed to provide wastewater treatment exceeding the stringent standards of the U.S. and Canadian governments. It uses an all-natural, passive process requiring no electricity/mechanical devices and no additives, replacement media or special maintenance. It is a multistage effluent treatment system for residential, commercial and community applications. 800/473-5298; [www.presbyenvironmental.com](http://www.presbyenvironmental.com).



## SBR Wastewater Technologies SYBR-AER

The SYBR-AER advanced wastewater treatment system from SBR Wastewater Technologies is based on sequential batch reactor technology that allows the entire treatment process to happen in a single, locally secured tank. The entire system ships



preassembled from the factory and ready for installation. To ensure proper performance, the package includes a preprogrammed control with an internal logic module with battery backup. All components are easily serviceable and use quick-release connectors to remove any part for inspection or service. The system is ANSI and NSF Standard 40 approved, and is available in 500, 600, 800, 1,000 and 1,500 gpd systems. 855/391-2448; [www.sbrww.com](http://www.sbrww.com).

### Waterloo Biofilter Systems EC-P

The EC-P from Waterloo Biofilter Systems is designed to permanently remove phosphorus from wastewater installations using electrochemistry. Phosphorus is removed without the use of any chemicals, no sludge production, little energy use and no effect on pH. It precipitates Fe-P minerals onto a filtration medium where they remain highly stable and unavailable to microbes. Units are modular, allowing the system to be easily scaled from 1,000 to more than 50,000 gpd. It can be used for retrofits and new installations, and in conjunction with advanced treatment units or conventional soil-based beds. Greater than 98 percent of phosphorus is removed before entering groundwater supplies, according to the maker. 519/856-0757; [www.waterloo-biofilter.com](http://www.waterloo-biofilter.com).



## BIO/ENZYME/CHEMICAL ADDITIVES

### Arcan Enterprises Septic-Scrub

Septic-Scrub chemical additive from Arcan Enterprises helps remove the sludge that builds up and sticks to the stone in a drainfield, pit or sand mounds, helping rejuvenate the drainfield. According to the maker, it is fast-acting, working in the first 24 hours after application. It allows an installer to add a drainfield treatment option to their business and can serve as part of a maintenance program. It works with all types of systems, is safe to handle and is environmentally friendly. 888/352-7226; [www.arcan.com](http://www.arcan.com).



### BioStim Septic Saver

Septic Saver multi-strain microbial additive from BioStim is designed to prevent foul odors, slow drains, seep hole blockages and excessive tank pumping in septic systems. Regular use can help keep the septic system free-flowing by digesting fats, oil, grease, soaps and other organic household waste and prolong the life of the entire system, according to the maker. It is safe for plumbing systems in homes, RVs, portable toilets and sewer lines. It contains no caustic or corrosive chemicals, is free of enzymes, emulsifiers or surfactants, and does not cause grease to pass through to the leachfield, where it can re-solidify and cause a septic field failure. 800/338-8812; [www.biostim.com](http://www.biostim.com).



### Brookside-Agra DrainXcel

DrainXcel all-natural pipe cleaner from Brookside-Agra has a blend of bacteria and enzymes designed to eliminate odor and digest organic material, including fats, oil and grease, in grease traps and drainpipes. Safe for use around humans and animals, the cleaner leaves no byproduct or residues and will not damage pipe or drains, or harm the environment. 618/628-8300; [www.brookside-agra.com](http://www.brookside-agra.com).



### Cape Cod Biochemical Co. AfterShock

AfterShock bioremediation restorative from Cape Cod Biochemical Co. is designed to help restore drainage to clogged and sluggish drainfields, cesspools and seepage pits to prevent backups and eliminate odors. It contains naturally occurring, USDA-approved bacteria that biologically digest the solid material that normally clogs soil absorption areas, as well as a bacteria-friendly, time-release oxidizer that accelerates the bacterial activity and helps to degrade the sulfides in the soil. According to the maker, it is effective in residential and commercial applications in conjunction with high-pressure waterjetting and soil fracturing equipment. It can be applied in one day, eliminating the need to keep the system exposed for repeated site visits. 800/343-8007; [www.septiconline.com](http://www.septiconline.com).



### Jet Inc. Bio Jet 7

Bio Jet 7 bacterial supplement from Jet Inc. is designed to accelerate the degradation of FOG (fats, oils and grease), proteins, tissues, soap scum and other organics. Nonhazardous and nontoxic, the blend is formulated to assist biological activity in septic systems, aerobic wastewater treatment systems, lift stations, lagoons and retention ponds. The supplements are effective for difficult startups, daily maintenance to meet system discharge requirements, or when a system becomes unstable due to changes in flow, chemicals or increased organics. According to the manufacturer, continuous use can lead to a significant decrease in odor, maintenance and emergency line blockages. It is available as ready-to-use, quick-dissolving, flushable dry packs that are packaged as a one-year supply in a recyclable plastic canister. It is also available in liquid form in 1-, 5- and 55-gallon containers. 800/321-6960; [www.jetincorp.com](http://www.jetincorp.com).



### RCS II Septic Drainer

Septic Drainer drainfield restorative from RCS II is designed to repair the soil in a septic drainfield damaged by hardpan soil issues. Due to restricted airflow, this hardpan soil layer causes aerobic bacteria to die off. Only anaerobic bacteria can survive without air. Anaerobic bacteria produce a waste product called biomat, which compounds drainfield failure. The solution is designed to remove the bond between sodium and the soil, which creates hardpan. The manufacturer recommends using it first to solve underlying hardpan issues, then add an oxygenator or aerobic bacteria to speed up the restoration process. 518/812-0000; [www.septicdrainer.com](http://www.septicdrainer.com).



### Septic Maxx

Septic Maxx all-natural bacterial additive contains several types of replenishing enzymes and healthy bacteria needed by a septic system to naturally liquefy waste, help prevent odors, backups and clogs, and help reduce the frequency of pumpouts. 800/397-2384; [www.septicmaxx.com](http://www.septicmaxx.com).



## JETTING

### Amazing Machinery J/VB9030HGGEA390-AM

The J/VB9030HGGEA390-AM portable cart jetter from Amazing Machinery is powered by a commercial-grade Honda GX 690 twin-cylinder air-cooled four-stroke engine. It features low-oil shutdown and electric start. The General pump produces 3,000 psi at 9 gpm. It is plumbed with the bypass back to the customer's water tank and a thermal relief valve to prevent overheating. It is mounted on an aircraft-grade aluminum frame with oversized pneumatic tires. It comes with 200 feet of low-friction jetter hose, three nozzles and a foot pedal for easier start/stop of the jetting process. The wheeled hose reel gives you the option of jetting inside or outside drains with the machine operating safely outside. It is designed to clean 4- to 12-inch pipes. 800/504-7435; [www.amazingmachinery.com](http://www.amazingmachinery.com).



### Cam Spray RCJ skid-mount jetter

RCJ Series skid-mounted jetters from Cam Spray are offered in flows and pressures of 8 gpm at 3,500 psi and 7 gpm at 4,000 psi. A three-plunger industrial pump with pulse is powered by a 688 cc Honda engine. Its 200 feet of jetter hose can be used to supply an optional 200DS4 portable reel cart available with 200 feet of 3/8-inch jet hose. It comes with a 35-gallon buffer water tank with float control, powder-coated heavy tube frame, washdown gun and a four-nozzle set. It easily mounts in the side door of a cargo van, on a truck bed or inside of a service truck. A root-cutting nozzle enables residential root cutting. 800/648-5011; [www.camspray.com](http://www.camspray.com).



### General Pipe Cleaners JM-3080 Jet-Set

The JM-3080 Jet-Set waterjet drain cleaning machine from General Pipe Cleaners is engineered to clear stubborn grease stoppages as well as sand, sludge and ice clogs. It generates 3,000 psi at 8 gpm to break up tough stoppages and flush them away. Vibra-Pulse on demand helps the hose slide easily down long runs and around tight bends. A 20 hp Honda engine with electric start and two-to-one gear reducer drives the pump, while a 12-gallon buffer tank protects the jet if the water supply can't match the pump demand. 800/245-6200; [www.drainbrain.com](http://www.drainbrain.com).



### Hi-Vac O'Brien 7000

The O'Brien 7000 Series trailer-mounted jetter from Hi-Vac Corporation comes with water tanks with a sediment pump for easier cleaning and longer life. The trailer has the muffler and air cleaner mounted inside the enclosure for improved sight lines, electric reel control for smoother rotation and easier operation, and hydraulic and water gauges mounted in the main control panel for easier viewing. 800/752-2400; [www.hi-vac.com](http://www.hi-vac.com).



### RIDGID KJ-3100

The KJ-3100 portable water jetter from RIDGID provides 3,000 psi actual working pressure for use in large commercial and industrial applications. It propels a highly flexible and lightweight hose through 2- to 10-inch lines.



The hose blasts through sludge, soap, grease and sediment blockages, power scrubbing the line to flush debris away and restore drainlines to full, free-flowing capacity without the use of chemicals. Its removable hose reel makes it unnecessary to purchase a portable reel. The reel can be removed to ease loading, and the two-wheeled cart is designed to fit through standard doorways and easily negotiate tight turns. The pulse action can be activated to navigate difficult bends and traps. Its reduced number of fittings, hoses and parts minimizes leaks and downtime. 800/769-7743; [www.ridgid.com](http://www.ridgid.com).

### Spartan Tool Model 740

The Model 740 hybrid hydrojetter from Spartan Tool offers 4,000 psi of jetting power at a 12 gpm flow on a wide-track chassis towable by any vehicle. It is available in either a traditional gasoline-powered configuration or in a hybrid version that runs on liquid propane. The LP version offers 4,000 psi of jetting power wherever needed, even inside food processing plants and other locations where air quality is a concern, including areas that experience ozone action days or other local emission restrictions. It comes with 350 feet of hose and a 40 hp electric-start engine. It is available in a skid-mounted version for installation into an existing van or trailer. 800/435-3866; [www.spartantool.com](http://www.spartantool.com).



## PRESSURE WASHERS/SPRAYERS

### Water Cannon electric power washer

Electric power washers from Water Cannon do not emit exhaust, so they can be used to maintain interior areas. They are available with a 1.5 hp commercial motor that uses a traditional household 115-volt plug. They have a roll cage and water storage tank for added convenience and versatility. They have General Pump TT Series pumps, and are available in strengths from 2 to 3 gpm and 1,200 to 1,500 psi. Standard accessories include a 50-foot hose, trigger gun and wand, chemical injector, and four color-coded spray nozzles and a color-coded chemical nozzle, all with quick connects. 800/333-9274; [www.watercannon.com](http://www.watercannon.com).



## REJUVENATION SYSTEMS

### K&P Enterprises EarthBuster

The EarthBuster from K&P Enterprises mounts via quick-attachment to skid-steers, tractors, and excavators, and uses a probe to inject compressed air into the ground at depths of up to 6 feet. This reopens compacted or clogged water channels and breaks up biomat, restoring septic percolation to within normal parameters. The process can be completed in about three hours by one operator. It doesn't destroy the existing lawn, avoiding sod and landscaping expenses after the repair. 406/215-1588; [www.earthbuster.com](http://www.earthbuster.com). □



**ONSITE installer**  
**Socially Accepted**

[www.facebook.com/OnsiteInstaller](https://www.facebook.com/OnsiteInstaller)  
[www.twitter.com/OnsiteInstaller](https://www.twitter.com/OnsiteInstaller)  
[www.plus.google.com](https://www.plus.google.com)  
[www.youtube.com/OnsiteInstaller](https://www.youtube.com/OnsiteInstaller)  
[www.linkedin.com/company/onsite-installer-magazine](https://www.linkedin.com/company/onsite-installer-magazine)

Extra!  
Extra!

## Want More Stories?

Get more news,  
information,  
and features  
with our  
exclusive  
online content.

Check out

### Online Exclusives

at

[www.onsiteinstaller.com/online\\_exclusives](http://www.onsiteinstaller.com/online_exclusives)

ONSITE  
installer

## productnews

### RIDGID telescoping basin wrench

The telescoping basin wrench from RIDGID extends up to 17 inches. It has a heavy-duty jaw with a rust-resistant spring and travel limiter designed for a tight grip and long life span. An LED light illuminates work areas and automatically shuts off after five minutes of inactivity. A removable T-handle pivots 180 degrees for access to tight under-sink spaces and provides the option to use a standard 3/8-inch ratchet or breaker bar for additional leverage. 800/769-7743; [www.ridgid.com](http://www.ridgid.com).



### Komatsu hydraulic excavator

The PC210LC-11 hydraulic excavator from Komatsu America Corp. is powered by a 165 hp EPA Tier 4 Final SAA6D107E-3 engine. Features include a viscous fan clutch for improved cooling, three travel speeds, and heavy standard counterweight (9,634 pounds) for improved over-the-front and over-the-side lift capacity. 847/437-5800; [www.komatsuamerica.com](http://www.komatsuamerica.com).

### COXREELS band brake accessory

The band brake accessory for hand-crank and motorized hose reel lines from COXREELS is available on most A-frame and all hybrid-frame reels, including the 1125, 1175, 1185 and 1600 series. Made from composite friction brake material with a solid steel drum, the accessory increases braking friction, extending brake life while improving adjustability and ease of use, according to the company. 800/269-7335; [www.coxreels.com](http://www.coxreels.com).



### EzRig portable crane

The portable crane from EzRig Crane is designed to lift heavy loads from unique positions and hard-to-reach locations. It can lift or lower 2,400 pounds, has a vertical reach of 19 feet, delivers 130 feet of cable for lowering equipment three to four stories, and moves on 8-inch locking caster wheels. The mini-crane can be wheeled through 3-foot doors and elevators. 844/395-4387; [www.ezrigcrane.com](http://www.ezrigcrane.com).

### Hyundai Tier 4 Final wheel loaders

The HL900 series (HL940, HL955, HL960, HL970, HL980) of Tier 4 Final-compliant wheel loaders from Hyundai Construction Equipment Americas deliver up to 5 percent greater productivity and 10 percent lower fuel consumption than previous 9A series loaders. The cab is 10 percent larger than earlier models and has been reconfigured for additional floor space and visibility. Features include 7-inch interactive touch-screen monitor, optional fingertip controls, fully adjustable and heated air-ride seat, and centralized control switches. 877/509-2254; [www.hceamericas.com](http://www.hceamericas.com). □



## Joint wastewater association conference Nov. 3-6

The National Onsite Wastewater Recycling Association (NOWRA), along with the Virginia Onsite Wastewater Recycling Association (VOWRA), the State Onsite Regulators Alliance (SORA) and the National Association of Wastewater Technicians (NAWT), will hold a joint industry conference Nov. 3-6 at the Virginia Beach Convention Center. The conference will serve as the annual meeting for NOWRA, VOWRA and SORA and NAWT's 2015 Treatment Symposium. For more information, visit [www.nowra.org/2015mega](http://www.nowra.org/2015mega).

## Grundfos Pumps names managing director

Grundfos Pumps Corp. named Jonathan Hamp-Adams managing director for its Commercial Building Systems unit. Based in Downers Grove, Illinois, he will be responsible for leading sales and production of the PACO brand.



Jonathan Hamp-Adams

## Vermeer breaks ground on technology hub

The Iowa State University Research Park and Vermeer Corp. broke ground on the Vermeer Applied Technology Hub in Pella, Iowa. The facility will enable students and faculty from Iowa State and other schools to collaborate on technology advancements for Vermeer industrial and agricultural equipment. Vermeer will initially occupy about 23,000 feet of the 35,880-square-foot facility, which will be built, owned and operated by the ISU Research Park. Construction is scheduled for completion in May 2016.

## Ecoflo celebrates 20th anniversary

Premier Tech Aqua, the environmental technologies group of Premier Tech, is celebrating the 20th anniversary of its Ecoflo ecological onsite wastewater treatment system in 2015.

## Presby Environmental acquires Geo-flow product line

Presby Environmental acquired Advanced Drainage Systems' Geo-flow line. The acquisition will enable both companies to focus on core strengths, according to a press release. □



GET  
EMAIL NEWS  
ALERTS FOR  
ON-SITE  
installer

Go to  
[onsiteinstaller.com/alerts](http://onsiteinstaller.com/alerts)  
and get started today!

Over 30 years experience

## SEPTIC SERVICES, INC.

SEPTIC SYSTEM PUMPS, PARTS AND SUPPLIES STORE

TO ORDER

SHOP ONLINE

CALL TOLL FREE: (800) 536-5564

[www.septicserv.com/store](http://www.septicserv.com/store)  
(636) 583-5564



### RETROAIR™

Available in 6 models to match your application

The Retro-Air provides a complete absorption field rejuvenation system that will improve flow and return a failed existing system back to optimal flow and performance. Use in systems prone to backup in the tank.

- ✓ Improve Flow
- ✓ Eliminate Clogged Absorption Field Due to Biomat
- ✓ Install in Single or Multiple Tanks

Starting at \$590.00

2-Year Warranty



### MAXAIR500™

## MAXAIR500 SUBMERSIBLE SEPTIC AERATOR

- Motor is fully enclosed, continuous duty
- Stainless steel motor enclosure & legs
- 15-foot power cord

\$425.00

2-YEAR WARRANTY

Replacement for Multi-Flo Aerator\*

\* All original equipment manufacturer's names, drawings, and part numbers are used for identification purposes only, and we are in no way implying that any of our products are original equipment parts. Not associated with Multi-Flo or Consolidated Treatment Systems.

### BULLET™

#### HIGH FLOW FILTERED EFFLUENT PUMPS

18-Month Warranty

All stainless steel construction built for years of dependable service

- 1/2 HP, 10 amp motor
- Prewired
- 15-foot power cord



Models:  
BP12 (12 gpm) ... \$280.00  
BP20 (20 gpm) ... \$280.00

### FLAGG-AIR™ 340HT AERATORS

Flagg-Air High-Torque Performance



We've increased motor torque and adjusted shaft length to provide greater aeration.

MADE IN USA

FEATURES:

- Motor is fully enclosed
- Prewired
- 7-amp mini-breaker
- Powder coated steel brackets w/ rubber vibration restrictors
- Stainless steel shaft w/ bronze counter shaft
- High impact plastic suds diffuser & aspirator tip

\$350.00

2-YEAR WARRANTY

Does not carry the NSF seal. Check local and state regulations for approval in your area.



### Max Filters 30-Pack (Complete Set)

Durable • Reusable • Highly Effective  
Filter socks may be used in Multi-Flo\* tank.

Call for prices

### AERATORS

Superior choice for new installation or upgrading existing 40/60/80/100 models.

2-Year Warranty



#### Whirlwind Linear Air Pumps

Models:

STA40 ...	\$199.00
STA60N ...	\$220.00
STA80N ...	\$250.00
STA100 ...	\$340.00
STA80AL ...	\$320.00

\* "N" models include hose bib for low pressure alarm connection.  
\* "AL" model has integrated audible alarm & warning light with toggle testing switch.

### ALARMS • TIMERS CONTROLS



24-HOUR TIMERS  
15-min increments settings

Model: P101FA-2 \$105.00

- Warning light & reset switch
- Mini-breaker

Model: P101-2 \$95.00

### REGENERATIVE BLOWERS

18-Month Warranty



Whirlwind R-5760 ... \$400.00 (57 CFM)

# Pumper & Cleaner **PROFIT** *Series*

**3 DAYS OF HANDS-ON BUSINESS BUILDING & NETWORKING**

**CELEBRATION, FLORIDA • BOHEMIAN HOTEL  
APRIL 4-6, 2016**

**EARLY REGISTRATION: ONLY \$395 PRIOR TO NOV 25, 2015  
ADDITIONAL REGISTRANTS FROM SAME COMPANY SAVE \$100**

**[WWW.PUMPERPROFIT.COM](http://WWW.PUMPERPROFIT.COM)**

**866-933-2653**



## **DAY 1 & 2 - GEORGE HEDLEY**

- **BIZ-BUILDER BLUEPRINT ACTION PLAN WORKSHOP**
- **BIZ-DEVELOPMENT, MARKETING & SALES ACTION PLAN WORKSHOP**

## **DAY 3 - STEVE BEECHAM**

- **BASS/ACKWARD BUSINESS WORKSHOP**

D 38



## 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 91066-0923, USA  
 phone: (626) 962-2116 fax: (626) 962-2177  
 on-line: www.alita.com e-mail: sales@alita.com

**UL US**  
 UL certified in compliance to USA and Canada safety standards for outdoor air compressors

## "Duel Power Lid"



Plugs, Lids & Adaptor Rings

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

**Fergus Power Products**  
 Providing "Environmental Products"

*The Company who maintains a pulse on the environment!*  
 Toll Free **1-800-243-7584**  
 E-mail **fpproducts@prtcl.com**  
**www.FergusPowerProducts.com**

**ONSITE installer classifieds**  
 Place your ad online at: [www.onsiteinstaller.com](http://www.onsiteinstaller.com)

### AERATORS

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

**Aerators:** Multiflo alternative replacement \$325 + shipping. Alternative replacement, NEW FILTER SOCKS, 30 per case \$370 + shipping. Spring clips to hold filter socks in place, \$3.86 per clip. **Alternative Jet Aerator** available \$425. Call us at 800-717-8807 or email us at [fabulousfungi@gmail.com](mailto:fabulousfungi@gmail.com). [www.Roland-Turbo-Aerator.com](http://www.Roland-Turbo-Aerator.com). Multi-Flo® and NAYAD-IC® are registered trademarks of Consolidated Treatment Systems, Inc. used here for reference purposes only. (PBM)

### BUSINESSES

**Start your own septic tank business in FLORIDA.** Call for more details. 931-248-1284 or 931-287-5413. (PBM)

Septic tank cleaning & inspection service business for sale in Central Maine. Profitable, turnkey business with a loyal customer base. Two pump-truck operation (1) 2000 GMC - 2,500-gallon capacity, 136,000 miles. (2) 2004 Peterbilt - 4,500-gallon capacity, 129,000 miles. Serious inquiries only! \$257,000. Call 207-782-1620 or email [septicbizsale@gmail.com](mailto:septicbizsale@gmail.com) (PBM)

### HAND TOOLS

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

### PUMPS

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

Honda model WP40X, 8 hp, 4" with hoses. Honda 4 hp, 2" pump with hoses. The Cable Center: 800-257-7209. (CBM)

*We don't make the Wastewater Treatment Systems,  
 We make them work better.*

**White Knight Microbial Inoculator Generators™**  
 (US Patent 7,658,852)

### ◆Enhanced Biological Augmentation◆

High Strength Wastewater BOD Reduction  
 Rehabilitation of Organically Clogged Systems

### ◆Dealer Opportunities Available◆



**Guardians of Water Quality®**

281 County Route 51A, Oswego, NY. 13126

[www.knighttreatmentsystems.com](http://www.knighttreatmentsystems.com)

1-800-560-2454

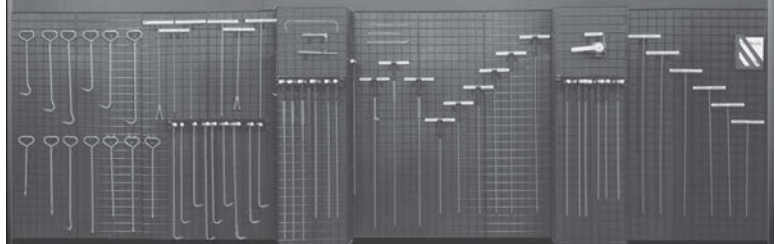


**T&T Tools, Inc.**  
**800.521.6893**

Probes ▼ Hooks

**T&T Tools, Inc.**

Probes ▼ Hooks



### Hooks...

- \* Heat treated for long life
- \* Manhole Cover Hooks
- \* Septic Tank Lid Hooks
- \* Many styles available
- \* "T" handles for two hands or compact "D" handles

### Probes...

- \* Insulated, Standard and Specialty
- \* Metal shafts: 3/8 round or hex
- \* Replaceable hardened tips
- \* Optional "slide" available to make your probe a mini-slide hammer

**Call for a FREE Catalog**

[www.mightyprobe.com](http://www.mightyprobe.com)

Email: [sales@mightyprobe.com](mailto:sales@mightyprobe.com)

Fax: 800.521.3260

# Serving the Industry

Visit your state and provincial trade associations

## Alabama

Alabama Onsite Wastewater Association;  
www.aowainfo.org;  
334/396-3434

## Arizona

Arizona Onsite Wastewater Recycling Association;  
www.azowra.org; 928/443-0333

## Arkansas

Arkansas Onsite Wastewater Association;  
www.arkowa.com

## California

California Onsite Wastewater Association;  
www.cowa.org; 530/513-6658

## Colorado

Colorado Professionals in Onsite Wastewater;  
www.cpow.net; 720/626-8989

## Connecticut

Connecticut Onsite Wastewater Recycling Association;  
www.cowra-online.org;  
860/267-1057

## Delaware

Delaware On-Site Wastewater Recycling Association;  
www.dowra.org

## Florida

Florida Onsite Wastewater Association;  
www.fowaonsite.com;  
321/363-1590

## Georgia

Georgia Onsite Wastewater Association;  
www.onsitewastewater.org;  
678/646-0379

Georgia F.O.G. Alliance;  
www.georgiafog.com

## Idaho

Onsite Wastewater Association of Idaho;  
www.owaidaho.org;  
208/664-2133

## Illinois

Onsite Wastewater Professionals of Illinois;  
www.owpi.net

## Indiana

Indiana Onsite Waste Water Professionals Association;  
www.iowpa.org; 317/889-2382

## Iowa

Iowa Onsite Waste Water Association;  
www.iowwa.com; 515/225-1051

## Kansas

Kansas Small Flows Association;  
www.ksfa.org; 913/594-1472

## Kentucky

Kentucky Onsite Wastewater Association;  
www.kentuckyonsite.org;  
855/818-5692

## Maine

Maine Association of Site Evaluators;  
www.maine.com

Maine Association of Professional Soil Scientists;  
www.mapss.org

## Maryland

Maryland Onsite Wastewater Professionals Association;  
www.mowpa.org; 443/570-2029

## Massachusetts

Massachusetts Association of Onsite Wastewater Professionals;  
www.maowp.org; 781/939-5710

## Michigan

Michigan Onsite Wastewater Recycling Association;  
www.mowra.org

Michigan Septic Tank Association;  
www.msta.biz; 989/808-8648

## Minnesota

Minnesota Onsite Wastewater Association;  
www.mowa-mn.com;  
888/810-4178

## Missouri

Missouri Smallflows Organization;  
www.mosmallflows.org;  
417/739-4100

## Nebraska

Nebraska On-site Waste Water Association;  
www.nowwa.org; 402/476-0162

## New Hampshire

New Hampshire Association of Septage Haulers;  
www.nhash.com; 603/831-8670

Granite State Designers and Installers Association;  
www.gsdia.org; 603/228-1231

## New Mexico

Professional Onsite Wastewater Reuse Association of New Mexico;  
www.powranm.org;  
505/989-7676

## New York

Long Island Liquid Waste Association, Inc.;  
www.lilwa.org; 631/585-0448

## North Carolina

North Carolina Septic Tank Association;  
www.ncsta.net; 336/416-3564

North Carolina Portable Toilet Group;  
www.ncportabletoiletgroup.org;  
252/249-1097

North Carolina Pumper Group;  
www.ncpumpergroup.org;  
252/249-1097

## Ohio

Ohio Onsite Wastewater Association;  
www.ohioonsite.org;  
866/843-4429

## Oregon

Oregon Onsite Wastewater Association;  
www.o2wa.org; 541/389-6692

## Pennsylvania

Pennsylvania Association of Sewage Enforcement Officers;  
www.pa-seo.org; 717/761-8648

**Pennsylvania Onsite Wastewater Recycling Association;**  
www.powra.org

**Pennsylvania Septage Management Association;**  
www.psmma.net; 717/763-7762

**Tennessee**  
Tennessee Onsite Wastewater Association;  
www.tnonsite.org

**Texas**  
Texas On-Site Wastewater Association;  
www.txowa.org; 888/398-7188

**Virginia**  
Virginia Onsite Wastewater Recycling Association;  
www.vowra.org; 540/377-9830

**Washington**  
Washington On-Site Sewage Association;  
www.wossa.org; 253/770-6594

**Wisconsin**  
Wisconsin Onsite Water Recycling Association;  
www.wowra.com; 608/441-1436

**Wisconsin Liquid Waste Carriers Association;**  
www.wlwca.com; 608/441-1436

**NATIONAL**  
Water Environment Federation;  
www.wef.org; 800/666-0206  
National Onsite Wastewater Recycling Association;  
www.nowra.org; 800/966-2942

**National Association of Wastewater Technicians;**  
www.nawt.org; 800/236-6298

**CANADA**  
**Alberta**  
Alberta Onsite Wastewater Management Association;  
www.aowma.com; 877/489-7471

**British Columbia**  
British Columbia Onsite Wastewater Association;  
www.bcossa.org; 778/432-2120

**WCOWMA Onsite Wastewater Management of B.C.;**  
www.wcowma-bc.com;  
877/489-7471

**Manitoba**  
Manitoba Onsite Wastewater Management Association;  
www.mowma.org; 877/489-7471

**Onsite Wastewater Systems Installers of Manitoba, Inc.;**  
www.owsim.com; 204/771-0455

**New Brunswick**  
New Brunswick Association of Onsite Wastewater Professionals;  
www.nbaowp.ca; 506/455-5477

**Nova Scotia**  
Waste Water Nova Scotia;  
www.wwns.ca; 902/246-2131

**Ontario**  
Ontario Onsite Wastewater Association;  
www.oowa.org; 855/905-6692

**Ontario Association of Sewage Industry Services;**  
www.oasisontario.on.ca;  
877/202-0082

**Saskatchewan**  
Saskatchewan Onsite Wastewater Management Association;  
www.sowma.ca; 877/489-7471

**Canadian Regional**  
Western Canada Onsite Wastewater Management Association;  
www.wcowma.com;  
877/489-7471 ☐

**THE DIRTY BIRD™**  
Septic Vent Concealer

Invented and Made in the USA

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

Installs in [Easy Steps]

866.968.9668 781.806.0797

Reps & Distributors Wanted [www.thedirtybird.com](http://www.thedirtybird.com)

**Wolverine Brand Septic Vent Filters**  
We Stop the Stink!



Patent #US 8,273,162

- More Carbon than other filters
- Patented Cross Flow Design
- Wicks Away Moisture

[IndustrialOdorControl.com](http://IndustrialOdorControl.com)  
866-NO-STINK (667-8465)  
973-846-7817

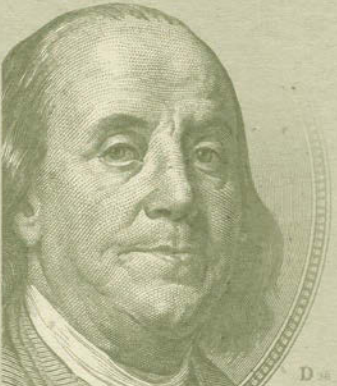
Simple Solutions DISTRIBUTING LLC

- BECOME MORE PROFITABLE
- NETWORK WITH PEERS
- WORK SMARTER, NOT HARDER

**Pumper & Cleaner PROFIT Series**

**3 DAYS OF HANDS-ON BUSINESS BUILDING & NETWORKING**  
**CELEBRATION, FLORIDA**  
**BOHEMIAN HOTEL**  
**APRIL 4-6, 2016**

[WWW.PUMPERPROFIT.COM](http://WWW.PUMPERPROFIT.COM)  
866-933-2653



**ROTATING TURBO NOZZLES**



**\$39.99** 4500 PSI

**WATER CANNON** Made in Italy Industrial Duty

[watercannon.com](http://watercannon.com)  
800.333.9274

**SIM/TECH FILTER**  
Toll Free 888-999-3290

**STF-100 series pressure filter**

- Lower total suspended solids (TSS)
- Protect with low head-loss (.5002 ft)
- Extend the life of the distribution field
- Filter to .062", .024", .007", or .004"
- Pass up to 83.8 gallons per minute @ 1PSI
- Allow for easy installation and service
- Protect from improper system maintenance
- Protect from system abuse
- Satisfy your customers

US Patent# 5,885,452  
CAN Patent# 2,237,751

[www.simtechfilter.com](http://www.simtechfilter.com)

**Breakthrough Blower Technology!**

Lower operating temperature extends life of wearable parts. Best-in-class power efficiency. Highest quality product and warranty at highly competitive wholesale pricing.



**844-468-1344 (toll free)**  
[www.macblowers.com](http://www.macblowers.com)

**MACBlowers**  
by FujiClean of Japan

# PL-250 6" Effluent Filter



**NOW NSF CERTIFIED!**  
NSF/ANSI Standard 46

Polylok, Inc., the industry leader in effluent filter technology, is pleased to introduce our latest effluent filter - the PL-250. The PL-250 is designed to handle up to 3000 GPD with 250 linear feet of filtration. Like our other filters, installation is easy!

Polylok, Inc. is recognized as the industry leader in effluent filter technology. With our proven track record, you can't go wrong. We offer three unique filter lines: Polylok, Zabel and Best. All of our filters are designed with functionality and longevity in mind. The PL-250 incorporates nearly a century of experience in its design.



## FEATURES & BENEFITS

- Accepts 1" PVC handle
- 250 linear feet of filtration
- 6" diameter
- Rated for 3,000 GPD
- 550 SQ.IN. of total surface area
- "W" design prevents solids from settling
- Cannot be installed incorrectly



Polylok PL-68      Polylok PL-122      Polylok PL-525      Polylok PL-625      Zabel A1800      Zabel 8 Series A100/300/600      Zabel 12 Series A100/300/600      Best GF-10