1st Filters to be NSF Certified

Spring 2000

THE ZABEL ZONE®

THE ONSITE WASTEWATER MAGAZINE

AeroCell™
Easy to install,
Easy to Maintain
pg 07

Reinventing the Zabel
A100/A300 Filter
pg 11

Win a Cruise!
Details on pg 22

Buy Direct see article pg 34

1st Filters to be NSF Certified

All 1800 series and all 12" A100/A300 Series filters

MADE IN USA

Watch for other certified Zabel products in the near future

NSF Certified to ANSI/NSF Standard 46

See the Engineering note on page 21 for the NSF testing procedure.

ZABEL™ environmental technology

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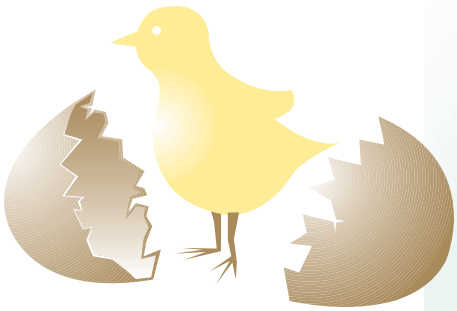

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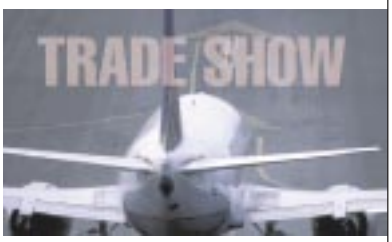

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Editorial Policies

The Zabel Zone™ 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 502-992-8201, or - Email Jnurse@zabel.com

The magazine is distributed free of charge and current circulation is approximately 30,000.

EditorsCorner

Jan M. Nurse, DMD

Here is the first Zabel Zone of the 2000's – strange ring to that, huh? Our New Year started off with a party – not New Year's Eve like most, but New Year's Day. My daughter, Rachel, chose this as her wedding day saying she didn't want her future husband to be able to forget their anniversary.

I know I won't. We had been planning this event since April of last year when Rachel and Chris became officially engaged. It was a fun and pricey learning experience. When I hang up my editor's hat, I am thinking of becoming a wedding planner – NOT.

Anyway, after the time and expense of planning this shindig, I threatened anyone I thought might cry. Eyes like a raccoon's were not going to be part of the order of the day. At least, that's what I thought.

A very handsome, distinguished-looking fellow officiated at the nuptials (my husband, Harry). I felt so proud seeing him at the front of the congregation as my nephew, Eric, escorted me to my seat.

My older son, D.G., and younger daughter, Danielle, were part of the wedding party and my youngest, Morgan, participated by throwing roses in the bride's path that came from a top hat we had purchased for the occasion. Little lump in the throat.

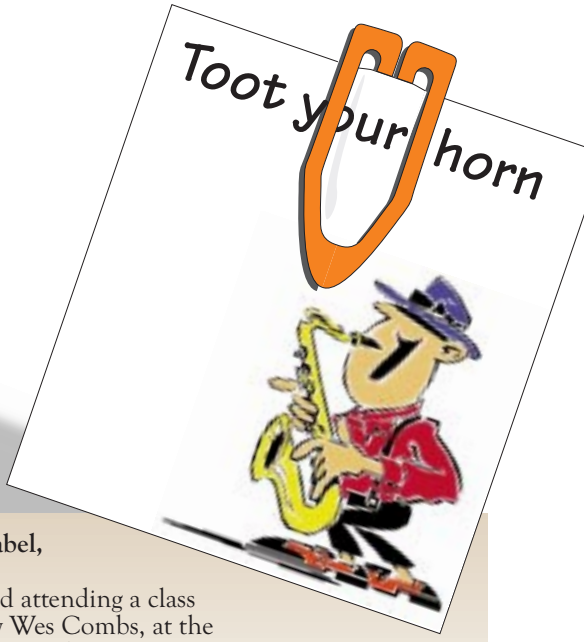
After being "given away" by my brother, a poem was to be read by a bridesmaid. Rachel had written it and due to the last minute rush, it had been omitted from the program, so I'd not read it.

I suppose I was expecting- "roses are red, violets are blue". Instead, this was the poem she'd written.

HEAVEN
By Rachel Van Meter
In memory of Papaw (my father)

He thought he kept my universe alone
Little did he know my angel had been sent
He looks down on me and I look at you
Your eyes act as mirrors to reflect images
From a passage of time that appeared to be a blur
The images focus when I look at you
For I can see him and I know he lives on
My angel and my love are one and the same
Two souls unite to watch me from Heaven and on earth
You kiss me - he hugged me
He held me - you hold me
These two men I need in my life
One has passed on, the other
Well, I shall be his wife

Okay, so I cried. Most everyone in attendance did, too. I've missed him every day for the last 8 years, but know he was with us for his granddaughter's wedding.
Rachel and Chris, be happy, be smart, be good to each other.



NORTHEAST MISSOURI

ON-SITE SEWAGE WORKSHOP & EXHIBITION

MONROE COUNTY HEALTH DEPT. PHONE: 660-327-4653 FAX: 660-327-4510

MARION COUNTY HEALTH DEPT. PHONE: 573-221-1166 FAX: 573-221-1114

RALLS COUNTY HEALTH DEPT. PHONE: 573-985-7111 FAX: 573-985-1111

January 27, 2000

Zabel Environmental Technology
Attn: Bob Paulus, R.E.H.S.
Northestern Field Manager
P.O. Box 1520
6244 Old LaGrange Road
Crestwood, KY 40014

Dear Mr. Paulus:

This letter is being forwarded in appreciation of your presentation to those in attendance at the Northeast Missouri On-Site Sewage Workshop & Expo which was held January 18, 2000.

Your presentations concerning S.T.E.P. Systems and Septic Tank Effluent Filters were very interesting and appeared to be well received by this audience. The time and effort which you donated to this educational workshop is to be commended and provided valuable information regarding the installation of on-site sewage and wastewater treatment systems.

Once again "THANKS" for your participation at this workshop. Your assistance with the educational program was much appreciated and helped to increase the technical knowledge of the on-site sewage system installers, which is the goal of this workshop.

Sincerely:
Steve St Clair, R.S.
Environmental Public Health Specialist III

Sincerely:
Philip Shatzer, R.S.
Environmental Public Health Specialist III

Dear Zabel,

I enjoyed attending a class given by Wes Combs, at the IOWWA conference, in DES MOINES, IA, on Feb. 16. Well presented and informative class on foam based media, and recirculating filters. You guys keep up the good work.

Sincerely, Gail Anderson, Latimer, IA.

Delaware On-Site Wastewater Recycling Association
P O Box 1696
Dover DE 19903-1696

From the desk of the President

December 9, 1999

Zabel Environmental Technology
Bob Paulus
6244 Old LaGrange Road
Crestwood KY 40014

RE: 3rd Annual DOWWA Conference

Dear Bob:

On behalf of the Officers, Directors and Members of the Delaware On-Site Wastewater Recycling Association I would like to extend a very heartfelt thank you for your contributions to the 3rd Annual DOWWA Conference. It appears that the Conference was a huge success and all comments are favorable. This is all, in part, due to the participation and presence of you. Your expertise and knowledge of the wastewater industry adds to the credibility of the organization. Again, I would like to extend a special thank you for your participation in our 3rd Annual Conference.

Look forward to seeing you next year.

Sincerely,
John "Jack" Hayes

Dear Bob Paulus,

On behalf of the Adams County Health Department, Environmental Health Division, we would like to take this opportunity to thank you for your informative presentation at our Annual Installer's meeting on Thursday, January 27, 2000 at the Country Fun.

We especially appreciate your assistance due to the rescheduling. If our office can be of any assistance to your company, feel free to give us a call at (937) 544-5547, extension 22.

Sincerely,

Bruce M. Ashley, MD, RS
Health Commissioner

Dear Bob,

Thank you for your time and presentation! I received many compliments on your presentation and hopefully it cleared a lot of confusion among the installers!

Maura Esposito
City of Middletown, CT.

Zabel would like to thank everyone who has written to us. It is easy to write or call when something is not to your liking, but it takes time and effort when there is something good to say. Thank you.

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Advanced Modular Treatment System

AeroCell™

- Secondary quality effluent
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Wes Combs, R.S.
Advanced Treatment Manager

U.S. Patent, 5,707,513

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AeroCell™ ATS

By John Christensen, B.S., M.ENG.

The AeroCell™ system is a multiple pass design used for the treatment of household wastewater. It is an adaptation of the Waterloo Biofilter™, a system that has been used extensively throughout Canada. The Waterloo Biofilter (has been tested and used at length in baskets ranging in size from 21" to 30" in diameter and 24" to 54" in height. These dimensions are similar to the dimension of Zabel basins, 26" in diameter and 38" in height, which made the transfer of technology relatively easy.

In the Aerocell treatment system, effluent from the septic tank is pumped over the foam media contained in the modules. After passing through the foam, the effluent is collected and sent to a recirculation device, which will send a portion of the effluent back to the primary tank. The recirculation ratio is set such that the effluent is passed through the treatment media several times before it is sent to the disposal field. By sending the effluent through the modules several times, nitrification is allowed to occur and most odor problems are eliminated.

The standard design proposed by Craig Jowett (1997) suggests a loading rate of 50 centimeters/day (1.64 feet per day or 3 gallons per day per cubic foot of foam). In his experiments and field studies, a media depth of 1.25 meters (4.1 feet) was used. Dividing the media height of 125 centimeters by the loading rate of 50 centimeters per day results in a retention time of 2.5 days. A system, used for the treatment of normal septic tank effluent, designed with these parameters will typically reduce BOD and TSS 90% to 95% and TN 20% to 50%.

For a three bedroom house, it is assumed the daily waste flow will be 450 gallons. Four Aerocell modules should be used to treat this wastewater. Therefore, each Aerocell module will be responsible for treating 112.5 gallons of wastewater per day. Dividing the daily waste flow by the Aerocell media volume results in an overall loading rate of 15.76 gallons per day per cubic foot of foam. The design loading rate stated by Craig Jowett is 3 gallons per pass per cubic foot of foam. Therefore, in order to get the proper treatment utilizing the amount of foam in four modules, the effluent will have to be passed through the foam several times. To obtain the number of passes required, the overall loading rate of 15.76 gallons per day per cubic foot of foam is divided by the design loading rate of 3 gallons per pass per cubic foot of foam, resulting in 5.25 passes required. (These numbers and those calculated for the four bedroom house can be found in the following chart.)

Number of Bedrooms	3	4
Gallons per Day	450	600
Number of Aerocell Modules	4	6
Aerocell Media Volume	28.56	42.84
Gallons treated per module	112.5	100
Overall Loading Rate (gal/day/ft^3)	15.76	14.01
Number of Passes Required	5	5
Percent Recirculation	80	80

The Aerocell modules can be dosed on demand or timed basis. Demand dosing will be used for most residential applications and will produce excellent treatment results. Whether demand or timed dosing is used, each module should receive approximately 4 gallons per dose. A four module system will have a total dose volume of approximately gallons and a six module system will have a total dose volume of approximately 24 gallons.

Dosing

Number of Bedrooms	4	6
Dose Volume per module (gallons)	4	4
Total Dose Volume (gallons)	16	24

Whether timed or demand dosing is implemented, the spray nozzle in each module must be dosed at a rate of 3 gallons per minute or higher. As long as this is done, the operating pressure in the nozzle will be sufficient to allow effluent to fully cover the foam surface area in each module. At 3 gallons per minute, the operating pressure in the nozzle will be approximately 5.5 psi.

Concerning the question of recirculation, there are several options, most of which depend on the initial installation of the Aerocell modules and the installation site terrain. In the situation where gravity flow is possible, a distribution box could be used. When pumping is required, the discharge line can be split to allow a portion of the effluent to return to the primary septic tank. Gate valves can be used to regulate the portion of water that is recirculated.

The design of the AeroCell ATS is simple, unique, and proven effective. Following these listed design guidelines will result in a system that will effectively treat the wastewater at most residential applications.

If you are interested in using Aerocell or have questions concerning the product call Zabel at 1-800-221-5742.

Jowett, E. C. 1997. "Sewage and Leachate Wastewater Treatment Using the Absorbent Waterloo Biofilter." Site Characterization and Design of On-Site Septic Systems, ASTM STP 1324, M. S. Bedinger, J. S. Fleming, and A.I. Johnson, Eds., American Society for Testing and Materials, 1997.

The Zabel Zone™ and the Zabel Products Catalogue are now being printed separately. Since the Fall '99 issue, we have added some new and exciting products that you won't want to miss! If you would like to receive a copy of our latest catalogue, please call or e-mail us at:

1-800-221-5742
webmaster@zabel.com

Thanks to all of you for making Zabel and The Zabel Zone such a success.

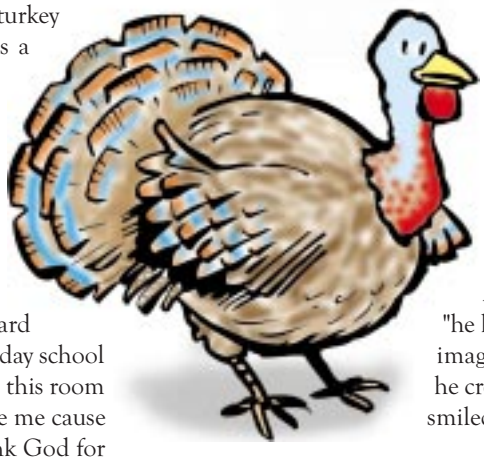
By Harry L. Nurse Jr.

Rebel's Corner

Each Thanksgiving, Jan and I attend a special worship service and luncheon at Morgan's preschool at St. John's Methodist Church. It's always a lively event.

The special worship program features the three, four and five year olds singing songs about turkeys and Indians and pilgrims. Each group of about thirty children dresses their part. Seeing thirty four-year-olds in their homemade turkey costumes in the front of the sanctuary singing "Hello, Mr. Turkey, how are you?"; well, to quote my son, "It's a moment, Dad, it's a moment." Someday when I am braver, I will tell you how this quote originated, but for now let's just say potty training is not my best skill.

So the children sang, the parents took pictures and later we all stuffed ourselves with turkey and dressing at the luncheon. It was a good day. A special day.



Even before the festivities began, I was feeling a little more thankful than usual. Jan and I had started the day in Morgan's classroom, helping him make a turkey out of a cookie under the watchful eye of his teacher, Mrs. Rowlands. Posted on the bulletin board just outside the classroom was the Sunday school lesson from the eight-year-olds that use this room on Sunday mornings. What I read gave me cause to pause, take a deep breath, and thank God for his loving care for our family.

The lesson assignment included the verse, "For the Lord your God will bless you in all your harvest and in all the work of your hands, and your joy will be complete." (Deuteronomy 16:15) The children were asked to answer three questions: (1) What is the one thing that happened in the last year that you're most thankful for? (2) In what special way has God cared for you this year? And (3) What is a prayer God answered this year?

Answered prayer caused one child to respond, "That my grandma got better" explaining "because she was sick." And another, "That I got a new friend." One child said my answered prayer is, "He would always love and care for me." Their wisdom and insight humbled me.

What was the one thing they were most thankful for? "That we won the football championship" and another "I sprained my neck, but I still got to swim." Others were thankful for birthdays and one little boy said, "He gave me summer." Imagine that, an eight-year-old took time to say, "God thank you for summer" and meant it. I will think of that when the weather warms and Morgan and I go fishing.

Each little girl and boy recognized the special care of God in his or her life during the past year. One said, "He did not let me get hurt." And one child was thankful, "When I couldn't go to sleep, he helped me go to sleep." The little boy that had been thankful that God had given him summer said, "He let me out of school." Now there is a kid focused on his priorities.

Of all the answers, the one that touched me most came from the child who said my answered prayer was "that I would get adopted." I am most thankful for "my adoption." And the way God cared for me was "he helped me get a new family." Can you imagine the warm hearts and big smiles he created for his new family? I think God smiled, too!

Jesus said that unless we become like little children, we couldn't enter the kingdom of heaven. Does He mean we adults need to return to some more innocent, child-like state where faith is easy because they just don't know better? I don't think so. I think he meant that when it comes to spiritual things, the meaning of life, the importance of the people and events in it, it is the children who are wise and really understand the heart of God.

They take him at his word and hold him to it. They know what he expects of them in return. For them and for Him, it is a real relationship.

All those singing turkeys are wiser than we know.

While others imitate

We improve!

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NEW

Introducing the Zabel 8” filter.

- Built in Reducer
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- Flow rates from 800 gpd to 3000 gpd
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- Redesigned filter plates

Patents Issued & Pending

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ZABEL Reinvents the Famous A100/300 Disc-dam Filter

By Harry Nurse

This is the filter you've been asking for, with the high removal performance of the famous original ZABEL™ A100/300 style disc dam filter, at a lower price. Recognized by many as the best filter in the industry, ZABEL has dramatically improved the original A100/300 disc dam design in a brand new eight-inch diameter expandable version incorporating many new, innovative design features (patents issued and pending).

How do you achieve high performance and lower costs at the same time? It starts with research. Regardless of some who think all you have to do to improve a filter is to make it bigger, wastewater filtration is not a simple issue of size. Making it better, not bigger, is the goal.

We asked Dr. Richard Lowhorn, P.E., at Tennessee Technical University to evaluate several design modifications considered for the A100/300 series filter.

A dye study was performed to evaluate the effect various filter design modifications had on the mixing that occurs within the filter system. Utilizing a fluorometer, the concentration of dye leaving the filter system was determined relative to time in order to make graphical comparisons of the hydraulics of the filter system from ideal complete mix to ideal plug flows.

We had exciting results. We engineered the best combination of design features to achieve the maximum reduction of the dispersion number, which reflects a reduction in mixing.

A solids study to evaluate the removal performance of the redesigned disc dam plate was also done to compare the effect of various design changes. We were able to reduce the number of disc dam plates by half without compromising solids removal performance. The study demonstrated that doubling the height of the weirs and adding a second weir at the outlet while reducing the number of disc-dam plates showed the same solids removal rate (approximately 76% to 83%) as the old 27-plate stack design. We lowered manufacturing costs without lowering performance.
We also set the flow rate at approximately 10% of the calculated daily flow capacity to assure a reasonable service life.

Our research further confirmed the value of the vertical column effect on filter performance. Doubling the weir height doubles the amount of smooth, uninterrupted vertical column wall and promotes settling of solids by creating less turbulence. In the quiet zones created by the multiple columns, solids fall out of the column and never come in contact with the 1/16" slot. This reduces their opportunity to plug the filter. This is how smaller, more compact and better-designed slotted filters with two-way bridging often outperform larger screened or tube based designs with four-way bridging.

The redesigned disc-dam plate and weir, is the high performance heart of the new A100/300-8, eight-inch filter model and will eventually be incorporated in the original A100/300-12, twelve-inch diameter series.

What are the other new features?

The Extension Adapter is now built-in, making installation easier with a new one- piece integrated design. This saves you the expense of an added part and the labor to install it, plus it assures additional protection by reducing the bottom access opening to only four inches.

The new filter is also easier to install

The new filter is also easier to install because a built-in, multiple-outlet pipe connector allows you the choice of attaching to three-inch, four-inch and 6-inch pipe, without requiring additional adapters.

We have also added a secondary weir at the front of the disc dam plate to prevent accumulated solids from leaving the settling plate.

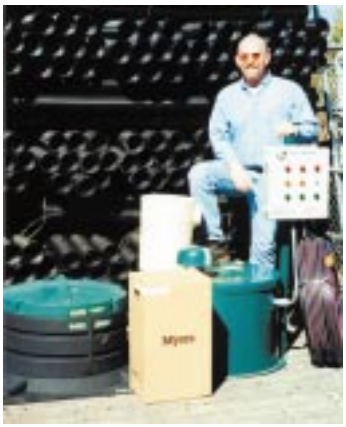
You get all these great new features plus those recently added to the existing A100/300-12 design such as the new, adjustable service handle and the SmartFilter™ Alarm option. And that's not all!

This new filter is not only available in 1/16" (A100-8) or 1/32" (A300-8) filtration models, but now you can have it in the length you need in seven-inch increments from 12", 18", 25", 32" and up.

What does this all mean for you? Now you can have the great new, improved A100/300 disc dam filter design, at a lower price, with all of the features you need to protect your work and your customers' drain field.

SOUTHERN PIPE & SUPPLY AND ZABEL:

A Winning Combination



By Todd Harper

When Jan first called to ask me to write an article for Zabel Zone, several thoughts went through my head. The first was, "How have I been chosen for this honor?"

Then I looked back over the past year. I realized how fortunate I am to be employed by a company such as Southern Pipe and Supply. They have allowed me to pursue what I believed to be a market with great potential. They have also permitted me to establish relationships with companies we haven't dealt with before and it's been a win/win situation for all involved. So, here's our story.

Although our beginnings in the wastewater industry (1998) were humble and hardly noticed, I felt we were making a contribution to our customers, employer and the industry in McDonough, Georgia. The following year (1999), I recognized how class time and on-the-job training were translating into opportunities for us to educate our customers as well as grow with them. So, for us, product knowledge is a priority.

Southern Pipe has a reputation built around service. Along with education, one of our goals for '99 was to have *quality products in stock* for the wastewater industry. We know that components for wastewater systems must be available at all times. Even as you read this article, we are continuing to add to our product lines.

From carrying perforated pipe and paper to having an abundant supply of products necessary for the wastewater industry, we have established ourselves as a leading supplier in the wastewater industry.

We carry a full line of Myers pumps which we size to fit requirements; Zabel Filters for residential, commercial and industrial applications; Norwesco polyethylene tanks; chambers from Infiltrator and Bio Diffuser; Zabel risers; Geoflow dripline; Connery alarms; treatment systems from Aquarobic and Delta Environmental; Bord Na Mona's peat biofilter; ADS pipe; as well as geotextiles, valves and fittings. You can get it ALL from Southern Pipe and Supply.

Last year was very successful. We will continue our commitment to the wastewater industry in the year 2000 with education and making quality, approved products available.

We are charter members of GOWA (Georgia Onsite Wastewater Association) and keep our certificate proudly displayed at our McDonough location. I encourage each of you to join your state's wastewater association. It's a great opportunity to meet other professionals in the industry.

In closing, I would like to extend a heartfelt thank you to our customers!

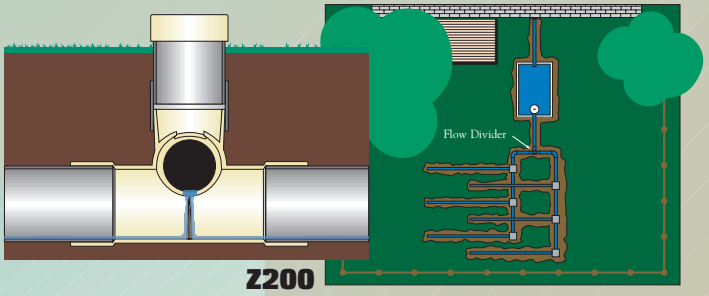
*Editor's Note: Southern Pipe and Supply has 63 branches in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, and Tennessee.

Don't Say No say Zabel

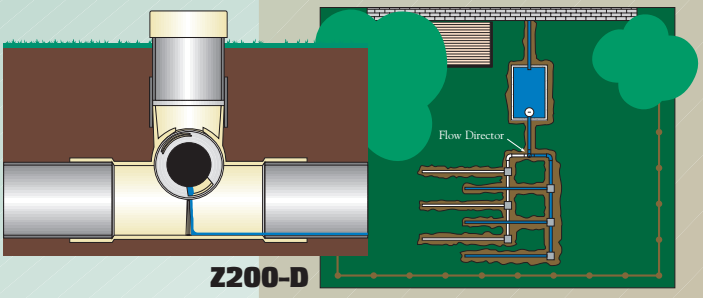
Septic Tank Distribution System

Flow Director and Flow Divider

When your customers ask if you carry products other than tanks and filters, Don't Say No. Increase your business by carrying a full line of quality Zabel products. Zabel's Flow Director/Dividers are a cost effective and efficient way to split and direct effluent flow. They are easy to install and allow visual inspection of effluent at all times. To learn more about carrying a full line of quality Zabel products call 1-800-221-5742.



Z200



Z200-D

Z200

Z200-D

The Z200 replaces old-fashioned distribution boxes and pipe manifolds. The Z200-D replaces expensive old-fashioned Y-valves.

This product is covered by one or more of the following patents: 5593584, 4710295.

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Other Products Include:

Aerocell Aerobic Units, Risers , Lids, Basins, Discharge Systems, Pumps, Pump Vaults, Alarms and Control Panels

The CLEAR Choice

ZABEL FLOW DIVIDERS OR DIRECTORS

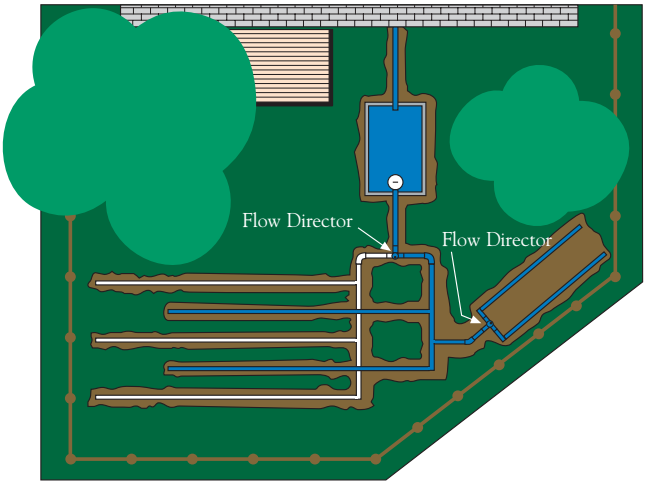
By Bob Paulus, R.E.H.S.

When designing for the "less than perfect" site to be utilized with onsite wastewater treatment, we all understand the principles of Schwartz's law. It makes little difference if you are a homeowner, designer, installer, or a regulator; Schwartz's law applies. "What is Schwartz's law?" you say. Schwartz was an individual who explicitly tested Murphy's Law. We all know Murphy's Law to be: anything that can possibly go wrong, will. Schwartz, through independent third party testing, unanimously convinced himself and others that Murphy was an optimist. Validation of Schwartz's theory gave him the second accepted law of pure pessimism.

Many onsite applications occur on lots with less than uniform dimensions; others may require the use of two separate absorption fields. As onsite professionals, we understand the necessity of equal distribution of effluent in equally proportioned laterals. An ideal method to deliver water to sites requiring two separate absorption fields (Murphy's Law) is with a Flow Director. Ideal methods to deliver water to two separate absorption fields with irregular lot dimensions (Schwartz's Law) is with a Flow Director and Flow Divider.

The Z200D Flow Director is a tee that contains a sleeve valve, which permits the control of water flow to alternate fields. It has a riser that may be piped to grade, allowing for changes in flow to be made at the discretion of the user. Compared to a traditional Y valve, the Flow Director allows for the selection of a particular absorption field, while providing the extra insurance that a Bull Run valve lacks. The Z200D Flow Director will gravity back flow from the first field to the second field if the homeowner forgets to periodically direct flow. A second advantage over the "Bull Run" valve comes with the problems associated with hydraulic overload. Since the Flow Director will gravity back flow, it will automatically select both absorption fields in the event hydraulic overload occurs.

The Z200 Flow Divider provides equal, non-selected routing of water in two separate directions. When installing an absorption field on a property with irregular shape, uniform lateral lengths may not be possible. The Z200 Flow Divider allows for the equal distribution between laterals without the cumbersome use of a heavy distribution box.

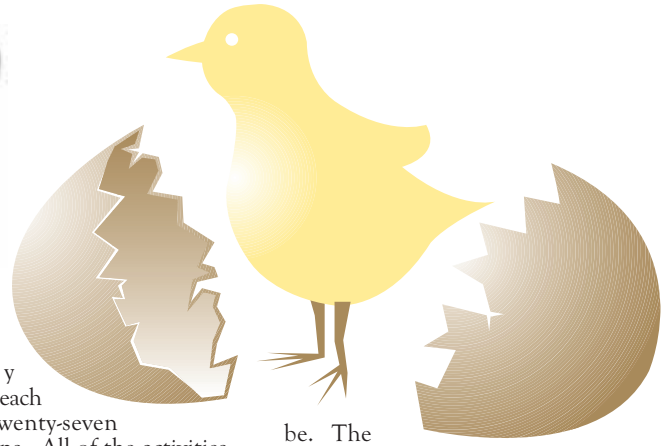


When the ZS200D Flow Director and ZS200 Flow Divider are installed level, they will deliver 50% of the effluent into each of two lines. If the Flow Divider and Flow Director are installed off level at 1/4 inch, they will get distribution of 53% and 47% respectively. That's performance that's difficult to match with standard distribution boxes and speed levelers. Generally, distribution boxes are leveled and speed levelers installed prior to backfilling. It is common to observe the shifting of distribution boxes of at least 1/4" when backfilled. On average, if a distribution box is tilted 1/16 of an inch, flow can be distorted as much as 73% and 27% respectively. In contrast, the Flow Director and Flow Divider will distribute at 50.2% and 49.8%, respectively. Making a decision is easy; when the difference is big, you know what to choose: Zabel Flow Directors and Dividers.

The ADVENTURES Of Zabel™ Man

Illustration by Lonnie Walker

Which Comes First in Massachusetts... I/A or Onsite Management???



Over the last 5 years a classic "which comes first the chicken or the egg?" debate has raged across the country and throughout the onsite industry. Some regulators said, "We don't want to approve all these new onsite technologies until their management is assured. Others decided that the best way to insure that onsite wastewater management becomes a reality is to get lots of systems with lots of moving parts scattered across the landscape and hope that, sooner or later, "people" will realize that onsite sewage treatment systems need to be managed just like centralized systems. The Commonwealth of Massachusetts, when faced with this conundrum, chose to accept both sides of the debate as sound ways to proceed. As many states and counties have done, the Massachusetts Department of Environmental Protection (DEP) developed a rigorous technology approval process in an attempt to assure, as much as possible, that these technologies would perform as promised with minimal oversight.

DEP, unlike most other jurisdictions, also developed new procedures and incentives that would foster an increase in the number of municipalities that managed ALL of their wastewater. The most visible of the changes involved reorganizing the Bureau of Resource Protection programs (Water Pollution Control, Water Supply and Wetlands Protection), to integrate monitoring, planning and regulatory activities within each of the state's twenty-seven major river basins. All of the activities within each basin are focused on building local and regional coalitions to work toward the next major increment of water quality improvement. Each basin is on a five-year cycle in which water quality is monitored; issues, concerns and problems are identified; plans for control/resolution of problems are developed and approved; plans are implemented and results are assessed. Critical in this approach is the integrated look at what the causes of water quality problems are and how they can be resolved on an integrated basis. If in fact "under-managed" on-site systems are contributing to public health and environmental problems, then those problems will be identified and solutions will have to be developed.

by John J. Higgins, Director of Municipal Assistance
Massachusetts Department of Environmental Protection

The DEP also created a Municipal Assistance Program to provide technical assistance, training and outreach to municipal officials and citizens in getting their planning efforts "off the ground". The outcome of these efforts will, in many cases, be an integrated wastewater management plan that lays out for a community a roadmap for managing wastewater. Often, the plans will have portions of a community served by conventional sewers and a Publicly Owned Treatment Works, while other portions may be served by a STEP (Septic Tank Effluent Pump) sewer. Some parts of the community will be served by cluster on-site sewers and treatment; still others will be served by individual on-site conventional and alternative treatment and disposal systems.

Integral to any wastewater management plan is financing. Though the high cost of centralized wastewater treatment has been a principal moving force for the increased interest in decentralized management options, even an integrated approach is not cheap. Most cities and towns still need financial help, no matter what the solution to their problem will be. The DEP changed its State Revolving Fund (SRF) regulations to help insure that funding went to top watershed priorities and to the projects that provided the best water quality and public health benefits. The new SRF regs take into account, amongst other things:

- the severity of the environmental or public health problem the project addresses;
- the water quality benefits of the project;
- the extent to which:
  - the project is a priority in watershed management or protection plans, and is consistent with growth and infra-structure plans;
  - the environmental and public health benefits outweigh negative water quality, quantity or public health impacts;
  - the project uses innovative technology.

No longer is the number of people to be served by a project a major consideration.

During the first year (1998), despite communities having only about a six week notice before applications were due, the SRF was able to provide loans totaling over $3 million for integrated wastewater planning projects and another $3 million for the actual implementation of projects related to correcting failed on-site systems. It appears that these numbers will increase dramatically in the coming years.

With this approach, Massachusetts believes it can have both the chicken and the egg. Thousands of alternative technologies are being installed while dozens of communities are in various stages of implementing integrated wastewater management plans.

Helping You Help Yourself

Radio?

Word of mouth?

Television?

Brochures?

Newspaper?

Not everyone who sells has the tools, and more importantly, the vision, to think of ways to market their products. Here at Zabel, getting on a telephone and calling every customer and potential customer is not the only way we work. Our products, being the best on the market, you may think they are relatively easy to sell. Well, they are, so why don't we just sit back and answer the dozens of calls we get daily? We could do that, but we want more of the market.

In the year 2004, Customers (Homeowners, Installers, Contractors, Pre-casters and Wholesalers) in the onsite wastewater market will spend an estimated 3.2 billion dollars. Now ask yourself, "How much of this market do I want?" If the answer is, "I'm happy with the portion I have now", then you need not read any further. If you would like more of this market, then hopefully this article will help.

We want to get you the tools you need to better market your business, which, in turn, will benefit Zabel. We, as a manufacturer today, have worked hard to offer you an array of things that make selling our products easier. Then, you may choose what works best in your area.

By Tom Jenkins

There are several things any business can do to increase sales. First, determine from where the majority of your sales are coming. This is what we in the marketing biz call a 'target market'. There are many ways to reach your target market; some are more effective than others.

If you are in a service business, it is essential to advertise in the Yellow Pages. That is how the majority of your customers will find you. You need to have the biggest, baddest, most eye-catching ad in your section. Don't think you have to name your company AAAAAA Septic to get most of the traffic. If you have a very large, professional-looking ad, they will come.

So, how can we help you with your local phone book ad? Well, we are currently working on an advertising co-op program for our customers. What does that mean? It means we will help you pay for the ad. A percentage of the cost, depending on the amount of coverage that Zabel gets. Currently, we do this on a case by case basis. Along with helping you financially, we will send you our logo, photos, and lineart of our products to use. This system will also work with other ad media such as banners, point of purchase displays, and the list goes on and on.

Have you tried radio? These ads reach a great number of folks and are not as expensive as you may think. Call your local stations and inquire about their prices. Of course, mentioning Zabel products will make your ad sound more professional and we

will help with a portion of the cost.

In either of these methods of advertising, you could address a major problem that your potential customers have currently or have had in the past. That's the hook, and then you can tell them how your company will be able to help.

After your customers find you, you need to have information to give them. We have product sheets found in each magazine, and we can send you as many of these as you need.

If you are an engineer, we offer research studies and auto cad drawings that can be placed in your system designs. If you are in the business of education, we have power point presentations.

As I have said, there are many ways of bringing your business to market. If you are particularly talented, you may want to attempt marketing your business on your own. However, if you have the resources, I strongly recommend having it professionally done. If you don't have the resources right now, don't put it off- find them.

Once you have a marketing system that is working for you, stick with it. In my pre-Zabel days, I had an advertising business. With some of my customers who were starting a new business, I saw them marketing it and prospering. Then, I saw a deadly pattern. They would advertise to attract customers, but once the customers and money were coming in, they would cut their advertising, so they could pocket even more of the profits. The ones who were keeping their books properly saw that, at that point, their profits began to drop. Even though Coca-Cola makes ungodly amounts of money every year, you still see their ads. What's the reason for that?

Don't stop a successful marketing strategy when things are going well!

There are two purposes for this article. One is to help you find the most effective marketing plan, and to stick with it. The other is to let you know that you are not alone. Zabel has an in-house Media Services Department that you should utilize. It may be as simple as us sending some artwork to you or even us designing your ad. Let us know your needs. In order for Zabel to have a successful business, you must have a successful business. Since all businesses are different, call me with your needs or ideas and together we can build stronger companies.

Tough Enough TO BE A ZABEL

Zabels' risers, basins and lids are the toughest on the market.

- Best Guarantee (2 years)
- Durable Construction (tested to withstand up to 3,300 pounds of pressure).
- Made of non-corrosive UV protected polyethylene to withstand years of exposure to sunlight and septic gases.
- Light weight, for ease of transport to site. No need for heavy equipment for installation.

Installation is easy for existing tanks by using our retrofit tank adapter, or by using the cast-in tank adapter on a new tank.

Retrofit Tank Adapter

All products shown are Patent Pending

Water Resistant
Provides protection from ground water infiltration

Tamper Resistant
Every riser and lid comes with four stainless steel tamper resistant screws ,a torx bit and installation instructions

Interlocking
All parts lock together, and are easy to take on and off even after they have been under ground

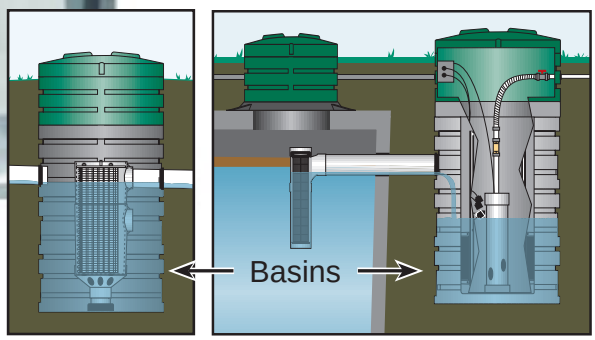
Available Sizes

RB-L-20	20" Lid
RB-TA-T-20x2	20" x 2" Retrofit Tank Adapter
RB-TA-F-20x6	20" x 6" Cast-In Tank Adapter
RB-R-20x6	20" x 6" Riser
RB-R-20x12	20" x 12" Riser
RB-R-20x38	20" x 38" Riser
RB-B-20x12	20" x 12" Basin
RB-B-20x38	20" x 38" Basin
RB-BAS-20	20" Container Assembly
RB-L-26	26" Lid
RB-TA-T-26x2	26" x 2" Retrofit Tank Adapter
RB-TA-F-26x6	26" x 6" Caste-In Tank Adapter
RB-R-26x6	26" x 6" Riser
RB-R-26x12	26" x 12" Riser
RB-R-26x38	26" x 38" Riser
RB-B-26x12	26" x 12" Basin
RB-B-26x38	26" x 38" Basin
RB-BAS-26	26" Container Assembly

MADE IN USA

Septic Tank Access System

Risers, Basins & Lids



Call for a **free** ZABEL ZONE *An Onsite Wastewater Magazine* **1-800-221-5742** • Website http://www.***zabel***.com

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 any Model # RB-CTA or retrofit onto an existing tank using any Model # RB-RTA. All are available in 20",22" 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-RTA) 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.
8. Install lid and security screws (without sealant).
9. Backfill 1 to 2 inch above edge of lid to allow for settling and water diversion.

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

Engineering Note!

ANSI/NSF Standard 46, Evaluation of Components and Devices Used in Wastewater Treatment Systems, has recently added Section 10, which covers "Filtration devices for residential gravity flow septic tank systems". This new section, which allows for the certification of septic tank effluent filters, gives each filter manufacturer an opportunity to subject their filter(s) to the same tests as their competitors.

The new Section 10 of the standard includes the following tests:

* Flow test for clean filters
* Flow test for partially clogged filters
* Solids reduction test
* Bypass protection test
* Structural integrity test

Because Zabel was confident that its line of effluent filters would pass the tests, several of our filters were shipped to the NSF labs in Ann Arbor, Michigan. All of the filters passed each of the above listed five tests. Subsequently, Zabel's entire line of filters became the first on the market to be certified by NSF to Standard 46.

Currently, the A1800 series and A100/300-12 series of filters and filter cartridges are certified to ANSI/NSF Standard 46. Also, Zabel has started the certification process for the new 8" version of the A100/300.

Zabel is giving away a free cruise.

Fill out the postcard and Good luck!

1. No Purchase Necessary. Must be 18 years of age or older. Void where prohibited.

2. How to Enter. Fill out postcard completely (all questions must be answered) and mail in. It must be received by us no later than May 31, 2000.

3. Drawing for prizes will be held on or about June 1, 2000. Winners will be notified by phone and/or mail.

*GRAND PRIZE: 3-day Bahamas cruise for two on Carnival's Fantasy or $500 cash

FIRST PRIZES: 5 winners of $100 cash
SECOND PRIZES: 10 winners of $50 cash
THIRD PRIZES: 20 winners of $25 cash

** Cruise must be taken prior to December 31, 2000. Zabel will book the cruise through its travel agency once the winner has chosen a date. We will not be responsible for cancellations caused by weather, airline problems or any other reason the winner fails to be onboard prior to the ship departing Port Canaveral.*

Put Your Money Where Your Mouth Is -
Zabel takes the lead!

Once again Zabel takes the lead by making a $2000 donation to the Florida Onsite Wastewater Association (FOWA) for their new Onsite Training Center.

Zabel was invited to attend the Gator Swamp Fest fund raiser dinner held at the FOWA Winter Fest January 2000 Conference.

Harry Nurse, Zabel's CEO, presented FOWA's Joe Drake with a check in the amount of $2000. FOWA will use the money raised at this event for a new training center to be located at Central City Florida.

This donation follows Zabel's contribution to the training center at Texas A&M and to the Missouri Milk Food & Environmental Health Association.

Zabel backs its verbal commitment to training with cold hard cash and challenges other manufacturers to match Zabel's financial commitment to training.

Use of Soil Morphology Evaluations for siting, sizing, and designing On-Site Wastewater Systems

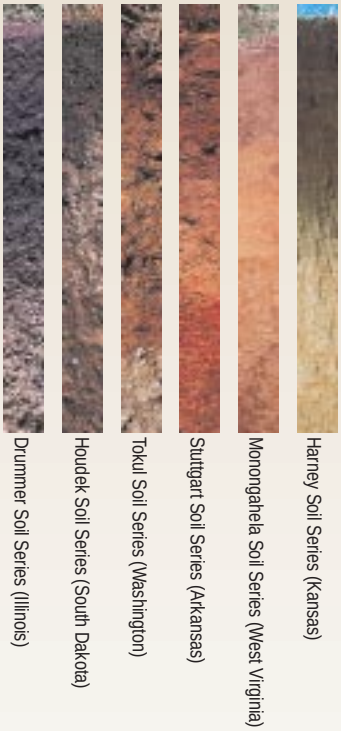


Illustration of various soil types across the country.

By Randy Miles
Associate Professor of Soil Science
University of Missouri

Soil is an important component in the siting, sizing, and designing of an onsite wastewater system (OSWS). For an onsite system to work effectively the soil must be able to absorb large quantities of effluent while providing adequate treatment before water (formerly effluent) hits a surface or ground water source. One of the traditional soil assessment evaluations has been the "perc" test. While this test has given useful information for designing an onsite system, it has not provided a comprehensive evaluation of soil properties that provide treatment and dispersal of effluent. Many states are now utilizing a soil morphological evaluation of the soil for siting , sizing, and designing an OSWS. Many people ask me "What is a soil morphology evaluation and what does it provide?" To answer this question a short explanation of soils is appropriate. First, soils are layered horizontally similar to an onion. These soil layers called horizons have unique soil properties and thicknesses. The major soil properties described for each horizon are: texture, structure, and color.

Soil texture is the determination of the sizes of the mineral particles or the percent sand, silt, and clay. Sand may provide large pores for effluent and air movement but generally give a minimum of treatment; whereas, clay provides treatment of effluent but in many instances does not allow much movement. Soil structure is the arrangement of the sand, silt, and clay into a larger aggregate or clusters of soil. If the aggregate is a "desired" type of structure (i.e. granular, subangular or angular blocky), more large pores may be available to move effluent and air. If the structure is a less desirable type (i.e. platey - many times a sign of compaction), a smaller volume of large pores are present with a reduced permeability of the soil horizon.

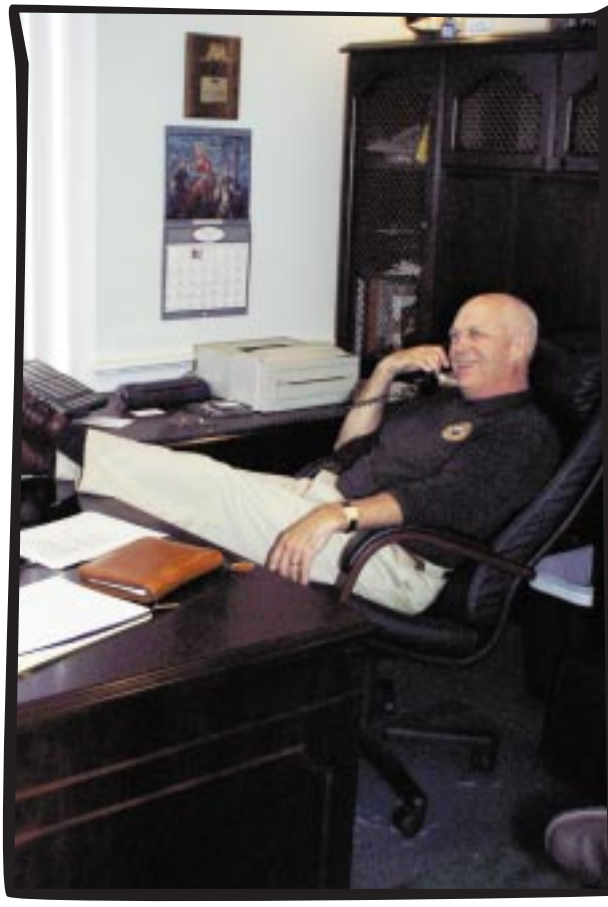
In Missouri, soil scientists are the professionals who perform the soil morphology evaluation. The combined influence of texture and structure as determined by the soil scientist is used to provide a loading rate ($gals/ft^2/day$) for each horizon. Loading rates for those horizons immediately under the trench or bed provide the limiting loading rate for that site (depending on the vertical separation or thickness of soil under the trench bed described by code needed for the absorption field).

Soil color provides a unique siting item which is not provided by a "perc test." Through the determination of color, redoximorphic features or coloration patterns produced by water tables (ground water or perched) or zones of water saturation can be delineated. This determination can give rise to whether the soil site is not suited because of the lack of aeration or if removal of the water by interceptor or under drains would make the site suitable for an onsite system.

Additionally, a soil scientist will describe the landscape position of the site (summit, shoulder backslope, footslope, toeslope) so that consideration of surface and subsoil lateral water movement can be provided. This assessment can fine-tune a designer's and developer's plan for surface water management relative to the onsite system and future development of the site.

Evaluation of the soil and site properties is a very important component of siting, sizing, and designing an OSWS. A great design and correct installation of an OSWS can be useless if the site conditions are not properly and correctly assessed up front. While a perc test supplies one aspect for the design of an OSWS, the soil morphology evaluation provides a more comprehensive array of soil and site conditions to properly site, size, and design the OSWS.

WHY SOME COMPANIES PROSPER



By Dick Levin

As a part of my academic life, I have done consulting work for or studied over 500 companies. During a thirty-year period, some of these companies prospered financially and others didn't. Since I knew just about all of the company CEOs personally, I had access to financial and marketing information, and I got quite interested in the difference between success and failure.

I asked lots of questions, and thought about what I heard. I learned a lot. The result of this experience is that I have put together a list of eight attributes, which explain a good portion of difference between success and failure. Here are a few comments on each of these eight differences.

1. Nearly all of the successful companies I observed had a simple strategy that they could articulate to their managers and employees. These CEOs could say, in a very few words, what the company was trying to do. Not what the company had done in the past, not what the company was working on today, not how much sales were today, and not what profits were last year or last quarter, but where the company was headed in the future. Companies need a strategy that everyone who makes decisions can understand and use to focus. If you can't explain to your employees what you are trying to accomplish and specifically where the company is heading, they can't help you get there. Letting everyone know where your company is heading focuses all of your people on the goal, instead of today's work. Both are important, but not understanding the company goals will hurt you more than simply having a bad day or week.

2. Almost without exception, the CEOs of the successful company were good salespeople. They could sell customers on the superiority of their products and services, they could sell employees on ideas, they could sell bankers on lending more money, and they could sell their investors on the potential of the company. Unless you are a persuasive salesperson of your vision, your chances of financial success are much lower. Salesmanship is infectious. If your employees aren't sold on the company, they can't sell others in turn. Business is not just about accounting or marketing or inventory control. It's about getting everybody to help you reach the goals you had in mind. It's about selling the relevance and worth of your vision to others, both inside and outside the company. Without sales ability, you limit your own potential to influence others.

3. In just about every successful company, the CEO was financially literate. I define financial literacy as having three sets of financial skills: (1) understanding income statements, balance sheets, and cash flow statements. (2) understanding the difference between profit and cash flow, specifically what conditions and events produce (a) profit but no cash (b) cash but no profit (c) profit and cash together, and (d) no profit and no cash, and (3) being able to understand and use a spreadsheet to test "what if" kinds of strategic thinking. It' s certainly possible to let your CPA or financial officer do all of this "number work", but it turns out to be dangerous if you don't understand exactly what is being done. In my experience, CEOs without financial literacy generally wind up getting their companies into trouble.

4. The companies that continued to be successful over time had high organizational discipline. If you worked there, you got about three strikes, and then you were called OUT. The less successful companies gave their managers a lot more strikes; some of them even described this lax approach to discipline as "good human relations". One of the most successful companies I have dealt with in the last thirty years has the highest first year flunk out rate for new managers I have ever seen. They give new hires a set of goals, a set of proven guidelines to help them reach these goals, resources sufficient to win and a lot of autonomy to prove they've got what it takes to succeed. Within a year, they are either on the fast track at this company or they have been terminated. Without strong

organizational discipline in a company, you can never be certain that what you intend to happen actually happens. Child psychologists have known for decades that children need and actually ask for discipline and rules for behavior, in both verbal and non-verbal ways. In much the same way, managers need to know that they will be held to high expectations and that their success depends on reaching goals that have been mutually agreed to.

5. All but a few of the successful companies I observed let truth rise to the top. They didn't shoot the messenger, who brought bad news. They sought and listened to both good and bad news from customers and employees, and then let this news rise to the managerial level in the company at which it could be handled best. They collected market information on customers and on competitors, and when this information suggested that the competitor's product or service is superior, this information went right to the top. The successful companies did periodic employee opinion surveys, and when the feedback was bad, they changed company policies and people, too. Conversely, the less successful companies tended to be insular, shot messengers who brought bad news and suppressed information that could have helped them succeed. All of the market research we have done suggests that your employees, your customers, and your competitors all learn the truth about what is going on fairly quickly. If that truth is not available to your managers, is it possible to respond effectively?

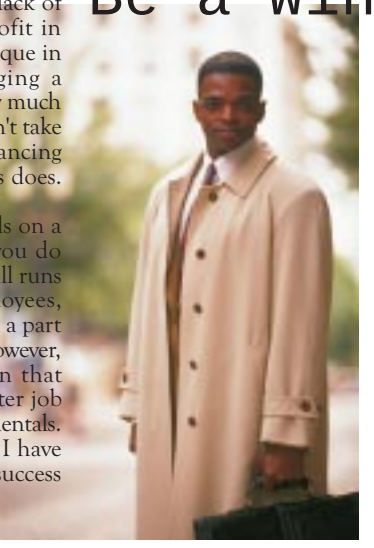
6. The successful companies I have observed believed strongly in performance-based compensation. Managers in the successful firms had a much higher proportion of their total earnings based on performance, and less of it guaranteed**.** And CEOs of the successful firms did not put ceilings on their managers' earnings either. One of the CEOs I work with told me one day that his top salesman earned $35,000 more a year than he did. That situation is diametrically opposed to companies where blind application of a simplistic job evaluation/salary administration plan puts every manager's top earnings at no more than 84% of what his boss earns. When you pay only for time on the job and not performance, when low performing managers earn the same as those who excel, when you put limits on what a person can earn regardless of performance, you deny your company the profits that accrue from outstanding, unlimited performance. The key here is not to watch what people earn but to focus on what they accomplish.

7. The most successful companies turn out to be those who have the most effective performance appraisal systems. Some academic colleagues of mine who do research in management, tell me that the most frequent complaint on employee surveys is "I don't get useful and timely feedback from by boss on how I am doing". It makes you wonder how employees know to change what they are doing when it is no longer focused on company goals. The most profitable companies give every employee a thorough, candid performance appraisal every six months. This is the best way I know to keep employees focused on doing what is important to you. I am not referring here to a pat on the back, a cursory thank you, or a general comment that "you need to shape up". What makes the difference is a thorough, completely understood review of how someone is measuring up against specific goals which come from the company's strategy, and what that person needs to do to win, both individually and for the company.

8. The successful companies have learned that no amount of cost and price-cutting can do as much good as offering the customer more features and maintaining prices at a high level. If your salespeople don't know how to sell effectively against a competitor with a lower price, chances are high that you will wind up like the airlines, victims of each other's lack of common sense. There is a lot more profit in making your product or service truly unique in design and delivery, and then charging a premium for it than there is in seeing how much you can cut margins. Cutting prices doesn't take nearly the intelligence or guts that enhancing the product or service and raising prices does.

Conclusion. Success in business depends on a lot of factors. Sometimes, even when you do everything that is important right, luck still runs against you. Markets, suppliers, employees, customers, competitors, and luck were all a part of each of the 500 companies I studied. However, the financially successful companies in that group succeeded because they did a better job of what athletic coaches refer to as fundamentals. Doing better at the eight fundamentals I have noted has made the difference between success and failure.

Be a Winner



R&D

RESEARCH AND DEVELOPMENT : ZABEL'S FUTURE

By Dr. Dwayne Edwards

A focused, responsive Research and Development (R&D) program can spell the difference between sustained growth and creative stagnation in firms. There is no shortage of companies that have managed to develop ideas into marketable products without a significant R&D program, and many of these companies have been spectacularly successful - for a time. There are also many examples of successful companies that chose either to decrease their R&D investment or not to invest in R&D at all, decisions that have had the effect of "killing the goose that lays the golden eggs." Building and maintaining a viable R&D program has been a defining characteristic of many of the world's most successful companies, representing a commitment to continued growth at the expense of short-term capital.

What is R&D? As the name implies, R&D is the integration of two related functions: research and development. Research can be defined as activities undertaken to gain new information with a view toward ultimately marketing this information. Basic research is a relatively risky activity, because its practical applications are normally not clearly understood at the outset. Basic research is often targeted toward understanding mechanisms, processes, and other relatively esoteric subjects. Applied research, on the other hand, is undertaken with better-defined marketing expectations with quicker application of results. Research, however, does not lead directly to marketable products. Development is required to translate research

results into consumer-ready products and processes.

As mentioned above, building and maintaining an R&D program constitutes an investment. It is not unusual for successful companies to devote 10% or more of their sales income to R&D, with 5% or so of that amount allocated to basic research. Almost every investment, however, comes with some degree of risk, and R&D is no exception. Considering that 10% of sales can represent a substantial investment, how can companies minimize the risk?

Risk can be minimized by first defining the specific tasks of the R&D program. While the tasks will vary depending on the nature of the company and the company's goals, there is often much common ground in a general sense. Research and development programs are often given the charge to (1) promote innovation in products/processes, (2) better understand and improve existing products/processes, (3) recognize and develop applications of published research from public institutions, (4) maintain awareness of technical developments, and (5) maintain awareness of competing products/processes. It is also critical that the R&D program not exist in a vacuum. Unlike public institutions, corporations undertake R&D for only one reason: to enhance the objectives of the company. Research and development must therefore support the larger corporate objectives, and its activities should be fully integrated into all long-term planning efforts.

Zabel recognizes the value of long-term investment in R&D and has implemented significant initiatives that will ultimately lead to improved products and services for its customer base. Zabel recently implemented an R&D plan as part of its larger strategic planning cycle that outlines the goals of the R&D program, identifies prioritized R&D needs, and specifies operating procedures with a timeline for results.

The coming months will see Zabel engaged in parallel activities to develop near-market-ready products, to improve the performance of existing products such as the A100 effluent filter, and to develop new products that will offer the consumer a spectrum of choices among onsite treatment technologies. Zabel will also invest in long-term research and demonstration sites that will both support product evaluations and serve as models for educating consumers, installers and regulators. While some activities will represent "in-house" work, Zabel will also form mutually-supportive partnerships with public institutions as part of the overall R&D plan. All activities will be characterized by full integration with engineering and marketing functions to maximize responsiveness, relevance and, ultimately, customer service.

History teaches us that onsite wastewater treatment is a long-term challenge, and that long-term challenges demand long-term approaches. Zabel is in business for the long term.

"Rebel Humor"

Attn: IRS

Enclosed are my 1998 tax return & payment. Please take note of the attached article from USA Today. In the article, you will see that the Pentagon is paying $171.50 for hammers and NASA has paid $600 for a toilet seat.

Please find enclosed four toilet seats (value $2400) and six hammers (value $1029). This brings my total payments to $3429. Apply the overpayment of $22 to the Presidential Election Fund. May I suggest you send them a 1.5" screw as HUD paid $22 for a 1.5" Phillips head screw.

It has been a pleasure to pay my tax bill this year.

Sincerely, A Satisfied Taxpayer

Author: Anonymous, found on the Internet

By Harry L. Nurse

Choosing Filters: Whats a person to do?

There is often more heat than light in the industry regarding effluent filters, how they work, and the proper way to determine which filter to use for a specific application. Some manufacturers claim that the only thing that counts is how many square inches of filtration is provided clouds the waters. They make this argument while completely ignoring the fact that all filters do not work in the same way. Then they make charts that compare all filters based only on filtration area. That is bad science.

It's the same as saying the only real measure of performance for a vehicle is speed and then go on to compare a dump truck with a sports car. Obviously the sport car wins, and obviously the two vehicles are designed to perform in different environments. Of course if you compare the two only on size, the dump truck wins and it's equally meaningless.

Bigger is not the only criterion. If some filter manufacturers had designed portable radios, a jogger would have to pull a wagon full of batteries behind them to power their headphones.

In filters, bigger only counts when comparing a filter of the same design type. That is, if you put screens or tubes in a vault that traps all of the 'screened' solids inside or on the screen that hangs unprotected down into the wastewater, then the larger the screen or tube surface the better. The larger filter surface will not necessarily remove a higher percentage of solids or reduce $CBOD_5$ more than the smaller filter of the same design. A bigger filter of the same design will go longer between service intervals. And a smaller filter of an efficient design will last longer than the larger filter that is poorly designed. ZABEL's™ claim to fame for its compact A1800 Series cartridge filter is its proprietary inside outside flow, which allows us to achieve much higher performance with a much smaller filter than many competitors.

Secondly, ZABEL's A100/300 Series disc dam filters provide settling plates, plus weirs to achieve high performance in higher strength waste at larger flow rates.

Slotted filters that promote sloughing are much more efficient than old-fashioned screens. ZABEL has never performed a test that resulted in a screened or tube type filter outperforming our disc dam filters. And ZABEL makes so many different kinds of filters because the same design does not work best for all applications.

So how do you go about choosing a filter? ZABEL Filters' designed flow is set at about 10 to 12% of total flow capacity. Our conservative approach to flow rates assures that you can expect a Zabel Filter will flow at or above its advertised flow rate even when it is about 90% matured. The head created at this flow is less than the three-inch drop across most tanks and therefore effluent will not back up into the home. See Dr. Edwards study on head and discharge relationships for ZABEL Filters.1[1] Two or more filters of the same kind may be installed to increase daily flow capacity or to increase the intervals between servicing for the recommended flow capacity.

The A1800 series residential filter is not recommended for commercial or industrial applications, but may be used in multi-family applications if sized by gallons per day based on strength of $CBOD_5$. The A1800-HIP is recommended in single family residential if a garbage disposal is present.

Exceeding recommended flow rates may effect the filter's efficiency and service frequency.

The following chart is a guide to help designers pick the right ZABEL filter for their application.

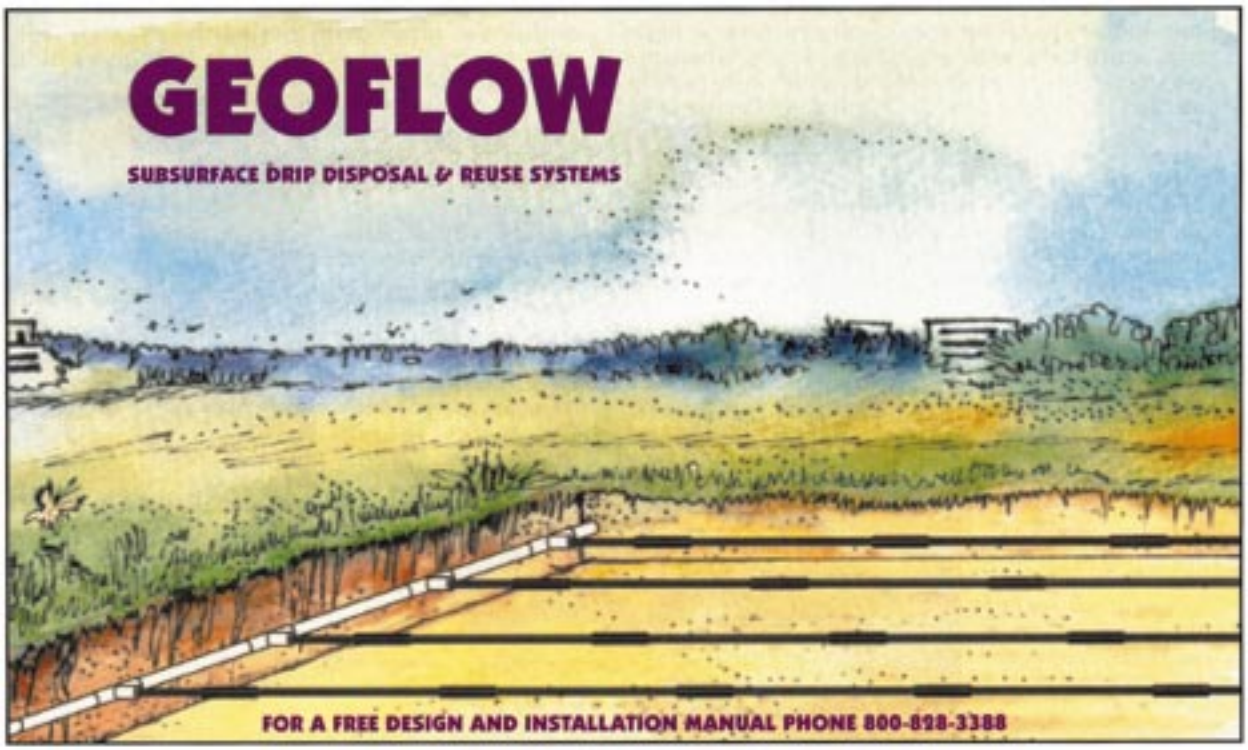
1[1] Head and Discharge Relationships Under Variable Simulated Obstruction for the ZABEL A1800, A1800-HIP, A100, A300, A100-HIP and A300-HIP Residential, Commercial, and Industrial Wastewater Filters, Dwayne R. Edwards, Ph.D., P.E., May 17, 1998

ZABEL makes so many different kinds of filters because the same design does not work best for all applications.

Flow Rate Application Chart for ZABEL Wastewater Filters

FILTER TYPE[1]		FILTER FLOW RATE				FILTER SIZE					
Case & Cartridge	Cartridge Only	Single Family Application in GPD	Other than single family applications in GPD < 300 $CBOD_5$	300 - 600 $CBOD_5$	600 - 1000 $CBOD_5$	Filtration Size	Diameter	Height	Settling Area	Total Filter Surface	Linear Ft of Weir
RESIDENTIAL											
A1800	A1801	800	500	250	167		4”	18”	na	158 in^2	61
A1800-HIP	A1801-HIP	800	500	250	167	1/16”	4”	22”	na	158 in^2	61
na	A1807	800	500	250	167		4”	18”	na	158 in^2	61
na	A1807-HIP	800	500	250	167		4”	22”	na	158 in^2	61
COMMERCIAL											
A100-8x12	A101-8x12	800	800	400	267		8”	11.5”	246 in^2	678 in^2	39
A100-8x18	A101-8x18	1200	1200	600	400		8”	18.5”	492 in^2	1,356 in^2	78
A100-8x26	A101-8x26	1800	1800	900	600		8”	25.5”	738 in^2	2,034in^2	117
A100-8x32	A101-8x32	2400	2400	1200	800	1/16”	8”	32.5”	984 in^2	2,712 in^2	156
A100-12x16	A101-12x16	3000	3000	1500	1000		12”	16”	920 in^2	2,249 in^2	198
A100-12x30	A101-12x30	4500	4500	2250	1500		12”	30”	1,556 in^2	3,805 in^2	335
INDUSTRIAL											
A300-8x12	A301-8x12	800	800	400	267		8”	11.5”	246 in^2	664 in^2	39
A300-8x18	A301-8x18	1200	1200	600	400		8”	18.5”	492 in^2	1,329 in^2	78
A300-8x26	A301-8x26	1800	1800	900	600		8”	25.5”	773 in^2	2,088 in^2	123
A300-8x32	A301-8x32	2400	2400	1200	800	1/32”	8”	32.5”	1,019 in^2	2,753 in^2	162
A300-12x20	A301-12x20	3000	3000	1500	1000		12”	20”	955 in^2	2,258 in^2	206
A300-12x30	A301-12x30	4500	4500	2250	1500		12”	30”	1,627 in^2	3,847 in^2	351

1. All filters come SmartFilter ready.
2. All A100/300-8, A300-12 and A100-12x30 models include the reducer in the height calculations.



CERTIFIED TO BE THE BEST

ZABEL™ CERTIFIED INSTALLER

As we move into the new millennium the face of onsite is rapidly changing. Gone are the days of straight pipes, illegal systems and 55-gallon drums. Onsite systems are becoming increasingly complex, technical and are requiring higher levels of operation and maintenance. With this increase in complexity comes the need to obtain training and expertise in a wide variety of onsite system technologies. This higher level of training and knowledge is necessary to create new avenues for expanding and building your business. Zabel™ will assist you through a certification program aimed at providing you with the necessary tools to reach your professional goals in the 21st century.

Becoming a Zabel Certified Installer is easy and will bring with it the benefit of having an onsite manufacturer in your corner helping and guiding you to a more profitable business. The certification process is accomplished by attending a training course designed to teach you the function and proper installation of all the Zabel products including: Filters, Risers, Basins, Flow Directors/Dividers, Filtered Pump Vaults, Pumps, and Alarms/Controls. The certification course will combine classroom and hands on instruction and, best of all, Zabel will come to you. The certification course will be offered at various locations throughout the country and at our home location in Kentucky.

Zabel Certified Installers will be eligible for extensive benefits designed to enhance and increase your business' visibility and profitability. As a Zabel Certified Installer you will receive discounts on Zabel products, marketing and advertising materials such as Zabel logos and decals, assistance with print advertising and business cards, product fact sheets, and special promotional offers. Zabel will also provide you with business forms and advice to help keep your business strong and running smoothly. In addition, as a Zabel Certified Installer you will automatically become a member of the Association for Installers and Manufacturers (AIM™). Membership in this national onsite association entitles you to many benefits including an AIM endorsed insurance package and the quarterly newsletter ***AIM Onsite***.

All of these benefits and educational opportunities are available to you by simply completing the registration card attached or by calling Zabel to sign up for the Zabel Certification Course of your choice. There will be a minimal fee charged for each participant, however, upon successful completion of the Zabel Certification Course the fee will be applied to your Zabel account as a credit toward your next purchase of Zabel products. Certification will be valid for a period of one year and is renewable by simply attending one of many organized training conferences held annually throughout the United States. These conferences include AIM Regional Conferences and State Onsite Conferences pre-approved by Zabel.

Don't delay, choose the Certification Course of your choice from the course schedule on the next page and sign up today. Zabel has dedicated itself to promoting and enhancing the onsite industry. As onsite system installers you are the heart of onsite and we want to help you succeed and prosper in the next century.

Brian Borders, R.S.
Sales Manager

Zabel™ Certification Program

ZABEL™ CERTIFIED INSTALLER

Increase the visibility and profitability of your business by becoming a Zabel Certified Installer.

What is the Zabel™ Certification Program?
The Zabel Certification Program provides educational opportunities, rewards, and assistance designed to help you build and strengthen your onsite system installation business.

How do I become a Zabel Certified Installer?
1. Choose the Certification Course of your choice from the schedule below.
2. Complete and mail the attached registration card or call Zabel to register immediately.
3. Attend and successfully complete the Certification Course.

Why should I become a Zabel Certified Installer?
As a Zabel Certified Installer you will receive the following benefits:

* Training on the proper installation and maintenance of all Zabel Products
* Discount$ on Zabel Products
* Marketing and advertising materials
* Business forms and advice
* Special promotional offers
* AIM™ Membership
* Technical advice and assistance

How much does it cost to become a Zabel Certified Installer?
The course costs $99.95 per participant. However, upon successful completion of the Certification Course the fee will be credited to your Zabel account and may be used on your next purchase of Zabel products.

What do I have to do to keep my Certification?
Attendance on an annual basis to one of many educational conferences held throughout the United States is all it takes to maintain your certification. These conferences include AIM Regional Conferences and pre-approved State Onsite Association Conferences.

If you would like to set up a Zabel Certification Program in your area please call 1-800-221-5742. To sign up complete the following registration form and send to the address listed below. An informational packet will be sent once payment has been received.

Name _____ Company _____

Address _____

Phone _____ Fax _____

Please circle the course of your choice:

June 20, 2000 Pensacola, Florida	June 21, 2000 Panama City, Florida	June 22, 2000 Tallahassee, Florida
Aug 15, 2000 Macon, Georgia	Aug 16, 2000 Columbus, Georgia	Aug 17, 2000 Albany, Georgia

Send this form to: Zabel Environmental Technology, c/o Zabel Certification Program, PO Box 1520, Crestwood KY 40014 or call 1-800-221-5742 to register.

Zabel Comes to You!

The development of new on-site technologies has resulted in many organizations scrambling to educate and train their members and employees. Zabel's Environmental Specialists spend the majority of their time working with groups of professionals in their educational efforts. At Zabel, we pledge our support to the education of the on-site professional. Whether your organization is that of installers, manufacturers, regulators or design engineers, Zabel wants to assist you in your training efforts.

Simply complete the blanks/boxes below, and return the form. Your Environmental Specialists will contact you to arrange a time, place and date. Zabel can participate in your agenda of on-site training, or we can conduct a complete training session over the various technologies new to the industry. We look forward to sharing in the success of your organization.

Organization Name _____

Address _____

City _____ State _____ Zip Code _____

Phone _____ Fax _____ Email _____

Complete Training Class _____ One of Participants at Training Class _____

Expected Number of Attendees _____

Topic(s): Check all areas of interest

☐ Effluent Filters ☐ Effluent/Sewage Pumps and Sizing ☐ Discharge Systems ☐ Alarms & Controls

☐ Access Systems ☐ Grease Traps ☐ Peat Systems ☐ Basin Systems & Aerocell ☐ Codes/Standards

☐ Aerobic Systems ☐ STEP Systems ☐ Other _____

Bill Rawlins
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MAIL TO:Zabel Environmental Technology/Training
P.O. Box 1520 Crestwood, KY 40014

Milton R. Allen OCIA president

OKLAHOMA INSTALLERS FORM NEW ASSOCIATION

With Milton R. Allen

The Oklahoma Certified Installers Association (OCIA) has gotten off to a fast start. On January 7th, 2000, they hosted an onsite wastewater conference in conjunction with AIM. It was held at the Doubletree Hotel in Tulsa with over 100 attending, including one third of all the certified installers.

While the association was formed just last year after a number of meetings between a special board of certified installers and AIM's President, Theo Terry, it actually had begun in an informal manner prior to that. A group of certified installers met on a quarterly basis to discuss rules and regulations.

At one of their meetings, they made a unanimous decision. They all wanted mandatory certification for any septic installer in the State of Oklahoma. They also saw the chance to address concerns or questions regarding rules and regulations. In order to accomplish this and have a voice to lobby their state legislature, they knew it would be necessary to form an organization.

One of the principle reasons for the creation of AIM was just such a situation as this. AIM founders felt that each state needed to form an onsite wastewater association and that their past experiences would be valuable in helping provide input and direction to these fledgling groups.

Milton R. Allen was elected President and Blake French, Secretary, of the OCIA. They intend for the organization to serve the needs of installers, customers and regulatory representatives and their first conference was a big step in that direction.

Certification classes were held for those not yet certified but wanting to be. Attendees also had the chance to meet representatives from various wastewater specialty companies and to attend meetings on various wastewater issues.

Said Theo Terry, "What impresses me most about the OCIA group is that it is an Onsite Wastewater Association that was started by a group of installers to meet their needs. I am excited to see this segment of the industry step forward and take a leadership role."

ZABEL wishes this new association the best.

Milton speaking to installers

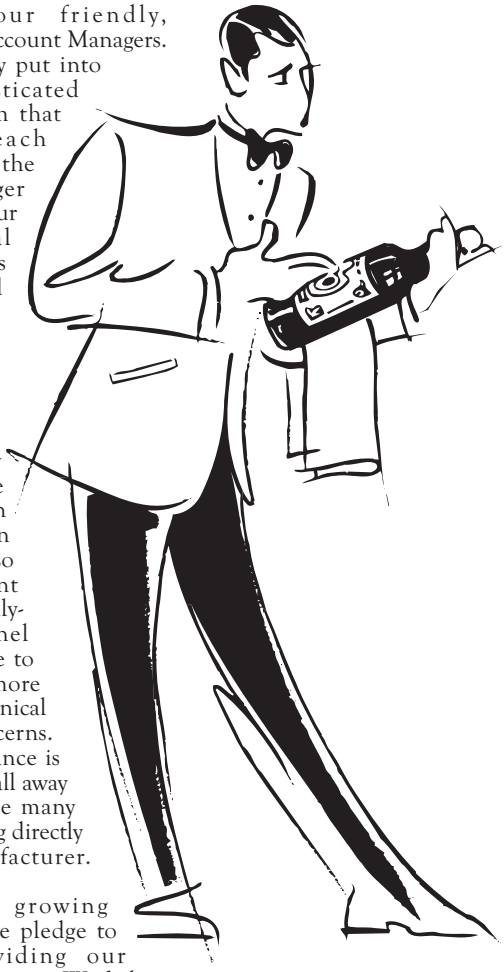
"You Can't Choose Your Family or Your Neighbors"

Have you ever heard the saying "You can choose everything in life except your family or your neighbors"? Everyday we make choices about small, insignificant details and larger life changing decisions. We are all blessed with "free will" to pick and choose what car we drive, what house we live in, who we marry, where we work, and the list goes on. So why can't you have a choice about where and from whom you buy all your onsite wastewater products?

Zabel recognizes your need for free will and provides you with choices. We have established ourselves as the premier direct sales company in the onsite wastewater industry. We don't discriminate against, or in favor of, a particular industry segment by limiting our sales. We encourage all industry participants to shop around and make their purchasing decisions based upon what is the most cost effective and efficient means possible.

Direct selling means that anybody and everybody who would like to buy directly from us is able to do so and receive a fair price. Those individuals who are in the business of re-selling our products to contractors are given discounts through two-tier pricing and volume discounts. This pricing structure affords them the opportunity to re-sell to their customer base and maintain a profitable return. Contractors benefit from this direct selling by having choices, they may choose to buy from us or they may choose to buy from their local re-seller. It is their choice, their *free will* and it works. They are able to shop around and receive the best possible price available without having to give up the control and security of having choices.

Buying direct from Zabel is easy, simply call 1-800-221-5742 and speak to one of our friendly, knowledgeable Account Managers. We have recently put into place a sophisticated telephone system that will route each incoming call to the Account Manager responsible for your area. You deal directly with this person each and every time you call. Your Account Manager will answer questions, process your order, and provide you with any needed literature or information while you are on the phone. We also have an excellent staff of technically-trained personnel who are available to assist you with more complex and technical problems or concerns. All of this assistance is simply a phone call away and is one of the many benefits of dealing directly with the manufacturer.



As a rapidly growing manufacturer, we pledge to continue providing our customers with choices. We feel the ability to choose is so important that we went against industry standards to develop our direct sales approach. This approach has allowed us to better meet the needs of our customers and provides services that are tailored to their particular interests and concerns. We can't help you choose your family or your neighbors but we can give you the free will to choose your own path and direction when it comes to your business.

By Brian Borders, R.S.

Zabel helps Tri-County grow with new state standards

January 1, 1996 ushered in a host of changes for Missouri's onsite septic systems. The Missouri Department of Health implemented minimum wastewater standards that made system design and installation very challenging.

Typically, step systems were few and far between. However, today, the majority of systems being installed are requiring the pumping of effluent to different locations. In order to stay competitive and keep abreast of the latest technology, our company began to look for products we could offer to our customers. Since change doesn't come easily for those who have been doing things the same way for the last 15 to 20 years, we knew the products we would sell had to offer ease of installation, cost effectiveness, and simplified servicing. After much research our path led to Zabel™.

What we found with Zabel was an outstanding product warranty; simplified ordering; prompt delivery and tremendous customer support. They have allowed us to supply products for virtually any application, including the "design nightmares".

One year ago our business dealt mainly with Class 1 aeration treatment systems. But after our customers were exposed to Zabel products we have seen a large increase in business due to the wider variety of quality components that can fill just about any need that arises. Our goal is to not only have a successful business, but also to help repair environmental damage... Zabel Environmental Technologies is helping us to achieve that goal!

Zabel would like to thank Tri-County Wastewater, our customers in Rocky Mount, Missouri, for their terrific feedback. If you're in their area drop by and do some business. Tell 'em, "Zabel sent me!"

Zabel's Travels

In late October Zabel attended the AIM/TOWA Conference in College Station, Texas, at the Brazo Center.

At this conference the installers could also get the required hours they needed for the year. At mid day some installers chose to go to the training center at Texas A&M. This site is one of the largest in the country.

Warren Samuelson

Charles Digges (TOWA)

There were two instructors at the training center. Bruce Lesikar (maroon hat and tie) from Texas A&M, and David Jumper (Straw hat and beard) from Baylor University.

Standing room only

On our way to Texas, Bob Paulus (Green shirt) and John Christensen (plaid shirt) were talking trash about who is the better basketball player. When we made one of our many wrong turns we passed this little church with a goal, and there just happened to be a ball lying there. We took this as a sign and put them out to prove themselves. The rules were first one to five wins. It was a good flip flopping game, but after the dust cleared John came out on top. The score was 5 to 4.

Today's onsite regulations, it's a whole new ballgame

By Theo Terry, R.S.

When I was a kid growing up in rural Kentucky, I loved to play ball with some of the other kids in my neighborhood. Of course, my neighborhood consisted of every household within, say, a three-mile radius of our farm. But even this large neighborhood couldn't net us enough kids to field a baseball team. So, in order to play a game of baseball with less than nine players on each team, we had to develop our own set of rules. Like having ghost runners on base and declaring right field "the dead zone".

Now that I'm a big boy, and coaching Peanut League Baseball, times sure have changed. It just wouldn't be practical for the coaches to decide before each game what the rules are gonna be, and I have a sneaking suspicion we'd never agree as well as we did back when we were kids. Today, I'm one of several other adults serving on our Youth Baseball Board of Directors, and we meet year round in order to be prepared for the next season. I'm currently serving my second term on this board, and I am amazed at how much effort goes into running an organized youth sports league. There are so many issues to deal with each year, no one person could ever have the knowledge or energy to get it all done.

This same story holds true for the onsite wastewater industry. Ten to fifteen years ago, it was quite possible for a small group of regulators (or quite possibly even an individual) to have enough knowledge to sit down and write a comprehensive regulation, addressing the onsite needs in a particular state. And why not? Very little changed from year to year. With only a few new technologies introduced every few years, it was easier for a handful of individuals to learn about these new products and technologies, then update their regulations every ten years or so.

Not so anymore! Go visit any major onsite conference and walk through the exhibit hall. You'll see countless new technologies in the booths. Attend the educational sessions and you'll hear presentation after presentation about innovations in the treatment of wastewater. Now, don't stop there. Wait just a few months and attend a different conference. I'm willing to bet you'll find modifications to the new technologies you saw a few months before, and there'll be even more new technologies and products being introduced into the marketplace.

So, how does this rapidly changing market affect the onsite wastewater industry? In many ways. It is no longer possible to wait ten or even five years between regulatory revisions. Also, one segment of the onsite industry, specifically the regulatory community, can no longer be expected to have all the knowledge required to write a comprehensive state onsite regulation. This is precisely the reason why forward-thinking states such as Missouri are forming a "stakeholder" committee, composed of representatives from all segments of the onsite industry to write their new onsite statute. Other states, such as Florida and Georgia, have put similar committees in place, which meet year round to address the continuing need to update and revise onsite regulations.

Successful installers and manufacturers update their knowledge base and expand their horizons. It used to be acceptable to know the regulations in one county or state. Today, it's important to stay informed about regulatory trends in other regions outside your own geographic boundaries.

To aid in this process, Zabel will be compiling a monthly or bi-monthly newsletter (depending upon how much information you send us) dealing with regulatory issues. Hopefully, this sharing of information among onsite professionals will keep us from re-inventing the wheel over and over again. Look for our first issue in April. If you would like to be added to this mailing list or share information about regulatory changes in your state or county, give us a call.

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LASERS AND THE ONSITE INDUSTRY

By Brian Phipps

Lasers are used to provide clear communication. Lasers are used to do precision cutting. Lasers are used to measure exacting distances. Lasers are used to do delicate surgery. But lasers, a common tool for onsite waste contractors? More and more the answer is yes.

Regardless of the type of onsite system a contractor installs, there are countless times when accurate elevations are needed. From the initial topo, to the project design, to the excavation process, to the bedding of pipes or chambers, to the final inspection, elevation control is crucial.

Traditionally, a contractor has used an optical level and grade rod to determine his elevation. This method is sure and time tested, having been in use for about 2000 years! However, this technique requires two people to perform the task, one person to hold the grade rod and a second man to sight through the instrument. As most contractors can attest to, finding that second man can sometimes be the most difficult part of a job.

The introduction of laser leveling to the construction jobsite has not only saved time and manpower but increased accuracy by replacing two men and a level with one man and a laser.

A laser system consists of two main components: the laser transmitter, which is mounted on a tripod and a laser receiver, which is mounted to a grade rod.

The laser levels works by emitting a level plane of laser light across the entire jobsite. The laser light can either be visible or invisible to the human eye depending upon the type of laser beam. A rod eye or laser receiver attaches to the grade rod. The rod eye then "sees" the laser light and allows the contractor to check elevations right on the rod. The rod eye sends three distinct audio and visual signals to indicate either "high", "low" or "on-grade". The concept is simple and accurate.

Most laser transmitters are equipped with an internal leveling compensator. This device permits the laser to operate only when it is sending out a perfectly level plane of light. If the laser is moved or if the tripod slips and the laser cannot compensate for the change, it will automatically shut down. This important safety feature prevents any bad rod readings from being taken.

Once the laser transmitter is set up, one man can do all the jobsite elevation control work. The man who holds the rod can take depth readings and finish grade readings as quickly as he can move from point to point.

For even more advanced elevation control work, the contractor can attach a specialized laser eye to his backhoe dipper stick or bulldozer blade. This enables an operator to dig to accurate grade as he goes, without ever getting out of his machine.

Such advances in technology as laser levels allow smaller contractors to be more competitive and profitable by letting them do more and better work with fewer man-hours. In today's increasingly tight labor market, such innovations are welcome.

HOW TO AVOID CALLBACKS ON PUMP TANK MECHANICALS

By Virg Einck, President / CEO, Septronics, Inc.

What's the weakest link in the otherwise superior performance of a pressurized residential septic system? It's how the junction is made between the main power source on site and the pump tank mechanicals. A faulty electrical junction installation can short out and shut down the system, jeopardizing the home.

The scenario begins even before installation of the system when the contractor or builder negotiates the price of installation with his sub, but the specs on equipment are not discussed.

The problem is that makeshift solutions for the junction box are often employed. It starts with the plug ends from the pump and the pump switch being simply cut off and discarded. These are then hard wired to the main power source. The float switch is spliced and run back to the residence to some kind of signaling device. To make it possible to perform service, slack is left in the wires near the riser.

The wires are often bundled and put inside the pump tank, placed in a "homemade" junction box connected to the riser, or stuffed into a section of PVC piping and pounded into the ground. In some instances, the bundled wires are simply put into a plastic bag and buried. These tactics, unfortunately, are not a long-term solution, but are all too commonly employed in the field. When the inevitable occurs and there's a short, it usually doesn't occur when the weather is pleasant. Sorting out hot wires to determine which wires go to which device is not fun work, particularly if it's January and the wind chill is below zero.

Septronics has a full line of inexpensive solutions to make a pressurized septic system perform over the long term, including the Mini-

Jiffy junction box, the Pedestal Mini-Jiffy and the Jiffy Junction Pedestal. All provide a code-approved, water- and gas-tight method for connecting the main power source and pump tank mechanicals. They are less costly for the contractor and the homeowner. The units are simple to install and service.

The following are some requirements for a code approved electrical junction: (these requirements may not apply in all states or counties)
* The junction box enclosure should be a NEMA 4X rated non-metallic enclosure that is watertight and will not rust.
* The junction box should have gas tight and moisture proof cord seals.
* There should be a single receptacle inside the enclosure to facilitate plugging in the piggyback plug, and the pump. These plugs were installed by the manufacturer to make it easier to install pumps and switches.)
* The circuit board should have a shock resistant terminal strip, along with a ground lug, to sufficiently ground the circuitry.
* The junction box should be provided with a PVC conduit for the incoming power line, to protect the wires from being cut by lawn mowers or grass whips.
* The pedestal units should be constructed of polyethylene with an UV inhibitor to prevent deterioration from sunlight.
* Any hardware, such as bolts, screws, brackets, should be of stainless steel, to prevent rusting and corrosion.
* The junction box should be designed to permanently mount outside of the pump chamber, where it will be easier and safer to service.
* All junction boxes should provide a provision for an audible and visual alarm, either as an integral part of the junction box for outdoor applications or as a separate alarm unit for installation inside the homeowner's residence.
* Alarm floats and pump switches should be non-mercury types, to eliminate any future mercury contamination. Also the float switches should be provided with a heavy-duty poly pipe strap, not nylon, as it weakens in septic applications.
* Junction boxes should be available for either 120- or 230-volt application.
* All of the above requirements are found in the Septronics junction box product line.

NEW FACES

The Zabel Team has added two more new faces and has found a new place for an old, familiar face. Read on.

Wes Combs R.S.
Wes has come on board as Zabel's Advanced Treatment Systems Manager. He is a UK graduate (Go Cats!) who started with the Kentucky Department of Public Health in 1985 as a soil scientist in the Onsite Wastewater Program, moving to supervisor in 1995.

Wes is married to Pam and has three children- Caitlin, 12, Kendall, 6, and 4-month-old Ian. His hobbies include gardening, landscaping, soccer, and anything outdoors.

Tom Petty, P.G., R.E.H.S.

Tom joins Zabel as an Environmental Specialist. He is a Nashville native who spent 5 years in the army before attending UT-Knoxville (go vols). He graduated in 1976 with a degree in geology. He has worked for the State of Tennessee as a county Environmentalist and also worked at the regional level, helping train new environmentalists statewide.

Tom has been married to Nola, a Wisconsin native, for 28 years and has two children. Richard is 21 and a student at Middle Tennessee State and Lauren, 17, who is a junior at Hillsboro High School where she plays basketball. Tom is a golfer and season ticket holder for the Tennessee football Vols and the Tennessee Titans.

Bill Gregory

Bill has been a successful Marketing Associate for Zabel for many years. We are pleased to announce that (after much begging and pleading on our part) he has agreed to become our Marketing Associate Manager. While maintaing his own company, W.G. Sales, he is working with Zabel's Marketing Associates around the country to provide advice and support for them and their customers.

With the clearing of land for agriculture and timber harvest, and movement of the population west, wildlife in this country has been under siege. White-tailed deer, waterfowl, pronghorn antelope, elk and other creatures hovered at historical lows.

At the turn of the century, there were only 30,000 wild turkeys left in the United States and Canada. They had disappeared from 18 of the 39 states that had been their historical range. Now, thanks to the efforts of state, federal and provincial wildlife agencies and the NWTF (National Wild Turkey Federation) and its volunteers, there are more than five million.

The NWTF is a sportsmen's organization that was created in 1973. By then, turkey repopulation had begun, but the formation of this group and especially their Target 2000 initiative put this effort on the fast track.

Target 2000 was meant to restore wild turkeys to all suitable habitat in the U.S. by the year 2000. It has been paid for by the Wild Turkey Super Fund, a pool of money raised at NWTF membership banquets, donated by corporate sponsors and given by private donors. The results have been phenomenal, but there is still work to be done in the West and in Canada. However, the outlook for North American wildlife is brighter than anyone would have imagined 100 years ago. And, if the NWTF and the story of the wild turkey can serve as any type of barometer, anything is possible.

Zabel urges everyone to support any of our wildlife conservation programs. You can get info about the NWTF from their website www.NWTF.com

Zabel Outdoors

Rebekah Witherington, our travel coordinator, has a favorite pastime which is common to a lot of Kentuckians. It's Thoroughbred racing. After showing Tennessee Walking horses successfully when she was a child, the family's interest turned to Thoroughbreds when Rebekah's sister married into a family that had been in the business for many years.

Rebekah and her daughter live on a farm with Rebekah's mother and have raised a filly named Bourbon Belle. This horse has recently been chosen as the best sprinting female Thoroughbred in the world, according to *Blood Horse* magazine.

Rebekah is also part owner in a filly named Prospect of Snow, who was purchased at the Keeneland January Sales and has recently won her first race.

In late October while at the AIM/TOWA conference in College Station, Texas, Shea Kent of MKM Sales invited us to go on a guided fishing trip on the Sabine River in South Texas. We had two boats and, as always, a bet was made on which boat would catch the most fish.

Brian Borders caught the only flounder.

Thanks to Captain John Team Two found the right pattern for the Speckled Trout.

Team One (Harry, Theo, Bill and Shea) with age and experience couldn't compete withTeam Two's (Brian, Bob, John and Tom) youthfulness and enthusiasm. As usual, they had a long list of excuses.

Captain John

As luck would have it, there was a small neighborhood establishment at water's edge where we could sit back and enjoy our victory. As the beer got colder, the fish got bigger. Thanks Shea!

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2000

April
5th-7th, MO. Milk, Food &Env. Health Ass. Conf., Janet Murray 660-263-6643 ext. 3043
9th -12th, CIPHI 2000 National Educational Conf., Greta Kos 604-736-2866
13th-15th, NCSTA Convention, no name 252-633-1300
13th,Zabel Certification Course, Brian Borders 502-992-8214
14th, AIM/TOWA Regional Conference, Chattanooga TN, Robin Terry 877-323-5246
27th , IEHA Spring Conference, Robert Lewis 317-392-6470

May
2nd - 3rd, OEHA Educ. Conf., Christine Stelzer 419-433-8775
11th , Zabel Certification Course, Brian Borders 502-992-8214
17th - 19th, AR Public Health Annual Mtg., Nancy Ipock 501-661-2932
24th - 26th, SC Public Health Assoc., Vicki Zelenko 803-898-3427

June
14th - 18th, 2000 NEHA AEC & Exhibit, Kim Brandow 303-756-9090 ext. 0

July
7th - 8th, Wisconsin Precast Con. Ass. Convention, no contact 608-256-7701
20th - 22th, FOWA 2000 Conv™ Show, Kevin Sherman 850-402-9230

August
14th , Delaware Onsite WW Ass. Conf., Jack Hayes 302-739-4761

September
8th, AIM Regional Training, Billings, MT, Robin Terry 877-323-5246
11th - 14th, WFSC, Cheyenne WY, Roy Kroeger 307-633-4090
15th, AIM/MOWA Regional Training, Vicksburg, MS, Robin Terry 877-323-5246
21st-23rd, GOWA Conference, Jekyll Island, GA, Robin Terry 877-323-5246

October
14th - 18th, WEFTEC 2000, Nannette Tucker 703-684-2434

November
29th - Dec. 1st, DOWRA 4th Annual Conference, Jack Hayes 302-739-4761

At the time of printing those shows highlighted in red will have someone from Zabel exhibiting at the conference.

For the most up to date listing, or to submit a Conference or Trade Show 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™ 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, P.O. Box 1520, Crestwood KY 40014

Faces Behind the Phones

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President

Jan Nurse
Zabel Zone Editor

Theo Terry, R.S.
VP Government Relations

Becky Page
VP Business Services

Amy Sparks
Account Receivable

Lesley Jenkins
Credit & Collections

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Ronda Schnellenberger
Account Manager

Bill Rawlins
Environmental Specialist

Wes Combs, R.S.
Advanced Treatment Systems Manager

Brian Borders, R.S.
Sales Manager

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Account Manager

Bob Paulus, R.E.H.S.
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Ann Hines
Account Manager

Joe Mattingly
Account Manager

Larry Nurse
Account Manager

Linda Ellsworth
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Gary Ellsworth
Roto-Mold Production Manager

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

Rebekah Witherington
Travel & Resource Manager

Tom Jenkins, A.A.S.
Media Services Manager

TechTalk

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

Check Valve

1. Do all discharge systems require the use of a check valve?
All discharge systems do not require the use of a check valve. If the intent is to keep the discharge line completely full, then a check valve will be required. Otherwise, the effluent volume in the discharge line will drain back into the pump tank. If this is not a problem, then a check valve is not necessary.

2. Can Flow Dividers be used in series?
The patented design of the Flow Divider allows it to equally divide a stream of effluent. Using the units in series will allow you to further divide the effluent stream into smaller quantities. For example, three Flow Dividers could be used to divide an effluent stream into four equal parts. The first unit would divide the stream into two streams. These two streams could then be divided into four streams using two additional Flow Dividers.

A1801

A1801-HIP

3. What is the difference between an A1801 residential filter and A1801-HIP residential filter?
The A801-HIP is an improved version of the A1801. Both filter will filter solids 1/16" or greater. Both filters utilize Zabel's patented inside-out flow design which promotes sloughing and decreases the need for servicing.

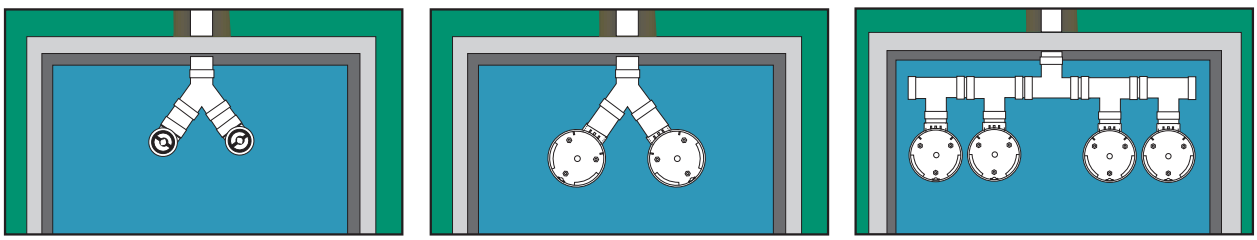
The A1801-HIP has some added features that improve the overall design of the filter. It offers two stages of filtration. The first level is one-half inch, which keeps most of the gross solids from the interior of the filter. The second level is one-sixteenth inch, which is the standard for most residential septic tank filters. The solid bottom of the HIP acts as a gas baffle, keeping small particles from traveling, into the interior of the filter, on a naturally occurring gas bubbles. Both of these features increase the timeframe between servicing.

In addition, with the A1801-HIP, the SmartFilter switch can be used. This switch tells the homeowner, more conclusively, when the filter needs servicing. The SmartFilter may not be used with the standard A1801 because it does not offer the initial filtration of gross floatable solids. While this filter will filter solids greater than 1/16", it will not prevent them from interfering with the proper function of the vertical reed switch, which may lead to false alarms.

4. What size hole saws are needed to install grommets in basin assemblies?
There are several different size grommets and they require different hole saws for installation. If a 1 1/4", 1 1/2", or 2" grommet is used, a 3" hole saw will be needed to cut the hole. A 3" grommet requires a 4" hole saw and a 4" grommet requires a 5" hole saw.

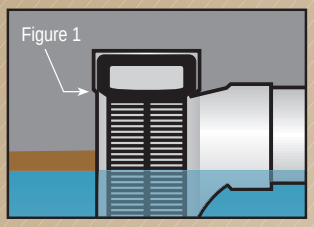
5. Can I install more than one Zabel filter in my tank?
The A1800 series of residential filters is designed to handle flow rates of 800 gpd or less. However, if the daily flow rate exceeds 800 gpd, multiple Zabel filters can be installed in a manifold inside the tank. Likewise, the A100's and A300's can be installed in manifolds to in order to accommodate for increased daily waste flows.

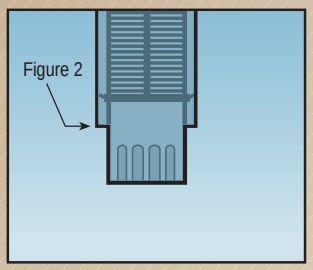
Multiple Filter Installations



Difficult Installations Made Easy

Now, with our full line of accessories and proven techniques developed in the field with contractors, pumpers, installers and the Zabel™ Team, there are easy solutions to difficult installations. Use one of the following techniques to install any model of Zabel Filter.





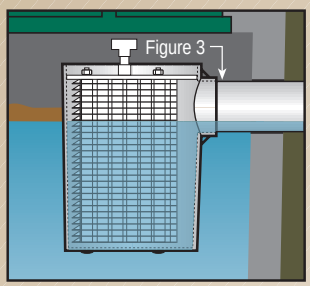
Retrofitting filters to a existing system

1. Uncover the septic tank and remove the outlet access cover.

2. Pump the tank completely or to at least below the level of the outlet tee.

3. To install the A1801, slide the filter into the outlet tee until the top edge of the filter is flush with the inside lip of the tee- sch 40 or 35 PVC pipe must be used **(figure1)**.

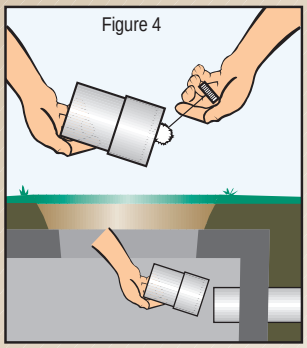
4. When installing the A1801, inspect the tee to see that the pipe extends below the bottom of the filter. With the A1801HIP model, the bottom deflector must extend below the bottom of the pipe **(figure2)**.



5. When installing either the A100 or A300, the outlet tee should be removed while leaving at least 3 to 4 inches of the pipe extending into the tank on which to glue the filter **(figure3)**. Use a 4" sch 40 or 4"sch 35 reducer if the pipe extending into the tank is sch 35 **(figure4)**.

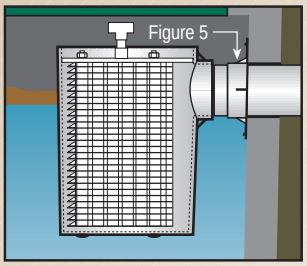
6. If the method described above isn't possible, clean the area around the outlet and attach a standard closet flange onto the tank wall over the outlet. Install the filter with a section of sch 40 4" pipe **(figure5)**. The Supplementary Support Method should be used **(figure6)**.

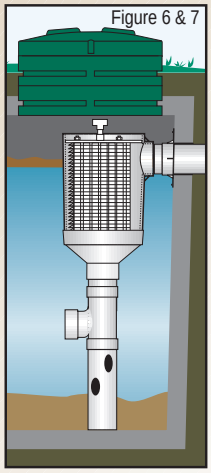
7. Use the Supplementary Support Method when extending the filter inward18" or more from the end of the tank or in high strength waste applications. These high strength waste applications such as restaurants or dog kennels may require additional support to handle the extra weight.



8. The Supplementary Support Method involves gluing a 4" extension adapter to the bottom of the filter case. Next, for support, glue a section of 4" Sch 40 PVC pipe with an inverted Sanitary Tee and then another section of pipe in the bottom of the adapter. Place the filter, adapter, and the support pipe on the outlet pipe. Adjust the support pipe so it rests level on the bottom of the tank. Remove and cut at least four 2" holes from top to bottom in the support pipe **(figure7)**.

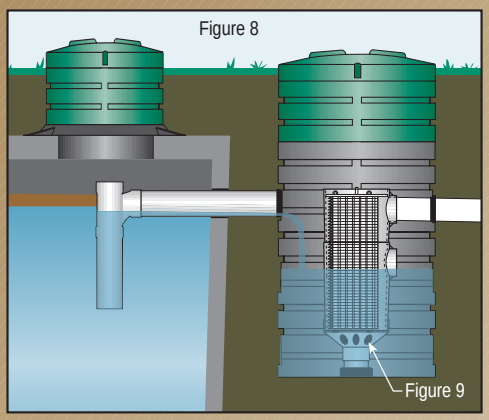
9. Installation of all Zabel Filters outside of the septic tank is accomplished by using a ZEUS™ Basin Assembly, model RB-BAS-20x38, RB-BAS 22x38, or RB-BAS-26x38 **(figure 8)**. This is added between the septic tank and the disposal field by cutting the drain line. When installing an A100HIP or A300HIP, install a Zabel 4" extension adapter and a section of 4" Sch 40 pipe that extends to the bottom of the basin. Drill several 1" holes around the bottom of the extension adapter to allow solids to slough back into the basin **(figure 9)**.

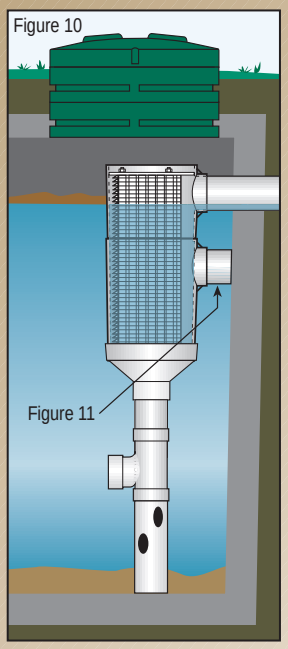


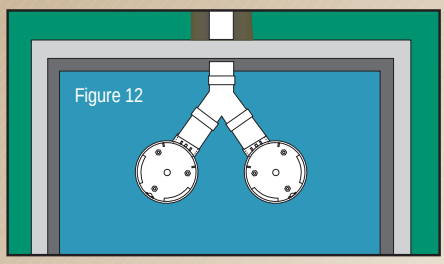


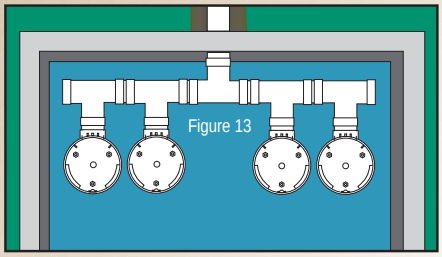
10. When installing an A100HIP or A300HIP unit in a tank, use the Supplementary Support Method **(figure 10)** along with a section of 4" Sch 40 PVC pipe extending from the lower filter case outlet blank to the wall. This will provide additional support for the larger model filters **(figure 11)**.

11. Multiple filter installation may be required for systems having high daily flows. This is accomplished by using a "Y" fitting for two filters **(figure 12)** or by constructing a manifold using a combination of fittings for multiple filters **(figure 13)**. A larger access may be required for servicing this configuration.









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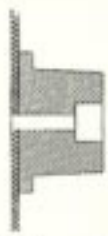
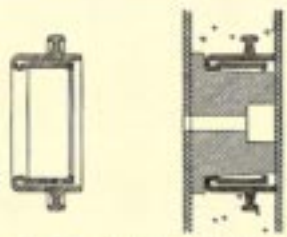
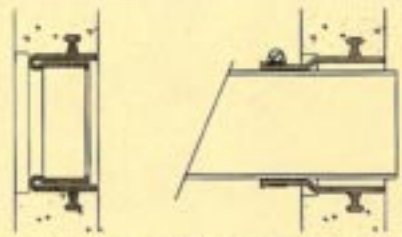


▶ Attach mandrel to outside form wall.



▶ Invert gasket into casting position and place gasket on mandrel. Pour concrete.



▶ Strip form, leaving gasket in place. Invert gasket to outside of tank. Insert pipe and tighten take-up clamp.

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