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# Tough Enough TO BE A ZABEL

Patent Pending



The ZEUS<sup>™</sup> Access System includes six interchangeable parts: two septic tank adaptors, three risers and a lid. The patent pending interlocking system makes this Zabel product resistant to unauthorized entry and provides protection from ground water infiltration.

The ZEUS<sup>™</sup> Access System is designed to fit other ZEUS<sup>™</sup> Systems such as: Filtered Pump Vaults, Pump and Discharge Systems, and Alarm and Control Systems to make complete STEP system packages.

Look for the ZEUS<sup>™</sup> trademark to ensure quality.



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The Zabel Zone<sup>™</sup> is published in Fall and Spring editions each year and contains articles of interest to the Onsite Wastewater Community as well as information on Zabel products.

The Onsite Wastewater Community does not exist in a vacuum, but is part of the larger culture. Articles may also appear of a general interest that do not directly involve onsite wastewater issues. Articles by guest authors reflect only their opinions and do not necessarily reflect the opinion of the editor.

Letters to the Editor will be published as space allows with the editor reserving the right to edit the letters for brevity and clarity. If you would like to contribute an article, please contact the editor at : Voice 1-800-221-5742 - Fax 502-267-8801, or - Email ZABELZONE@AOL.COM

The magazine is distributed free of charge and current circulation is approximately 20,000.



# **EditorsCorner**



Jan M. Nurse, DMD

menta

# WE ARE MOVING

1998 was another terrific year for Zabel and as we draw close to the year 2000, another exciting event is taking place!

With the increase in business and addition of personnel to keep pace with this increase, the building where Zabel has been located the past several years has become woefully inadequate. After searching for a couple of years, first casually, then intently, a place was located that will be perfect for the next phase of Zabel's future.

I'll save the juicy details for the next issue of The Zabel Zone, but let me at least say the new location will be vastly larger in office space area and will also have a warehouse and a roto-mold facility.

Leaving the old place tugs at my heart since it was truly Zabel's first home, but I am so proud of our new facility and the man who got us there!

> PLEASE CHANGE YOUR INFORMATION

P.O. BOX 1520 CRESTWOOD KENTUCKY 40014 1-800-221-5742 FAX: 502-992-8201 I was wondering if you know of an inexpensive flow meter that I can install downline from a pumped LPP system, to see how much water is going to the field lines. There is one water meter serving this facility which has an automated car wash and we can't tell how much water is going to the car wash versus out into the field lines. The size of the meter will probably be 1-1/2 to 2 inch diameter and the effluent is pretreated by an aerobic treatment plant so it should be fairly clean.

Thanks for your help, Buck Durham

P.S. I enjoy reading your Zabel Zone Magazine and think that your products and entire organization are "top notch"! Keep up the good work.

Mr. Nurse, very good website! I am buying a property with a septic on it and part of the FHA requirement is that the tank be pumped and certified. As I said, I think you have a great site, I learned much, and it cleared up lots of question I had.

Thanks Gerald Schroeder



John Christensen, B.S., M.Eng.

# **Engineering Note!**

We at Zabel pride ourselves in the constant improvement of our products. Just recently, there have been changes made to the materials used in constructing the A100 and A300 filters. In the past, the rods were made of polyethylene and the nuts were nylon. While these materials performed well in these filters, we feel that stainless steel rods and nuts will perform even better. For this reason, we made the switch to this new material, without increasing the cost of our product.

The new stainless steel rods will require new installation procedures. The polyethylene rods contained a bolt and were secured with one nut each. The stainless steel rods are all thread and require two nuts on each rod to be properly installed on the filter. In order to maintain product integrity, these nuts must not be over torqued when being secured. To ensure proper installation, modified and improved installation instructions will be sent with each filter.



Toot your horn

WESTMORELAND RESERVATION

# HELPING THOSE WHO HELP OTHERS

The Boy Scout program is known for training tomorrow's leaders and for helping others and serving communities through various volunteer cts. However, on

projects. However, on occasion, the organization lacks the necessary resources to improve facilities they use and must reach out for assistance from the community. This happened recently in Florence, Alabama, when Camp Westmoreland was in need of repairs to make it fully operational.

By April Wright

The camp originally consisted of 40 acres on Shoals Creek donated by the Westmoreland family in 1931. It was to be used as a camping place for the Northwest Alabama Boy Scouts and in 1934 became an official camp in the Tennessee Valley Council. Over the years, land has been added as it became available and now Camp Westmoreland covers about 280 acres.

In the 1970's, the council started another camp on the other side of the state and the older camp was to be used only for camporees and other smaller activities. The old camp with the rich tradition quickly fell into disrepair.



Things began to change in 1997 when the Tennessee Valley Council merged with two other councils and became the Greater Alabama Council. This meant money and other resources were pooled. It also meant the older camp would have a purpose as a designated spot for camping and to host larger activities.

At this point, a committee was formed and a five-year plan was formulated for developing the grounds to make Westmoreland operational for large group use. At that time, the camp had one cold water communal shower and pit privies.

The national office drew up plans for a central bathhouse that would have individual shower/dressing rooms and individual commode/lavatory rooms, each with a locking

door. The limited resources caused the scouts to reach out to the Shoals A r e a Builders Association whose



contractors agreed to construct the building using their own men and materials at no cost to the scouts.

The next problem was to construct the large onsite sewage treatment facility that the camp needed. Phil Wright, District Commissioner for the Muscle Shoals

District Boy Scouts and also a Public Health Environmentalist with the Franklin County Health Department, was asked to help with the septic system.

He then contacted James B. Cahoon, a professional engineer. Cahoon's son and wife are involved in





the scouting program in the Muscle Shoals District. Cahoon performed the required soil tests and designed the large system. His system design required two 1500-gallon tanks and 640 linear feet of thirty-six inch wide field lines, which would mean a great expense for gravel and installation.

Wright approached Sonny Hendon of Hendon's Septic Tank Service who agreed to donate one of the 1500-gallon tanks and installation of both, but could find no one to install the field lines.

Wright then called Bobby Trousdale of Trousdale's Backhoe and Hauling who asked if the committee had considered using Infiltrator for the project. This would simplify things by reducing the linear footage and

eliminating gravel. Mike Nowak of Infiltrator got approval from David Click to donate the material necessary for the project and would help with the installation.

Wright also contacted Bill Rawlins of Zabel Environmental Technology. Zabel donated an A-100 Filter for the project and Bill helped by giving instruction prior to installation.



On August 28, 1998, the plan came together. Hendon and his crew consisting of sons, Mickey and Ronnie, and Maurice Horton performed the task of installing



From left to right: Bobby Trousdale, Mike Nowak, Mark Trousdale, Shank Hughes, and Edward E. Rogers

the tanks. The next day, Trousdale and his crew, consisting of son, Mark, Shank Hughes and grandson Cameron Trousdale (who is six years old and can operate a backhoe) arrived. Mike Nowak was also there as promised and by 12:30 the system installation, including the donated Zabel Filter, was complete.

By donating their time and, most of all, their sweat, these men set an example to the many scouts who their actions will benefit.



## What do contractors say about the Infiltrator Chamber System for septic leachfields?

## "I tell you, I love these things. They're the way of the future."

EAN A. SO

TING

FOUNDATIONS REMODELING

IC SYSTEMS

Dean Soucy is a busy contractor who knows he can always rely on Infiltrator chambers for his septic installations.

ONCRETE

CAVATING

"Infiltrator chambers make the job a lot easier and faster. I've done Infiltrator jobs all by myself, but stone and pipe jobs need two or three people.

"With stone and pipe, you've got to level the stone by hand, then spread cloth on it. It's too easy to knock the cloth off or crush the pipe with your equipment. And the stone will eventually plug up with scep and silt. Sooner or later, you'll get called back to do it over.

This doesn't happen with Infiltrators because they're hollow and completely open inside so.

Dean Soucy, Tolland, Connecticut

they don't plug up. They hold the water until it leaches into the ground.

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# Leading the Way

With growing concerns about the environment and public health, the onsite industry is receiving a great deal of attention and publicity. In order to address these concerns, along with ensuring that high standards of professionalism and quality of work are upheld, Florida's Bureau of Onsite Sewage Programs, under the direction of Mr. Bart Bibler, has established a toll free hot line for reporting any suspected fraudulent activity.

Mr. Bibler has said the hot line will be manned 24 hours a day, seven days a week. There will be an inspector on call in each county in the state. There may be some glitches that will be addressed as they pop up, but he doesn't anticipate many problems. For further information on this program contact one of his staff members at (850) 488-4070.

Below is a copy of the bulletin that is being sent throughout the state



TO REPORT FRAUDULENT SEPTIC TANK CONTRACTING ACTIVITY PLEASE CALL TOLL-FREE

# 1-888-993-9813

Bureau of Water and Onsite Sewage Programs

#### 1999

## March

15th-19th, LA Conference On Water Supply, Grover Lowe 318-222-7890 23th-25th, NSF Joint Wastewater Committee, Rich Haffner 800/673-6275 26th-27th, NCSTA Trade Show, Karla Gwaltney,, 252-638-4407 26th-27th, OR Onsite Wastewater Association Conf., Tom Rogers 541-440-4683

## April

7th-9th, MO Milk, Food & Env Health Conference, Charles Kendrick 573-221-1167 8th-10th, AIM/GOWA Regional Conference, Macon, GA.,Robin Terry, 877-323-5246 13th-14th, OEHA Educational Conference, Vicki Johnson 614-871-0665 13th-15th, WasteX 99 World Trade Ctr. Mexico City, call for info 407-851-7222 26th-30th, RRFA Convention & Expo, Mary Lou 702-882-1773 28th-29th, ALPHA/SHA Educational Conference, Karen Landers 256-383-1231 30th-May 1st, AOWA Trade Show & Certification classes, AOWA Office 344-260-0990

### May

5th-7th, AK Public Health Ass. Conf., Iva Moss 501-280-4624 9th-11th, EAA National Environmental Conf., Thomas Salt 320-763-4320 10th-12th, C.I.P.H.I. National Education Conference, Dwayne Djkowich 306-655-4143 19th-21st, MCX '99, Brenda Malayeri 800-366-7731 20th-22th, AIM Regional Conference, Kansas City, MO.,Robin Terry, 877-323-5246 22nd-25th, NRA Annual Show, Shelley Picardi 312-853-2525 26th-27th, FEHA Education Meeting & Trade Show, Seldon Carsey 813-962-0176 26th-28th, Pumper & Cleaner Environmental Expo, Cole Publishing 800-257-7222 26th-28th, SCPHA Annual Meeting, Vickie Zelenko 803-898-3427

#### June

6th-9th, Water Resource Planning & Management, no number www.asce.org

#### July

6th-7th, NEHA Educational Conf. & Exhibition, Kim Brandow 303-756-9090 ext. 306 7th-9th, Georgia Env. Health Ass. Seminar, Henry Gilmer, 706-667-4234 9th-10th, Wisconsin Precast Association Summer Conv., Ashley Moore 608-256-7701 25th-28th, ASCE-CSCE Conference on Env. Engineering, no name www.asce.org

## August

8th-11th, Soil & Water Conservation Society Conf. & Trade show, Pat, 515-289-2331 10th-12th, Michigan Ass. of Local Public Health 99 Conf., Cindy Hengesback 517-485-0660 19th-21th, FOWA Trade Show, Bob Lynch 904-454-4030 26th-28th, AIM/NYOWA Regional Conference, Binghampton, NY. Robin Terry, 877-323-5246

## September

2nd-4th, GOWA Conference, Robin Terry, 877-323-5246 9th-11th, AIM Regional Conference, Ft. Wayne, IN., Robin Terry, 877-323-5246 22nd-24th, Mississippi Public Health Ass. Trade Show, Bruce Chamberlain, 601-576-7553 30th-2nd, AIM/MOWA Regional Conference, Vicksburg, MS., Robin Terry, 877-323-5246

### **October**

6th-7th, OEHA Fall Educational Conference, Linda Griffith 614-873-4654 9th-13th, WEFTEC 99, no name 703-684-2400

## November

3rd-6th, Nowra Conference, Pam Franzen 800-966-2942 8th-9th, MHOA Conference, Donna Moultrup 617-489-8249 18th-20th, AIM Regional Conference, Warren, OH., Robin Terry, 877-323-5246

At the time of printing those shows highlighted in red will have someone from Zabel giving one or more presentations at some time during the conference. For the most up to date listing, or to submit a Conference or Trade Shows see the Trade Shows page under the Coffee Shop section on our website. Reservations Scheduling Planning Organizing Travel Registration

If you are having a Conference or Expo, and would like the information printed in the next Zabel Zone<sup>™</sup> or to appear on the Internet. Please send your info to us. Or go online to www.*zabel*.com, click the Coffee Shop, then click Trade Shows, then click the Post button and start typing.

Name of Conference \_

Date(s) of Conference \_

Contact Person \_

Telephone number \_

Send this form to: Zabel™ Environmental Technology, c/o Tom Jenkins-Conferences,10409 Watterson Trail, Louisville, KY 40299





Figure A



Figure B



Figure C

## **Access System Installation**

Zabel's new Access Systems are designed to be user friendly. They are easily installed using one of two methods. They can be cast into the lid of the tank (fig. A) using Model # RB-TA-F or Model # RB-R or retrofit onto an existing tank using Model # RB-TA-T. All are available in 20" or 26" outside diameters.

To cast the appropriate adapter into the lid of a tank, you simply align the adapter with either the outlet or inlet of the tank in place of the access form ring. (fig. B) Care should be taken to ensure proper alignment to provide an unobstructed view and proper clearance for installation and inspection of the inlet, outlet and filter(s). Pour concrete taking care not to spill concrete into the center of the adapter. It is recommended to temporarily install the lid or another cover while pouring.

Retrofitting Access System to an Existing Tank.

1. Uncover the area around the access openings and remove all loose soil.

2. Remove access lids, inspect inlet and outlet devices and filter.

3. Apply 1-inch mastic around bottom side of Adapter assembly (RB-TA-T-) 1/2 inch from outside edge.

4. Place Adapter Assembly on tank lid over access opening ensuring proper alignment (fig C).

5. Put pressure on edges of Adapter Assembly by walking around edges until mastic spreads, forming a watertight seal to surface of tank.

6. Apply a bead of silicone sealant (or equivalent) around top flange of Adapter Assembly and install first section of riser. Turn clockwise to lock in place.

7. Back fill half way up the riser. Then repeat step #6 for each riser section installed.

Install lid and security screws (without sealant).
 Backfill 1 to 2 inch above edge of lid to allow for settling and water diversion.

# SPONSORSHIP

#### LEFT TO RIGHT: SERGEANT SHERMAN TEBAULT, TROOPER RUDD KERR, SECRETARY CHIEF SALLY ARK, SERGEANT DERON BERTHOLD.

THE MEMBERS OF KENTUCKY STATE POLICE POST 4 IN ELIZABETHTOWN RECENTLY PLAYED AS A TEAM IN THE ANNUAL BENEFIT GOLF SCRAMBLE FOR TROOPER ISLAND, INC., AN ISLAND DEVELOPED BY THE KENTUCKY STATE POLICE AS PART OF A LONG RANGE PROGRAM AIMED DIRECTLY AT PREVENTING ACCIDENTS AND CRIME. YOUNGSTERS, AGE 10 TO 12, ARE SELECTED FROM THE STATE AND TAKEN FOR A WEEK LONG CAMPING EXPERIENCE AT NO COST TO THE YOUNGSTER OR HIS FAMILY.

ZABEL SPONSORED SHIRTS FOR THIS TEAM, AND WHILE THEY DID NOT COME IN FIRST PLACE, THEY WERE VOTED BEST DRESSED.



# Still doing it the old way?

## Do it the new way; use the Ecoflo® Biofilter

Conventional septic systems treat wastewater using soil, gravel and sand, which vary in quality and availability from county to county. Compare this with the Ecoflo® Biofilter, which uses a consistent and controlled filtering media throughout America.

Premier Tech Environment, the world leader in peat based onsite wastewater treatment technologies, produces and provides a standardized peat filter media from coast to coast. With 75 years of experience in the peat moss industry and more than 22 plants across America, Premier Tech offers the Ecoflo® Biofilter, a quality controlled onsite system.

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Ralph J. Turnbo, Jr.

THE KEY

properly repairing and maintaining individual onsite wastewater disposal systems. The MSDH will provide this education through seminars,

demonstration repairs, a video showing repair options and training for targeted groups.

This is a three-phase project, with each phase requiring one calendar year. The total cost for all three phases is \$114,092. Of this amount, \$68,000 is Federal 319 funds, with the balance of \$46,092 to be supplied as match. The match will be provided by participating homeowners as well as by the MSDH.

The first phase of this project was completed in 1998. This consisted of three-hour continuing education workshops presented in each of our nine public health districts. The targeted audience for these workshops was installers, registered professional engineers and public health environmentalists. The workshop agenda included the nonpoint source pollution problem, environmental and public health impact, demonstrations of surface runoff and conventional and alternative wastewater treatment and disposal technology.

The second phase, currently underway, is the actual selection of sites with failing systems. The sites chosen for demonstration repairs must be located in a targeted watershed and must exhibit a failure that is readily discernable from a visible inspection. This phase will demonstrate a cost effective solution to repair of failing systems using currently available technology to treat the sewage to the best possible extent, reduce the amount of effluent as much as possible and maintain the treated effluent on the property of the generator to the greatest extent possible. Technology utilized in repair of the systems will be chosen based on cost to the homeowner, availability and effectiveness.

Once repaired, the system will be monitored to evaluate the viability of the repair. These results will be compared with the condition of the site prior to the repair and if possible to control sites with the same vicinity.

The third phase (year 2000) of the project will involve the production of a resource manual for wastewater system repairs and a video of repair options.

In summary, the goal is to demonstrate basic public health by taking a system which is generating an untreated volume of sewage that flows into the road ditch, pools in the yard or runs onto the neighbors' property and to demonstrate repair techniques to provide adequate treatment, volume reduction and to the greatest extent maintain the effluent on the property of the generator.

Ralph Turnbo served as Sanitarian for Pike County, Mississippi for 18 yrs. and Lincoln County, Mississippi for 1 y, before coming to the Bureau of Env. Services where he holds the position of Director of the Onsite S.W. Branch. His job consists of regulation and policy development, planning, and implementation of all general environmental programs, individual onsite W. W. treatment and disposal being the major program.

not discard



NINW

onsite wastewater installations, along with a lack of homeowner education concerning the appropriate use and maintenance of onsite wastewater disposal systems, has contributed to system malfunction. Many of these older systems are located on lots where the soil/site conditions will not permit the repair or replacement of the failing system with one that is fully approvable. These 'unrepairable" sites are among the sources that contribute to nonpoint pollution of Mississippi's environment and in the past have been the least addressed. These existing systems, if malfunctioning or if functioning (to the casual observer), can load streams, waterways and shallow groundwater aquifers with pathogenic bacteria and viruses as well as nutrients.

Over the years, unregulated and improper

SCHOOL BUS

Staff members usually are not involved with existing systems unless a complaint is filed or the homeowner needs an approval for some future transaction, such as a loan or sale of a home. Current State Law does not require homeowners to involve the Mississippi State Department of Health (MSDH) in the repair of malfunctioning onsite systems, or should this assistance be sought, does not require that any recommendations be followed. In most cases of repair of malfunctioning onsite systems, the only contact the homeowner has is with the certified installer. It is, therefore, imperative that homeowners and certified wastewater system installers be educated about the impact of malfunctioning wastewater disposal systems on public health and the potential for pollution of both ground and surface water. It is the goal of the MSDH to educate public health environmentalists, wastewater disposal system installers, and homeowners about methods to reduce pollution by





By Craig Jowett, PhD., P. Eng.

How important is size anyway?... for treating wastewater, that is. At our wedding a long time ago, my best man, Jim, told a "short joke" during his speech, and I've been trying ever since to show that "good things do come in small packages". (No harm done, however, because years later, Jim is still tall but now also bald and people bask in his reflected light.)

Aerobic filter media have changed considerably to include the more efficient and more consistent physical properties that synthetic materials provide. The patented Waterloo Biofilter<sup>®</sup> utilizes pieces of open-cell plastic foam as filter medium. It has the surface area and water retention ability of a silt, but at the same time has the pore spaces of a gravel so it won't plug at very high flow rates. Air passes through the filter bed at



the same time as dosing, rather than waiting for the water to pass out through the bottom as is the case for sand or soil. These advantages combined enable loading rates 10 times or more than particle filters like sand, soil, or peat. Being light in weight and small in volume (like many good people), is not a disadvantage for the Biofilter, in fact it's a major advantage.

Zabel manufactures Zeus pump basins in 20" or 26" diameter sizes with a standard 38" height, with 12" risers added for deeper basins. The transportability of the basket filters is a major advantage, as it is for Zabel pump basins. Can we marry these two technologies for a fully transportable system, and what size must they be for standard houses? To answer this question I first need to explain how the Waterloo Biofilter works.



The wastewater is sprayed on top of foam cubes contained in a cylindrical basket and percolates slowly down through the cubes where beneficial microbes degrade the microbial contaminants and oxidize ammonium to nitrate, while introducing dissolved oxygen back into the water.

Our standard Ontario design for tertiary treatment (<15 mg/L BOD and <10 mg/L TSS) is an 8' by 4' by 5' container volume with 50% return to septic tank for a typical 4-bedroom house with septic tank and effluent filter pretreatment. These cylindrical baskets allow for more efficient use of the circular pattern of the spray nozzles, but more importantly, allow air to move in and out through the side walls in addition to the top. (The basket also doubles as its own shipping container, and can be placed into concrete tanks on site.) These baskets are nominally 4' diameter and 5' high and two are required for tertiary quality effluent in a single pass or with 50% recirculation.

The Waterloo Biofilter<sup>®</sup> technology has been tested at length since 1994 using narrow baskets and basins in the size range of 21"-30" diameter and 24"-54" height, the same as Zabel basins, to attain both secondary and tertiary quality effluent. As expected, these tests show that effluent quality improves with larger size of filter or with more energy expended in recirculation. Results of treatment of domestic septic tank effluent are divided into the two categories of "Low Recirculation" (1-5 passes through the Biofilter), with larger filter volumes, and "High Recirculation" (10-25 passes) with smaller filter volumes.

Low Recirculation: Lower loading rates of <5 gpd/ft3 (US gallons per day per cubic foot of basket or container filled with filter medium) combined with a single or few passes on the Biofilter produce mainly tertiary quality effluent.

High Recirculation: High loading rates of 15-25 gpd/ft3 combined with multiple passes (10-25) produce mainly secondary effluent, whereas moderate loading rates of 5-15 gpd/ft3 with multiple passes (10-25) produce tertiary effluent.

Now back to the question, Can we marry these two technologies for a fully transportable system, and what size must they be for standard houses?

There is obviously a trade-off between energy used for recirculation and size of Biofilter required. The standard 26"Dx38"H Zabel basin is ~11ft<sup>3</sup> in volume, which at one Zabel basin per bedroom is equivalent to a loading rate of 10-15 gpd/ft<sup>3</sup> (at 150 gal/bedroom). This rate produces secondary effluent with 10-15 passes through the filter, and tertiary quality effluent with 20-25 passes. At this rate, four ZEUS basin modules could treat a four-bedroom house.

To have less energy expenditure at the expense of high initial cost, one bedroom could be treated by 1.5 or even 2 ZEUS basin modules, followed by an upflow filter to guarantee treatment at even the most difficult house.

Years ago I learned good things come in small packages. That's true for advanced wastewater treatment as well as people.



# 7ATEDLOUIDDORS

The Nurse Family's first annual fishing tournament



From left to right: Tom Jenkins, Brian Reeves, Bill Rawlins, Morgan Nurse, Harry Nurse



With the fishing being slow this was the normal size fish



Tom trying to listen in on Harry's and Morgan's strategy



We think it was all the excitement that took its toll on Morgan, but no one checked to see what was in the bottle

There were two boats involved. In one was Harry, Bill and Morgan. In the other was Tom and Brian. Tom and Brian were the unofficial winners. Still unofficial because of an appeal from Harry and Bill's team that has not been resolved. You see every time Harry or Bill caught a fish the other team told them to throw it back because it would not make the legal size limit. Oh well maybe next year the rules will get a little tighter.



Bill's showing us his secret knot

With Brian residing in Florida he's used to them being larger



Tom with his 98' Kentucky bow hunting trophy a beautiful 10 point white-tailed deer that tipped the scales at 170 field dressed lbs..

14

Shea Kent from **MKM Sales** landed this 32" Redfish off the coast of Texas

Great fish Shea did it taste as good as it looks?

Red caught on spoil bank outside Mobile bay on live croaker. 12 seconds of fishing (no lie) and 35 minute fight. It was actually a double as my father-in-law hooked up at same time. We really in truly just dropped the croaker over the side and before they could swim to the bottom we were on fish.

## INTRODUCING . . .

Since you received your fall edition of the Zabel Zone, two new faces have been added to our staff.



#### John Christensen

In the past, Zabel has outsourced all engineering work. Recently, the decision was made to add an engineer to our staff and we were fortunate to find John Christensen to fill that slot. John is now in charge of all CAD drawings and is involved in product research and development.

He is a graduate (at the ripe old age of 16) of Covington Latin School. After high school, John continued his education at the University of Louisville, where he earned a Bachelor of Science in Chemical Engineering and Master of Engineering. His hobbies include playing basketball and billiards and building remote control cars.



#### Brian Borders

After graduating from Western Kentucky University, Brian earned his stripes in the regulatory community. His first position was as a local Sanitarian with Pennyrile District Health Department, then later as a Technical Consultant in the Onsite Sewage Program for the Kentucky Department for Public Health. His stint with the State Department of Health allowed him to focus entirely on the onsite sewage program and provided him with an opportunity to be exposed to the national onsite community. As NE Field Manager, Brian provides education to those in his territory as well as technical support in the

field.

When not working, he enjoys spending time with his wife and daughter and has recently taken up the frustrating game of golf. Brian says, "I am really enjoying my new position at Zabel and look forward to many long years of success."

"Rebel Humor

A man was walking along a street in Kentucky when he came upon a dog attacking a small boy. He immediately got between the boy and the dog, and grabbing the animal by the collar, jerked it around, breaking its neck. Just then, another man came running up, and said, "I'm a reporter for The Courier-Journal, and I saw everything! I can just see the headline: 'Local Man Saves Child from Attack by Vicious Dog'."

"Well, actually, I'm not from Louisville," the stranger said. "I'm just here attending an AIM Training Conference."

"Okay," the reporter said, "the headline can be: 'Kentucky Man Saves Child from Attack by Vicious Dog'."

"No, no, you don't understand," the stranger explained, "my name is Plander, and I'm from Connecticut."

The reporter eyed the stranger once again. "Well, in that case," he said, "I guess the headline will read: 'Damn Yankee Kills Family Pet'."

# **Installing Filters in Difficult Places**

There are several techniques for achieving a successful installation in problem situations. Most of these situations can be handled successfully by using the following techniques.

## Retrofitting Zabel<sup>™</sup> Filters:

Any Zabel<sup>TM</sup> Filter can be retrofitted to existing onsite wastewater applications. The first method is to uncover the existing tank at the outlet end, remove the access lid and insert an A1800 Cartridge in the existing outlet tee or replace the existing outlet tee with the appropriate Zabel<sup>TM</sup> Filter. (*Figure 1*)

Where this is not practical, a Zabel<sup>TM</sup> Filter can be retrofitted using a Zeus<sup>TM</sup> Basin or Container Assembly. The tight line between the septic tank and the disposal field can be cut to allow for the installation of a Basin or Container Assembly. (*Figure 2*) The Zeus<sup>TM</sup> Basin system allows you to utilize the various risers in the Zeus<sup>TM</sup> Access system to bring at grade entry to the tank to allow for service of the filter. The Container Assembly includes everything you need - Filter Container, Adjustable Riser, Riser Lid, Lid Screws, Schedule 35 & Schedule 41 Pipe Seals and Sealant.

The 38" Basin will also allow you to install an A-100 HIP or A-300 HIP filter outside the septic tank. This is accomplished by using the Zabel<sup>TM</sup> 4" extension adapter and a section of 4" Sch 40 pipe extended to the bottom of the basin. 1" holes will need to be drilled into the extension adapter to allow solids to slough back into the basin. (*Figure 3*)

**Supplementary Support Method for Installing Zabel<sup>™</sup> Filters:** Installing two or more Zabel<sup>™</sup> Filters in one tank, 18 inches or more from the end of the tank or in high strength waste applications such as restaurants or dog kennels sometimes requires additional support to handle the weight of the filter. Supplementary support can be achieved by following these directions.

Solvent weld the reducer to the bottom of the filter case. Using two pieces of Schedule 40 pipe











Figure 2



Figure 4

with an inverted Sanitary Tee located at the clear zone level, extend to the bottom of the tank for support. Make sure the pipe exiting the filter and extending through the tank wall is level. Cut four or more two inch holes in the PVC pipe below the Sanitary Tee to prevent sludge build up in the pipe. (*Figure 4*)

When installing an A-100 HIP or A-300 HIP unit in a tank use the Supplementary Support Method outlined previously above as well as a section of 4" Sch 40 PVC pipe extending from the lower filter case outlet to the tank end wall. This gives maximum support to this larger filter unit. (*Figure 5*)

A plumbing flange should be used where Schedule 40 pipe can not be extended through the tank end wall. (*Figure 6*)



Figure 6





What do folks at Joe Wheeler Electric Membership Co-op in Trinity, Alabama, call its onsite wastewater management department? Well, in the presence of company, they call it the lumpy water division. And they say it with a smile.

Why? Because decentralized wastewater management has the potential to be a key value-added service to members; because that service can increase member loyalty, which will be important in a deregulated market; and because it projects a positive image of good stewardship to the environment.

(A value-added service is an extra service that co-ops offer their members. Some are providing the Internet, others are selling appliances and some even offer telephone service.)

At Joe Wheeler EMC, the idea of on-site wastewater management came through a national pilot project that grew from Alabama's Flint Creek Watershed Project. The project stems from a public-private partnership involving local, state and federal regulatory agencies and engineering and resource management specialists.

The pilot project should open previously unsuitable land for residential and commercial development and reduce pollutants in Morgan County's Flint Creek, designated as one of Alabama's most polluted streams.

"During our research, we learned that 50% of the wells in the watershed were contaminated by bacteria. Bacteria was coming from failing septic systems which were releasing raw effluent into soils which have no capacity to provide percolation," said Chuck Jackson, JWEMC environmental management manager.

Joe Wheeler EMC, in conjunction with the Tennessee Valley Authority (TVA) and the cooperating regulatory agencies, has already begun work at the site of an animal waste lagoon left by a former dairy farm operation which has been identified as part of the pollution problem. The lagoon will be converted to a constructed wetlands. The project will meet the wastewater needs of 50 new homes near Hartselle, Alabama. "The site was selected because of severe soil conditions and because the property couldn't be developed as it stood. Now, thanks to this project, a neighborhood will be built," said Jackson. "The co-op benefits two-fold: householders pay a monthly management fee and each new family will use electric power."

Since announcing the pilot project, local land developers have begun approaching the co-op and seven new projects are presently being developed. Jackson said, "There has been a tremendous interest locally from land developers and nationally from other co-ops. Co-ops and decentralized systems are a good match. "

Each lot will have a septic tank that will send wastewater to a communal disposal system located on acreage set aside for that purpose. There are four basic components: a wastewater collection system; a constructed wetlands for treatment; a system to dispose of treated water; and a supervisory control and data acquisition (SCADA) system which will allow Joe Wheeler EMC personnel to monitor the system's performance.

According to Jackson, the market is wide open for managing these systems. He stated, "Co-ops have always taken a leadership role when there has been a community problem. With toxins from failed systems affecting the environment by polluting our lakes and rivers, co-ops have an opportunity to again take that role." Collaborators on the pilot project are Joe Wheeler EMC, TVA, and team members from the Environmental Protection Agency, the Alabama Department of Public Health, the Alabama Department of Environmental Management, Natural Resources Conservation Service, the Tri-County Health Service and the Morgan, Lawrence and Cullman County Soil and Water Conservation Districts.

Lynnette is the Communications Director at Joe Wheeler EMC. She edits the Cooperative Voice magazine to members on a monthly basis.

# Faces Behind the Phones



Harry Nurse President



Jan Nurse Zabel Zone Editor



Becky Page VP Business Services



Theo Terry VP Marketing



Lesley Jenkins Central Account Manager



Joe Mattingly Senior Northeastern Account Manager



Larry Nurse Southeastern Account Manager



Amy Sparks Bookeeper



Ann Hines Communications Manager



Bill Rawlins Senior Southeastern Field Manager



Tom Jenkins Media Services Manager



Kevin Greene ZEUS Product Manager



John Christensen Engineer



Brian Borders Sales Manager

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The Red Jacket Utility pumps are specifically designed to handle your toughest effluent applications. Both the 610 and 518 Model Utility Pumps come equipped with a 1/2 HP, 115-volt, NEMA standard motor and a removable pump end for quick and easy service.

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SP

The Model 518 Utility Pump has an optimum performance of 18 gpm, giving you greater flow on more demanding jobs.

For lower flow applications, The Model 610 Utility Pump has optimum performance at 10 gpm.



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## "My System is Failing and What Are You Going to Do About It?"

Does that phrase sound familiar? No matter how advanced onsite technology becomes or how careful we are during design and installation, some onsite systems are going to fail.

Before we can figure out "what to do about it", we must first determine the cause of failure. In my regulatory experience, I had to troubleshoot countless failing systems. Usually my first inclination concerning the cause was wrong. That's right, a regulator (former) admitting they were wrong. To successfully troubleshoot a failing system, you must take a systematic approach to examining every part of the system.

You should begin by gathering information on the system concerning installation, use, maintenance, failure, layout, and site/soil characteristics. This information may be obtained from the health department, system installer, and most importantly the homeowner. Yes, I said the homeowner! The homeowner is the chief operator of the system and can tell you how the system has been used and maintained. I once had a homeowner tell me the system worked fine until he "re-leveled the yard". It's amazing what people will say when they really don't know what they are saying.

The next step is to examine each component of the

system to determine proper function and installation. I have seen tanks installed backwards, at the wrong elevation, and tilted toward the house. The type of distribution should be examined to determine where the effluent is going and in what quantity. I have opened many equal flow distribution boxes to find they had shifted and all the effluent was being sent to one lateral line.

You should examine the lateral field to determine its depth, size, ponding level, biomat formation, type of trench material,

and proper installation. This information should be compared to the site and soil



characteristics that you observe and those documented on the original design.

The type, time, and location of the failure can also indicate its cause. In a serial distribution, continuous surfacing on the lowest

or last line indicates the system is completely saturated. Surfacing that occurs in the middle of the drainfield during wet periods of the year may be a direct result of a seasonal high water table.

Analyze all the information from your investigation and narrow down your probable causes of failure. Remember, the cause may be a whole series of problems that are working together. Generally, the homeowner will fail to think of their septic system until it fails. It is then too late for an easy solution and the only option may be to abandon the existing lateral field. This is a very expensive proposition and is why installing a Zabel Effluent Filter just makes good sense. Zabel's effluent filters protect

the drainfield by reducing the amount of solids leaving the septic tank. Filters also force routine maintenance requiring the homeowner to think about their system before the failure occurs.

Troubleshooting system failure is not an easy process. I found it to be one of the most challenging aspects of my regulatory career. My successes and failures taught me several lessons. First, never assume the first problem you encounter is the only problem; second, never underestimate the property owner; and third, expect the unexpected.



Zabel's Tom & Lesley Jenkins, Have been trying to adopt for about 18 month's. With two unsuccessful attempts they finally were successful. Kaitlyn Leigh Jenkins was born on February 3rd, they took her home 2 days later. She was two weeks early and weighed only 5 lbs.-13oz. She's doing great.



Congratulations to Zabel's Larry Nurse who turned 50 on March 7th. So when you talk to him on the phone rub it in a little.





by Brian Borders

# **Assuring Septic System Maintenance Management** with Wastewater Filters



By Harry L. Nurse Jr.

Do wastewater filters solve all the maintenance management problems of conventional onsite systems?

> The Spring 1996 edition of Pipeline magazine, published by National Small Flows Clearinghouse, focused on the need for management programs for onsite systems. It reported that state regulators have more confidence in centralized treatment systems than onsite systems because "they have centralized management and oversight and centralized operation and maintenance". Most industry professionals agree there are three keys to managing properly operating onsite systems. These are design, installation and maintenance.

A proper design usually encompasses environmental factors such as a site evaluation - including climatic, topographical and soil conditions, type of use residential, commercial or industrial, nature and strength of waste, and hydraulic loading of the system.

There are onsite technologic alternatives to properly design a system for most sites. There is also enough systems design know how to determine when an onsite system should not be used. More and more states are putting management programs in place that require designers to pass specific courses and take continuing education seminars to be certified to practice onsite wastewater systems design. This is not to say that there is complete agreement about this process and it is true many areas of the country lag behind the learning curve required to provide adequate

design management. However, that is a program problem that can be solved through proper state and county codes. Good design information is available.

Just as management of the design process is the foundation on which a successful onsite system rests, a competent <u>installation</u> is also necessary to a properly operating system. Good installation is also dependent on training and monitoring installers to assure that the system has been constructed as it has been designed.

Whether it is an advanced design requiring the installation and setting of complex mechanical components or a conventional septic tank and drainfield, the system will not provide the designed treatment unless a knowledgeable installer carefully follows the intended design. Again, many states are beginning to require training and certification of installers.

The third leg of this management puzzle is <u>maintenance</u>. It is by far the most difficult of the three to execute. Like designers and installers, service personnel can and should be required to be certified in the skills necessary to monitor and maintain a variety of systems. Some states have already headed down this road with more to soon follow.

The decision to service a system, that is to determine if and when it should be serviced, is usually left to the homeowner. This is the only part of the onsite program dependent on the knowledge and performance of a non-professional. This dependence on the homeowner for service of onsite systems is the greatest contributor to the reluctance of governmental jurisdictions to view economical onsite systems as an attractive alternative to expensive centralized sewer systems.

The industry's failure to provide an adequate approach for the maintenance of the most basic conventional systems has also contributed to the reluctance of states to embrace the more sophisticated onsite technologies. Aerobic treatment units are a case in point. The primary restriction on the acceptance of aerobic treatment units has been the problem of assuring long term maintenance of the system beyond the two years required under NSF Standard 40 certification. Aerobic manufacturers are reluctant to voluntarily increase their required service commitment of two years. They feel it puts them at a cost disadvantage with conventional and other onsite technologies which in most states do not have any enforceable service component.

If periodic monitoring and maintenance is needed for aerobic systems, it is certainly a need for all onsite systems whether it is the more complicated recirculating sand filter or simple conventional systems that usually only require periodic inspection and removal of septage. Although servicing of conventional systems is very straightforward and some would say down right simple, it is also critical in avoiding system failure.

This concern for maintenance management of conventional systems is voiced in seminar after seminar with repeated calls for educating the homeowner about the needs of the system. Simply writing code that says a conventional system should be inspected and serviced every three to five years is not likely to result in the homeowner, who probably doesn't even know the code exists, having the system serviced. Most homeowners have many priorities in their lives other than pumping their septic tank.

When does the homeowner have the system serviced? In seminar after seminar I have conducted, regulators and industry agree, "They have it serviced when it backs up."

Managing the homeowner is the key to managing maintenance! Now, how do we manage the homeowner?

Homeowners actually do three things that compound the problem of system performance and interfere with system maintenance management. First, they put things in the tank that don't belong. Second, they hydraulically overload the system. And third, as we said previously they perform system maintenance only when the system backs up.

Depending on the homeowner to act either takes direct regulatory enforcement, which states have been reluctant to do, or depends on homeowner education - an impossibly expensive undertaking that is unlikely to dramatically change homeowner attitudes.

The answer is to manage system maintenance by requiring wastewater filters in all systems utilizing septic tanks as part of the design. Requiring wastewater filters on the outlet of septic tanks manages the homeowner!

If the homeowner discards inappropriate material in the tank, the filter keeps it in the tank. Sanitary products, hair and cigarette butts will also be contained in the tank. If bleach or some other caustic material is discarded, the filter will not remove the offending agent. However, it will protect the field from the excess solids until the tank recovers. If grease is put in the tank, the filter will keep most of the grease out of the field.

If the homeowner overloads the hydraulic flow, not allowing the normal 24 hour retention time, the filter protects the field from solids carryover exacerbated by the flow.

Finally, if the homeowner has maintenance performed <u>only</u> when the system backs up, the filter will protect the field and slow the system down which assures system <u>maintenance</u> before there is a system failure.

Does this mean the system works fine one day and plugs the next causing a messy problem for the homeowner? No! All Zabel filters are designed with a bypass when the body of the filter plugs.

Does the bypass allow unfiltered material to leave the tank? No! The material rises over the outside of the filter, approximately four inches above the outlet invert, causing a gentle slowing of the waste system. The effluent exits through the normal outlet after it has been filtered through the clean reserve portion of the filter.

During the period the system has slowed, the homeowner has ample opportunity and warning to have the system serviced.

Do wastewater filters solve all the maintenance management problems of onsite systems? No. It is in systems utilizing conventional septic tanks and filtered pump vaults that most benefit from this process.

Wastewater filters do not solve problems of poor siting or poor design. They cannot correct problems caused by poor installation. When the system has been correctly designed and installed, however, the filter is the only passive system that will assure system maintenance prior to an expensive and catastrophic failure caused by overloading of suspended solids.

It will take states time to put in place the programs and training necessary to provide adequate monitoring and management of onsite wastewater system design and installation as well as systems maintenance. However, by simply requiring an inexpensive wastewater filter in every septic tank, conventional onsite systems will no longer be dependent on the homeowner's education or interest in the system's maintenance.

At a lower cost per system than any other design, installation or maintenance management program, requiring a wastewater filter in every septic tank will manage the homeowner assuring septic system maintenance in a timely manner. With conventional system maintenance assured, perhaps state regulators would be more likely to see onsite systems as an attractive and low cost alternative to expensive centralized systems.





BillRawlins made a stop at the Dam while he was attending the NEHA conference last June.









Hoover Dam is a testimony to a country's ability to construct monolithic projects in the midst of adverse conditions. Built during the Depression; thousands of men and their families came to Black Canyon to tame the Colorado River. It took less then 5 years, in a harsh and barren land, to build the largest dam of its time. Now, more then 60 years later, Hoover Dam still stands as a world-renowned structure. The dam is a National Historic Landmark and has been rated by the American Society of Civil Engineers as one of America's Seven Modern Civil Engineering Wonders.

Hoover Dam is a part of the Bureau of Reclamations's multipurpose projects on the Colorado River. These projects control floods; they store water for irrigation, municipal, and industrial use; and they provide generation of hydroelectric power, recreation, and fish and wildlife habitat. Lake Mead, with a storage capacity of 28,537,000 acre-feet, is the largest man-made lake in the United States.

The Hoover Dam Power Plant has 17 large generators and has a rated capacity of more then 2,000 megawatts.

#### The Dam:

Hoover Dam is a concrete arch-gravity type, in which the water load is carried by both gravity action and horizontal arch action. The first concrete for the dam was placed on June 6, 1933, and the last concrete was placed in the dam on May 29, 1935.

The dam was built in blocks or vertical columns varying in size from about 60 feet square at the upstream face of the dam to about 25 feet square at the downstream face. Adjacent columns were locked together by a system of vertical keys on the radial joints and horizontal keys on the circumferential joints. Concrete placement in any one block was limited to 5 feet in 72 hours. After the concrete was cooled, a cement and water mixture called grout was forced into the spaces created

between the columns by the contraction of the cooled concrete to form a monolithic (one piece) structure.

Hoover Dam contains three and one-quarter million cubic yards of concrete. There are 4,360,000 cubic yards of concrete in the dam, powerplant, and appurtenant works. This much concrete would build a

monument 100 feet square and 2-1/2 miles high; would rise higher than the Empire State Building (which is 1,250 feet) if placed on an ordinary city block; or would pave a standard highway, 16 feet wide, from San Francisco to New York City.

#### The Reservoir:

At elevation 1221.4, Lake Mead contains 28,537,000 acre-feet. An acre-foot is the amount of water required to cover 1 acre to a depth of 1 foot, or approximately 326,000 gallons. The reservoir will store the entire average flow of the river for 2 years. That is enough water to cover the State of Pennsylvania to a depth of one foot.

Lake Mead extends approximately 110 miles upstream toward the Grand Canyon. It also extends about 35 miles up the Virgin River. The width varies from several hundred feet in the canyons to a maximum of 8 miles. The reservoir covers about 157,900 acres or 247 square miles.

Recreation, although a by-product, constitutes a major use of the lakes and controlled flows created by Hoover and other dams on the lower Colorado River today. Lake Mead is one of America's most popular recreation areas, with a 12-month season that attracts more than 9 million visitors each year for swimming, boating, skiing, and fishing. The lake and surrounding area are administered by the National Park Service as part of the Lake Mead National Recreation Area, which also includes Lake Mohave downstream from Hoover Dam.

#### The Power Plant

There are 17 main turbines in Hoover Powerplant. The original turbines were all replaced through an uprating program between 1986 and 1993. With a rated capacity of 2,991,000 horsepower, and two station-service units rated at 3,500 horsepower each, for a plant total of 2,998,000 horsepower, the plant has a nameplate capacity of 2,074,000 kilowatts. This includes the two station-service units, which are rated at 2,400 kilowatts each.

Hoover Dam provides generation of low-cost hydroelectric power for use in Nevada, Arizona, and California. Hoover Dam alone generates more than 4 billion kilowatt-hours a year - enough to serve 1.3 million people. From 1939 to 1949, Hoover Powerplant was the world's largest hydroelectric installation; with an installed capacity of 2.08 million kilowatts, it is still one of the country's largest.

The Boulder City Project and Hoover Dam's cost has been repaid, with interest, to the Federal Treasury through the sale of its power. Hoover Dam energy is marketed by the Western Area Power Administration to 15 entities in Arizona, California, and Nevada under contracts which expire in 2017. Most of this power, 56 percent, goes to southern California users; Arizona contractors receive 19 percent, and Nevada users get 25 percent. The revenues from the sale of this power now pay for the dam's operation and maintenance. The power contractors also paid for the uprating of the powerplant's nameplate capacity from 1.3 million to over 2.0 million kilowatts.





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By Bill Rawlins

The growing attention toward the environment has led to a need for the development of new technologies and improvement in current methods. The onsite industry is doing its part through education and training.

Many state associations have set up educational programs designed to keep their local contractors and installers up to date on the new technologies available along with training on more conventional methods. In Alabama, the AOWA (Alabama Onsite Wastewater Association) has gone one step further in answering this demand for education and training. This organization has established a first of its kind program where both classroom and hands-on training are provided while helping the less fortunate. AOWA has begun their training in the field by installing systems for the needy. This also gives the contractors and installers a chance to work with new technologies and products available.

The first class was held this past December in Rainbow City, Alabama. It was a huge success with over 26 contractors, installers, and pumpers in attendance. Labor was provided by attendees and materials for the project were donated by Tommy and Mitchelene Shaddix from the Shaddix Co., Mike Nowak from Infiltrator Systems Inc., Jim Breazeale and Ken Worley from EEE-ZZZ Way Drain Co, Tony Woodard from Economy Septic Tank Service, and Zabel Environmental Technology.

At Zabel, we pledge our full support to AOWA and their new, innovative program. We encourage other state associations to become involved in their communities by starting one of their own. It is a situation where everybody wins!



For more information on this program contact Mrs. Carolyn Gibson, Executive Director of the Alabama Onsite Wastewater Association at (334) 260-0990.



Zabel's Bill Rawlins teaching a class on our Access System.



Various Contractors attending a class



Jim Breazeale giving a class on EEE-ZZZ Way



Tommy Shaddix showing Bill how it's done

Christy White (State Soil Scientist)

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Zabel Filter s are the only filter on the market with the exclusive patented inside out filtration flow to promote sloughing back into the





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# First of Its Kind





By Bill Rawlins

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Tommy Shaddix showing Bill how it's done

# BE A WORKER



By Harry L. Nurse Jr.

This past Christmas my wife Jan and I worked especially hard to make it a memorable time for our family. I have to admit she does most of the work, but I had a very special assignment to pick out a 'big gift' for Morgan, our three-year-old son.

Under the tree were toy cars, games and a toy workbench with plastic tools. The very special 'big gift' I had selected was a battery operated Jeep he could actually drive himself. I could not wait for Christmas morning to come and see the expression on his face when he found his new Jeep.

Sure enough, Christmas morning he was up bright and early. It took his brother and two sisters to hold him back while we got the camera ready to capture the moment. With camera rolling, Morgan swooped into the room, eyes sparkling, face beaming, ran past the toy cars, past the new Jeep, picked up a plastic red and yellow tool and exclaimed, "Wow, it's a hammer!" I am writing this article on January 11th and although Morgan has enjoyed his new Jeep and his many other toys, you guessed it, the toy hammer is by far his favorite. He has spent many happy minutes banging plastic pegs into the holes in his workbench declaring to all who could hear, "I'm a worker."

I think the themes of many of our onsite training conferences are like Morgan's favorite gift. Many training conferences feature exciting new advanced treatment technologies while failing to provide installers good practical tools to help them install the approved conventional systems that they use every day.

Are installers interested in advanced treatment? Absolutely! And every conference should provide the opportunity to learn about new treatment systems. However, it is essential that we focus on the basics.

Everyone likes the new stuff. But every once in a while we need to remember that to be a good worker you have to learn to use the basic tools.





## Zabel<sup>™</sup> Filter Test Reports

Most university, government and independent testing laboratories report TSS and BOD as an average of the data points taken before and after filtration. Zabel has also developed a new device for taking a control sample as well as a filtered sample at the same time in order to directly compare and report the results as an average percentage of reduction. Both methods are based on a technique for comparing filtered and non-filtered effluent from the same septic source.

Reporting TSS from a filtered source without comparing an unfiltered sample from the same source tells nothing about the actual contribution the filter made to the performance of the system. For example, you can report an average TSS of 30ppm, but without knowing what the TSS was before the filter was installed you can not tell whether the filter performed well or not.

Because of the way others have reported their filter's "performance", Zabel has always reported our filters performance including the benefit of the septic tank itself. If the tank removed 31% of the TSS and Zabel's filter improved this by 68%, the total system - tank and filter - were removing 98% of the total solids.

Consistent with university, government and independent testing laboratories we will continue to report the filtered versus unfiltered effluent from the same site as a percentage of improvement, but we will only report the actual improvement achieved by the filter ignoring the performance of the tank. We recommend our competitors do the same so it will be easier for the industry to compare results.

Keep this in mind when you compare the following test results with our competitors or with our previous reporting method.

Data Point Averages	TSS <b>Before</b>	TSS After	% Reduced	BOD₅ <b>Before</b>	BOD₅ <b>After</b>	% Reduced
Zabel A100 TN Tech University Kentucky Testing Laboratory	95.7 93.2	45.8 31.0	52.1 66.7	131.3	89.3	31.9
Zabel A300 Wastewater Services <sup>1</sup> Zabel A1800	6530	113	98.3	2130	780	63.4
DNREC, Div. of	190.5	68.0	64.3			
Zabel Proprietary Test Program	131.6	56.6	56.9			

1. The grease & oils for this installation were: Before - 1764 After - 2.2 % Reduced - 99.8

In addition to the data shown above, Zabel received a report on five restaurants monitored by the Merrillville Conservancy District. This report was done by ranges and is shown below.

Zabel A300	Range mg/l	Range mg/l	% Reduction	
	Without Filter	With Filter	Low End High End	
Kentucky Fried Chicken	120 to 6500	50 to 110	53.3	98.3
New Moon Chinese	76 to 1300	34 to 120	55.3	90.8
Cisco's Mexican	96 to 1040	19 to 110	80.2	89.4
Gary Country Club	130 to 706	22 to 94	83.1	86.7
Patio Restaurant	70 to 800	50 to 120	28.6	85.0

# Ready, AIM...



ASSOCIATION FOR INSTALLERS AND MANUFACTURERS™



By Theo Terry

Over the past few weeks, I've heard a lot of comments (not always positive) about our intentions to form a new organization for offering training to onsite installers and contractors. To each of those persons, I've had the same response--give me a chance to tell you what AIM is all about before you jump to conclusions.

I'll start by explaining what AIM stands for. It's an acronym for the Association for Installers and Manufacturers. Does this mean that only installers and manufacturers need apply for membership? The answer, of course, is certainly not. It does, however, mean that the primary focus of the organization, its "reason for being", is on these two groups. Currently, no other national organization in the onsite industry is focusing primarily on the needs of these two major players.

Does that mean we have intentions for AIM to replace other national onsite organizations? Again, certainly not, but let's look at the focus of the other groups. NEHA (National Environmental Health Association) is dedicated to providing education and services to the regulatory community. NAWT (National Association for Waste Transporters) is dedicated to providing education and services to the pumpers. Academics in our field have a Consortium to which they belong, so they have a forum to discuss issues of relevance as they see them. So, to what group do the installers and manufacturers turn?

Many of you have suggested NOWRA (National Onsite Wastewater Recycling Association). "Isn't NOWRA primarily made up of installers and manufacturers?" you've asked. "Doesn't it provide education and services to these two groups?" The answers are yes...and no.

NOWRA membership is indeed composed mostly of installers and manufacturers. In fact, approximately 60% of NOWRA's membership are from the private sector. Constituent state groups are primarily made up of installers and manufacturers. When that state group joins NOWRA, their members become members of NOWRA.

NOWRA provides education to these two groups via newsletters and through an annual conference, but attendance registers have shown that installers are not coming to the annual conferences. For whatever reasons, installers are not taking advantage of this opportunity for education. NOWRA was never meant to be a service organization to any one particular segment of the onsite industry, but was designed to serve the entire onsite industry.

That's the difference between AIM and these other important organizations. AIM does not want to be all things to all people. Our focus is to be a service organization for installers and manufacturers at the grass roots level. Through a series of Regional Conferences, AIM intends to bring educational opportunities to more installers.

AIM will host seven conferences over the next year, so we will reach more installers by offering training opportunities closer to them and gearing the schedule to make it easier for them to minimize their time away from the field. When they aren't working, they aren't getting paid!

Another way to lower costs for installers

is to keep registration fees low. AIM does this by spreading out its operating cost over several conferences. In addition, this allows AIM to make a unique offer to individual state onsite wastewater organizations. We will gladly work with any of these organizations, and will profit share when an AIM Training Conference is held in their state. That's right--we offer to share 20% of any profits from an AIM conference with any state onsite wastewater organization. All we ask in return is that the state group work with us in promoting the conference by providing a mailing list of installers in the area, promoting it within their state newsletter whenever possible, and providing registration assistance at the conference.

What if a state does not yet have an active onsite group? In that case, AIM will utilize those funds as seed money to get a state organization off the ground.

Lastly, AIM keeps costs low by providing the same training agenda from conference to conference. The speakers may change but the topics will remain the same. Some of the exhibitors also may change from region to region, but AIM wants to keep a core group of manufacturers together that sell and market their products nationally to exhibit at each show. In fact, to encourage this, we have put together discount packages for exhibitors so they can save by signing up for multiple shows.

In 2000, AIM is planning on having 16 Regional Conferences, with several more exhibitor packages for the manufacturers. Anyone familiar with Kentucky knows basketball reigns supreme here, and each year, our high school teams vie for a spot in the Sweet 16 Tournament. AIM's version of the Sweet 16 promises some fun to start the new millenium, but to hear about this, you'll have to read the follow-up

## Nikon

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to this article in the Fall 1999 issue of The Zabel Zone An Onsite Wastewater Magazine

How can you become a member of AIM? Like any organization, AIM needs members and our membership comes from two areas: state affiliate groups and individual memberships. In January, GOWA (Georgia Onsite Wastewater Association) became the first state group to join AIM as an affiliate group. For \$15 per member, AIM provides any affiliate group the following services:

- Quarterly AIM newsletters mailed to membership
- Production and mailing of quarterly state group newsletter
- Group insurance package for installers
- Coordination of conference arrangements for State Conferences A wide variety of business services to help new organizations with startup

Individuals also may join for the \$15 fee. AIM includes the membership fee to anyone attending one of the 7 regional conferences in 1999; a one-year membership to AIM is included in the \$25 pre-registration fee or the \$45 at-

the-door rate for any of these conferences. Individual members also receive the quarterly newsletter, and can participate in the group insurance.

So there you have it. AIM is a service organization, designed to provide education and training to installers, and give manufacturers the opportunity to meet and work with their customers. To this end, we are putting together an Advisory Board of Regional Vice Presidents. There are still several positions to be filled on this board, and we'd be interested in hearing from anyone who is interested in serving.

I hope this article clears up some of the misconceptions many of you have about AIM. As individuals, each of us belongs to several state and national organizations that provide us information about our professions or other aspects of the onsite industry. AIM's intention isn't to create a rift: we're here to fill a void. So after hearing the facts about AIM, I hope you'll join us. Just fill out the membership form, and return it to us. We'll also be glad to make a presentation to any state organization that is interested in hearing more about AIM. Give us a call at our toll free number, 1-877-323-5246.



ASSOCIATION FOR INSTALLERS AND MANUFACTURERS \*\*\*

# ...Your Wife's Ugly and Your Dog Won't Hunt



By Theo Terry

That got your attention, didn't it? Down South, that statement is about the worst thing you can say to a man. Yet every day, those of us in the onsite industry make similar statements to homeowners. Don't believe me? Keep reading, and you'll see what I mean.

Back in the late 1960's, I was a 6-year-old kid who went into the business of selling watermelons and cantaloupes out of a wheelbarrow in my front yard. I set up right along the roadside, where people driving by could easily see my product. My father, Theo, Jr. then taught me a very valuable lesson in marketing.

You see, people loved the taste of the melons we produced on our farm, and the secret to that taste was allowing them to ripen on the vine. The drawback was that vine-ripened melons have a very short shelf life. So, in order to make any spending money (I got to keep 25 cents out of every dollar I sold), I had to keep waste to a minimum.

Dad taught me how to help customers make selections that would keep them in good tasting melons for two or three days, and, at the same time, keep me from losing profits due to spoilage. After the customer made several selections, I pointed out to them that the melons they had selected would be at peak flavor in a couple of days. But, I explained, as I picked up a very ripe melon, if they wanted to have a sweet tasting one for supper that night, they should buy the one I selected. Enough said. Ring up the sale.



Recently, while making a presentation on systems design at the 10th Annual Onsite Conference in Auburn, Alabama, I thought back to those early marketing lessons. Back then, I learned a lot about how you present your product. And even today, it's my belief that marketing is as important to the industry as knowing how to design systems to fit various site conditions.

Yes, folks, regulators and

even those designing systems need to have some marketing skills. After all, they are usually the homeowner's first contact with anyone in the onsite industry. We are all building upon first impressions!

All too often, this first contact results in the homeowner being told that his wife's ugly and his dog won't hunt. Huh? Through the terms and phrases used to describe the types of systems available for his lot, first contacts often leave a very negative impression. "I'm sorry, sir," the regulator says, "but your lot isn't suitable for a conventional system." With much head shaking and beard tugging, the regulator then proposes an Idea! What about an alternative system? (Whoa, there, what did you say about my wife?) Or there's always the experimental system! (What's that about my dog?)

You and I know that regulator didn't say anything bad about that poor homeowner's choice in women or dogs, but it amounts to the same thing when he uses words like "alternative" or "experimental" to describe the systems he is going to have to design for that homeowner's lot. You can just forget the homeowner hearing anything from that point on. I saw "the look" many times when I was a regulator. I was trying to explain how these systems work, and the whole time I was talking, the homeowner was picturing images of alternative lifestyles and lab experiments.

Think what a difference it would make if we called these systems what they rightly are--advanced treatment and innovative treatment systems. When these terms are used, the homeowner starts to generate positive images in his mind. Already, everyone's job in this industry becomes a lot easier.

So, think about this the next time you explain an advanced or innovative treatment system to a homeowner, or propose changes to revise existing state rules and regulations. Remember that little 6-year-old melon salesman? I wasn't selling a melon just a day away from the hog lot, but rather a sweet-tasting treat for that evening's meal.

Thanks Dad for this lesson and all the others.







## Why AIM<sup>™</sup> - the new Association for Installers and Manufacturers

Another new onsite service organization? Surely, we must have lost our minds. This was our first thought as Theo Terry and I discussed the need for manufacturers such as us to reach installers as well as the need for the installers to have a national association that brought training to them through regional conferences.

Onsite installers and manufacturers have needs and concerns that are unique. After much discussion, we concluded that there needed to be a new Association for Installers and Manufacturers (AIM).

What are the unique needs of installers and manufacturers and how is AIM going to address them?

The quality and quantity of education and training for installers varies across the country. Some areas have excellent programs while other areas have no programs at all and few resources with which to construct one. And only a few exceptional educational programs focus on the kind of practical training that installers need.

AIM's efforts will focus on providing practical education specifically designed for training installers: (a) How to build their business; (b) How to understand and meet local codes; and (c) How to properly install conventional and advanced treatment systems.

Many Onsite Training Centers are under construction, but few have enough funds or equipment for the task at hand. AIM intends to muster the private financial and human resources of national manufacturers to support existing local and regional Onsite Training Centers.

Onsite Manufacturers are spending tens of thousands of dollars

in the support of conferences and the number of conferences are growing exponentially. AIM offers manufacturers packages of conferences at a volume-discounted price with guaranteed attendance. AIM takes the risk, you reap the reward. If we do not meet the installer attendance guarantee, you get half your exhibit money returned. The AIM approach provides manufacturers with a more economical marketing strategy for reaching a larger number of potential customers and will give manufacturers a more active role in training installers in the use of their products.

AIM exhibit halls remain open all day to registered conference attendees and are free to the guest of any exhibitor. If you want an unregistered customer to drop by your booth they can do so at no charge.

In conclusion, AIM provides conference, educational and local association organizational management services to the installer/manufacturer segment. AIM will provide professional management services to assist local groups to organize conferences and develop educational programs, print newsletters, and provide much needed installer insurance packages. AIM will assist local groups in improving their existing conferences in order to minimize their financial risk and to attract the largest number of national exhibitors. Where local groups or conferences do not exist, AIM will help organize them.

These services are not available from any other national organization.

If you are an installer or manufacturer and would like to receive information on what AIM can do for you, please call the toll free number 1-877-323-5246 for your Free AIM Benefits Package and Conference Schedule.

## Meet me at the beach. BEACH BASH '99

Convention and Trade Show THURSDAY-SATURDAY, AUGUST 19-21, OCEAN CENTER, DAYTONA BEACH

• Golf Tournament - Aug. 19

• "Fine Tuning Contractor Awareness"

Three days of 2-hour course segments on a variety of technical and administrative subjects. Registrants have an opportunity to select three two-hour segments to obtain their six-hour attendance credits for renewal of Florida septic tank contractor registration. At least 10 choices are planned with flexibility to complete six hours in any one day or take more classes at the same bargain rate over the three days... registration fees of \$80 for FSTA members and \$120 for non-members until two days before the Convention begins.

• FREE Trade Show will open the afternoon of Aug. 19, as well as Aug. 20-21. Ample air-conditioned space exists in the Ocean Center Arena for equipment displays, along with exhibitor booths.
 Special Friday Events

 • Exhibitor Appreciation Night
 • Country Western Barbeque
 • Backhoe Rode-Hoe and Portable Potty Competition
 • "Absolutely Awesome Auction IV" at the completion of the Trade Show

- Special Saturday Events
  Backhoe Rode-Hoe and Portable Potty Competition
  "Absolutely Awesome Auction IV" at the completion of the Trade Show
  Installation Banquet with entertainment
  Midnight Madness fun and games with Bonus Bid Bucks to celebrate the official name change of Florida Septic Tank Association, Inc. to Florida Onsite Wastewater Association, Inc.

## Daytona Beach a must visit destination on your summer calendar.
# What Does That Zabel<sup>™</sup> Filter Really Do?



By Shea Kent

What does that Zabel Effluent Filter really do? That was the question I needed answered when I attended the Zabel Marketing Associates Training Session before the NOWRA Convention this fall.

I already knew how it worked. (The lack of moving parts and electric circuits aided in my quick study there). Effluent rises inside of the cartridge and is filtered through slots (NOT SCREENED) as it enters the discharge line. Pretty simple stuff, but I needed to learn more.

I needed to understand what role the filter plays in the onsite system, and how it benefits the user and the environment. After several hours of instruction covering the ins and outs of the filter's function, it became very clear what a Zabel Effluent Filter does.

Bottom line, the answer to my question was pretty simple. These filters dramatically improve the function of the onsite systems in which they are installed and promote regular maintenance of that system.

It's now easy to respond to the following statements we hear in the field...

"...But my septic system works great as it is, and hasn't ever backed up or needed to be pumped!"

That may explain the marsh growing in the back corner of your yard that no one has gone near for years. By installing a Zabel Effluent Filter and allowing it to filter suspended solids, the CBOD₅ is reduced in your drainfield, and the natural treatment process occurs without doing harm to your drainfield and property. A maturing filter also gradually slows your drains, alerting you to the fact that solids are not settling out in the tank so you are warned when your system isn't functioning properly.

"I don't need any kind of filter, because I spent all of that money on this aerobic system. It is so effective, and the water comes out so pure, I could use it as a reserve water supply when the Y2K crisis shuts down the city's water plant!"

What's going to happen to that pump when solids get out of the trash tank because your nine grandkids overload your system one weekend, or when the compressor burns up? A Zabel Effluent Filter provides a high level of insurance for your costly aerobic system by preventing the pump (and sprinkler heads on spray systems) from getting clogged with suspended solids. It also aids in the overall treatment process

by keeping solids in the trash tank in case of a malfunction or overload.

When the benefits that a Zabel Effluent Filter provides to a homeowner are measured against its minimal cost, there is no question what that filter does!

A Zabel Effluent Filter improves the performance of any onsite system by removing solids from the discharged effluent, and

promotes regular maintenance by requiring periodic service. It is an insurance policy with a very low premium that protects your family's health, your land, and your onsite system.

When you take the time to learn not only how the filter works, but also what is does for the onsite system in which it is installed, there is little doubt that Zabel Filters are destined to become a required component to all onsite systems.

Shea Kent was born and raised in Beaumont, TX., graduated from Rhodes College with a degree in Economics and in 1996 began to work with his father, Tommy Kent, at MKM Sales. He has a 16-month-old son and a second child due in April.





# GOULDS PUMPS

Death and Taxes. We'll bet that you can count on the fingers of one hand the number of things that you can really count on in life.

Now, if you've ever installed or owned a Goulds pump, you know that the reliability of Goulds Pumps is something you can always count on. For example, with the Goulds 3885 submersible effluent pump, or our multi-stage filtered effluent pumps you get the very best design, materials and construction. Our complete line of stack and custom control panels for every type of waste water treatement system are second to none. And as the on-site waste water industry grows, Goulds Pumps will be there, supplying high quality, durable and reliable products like it has since the industry's inception.

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Your source of information. Monday to Friday 8 am to 5 pm EST. Call the Goulds Pump Information Center" at 315-255-3378 extension 300 and request our complete product brochure. Goulds Pumps is ISO 9001 registered.

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It's an idea whose time has arrived! A realization that success breeds success and that a partnership of supplier and user is more than just a "buy-sell" arrangement. The truly successful suppliers and users will do business TOGETHER. Each will bring strengths and needs to the table and each will help the other reach their goals. To do so will require a willingness to share knowledge, time and investment. Zabel Environmental Technology has seen the excellent opportunities available to their customers with such a program and is getting ready to go ON TOUR!

Always a leader in the innovation of technology, Zabel Environmental Technology has seen the on-site wastewater industry grow quickly in the last decade. Like a snowball rolling down a steep hill, this technology is gaining speed and getting bigger and bigger with every turn. The products available to the on-site system more effective, longer

contractor will produce lasting wastewater systems. practices, will only be along to those at the insure success of the Zabel the installer receives the education. Since the wastewater system depends product and its a "marriage of purpose." industry leaders certify plumbing, and automotive

"I thought it was along with the resulting a good meeting and changes in installation and education needed for enjoyed it, which these changes is passed is more than you can say for most sales meetings"

Ray Korston, Granse & Associates, Inc.

These new products, effective if the information jobsite. The best way to product is to make sure proper training and success or failure of the on the quality of the new installation, Zabel proposes The idea isn't new! Other their installers. Electrical, suppliers have certification

programs. The result creates common benefit: the user receives training and marketing support they can use in promoting their business, and the supplier receives a better assurance of success and a sales force second to none- satisfied customers!

Zabel's Certification Program will improve your ability to profit from tomorrow's technology. One way to successfully market your service is to separate yourself from the rest of the crowd. Zabel will help you promote your business in the local market using our support staff in engineering, graphics and communication. WE WANT YOU TO BE THE BEST! The certification training will be instructional and energetic. There will be hands-on demonstration as well as visual aids and handouts. This will not be a "we speak, you listen" program. We expect input from you, not just attendance. The result will be shared knowledge and that is a powerful marketing tool.

Our Certification Programs will be open to on-site manufacturers, installer, and

pumpers. The typical program should last 3-4 hours and the Certification will be based on a continuing education format.

As Zabel develops more products, you will be invited to additional classes. Between times, as we receive experience reports from our users, we will share the information with our certified contractors.

Zabel will be coming to your area soon. Call 1-800-221-5742 and ask about the nearest Zabel Certification Program. We want you on our team!





Last Halloween, one kid showed up at my house as an IRS agent. It was very authentic. He took 40% of our candy.

On top of everything else a businessperson must do- attract and retain good people, maintain the day to day operations, sell the product or service, etc.- he or she must figure out how to keep from losing 40% of their candy. It takes good people to make it all work. An employee survey listed hospitalization and retirement as the top two benefits they are looking for. So, even if you find and hire the perfect employee, chances are he will go elsewhere if, at the very least, these two benefits are not in place.

When looking for a good benefit package, your partner, Uncle Sam, has to be considered. When the 401K retirement plan came into being, it was considered by many as the best thing since sliced bread. An employee could pretax up to 15% of his income, the employer could match a portion of it and everybody is happy. Right? Well, maybe not.

The businessowner wants this plan to fund his retirement also. Unfortunately, being an owner or stockholder, he is limited to a contribution level that is low enough to keep from receiving more benefit from the plan than the employees receive. Why should he have to limit his retirement savings based on what his employees decide to do for themselves? Well, those are just THE RULES. Documentation must be filled out and filed annually to make sure that all requirements are being met, and if they are not, the plan may be out of compliance and penalized. This not only makes it expensive to fund a pension plan, but administrative costs are going through the roof.

Now, what if you follow all the rules, make good choices on where you put your retirement savings and build up a nice nest egg? Now there are penalties for not taking the money out by a certain age, taking it before a certain age, taking too much or taking too little. Penalties can range from 5% to 100%, are not deductible and can wipe out your entire pension. It may even be necessary to hire a compliance person to keep track of your annual withdrawals. Uncle Sam, your old partner, is with you in your retirement years, too.

Some newer plans reduce or eliminate administrative costs and make it easier to access your money at retirement. The SIMPLE and ROTH IRA'S have quickly gained in popularity, but not everyone can qualify for these and there are still contribution limitations.

So, let's consider another idea for retirement. What can you do if you want tax advantages and you have more to put away than government regulations allow? If your qualified plan is fully funded or if you have employees to cover, you may consider an alternative retirement plan in the form of an overfunded life insurance policy. This will have the following advantages:

- 1. There is no tax on the inside buildup of cash values.
- 2. There is no tax at death.
- 3. There is no tax on the withdrawal of basis (amounts you paid to buy the policy).
- 4. There is no tax on loans. Some companies will even loan the money at the same interest rate that you are receiving on the cash value and you can pay back loans without tax at death with the tax free death benefit.

Here is an example. A male at age 45 begins to contribute \$12,000 per year into a \$650,000 policy. During the years he pays a premium, he has a \$650,000 life insurance policy. At age 65, (assuming a 12% return and current costs of insurance), he could start drawing a \$55,000 annual income. If he lives to age 83, he would have received \$990,000 in spendable income. After the loans against the policy are repaid, his family would still receive a benefit check of \$277,615.

Without this policy, you would need to draw \$79,000 of taxable income per year to have a spendable income of \$55,000. This means you would need to have accumulated over \$737,000 to provide that amount of income for 18 years. You will need to pay \$14,188 per year into a taxable investment to provide that level of income. If you died at age 83, your beneficiary would not receive the 277,000+ insurance proceeds and if you lived beyond that age, your money would be gone.

So, with all the new investment vehicles available, you may still want to consider an option that has been around for years to help you keep 40% of your candy!

If you would like to contact Marc about questions concerning this or other investments, he can be reached at 1-888-270-3002.



Zabel continues to strive toward onsite wastewater promotion and technology development. We are increasingly in need of highly motivated and qualified individuals to assist Zabel in becoming the leading onsite wastewater company in the world. If you have sales experience and/or onsite training and experience and would like to join the Zabel Team please contact Brian Borders, Sales Manager, at 1-800-221-5742 or you may reach us through our website at www.zabel.com.



## Harry has finally lost his mind... Or has he?

## All Septic Systems are Failing?

What is the failure rate of septic systems in your area? When I ask regulators this question at educational conferences, the responses usually range from five percent to fifty percent. Then I ask how often systems receive service and they smile knowingly as they respond, 'When they fail'.

If we only service septic systems when there is a problem, then the maintenance policy is 'service upon failure'. All systems are on their way to failure because they do not receive service until they do. Therefore, the failure rate is 100%. All systems eventually fail because that is the only point at which they receive service. Everything eventually fails without service.

There has been a lot of discussion at onsite conferences about how often you should service conventional systems. Most regulatory agencies call for service within three to five years while some in the private sector claim the average system can go twelve years or more. On the one hand, we lack the ability to enforce a regular maintenance interval. On the other hand, we lack the knowledge of which system is only going to last one year before it needs servicing instead of the 'average' twelve.

There has been very limited success in passing local regulations to assure a three to five year maintenance interval. In the age of smaller and less obtrusive government, it is politically impossible and many believe unacceptable to have mandatory periodic maintenance. And while some would assure us that average twelve-year maintenance intervals are adequate, the point is the maintenance interval of every system is different and no one knows how often any one specific system will need servicing.

So what's the answer? It is one that's increasingly embraced by state and local governments. Require a septic tank filter in the outlet of every tank. The septic

tank filter will keep solids in the tank where they will receive further pretreatment and the filter will let you know when the system needs servicing.

Are all septic systems on a 'service when fails' maintenance interval? The answer is "Not in those counties and states that require an outlet filter". A septic filter will require service at the proper interval for that specific system, whether it is twelve months or twelve years. All septic systems are not failing - at least not the ones with septic tank filters installed.



# What's that extension on the bottom of the 1801 cartridge?



By Theo Terry

Like any design company, we at Zabel are always looking for ways to "build a better mousetrap". In the case of the 1801 cartridge, that better mousetrap idea led to an extension at the bottom of the cartridge. But in order to understand the extension, let's first talk about the 1800 filter.

The 1800 filter was designed for use in a residential wastewater environment, basically for daily waste loads of 800 gallons or less. This load is typical of a 3 to 4-bedroom home. These filters will remove solids greater than one-sixteenth of an inch from the wastewater stream, while allowing most normal solids to slough back into the septic tank during a resting state. The solids are then acted upon by naturally occurring bacteria in the septic tank, which break down these waste products before they are introduced into the environment.

The process continues, eventually leading to a need for service of the filter and septic tank. Depending on the actual usage of the system, this generally occurs every three to five years. Problems will crop up when the septic system is abused, such as with the addition of a garbage disposal system. The convenience of these devices for the homeowners, however, allows a great deal of waste products not generally seen in a wastewater treatment system to now be there! This increased loading causes the effluent filter to need service at more frequent intervals.

The SmartFilter switch was developed to tell the homeowner more conclusively when the effluent filter needs servicing. As we developed this product, however, we realized that even though most regulatory codes prohibit the use of garbage disposals in homes utilizing an onsite wastewater treatment system, homeowners would continue to install this convenience. So we looked for a way to extend the service interval for homes with a garbage disposal, at the same time protecting the vertical reed switch from giving false alarms due to large floatables adhering to the switch. Hence that "better mousetrap"--the 1801-HIP effluent filter cartridge.

The 1801-HIP offers two stages of filtration. The first level is at one-half inch, which keeps large gross floatable solids from entering the core of the filter, consequently increasing the time frame between service calls. The second level of filtration is at one-sixteenth inch, which is the filtration standard most onsite companies now adhere to.

The second noticeable difference is the cartridge's solid bottom. This surface acts as a gas deflector, keeping small solids from piggybacking on naturally occurring gas bubbles and entering the core of the effluent filter. The vertical half-inch slots on the extension allow for sloughing solids to fall back into the septic tank, as does the regular 1801 effluent filter cartridge.

The 1800 filter is still the leading effluent filter sold in the United States. But the 1801-HIP now offers homeowners an improvement for protection of their onsite wastewater systems.



ASSOCIATION FOR INSTALLERS AND MANUFACTURERS 10

## **Dear Onsite Association Leader:**

Sometimes it can feel like there is nowhere to turn to get help with educational programs, conferences, newsletters and the hundreds of other little details that are involved in the management of a state onsite association. Every association leader struggles with the same problem - overworked volunteers, too little money and frustrated members.

### AIM is designed to help solve these problems.

**FREE Association Newsletter:** Would you like your newsletter to be written, edited, printed and mailed on a regular basis? Would you like for it to be printed in full color? Would you like nationally known contributors as well as local stories and interest? And would you like it done for **FREE**? That's right! AIM will provide this service to every AIM affiliated association at no charge. All you pay is the postage, and we do the rest. In fact, we'll even pay you based on our success in selling advertising.

**Educational Seminars and Conference Management Services:** AIM will organize and manage Educational Seminars and Association Conferences. This service is not free, but is the next best thing. AIM takes the financial risk, and shares any money that remains over the conference cost. We contract the facility, organize the program, lineup the speakers, request CEU approvals, advertise the event and share the positive cash flow.

**A National Voice:** In addition, AIM provides a national lobbyist to represent our members' interests and publishes the national magazine AIM Onsite to keep members informed of national onsite events and issues.

All of these services and more are provided for your association and members for \$15.00 per member or *less*! Did I say for less? Yes! Your association may join for only \$15.00 per member, *BUT* if your association is sponsored by one or more of our national manufacturer members, it will cost *only* \$10.00 per member. And did I mention everyone attending an AIM managed educational program or conference becomes a member absolutely *FREE!* 

Oh, I almost forgot. Student members are our future, so you guessed it. Every student sponsored by an AIM member will receive not only their membership, but access to all AIM seminars and programs - that's right - absolutely **FREE**?

AIM - the not for profit Association for Installers and Manufacturers - brings a new level of service and opportunity to local associations. Give us a call for more details for these and other AIM program services.

Sincerely,

Theo B. Terry, III President

> Toll Free Phone - 1-877-323-5246 Fax (502) 369-9647 E-mail - AimOnsite@aol.com



ASSOCIATION FOR INSTALLERS AND MANUFACTURERS11

AIM is a not for profit corporation providing conference, educational and local association organizational management services to the onsite wastewater industry focusing on the needs of installers and national manufacturers.

#### The Purpose of AIM

- 1. To promote membership in the local onsite association.
- 2. To provide management and consultant services to local associations and training centers.
- To provide practical educational programs designed for training installers in the following skills:

   (a) How to build their business;
   (b) How to understand and meet local codes; and
   (c) How to properly install and maintain conventional and advanced treatment systems.
- To provide a forum for national manufacturers to educate installers about the correct use and application of their products.
- To provide installers and national manufacturers a forum to address issues and concerns specifically related to their interests.
- 6. To promote cooperation with other national onsite wastewater associations and resource organizations.

#### AIM Membership:

- 1. Individuals Membership: Individuals may join for \$15.00.
- 2. Conference Membership: Each person attending an AIM conference receives a one-year membership at no additional charge.
- 3. Student Membership: An AIM member may sponsor a student with a current student ID for a free membership.
- 4. Corporate Sponsored Membership: Company sponsored memberships are available for Bronze: \$500.00; Silver \$1,000.00; Gold \$2,000.00; and Platinum \$3,000.00. These memberships may be used to sponsor a local association, with company employees, or given as company sponsored guest memberships for any onsite industry professional. Corporate Sponsorships include the following benefits:

		Bronze	Silver	Gold	Platinum
a.	Discounted individual memberships	50	100	200	300
b.	AIM Magazine Advertising Discount	5%	10%	15%	20%
c.	One Free AIM Magazine ad	1/4 pg.	1/3 pg.	1/2 pg.	Full page

#### **Membership Benefits**

AIM is working to provide each member with the following benefits:

- 1. The AIM Onsite Magazine
- 2. An AIM endorsed small business insurance package.
- 3. A national educational certification program
- 4. A national forum to address issues and concerns
- 5. A governmental liaison to address national legislative concerns
- 6. AIM logo materials for stationary and equipment
- 7. Homeowner educational materials



ASSOCIATION FOR INSTALLERS AND MANUFACTURERS 10

## **Onsite Training Center Support Services**

AIM is recruiting the private financial and human resources of national manufacturers and local installers to support local and regional Onsite Training Centers. AIM members will be asked to take the 'AIM Onsite Training Center Pledge' to provide Onsite Training Centers with product and services at no charge. A list of members who have made this commitment will be furnished to each Onsite Training Center on request.

### **State Association Support Services**

- 1. New Associations
  - (a) AIM provides seed money to start new local associations.
  - (b) AIM provides the state association starter manual
- 2. All Associations
  - (a) AIM provides shared profits for local conferences
  - (b) AIM produces newsletter for local membership
  - (c) AIM provides the state association financial management services
  - (d) AIM serves as an organizational consultant to the local association

### **Educational Conference Support Services**

An onsite association may engage AIM to manage their conference and/or co-sponsor an AIM educational conference in their region. AIM provides the following services:

- 1. AIM develops the educational program to comply with state ČEU requirements in consultation with the local association and regulatory agency.
- 2. AIM contracts with the hotel or conference facility.
- 3. AIM promotes the program to the onsite community.
- 4. AIM promotes membership in the local association at the conference.
- 5. AIM provides a free exhibit booth for the local association.
- 6. AIM finances the conference and takes the risk for any financial loss.
- 7. AIM shares a percentage of the positive revenue with the local association.
- 8. Where there is no local association, AIM commits a percentage of conference revenue as seed money to start a local association and provides association management services.
- 9. AIM registration fee is: Early registration is \$25.00. Late registration is \$45.00.
- 10. Student members may attend AIM educational conferences at no charge.
- 11. Each person that registers receives a year's free AIM membership.
- 12. Exhibit areas are open throughout the conference.
- 13. Exhibitors may invite guests to the exhibit area at no charge by registering them and obtaining a guest badge. Guests must pay to attend any of the educational classes.

PHONE	1-877-323-5246
FAX	1-502-369-9647
EMAIL	AimOnsite@aol.com

	ASSOCIATION FOR INSTALLERS AND MANUFACTURERS <sup>TM</sup>
AIM Endorsed	Septic Installer Insurance Program
Benefits * Competiti * Comprehe * 24-hour c * 24-hour c * certificate * all types c * coverage * can provi perform (i	ve rates ensive coverage laim service laims center of insurance hotline of coverage available upon request can start immediately de coverage for most activities onsite installers will installation, pumping, sewer work, etc.)
Coverage * General L * Auto Liab * Property: business * Inland Ma installatio	iability ility & Auto Physical Damage includes buildings, business personal property, & income rine: includes scheduled equipment, misc. tools & on floater* (*hired or leased equipment)
Financing Ava	ilable for qualified applicants
Reply Now!	
Company	
Address	
Phone	Fax
<b>Yes I am in</b> Contact Robin	terested in AIM Membership. Terry @ PHONE 1-877-323-5246; FAX 1-502-369-9647; or EMAIL AimOnsite@aol.com
Yes I am inte	Prested in AIM Membership & Endorsed Insurance Program



By Kevin Greene







## 1. Do you clean or shine effluent filters?

Most people think filters need to be cleaned as meticulously as you would your brand new car. However, an effluent filter is not a new car and works at peak efficiency when biological growth is active throughout. Therefore, to clean the filter does not require it to be spotless. Simply wash the bulk particles from the filter leaving a thin haze of biological material. The biomass growing on the filter plates will provide an adhesive media on which the bacteria can cling, thus improving the pretreatment process.



## 2. What is the minimal tank opening required for acceptance of the Zeus pump vault system?

The tank opening must be a minimal of 16"diameter to allow the pump vault to slide down into the tank.

## 3. How does the ZEUS pump vault system hang into the top of the tank?

Center the 15" filtered pump vault in the septic tank outlet access opening. Thread 1-1/2 schedule 40 pipe through the handles to bridge the access opening in the tank. If a 6" adapter has been cast into the lid simply lower the FPV through the opening and allow the pump vault to rest on the adapter.

## 4. What is the difference between the timed and demand dosing?

Demand dosing is dependent upon a certain quantity of waste flow from the source to force the pump to activate. Dividing the total daily waste flow generally sets demand dosing volumes by three to four doses per day. When this volume is reached in the tank the pump turns on and doses "X" amount of wastewater. The problem is that usually flow from the residence occurs twice daily: (1) The morning when everyone is getting ready for their daily activities and (2) in the evening when dinner is prepared and evening baths occur. By only dosing when the liquid level gets to a certain point, you are generally dosing two times during the day, sending large quantities that flood the disposal trenches.

Timed dosing means a predetermined quantity of wastewater will be dosed over the course of an entire day. This allows spreading out the doses to provide much smaller quantities and to prevent flooding of the trenches, while retaining the effluent in the tanks for a longer period to undergo settling and biological breakdown.

## 5. Can two pumps be placed inside a single ZEUS pump vault unit?

The ZEUS pump vault systems have been designed to accept two 4" submersible pumps inside the same pump vault unit. This will allow operation of both pumps through a ZEUS duplex control panel, using a common set of floats.



R SI

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Welcome to the World Wide Web - Zabel Style

Think of the internet as a huge spider web, connecting and interconnecting every computer on the planet that has a modem. Order a book, check out the price of a car, read the latest news and weather or movie reviews, look for the latest research, or even write your mother. And while you are on the internet be sure and go to www.zabel.com.

The Zabel web site is designed to be a fun place that is constantly changing, providing the latest information not only from Zabel, but from around the industry. You can participate by putting your latest comments, observations and questions on line where members of the industry from around the world can interact with you.

The Zabel web site is organized into seven major sections: The Coffee Shop, Place an Order, Show Time, Zabel Zone, What's that Zabel product do, Southern History, and The Adventures of ZabelMan.

Check out The Coffee Shop for the latest information on industry trade conferences and meetings. Is your organization having a special meeting? Post it to the Trade Conference site as a reminder or invitation. Check in on Experts Mix it Up and read the latest thoughts and questions of onsite professionals from around the world, and add your own remarks.

Go to Contact your local Marketing Associate to find your local Zabel sales representative, give them a call or email them directly without leaving the page with one click of the mouse. Likewise you can contact any Zabel employee by choosing Contact Zabel for Help and clicking on the Zabel person that can provide the information you need.

When you get finished in the Coffee Shop jump to What's that Zabel product do? for the latest information on Zabel Wastewater Filters and Accessories, and ZEUS - Zabel Engineered Unified Systems including Specifications, Drawings, Research, and ZabelZone Product Articles.

Are you ready to place an order? Click on Place an Order and you can Design your Complete ZEUS STEP System on forms ready for you to print out or save to your own computer; or Check prices, Order Zabel Filters and ZEUS Systems. You can fill out a Credit Application, or place an Order by filling out the form and sending direct by email or fax right from your computer.

> Can't find your latest copy of the ZabelZone, want to check on an earlier edition or sign up for a free subscription? You can do it all under the ZabelZone page. You can even go to Show Time and download a complete Zabel product presentation. And since we don't want you to get bored, you can follow the

exciting Adventures of ZabelMan or click on Southern History just for fun.

Do you have a computer, but don't want to go to the web to get Zabel's information in a digital format. Email or call Zabel for a **FREE** Zabel CD that has all of the product information that is on our web site right on the disk. You can access the ZabelZone, What's that product do? and other helpful information right at your desk, anytime you need, without having to go online.

## ZABEL WEB SITE MAP

The Adventures of ZabelMan

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#### ZabelZone

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#### What's that Zabel Product do?

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Zabel<sup>TM</sup> Recommendation: Any configuration of Risers used should not exceed 48" in height.

### The product(s) shown are covered by one or more of the following patents:

U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007, Canadian: 2,135,937 New Zealand: 264824, Other Patents Pending



Zabel's<sup>™</sup> New Residential High Performance Filter is designed to provide extra protection for homes with garbage disposals and still sloughs the solids back into the tank.

A recent Zabel<sup>™</sup> survey showed that 43% of homes on conventional onsite systems have a garbage disposal. Like most regulators, Zabel<sup>™</sup> recommends homes on septic systems should not have garbage grinders - a condition that is prohibited by some codes and discouraged by regulators everywhere - but people do it anyway! Zabel's<sup>™</sup> New Residential High Performance Filter has an exclusive two-stage filtration (1/2 inch & 1/16 inch) system designed to prevent large solids and fine garbage grinder floatables from getting inside the filter cartridge while maintaining Zabel's<sup>™</sup> patented system for sloughing filtered solids back into the tank.

The **SmartFilter**<sup>™</sup> is designed to improve the long-term performance of most onsite septic systems including those in homes using a garbage disposal and those in locations with poor soils. The system consists of an A1800-HIP-SF effluent filter, vertical float switch, and alarm panel.

The A1800-HIP effluent filter is designed to fit in a standard four inch outlet sanitary T pipe. This filter prevents unwanted solids from leaving the tank, entering the drainfield, and causing premature failure of the effluent treatment system. Over time, the filter collects solids which gradually restrict the flow of effluent to the drainfield.

The vertical float switch monitors the blockage of the filter and sends a signal to the alarm panel when the filter is approximately 90% full, or mature.

The alarm sounds and the red beacon illuminates prompting the homeowner to contact their installer or pumper for routine servicing.

During this routine service call, the installer or pumper should:

- 1. Clean the switch and filter. To avoid potential health hazards, the filter debris must be sprayed directly back into the septic tank and not onto the homeowner's lawn.
- 2. Determine if pumping is necessary by checking the depth of sludge in the tank.
- 3. Pump the tank if necessary.

## FEATURES

- Alarm panel features manual alarm test switch and horn silence switch
- Alarm horn sounds at 82 decibels at 10 feet (3 meters)
- Direct interface of control switch and Zabel A1800-HIP effluent filter insures proper placement of switch.
- Two-year limited warranty







Zabel<sup>™</sup> Recommendation: Any configuration of Risers used should not exceed 48" in height.

## *The product(s) shown are covered by one or more of the following patents:* U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007, Canadian: 2,135,937 New Zealand: 264824,

Other Patents Pending



Zabel's<sup>™</sup> Commercial & Industrial Filters have been redesigned so that they can now accept the SmartFilter<sup>™</sup> switch.

Managers of Commercial/Industrial facilities have responsibilities for countless issues during their normal daily routine, one of which is the proper operation of their onsite wastewater treatment system. This usually is not a high priority, thus leading to costly problems from system failures or fines for exceeding discharge standards.

The SmartFilter is designed to provide the manager of a Commercial/Industrial facility an early warning that their septic tank or grease interceptor needs a service call. The vertical float switch monitors the blockage of the filter and sends a signal to the alarm panel when the filter is approximately 90% full or "mature".

The alarm sounds and the red beacon illuminates, prompting the manager to contact their service company.

During this routine service call, the serviceman should:

- Clean the switch and filter. To avoid potential health hazards, the filtered debris must be sprayed directly back into the septic tank or grease interceptor.
- 2. Determine if pumping the tank is necessary by checking the depth of sludge or grease in the tank.
- 3. Pump the tank, if necessary

#### FEATURES

- Alarm panel features manual alarm test switch and horn silence switch
- Alarm horn sounds at 82 decibels at 10 feet (3 meters)
- Direct interface of control switch and Zabel A100/A100 HIP and A300/A300 HIP effluent filters insures proper placement of switch.
- Two-year limited warranty



Zabel<sup>TM</sup> Recommendation: Any configuration of Risers used should not exceed 48" in height.

## The product(s) shown are covered by one or more of the following patents:

U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007, Canadian: 2,135,937 New Zealand: 264824, Other Patents Pending

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## Zabel<sup>™</sup> A1800 Series Residential Wastewater Effluent Filter Product Specification

- 1. Product Name: Zabel<sup>™</sup> The A1800 Residential Wastewater Filters, U.S. Patent Nos.: 5,382,357; 5,482,621; Canadian Patent No: 2,135,937; Other patents pending.
- 2. Model Numbers: A1800; A1800-HIP, A1800-HIP-SF, A1801, A1801-HIP, A1801-HIP-SF, A1807, A1807-HIP
- 3. Application: Single family homes no more than four bedrooms. **Zabel's™ New Residential High Performance Filter** is designed to provide extra protection for homes with garbage disposals and still sloughs the solids back into the tank.
- 4. Performance Specification
  - 4.1. All A1800 Models: Maximum daily flow 800 gpd.
  - 4.2. Multiple Filters may be installed in manifolds to handle larger flows.
  - 4.3. TSS: Average reduction in TSS within 6 months of installation 40 percent in typical residential wastewater.
- 5. Materials: All materials are non-corrosive PVC
- 6. New System Installation: Center the top of the 4-inch Filter Case under an outlet access opening at least 8 inches in diameter. Securely fasten the bell coupling of the case by a PVC solvent weld connection to the 4-inch PVC pipe extending through the outlet wall of the tank. The pipe extending through the end wall may be any schedule four-inch pipe. Location of the PVC outlet pipe in the tank end wall shall conform to local code. The PVC outlet pipe should extend at least 18 inches beyond the outside face of the tank wall. For septic tanks with cast in place concrete baffles use the A1807 model. Insert bottom of filter through thick gasket and slide to top of filter cartridge. Install filter cartridge with top gasket only into tank baffle, to ensure gasket lies flat without hanging over the edge of baffle. Do not trim gasket unless it overhangs edge of baffle. Remove filter cartridge and install thin gasket into the groove at the bottom of the cartridge. Reinsert the cartridge into the concrete baffle to complete installation. A riser to grade over the Outlet Access Opening is recommended.
- 7. Existing System Installation: The filter cartridge, Model A1801 may be installed in any existing 4" outlet Tee and pipe. The filter may be installed in an existing tank if an adequate outlet access opening already exists and the filter can be installed without damaging the existing tank. If a 4-inch PVC outlet pipe does not extend into the tank, the filter can be installed utilizing a plumbing flange. For septic tanks with cast in place concrete baffles use the A1807 model. Insert bottom of filter through thick gasket and slide to top of filter cartridge. Install filter cartridge with top gasket only into tank baffle, to ensure gasket lies flat without hanging over the edge of baffle. Do not trim gasket unless it overhangs edge of baffle. Remove filter cartridge and install thin gasket into the groove at the bottom of the cartridge. Reinsert the cartridge into the concrete baffle to complete installation. If the existing tank cannot be used, the filter can be installed in existing systems using a Zabel Container Assembly Model CA100 or Zeus™ Basin System.
- 8. Service: A professional onsite service company should perform all onsite system service.
- 9. Service Method: Grasp the filter handle and pull the filter cartridge upward. A Zabel<sup>™</sup> 36" T-Handle is available if required to reach filters more than 12 inches below grade. Tap the cartridge on the inside of the inspection port or hose off the cartridge into the tank if needed and reinsert into the case. Installation of an effluent filter may increase the frequency of service if the homeowner discharges materials that are harmful to the system
- 10. Service Frequency: The filter should be cleaned when the septic tank is normally inspected and pumped as required by local regulation. The A1800's are designed to slough most normal solids off the inside of the vertical walls and back into the tank when the effluent flow is in a resting state. Installation of an effluent filter may increase the frequency of service if the homeowner discharges materials that are harmful to the system
- 11. Warranty: The A1800's are warranted to be free from defects in material and workmanship for the life of the original purchaser. Zabel's<sup>™</sup> liability is limited to repair or replacement of the part and in no event shall Zabel<sup>™</sup> be liable for any consequential damages of any kind.
- 12. Dimensions:

	Diameter	Cartridge Height	Filtration	Total Filter Surface	Lineal Feet of Weir
A1800	4"	18"	1/16"	158.4 in <sup>2</sup>	61
A1800-HIP	4"	22"	1/2"-1/16"	*158.4 in <sup>2</sup>	*61
A1807	4"	18"	1/16"	158.4 in <sup>2</sup>	61

\*Calculations are for the 1/16" area only.







*Zabel*<sup>™</sup> *Recommendation:* Any configuration of Risers used **should not** exceed 48" in height.

*The product(s) shown are covered by one or more of the following patents:* U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007, Canadian: 2,135,937 New Zealand: 264824, Other Patents Pending

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## Zabel<sup>™</sup> A100 Series Commercial & Residential Effluent Filter Product Specification

- 1. Product Name: Zabel<sup>™</sup> A100 Commercial & Residential Effluent Filter, U.S. Patent: 4,710,295
- 2. Model Numbers: A100 Case & Cartridge; A101 Cartridge Only; A100-HIP Case & Cartridge; A101-HIP Cartridge Only
- 3. Applications: Apartments, trailer parks, schools, churches, shopping centers, and offices; Septic dump stations and community treatment plants; Single and Multi-family homes
- 4. Performance Specification
  - 4.1. Model A100: 3,000 gpd
  - 4.2. Model A100-HIP: 4,500 gpd
  - 4.3. Multiple filters may be installed in manifolds to handle larger flows. Use a Zabel Flow Control Plate Model FC100 to set the effluent flow to predetermined limits.
  - 4.4. TSS: Reductions in TSS within six months of installation 50 to 90 percent. The higher the pre-filtered TSS the greater the percentage of reduction.
  - 4.5. BOD<sub>5</sub>: Reduction in BOD<sub>5</sub> within six months of installation 20 to 45 percent is dependent on the make-up of the wastewater.
- 5. Materials: All materials are non-corrosive. Case & Lid PVC; Filter discs Polystyrene; Rods and Nuts-Stainless Steel
- 6. New System Installation: Center the top of the 12 inch Filter Case under an outlet access opening at least 16 inches in diameter. PVC solvent weld the bell coupling to the 4 inch Schedule 40 PVC exit pipe of the tank as required by local code. The PVC outlet pipe should extend at least 18 inches beyond the outside face of the tank wall. If required to meet depth requirements, install a Zabel™ Extension Reducer and 4-inch Schedule 40 pipe to the bottom of the filter case. A riser to grade is recommended. High performance double stack (Model A100-HIP) filters and multiple filters installed in manifolds will require additional support and access.
- 7. Existing System Installation: The filter may be installed in an existing septic tank if an outlet access opening already exists and the filter can be installed without damaging the existing tank. If a 4-inch Schedule 40 PVC pipe does not extend into the tank, the filter can be installed utilizing a plumbing flange. If the existing septic tank cannot be used, the filter can be installed using a Zabel<sup>™</sup> Container Assembly Model CA100 or Zeus<sup>™</sup> Basin System.
- 8. Service: A professional onsite service company should perform all onsite system service.
- Service Method: Grasp the filter handle and pull the filter cartridge upward. A Zabel<sup>™</sup> 36" T-Handle is available if required to reach filters more than 12 inches below grade. Hose off the cartridge into the tank and reinsert into the case. If required, the filter may be disassembled for further cleaning.
- 10. Service Frequency: The filter requires cleaning when the septic tank is normally inspected and pumped as required by local regulation. The A100s are designed to slough most normal solids off the inside of the vertical disc dam walls and back into the tank when the effluent flow is in a resting state. Installation of an effluent filter may increase the frequency of service if the homeowner discharges materials that are harmful to the system.
- 11. Warranty: The A100s are warranted to be free from defects in material and workmanship for the life of the original purchaser. Zabel's<sup>™</sup> liability is limited to repair or replacement of the part and in no event shall Zabel<sup>™</sup> be liable for any consequential damages of any kind.

12. Dimensions:
-----------------

Model	Diameter	Height	Filtration	Settling Area	Total Filter Surface	Lineal Feet of Weir
A100	12"	16"	1/16"	596.16 in <sup>2</sup>	1,857.6 in²	198
A100-HIP	12"	26"	1/16"	1,018.08 in <sup>2</sup>	2,908.8 in <sup>2</sup>	297

11-13/16' → DIA 3-9/16'

26°

4-3/4"

Zabel<sup>™</sup> Recommendation: Any configuration of Risers used should not exceed 48" in height.

*The product(s) shown are covered by one or more of the following patents:* U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007, Canadian: 2,135,937 New Zealand: 264824, Other Patents Pending

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16'



4-1/2" I.D. 5" O.D.

- 1-3/16

6-3/8

<del>~</del> 4-3/4" →



A300-ADA



## Zabel<sup>™</sup> A300 Series High Strength Industrial & Commercial Effluent Filter Product Specification

- 1. Product Name: Zabel<sup>™</sup> A300 Industrial & Commercial Wastewater Filter, U.S. Patent: 4,710,295
- 2. Model Numbers: A300 Case & Cartridge & Reducer; A301 Cartridge Only; A300-HIP Case & Cartridge & Reducer; A301-HIP Cartridge Only
- Applications: Grease: restaurants; Hair: dog kennels, beauty shops, zoo facilities; Lint: Laundromats; Food processing: wineries, bakeries; Animal wastes: poultry, hog & cattle farms; Apartments, trailer parks, schools, churches, shopping centers, and offices; Septic dump stations and community treatment plants; Single and Multi-family homes
- 4. Performance Specification
  - 4.1. Model A300: Maximum daily flow 3,000 gpd
  - 4.2. Model A300-HIP: Maximum daily flow 4,500 gpd
  - 4.3. Multiple Filters may be installed in manifolds to handle larger flows than those shown above. A Zabel<sup>™</sup> Flow Control Plate Model FC100 is available to set the effluent flow of a single filter to pre-determined limits.
  - 4.4. TSS: Reductions in TSS within six months of installation 50 to 90 percent. The higher the unfiltered TSS, the greater the percentage of reduction.
  - 4.5. BOD<sub>5</sub>: Reduction in BOD₅ within six months of installation 20 to 45 percent is dependent on the make up of the wastewater.
- 5. Materials: All materials are non-corrosive. Case & Lid PVC; Filter discs Polystyrene; Rods and Nuts-Stainless Steel.
- 6. New System Installation: Center the top of the 12 inch Filter Case under an outlet access opening at least 16 inches in diameter. PVC solvent weld the bell coupling to the 4 inch Schedule 40 PVC pipe of the tank as required by local code. Add 4 inch Schedule 40 pipe to the bottom of the reducer as needed. The PVC outlet pipe should extend at least 18 inches beyond the outside face of the tank wall. A riser to grade is recommended for all commercial and industrial installations. All filters installed in grease interceptor tanks will require additional support.
- 7. Existing System Installation: The filter may be installed in an existing tank if an outlet access opening already exists and the filter can be installed without damaging the existing tank. The filter can also be installed utilizing a plumbing flange. If the existing tank cannot be used, the filter can be installed in existing systems using a Zabel<sup>™</sup> Container Assembly Model CA100 or ZEUS<sup>™</sup> Basin System.
- 8. Service: A professional onsite service company should perform all onsite system service.
- Service Method: Grasp the filter handle and pull the filter cartridge upward. A Zabel<sup>™</sup> 36" T-Handle is available if required to reach filters below grade. The filter may be cleaned with a steam wand, chemical degreaser or disassembled for further cleaning.
- 10. Service Frequency: The A300s are designed to be installed in high strength waste applications. Each application will have to be monitored to determine proper service cycles. See article on "Restaurant Applications for Zabel™ Filters" for recommended guidelines in the Spring/Summer 97' issue.
- 11. Warranty: The A300s are warranted to be free from defects in material and workmanship for the life of the original purchaser. Zabel's<sup>™</sup> liability is limited to repair or replacement of the part and in no event shall Zabel<sup>™</sup> be liable for any consequential damages of any kind.
- 10. Dimensions:

	Diameter	Height	Filtration	Settling Area	Total Filter Surface	Total Flow Area
A300	12"	18"	1/32"	624.69 in <sup>2</sup>	1,857.6 in <sup>2</sup>	206
A300-HIP	12"	28"	1/32"	1,067.04 in <sup>2</sup>	2,908.8 in <sup>2</sup>	312





# Zabel<sup>™</sup> Filter Installation

The Model A100/A300 Zabel Filter for commercial/industrial septic tanks is installed in place of the standard outlet tee.

Securely fasten the bell coupling on the side of the filter case by a solvent weld connection to the Schedule 40 PVC plastic pipe which extends through the outlet opening of the septic tank. The Schedule 40 PVC pipe extending through the outlet opening of the tank should be at least 12" or more beyond the tank before being connected by an adaptor to the remainder of the system. This will suspend the filter inside the septic tank by the bell housing on the side of the filter case.

The top of the tank must have an opening 12" in diameter or larger to allow easy removal of the disc dam cartridge for cleaning. If the tank opening over the filter is the only access to the tank for pumping, it should be large enough in diameter to allow the tank to be pumped prior to removing the cartridge for cleaning.

#### Supplementary Support Method for Installing Zabel Filters:

Installing two or more Zabel Filters in one tank, 18 inches or more from the end of the tank or in high strength waste applications such as restaurants or dog kennels sometimes requires additional support to handle the weight of the filter. Supplementary support can be achieved by following these directions.

Solvent weld the reducer to the bottom of the filter case. Using two pieces of Schedule 40 pipe with an inverted Sanitary Tee located at the clear zone level, extend to the bottom of the tank for support. Make sure the pipe exiting the filter and extending through the tank wall is level. Cut four or more two inch holes in the PVC pipe below the Sanitary Tee to prevent sludge build up in the pipe.



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## Maintenance

The interval for servicing septic tanks is set by state and local code. Throughout the United States there is a wide divergence of opinion on what this interval ought to be, but most regulatory agencies suggest two to five years. The filter does not increase the frequency of servicing for the tank.

To service the filter, remove the tank cover located over the filter. Pump the tank prior to removing the disc dam cartridge for cleaning to prevent any solids from escaping to the field when the cartridge is removed.

Pull sharply on the lid handle and the disc dam cartridge will slide out of the case. In order to prevent contamination of the ground with septage, turn the cartridge sideways and lay it back in the opening. Now rinse off the cartridge with a garden hose or a fresh water tank hose from the truck, being careful to rinse all septage material back into the tank. It is not necessary that the filter be cleaned "spotless". The biomass growing on the filter aides in the pretreatment process and should be left on the discs.

On rare occasion then it will be necessary to dismantle the cartridge. If required, remove the nuts on the three bolts at the top of the lid and the cartridge can be easily disassembled for cleaning. After the cartridge is cleaned, and reassembled if necessary, place it back in the filter case. Be sure it is all the way in the case until it snaps into place. Replace the septic tank cover.

## Easy to maintain • Ecologically Sound

• The filter is virtually self cleaning. The continued action of the anaerobic organisms on the filter discs causes lodged particles to disintegrate and fall to the bottom of the tank.

• The filter only requires servicing at the normal inspection and pumping intervals required of a standard septic installation.

• The filter cartridge is safely hosed off back into the tank by a qualified septic tank pumper.



### *The product(s) shown are covered by one or more of the following patents:* U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007, Canadian: 2,135,937 New Zealand: 264824, Other Patents Pending

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**DISTRIBUTION SYSTEM** 



*The product(s) shown are covered by one or more of the following patents:* U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007, Canadian: 2,135,937 New Zealand: 264824, Other Patents Pending

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## Flow Divider - Flow Director ZEUS<sup>™</sup> Z200 - Z200D Series Product Specification

- 1. Product Name: Zabel<sup>™</sup> Flow Divider, Zabel<sup>™</sup> Flow Director, US Patent Nos.: 4,605,501; 5,098,568 D309,007
- 2. Model Numbers: Divider Model Z200, Director Model Z200D
- 3. Application

3.1. Divider Model Z200: Replaces old-fashioned distribution boxes and pipe manifolds.

3.2. Director Model Z200D: Replaces expensive old-fashioned Y-valves.

4. Performance Specification

Flow Pattern: Laboratory test results conducted by Dr. Bob Rubin Ed.D. on the Flow Divider using 1000 ml samples @ 3 gpm:

	Right Port Ave. Distribution	Left Port Ave. Distribution
Level	50.03%	49.97%
1/16" Tilt	50.2%	49.8%
1/8" Tilt	51.3%	48.7%

- 5. Materials: All material is non-corrosive Rigid Vinyl PVC
- 6. Installation: Weld the inlet side of the unit with PVC glue to the Schedule 40 pipe at the outlet end of the septic tank.
- 7. Service: A professional onsite service company should perform all onsite system service. Flow Divider: The Flow Divider does not require service, but may be used to view the effluent stream when the system is normally inspected.

Flow Director: The Flow Director does not require service, but may be used to view the effluent stream when the system is normally inspected. If the flow needs to be adjusted between two lines or fields, turn the gear device in the top of the unit to direct the sleeve valve in the proper direction. Direction of effluent flow can be confirmed by visual inspection.

8. Warranty: The Z220 and Z200D are warranted to be free from defects in material and workmanship for two years from the date of original installation. Zabel's liability is limited to repair or replacement of the part.

## Flow Divider Exclusive Features and Benefits

- Distributes effluent leaving the septic tank by means of a patented central weir design that insures flow is evenly divided even if the Flow Divider is not level.
- Distributes flow better than any distribution box or manifold.
- May be placed in manifold for even distribution of multiple lines.
- · Allows effluent monitoring from grade level.

### Flow Director Exclusive Features and Benefits

- The Flow Director is a Flow Divider with a patented sleeve valve installed to allow adjustment of the effluent flow between a primary and secondary field or between two or more lines.
- Replaces old fashioned WYE-Valves
- Allows effluent monitoring from grade level.
- The effluent will gravity back flow from the primary to secondary field if the homeowner fails to change the flow direction at the proper time reducing the probability of an effluent breakout.



The ZEUS<sup>™</sup> Access System includes six interchangeable parts: two septic tank adaptors, three risers and a lid. The patent pending interlocking system makes these Zabel<sup>™</sup> products are resistant to unauthorized entry and provides protection from ground water infiltration.

The ZEUS<sup>™</sup> Access System is designed to fit other ZEUS<sup>™</sup> Systems such as: Filtered Pump Vaults, Pump and Discharge Systems, and Alarm and Control Systems to make complete STEP system packages. Look for the ZEUS<sup>™</sup> trademark to ensure quality.

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## ZEUS<sup>™</sup> Access Systems Product Specification

- 1. Product Name: ZEUS<sup>™</sup> 20" or 26" Risers and Lids
- 2. Model Number:RB-TA-T-20x2, RB-TA-F-20x6, RB-R-20x6, RB-R-20x12, RB-R-20x38, RB-L-20, RB-TA-T-26x2, RB-TA-F-26x6, RB-R-26x6, RB-R-26x12, RB-R-26x38, RB-L-26
- 3. Applications: Appropriate for use in all access to septic tanks, dosing chambers and the ZEUS<sup>™</sup> basin system.
- 4. Materials: All materials are non corrosive high density polyethylene.
- 5. New System Installation: Cast either the 20" tank adapter form, Model # RB-TA-F-20x6 or the 26" tank adapter form, Model # RB-TA-F-26x6 into the concrete septic tank lid. To retrofit to existing tanks use 20" tank adapter top, Model #RB-TA-T-20x2 or the 26" tank adapter top, Model #RB-TA-T-20x2. First clean the concrete lid of any soil and debris around edge the of the inlet and outlet access opening. Apply double mastic to the bottom edge of the tank adapter top. Center the tank adapter top over the inlet and outlet access openings and walk down to seal the adapter to the top of concrete lid. Place a bead of sealant around the top inside edge of the tank adapter top and lower an appropriately sized riser into place. Turn the riser clockwise until it locks into place. Repeat this step as necessary until you reach the desired height for the access system. Zabel Recommendation: Any configuration of risers should not exceed 48" in height. Place the lid onto the last riser and turn clockwise until it locks into place. Secure in place with tamper resistant screws. Do not place any sealant onto the uppermost riser as this will inhibit access to the system for routine maintenance.
- 6. Warranty: The ZEUS<sup>™</sup> access system are warranted to be free from defects in material and workmanship for two years from the date of original installation. Zabel's<sup>™</sup> liability is limited to replacement of the ZEUS<sup>™</sup> access system only and in no event shall Zabel<sup>™</sup> be liable for any consequential damages of any kind.









## **Basin Assembly Systems**



20" or 26

16" or 22"

**RB-B-20x12** 

**RB-B-26x12** 

## RB-BAS-26x38

20" or 26' 16" or 22"

**RB-B-20x38** 

**RB-B-26x38** 

5

12

13

12

38'

Basin System includes 26" Basin, Lid and 4 Grommets \*grommets come in 4" size, one set for Sch 40 pipe and one set for SDR 35 pipe. other size grommets are available





## RB-BAS-20x38

Basin System includes 20" Basin, Lid and 2 Grommets \*grommets come in 4" size, one set for Sch 40 pipe and one set for SDR 35 pipe. other size grommets are available



The ZEUS<sup>™</sup> Basin System is composed of a 38" basin, lid, and two 4" grommets. These basins are designed to work with the ZEUS Access System to make products that are resistant to unauthorized entry and provides protection from ground water infiltration.

The ZEUS Basin System is designed to fit other Zabel<sup>™</sup> products such as: Effluent filters, Interlocking Filtered Pump Vaults, Pump and Discharge Systems to make complete ZEUS packages. Look for the ZEUS trademark to ensure quality.

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## ZEUS<sup>™</sup> Basin Systems Product Specification

- 1. Product Name: ZEUS<sup>™</sup> 20" or 26" Basins
- 2. Model Number: RB-B-20x12, RB-B-20x38, RB-B-26x12, RB-B-26x38, RB-BAS-20x38, RB-BAS-26x38
- 3. Applications: Appropriate for use with all Zabel<sup>™</sup> filters, as a distribution box, water level control box for constructed wetlands and in the case of the RB-B-26x38 may be used to house the interlocking Filtered Pump Vault model number FPV-I36-2. May also be used to house a pump and discharge system for various applications, such as use within a recirculating sand filter.
- 4. Materials: All materials are non corrosive high density polyethylene.
- 5. Risers and lids wheel load certified at 2500 lbs.
- 6. Installation in new or existing systems: The Basin Assembly System includes everything you need to install the unit Basin, lid, lid screws, 2-4"grommets. The basins are designed to be custom fitted by the installer utilizing any one of the three pre-determined inlets or outlets on the 38" basins and the appropriate sized pipe grommets. The installer can customize the 12" basin as the need arises. The Zeus Access System can then be utilized to provide a grade access to these systems. Zabel Recommendation: Any configuration of risers used should not exceed 48" in height.
- 7. Warranty: The ZEUS<sup>™</sup> Basin system are warranted to be free from defects in material and workmanship for two years from the date of original installation. Zabel's<sup>™</sup> liability is limited to replacement of the ZEUS<sup>™</sup> access system only and in no event shall Zabel<sup>™</sup> be liable for any consequential damages of any kind.





The ZEUS<sup>™</sup> Filtered Pump Vault System includes seven pump vaults of two basic styles: Hanging style and Interlocked. The Hanging style pump vaults come in two filter designs: A100 and A1800 style slotted plates. The Interlocked FPV comes only with the A1800 style slotted plates. These parts are designed to fit those from the ZEUS<sup>™</sup> Riser & Basin System, Discharge System and Alarm & Control System to make complete STEP System Packages.

Zabel<sup>™</sup> Recommendation: Any configuration of Risers used should not exceed 48" in height.

2"

*The product(s) shown are covered by one or more of the following patents:* U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568, Des. 309007 Canadian: 2,135,937 New Zealand: 264824

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## ILTERED PUMP VAULTS



The ZEUS<sup>™</sup> Filtered Pump Vault System includes seven pump vaults of two basic styles: Hanging style and Interlocked. The Hanging style pump valuts come in two filter designs: A100 and A1800 style slotted plates. The Interlocked FPV comes only with the A1800 style slotted plates. These parts are designed to fit those from the ZEUS<sup>™</sup> Riser & Basin System, Discharge System and Alarm & Control System to make complete STEP System Packages.

Zabel<sup>TM</sup> Recommendation: Any configuration of Risers used should not exceed 48" in height.

The product(s) shown are covered by one or more of the following patents:

U.S. 5,382,357, 5,482,621, 5,683,577, 5,580,453, 5,582,716, 5,591,331, 4,710,295, 5,593,584, U.S. Des. 386,241,349067, 4605501,5098568,

Des. 309007 Canadian: 2,135,937 New Zealand: 264824

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## ZEUS<sup>™</sup> Filtered Pump Vaults Product Specification

- 1. Product Name: Zabel™ Filtered Pump Vaults, Hanging or Interlocking styles
- 2. Model Number: FPV-H34-A101, FPV-H36-2, FPV-H36-4, FPV-H44-2, FPV-H44-4, FPV-I36-2
- 3. Applications: Appropriate for use in all STEP systems with submersible effluent pumps, sewage pumps and high head turbine pumps.
- 4. Performance Specification: All flows for the FPV-H34-A101 were determined to be laminar at rates up to 34 gpm. All flows for FPV-H36-2, FPV-H36-4, FPV-H44-2, FPV-H44-4, FPV-I36-2 were determined to be laminar at rates up to 90 g.p.m. It was concluded that the pumps tested with the FPV as a system did "not generate enough turbulence to materially disturb the solids in the septic tank system."

FPV Septic Tank Turbulance Test Results: FPV-H36-2, FPV-H36-4, FPV-H44-2, FPV-H44-4, FPV-I36-2							
Flow Rate @	0" Theoretical	1" From Filter	6" From Filter	12" From Filter			
5 gpm	0.042 fps	< 0.02 fps	< 0.01 fps	< 0.01 fps			
15 gpm	0.128 fps	< 0.06 fps	< 0.03 fps	< 0.01 fps			
30 gpm	0.255 fps	< 0.08 fps	< 0.04 fps	< 0.02 fps			
40 gpm	0.34 fps	< 0.09 fps	< 0.05 fps	< 0.02 fps			
80 gpm	0.68 fps	< 0.20 fps	< 0.06 fps	< 0.02 fps			
FPV Septic Tank Turbulance Test Results: FPV-H34-A101							
Flow Rate @	0" Theoretical	1" From Filter	6" From Filter	12" From Filter			
8 gpm	0.122 fps	< 0.02 fps	< 0.01 fps	< 0.01 fps			
34 gpm	0.520 fps	< 0.05 fps	< 0.03 fps	< 0.02 fps			

- 5. Certified Pumps: The following pumps have been tested by Zabel<sup>™</sup> and have been certified for use with the following Filtered Pump Vaults: FPV-H36-2, FPV-H36-4, FPV-H44-2, FPV-H44-4, FPV-I36-2.
  - 5.1. 1 HYDROMATIC Pump Models: SP50, SW/VS33, SHEF33, SHEF25, OSP33, SPD100H, SHEF50, SKHD150, SP40, SHEF100 and SPD50H. High Head Turbine Pump Models HE8-51, HE12-51, HE20-51.
  - 2 F.E. MYERS Pump Models: SSM33, ME3H, ME3F, ME40, ME50, ME75, ME100, ME150, P51, P102, MW50, and High Head Turbine Pump Models 2NFL51-8E, 2NFL52-8E, 2NFL72-8E, 2NFL102-8E, 2NFL51-12E, 2NFL52-12E, 2NFL72-12E, 2NFL102-12E, 2NFL51-20E, 2NFL52-20E, 2NFL72-20E, 2NFL102-20E, 2NFL152-20E, J1025BE, J1525BE, J1035BE and J1535BE.
  - 5.3. Red Jacket Pump Models: Utility 518

5.4. Zabel's Pump Models: Zeus™ Turbinator™ T125-10, T100-18.

- Materials: All materials are non-corrosive. For the FPV-H34-A101 the pump vault tank-high density polyethylene, case, lid & nuts-rigid vinyl PVC, Filter discs-high impact polystyrene, rods-high density polyethylene. For the FPV-H36-2, FPV-H36-4, FPV-H44-2, FPV-H44-4, FPV-I36-2 the pump vault, filter panel, trim strips, and maintenance plate linear low density polyethylene (LLDPE); Filter plate polypropylene
- 7. Installation in new or existing systems: For the hanging FPV's center 15-inch filtered pump vault in the septic tank outlet access opening of at least 16 inches in diameter. Thread 1-1/2" schedule 40 pipe through the handles to bridge the access opening in the tank. If 6" adapter has been cast into the lid simply lower the FPV through the opening and allow the pump vault to rest on the adapter. For the FPV I-36 it is a matter of simply lowering the pump vault into the 38" basin and turning to the right to lock into place.
- 8. Service method: A professional onsite service company shall perform all onsite system service. Pump the tank to the lowest level practical. For the FPV-H34-A101 disconnect the discharge assembly from the pump, remove the pump and floats. Remove the Filter cartridge and rinse with clean water. Return the cleaned Filter cartridge to the bottom of the pump vault. For the FPV-H36-2, FPV-H36-4, FPV-H44-2, FPV-H44-4, FPV-I36-2 Insert the maintenance plate behind the filter panel to be cleaned all the way to the bottom of the tank. Remove the filter panel and rinse the filter plate with clean water. Return the cleaned Filter Panel and repeat until all panels have been cleaned. Visually inspect the pump and float switches. After servicing return pump and a float to original positions and remove the maintenance plate. They normally will not require adjustment unless there is a malfunction.
- 9. Warranty: The Filtered Pump Vaults are warranted to be free from defects in material and workmanship for two years from the date of original installation. When the Filtered Pump Vaults are originally installed with a certified pump, the warranty period is ten years from the date of installation. Zabel's<sup>™</sup> liability is limited to repair or replacement of the Filtered Pump Vault only and in no event shall Zabel<sup>™</sup> be liable for any consequential damages of any kind. Manufacturers warrant their respective pumps and controls.

<sup>1</sup> Dr. S. Lingireddy and Dr. S. Yost., Assistant Professor of Civil Engineering at the University of Kentucky, Department of Civil Engineering, *Evaluation of Zabel™ FPV100 Pump Vault and Hydromatic Pumps: A Study of Septic Tank Turbulence* Lexington, KY, June 10, 1996 and

<sup>2</sup>Evaluation of Zabe<sup>™</sup> FPV100 Pump Vault and Myers Pumps: A Study of Septic Tank Turbulence Lexington, KY, September 3, 1996.







**DISCHARGE SYSTEMS** 



\*Pump sold seperately or as part of a ZEUS STEP System package



\*Pump sold as part of a ZEUS STEP System package



# Alarms, Controls & Accessories

## Versatile, indoor or outdoor liquid level alarm system.

- Enclosure meets Type 3R water-tight standards
- Manual horn silence switch, and manual alarm test switch
- Alarm horn sounds at 82 decibels at 10 feet (3 meters)
- Complete package includes standard VRS control switch with 10 feet (3 meters) of cable indoor/outdoor alarm panel.
- Two-year limited warranty

## Easy-to-Install liquid level alarm system for indoor use.



AC-A-O

AC-A-O-SF

ZEUS	
FOLLOW HATFUCTURE BULDY WINN ALARM WINN ALAR	WARNING LIGHT
• • •	HORN SILENCE

AC-A-I

- NEMA 1 enclosure rated for indoor use
- Red warning light, green "power on" light, alarm test switch, and horn silence switch
- Alarm horn sounds at 88 decibels at 10 feet (3 meters)
- Can be used with any UL Listed switching mechanism rated to include 1 amp, 12 VAC load
- Alarm system (when installed on separate circuit) operates even if the pump circuit fails
   Complete package includes standard Sensor Float<sup>®</sup> control switch with 15 feet (4.57 meters) of cable and pipe clamp for mounting, and UL authorized, waterproof splice kit
- Switching mechanism operates on low voltage and is isolated from the power line to reduce the possibility of shock
- Two-year limited warranty

## Versatile, indoor or outdoor liquid level alarm system.

- Enclosure meets Type 3R water-tight standards
- Automatic alarm re-set, horn silence switch, and alarm test switch
- Alarm horn sounds at 82 decibels at 10 feet (3 meters)
- Alarm system (when installed on separate circuit) operates even if the pump circuit fails
   Complete package includes standard Sensor Float<sup>®</sup> control switch with 15 feet (4.57
- meters) of cable and pipe clamp for mounting
- Two-year limited warranty



## Junction Box w/3 or 5 connectors.



- Veratile, reinforced, PVC enclosure provides weatherproof protection for electrical connections
- Tested to NEMA 4X standards
- Durable housing is resistant to moisture, flame and ultraviolet rays
- Hinged cover can be locked to provide a secure and tamper proof box
  - RCC8 cable connectors provide strain relief and a liquid tight seal





# Alarms, Controls & Accessories

## AC-CP-S-S



## Single-phase, simplex pump switch control.

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes 2 float switches one for on/off, and one for alarm
- Complete, step-by-step installation instructions included
- Two-year limited warranty



AC-CP-S-C

## Single-phase, simplex motor contactor control.

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes 3 float switches two for on/off, and one for alarm
- Complete, step-by-step installation instructions included
- Two-year limited warranty





c(UL

## Single-phase, simplex timed dosing pump control.

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes 3 float switches (low level cut out, redundant off, high water alarm)
- Repeat cycle timer for sizing pumped effluent doses and frequency of operation
- Complete, step-by-step installation instructions included
- Two-year limited warranty

## Single-phase, duplex alternating pump control with override.

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes 3 float switches two for on/off, and one for lag/alarm
- Alternately controls two pumps with lag pump backup
- Complete, step-by-step installation instructions included  $(\bigcup_{c} c)$
- Two-year limited warranty



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T125-10









T100-18











The ZEUS Turbinator<sup>™</sup> Submersible Pump is specifically designed to handle effluent applications.

The Turbinator<sup>™</sup> is the newest addition to the ZEUS STEP System family. Customers have the option of buying individual components from Zabel<sup>™</sup> and putting together their own STEP System or they can choose to have Zabel quote a complete system package (see related article on page 24-25 of this magazine) and ship the entire package to them.

Two models are currently available: T125-10 and T100-18.

Both the T125-10 and T100-18 model Turbinator<sup>™</sup> Pumps come equipped with a 1/2 HP, 115-volt, NEMAstandard motor that is CSA-approved. A stainless steel secondary strainer gives the ZEUS Turbinator<sup>™</sup> Pumps added protection against blockage. So, the Turbinator<sup>™</sup> Pumps can handle solids up to 1/16-inch in diameter.

The Model T100-18 Turbinator<sup>™</sup> has an optimum performance of 18 gpm with the Model T125-10 having an optimum performance of 10 gpm.

#### FEATURES

- Cleanable, removable primary strainer adds to pump life
- · Stainless steel secondary strainer
- Specially designed SJWO motor leads handle tough effluent applications
- 120-inch cable ideal for demanding applications
- Tested to a simulated depth of 575 feet
- Two-year limited warranty



## **STEP**estimateInformationform

OFFICE USE ONLY
Project #\_\_\_\_\_
Estimator\_\_\_\_\_

#### a. Customer Name, Address, Phone number

Company Name		
Customer Name		
Address	CityStat	eZip
Phone #	fax #	
Contractor , Whole	esaler/Pre-caster 🗌 , Other	
b. Design: Are we n	neeting an engineered spec?	
Specifications? No	,Yes 🦳 (if yes attach specs to back)	
Designer Name	Company	
Address	CityStat	eZip
Phone #	fax #	
<b>c. Application: Res</b> Residential , Com Daily Flow Rate	idential or commercial? mercial (if commercial identify) (Gallons per Day)	
d. Pump Requireme	nts	
Pump Discharge Size	, Check Valve? No Yes	
Pump Requirements:	Total Dynamic Head (TDH) Gallons per Minute (GPM)	
Voltage Requirement:	115 or 230	
e. Alarm Requirem	nents:	
Indoor Outdoor		
B Contraction of the second se	For more information contact: Zabel Environmental Technology P.O. Box 1520 Crestwood, KY 40014 1-800-221-5742 fax: 502-992-8244	<b>m</b> a il zabelzone@aol.com

### Conventional **STEP** layout form

OFFICE USE ONLY
Project #\_\_\_\_\_
Estimator

- A = Inside bottom of tank to bottom of inlet
  - B = Diameter of opening
    - C = Diameter of opening
    - D = Length of tank
    - E = Distance from opening C to the edge of the tank
      - F = Top of tank to ground level
        - G = Thickness of the tank lid
        - H = Inside bottom to the inside top
          - I = Vertical rise ground level over tank to ground level over distribution box
          - J = Distance from tank to distribution box (Length of discharge pipe)





For more information contact: Zabel Environmental Technology P.O. Box 1520 Crestwood, KY 40014 1-800-221-5742 fax: 502-992-8244



zabelzone@aol.com

### NOTES:

# Don't Cut Corners

*Use Zabel Products to ensure Quality and Performance!* 

Effluent Filters increase the efficiency of the septic tank, they further protect the treatment and disposal system from excessive solids during peak flow conditions. And most importantly they give homeowmers a passive warning that its time to service their systems. So look for the Zabel<sup>™</sup> brand and protect your investment as well as the environment with a low cost high performance effluent filter.



*The product(s) shown are covered by one or more of the following patents:* U.S. 5,382,357, 5,482,621, 5,580,453, 5,582,716, 5,591,331, 5,593,584, 5,683,577, Des. 386. Canadian: 2,135,937; New Zealand: 264824; Other Patents Pending

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### ZABEL<sup>™</sup> WASTEWATER FILTERS & ACCESSORIES

PART NO	RESIDENTIAL FILTERS	LIST	ONE +	10+	30+	50+
	A1800 Case & Cartridge					
A1800 A1800-HIP A1800-HIP-SF	Standard Filter High Performance Filter High Performance SmartFilter™	45.95 51.95 145.95	39.00 45.00 139.00	31.00 37.00 131.00	30.00 36.00 130.00	29.00 35.00 129.00
	A1801 Cartridges					
A1801 A1801-HIP A1801-HIP-SF	Standard Cartridge High Performance Cartridge High Performance SmartFilter <sup>™</sup> Cartridge	39.95 41.95 135.95	33.00 35.00 129.00	25.00 27.00 121.00	24.00 26.00 120.00	23.00 25.00 119.00
	A1807 Concrete Baffle Cartridges					
A1807 A1807-HIP	Standard Cartridge High Performance Cartridge	49.95 51.95	43.00 45.00	35.00 37.00	34.00 36.00	33.00 35.00

		A101-HIP-SF		A300		A30	00-нір
		COMMERCIAL FILTERS	Reducers are also included	e included o I on the A10	n all A-300   )0-HIP	Filters,	_
PART	ΓΝΟ	A100 Case & Cartridges	LIST	ONE +	10+	30+	50+
A100 A100 A100 A100	-SF -HIP -HIP-SF	Standard Filter SmartFilter <sup>™</sup> High Performance Filter High Performance SmartFilter <sup>™</sup> A101 Cartridges	169.95 249.95 224.95 324.95	133.00 213.00 178.00 278.00	108.00 188.00 177.00 277.00	102.00 182.00 176.00 276.00	98.00 178.00 175.00 275.00
A101 A101 A101 A101	-SF -HIP -HIP-SF	Standard Cartridge SmartFilter <sup>™</sup> Cartridge High Performance Cartridge High Performance SmartFilter <sup>™</sup> Cartridge	134.95 214.95 174.95 274.95	98.00 178.00 113.00 213.00	73.00 153.00 112.00 212.00	67.00 147.00 111.00 211.00	63.00 143.00 110.00 210.00
PART	ΓΝΟ	A300 Case & Cartridges	LIST	ONE +	10+	30+	50+
A300 A300 A300	-SF -HIP	Standard Filter SmartFilter <sup>™</sup> High Performance Filter	199.95 279.95 249.95	163.00 243.00 203.00	138.00 218.00 202.00	132.00 212.00 201.00	128.00 208.00 200.00

A300	Standard Filter	199.95	163.00	138.00	132.00	128.00
A300-SF	SmartFilter <sup>™</sup>	279.95	243.00	218.00	212.00	208.00
A300-HIP	High Performance Filter	249.95	203.00	202.00	201.00	200.00
A300-HIP-SF	High Performance SmartFilter <sup>™</sup>	359.95	313.00	312.00	311.00	310.00
	A301 Cartridges					
A301	Standard Cartridge	149.95	113.00	88.00	82.00	78.00
A301-SF	SmartFilter <sup>™</sup> Cartridge	229.95	193.00	168.00	162.00	158.00
A301-HIP	High Performance Cartridge	184.95	138.00	137.00	136.00	135.00
A301-HIP-SF	High Performance SmartFilter <sup>™</sup> Cartridge	284.95	238.00	237.00	236.00	235.00
		-	-			



A100/A300-ADA







PART NO	ACCESSORIES	LIST	ONE +	10+	30+	50+
A100/A300ADA	Extension Adapter	29.95	19.00	18.00	17.00	16.00
FC100	Flow Control/Maintenance Plate	9.95	9.00	8.00	7.00	6.00
TH100	Filter Service Extractor (T Handle)	34.95	32.00	30.00	28.00	26.00
SEAL	Filter Tamper Seal	2.95	2.00	1.90	1.80	1.70







**INDOOR ALARM** 

**CONTROL PANELS** 

#### **OUTDOOR ALARM**

		-				_	
PART NO	ALARM & CONTROL SYSTEM	LIST	ONE +	10+	30+	50+	
AC-JSB-3	Junction/Splice Box w/3 Connectors	36.95	32.00	31.00	30.00	29.00	
AC-JSB-5	Junction/Splice Box w/5 Connectors	36.95	35.00	34.00	33.00	32.00	
AC-A-O-SF	Outdoor SmartFilter <sup>™</sup> Alarm	136.95	106.00	104.00	102.00	100.00	
AC-A-I	Indoor Alarm	106.00	76.00	74.00	72.00	70.00	
AC-A-O	Outdoor Alarm	134.95	104.00	102.00	100.00	98.00	
AC-ACB-O	Outdoor Alarm w/ Control Block	186.95					
AC-CP-S-S	Simplex-Switch Control Panel	459.95	77119	M Alarm &	Control S	vstem	
AC-CP-S-C	Simplex-Contactor Control Panel	492.95	May only be purchased				
AC-CP-S-T	Simplex-Timed Control Panel	585.95	· ·	with ZEUS⁼	packages	s.	
AC-CP-D-C	Duplex-Contactor Control Panel	764.95					



PART NO	RISER & BASIN SYSTEM	LIST	ONE +	10+	30+	50+
RB-L-20	20" Lid	48.95	39.00	38.00	37.00	36.00
RB-TA-T-20x2	20" x 2" Retrofit Tank Adapter	45.95	36.00	35.00	34.00	33.00
RB-TA-F-20x6	20" x 6" Cast-In Tank Adapter	35.95	26.00	25.00	24.00	23.00
RB-R-20x6	20" x 6" Riser	35.95	26.00	25.00	24.00	23.00
RB-R-20x12	20" x 12" Riser	45.95	36.00	35.00	34.00	33.00
RB-R-20x38	20" x 38" Riser	85.95	76.00	75.00	74.00	73.00
RB-B-20x12	20" x 12" Basin	45.95	36.00	35.00	34.00	33.00
RB-B-20x38	20" x 38" Basin	85.95	76.00	75.00	74.00	73.00
RB-BAS-20	20" Container Assembly	119.95	100.00	99.00	98.00	97.00
RB-L-26	26" Lid	52.95	43.00	42.00	41.00	40.00
RB-TA-T-26x2	26" x 2" Retrofit Tank Adapter	49.95	40.00	39.00	38.00	37.00
RB-TA-F-26x6	26" x 6" Caste-In Tank Adapter	39.95	30.00	29.00	28.00	27.00
RB-R-26x6	26" x 6" Riser	39.95	30.00	29.00	28.00	27.00
RB-R-26x12	26" x 12" Riser	49.95	40.00	39.00	38.00	37.00
RB-R-26x38	26" x 38" Riser	89.95	80.00	79.00	78.00	77.00
RB-B-26x12	26" x 12" Basin	49.95	40.00	39.00	38.00	37.00
RB-B-26x38	26" x 38" Basin	89.95	80.00	79.00	78.00	77.00
RB-BAS-26	26" Container Assembly	139.95	130.00	129.00	128.00	127.00



PART NO	FILTERED PUMP VAULT SYSTEM	LIST	ONE +	10+	30+	50+
FPV-H34-A101	34" Hanging w/A101 Filter	139.95	129.00	118.00	117.00	116.00
FPV-H36-2	36" Hanging w/2 Filter Plates	189.95	179.00	175.00	174.00	173.00
FPV-H36-4	36" Hanging w/4 Filter Plates	199.95	189.00	185.00	184.00	183.00
FPV-H44-2	44" Hanging w/2 Filter Plates	209.95	199.00	195.00	194.00	193.00
FPV-H44-4	44" Hanging w/4 Filter Plates	219.95	209.00	205.00	204.00	203.00
FPV-I36-2	36" Interlocking w/2 Filter Plates	189.95	179.00	168.00	167.00	166.00
PART NO	PUMP SYSTEM	LIST	ONE +	10+	30+	50+
PS-T-125-10	125TDH-10GPM Turbinator <sup>™</sup>	579.95	379.00	374.00	369.00	364.00
PS-T-100-18	100TDH-18GPM Turbinator <sup>™</sup>	569.95	369.00	364.00	359.00	354.00
PART NO	DISCHARGE SYSTEM	LIST	ONE +	10+	30+	50+
DS-TD-1.25	1.25" Turbine Discharge*	85.95	78.00	76.00	74.00	72.00
DS-ED-1.5	1.5" Effluent Discharge*	95.95	88.00	86.00	84.00	82.00
DS-TD-2.0	2.0" Turbine Discharge*	149.95	142.00	140.00	138.00	136.00
DS-CV-1.25	1.25" Check Valve	36.95	32.00	31.00	30.00	29.00
DS-CV-1.5	1.5" Check Valve	38.95	34.00	33.00	32.00	31.00
DS-CV-2.0	2.0" Check Valve	48.95	44.00	43.00	42.00	41.00
DS-ASV-1.25	1.25" Anti-Siphon Valve	36.95	32.00	31.00	30.00	29.00
DS-ASV-1.5	1.5" Anti-Siphon Valve	38.95	34.00	33.00	32.00	31.00
DS-ASV-2.0 DS-GT-1.25 DS-GT-1.50	1.25" Grommet	3.95 3.95	46.00 2.80 2.80	45.00 2.60 2.60	44.00 2.40 2.40	43.00 2.20 2.20
DS-GT-2.0 DS-GT-3.0	2.0" Grommet	3.95	2.80	2.60	2.40	2.20
DS-GT-4.0	4.0" Grommet	4.95	3.50	3.30	3.10	2.80



\*Includes true union ball valve & flexible connector. Check or anti-siphon valve and float switch extra, call Zabel for pricing.

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