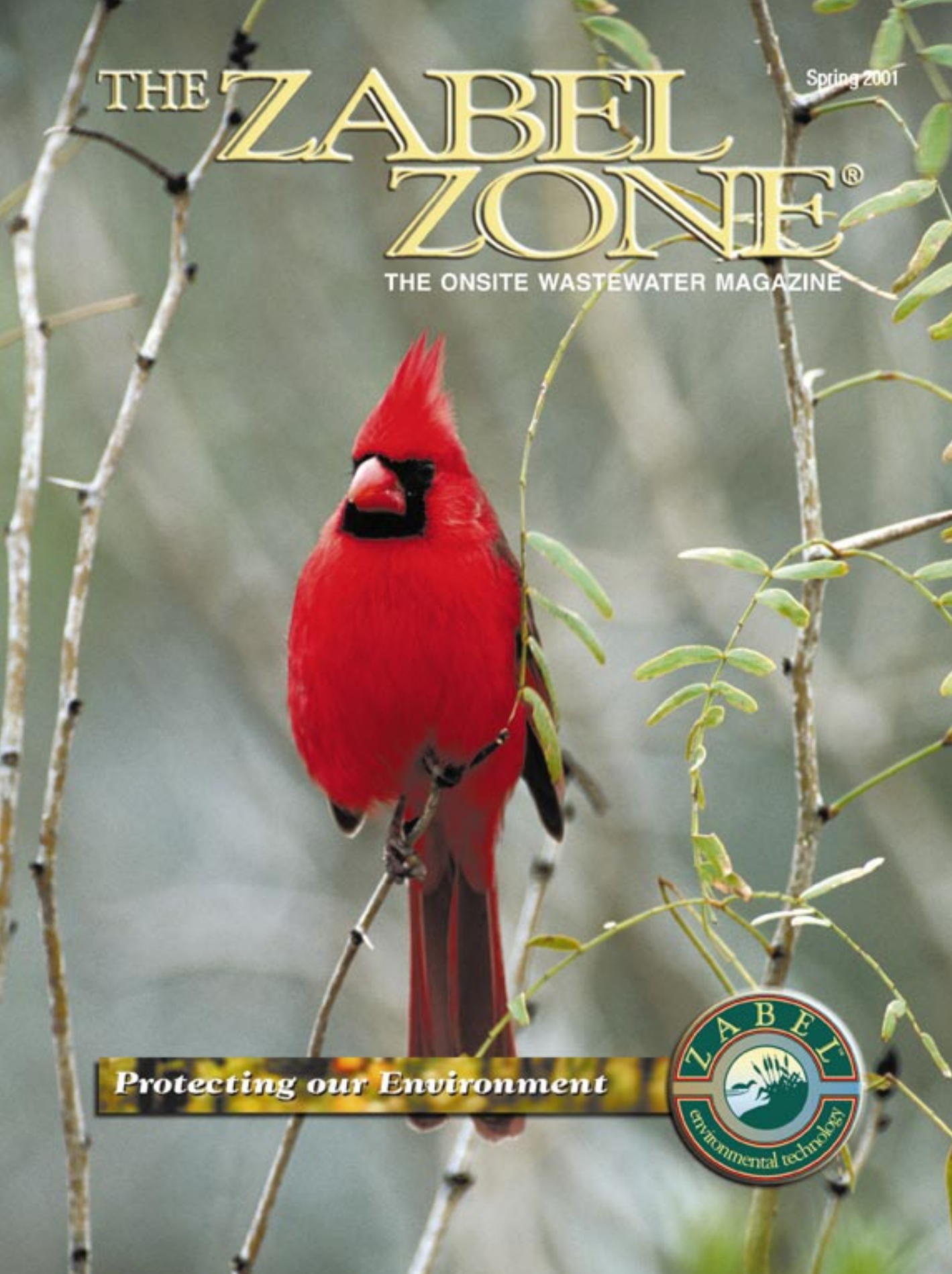
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Advertiser Index:

Cardinal or redbird, common name for a North American songbird of the family Fringillidae (New World finch family). In the eastern cardinal, Richmondena cardinalis, the male is bright scarlet with black throat and face; the female is brown with patches of red. Both sexes have crests and red bills. Cup-shaped nests are built by male and female, and the male helps rear the young. Cardinals are essentially monogamous, and are not very gregarious.

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zabel@zabel.com

Editorial Policies

The Zabel Zone™ is published in three 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

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EditorsCorner

Jan M. Nurse, DMD

This issue, I wanted to take the opportunity to thank all of the authors who contribute articles in each issue of the Zabel Zone, especially those not working for Zabel. I have no way to threaten them, so they are taking their time without expecting anything in return.

I especially hope you readers will check out the article from Bob Kendall (**page 30**). I can remember my first visit to the expo. I was in awe. In my past life, I attended more than a few conventions and was amazed at how smoothly things ran in Nashville, and how easy they made it appear.

I know better though. It's a monumental undertaking. So, when I figured out the timing of this issue in relation to that show I thought you might like to read a little about its evolution.

When I received the article, I was impressed by the history and growth, but touched by the value placed on family. "What does your dad do?" "He's in the healthcare industry." How true. How nice that they help children appreciate their parents' hard work. As the mother of teens past, present and future, I know they can be a tough crowd.

For those of you fortunate enough to attend the 2001 expo, please stop by the Zabel booth to talk to our folks and check out our product line. (It's impressive, too.) Tell 'em, "Jan sent me."

Anyway, I digress. Thanks again, authors. For those of you whom I've not called yet, watch out, you could be next.

Zabel's New Addition
Congratulations

You can call Bill Rawlins "Grandpa". Jan and Bill's daughter Jodie and husband Brian are the proud parents of Jacob William Reeves. Jake was born 12-04-00 and weighed in at 7lbs.-3oz. and 21 inches. Mom and Baby are doing well.

"Rebel Humor"

NEW STATE SLOGANS FOR FLORIDA

Florida: Where your vote counts and counts and counts and counts . . . .

Florida: This is why we need Bush's education plan.

Don't blame me, I voted for Gore twice.

If you can read this, you must be a Republican.

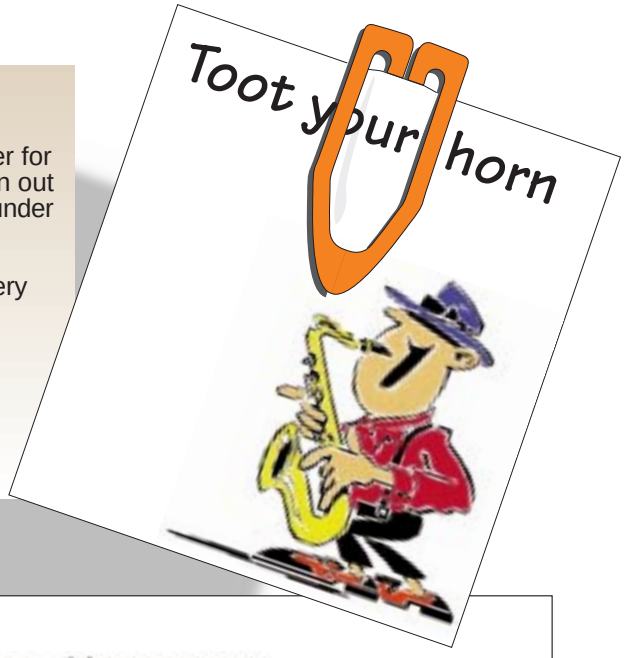
If you don't like the way we count, take I-95 and visit the other 56 states.

If you think we can't vote, wait till you see us drive.

AND FINALLY:

Florida: We don't just cheat at football.

Found on the internet, author unknown



Joe Mattingly,

I just wanted to thank you for the donation of the A100 filter for our customer appreciation dinner. We had the biggest turn out ever this year. Just under 200 people. Which compared to under 50 just a few years ago is very good.

The filter went to a local septic tank installer and he was very grateful to have it.
Our dinner was a great success and everyone enjoyed it.
Again, Thank you for your donation.

Branvulle G. House
Precast of Maine

Dear Zabel,

I greatly enjoyed meeting each of you last week. The class time was very imformative. I really feel as though you offered information and knowledge that I could bring back to my fellow employees. I look forward to seeing each of you again in Jekyll. Thankyou again.

Todd Harper

PURDUE UNIVERSITY

AGRICULTURAL AND BIOLOGICAL ENGINEERING DEPARTMENT

November 6, 2000

Harry L. Nurse
President and CEO, Zabel Environmental Technologies
P.O. Box 1520, 6244 Old LaGrange Rd
Crestwood, KY 40014

Dear Harry:

We really appreciated your presentation at the "Technology for Today's Septic Systems – A Public Forum" held recently in Kokomo, Indiana. This conference was attended by a total of 277 people (approximately 150 from industry and 75 from county health offices) including speakers and 28 commercial exhibitors.

The evaluations returned rated this conference as excellent. Every evaluation listed the conference as either "great" or "good" and all indicated they would attend similar conferences in the future. This success is due in large part to the excellent job that you did as speaker and participant. When asked to identify the presentations that were most valuable to them, all speakers were named on at least a few of the evaluation forms, which indicates the overall quality of the content and style of your presentation. Thanks again from Purdue University and from the Indiana Onsite Wastewater Professionals Association for making this educational conference such a success.

Sincerely,

Don D. Jones
Extension Engineer

DDJ:cms

Using New Tools To Solve Old Onsite Problems

By Theo B. Terry, III, RS

Is it possible that it has been fifteen years since I started my onsite wastewater career? I can still remember my first day on the job. I had barely gotten out of my car in the Health Department's parking lot before a 'gentleman' met me. Figuring me for the new guy, he began telling me about his neighbor's 'effluent' running over into his yard. He then 'politely' asked me what I intended to do about it.

Truth be told, 'gentleman' is a stretch, 'effluent' wasn't the word he used and 'polite' is an out-and-out lie.
Not knowing exactly what to do, we went to my office, got coffee and sat down to discuss the situation. I didn't know if this was something I was supposed to handle, let alone how to handle it, but I took down his information and told him I would call him back as soon as possible.

My supervisor cheerfully informed me that effluent being where it's not supposed to be was indeed my problem, so the next day, Joey Purdom, a roving environmentalist within our district, came by the office and off we went. We drove to the address in question, and sure enough, there was @#$% everywhere! (Sorry, I hadn't learned the term "effluent" yet, either.) And so began my onsite training.

I watched as Joey took a long, metal rod out of the back of his truck, and began poking holes into the ground. Soon, he was telling me that he'd found the septic tank, and some things called lateral lines. He explained that it appeared the old drainfield was plugged, and would have to be replaced. Problem was, the only area to move the lateral fields was uphill from the house, so he said a pump would have to be used. He was able to determine all this information with one simple rock probe, and by simply looking at the lay of the land.

I learned so much that day, and in the days and weeks that followed, that when a call came from the area hospital (the job I had really wanted), I turned it down. I had found my niche--a career where I could use my problem-solving skills and learn something new every day.

I learned there was no magic in that metal rod but that knowledge and skill

Total Liquid Depth	36"-43"	44"-47"	48"-51"	52"-55"	56"-63"	64"-67"	68"-71"	72"-75"	76"-79"	80"-83"	84"-87"	88"-9
FPV-H34-A101	✓	✓	✓	✓	✓	✓	✓					
FPV-H36-2	✓	✓										
FPV-I36-2	✓	✓										
FPV-H44-2			✓	✓	✓	✓	✓					
FPV-H50-2						✓	✓	✓	✓	✓	✓	
FPV-H56-2										✓	✓	✓
FPV-H62-2												
FPV-H68-2												
FPV-I40-SC		✓	✓	✓	✓	✓	✓	✓	✓			
FPV-H40-SC		✓	✓	✓	✓	✓	✓	✓	✓			
FPV-H48-SC							✓	✓	✓	✓	✓	✓
FPV-H54-SC											✓	✓
FPV-H60-SC												
FPV-H66-SC												
FPV-H72-SC												

enabled the discovery of the problem with that failing system. By using the chart below to simplify your selection of a Filtered Pump Vault, I hope some of the knowledge I've gained over the past 15 years can make your job easier.

Fifteen years ago, when that problem drainfield was fixed, the design included an additional pump tank with an effluent pump set atop a concrete block. Not only was this more expensive than the options available today, but it did not protect that homeowner from having the system fail again, due to excessive solids getting into the drainfield and plugging the soil.

Today, Filtered Pump Vaults (FPVs) are available, allowing effluent to be pumped directly from the septic tank. This eliminates the added expense of an additional tank, as well as insuring that only filtered effluent enters the drainfield. Now that's what I call true onsite technology: designing products that deliver better performance for less money!

How do you select from the multitude of FPVs that Zabel has available? You can do the math or save time by using this chart. Here's how: The horizontal row of numbers at the top of the chart refers to the liquid depths of various septic tanks. The vertical columns represent each of the FPVs available from Zabel. Following the horizontal row at the top, locate the cell for the liquid depth of the tank you are going to use. Then follow that column downward, and you will find a check mark for each of the FPVs that meet the requirements you need.

For example: let's say we have a septic tank with a liquid depth of 60 inches. Moving horizontally across the top, you'll find a cell that is labeled "56 - 63 inches". By following this column downward, you'll see that four different models have been checked, three of which have been highlighted. All four of these models will place the inlet to the FPV into the clear zone (defined to be a zone that is 25% to 40% below the normal water line) of the septic tank. The three highlighted models place the inlet to the FPV at the optimal level (defined to be 33% below the normal water line of the septic tank) within the clear zone. You could choose any of these four models, but the three highlighted ones reach the optimal levels.

Quite simple really. I hope this chart takes some of the work, and some confusion, out of choosing Filtered Pump Vaults from Zabel. Of course, you can always call one of our friendly account managers who'll be more than happy to help you make the right selection.

)6"-99"	100"-107"	108"-111"	112"-115"	115"-120"
✓				
✓	✓	✓	✓	✓
		✓	✓	✓
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✓	✓	✓	✓	✓
✓	✓	✓	✓	✓
		✓	✓	✓
				✓

TAMING THE GR

By Shea Kent

Taming the grease monster with two Zabel A300 filters

An onsite regulator faces his/her toughest test when confronted with issues that affect both the environmental and economic health of the community they serve. This was the dilemma faced by Mike Melancon, Director of the Jefferson County (Texas) Environmental Control.

Jefferson County, located in Southeast Texas is comprised of several communities including Beaumont and Port Arthur. This coastal community rests upon soils that Melancon describes as marginal at best with regard to their ability to support conventional onsite systems. These gumbo-clay soils, which rest above a very shallow water table, dictate that advanced onsite systems such as aerobic treatment must be used.

In the fall/winter of 1999 and the early days of 2000, Melancon's office was forced to deal with a complicated problem. Three local restaurants, (The Pine Tree Lodge, Esther's Seafood & Oyster Bar, and Mae's Fish Camp) whose old conventional systems had been replaced by aerobic treatment units, were having ongoing problems with their onsite systems and were generating numerous complaints from patrons, neighbors and the restaurant owners themselves.

Mike Melancon explained, "When the owner of a system calls my office and complains about his system, you know you really have a problem. These businesses were struggling to maintain their customer base in light of the odors and frequent system back-ups. They had each spent thousands of dollars on systems that in effect were jeopardizing their livelihoods."

The culprit that was causing these problems (and threatening to cause Melancon's office to shut down the restaurants) was GREASE. Aerobic treatment in onsite systems is proven technology in the State of Texas, but high strength restaurant waste containing large volumes of grease can cripple even the best system. Each unit had components that were caked in grease, and one unit had it's aeration unit completely disabled, with a layer of grease several inches thick floating above untreated sewage in a tank that should have held odorless, treated effluent if working properly.

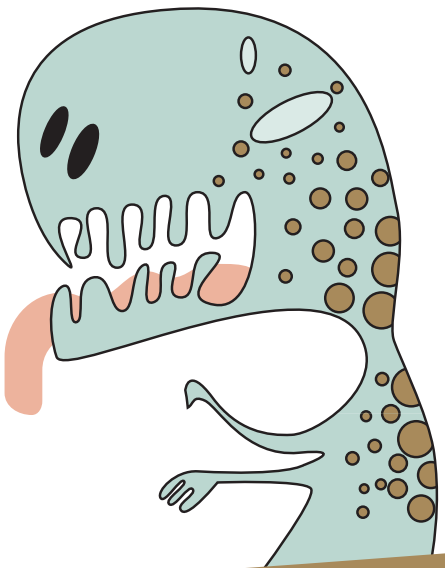
The three restaurants all specialize in cooking fresh seafood and serve large volumes of local delicacies like fried catfish and gulf shrimp. The amount of grease they utilize is immense and was quickly destroying their aerobic treatment systems. The grease was clogging their aeration devices, disabling the effluent pump and clogging sprinkler heads in the spray irrigation fields. These factors all combined to create failing systems that had to be serviced on a continuous basis to keep them operating even marginally.

Close to giving up hope on finding an easy solution, Melancon happened to attend a Zabel® Certification course in Beaumont, TX, at the invitation of MKM Sales, which operates as a Zabel Marketing Associate. During the daylong event, instructor Bill Rawlins of Zabel touched on the effectiveness of Zabel Effluent Filters in handling grease, and the many experiences that he had in battling what he termed 'The Grease Monster'. This piqued Melancon's interest and he quickly had Bill Rawlins and Shea Kent of MKM looking at the sites.

It was determined that several factors were leading to the grease problems, but the two most pressing were retention time in the grease traps and the cleaning practices in the kitchens. Two had severely undersized grease traps which lead to grease exiting the traps at a rapid rate and entering the aerobic treatment unit (ATU), while the other system was being victimized by a kitchen staff using large amounts of degreasers and super-hot water which kept the grease emulsified through the grease trap and again sent it straight to the ATU. With the problem now very evident to Mike Melancon (because of his new training) and Bill Rawlins and Shea Kent (because of their past experience with similar systems), the three set out to devise a plan.

The solution that was conceived was threefold. The first action was to educate the owners and their staff on the proper way to handle and dispose of grease in the kitchen, before it ever enters the system. The concepts of scraping plates, using a cold rinse on dishes before they went into the dishwasher, and a reduction in use of degreasers were introduced and had an immediate impact on the amount of grease entering the grease trap.

The second effort was to increase the capacity of the existing grease traps on the two undersized units. With material donated by Hydro-Action and MKM, these modifications were partially subsidized and have been treated as demonstration sites for those interested in handling such high strength waste.



REASE MONSTER

Under the supervision of Obie Burrow and Jay Wallace of Hydro-Action, and with the labor of Alcode, Inc., new tanks were added between the existing grease traps and the aerobic treatment unit at Mae's Fish Camp. In addition, a Zeus™ Basin System provided by Zabel was added to the system at Esther's. In each location, the added capacity was designed to provide more cooling and retention time. This increase in retention time allows for more coagulation of the grease and amplifies the effectiveness of the Zabel A300 SmartFilters™, which were added to the outlets of the last grease trap compartment in each system as the final step in the solution to Melancon's problem.

The Zabel A300 Filter is designed to handle high strength effluent in commercial applications when installed in a properly designed system. MKM made sure each unit utilized the Smart Filter option to warn the restaurant owner when the filter is maturing and the system needs to be pumped.

Esther's Seafood & Oyster Bar

the SmartFilter so that the restaurant will know a few days in advance that it is time to have their grease trap pumped. Without the A300 Smart Filter, they never know that their trap is full and sending grease straight into their system until it is too late, and we begin getting complaints of the system backing up and smelling of grease and sewage."

Implemented in March of 2000, the effectiveness of the plan hatched by Melancon, Kent and Rawlins was becoming clearer as the spring and early summer wore on. As the busy season wore on, these local hangouts for good times and great food saw their business grow and the complaints cease.

After operating for six months with their new kitchen practices and the Zabel A300 Smart Filter in place, each system had a flawless record. The Environmental Control office in Jefferson County went from getting a continuous stream of complaints about these three restaurants to zero complaints since the improvements.

A six-month visual inspection made by Shea Kent and Mike Melancon in late September revealed that each system was operating very well, with no visible grease in any compartment other than the grease traps. "The filters are keeping the grease where it belongs," explains Shea Kent. Mike Melancon, who was at first somewhat skeptical due to repeated failed efforts to deal with the grease in other ways, added, "These filters work. This was a tough test and they passed with flying colors. Not only did they help me solve my department's problems with these establishments, but also they probably saved these businesses in the long run. They just work."

Agreeing with MKM, Mike Melancon explains, "The filter is really an insurance policy for the system owner. It doesn't eliminate the grease, but keeps it in the grease trap where it can be removed, and out of the rest of the system which is ill-equipped to handle it." Melancon goes on to say, "For that reason we strongly recommend

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

Service & Maintenance
- *The Cat's Out of the Bag*

I've enjoyed training installers across the country about Zabel® products in our Certified Installer Programs. Included in these classes are service and maintenance contracts. Recently, while presenting this, I noticed a VERY GRUMPY face. After the talk, I asked this individual, " Why the menacing look?" He replied, "The cat's out of the bag, now everyone's going to jump on this!" I said that I hoped he was correct, but there would still be plenty of action for everyone.

The biggest hurdle to overcome is the installer or homeowner who doesn't believe conventional systems require maintenance, and you must be a believer to sell it. With heavy equipment not needed, I've even converted regulators who provide these services outside their jurisdictional boundaries. Imagine that, an entrepreneurial regulator earning some extra cash.

To make it profitable, you must use products that last, carry a good warranty, and require little attention once installed. In other words, you'd better be using Zabel. Our filters don't require excess cleaning. Our pumps have a 3-year no hassle warranty. Zabel pump vaults have easily accessible filter panels or you can install a self-cleaning pump vault. How's that for low maintenance! Why don't other manufacturers instruct about maintenance contracts? Because their maintenance is too excessive.

Let's look at some numbers. Most people providing service and maintenance contracts charge $100 to $150 per year for 3 years. Normal services include: checking the effluent filter, pump operation, tether lengths, pump draw down levels or time dose intervals, pumping the tank if needed (additional cost), walking the absorption field to observe for any signs of ponding, and reporting findings to clients. (If you don't own a pumper truck, you should be able to get a volume rate from a local pumping company.)

Total the number of systems you will install this year and add those installed the last seven years. Multiply this number by your fee. This is the potential amount you can add to your business. Develop a professional mailer to explain components of systems and how they work. Describe what they protect, how you will service it, how much it will cost, and how they can reach your company. It is a low cost, low hassle, low-pressure sale.

Here is another suggestion even if you aren't an installer. What is the one thing that almost every regulator values but never gets? You guessed it, MAINTENANCE. Go to surrounding health departments, tell them your plan and ask for a list of every system installed over the last five years. They should be able to print them from a computer database. Most regulators will throw the information at you when they learn you want to provide maintenance, but if not, remind them the information is public record.

This could add 300 to 3000 potential clients to your program. Some counties in your state may issue over 1500 permits per year! Ask them to separate the data by replacement versus new systems. Those who paid for a replacement system within the last five years will likely be the most receptive to your proposal. If you have done your homework, you are on the way to a profitable business. Take 10% of the 3000 permits issued for a geographical area and multiply it by the $300. At only a 10% rate of success, using the example above, we have increased revenue to the business by $90,000.

Wait, don't go running to the health department yet, there is more! Check into the Zabel Certified Installer program. You will get knowledge and product discounts. By replacing inferior products with Zabel products, you earn more by selling more! Also, maintenance can be performed on rainy days when you can't use heavy equipment.

Interested? Zabel can provide sample forms and contracts. The cat's trying to get out of the bag, but he hasn't made it yet. Think of the new innovations to the onsite industry. In the next 5 to 10 years, service and maintenance will be as common as a septic tank. So, now's the time! Don't be left holding the bag.

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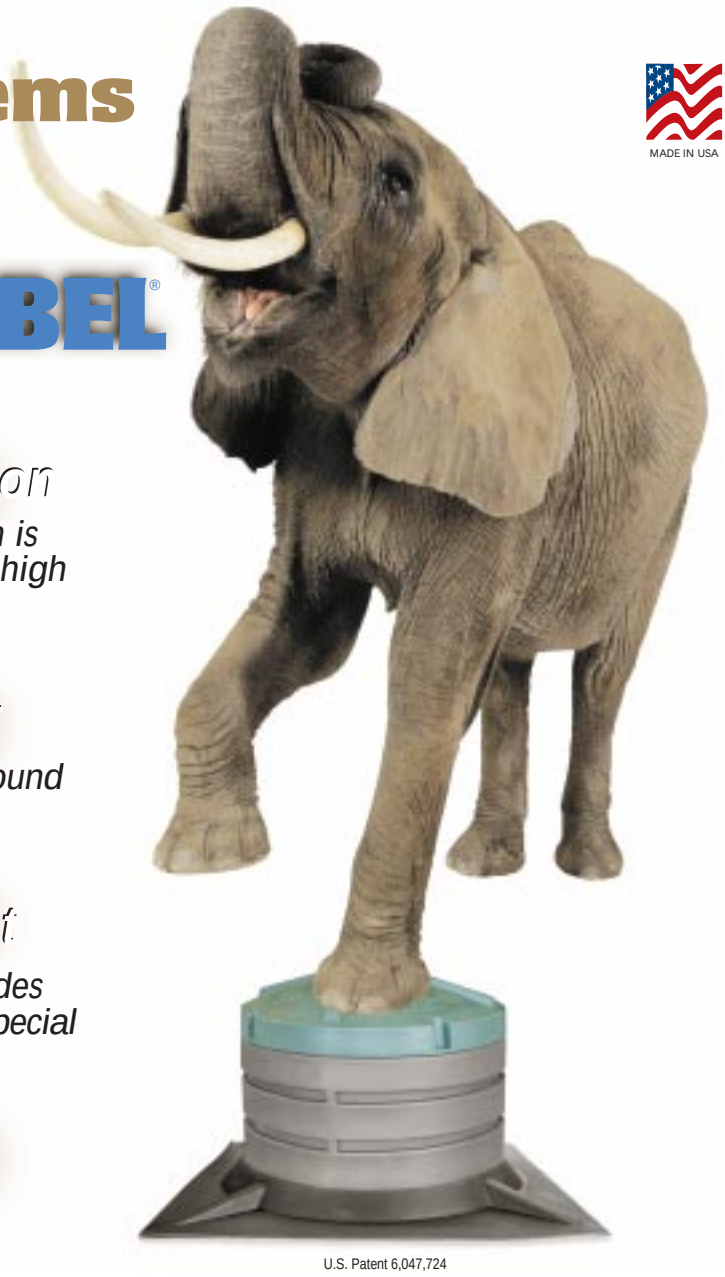

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COMMUNITY SEWAGE SYSTEMS:

MAINTENANCE IS THE KEY

By Pat Lacey

Continued growth, increased density and the lack of public sewer are the main reasons communities are seeking innovative ways to treat and dispose of wastewater. In Hall County, GA., we have the foothills of the Appalachian Mountains, Lake Sidney Lanier and many beautiful rivers and streams. Prime real estate is often the most challenging for locating onsite sewage systems because the parcels with mountain views frequently have steep topography and rocky soils, and the lots along the water are frequently characterized by flooding and/or wet soils. By placing community sewage systems on land with suitable soils and topography, we can better protect the environmentally sensitive areas and allow the use of prime real estate.

Whether the wastewater comes from a residential or commercial source, the technology to treat and dispose of it far surpasses the mandated and codified requirements assuring maintenance, and **maintenance is the key!** Even though community sewage systems have been around a long time, there are very few of them documented and the maintenance trail has long been forgotten.

Community sewage systems can be under one ownership or multiple owners, for example a homeowners association. In either case, it is important to know who is responsible for maintenance and repairs of the system because at some point, both issues will need to be addressed. If maintenance is performed on a routine schedule, repairs may not be necessary.

If the maintenance is left to the private sector, the following should be part of the approval process:

1. The developer should provide a surety bond or a fidelity bond for the replacement of the sewage system.
2. The homeowners association will need a separate account set aside and added to monthly/yearly for the routine scheduled maintenance and any needed repairs.
3. A contract, with a company certified for wastewater system maintenance, must be developed and should include specifics of what is to be checked, how often, and who receives reports. The homeowners association should be required to keep a maintenance contract for the life of the system.
4. The county government should have the ability, by deed, to repair the system and recover the cost from the property owners through a levy or lien on the real estate.

These requirements along with enforcement powers should be made part of the official code of the county. With all of the above in place, a government agency or department will need to ensure the maintenance is being performed.

Perhaps the ideal situation would be for the local public utilities department to take over the ownership and maintenance of community sewage systems. Following the same procedure as for roads, the system would be contracted by the developer to meet the standards of the governing body. The appropriate department of the governing body would perform the construction inspection. The system then would be deeded to the governing body for maintenance and future repairs. The continued maintenance can be accomplished by increasing trained staff or by contract with private industry. As with public water and sewer, monthly fees can be collected from individual property owners in order to pay for the maintenance.

We are now experiencing record low rainfalls and necessary watering bans, which brings forth a very important environmental issue: re-use! The wave of the future will be to address the treatment and reuse of domestic wastewater on a local level. With this, the issue of maintenance arises again. **Maintenance is the key**. If local public utility departments, county environmental health departments, state environmental protection departments and private industry work together, we can ensure through maintenance a balanced, affordable approach which benefits both public health and the environment.

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

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

Dean Soucy, Tolland, Connecticut

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

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

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

"This doesn't happen with Infiltrators because they're hollow and completely open inside so they don't plug up. They hold the water until it leaches into the ground.

"And, the Infiltrator system is ideal for cramped or small sites. If you're trying to maneuver behind a house with a big truck to get stone in there, you could really damage the lawn. But, you don't have to worry about that with Infiltrators.

"In ten years, I have never had problems. I tell you, I love these things. They're the way of the future."

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Effluent Quality, Don't Forget it!

By Wes Combs, RS

In another life as a regulator, one of my duties was to evaluate failed systems, determine the cause of failure and make recommendations for corrections. It was commonplace to consider problems such as soil compaction or other system damage, excessive water use, installation or design problems, or misdiagnoses of the soil conditions.

It finally dawned on me that there were important missing ingredients from my evaluation of failed systems that, once realized, would be important not only to troubleshooting of failed systems, but would shape my view on new systems as well. Any guesses? The first one was system maintenance. Doesn't it make sense that if systems are maintained, they will last longer, possibly indefinitely? In reality, when will municipal sewers be in all places?

What about the other missing and very important ingredient? Wastewater composition. It must be considered when designing new systems and evaluating failed systems. Common wastewater constituents are BOD_5 (biochemical oxygen demand or a measure of the organic material), TSS (total suspended solids), nitrogen compounds such as nitrate, coliform organisms such as fecal coliform, phosphorous compounds such as phosphate, and FOG (fats, oils and grease). Laboratories specializing in wastewater analysis will be able to determine the constituents. Consult with them, a system designer, and your local health authority for additional information regarding sampling, analysis and interpretation of the results.

When thinking about how systems function, it's helpful to separate them into two parts: treatment and the final disposal/recycling of the effluent. A conventional septic system typically consists of a primary treatment device or septic tank and a soil absorption system, which acts as the final treatment and disposal system. In this system, the septic tank is responsible for partially treating the sewage by mostly anaerobic (without oxygen) processes that are characterized by inefficient and incomplete breakdown. The final effluent is usually high in BOD_5, TSS, coliform organisms, possibly nitrogen and phosphorous compounds, and FOG depending upon the influent characteristics. The soil then is responsible for the final treatment, which is characterized in part by aerobic (with oxygen) processes and final disposal of the effluent. This means that the soil must remain aerobic, transmit large annual volumes of liquid, and remove contaminants in wastewater while continually rejuvenating itself. Many soils cannot keep up with demand that's placed on them and eventual clogging develops, leading to anaerobic conditions and eventual surfacing. Other considerations such as ground or surface water contamination are important when considering this type of system.

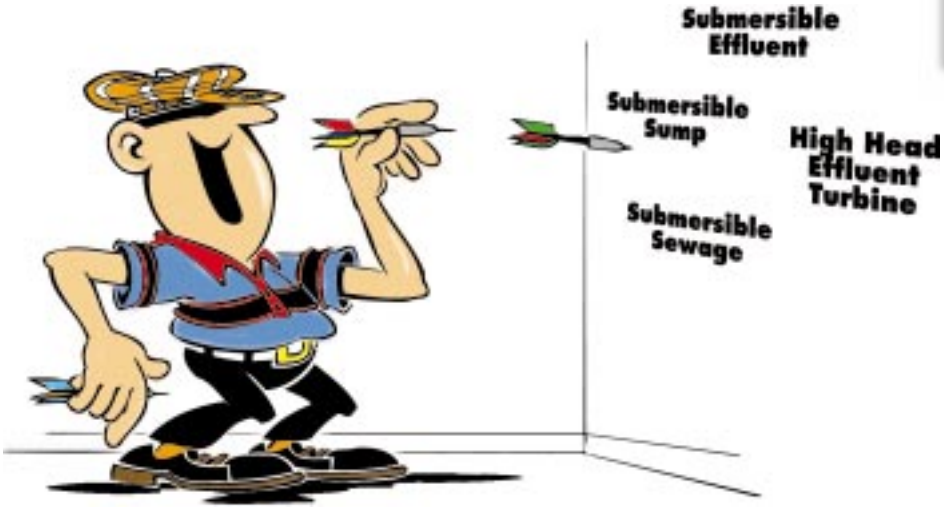
Another way of thinking is to treat the sewage to a very high degree before it's ever released to the soil system so that the soil only polishes the effluent and disposes or recycles it. This can be accomplished by using an advanced treatment system, which typically treats the wastewater by aerobic processes to a minimum secondary standard or <25 mg/L BOD_5 and <30mg/L TSS. Depending upon the specific system type and design, other contaminants such as coliform organisms, nitrogen, phosphorous, and FOG can also be very effectively treated.

When treating effluent to a high quality before it's released to the soil system, less importance may be placed upon the soil quality and therefore, a wider range of site and soil conditions become acceptable. Since the soil is not burdened with the majority of the treatment, it's primary function is to provide polishing and final disposal or recycling of the effluent. Marginal soils that would have otherwise been stressed by partially treated effluent, can much more easily process highly treated effluent.

In summary, wastewater characteristics must be considered when designing systems and evaluating failed systems. Without this knowledge, only a partial picture of the system needs can made. After all, it's only fair to the system owner and to the environment to consider all aspects of design and performance so that the best possible system will be installed on any given lot.

PUMPS:
Which should you choose?

By Tom Petty, REHS,PG



There is an old adage that says the principle commodity we are trying to deal with flows downhill. I am here to tell you that it may run uphill. Many situations require that disposal be done at a higher elevation so a pump is necessary. Also, it has long been known that one of the most effective ways to "dispose" of wastewater is equal distribution. This method requires that effluent be spread out over the proposed disposal area so that no one area receives a concentrated dose that can lead to premature failure. While not always uphill, delivery is most often accomplished with a pump.

In my past life as a regulator, the idea of pumping effluent to a disposal area has evolved from a bad idea to a safe, reliable and cost effective part of onsite wastewater management. Indeed, it has even become an integral part of some methods of treatment that require dosing to control a system's ability to keep soil conditions aerobic.

In every endeavor in life where some complexity is involved, we have to get the pieces/parts right. You don't put the wrong oil filter on you car. The same goes for pump selection- don't install the wrong pump in your onsite system.

There are two very important aspects of pump selection that must be considered when using a pump in an onsite system; these are size and type. The size of a pump is determined by the total flow needed and the head pressure it needs to produce. The flow is determined, quite often, by the size of the distribution system. This is predetermined by the system designer based on the number and size of holes in the distribution system and is expressed in gallons per minute (GPM).

With this information, you already have half the size of your pump. If you don't have this information it may be because you are not dosing a system with a

Friction loss per 100' of pipe			
GPM	1-1/4"	1-1/2"	2"
6			
8			
10	1.5		
12	2.1		
14	2.7	1.3	
16	3.5	1.7	
18	4.4	2.1	
20	5.2	2.5	0.9
25		3.8	1.3
30		5.2	1.8
35			2.4
40			3.1
45			3.8
50			4.7

distribution network. If this is the case, the flow is based upon minimum scour velocity and is dependent on the size of the pipe you use. The scour velocity is the minimum flow needed to move solids in a particular size pipe. The accompanying chart shows the minimum flows for various common pipe sizes.

The total dynamic head (TDH) is the other important information in properly sizing a pump. This is a reflection of how high and how far the liquid must be pumped. This information is a physical measurement of the elevation difference from the bottom of the dosing tank to the highest point in the field. The horizontal distance must also be measured to determine the friction loss in the pipe. The accompanying chart shows friction loss as a function of flow vs. pipe size. This information is added to the elevation difference, along with pressure head if you are pumping to a distribution network, and the total is the TDH. With this information, and the flow in GPM, you can look at the performance curves of each pump to determine the right size pump.

The type of pump is determined by what you want it to pump. If you are pumping 'clean' water or groundwater, you need a sump pump. These are to be used in an environment that is less stressful on the pump than other environments. The water being pumped is less corrosive and does not require resistant materials in construction of the pump as needed in a more stressful environment.

If you are pumping solids, you need a sewage pump. This pump is used, mainly, in pressure sewers or some situations where treatment is done offsite. These pumps generally handle solids up to 2" or more and produce low head with large flows.

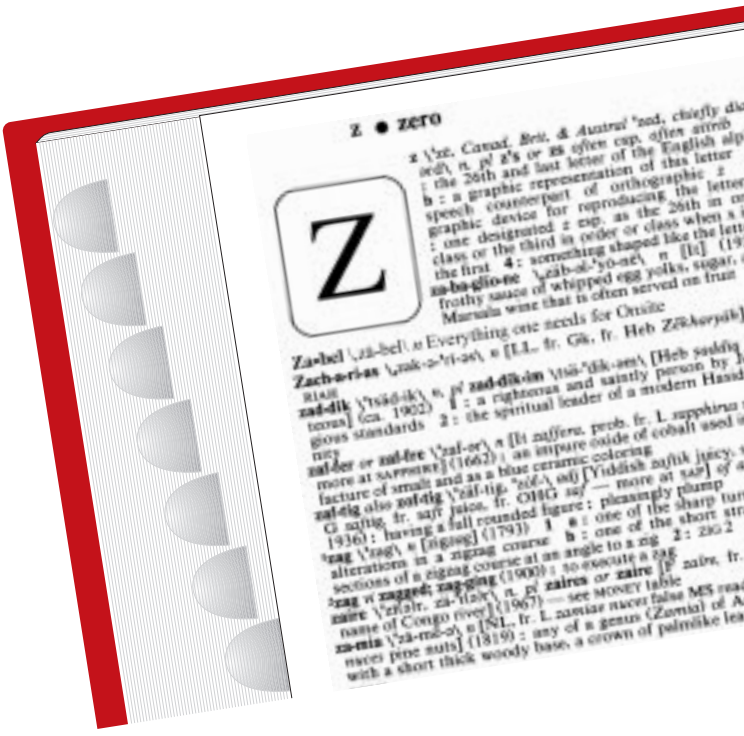
The most common application for pumps in the onsite industry is the effluent pump. These pumps move liquid from a primary treatment tank, such as a septic tank, to a disposal area. They are constructed with materials that can stand up to a more corrosive environment and produce a higher head. These pumps commonly produce a TDH of up to 80 feet and can go much higher if you use a turbine effluent pump.

As more onsite systems are installed and less suitable areas for disposal are available in close proximity, pumps have become a reliable solution and an integral part of more systems. Regulators and designers know the need for a properly sized and selected pump. If you need a pump and need help with the selection, contact our office @ 1-800-221-5742 and we will be glad to assist!

The ADVENTURES Of Zabel Man®

Illustration by Lonnie Walker

ZABEL: EVERYTHING YOU NEED FOR ONSITE



By Brian Borders, R.S.

Consumer wants and needs have changed dramatically over the past few years. The hustle and bustle of our daily lives has forced us to seek out the convenience of One-Stop Shopping. We no longer have time to shop for groceries, pick up dry-cleaning, get our car serviced, etc. We don't want to go to several locations to fulfill our needs; we are now shopping at Supercenters, strip malls and convenience stores. In the 21st Century the Internet is now affording us the opportunity to take care of all these mundane chores from the privacy and security of our homes. Fifteen to twenty years ago who would have thought you could drive to one location pick up some sporting goods, cleaning supplies, furniture, new eyeglasses, fresh lobster, and rent a movie all while you are waiting for your tires to be rotated and receive approval for a home equity loan. It completely boggles the imagination!

So where does that leave us? It left us with a very important decision to make. Do we continue to be a single product company or do we become the Supercenter of the onsite industry? Zabel made that decision several years ago. We have been expanding our product lines and increasing our services at a dizzying pace. Last fall I celebrated my 2nd anniversary as a Zabel employee, the Zabel today is a totally different company than the one I first got to know 2 years ago. With the addition of our new poly tank line we can now say we have everything you need from the tank to the ground. In the short time I have been with Zabel I have seen our product line grow from 80 parts and products to a product catalog that now includes almost 250 different onsite products and technologies. We are definitely no longer just a filter company!

The best part of all is that we have just begun to scratch the surface of our capabilities. There will be a day in the not too distant future when you will be able to call our toll-free number or better yet use the Internet to order and receive a plug and play onsite system. This system will contain every component you could possibly need for system installation. It will arrive from one source packaged and ready to go. The possibilities are endless and the advantages overwhelming. Packaged systems shipped to your door with single supplier security and ease of service. All backed by the onsite company with the best reputation for quality products and absolute best customer service. We probably won't ever rotate your tires but you can bet that we will provide every possible onsite product or service you will ever require. Come on in-the Zabel SuperCenter is now open for business.

WHY SOME COMPANIES PROSPER AND SOME FAIL

Commonsense Financial Management

Part II of II (see page 15 of the Fall 2000 Zabel Zone for part I)

Financial Strategies that make sense:

1. Always do monthly cash forecasts so you'll know when you will likely run out of cash long before your checks bounce. Meeting with your banker when you know you're headed for some problems is much better than surprising them.

2. Change the basis on which you pay incentives or bonuses from profit to cash flow. Pay people to produce cash flow and to reduce investments in assets. If things turn down, this will save you.

3. Put the people who manage your cash, receivables and inventory on a financial incentive plan. Paying people these days for "getting along well with others" or "having a neat work space" is nonsense. Tie earnings of your credit manager to how well she collects, not her appearance or work habits. Do the same with your inventory manager. Pay him a bonus for getting the inventory down without creating a lot of out-of-stock situations, and don't worry whether he has the seven habits of successful people.

4. If you borrow money from your bank, keep your cash in the bank to an absolute minimum unless you like giving your banker your money (at a very low interest rate) to lend back to you (at a much higher rate of interest). Pay your company bookkeeper or cash manager a bonus for making every dollar of cash flow work hard, not because his books balance to the penny. Ask your banker(s) about "zero balance checking" a system where you have no cash in the bank but where the bank counts up the total of your checks that arrive every day and adds that amount to your loan balance. Similarly, when your receivables are paid and the check deposited in the bank, the bank credits your loan balance with that amount.

5. If sales fall, readjust your inventory and receivable levels downward. Both of these should track sales, so that when sales move down, they both move down, too. Calculate a reasonable level of inventory and an acceptable level of accounts receivable for several levels of sales, so that when sales move, you can still have a good control point for both.

6. Don't think that just because you grow fast, you won't need to borrow money. In many industries the financial structure is such that more sales just doesn't create its own financing and debt must be used. Start doing business with more than one bank if you ever want to get better banking deals. It's just like buying a car; if the dealer knows his dealership is the only place that you shop, you will never get his best deal.

7. In getting a loan, lower interest rates should be of little interest to you. There are too many other much more important considerations like who signs, must we sign personally for the company loan, what value does the banker put on our assets when he lends on them, and many others. In a future article, perhaps, we can discuss how to negotiate a good term loan.

Finally, here's a little test of how much you know about financial matters. If you can answer all three of these questions, you are financially literate. If not, admit to yourself that, if you are ever going to understand the financial side of your business, you need some help.

Question #1: Can you explain to someone in simple terms the difference between an income statement, balance sheet, cash flow statement and a sources and uses of funds statement?

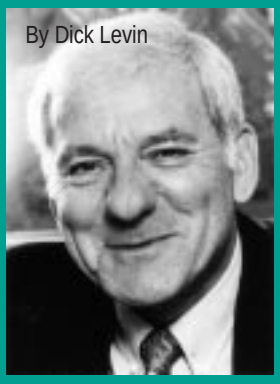
Question #2: Can you explain to someone the difference between profit and cash flow.

Question #3: Can you explain to someone how a company gets in each of these four situations:

a. Makes a profit but has no cash flow.
b. Has cash flow but makes no profit.
c. Has cash flow and profit at the same time
d. Has neither cash flow nor profit.

If this is a bit of a mystery to you, you can get that help at your local community college, from your CPA firm, or from your own company accountant. But wherever you get it, get it soon!

By Dick Levin



Cutting Edge Technology

Advanced Modular Treatment System AeroCell™

On July 28, 2000, Wes Combs, Bob Paulus, Tom Petty and Theo Terry assisted in installation of an AeroCell™ Advanced Modular Treatment System at the Kentucky Regional Onsite Training Center. A two-compartment, 1500-gallon septic tank was donated by Cloud Concrete of Lexington, Ky. Nathan Richards, P.E. of Cloud Concrete designed the tank to accept Zabel® cast-in adapters, risers, lids and a A300-8x12 filter.

Being the first installation at the new center, the procedure was filmed and used on local newscasts. So far, no one from Hollywood has called.

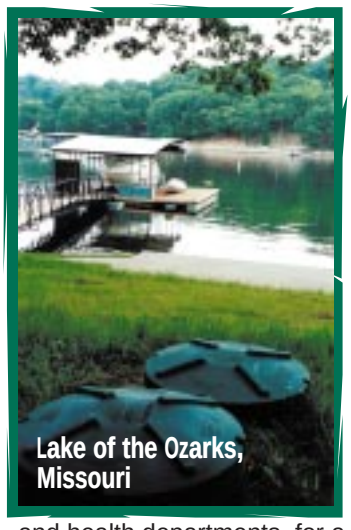
Mike Davis overseeing the work. Theo is making sure our riser's are up for the test.

We told Wes when he started we would make him a star!

Advanced Modular Treatment System

AeroCell™ UPDATE

By Wes Combs, RS



Lake of the Ozarks, Missouri

The AeroCell™ system has become quite popular in certain areas of the country where advanced level treatment is desirable or required by regulation. A good example of this is Lake of the Ozarks, Missouri, where many AeroCell systems have been installed during this past year for new homes as well as for repair or replacement systems. The AeroCell was chosen by engineers, installers, and health departments for a variety of reasons, some of which include: overcoming poor soil conditions and small lot sizes, ease of design and installation, and protecting the lake from contamination.

A typical system configuration in Lake of the Ozarks includes a primary septic tank, pump basin, AeroCell modules, recirculation device, and soil absorption system, normally reduced in size due to the high quality effluent. Various soil absorption systems have been used and include drip irrigation, low pressure pipe, and leaching chambers. Many systems are installed at shallow depths to maximize the vertical separation distance to soil restrictions.

Other areas of the country are using the AeroCell with other types of discharges. An example of this being three systems installed this past year in Iowa. These systems have small, free-access sand filters before final discharge to the surface. They are actively monitored and show very good treatment results.

New River, Arizona

Another noteworthy installation this past year was in Kokomo, Indiana, where the AeroCell was chosen to replace a failed home system. The AeroCell was not required, however the installer and the health department wanted an advanced level treatment system that would ensure long-term performance for the homeowner. Many researchers have proven that high quality effluent from advanced treatment systems reduces the overall BOD_5 and TSS loading to the soil system and prolongs system life.

Kokomo, Indiana

Advanced treatment systems continue to gain acceptance and popularity across the country. You only have to look at the many new technologies on the market today to appreciate this. New statutes and regulations are continually implemented requiring advanced level treatment. Commonly, regulatory authorities recognize reductions in soil absorption system size, reduced vertical separation distances to soil restrictions, and setback reductions to surface waters and other landforms.

AeroCell continues to be a popular choice for those "challenged" lots. So much so, that I begin to wonder what it would be like to be involved with a good lot!

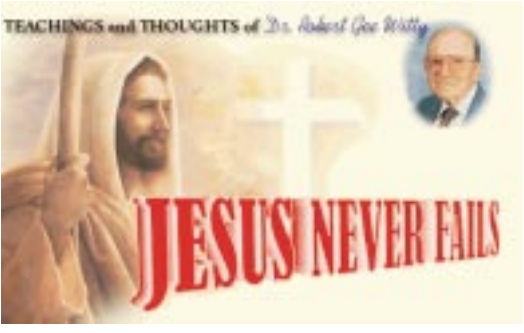
Des Moines, Iowa

In closing, we want to thank all of our customers for continuing to support us with products such as the AeroCell. Please contact us if you need information for assistance. Also, stay tuned for our next advanced treatment system that will be available this year.

By Harry L. Nurse Jr.

Rebel's Corner

I reconnected with my childhood pastor, Dr. Robert Witty after reading how he was using the Internet to share the gospel. The article was interesting but what was even more amazing to me is that Dr. Witty now 94 years old is host of his own website - www.rgwitty.com.



I gave him a call and after several conversations and a very pleasant visit last October, he asked me to write a series of articles about the issues that confront a Christian when trying to conduct your business or work life consistent with your faith in Christ.

My first challenge was to ask myself in what ways I was being a faithful witness within the context of my business relationships. I thought about how I might start a weekly Bible study. Perhaps at the Christmas luncheon this year we could read the story of Christ's birth from the Bible. How about placing Christian books in our company library for employees to read? These are good ideas and I may do them.

But I heard a story that touched my heart.

A man once prayed for his unsaved friend for sixteen years. One day shortly after the man retired from the pastorate, he approached his friend again encouraging him to accept Christ. The man saw for the first time that the former pastor actually cared about him. He realized that his sixteen-year witness was not based on the desire to recruit a new member for his church, but on his heartfelt concern for a lost friend. That day he accepted Christ. Four months later he died. I was told this story to emphasize how one who is not in the 'professional' ministry can have a witness that reaches beyond the limits of the pulpit. I got the message, and I received another message that day.

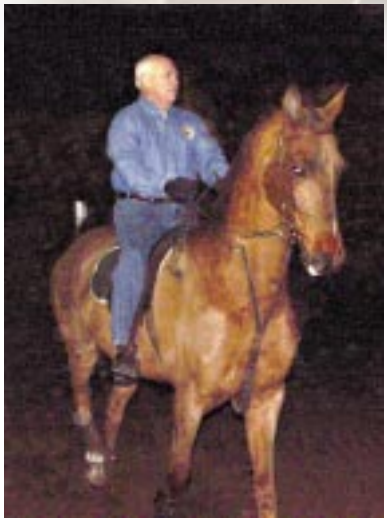
The message was that prayer is the foundational ministry of every Christian. We are told God will answer our prayer. We are also told to pray without ceasing. I saw the result of what one man being faithful in his prayer life can do, because God honors prayer. I might not be perfect. I might have doubts. But I can pray. My first response to Robert Witty's challenge to write an article for his website is to put each ZABEL employee and their family on my prayer list. I have committed myself to praying for them every day. I have asked God to help me be faithful in this prayer ministry.

No doubt I'm going to implement other ideas, but I am starting this adventure by seeing what God does in the lives of those I pray for each day.

I invite you to take the journey with me. Start your own ministry praying each day for those who are in the workplace with you and see what God can do.

"As for me, far be it from me that I should sin against the Lord by failing to pray for you." I Samuel 12:23a (NIV).

Zabel Outdoors



What does a man do when he turns 50? If it's Harry, he takes up horseback riding. He has been riding about three years now, and about a year ago bought Beau's Lucky Shamrock, a 10-year-old Saddlebred. When not traveling, Harry rides 2-3 times a week. He and Morgan, who has also ridden for about three years, entered their first show in December.

Theo Terry, age 9, went on a fishing trip with his Papaw and Mamaw last June and came away with this fine string of catfish. Theo was the only one with any luck that day and kept Papaw busy baiting his hooks! The fish were caught in the farm pond of a friend in neighboring Hardin County, KY.

Zabel's Vanessa Cox, with her 8-point whitetail. Vanessa harvested this trophy on November 18th which was the second weekend of Kentucky's modern rifle season. Ask her to tell you the whole story, it's a good one. Great deer, Vanessa.

Zabel's Tom Jenkins says, "Taking any animal with a bow is a challenge, but those of you who hunt know taking a wild turkey gobbler from the ground without a blind is a very rare event." Now he faces his greatest challenge convincing his wife of how good they taste. Good Luck Tom!

Allen Tartt the head of Alabama's Training Center took this beautiful 8-point monster on Thanksgiving afternoon somewhere in Alabama.

AIM TO HOST NATIONAL ONSITE EXPO IN SEPTEMBER 2001

By Robin Terry

In 2001, the Association for Installers & Manufacturers, Inc. (AIM) will continue its tradition of providing regional onsite training programs, while adding another twist.

As AIM has traveled across the country this past two years, we've heard the same thing over and over again from installers and contractors: "Give us practical onsite education, but keep the cost low." So, because the time is right, AIM is working on plans to host a NATIONAL ONSITE EXPO, scheduled for early September in Louisville, Kentucky.

This new national expo will offer a chance for installers and contractors across the country to convene in one location, receive continuing education credits (now required by many states for installer certification), and to view demonstrations of the latest in onsite products and technologies available.

In keeping with AIM's custom of 'going boldly where no man has gone before', we are totally re-designing the traditional exhibit hall to maximize time that installers, contractors, plumbers and precasters spend with the manufacturers displaying at our expo. A win/win situation for all!

AIM has invited experts to provide presentations on subjects today's onsite professionals should be on top of, including advanced and conventional treatments, and design and soil considerations. The trip will definitely be worth your while!

We are working to keep hotel room rates competitive and will see that entrance fees to the program are extremely reasonable. You will also find that Louisville is easily accessible by auto and air. So, bring the family and come see what The Derby City has to offer.

Be looking for more information in AIM Onsite, as well as in The Zabel Zone and other onsite publications.

GET READY, FOLKS, 'CAUSE YOU WON'T WANT TO MISS THIS!

Dates/Locations for 2001 AIM Training Programs:

Friday, January 12
Holiday Inn Select
201 South Shackleford
West Little Rock, AR 72211
Phone: 501-223-3000

Friday, February 2
Holiday Inn Oklahoma City Airport
2101 South Meridian Avenue
Oklahoma City, OK 73108
Phone: 405-685-4000

Tuesday, April 10
Little America Hotel
2515 E. Butler Avenue
Flagstaff, AZ 86003
Phone: 800-352-4386

Friday, March 9
AmeriTel Inn
645 Lindsay Blvd.
Idaho Falls, ID 83402
Phone: 208-523-1400

For further information, call AIM toll-free 877-323-5246

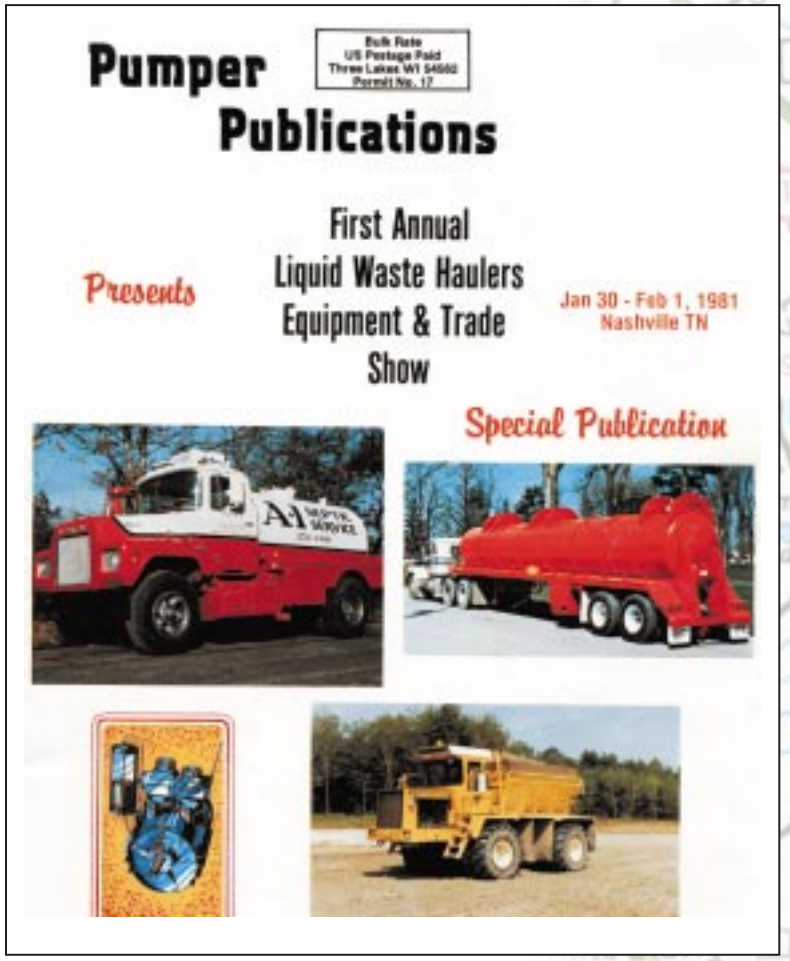
NEW FACES

Bill Schneider joins Zabel as Vice President of Operations after 26 years experience of business management, sales and marketing experience in the heavy equipment and RV industries. He and his wife of 23 years (and he's hoping for a contract renewal), Cheri, have two daughters, Amanda and Rebecca.

Bill is a native of Louisville whose secondary interests include landscape architecture and photography. For all of you customers out there, Bill's motto is: "Whatever it takes to get the job done!"

THE PUMPER

Brought to you by Cole Publishing



Founders of the first expo:
Pete Lawonn (left) and Bob Kendall (right)

"An early idea was to hold the show in the best facility available. The mom and pop operators who make up our industry deserve at least one weekend to truly enjoy the fruits of all their hard work. This philosophy served us well as we realized how important it was for the children of the industry to see their parents and their businesses in a different light."

PHENOMENON

By Bob Kendall

The idea was simple. Bring the readers and advertisers of our new publication, *Pumper*, together. The thought was, once a year, it would be nice to get together and let the advertisers show the readers the things that make their products special. Having no trade show experience was a real plus for us. We just did what we thought attendees and exhibitors would want. Now, 21 years later, we have a show that most consider quite unique not just to our industry, but unique among trade shows.

An early idea was to hold the show in the best facility available. The mom and pop operators who make up our industry deserve at least one weekend to truly enjoy the fruits of all their hard work. This philosophy served us well as we realized how important it was for the children of the industry to see their parents and their businesses in a different light. Many shows do not allow children to attend. We encourage the entire family to participate and don't charge for children under 18.

Imagine what kids deal with every day. "What's your dad do for a living?" The standard answer is "the septic business", or "excavating and trucking". The answer should be, "My mom and dad are in the healthcare industry, protecting the people who make up our community." We think it is great for the kids to see the latest equipment, displayed in the finest surroundings with thousands of successful people doing the same thing that their mother and father do.

The very first show was held at The Opryland Hotel in January 1981. Our second show moved to Fort Worth, Texas, then on to Gulfport, Mississippi, and back to The Opryland in 1984. The Opryland had expanded, and they could accommodate our show, which had grown significantly since 1981. By 1986, we needed more space, so it was off to New Orleans where we used the Superdome for the '86 and '87 shows. Then, The Opryland finished another round of additions and we have continued there, staying through further additions. The show, which originally utilized a 25,000 sq. ft. exhibit hall and a couple hundred guest rooms, now needs 300,000 sq. ft. of exhibit space and all of the 2900 guest rooms the Opryland has to offer, as well as most of the rooms at an additional 10 hotels.

Growth of the show occurred for many reasons. People attending did so much more than pump septic systems. Many of our attendees also install septic systems or clean sewers and drains, offer portable restroom services, do pipe rehabilitation, waterblasting, hazardous waste hauling, industrial cleaning, or some other environmental service. As manufacturers became aware of the types of services our attendees offered, they became exhibitors, and the more exhibitors that came, the more contractors were drawn to the show. Over the years, we expanded the educational programs, which now begin a day before the exhibits open, and have added more opportunities for contractors to share their experiences with each other. We have also added live entertainment, and last year's program featured The Oak Ridge Boys.

There are many people in our industry that have been to all of the shows; several come every other year. It's that kind of support that has not only made The Pumper and Cleaner Environmental Expo a success, it makes us all part of an industry, or more, part of a family. Twenty years have allowed us to watch friendships develop, watch children grow, watch a new generation take over family businesses, and watch an industry evolve where none had existed before. Over the years, we have become better at what we do as an industry, working together to improve our role in protecting the health and environment of the communities we serve. We have gained respect, and improved our self-image, but there is so much we can continue to do. I am proud of the last twenty years, and have enjoyed every minute. I reflect from time to time on what has been accomplished, but I much prefer to look forward at what is to come. We have so many ideas that the future is where my thoughts and enthusiasm remain.

Faces Behind the Phones

Harry Nurse
President

Jan Nurse
Zabel Zone Editor

Theo Terry, R.S.
VP Government Relations

Becky Page
VP Business Services

Amy Sparks
Accounts Receivable

Lesley Jenkins
Credit & Collections

Brian Borders, R.S.
VP Marketing

Wes Combs, R.S.
Advanced Treatment Systems Manager

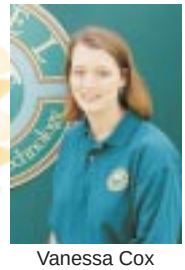
Bill Rawlins
Environmental Specialist

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

Joe Mattingly
Account Manager

Ann Hines
Account Manager

Larry Nurse
Account Manager



Vanessa Cox
Account Manager

Linda Ellsworth
Production Assistant

Gary Ellsworth
Roto-Mold Production Manager

William Schneider
V.P. Operations

Tom Jenkins
Media Services Manager

Loyalty, The name of the Game

By Vanessa Cox

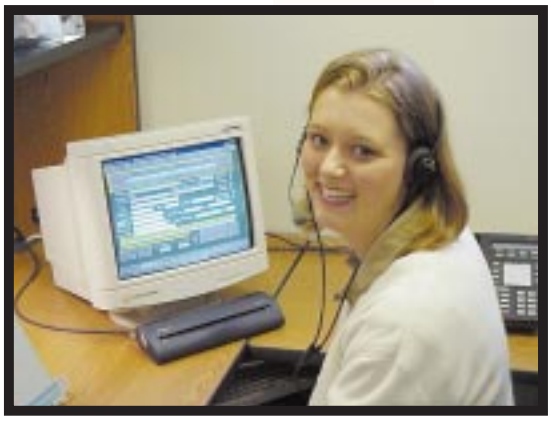
Loyalty - a quality, state, or instance of being loyal; faithfulness or faithful adherence to...Being a fairly new employee here at Zabel (only 15 months) I am constantly amazed by Zabel's loyalty to our customers. Most companies I've had the experience of being associated with have only been interested in doing the least amount necessary to get a customer's business. Notice that I said, "get", not "keep" a customer's business. How do we, at Zabel, keep our customers in this increasingly competitive on-site market? Loyalty. Zabel is loyal to our customers, to our industry, and to our environment; in turn, we receive loyalty from those we serve.

To say Zabel is loyal is one thing, but for those of you who haven't called and placed your first order with us, you're probably wondering if I can back that statement up. You bet I can. Let's start with product development. There is no better way to let people know you want to make them happy than to give them products that help their business. Zabel is constantly coming out with new or improved products that help to advance the onsite industry. How do we know what you need? We listen! When you call in and are talking to your account manager, we are paying attention. If you think there is something that we can do to improve our products or something you'd like to see made available, let us know, we'll take it to the drawing board and see what happens.

Another way Zabel shows its loyalty is quality products. From the very first Zabel filter produced in 1959, we have been committed to producing products of the highest quality. Not only do we produce the best products, but we also back them up with the best warranty available. By providing quality products, we believe that our customers will continue to come back time and again because they know we'll stand behind our products and continue to give them the best service available.

Take care of those that take care of you. If you aren't happy, then we're not happy. A part of being successful in the on-site industry is knowing how to take care of your customers. Let's face it, people in our industry have options. There are other companies that may provide a product that is a little cheaper, one that looks pretty in a picture, or one that makes false promises; but it's the quality of Zabel's products, people, and ideals that keep our customers coming back.

Take care of those that take care of you. If you aren't happy, then we're not happy.



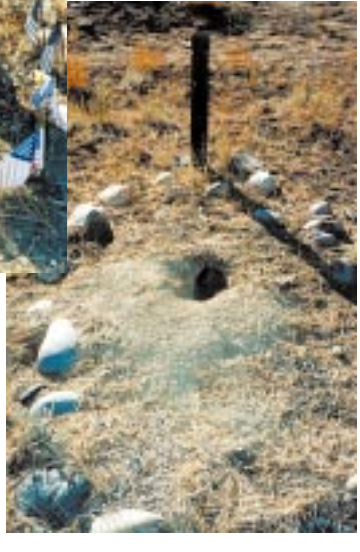
Zabel's Travels

In July while attending the AIM conference in Billings, Montana, Zabel's® Theo Terry drove to Yellowstone National Park and took a few beautiful photographs

Tower Fall, 132-foot drop of Tower Creek. Made famous by the painting of Thomas Moran. Yellowstone

These steep, columnar basalt cliffs are remnants of an ancient lava flow.

Mammoth Hot Springs



Famous Boot Hill Cemetery in what used to be Coulson, Montana now known as Billings.

I guess old gun fighters don't get to "rest in peace"

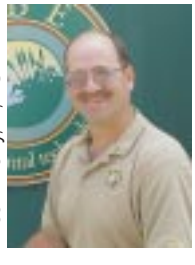
Beauty Is NOT Just In The Eye Of The Beholder

In the Fall 1996 issue of The *Zabel Zone*®, Dick Otis wrote an article about septic tanks titled, 'It's A Beautiful Thing'. He was describing the functionality of a septic tank but he could just as easily have been describing Zabel's new line of Poly-Tanks.

Seven models of septic tanks are available ranging in size from 750 gallons to 1500 gallons. The 1000-gallon, 1250-gallon and 1500-gallon tanks come in both single and dual compartment models. In addition to these septic tanks, Zabel also has a new 500-gallon pump tank to go along with our full line of filtered pump vaults.

So what makes these tanks so special? Well, let's start with the fact that they have a structurally superior design due to their parabolic shape and unique rib design. The ribs have uniform wall thickness throughout the tank. This structurally superior design makes them more tolerant of installation variations with minimum access deformation when the tank is under load.

In addition, the one-piece, seamless construction ensures water tightness of the tank. Then topping off the tanks are Zabel's patented risers and lids. These risers and lids have been proven to be the both water tight and structurally sound when added to Precast concrete tanks. Now the connection to the tank itself will be the same-patented design as the risers themselves thus ensuring a watertight seal each and every time.



Theo B. Terry, III, RS

Add our patent pending inlet and outlet tees along with our quality patented effluent filters and you do indeed have a truly beautiful thing, Zabel's New Poly Tank line.

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The Leaders

The Zabel Zone is the most effective advertising medium in the Onsite Industry.
Call to **JOIN** the industry leaders in the Zabel Zone.

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Onsite Professionals & Environmental Groups: JOIN FORCES

By Harry L. Nurse

Why do environmental advocacy groups seem to always use their political influence to promote centralized sewers over onsite solutions? Their attitude can be summed up as, "If you can't sewer it, don't develop it."

No one in the onsite industry advocates the use of onsite technology over central sewers for treatment of human waste all the time. There are times that central sewers make environmental and economic sense. However, with the advent of new and better advanced treatment technologies and sophisticated cluster system disposal methods, those times are fewer and fewer.

But I have never heard of an environmental advocacy group promoting an onsite solution to a waste treatment problem. The reason is they lack knowledge about the proper use of septic systems, the growing development of new advanced treatment technology and the move of the onsite industry toward perpetual maintenance paradigms.

Whose problem is it that they don't have this information? It is ours.

There are several things onsite professionals can do to bridge this environmental information gap. First, as individuals we need to join environmental groups. Second, we should invite them to attend and participate in state and national onsite conferences and training programs. And third, we should join forces on common issues.

Join environmental groups.
There is always the tendency for people to demonize those with whom they disagree, but if we have established one-on-one relationships it is more likely they will listen to our point of view and we will hear theirs. After all, we are all concerned about our environmental legacy and when onsite issues arise they will look to you for information. We must not underestimate the value of building personal relationships through participation in local chapters of groups such as the Water Watchers Association.

Include environmental organizations in onsite conferences.
At onsite conferences, it is not unusual to have forums dealing with onsite treatment issues and regulations that include every member in the industry from regulator to installer. However, I have never attended one where environmental groups were regularly included.

These groups need to be included so they will receive good technical information and training as well as the opportunity to discuss their concerns where our industry members can hear them.

Enlist environmental groups' support for onsite issues.
Onsite professional organizations should join forces with environmentalists to create laws and regulations that preserve the environment using single site and small cluster technologies. Do not wait for a crisis to initiate action.

If these single focus groups become convinced the people in our industry, who are also their neighbors, truly care about environmental issues and that we, as a profession, have expertise that will help them in their quest for environmental protection, they will become allies instead of enemies.

Let's stop fighting with environmentalists and enlist them in our common cause. Take the initiative and build bridges across the environmental divide. The planet will be a better place to live if we do.

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Zabel Environmental Technology is currently looking for highly trained and experienced onsite professionals to fill the following positions:

- Technical Sales Representative
- Environmental Specialist

"It is very exciting to offer products and components designed to strengthen on-site programs throughout the country and world!"

"Zabel provides its people with the latest technology that makes doing my job more productive and enjoyable."

Excellent ***salary*** and ***benefits*** package including:

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ZABEL™ environmental technology

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 _____

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Environmental Specialist
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Tom Petty, R.E.H.S., P.G.
Environmental Specialist
Email: Tpetty@zabel.com
Ph: 1-800-221-5742

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

2001

January

1st - 3rd, No-Dig 2001, Nashville, TN., Faye Boyle 301-468-3210
9th, NE MO Onsite Workshop & Expo, Hannibal, MO., Phillip Shatzer, R.S. 660-327-4653
12th, AIM Conference, West Little Rock, AR., Robin Terry 877-323-5246
23th - 25th, Auburn Conference, Auburn, AL., Elaine Ridgeway 334-844-5720
23th - 24th, Missouri Smallflows 5th Annual Conf., Mike Volrath 888-264-9146
26th - 27th, FOWA WinterFest, Kevin Sherman 850-402-9230
30th - 31th, IOWWA Conference, W. Des Moines,IA., Mike Volrath 515-830-1229

February

2nd, AIM Conference, Oklahoma City, OK., Robin Terry 877-323-5246
8th - 12th, NPCA & MCX Convention, Charlotte, NC., Pete Tensley 800-366-7731
14th - 17th, Pumper Show, Nashville, TN., Cole Publishing 800-257-7222
25th - 28th, Southwestern States RC&D Conv., Odessa, TX., Jimmy Apel 915-235-4300

March

4th - 6th, PASEO, Gil Longwell 717-761-8648 or PASEOS@aiol.com
5th , Granite State Designers & Installers Conference, 603-228-1231
9th, AIM Conference, Idaho Falls, ID., Robin Terry 877-323-5246
11th - 14th, ASAE Conference, Fort Worth, TX., David Gustafson 800-955-8636
26th - 27th, Ontario Onsite W.W. Conference, Mississauga, ONT., Shelly Bonte-Gelok 519-824-4120x4687
29th - 31st, NCSTA 11th annual Conf., Greensboro, NC., Doug Lassiter, 336-784-5311

April

13th, AIM Conference, Flagstaff, Arizona, Robin Terry 877-323-5246

June

30th - Jul. 3rd, NEHA 2001, Atlanta, GA., NEHA 303-756-9090

July

19th - 21th, FL Onsite W.W. Assoc. Tradeshow,Daytona Beach, FL., Kevin Sherman 850-402-9230

September

17th - 18th, NW Onsite W.W. Treatment Exhibit, Robert Seabloom 206-543-5539

At the time of printing those shows highlighted in red will have someone from Zabel speaking or 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

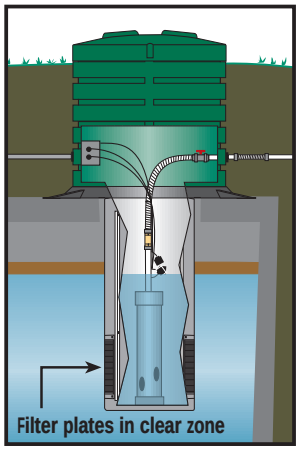
Tech Talk

1. How long will the open cell foam last in the AeroCell™ Advanced Treatment System?

Open cell foam has been used as a wastewater treatment medium for approximately 10 years. There have been very few problems with foam degradation and plugging. We package the foam in mesh bags (4 per module), which are easily cleaned or replaced if a problem arises. We also warrant the foam to be free from defects and workmanship for a period of 10 years.

2. Under what conditions are drip irrigation systems typically used?

Typically, drip systems are installed in a smaller area compared to conventional gravel trench systems. This is very advantageous where limited space is an issue. Shallow installations of 6 inches are common and allow greater vertical separation distances to bedrock, water tables and restrictive soil horizons. This is very important because it allows the effluent to percolate through the soil, thereby maintaining a well drained and an aerobic environment in the soil system. Steep or complex contours are more easily dealt with by using drip irrigation because in part, smaller, more easily maneuverable equipment is used. In addition, there's no trench rock to move or significant backfilling required. These are only a few of the many advantages of drip irrigation. Please contact us if you need assistance or have questions.



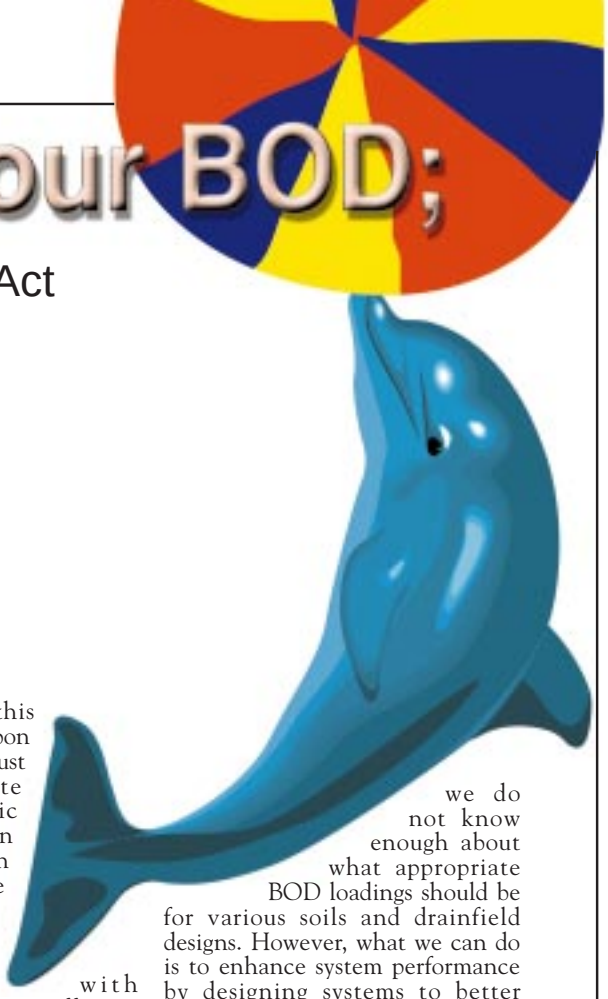
3. How is the optimum filtered pump vault length determined?

To determine the optimum length to use, first determine the application. For example, will the pump vault be located in a primary septic tank, a two-compartment septic tank, or a separate pump basin? If the pump vault will be located in a primary or two-compartment septic tank, it's important to locate the filter screens within the "clear zone" as much as possible. The clear zone is located at approximately the same depth as the bottom of the outlet tee or baffle for the chosen tank. If you don't know this depth, contact the manufacturer. If the pump vault will be located in a separate pump basin where time dosing will be utilized, it's important to located the bottom of the vault lower in the tank so more storage capacity can be maintained in the pump basin. This will prevent or minimize high water alarm conditions during times of higher water use. Please contact us if you need assistance with sizing a filtered pump vault.

Managing your BOD;

A Balancing Act

By Richard J. Otis, P.E.
Ayres Associates



Successful performance of an onsite wastewater treatment system depends on effective removal of the BOD or Bio-chemical Oxygen Demand in the wastewater. BOD is an analytical measure of the amount of oxygen that micro-organisms need (oxygen demand) to oxidize or degrade the waste materials present. In domestic wastewater, the source of the largest share of BOD is carbonaceous or organic carbon materials. If not removed, the organic carbon accumulates on the infiltrative surface of the drainfield in the form of particulate wastes or active biomass clogging the soil pores.

Hydraulic failure of the system soon follows. Organic carbon can be removed from an onsite system by pumping and hauling septage for treatment and disposal elsewhere or by converting the organic carbon to carbon dioxide (CO_2) or methane (CH_4) gases. However, the amount of organic carbon that can be removed by removing septage is limited because of the digestion of the settled solids that occurs in the septic tank.

This digestion process partially degrades the particulate BOD and releases soluble BOD that enters the septic tank effluent, which flows to the drainfield. Some removal of organic carbon as carbon dioxide and methane may occur in the tank, but the micro-organisms that can generate methane are strict anaerobes (cannot tolerate any oxygen) and are most efficient at temperatures greater than 90 degrees Fahrenheit. These conditions seldom, if ever, occur in septic tank systems, so little carbon is lost via this route. Therefore, carbon dioxide generation must be the predominate pathway for organic carbon removal. Carbon dioxide generation requires that free oxygen be present for the micro-organisms to use in their metabolism. As with any chemical reaction, sufficient oxygen must be present to meet the stoichiometric requirements or quantities necessary for the reactions to proceed. In addition, reoxygenation must occur to replace the oxygen consumed in these reactions. If either of these conditions is not met, anaerobic conditions will be created because the oxygen demand applied is greater than the available oxygen supply. drainfields, the organic carbon will accumulate on the infiltrative surface. Therefore, to maintain hydraulic performance of an onsite system, the rate that BOD is applied to a drainfield must be balanced with the rate that oxygen can be re-supplied to the system. Do we design onsite wastewater treatment systems with this in mind? We should but our septic tank codes are based on hydraulic loadings rather than on BOD loadings. This is why hydraulic failures are common, particularly with high strength wastes or in homes with large families. Instead, we should base system design on organic loadings and the reaeration potential of the drainfield. How should we do this? Unfortunately, we do not know enough about what appropriate BOD loadings should be for various soils and drainfield designs. However, what we can do is to enhance system performance by designing systems to better maintain the balance between BOD loading and reaeration. This can be done through siting, design, and operation of the systems. In siting a system, the elevation of the infiltrative surface of the drainfield should be placed well above the capillary fringe of the water table to maximize the volume of air-filled pores.

Designs should incorporate dosing in a manner that applies the septic tank effluent onto the infiltrative surface uniformly in space and time. The dose volume should be sized to limit the BOD loading to the available oxygen in the soil and the time between doses be sufficiently long to allow re-aeration of the soil before the next dose. Another method would be to reduce the BOD loading to the infiltrative surface. This can be done by removing BOD before application to the soil through the addition of aerobic pretreatment or by increasing the infiltrative surface area to reduce the hydraulic loading. Several other methods can be used.

It's nothing more than a balancing act! .

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Better Treatment

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- Redesigned filter plates

Patents Issued & Pending

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