THE ZABEL ZONE®

Fall 2002

THE ONSITE WASTEWATER MAGAZINE

State Training Centers - The wave of the future
See page 12

America, Australia, and New Zealand have combined forces for a massive trade show
See page 29

Anniversary Issue

The Zabel Zone® is celebrating its 5th year! Along with great new articles we are including some of the best from past issues.

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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@zabelzone.com

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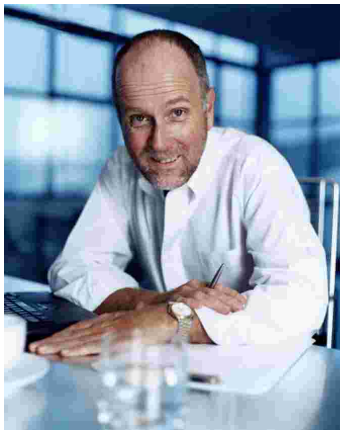

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Editor's Corner

Jan M. Nurse, DMD

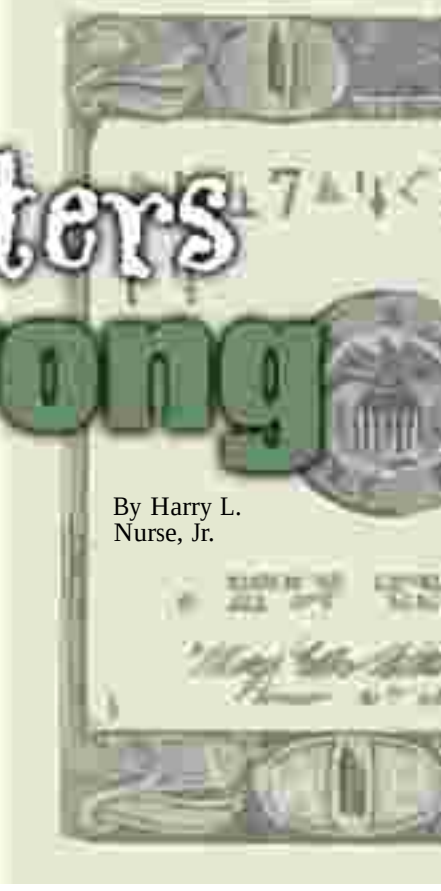
Welcome to the 5th anniversary edition of the Zabel Zone! Inside, you'll find a mix of new and 'best of' articles that we hope you will find interesting and informative. It was difficult to select articles from old issues because they're all packed with good information, but we did our best to give you a good sampling of the past five years.

If your favorite oldie was omitted, we apologize, but let us know. We're always interested in our readers' input, and you may see it in a future issue. We couldn't keep publishing our magazine without great authors and readers. Thanks from everyone at Zabel.

Spring 2000

You will know the "best of" ads, they have the cover of the corresponding issue on them.

A Million Filters Can't Be Wrong



By Harry L. Nurse, Jr.

The late Bob Zabel, onsite industry pioneer, would be thrilled that the filter concept he invented is approaching the one-millionth filter sold bearing the ZABEL® brand. We all owe Bob a lot. It is hard to believe not long ago the concept of putting a filter in the tank was actually controversial. In the early 90's, progressive Florida was the first state to require filters in all new septic tank installations and the debate raged on whether it was a good idea. Some claimed the result would be massive clogging of filters and thousands of irate homeowners calling their health department to complain. Others said filters do nothing but then claimed the filter would plug. And even a few suggested the filter would do too good a job and future drain field repair and replacement business would be lost.

But all of that is in the past. Effluent Filters are required in some form today in almost a third of the 50 states and many counties in other states have their own filter requirements. National and state design manuals routinely show them installed in standard and advanced systems. Now we even have a national filter standard (NSF Standard 46) under which seven national manufacturers are certified. Shortly after the Florida regulation went into effect, the concept 'Assuring Septic Tank Maintenance with Effluent Filters' was born while I sat in yet another conference discussion regarding the failure of onsite systems due to lack of maintenance. Almost every onsite conference tackles this issue in some form.

In a recent article appearing in Small Flows Quarterly Magazine comparing five onsite systems (four advanced, one conventional), the authors lament the lack of adequate operation and maintenance on the four advanced systems, and make no mention of maintenance requirements for the conventional system.[1]

The problem with the debate is it focuses almost exclusively on advanced treatment systems while conventional systems make up more than 80 percent of all systems installed. It also treats all systems as if the maintenance intervals will be the same regardless of homeowner use. Maintenance manuals for cars, for example, may suggest mandatory inspection and service intervals, but they also warn that heavy-duty use requires more frequent inspections

Onsite systems are dependent on the homeowner for maintenance. Onsite systems, by definition, are only serviced when they are perceived to have failed by the homeowner. It is this issue that regulators grapple with when establishing mandatory inspection intervals. If maintenance is dependent on the homeowner, the key to getting systems serviced is to manage the homeowner. In other words, build into the system a trigger mechanism that requires service or will slow down and eventually prevent the use of the system until service is performed

So what about conventional systems? Is there an

Over 1,000,000 Served

easy way to assure conventional systems are serviced before they have a critical failure? That brings us back to the concept 'Assuring Septic Tank Maintenance with Effluent Filters' that has appeared as a magazine article and a slide presentation many times since 1994.

The states that require effluent filters in conventional systems are now assured that every system will be serviced prior to solids build up reaching a critical point that causes system failure. The filter not only protects the field from solids carry over during normal operation, but when solids have built up to a significant level the filter will begin to plug causing a gradual slowdown of the system.

All the homeowner will know is their system has a problem. The system begins to slow. They call for service. The filter is cleaned, the tank pumped and drain field inspected in the interval needed by this individual system. Not some off-the-wall mandatory pump interval, which may respond well to industry averages but has absolutely nothing to do with what is actually happening with this individual system.

In 1990 when I proposed a filter should be required in every tank, many asked why. Now I ask those remaining states that do not yet require filters, why not? Almost 1/3 of the states and a million filters ask why are you waiting? Bob Zabel invented the original ZABEL filter for solids carryover to prolong drain field life and the data proves he accomplished his goal. But who would have ever thought the result of his work would be a $20 solution to the billion-dollar question of assuring maintenance in conventional systems. Eighty percent of onsite systems can have assured maintenance by requiring an effluent filter on the outlet of every septic tank.

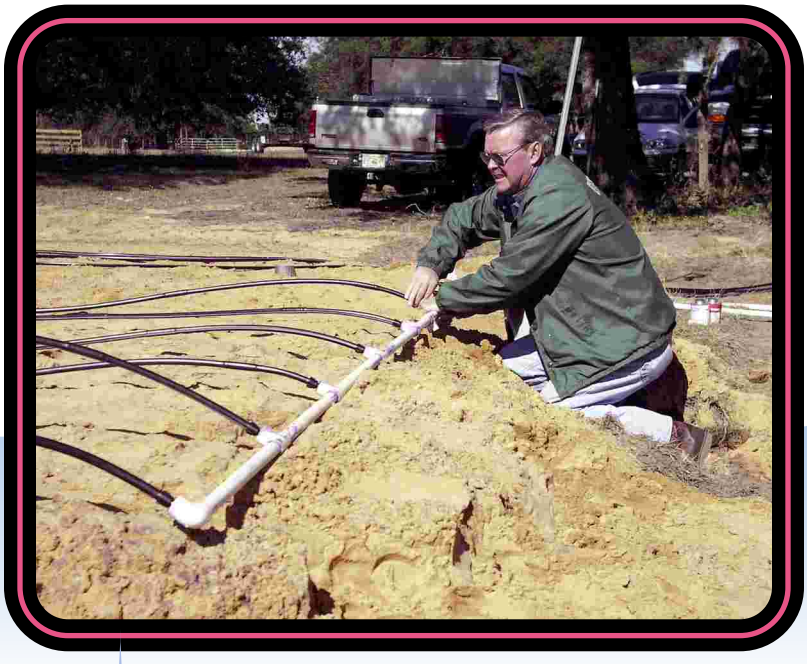
Thanks Bob.

[1] Alternative Small-Flow Wastewater Technologies in the Arid Southwest, Small Flows Quarterly Summer 2002, Pages 32-37

Drip™ irrigation

Regulations:

How Specific Should They Be?



By Calvin Locker

For more than fifteen years, subsurface drip irrigation systems have been installed for the disposal of effluent from various treatment devices. These pretreatment systems have ranged from standard septic tanks to different types of advanced treatment units such as aerobic systems, sand filters and other types of media filters. Most, if not all, of the drip systems were initially installed in the southern states, particularly Texas, Georgia and Mississippi. It was assumed that the northern climates would cause the drip systems to freeze in the winter months. During the early years, the drip irrigation systems were installed without benefit of either regulations or guidelines that defined proper design and installation criteria.

The early "trial and error" years experienced the typical problems associated with the use of new and untried technology. There were a considerable number of problems and failures associated with the early installations. These problems were due to several factors, including inadequate site and soil evaluations, poor equipment choices, inadequate pre-treatment, poor installation procedures and lack of maintenance. One state reported problems with over 98% of their installations. As a result of these problems, states began to write regulations for the design and installation of subsurface drip irrigation systems. Today, with many states currently using, or anticipating the use of drip irrigation systems for effluent disposal, we are faced with the problem of determining what needs to be addressed in the regulations and how specific (or restrictive) these regulations should be.

For those states that have experience with drip irrigation systems, their requirements are typically based upon those experiences in order to prevent the re-occurrence of any problems that they may have already encountered. However, states with limited or no experience, must rely upon information and recommendations they receive from other sources, including industry, state and local regulators, as well as the academic community. When using the experiences of outside sources, it is important to communicate with several parties. This helps avoid the potential of receiving "biased" recommendations due to the individual's personal preferences or conditions that may only affect a limited number of installations. Also, care needs to be taken so that the requirements are based upon accepted industry standards rather than the specifications of an individual product.

Requirements for the design and installation of drip systems should address those areas which can cause system malfunction and failure, but not necessarily define how each manufacturer must meet the requirements. For example, filters may be required to protect the drip tubing. However, the manufacturer of the tubing should be allowed to determine what type and size of filter is appropriate for their product.

It is important that all regulations, including those for drip irrigation systems, adequately address the critical areas of design, installation and maintenance. However, they should not be so specific or restrictive that they prevent manufacturers from making changes that may improve their products, or create unnecessary expenses for either the consumer, manufacturer or installer. Well-written regulations protect the public from health and environmental hazards, insure that quality materials are used, while maintaining a fair and equal playing field for industry, including both manufacturers and installers.

Spring
1997

By Theo Terry, RS

There's an old saying—an ounce of prevention is worth a pound of cure, and for the homeowner putting in a sewage treatment system, this couldn't be truer. Planning for the future at the time the system is installed can save a great deal of aggravation and money, simply by installing a Zabel® Filter and Flow Director.

In order to understand the significance of this statement, it is important to consider the most common reasons for an onsite sewage system's failure. Although there are many reasons, most are caused by three basic things: lack of maintenance, hydraulic overload, or damage to the system. Let's consider each of these, one at a time.

1) Lack of system maintenance: When does the typical homeowner think about maintaining his septic system? Usually, when it's too late - there's either a backup into his home or a breakout in his yard. By then, the damage has already occurred. Most then have the tank serviced, hoping this will solve the problem. After repeated service calls, (and a great deal of unnecessary expense) the health department regulators are called in. And then what? The homeowner is told the system will have to be replaced. More expense, not to mention the inconvenience and mess of a landscaped lawn being sacrificed for the installation of a new system.

2) Hydraulic overload: The site may have a problem with a restricted soil horizon that is allowing a perched water table to infiltrate into the disposal field, thus overloading the system. The homeowner or builder may have diverted rainwater downspouts or other sources of surface water toward the disposal field. The system may actually be undersized, through a fault of design or construction, or due to a change in the average daily waste load. Even something as simple as a leaking plumbing fixture can cause the overload. Again, the answer for the homeowner is to have the tank serviced. And the cycle begins again—repeated service calls, more expense, and a cry for help from the regulators. In this instance, the answer is to resolve the source of the excess water by installing an interceptor drain, diverting surface water away from the field, or fixing the leaking plumbing fixture. Last but not least, is the installation of a "Y" valve, and adding more disposal field to carry the load so the initial field may recover. Again, more expense and the sacrificing of a landscaped lawn.

3) Damage to the system: The most common cause is through the fault of the homeowner, particularly in the form of "home improvements"—the construction of a new driveway, garage or aboveground pool, not so intelligently located over the disposal field. And what about the landscaping I've mentioned so many times now? When that new tree or row of shrubs is planted without consideration for the placement of the system, trouble usually follows. In fact, homeowners can be quite ingenious at coming up with ways to destroy their septic systems with the end result generally being the replacement of all or part of that system.

Do you see a pattern forming here? Homeowners are their own worst enemies when it comes to their onsite sewage disposal systems, but back to that "ounce of prevention". A little additional expense of adding the Zabel Filter and a Flow Director provides the insurance the homeowner needs against a failing system.

The Zabel Filter prevents solids from leaving the septic tank and therefore prevents the blockage of pore spaces within the soil structure that is vital in the disposal of onsite wastewater. At the point in time the filter matures, it alerts the homeowner to service the septic tank, prior to the destruction of the disposal field. It's a foolproof safeguard, even for the homeowner who generally doesn't like to consider his sewage disposal system until a problem develops.

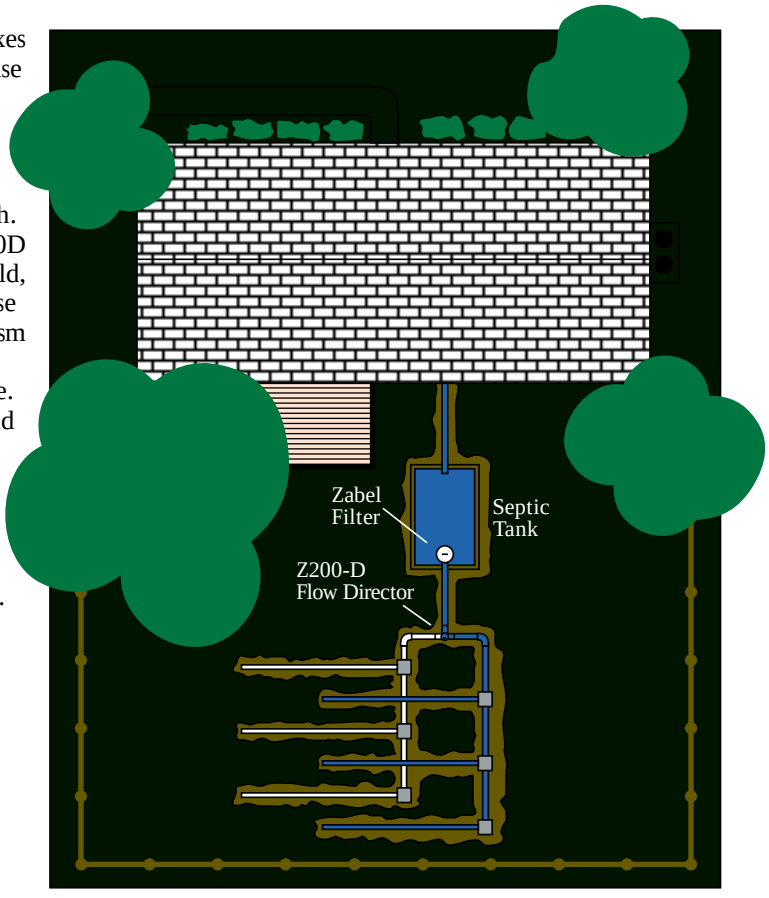
While filters are generally accepted as a safeguard for the homeowner (in fact, many states and counties are moving to require filters as part of approved conventional disposal systems), Zabel also has a second type of "insurance" for the homeowner—the Z200D Flow Director. This inexpensive device has the capacity to act as a "Y" valve, but more importantly, it has the versatility that a "Y" valve lacks. Where a "Y" valve directs flow to either field A or B, the Z200D Flow Director has the capability to direct flow to either field A or B, or if needed, to both fields equally. Once again, this Flow Director is "homeowner-proof" on a level field, because if the homeowner fails to manually change the direction of the flow, the Z200D will gravity back flow from the primary to the secondary field, reducing the probability of an effluent breakout on that landscaped lawn.

Even the problem that occurs in many distribution boxes when the ground settles is avoided by the Z200D, because the Z200D keeps providing equal distribution due to it's exclusive patented three-point support system. Studies by Dr. Bob Rueben, at North Carolina State University, show that the Z200D delivers a relatively equal amount of flow, even when off-balance as much as a quarter-inch.

By installing a Zabel Filter in conjunction with a Z200D Flow Director, solids are prevented from entering the field, homeowner maintenance is encouraged, and during those inevitable times of hydraulic overload, a built-in mechanism diverts flow to one-half of the field, allowing the first to recover. All this for less than the price of one "Y" valve.

Simple, really. An ounce of prevention is worth a pound of cure.

Editor's Note: Theo Terry is a former regulator from the state of Kentucky with seventeen years of experience in the onsite wastewater industry. He is the past President of the Kentucky Onsite Wastewater Association (KOWA). When not working, Theo loves spending time with his family and coaching Little League Baseball.



CENTER FOR DECENTRALIZED WASTEWATER MANAGEMENT

By C. Roland Mote, Assistant Dean, Tennessee Agricultural Experiment Station
Tom Petty, Past-President, Tennessee Onsite Wastewater Association

The establishment of a center for decentralized wastewater management in Tennessee has long been a goal of the Tennessee Onsite Wastewater Association (TOWA) and other onsite wastewater professionals in the state. This follows a nationwide trend to provide training facilities for onsite professionals and spotlight new technologies.

This goal is now being realized. The University of Tennessee's Agricultural Experiment Station has formed a partnership with the Tennessee Department of Environment and Conservation (TDEC) (Division of Ground Water Protection), the Tennessee Valley Authority (TVA), and TOWA to secure a 319(h) grant from the Tennessee Department of Agriculture's Nonpoint Source Program to establish the Center for Decentralized Wastewater Management.

This marks a milestone in the evolution of TOWA. Since its formation in 1995, establishment of a training center has been one of its main goals. Early attempts were directed at the establishment of smaller demonstration sites. The partnership formed by TOWA, TVA, TDEC and UT, now makes it possible to develop a world class center that will not only provide training in approved technologies, but also provide a site for showcasing and testing new and existing technologies, with the goal of providing more wastewater disposal options for the citizens of Tennessee.

Total funding pledged over a four-year period to establish the Center is $672,163. The 319(h) grant will provide 59% of the funds and the remaining 41% will be provided by the key cooperating agencies: TDEC, TVA, and TOWA (donated services, equipment and supplies, and treatment systems for the Center). Expectations are for the Center to become self-sustaining after the 4 year development period using income generated from its services and other sources.

The Center will be an education, service, and research program of UT's Institute of Agriculture. The principal training location will be at the Agricultural Experiment Station in Spring Hill, TN (south of Nashville). Training will also occur at a variety of other locations across the state to provide regional service. Training curricula will be developed for installers and regulators of onsite technologies, as well as continuing education training for other stakeholder groups such as realtors, engineers, surveyors, soil scientists and political officials. An Advisory Board consisting of representatives from TOWA, TDEC, TVA, housing developers, county/community governing bodies, and environmental interest groups will regularly review Center

"New Training Centers are popping up everywhere."

The partnership formed by TOWA, TVA, TDEC and UT, now makes it possible to develop a world class training center

The objectives of the Center are to:

1. **Train** Decentralized Wastewater Treatment Systems (DWTS) technicians (e.g.: installers, septic tank pumpers, inspectors, systems operators, etc.) in the proper installation, operation, and maintenance of established and evolving DWTS technologies.

2. **Educate** DWTS professionals (e.g., system designers, regulation writers, etc.) in the science and practice of successful decentralized wastewater management.

3. **Teach** consumers/users of DWTS technologies (e.g., community opinion leaders, housing developers/builders, home owners, etc.) to recognize and appreciate the advantages and disadvantages of decentralized wastewater management.

4 **Demonstrate/evaluate** alternative decentralized wastewater management technologies.

5. **Develop and/or identify** decentralized wastewater management technologies compatible with specific limiting soil/site conditions.

> "Training Centers for educating wastewater professionals are the hottest thing going."
>
> Bill Rawlins

For a complete list of Training Centers log on to www.zabelzone.com

activities and provide advice for improving the Center's educational and service programs.

With the advent of so many training centers around the country, it is possible to develop this center without "reinventing the wheel". A group spearheaded by TVA and led by Jennifer Brogdon of TVA has visited many existing sites. The goal of this effort was to talk to other training center directors, and learn what they did right and wrong. This way, the Tennessee center can be developed without the pitfalls encountered by other states.

The overriding goal for the Center will be improvements in water quality in regions where water has been negatively impacted by improperly functioning treatment systems. A parallel goal is sustained growth and development in unsewered areas with no deterioration in quality of surface and groundwater reservoirs. Sustained operation of the Center should eventually result in detectable changes in the number of reported incidences of failing "septic tanks" and noticeable improvements in the quality of surface and groundwater reservoirs now negatively impacted by domestic wastewater.

The center will hopefully play a major role in the upcoming NOWRA meeting, which will be held in Franklin, Tennessee the first week of November 2003 (a few miles up the road from Spring Hill). Field trips will be planned with the possibility of some educational sessions being held at, and taught by, the center's faculty.

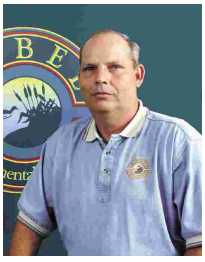
With the realization of this long-standing goal, it is important to recognize the value of partnerships in an endeavor like this. This effort has brought together regulatory, academia, manufacturers, onsite field professionals and engineers. An undertaking of this size could not be done without cooperative efforts from all stakeholders involved in bringing a successful decentralized wastewater system to the end user with the ultimate goal of protecting the ground and surface waters of our state.

Other Onsite Wastewater Training Center locations

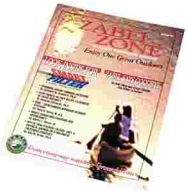
TRAINING IS THE ANSWER

Service

What A Great Idea!



By Bill Rawlins



Spring 1998

Operation & Maintenance (O & M) is an issue that has come to the forefront of today's onsite community. It is a lack of maintenance that has been identified as the leading cause of onsite system failures. In addition, it is the reason most often cited for installing central sewers in areas that could utilize onsite systems. In fact, the only attribute that a central sewer system holds over an onsite system is the fact that a central sewer system has someone paid to oversee O & M.

Just think about it. Onsite systems have proven their ability to deliver a higher quality effluent into the environment than do their counterparts, central sewer systems. Then consider the high cost of operating and maintaining a central sewer system. First you have the monthly sewer fees, then the hidden costs that come in the form of local taxes collected to offset the cost of maintaining these sewer systems. These taxes could have gone for other services or here's a radical thought; even lowered.

So given all these reasons, why do onsite systems continue to have an image problem? The reason is quite simple really; there have not been any operation and maintenance plans setup for onsite systems. Typically, onsite system maintenance has been the system owner's responsibility. Homeowners tend to think about their septic system only when it fails. A statement commonly uttered by homeowners is, " I don't understand what happened to my system, I haven't done anything to it or had any problems for the last 20 years and all of the sudden it just starts failing." Well it didn't just fail overnight, the problem has developed over time due to the lack of routine maintenance.

So the logical solution for this problem is to have some qualified person perform routine maintenance on these septic systems to ensure their continued high quality treatment and disposal of wastewater at the point of origin. Because if properly maintained, onsite systems are permanent solutions to wastewater treatment rather than a temporary fix until central sewer comes along. Sounds simple, so what's the problem?

The problem is that most everyone in the onsite industry has taken too narrow a view of the role they play in the successful treatment and disposal of wastewater. They do not see themselves as being in the onsite wastewater treatment business. Instead they view themselves as being an installer - a person who installs or repairs systems; a pumper - a person who pumps tanks, etc. What is needed is for these folks to take a holistic approach to the onsite wastewater market. We need for them to view themselves as onsite wastewater professionals.

Onsite professionals specialize in onsite wastewater treatment and disposal and not just one particular aspect of the industry. They provide "cradle to the grave" type service. They install systems, service and maintain systems, repair, and when necessary, replace systems. In essence, they provide one stop shopping.

Does this mean that every installer has to go out and purchase an expensive pumper truck, or that every

pumper needs to purchase an expensive backhoe and dump truck in order to provide this broad range of services? The answer of course is no! What they do need to do is establish some strategic alliances with complimentary onsite professionals. For example: John Doe's Backhoe Service may form an alliance with Bob Smith's Pumper Service. Now, without an increase in capital investment, both companies have potentially doubled the range of services they can offer to their respective customers.

The next step is to develop an O & M Agreement that can be sold to the systems owner at the time of initial installation or when first serviced. The agreement specifies that the onsite system will receive an annual inspection and that routine service will be performed at the time of inspection. Let's take a look at each of the two main components of this agreement.

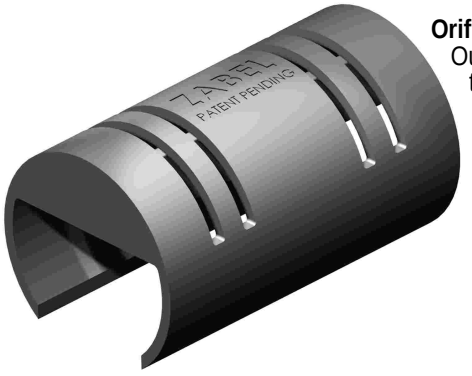
The inspection shall consist of such things as checking the structure of the septic tank, the condition of baffles or tees, the scum and sludge levels, and the operation of the disposal field. For alternative systems or for those systems involving a pump, the inspection process will be more elaborate, but this should give you a pretty good idea of what is needed to be included in the agreement.

The routine service shall consist of such things as cleaning the effluent filter, switching the alternating valve, and pumping the septic tank when needed (generally every 3 to 5 years). If the inspection reveals that the septic tank needs to be pumped more often than once every three years, this would entail an additional charge. Again, as stated earlier, for alternative systems or for those systems involving a pump, there will be additional service needs.

So what does this mean for you the onsite wastewater professional? How does increased profits, more return business and better acceptance of your profession by the general public sound? If it sounds like what you are looking for then you have taken the first step to becoming an onsite wastewater professional. All you have to do now is work out the details of how the two companies share the fruits of their joint efforts.

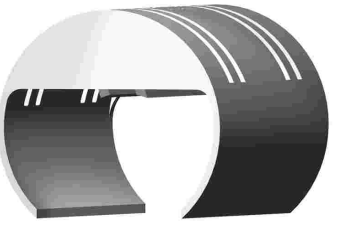
For example, John Doe's Backhoe Service has an O & M Agreement with John Smith the homeowner. During an annual inspection it was determined that the septic tank needs to be pumped. Mr. Doe had previously negotiated a price for this service from Bob Smith's Pumper Service and had already incorporated this cost into the price of his O & M Agreement. Thus, the homeowner benefits by having his system serviced, the installer gains additional revenue beyond the initial profits for installing the system and the pumper is guaranteed a service call. Everyone comes out a winner. And the biggest winner of all? The onsite wastewater industry!

An easier question might be "What isn't new?" With all the new and improved products that we have introduced the past couple of years, it would be quicker to list the original Zabel® products. But at Zabel, we do not spend precious time looking back. Instead, we look to the future of onsite and the leadership role we will play in that future. With that said, here's what's new for the fall of 2002:



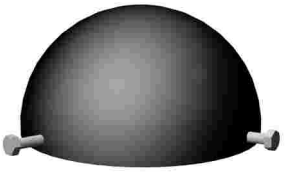
Orifice Shields

Our new patent pending Orifice Shield is molded in a process that assures uniform parts time after time. Design changes include closing the ends to protect from soil or media incursion and a unique internal weir that reduces short-circuiting and provides for even flow. It's constructed of PVC and is currently available in sizes to snap fit onto 3/4", 1", 1.25", 1.5" and 2" pipe.



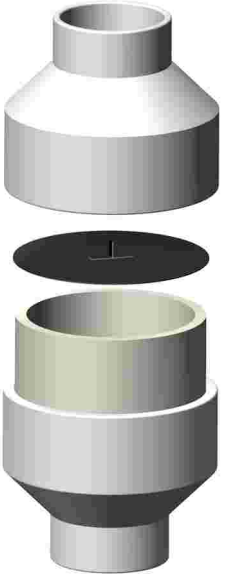
Flow Divider/Director

This Zabel standby has undergone a makeover. Due to the success of the Versa-Tee and its ability to work with either SDR 35 or Sch 40 pipe, we've now decided to add this feature to the Flow Divider/Director. The New Flow Divider/Director will attach to either grade of drainpipe without the need for additional fittings.



Carbon Filters

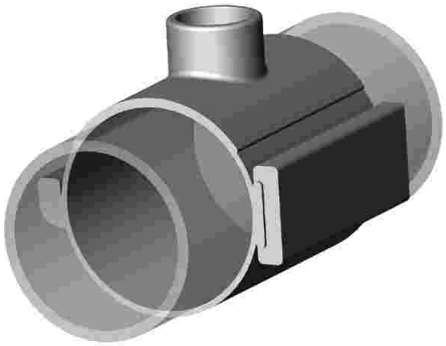
This product has a multitude of uses from rooftop plumbing venting and advanced treatment system venting to soil absorption field venting. Its secret is the replaceable Activated Charcoal Cloth or ACC with its special additive for adsorption of odor causing-gases such as hydrogen sulfide and ammonia. ACC is more efficient than granular activated carbon without the mess. Simply replace the ACC disc once a year. The new patent pending design comes in three sizes: 2", 3" and 4". Switch to these carbon filters for your venting needs and see your odor problems go away!



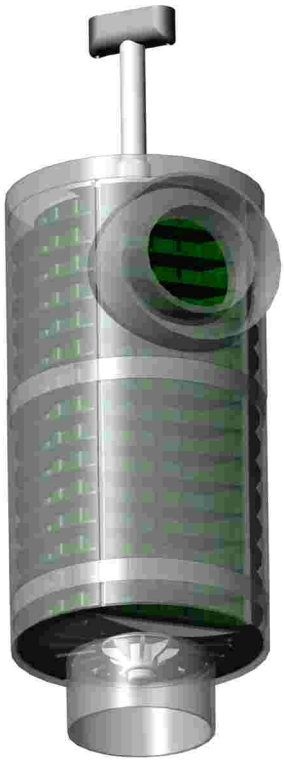
Air Compressors

Zabel now carries a full line of GAST and Thomas compressors and blowers for your Aerobic Treatment Unit needs. These compressors and blowers cover 90% of the ATU systems on the market today. Don't wait. Call today to get these units to cover your maintenance contract needs.

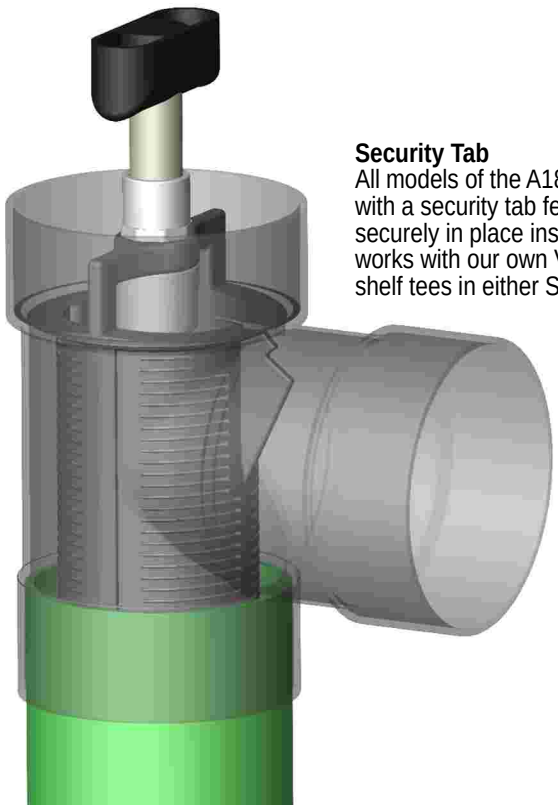
Riser/Basin
New to the 26" Diameter Series of Risers & Basins is the 26" x 18" version of this highly popular series. This gives the user the option of using a single piece riser for those needs where a 12" riser is not sufficient. Constructed of the same high quality polyethylene you have come to expect from Zabel, this series comes with the patented twist and lock design that is interchangeable with any of the other 26" series of risers and lids.



Flo Saddle
Tapping into that 4" sewer line just got easier. Zabel's new Flo Saddle makes recirculation back into the primary tank by way of the sewer line a snap. The only tools needed are a 2" hole saw, a rubber mallet and of course the new Flo Saddle.



Versa-Case
The new patent pending versa-case outlet filter design is now available on the 8" A100/300 series of effluent filters. You can now enjoy this level of drainfield protection on all models of Zabel filters.



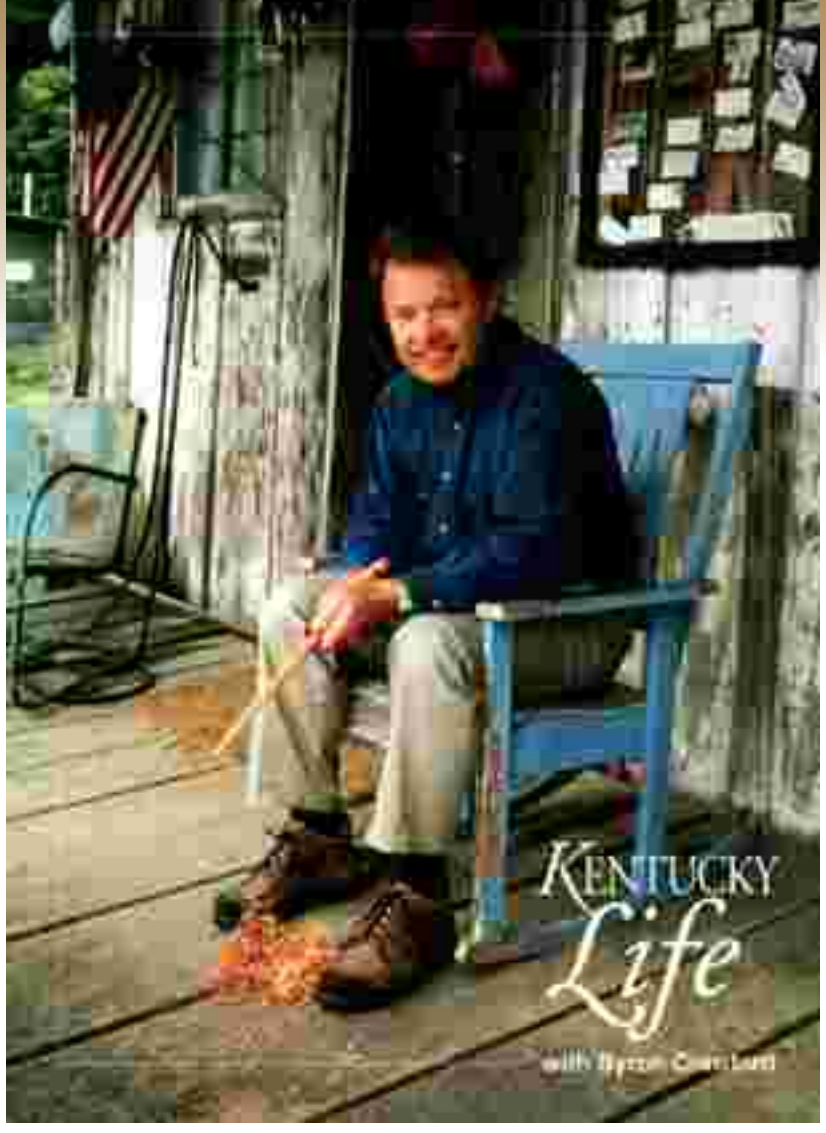
Security Tab
All models of the A1801 filter cartridges now come with a security tab feature that holds the filter securely in place inside the outlet tee. The tab works with our own Versa-Tee as well as off-the-shelf tees in either SDR 35 or Sch 40 versions.

For the latest in what's new at Zabel. Log on to our website at www.zabelzone.com and click on the **What's New** link.

THE GREATEST FOOTBALL GAME OF ALL

By Byron Crawford

Spring
1998



The Monday-morning quarterbacks were huddled around a coffee pot, discussing their most unforgettable football games. I could not help but overhear- and wanted to join them, but didn't.

My most unforgettable game wasn't a game in which I played. In fact I wasn't even there. Almost no one was. But a friend of mine, the wife of one of the referees, was among the handful of people in the stands that mid-October evening in 1980, when two seventh-grade teams tangled on a field behind a school in rural Central Kentucky.

One of the teams was pretty good; the other was pretty bad- so bad that it had not scored a single touchdown the entire season.

That was one of four seventh-grade squads organized as part of the feeder system for the county's strong high school football program. The coaches were teachers who had picked their players. Three of the coaches had chosen the best players available. The fourth, a special-education teacher who didn't know much about football, had chosen with his first pick a stocky youngster with a broad smile who answered to the name "Bubba."

Because of a birth defect, Bubba had no arms below the elbows.

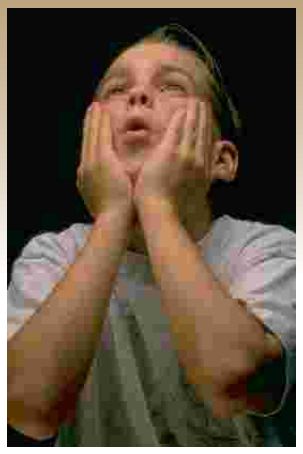
The coach had never been much of an athlete. One of the painful memories of his childhood, he later told my friend, was that he had always been picked last when playground teams chose sides. Maybe that was why his team of seventh-graders was loaded with kids who might always have been picked last; the boy with no arms, a boy with cerebral palsy and several other youngsters whose strength was confined mostly to the heart.

The other three seventh-grade teams were fairly evenly matched, but when one of them played the team coached by the special-education teacher, the result was always a rout.

Although the other coaches never seemed satisfied with their teams' winning performances, my friend had noticed all season that the fourth coach would often give high-fives to his losing players who ran fast and got scratched, or even to those who got grass stains on their uniforms.

Late in that memorable game- with his team down again, maybe 50 or 60 to nothing- the coach called an uncharacteristic timeout. He had decided that Bubba should run the ball, because no one was defending against him.

"Bubba," he instructed, "when they give you the ball, I want you to run like a big dog is after you."



Seconds later, as Bubba clutched the ball between the stubs that were his arms and charged up the middle, it was, my friend said, as though the opposing team was trapped in one of those slow-motion movie sequences reserved for moments magical.

The coach watched with fists clenched against his face as Bubba scampered toward the end zone from about midfield, crossed the goal line, ran between the goal posts, out of the end zone and across the track beyond, stopping only when he reached the fence.

As his teammates embraced their smiling, armless hero and struggled to hoist him into the air for a fitting celebration of their only touchdown of the season, my friend saw the coach- sitting on the bench, his face in his hands, crying. She could see his shoulders shaking.

In that splendid little moment, the Rose Bowl, the Super Bowl and the all-star games could all have been hidden in the exuberant shadows of a ragtag bunch of mostly 12-year-olds, the majority of whom would never play organized football after that season.

One of the referees that night, who would eventually go on to officiate at the college level, later recalled that he had been prepared to throw a crucial block, if necessary, and risk ruining his future as a referee, to see the kid with no arms score the touchdown of his life.

Football has never been quite the same for my friend since that night, or for me since I heard the story five years ago.

The Monday-morning quarterbacks may have seen some good games, but they missed the best one.

Byron Crawford is a resident of Shelbyville, KY. He is the Kentucky Columnist for the Courier Journal and the Cincinnati Enquirer. He has written two books, Kentucky Stories and Crawford's Journal.

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By Theo Terry, RS

House of Cards

Times sure have changed. Recently, my family, along with my wife's sister and brother-in-law, purchased a fish camp on Nolin Lake. We figured it would make a great place to crash after a hard day of fishing, or, as my wife says, a place just to get away from the phone ringing and the constant line of neighborhood kids tramping through our house. When we were making out a list of necessities to take with us to the camp, we wrote down a few board games and a couple of decks of cards.

Well, our kids quickly let us know that they weren't interested in board games or card games. Their list included a Game Cube and a VCR. I tried to explain that with a deck of cards you can do more than play games; you can test your skills at building a house of cards. "Who needs cards?" they asked. Then they showed me a computer game called Sim City, which allows them to design a whole city, along with the necessary infrastructure, with just a few clicks of the mouse. Obviously, we were on two different levels.

This got me to thinking: sometimes I become frustrated when I am seeking approvals from state or local regulatory agencies for new Advanced Treatment Systems. Just as the technology for computer games has advanced, so has the technology for these new, safe, and economical means of treating wastewater. However, with a constantly changing onsite market, it's understandable that sometimes we're approaching approvals from different levels.

If I tried to force my kids to accept the games of my youth as the only acceptable means of entertaining themselves, they'd soon get bored, and the end result would be, no one would be entertained. While there's certainly nothing wrong with playing board games or cards, let's face it: my kids are of a generation that looks for more technical and advanced entertainment.

Certainly, new Advanced Treatment Systems are being designed and offered for use each year. In order to gain approval for these systems, it's important for there to be a nationwide effort to identify the level of the system's performance to be achieved. In addition, there should be uniformity in the means by which this level of performance will be evaluated, such as NSF certification.

Once guidelines are established for granting approvals for Advanced Treatment Systems, then frustration and confusion are eliminated. Everyone now knows "the rules of the game." Most importantly, these rules should be published and followed.

Otherwise, our industry is just building an approval process that is a house of cards, and like that, is doomed to fall.

Maintenance BY DESIGN

by Lorene Lindsay

Lorene Lindsay holds a Master's Degree in Environmental Engineering from the University of Florida. She has over 20 years of experience in the environmental field, currently operating her own state certified lab for water and wastewater testing and provides operation and maintenance for small wastewater treatment systems.

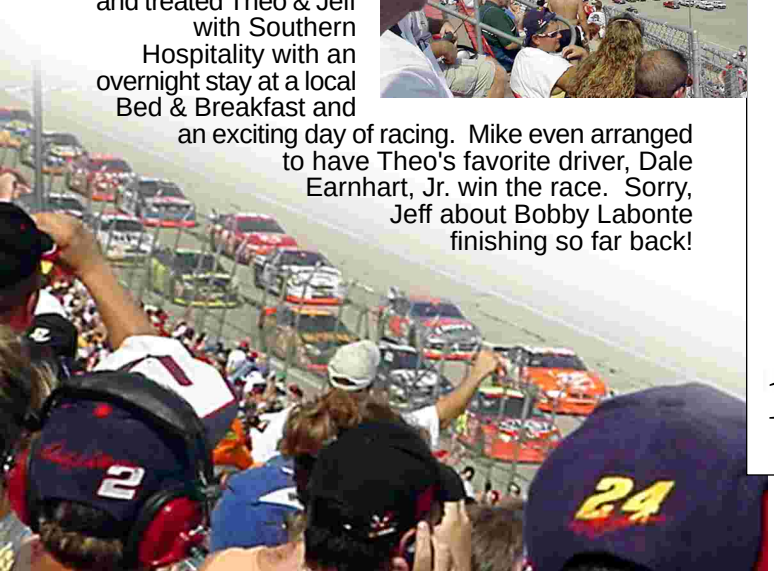
The On-site wastewater treatment industry has experienced an explosion of growth and improved technology over the past five years. The variety of products and the many different technologies available for on-site wastewater systems provide much better treatment than in the past and can provide solutions for extremely environmentally-challenged lots. I live in a resort/lake community "blessed" by rocky soil and steep slopes. I am often asked if it is possible to put an on-site system on a particular lot. Of course. The question is if the owner is willing to pay the cost. These more advanced treatment systems have not only a higher installation cost, but also a higher maintenance cost. If we examine just one area of technology such as septic tank and pump vault filters, we can get a better feel for the tremendous growth in the industry. Several years ago only a few suppliers provided a very basic, simple filter system to be installed in the sanitary tee of an existing septic tank. The most recent product catalog from Zabel offers 13 pages of filters-all sizes, shapes, and designs including the new "smart" filter to let the homeownerknow when the filter needs service. Filters provide good service and play a vital role in making other aspects of the technology work. Without a good filtration system, more advanced treatment may not be possible. However, filters require maintenance. Some filter designs provide features that obviously make maintenance easier, for example, extension handles, easy removal screens, and larger filtration area. Unfortunately, designing a system for easy maintenance doesn't stop with product design. The well-designed product must be properly installed and provide proper access if the wonderful design features are to be realized.

Take a closer look at the application of a filter or screen vault. Does the design and installation of the system take into account future maintenance? To provide maintenance, the filter must be accessible through a large enough opening in the tank to allow a field technician the room to get to it and to use any tools needed to service the unit. What about clearance above the tank to pull out the filter and clean the screen? On more than one occasion, I have found filters installed that literally could not be removed for cleaning. Another common problem is a near-by water source to clean the filter. This source should be part of the specifications for the system. If the water source is potable water, then protection against backflow should be provided or taken into account in the cleaning process. Maintenance must be done in such a way that the system does not pose a health or environmental threat while maintenance is being completed. If every designer/installer were required to provide maintenance on the system, the design and installation would be much more carefully planned for these on-site systems. The more complex the design and technology become, the more maintenance is required for the system to keep it operating as designed and providing a high level of treatment. As an industry, we have begun to realize the importance of maintenance and many new treatment systems require a long-term maintenance contract. We still have some work to do to set national standards for operational personnel and to provide the training needed to prepare field technicians. We have begun to look at standards for certified installers and Zabel has become an early leader by establishing their Installer Certification Training Program. We also need to have certified operations and maintenance specialists who will be available to keep these systems operating properly. The On-site Wastewater Treatment Industry is a challenging place to be these days. Keeping up with new technology is difficult and

keeping up the maintenance is even harder. Better designs start with the product itself but the technology must be applied properly, the equipment correctly installed, and the system properly maintained to make on-site treatment a success. technology become, the more maintenance is required for the system to keep it operating as designed and providing a high level of treatment. As an industry, we have begun to realize the importance of maintenance and many new treatment systems require a long-term maintenance contract. We still have some work to do to set national standards for operational personnel and to provide the training needed to prepare field technicians. We have begun to look at standards for certified installers and Zabel has become an early leader by establishing their Installer Certification Training Program. We also need to have certified operations and maintenance specialists who will be available to keep these systems operating properly. The On-site Wastewater Treatment Industry is a challenging place to be these days. Keeping up with new technology is difficult and keeping up the maintenance is even harder. Better designs start with the product itself but the technology must be applied properly, the equipment correctly installed, and the system properly maintained to make on-site treatment a success.

Taking in the sights, scents and sounds of Talledega

Theo Terry attended the EA Sports 500 at Talladega with Jeff Miller and Mike Owens of Arrowhead Plastics. Mike acted as host and treated Theo & Jeff with Southern Hospitality with an overnight stay at a local Bed & Breakfast and an exciting day of racing. Mike even arranged to have Theo's favorite driver, Dale Earnhart, Jr. win the race. Sorry, Jeff about Bobby Labonte finishing so far back!



Preparing for our medical mission trip included going to the International Travel Clinic to update shots for Jan, my dentist wife, and I, but it was the first visit for our seven-year-old son, Morgan.

"Do I have to get a shot," he repeatedly asked anyone who would listen. Morgan is not a fan of shots, taking medicine or visiting the doctor and his willingness to undergo this perilous process reflected his commitment to the trip.

The nurse asked Morgan, "Why are you going to Honduras?" He replied, "To tell people about Jesus. Do you know Jesus?" She replied she did and this began an oft-repeated dialog Morgan was to have for the duration of the trip when someone asked him why he was going to Honduras- including his visit to the cockpit of the Continental jet taking us from Houston to San Pedro Sula. A smiling stewardess came back to where I was sitting and said, "I'm a Christian and your son just witnessed to our pilots. He asked them if they knew Jesus and when they said, 'Who is this Jesus?', his reply was, 'Our Lord and Savior'."

Three airplane rides, a 45-minute van ride over narrow, winding roads, and a final 30-minute boat ride brought us to the cinder block Oak Ridge Chapel on a small cay off Roatan, 40 miles from the Honduran coast. The final ride on the old 20 passenger, propeller-driven Russian plane from San Pedro Sula was the most exciting part of the long trip that ended in a place where three dollars a day is a good job and there are almost no cars.

A mission team of 18- four doctors, one dentist, six nurses, one pharmacist, four construction workers, one child hereafter known as The Evangelist and one gofer (me) - came to this small, out-of-the-way place to provide help and share the hope of Christ.

The medical team treated over 700 patients; the construction crew replaced windows, doors and wallboard in the pastor's storm damaged home; and Morgan gave out Gospel Tracts and Spanish New Testaments and played with the Honduran children.

The people were wonderful. An energetic local congregation led by Reverend Dave Kelly and his wife, Harriet, provided

interpreters, cold bottled water and a place for us to work. The highlight of our trip was worshiping with them on Wednesday night.

While some hymns and choruses were familiar, they were mixed with local Spanish songs that translated into loving God beyond human language. After three and a half days of 100-degree heat, 90% humidity, and some dysentery among the team members, we reversed our journey and 17 hours later we arrived at the Louisville airport.

Thankful to be home, grateful for the blessings of God and with new friends to pray for, we began planning the next trip!

The Evangelist has returned to the first grade telling his classmates about the Christians he met in Honduras. And yes, he is still asking those who will listen, "Do you know Jesus?"

Well, do you?

We Have Come a Long Way

By Eanix Poole, MSPH

Spring 1997

When we are involved in a job or business on a daily basis, it is often hard to recognize when progress is being made. It is often worthwhile to sit back and reflect on where we are headed and from where we've come. The onsite sewage treatment and disposal industry has progressed rapidly in the last 20 years. Just the fact that we now recognize that onsite systems actually treat sewage is a milestone! Performance standards are now being discussed to determine acceptable treatment levels with various applications.

One of the most convincing ways to judge just how far this industry has progressed is the observation of repair jobs. All the sins of the past are right there staring you in the face. Years ago, systems were routinely installed directly in the ground water or near surface waters without thought. There was no continuity of sizing drainfields. Systems were installed too deep to function properly or to provide adequate treatment. Tanks were often of poor quality and leaked like a sieve.

Another way to realize how far we have progressed is to be involved with an inexperienced or unlicensed installer or with a homeowner who insists on doing their own installation. It always takes a tremendous amount of time and energy to get the installation into compliance. It is amazing how many people think that they're an authority on septic tanks and just how much misinformation there is about the design, installation and operation of onsite systems.

Education of regulators and installers is responsible for most of the change. Unfortunately, it has been slow because these two groups have had to be responsible for most of their own education. Universities who normally lead the way for higher education have been slow or reluctant to recognize the need for education and training in this area. Some engineering principles can be applied to many field applications, including onsite systems. However, there are certain unique principles and knowledge that can only be applied to onsite systems for successful design and installation.

Some overzealous developers have caused this industry irreparable harm. Development interests have insisted on using onsite systems for highly dense developments or in areas completely unsuitable for onsite systems. Unfortunately, they have often had the political clout to see that such permitting was done. Argument about the proper density of homes using onsite systems has been a continuing controversy with developers and regulators and continues to remain a volatile issue. Education of policy makers is an ongoing, necessary process and has yielded varying degrees of success.

Florida was one of the earlier states to start a Septic Tank Association. It is ironic that the association came into being and was able to survive the earlier years because of a serious threat to the industry created by misguided regulators. In 1972, it was actually codified into statewide regulations that by the year 1977, there would be no more septic tank installations in the state of Florida and all future development would be done using central sewer systems. Needless to say, that provision was removed after concentrated lobbying, but it stayed on the books long enough to ensure the formation of a very successful industry association.

The Florida Association has become a model for other states and has offered time and energy to assist other state and national organizations. All of us have profited from the knowledge they

have imparted. That educational process has reached the grassroots level and has had a tremendous impact on the quality of systems installed today.

Regulators have had to be educated to keep up with the rapidly changing industry. They have had to become more global in their thinking and more critical of their own laws and rules because “we have always done it this way” will not work with an informed and highly competitive industry. State officials now get together on a regular basis and discuss state and regional problems and solutions. Although there may be some regional differences in soils, temperatures, and rainfall, many principles can be applied in a uniform manner. The Southeastern States have been meeting successfully on an annual basis since 1984 when South Carolina hosted the first meeting. This exchange of information has led to improvements in the rules and educational advancements for all the states involved.

Industry competition has also caused considerable change. One prime example is the quality of septic tanks. Septic tanks are of better quality today than they have ever been. Larger installers and tank manufacturers have improved the quality of tanks and kept the prices low enough so that it is not cost effective for small to medium installers to manufacture their own tanks.

New products are now being introduced to this industry on an ongoing basis. Innovative drainfield products have caused quite a stir throughout the country. This competition has been good overall for the industry in spite of some products failing to meet claims made by their manufacturers. Installers and regulators have had to become educated on the pros and cons of the different products being offered. Mineral aggregate, which has traditionally been an unquestioned standard in the industry, has been questioned and new standards have been written to ensure proper sizing and fines content. Training provided to local regulators has enabled them to recognize acceptable and unacceptable aggregate.

Another advance is the recognition of the complexity of onsite systems, particularly commercial and larger type systems. Standards now have to be refined and perfected to allow these systems to handle stronger waste streams as well as the constant hydraulic loading not observed in typical domestic systems.

Knowledge of soils and the key role they play in the treatment and disposal of effluent is paramount for all installations. Installers and regulators alike have attended numerous courses on this subject and can quote soil names and their attributes in the locales where they work.

All of this has led to improved systems for our customers. There is still plenty of room for improvement but we’ve come a long way.

“Rebel Humor”

An old farmer had owned a large farm for several years. He had a large pond in the back, fixed up nice; picnic tables, horseshoe courts, basketball court, etc. The pond was properly shaped and fixed up for swimming when it was built.

One evening the old farmer decided to go down to the pond, as he hadn't been there for a while, and look it over. As he neared the pond, he heard voices shouting and laughing with glee. As he came closer he saw it was a bunch of young women skinny dipping in his pond.

He made the women aware of his presence and they all went to the deep end of the pond. One of the women shouted to him, "We're not coming out until you leave!"

The old man replied, "I didn't come down here to watch you ladies swim or make you get out of the pond naked."

"I only came to feed the alligators!"

Author unknown found on the internet!

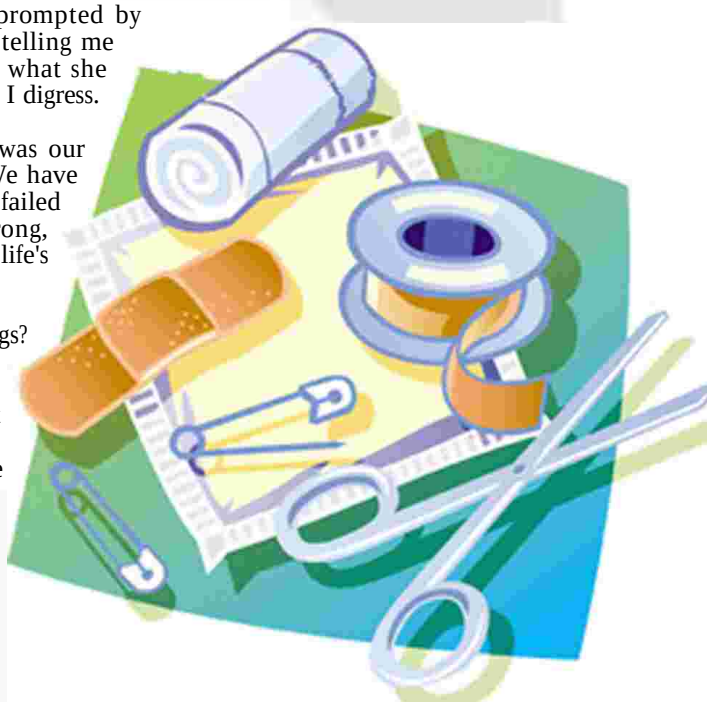
ON THE ROAD 2002

with Tom Petty

I was traveling through the countryside with Theo Terry. We were in a state that shall remain nameless for reasons that will become abundantly clear later. We were searching the radio for a station that might play some Beatles or Stones or, dare I say, some Led Zepplin. We got lucky, and found a likely candidate that even promised a Tom Petty tune. So, there I was, looking forward to hearing me sing, when the local announcer started some public service announcements.

According to the announcer, there would be a meeting of the "Bosom Buddies Vasectomy Support Group". Really, that was what he said. Before you think I am about to make fun of this group, think again. I would never ridicule a group of guys that, most likely, would never initiate this action unless they were under duress. And I honestly do believe they were under duress. It usually boils down to choices, and as extreme as it sounds, the vasectomy is usually the best choice. You see, the actions and deeds of most guys are a result of their inability to control their hormones. I know! I am a guy. As I told my daughter when I picked her up at the end of her first year of college, all men are scum. This remark was prompted by my daughter telling me what would happen at her wedding. I told her that she could do what she wanted, as long as she waited until she was 40 and I was dead. But, I digress.

What struck me most about the public service announcement was our propensity as a society to have support groups about everything. We have support groups for every disease, mental disorder, failed diet plan, failed social plan and all other issues plaguing society. Don't get me wrong, they usually serve their purpose and help a lot of people cope with life's disappointments. But, sometimes, I wonder.



What do you think the "Bosom Buddies" talk about at the meetings? Maybe what they are missing, literally and figuratively. Maybe they compare scars. I don't know and I really don't want to know. I am sure, though, it is a necessary function and provides comfort to those that need it.

All this started me to thinking about support groups that might be active in our industry. I wonder if there is a support group for

2002

September
13th-14th - GOWA Conference - Jekyll Island, GA. - Bruce Widener 678-646-0369
18th-21st - NOWRA Conference - Kansas City MO - 1-800-966-2942

November
25th-26th - DOWRA Conference - Dover, DE - Dave Schepens 302-739-4761

December
19th-20th - KOWA Conference - Louisville, KY - Kate Peake 270-358-8665

2003

February
19th-22nd - Pumper Show - Nashville, TN. - COLE Publishing 1-800-257-7222

At the time of printing these shows will have someone from Zabel speaking or exhibiting at the conference.

An up to date listing of tradeshows and conferences and CEU training can be found on our website.
www.zabelzone.com/onsiteeducation.htm

Have you heard!

The National Onsite Wastewater Recycling Association (NOWRA)-USA, the National On-Site Systems Interest Group (NOSSIG)-Australia, and On-Site NewZ - New Zealand are currently planning the first International On-Site Wastewater Treatment & Recycling Conference at Murdoch University near Perth Australia.

The event is to be held February 12-14, 2004 and will bring together scientists, engineers and professional from government departments, private institutions, consultants, research, education and training institutions. The conference will be attended by at least 400 delegates from 50 different countries.

In addition to a complete training and education schedule there will be an exhibition of the latest technologies, equipment and services and technical tours of various on-site systems in Perth.

For further information regarding the conference you may visit wwwies.murdoch.edu.au/etc/ or email at etc@murdoch.edu.au

State CEU/Zabel Training Classes

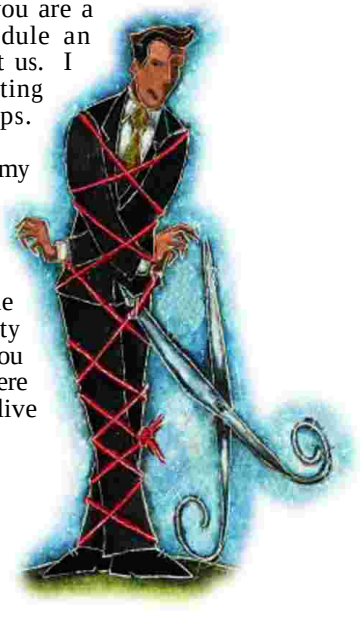
To view or sign up for the most up to date list of classes visit: www.zabelzone.com/zabeltraining.htm
If there are no classes in your area, give us a call we would be happy to help.

homeowners that have failing onsite systems. Maybe there is a subgroup of that one of homeowners that got turned in to the health department. I know I personally added to this group in my former life as a regulator.

I'll bet that in several towns and counties across the State of Kentucky, there are several chapters of "Installers that attended Tom Petty's CEU training support group". I wonder how many of them think about next year. Will he change his jokes? Will he stop rooting for Tennessee and pull for the Cats? (The answer to that is NO!)

I guess I am not really concerned what that support group is saying as long as they are thinking as a result of my educational efforts. I don't care if they disagree with everything I say as long as they offer plausible options for my points. I like doing the training. A regulator in Michigan referred to me as an Environmental Educator. I like that. I want the people attending my sessions to feel like they were educated. I hope the next support group formed is the "Tom Petty made me think about what I do for a living support group".

I will be back this fall. We expanded the CEU training from Kentucky to Georgia and Alabama this past year. We will do it again this fall. If you are an installer looking to fulfill your CEU needs for the upcoming year, check our website for a session near you. If you are a regulator needing to schedule an educational session, contact us. I really look forward to initiating some more support groups.



As for the guys in the Vasectomy Support Group, I really did not mean to ridicule you. But, in case some were more sensitive than others, I really cannot identify the part of the country I was in. I am pretty sure you can figure out who you are and I know you know where I live. In case you can't, I live in Florida, Go Gators!!

Help

Spring 1997

For Failed Drainfields

By Les Eldredge

Experts agree that the leading cause of drainfield failure is most likely biological overloading or what some industry practitioners refer to as "creeping failure". More succinctly, it is sludge or biosolids clogging the gravel/soil interface in the absorption beds, thus preventing percolation into the soil. The standard remedy for this condition has been to either add to the existing drainfield or replace it in its entirety. These repairs can be very expensive when coupled with the cost of re-landscape of the property.

An alternative to drainfield replacement in selected instances can be a process called drainfield vacuuming. Drainfield vacuuming is simply the process of removing the sludge and excess effluent from the drainfield with a vacuum truck, commonly known as a septic tank pump truck. The vacuum hose of the truck is connected to the piping system of the drainfield and the solids are removed by the use of the vacuum and rapid airflow generated by this equipment. Multitudes of failing drainfields have been revived by this method over the past ten years. It should be noted and remembered that this is not a panacea for drainage problems, and there are many caveats.

The vacuum truck must be capable of moving at least 200 A.C.F.M. of air at 15 inches of mercury vacuum to create a velocity in the piping system sufficient to remove the solids and effluent. The velocity created by this formula should be approximately 68 feet per second in the three-inch hose connected to the piping system. Larger capacity vacuum pumps work better. A vacuum unit capable of 300 A.C.F.M. at 15 inches of mercury vacuum can generate air velocities of approximately 102 feet per second in the three-inch hose. Repeated flooding of the piping system with fresh water along with the vacuuming process can facilitate a thorough cleaning of the piping system and absorption beds.

Candidates for this process must be carefully selected. It is not recommended to use this process on systems that are not in a stress condition and failing by virtue of backing up or surfacing effluent. Vacuuming a system that is functioning could compromise the natural biomass at the gravel/soil interface of a properly functioning system. This could reduce the capacity of the system to properly treat the effluent until the biomass can be naturally replaced.

It is not recommended to vacuum a drainfield that is in soil with a high water table. This condition can be detected by probing across the drainfield laterals and noting where the water table is between the drainfield laterals. If the water table is at the same elevation as the drainfield throughout the drainfield area, the vacuum process should not be attempted. If the water level is high in the gravel trenches but more than twelve inches below the bottom of the gravel bed in the areas between the trenches, the system may be a candidate for the drainfield vacuum process.

Some drainfields have piping that cannot withstand the pressures of vacuuming. Older systems that have twelve-inch long concrete tiles may be deteriorated by hydrogen sulfide gas and acids, and are thus prone to crumbling under pressure. This condition is almost always more prominent nearest the septic tank or distribution box, if one is present in the system. Frequently, the practitioner can replace the first two to ten feet of the deteriorated pipe with perforated PVC pipe, and then proceed with the drainfield vacuuming process. (Note: some county health jurisdictions require a permit for replacement of even one foot of pipe. Check with the health district before proceeding.) Systems that are constructed with styrene pipe cannot withstand the pressures of vacuum. The styrene is very brittle and will shatter, and it usually ends up in the vacuum truck. Corrugated pipe will almost always collapse under vacuum and therefore it is not usually successfully vacuumed.

Experts agree that in addition to removing a substantial quantity of sludge from the piping system and gravel beds, additional benefits are derived from the increased oxygen content in the system added by flushing with clean water and rapid air movement throughout the system during the vacuuming process.

It is important to pump the septic tank out completely just prior to vacuuming the drainfield so that the combined result will be a resting period for the drainfield. During the resting period, the remaining sludge deposits can dry out, shrink and crack, thus re-establishing percolation into the soil.

This process can be performed on level gravity systems at the outlet of the septic tank, or at the distribution box ports if the system is equipped with a distribution box. Serial distribution systems can also be cleaned, but each line must be located and cleaned separately. Most often the first line in the serial distribution system will be the only one severely affected by biological overloading. The subsequent lines

should be checked. An "as built" drawing is almost a necessity on any system other than a level gravity system. This process can be used on pressure distribution, sand filter and mound system piping with clogged orifices and the particulars are expressed in a separate paper. Attempting to clean pressure systems without the aforementioned paper or without the "as built" drawing is strongly discouraged by the author, as severe damage to the system can result. This process has some risks and some limitations that should be related to the owner of a candidate system before any work begins. The process does not always solve drainage problems, but the economics make it an attractive possible alternative to replacement of the drainfield.

The obvious solution to drainfield failure due to biological overloading is prevention. Prevention of clogging of the drainfield can be as simple as the addition of a good quality outlet filter and periodic monitoring and maintenance of the system. In the experience of the author, the Zabel A-100 septic tank filter has proven to be far superior to many other types of screens and filters currently in use. Maintenance would include pumping the septic tank when the total accumulation of sludge and scum layer equal approximately one third the total working volume of the tank.

Zabel® Outdoors

In August Zabel's Vanessa Cox was invited to go to France to compete in the World Championship Hot Air Balloon race.

18 year old Nick Donner earned his spot in this event by winning the 2001 U.S. National championships.

Vanessa and Bill have many hours of crewing experience for a local pilot and were very excited to get the call. When she informed us she was going we asked, "what about missing that much work?" She laughed and said she would see us when she got back.

Out of 99 teams they finished 7th.

Other U.S. placements were 2nd, 10th, 16th and 49th.

Way to go Nick, Vanessa and Bill.

The apple doesn't fall far from the tree. In October during the Kentucky bow season, Neal Jenkins (Tom's Father) arrowed this beautiful 8 point whitetail.

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ANSI/NSF STANDARD 46

EVALUATION OF COMPONENTS AND DEVICES USED IN WASTEWATER TREATMENT SYSTEMS

Fall 1999

By Rich Hafner

Onsite, residential wastewater treatment systems often require a number of critical components, collectively resulting in a complete treatment package. Such components can be introduced prior to treatment (pre-treatment), within the treatment process (primary and secondary treatment), and prior to final effluent discharge (tertiary treatment).

While NSF standards have been available for many years to evaluate complete treatment systems that use multiple components, the availability of standards to evaluate individual components has been limited. ANSI/NSF Standard 46, Evaluation of Components and Devices Used in Wastewater Treatment Systems, was developed to address this need.

Standard 46, first adopted in November 1997, establishes minimum materials, design and construction, product literature, and performance requirements for components and devices used in the handling, treating, recycling, reusing, or disposal of wastewater. Its scope covers components and devices intended for use with greywater or blackwater or both. The Standard contains general requirements applicable to all technologies (Sections 1 through 8) and specific requirements for various categories of products. Products must demonstrate compliance to all the general requirements and the product-specific section relating to the technology.

Standard 46 currently includes one product-specific section, Section 9, "Grinder Pumps and related components." As new product categories are identified, the NSF Joint Committee on Wastewater Technology will develop the testing and evaluation requirements and criteria for inclusion into Standard 46. Two new sections are currently being developed, "Filtration devices for residential gravity flow septic tank systems" (Section 10) and "Wastewater disinfection treatment devices" (Section 11).

Section 10 addresses a class of products commonly called septic tank effluent filters. Septic tank effluent filters are usually placed inside a septic tank at the outlet to prevent large solids from exiting the tank. These devices can reduce or prevent damage to treatment components and processes downstream from the septic tank and may also extend the service life of the drain field.

The National Small Flows Clearinghouse estimates that 90% of onsite wastewater treatment systems in the United States, serving more than 75 million people, consist of a septic tank and drain field. Although the use of effluent filters has grown steadily in the past 15 years, no national standard for their evaluation is in place. In states such as Florida, where effluent filter use is common, some regulators have written minimum requirements for the filters into their onsite regulations. Other states are waiting for a national standard to be adopted in an effort to provide similar minimum criteria. Once adopted, Section 10 of Standard 46 is intended to become this national standard.

Section 10 is currently being balloted by the NSF Joint Committee on Wastewater Technology. The balloted draft of Section 10 includes the following tests:

* Flow for clean filters;
* Flow for partially clogged filters;
* Structural integrity;
* Solids reduction; and
* Bypass protection.

Septic tank effluent filters would also have to meet the general requirements of Standard 46 for materials, design and construction, and product literature.

Section 11 is currently being developed by a task group of the NSF Joint Committee on Wastewater Technology. This section will cover electrolytic chlorinators, ozonators, ultraviolet systems, and flow through tablet chlorinators. Section 11 is expected to be balloted by the Joint Committee later this year.

All technologies covered under Standard 46, now and in the future, will be available for Certification by NSF. If the product complies with the general and product-specific requirements of the Standard and the NSF Policies for Wastewater Treatment Products, the NSF Mark may be applied in a similar way to those products already Certified by NSF.

Standard 46, combined with ANSI/NSF Standard 40, Residential Wastewater Treatment Systems, and ANSI/NSF Standard 41, Non-liquid Saturated Treatment Systems, provides a comprehensive package of product standards for the onsite wastewater community. For more information regarding NSF Certification and NSF Standards, contact Rich Haffner at (734) 769-5277 or send e-mail to haffner@nsf.org.

The exciting new ZABEL® SCAT™ BioFilter is fast becoming the next revolution in onsite wastewater treatment. Since its introduction several months ago, we have seen the installation of SCAT BioFilters on a variety of projects from single family residential to large commercial applications. Approval for use of the SCAT BioFilter has been granted in 14 states and is currently pending in another 13 states. The SCAT is providing the onsite community with a unique alternative to the existing advanced treatment technologies in a unique pre-engineered, simple-to-operate package.

To assist engineers, installers, and regulatory authorities in understanding the design, operation and installation of the SCAT BioFilter, we have created a comprehensive CD-ROM. The SCAT CD-ROM contains text, graphics, and drawings in a variety of formats for easy viewing and downloading. Designed much like a website, the SCAT CD is easy to navigate and utilize. The self-loading CD begins with a homepage divided into six topic areas, that include: Design Criteria, Drawings, Installation, Specifications, Brochure, and Article.

Design Criteria

The Design Criteria topic area of the SCAT CD includes two separate Adobe PDF files, which provide an overview of Open Cell Foam Technology and a specific Design Criteria for the SCAT BioFilter. The Design Criteria provides information relative to flow rates, sizing, dosing cycles and a summary of performance.

Drawings

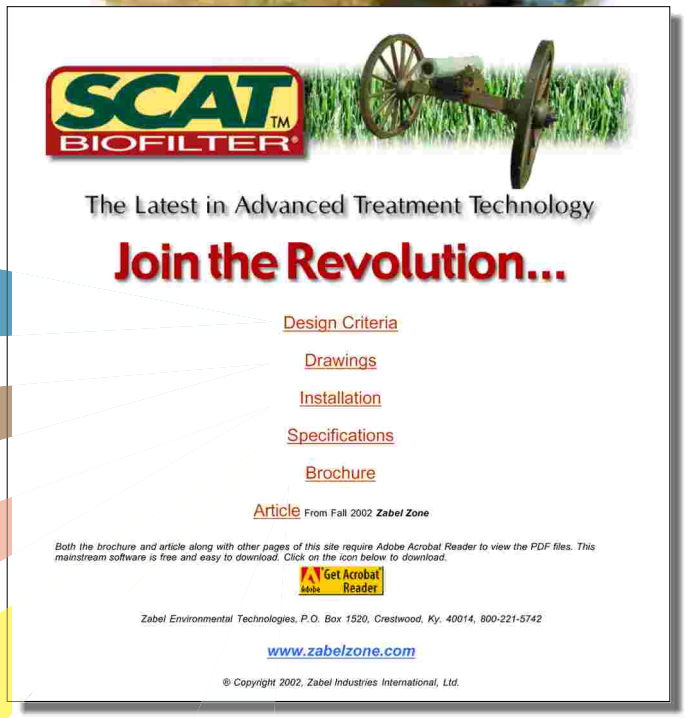
The Drawings topic area contains a variety of drawings in both PDF and AutoCAD files that may be viewed, downloaded and inserted into other files. Complete system drawings as well as individual component drawings are included. The Drawing area is broken down by subsystem such as Pretreatment, SCAT, STEP Package, and Recirculation. These easy to find and downloadable drawings will make designing a complete SCAT System quick and simple.

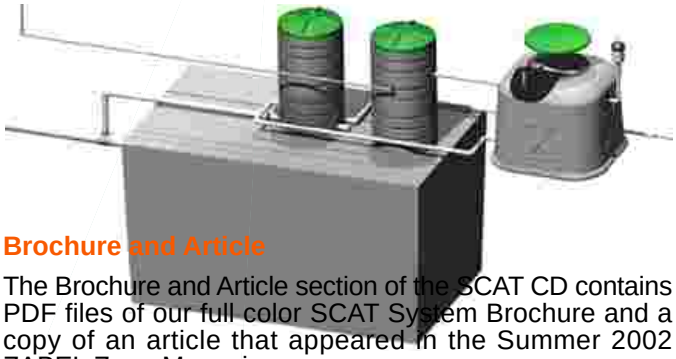
Installation

The Installation area contains a complete Installation and Operation Manual that may be either viewed or downloaded. This manual is illustrated with step-by-step instructions and color photographs to make installation a snap. The manual also includes information pertaining to maintenance and operation of the SCAT System when installation is complete.

Specification

This topic area provides an overview of how the SCAT System operates and includes a Performance Summary detailing various open cell foam test sites that are currently installed throughout the United States. There are also individual component test reports including a Compression Test of the ZEUS Access System and Vacuum Testing that was performed on the individual SCAT Modules. Technical Data Sheets are available for each SCAT Module. Each data sheet includes a full color graphic of the module, complete system drawing, and specification chart detailing the dimensions, construction, and flow rates, etc.- all in one easily viewed data sheet!





Brochure and Article

The Brochure and Article section of the SCAT CD contains PDF files of our full color SCAT System Brochure and a copy of an article that appeared in the Summer 2002 ZABEL Zone Magazine.

We feel the SCAT CD-Rom is a revolutionary tool that may be utilized by all stakeholders in the onsite industry from engineers wishing to design, regulators looking to approve, and installers requiring installation assistance. To request a FREE copy of the SCAT CD or for additional information on the revolutionary SCAT BioFilter give us a call at 1-800-221-5742.

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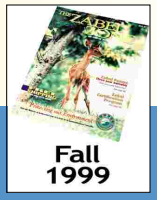
On-Site Wastewater Treatment Training Centers



On-site wastewater treatment training centers are a valuable teaching tool for reaching professionals in the on-site industry. Technological displays are the educational method utilized at the training centers. This method provides valuable information on how to correctly assemble a wastewater treatment system. We have several approaches to learning new information: reading, reviewing diagrams, pictures, and working models. Training centers provide an opportunity to incorporate working models into our teaching program. This learning technique can be very valuable for people who learn through visual inspection of a functioning system. We can incorporate these working models into a classroom lecture and provide the student a complete learning experience.

A variety of technologies are available across the country for addressing our wastewater management needs. However, acceptance of these technologies can be hindered through lack of local knowledge related to proper construction, operation and maintenance of these systems. Training centers provide an opportunity to demonstrate proper construction of a system. These display units train current professionals on technologies new to their region and professionals just entering the industry on proper assembly of a system. Some training centers have operating units for the purpose of teaching proper operation, maintenance and trouble shooting of on-site systems. Most of the systems, however, receive fresh water, which allows hands-on work with the components of the systems.

Training centers are a valuable component of a total training program. Texas has three on-site wastewater treatment training centers. These centers demonstrate a variety of technologies and equipment used for treatment and management of wastewater. However, courses are still offered at locations other than the training centers because of travel distances. Portable display boards are another valuable educational tool used during training events conducted at sites without a training center. These displays are also used to show optional equipment available for construction of a system demonstrated at a center.

Training centers must be constructed to minimize the required maintenance to keep them operating. Training centers require continual attention to keep them current. Technologies need to be updated and displays need repairs to ensure a good learning environment. We are also learning how to effectively use a training center for educating the industry

We must remember the goal of an on-site wastewater treatment training program is to deliver valuable information to the on-site professional. This information will assist the professional in selecting the best technology for a site and properly constructing, operating and maintaining the system at the site for effective management of the wastewater. Training centers provide a visual and hands-on learning experience on how to construct, operate and maintain the various technologies. These centers are a valuable component of a training program. The main challenges are keeping them flexible for demonstrating new technologies and maintaining them so they provide a valuable learning experience.

By Bruce J. Lesikar, PhD
Associate Professor, Associate Department Head for Extension Agricultural Engineering at Texas A&M University

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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.

Technology.

At Infiltrator Systems, we design and engineer onsite septic system products to complement nature's own processes for recycling wastewater. Our chamber technology is based on fundamental principles of physics, soil science and topography and is scientifically engineered for the job. Manufactured from recycled resins, our chamber products feature advanced technology like SideWinder® sidewalls that maximize the available surface area for infiltration, and MicroLeaching® louvers that limit the intrusion of soil and fines, while optimizing effluent disposal and promoting evapotransporation.

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Our chambers provide the maximum infiltrative surface area per linear foot. Compared with stone and pipe systems, Infiltrator chambers offer comparable wastewater treatment with up to a 50% smaller footprint. There are more than 600,000 Infiltrator systems installed in the United States and 13 other countries.

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We understand that everyone has a role and responsibility in conserving our natural resources. That's why we invest millions in research and development to create new products that operate more efficiently and conserve water resources. We also sponsor installer education seminars and onsite events and publish materials for homeowners so they can maintain their septic systems and learn how to keep our water resources safe for the future.

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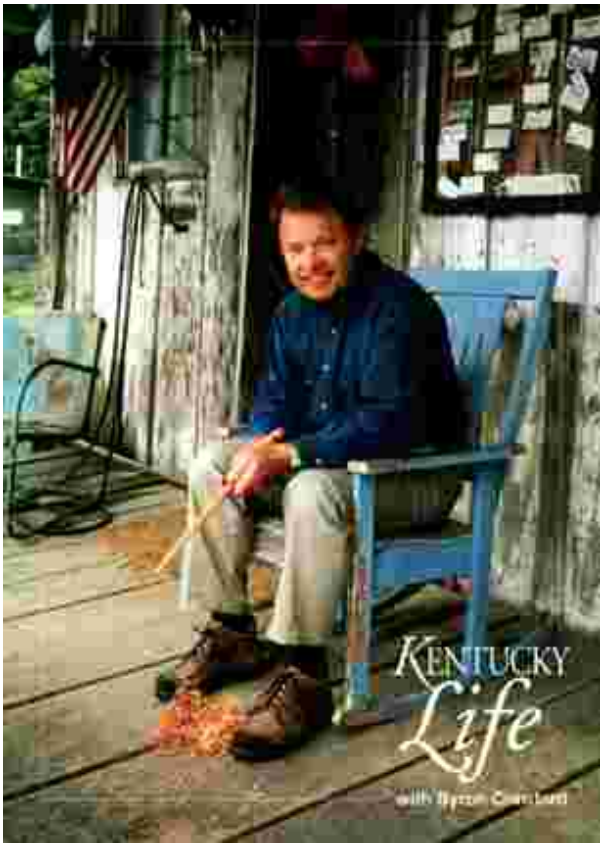

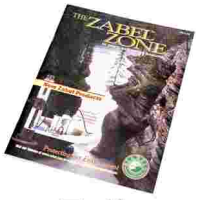

Fall
1998

LIFE'S REAL TREASURES SELDOM MEASURED IN DOLLARS, CENTS

Line Fork, KY.- The porch of Cecil Cornett's small cabin, deep in the mountains of Letcher County, is a good place to spend hours listening and learning.

Cornett's stories are seasoned with seldom-heard, old mountain words and phrases that mark his cultural heritage and his place in time.

"I wouldn't delight in a school," he said of his boyhood. "It seemed like I had my mind on something else all the time and just couldn't hardly learn a thing."

But Cecil Cornett has learned plenty in his 82 years on the banks of Wolfpen Branch.

He learned his mother's love of flowers and her ways of gardening, and his father's way with horses and tools. He learned that a good name was worth more than wealth on Line Fork. He learned to cut timber in the log woods, and to make rocking chairs, straight-backed chairs and tables from tree limbs that he cuts long Wolfpen Branch.

He has learned to enjoy the small things around him that are beautiful, and to accept, without bitterness, those things that he cannot change.

"I get awful lonesome sometimes, just studying about my people all dead and gone," he said. "I've got a radio that I listen at a lot. They'll sing them pretty songs and it gets me pret now, and wish I would've married. My mother wanted me to marry, but I never did."

He was in love once, years ago, with a pretty woman whose words and laughter linger in his memory.

"I liked her better than anything, and she did me, too," he said. "I would have married her if she would have had me, but she got killed in a car wreck. Her name was Ellie Jane Turner. That's the only woman I ever did love. I never did like another one good enough to marry."

He treasures a short-handled cutting scythe that Ellie Jane hung on the front of his four-room cabin many years ago, after they had been working in the yard. The scythe, along with a small, weathered bag of his mother's garden seeds, a rusty four-pound lard bucket that once served as his father's lunch pail and a dipper made from a gourd are among Cornett's most prized possessions. His father and mother hung the bag of seeds, the pail and the dipper on the wall of the back porch well over 50 years ago, and the objects have never been moved.

Cornett's mother died in 1948, but Cecil cared for his father until his death many years later at age 96. Cecil has outlived three brothers and two sisters.

Although he remembers traveling to some town in Indiana with his family years ago, and he was once hospitalized in Lexington, he has never seen Louisville or Cincinnati or very many of the towns around Kentucky.

Nearly all of his life has been spent on the 144-acre farm that his family carved out of the woods around the cabin. "I know every crook and turn of it," he said. "I can't climb these hills and I ain't able to work now, but I make a garden and cook for myself and try to keep the yard mowed."

He still tends a pink, fragrant patch of sweet william, which his mother planted in the yard 60 or 70 years ago, and which he moved to a spot beside the cabin after her death.

About seven years ago, while barefoot in his kitchen, Cornett was "nibbed" on the foot by a small copperhead snake, but he was treated for the bite and suffered no serious effects.

"They made a moving picture here a while back," he said. " 'Fire Down Below' is what they called it. They floored my porch; took everything out- foundation, sills and everything- and refloored it, and never charged me a penny. Some of them said that the man that did it was a brother to that man with the ponytail (actor Steven Segal). They paid me $2,100."

He would not trade his little cabin on Wolfpen Branch in Letcher County for a mansion elsewhere, Cecil Cornett told me as we said goodbye. Everything that meant something to him was there.

"Don't forget me," he said.

I promised that I wouldn't.

Byron Crawford is a resident of Shelbyville, KY. He is the Kentucky Columnist for the Courier Journal and the Cincinnati Enquirer. He has written two books, Kentucky Stories and Crawford's Journal.

TechTalk

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

Do you have a technical question? Go online and get answers quickly to all your tech questions from the pros at Zabel.

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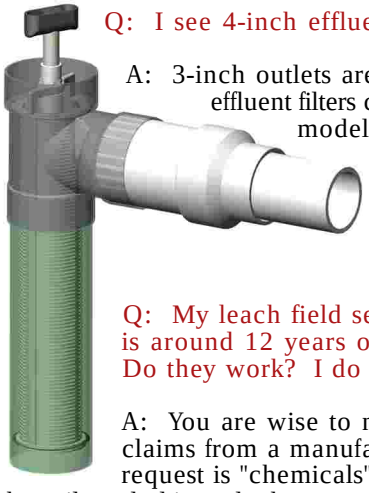
Q: Are there different sized siphons for different dosing rates per minute? If so, how many different sizes are there?

A: There are siphons available with discharge diameters from 2 inches to 14 inches. These represent discharge flows from 30 gallons per minute to 3000 gallons per minute. We have 13 models available. These discharge diameters include 2, 3, 4, 5, 6, 8, 12, and 14 inches. Call 1-800-221-5742 with your desired flow and we can match you with the right model.

Q: I am designing a replacement sand mound system for a single-family home. What effluent filter or filter package would be appropriate for retrofitting the existing 1000-gallon septic tank? This is normal residential sewage with expected flows of 400 GPD.

A: My first inclination is to recommend a four-inch residential effluent filter like our A1800-4X22. However, since it is going to a sand mound and they are usually dosed through a network that discharges through very small diameter holes, a finer level of filtration is necessary to protect the distribution network. I would recommend an A300-8X18. While this would provide flows up to 1200 GPD, it will filter particles down to 1/32 inch. If the existing septic tank does not have adequate access to install the filter, I would suggest an A300-8X18-VC-FP. This comes in a 38-inch deep basin and can be installed outside the effluent end of the septic tank.



Q: I see 4-inch effluent filters but what about 3-inch? A 3-inch outlet is now standard in California.

A: 3-inch outlets are now allowed in many states. However, the standard outlet size when residential effluent filters came out was 4-inch. Therefore, all the different manufacturers produced their residential models in a 4-inch version. This is really no problem. To adapt the four-inch filter to the 3-inch outlet, use a reducer to go from the 4-inch tee to the 3-inch outlet pipe. There will be no problem with restricting the pipe size from the 4-inch filter to the 3-inch outlet since the outlet flow is a response to the inlet flow and they are the same size.

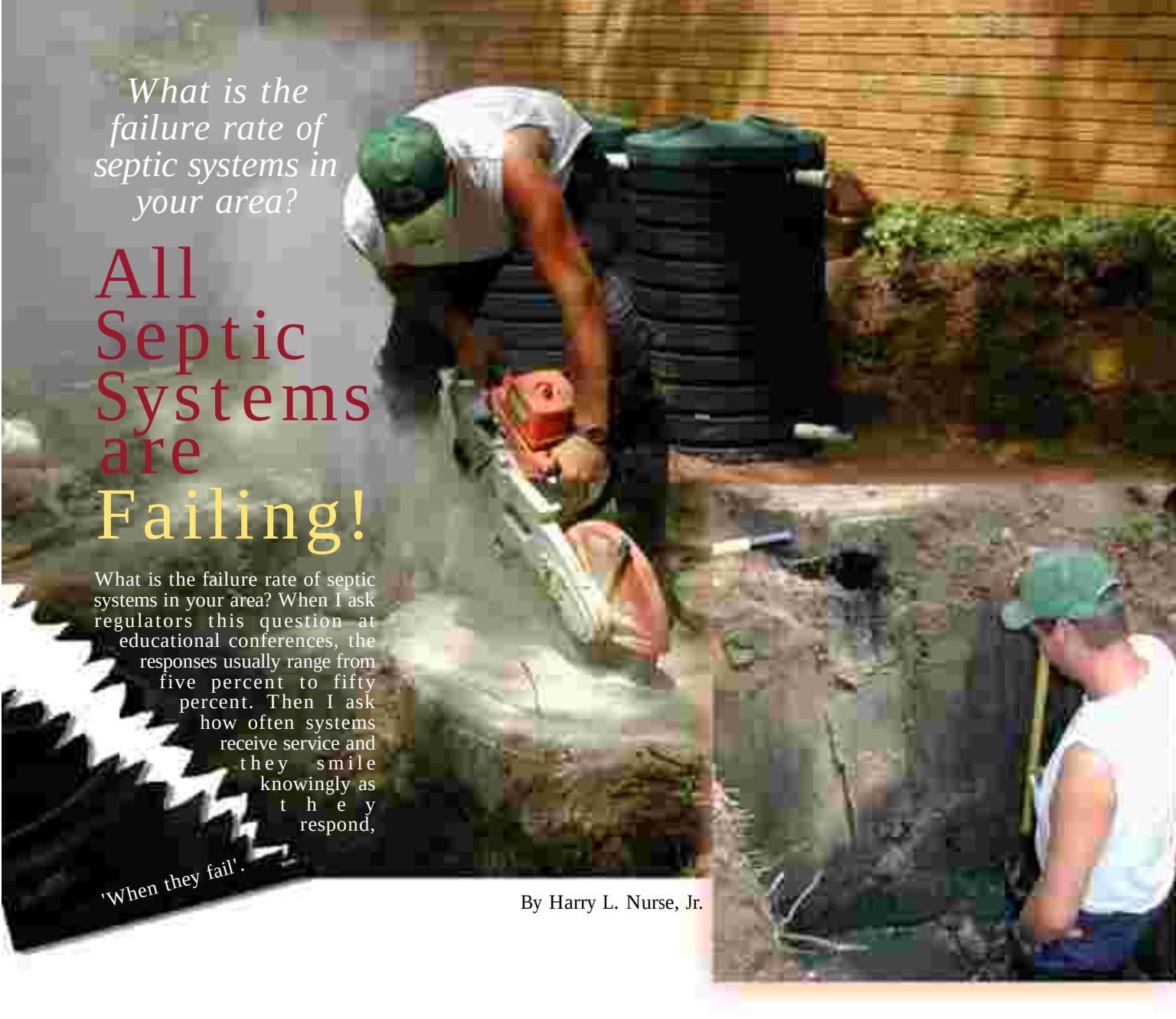
Q: My leach field seems to be slowing down especially when it rains. It is 36 inches above clay and is around 12 years old. The fill is gravel. I have read about chemicals that break down the biomat. Do they work? I do not want to buy snake oil.

A: You are wise to not want to buy snake oil. So many of the additives on the market are backed by claims from a manufacturer but not by independent third party testing. Also, the operative word in your request is "chemicals". Some chemical compounds can break up the biomat but the secondary effects on the soil, and ultimately the water table, cancel any benefits they may seem to have. The best way to renovate a clogged field line is to allow it to rest and let nature break down the biomat. If you do not have the luxury of letting a field rest, there is promising research using advanced treatment systems to provide increased oxygen to the biomat and hopefully, breaking it down. This is done by treating the wastewater aerobically and then discharging it into the field lines. You may want to look into adding an advanced treatment system to your current system.

What is the failure rate of septic systems in your area?

All Septic Systems are Failing!

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



By Harry L. Nurse, Jr.

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

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

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

So what's the answer? It is one that's increasingly embraced by state and local governments. Require a septic tank filter in the outlet of every tank. The septic tank filter will keep solids in the tank where they will receive further pretreatment and the filter will let you know when the system needs servicing.

Are all septic systems on a 'service when fails' maintenance interval? The answer is: Not in those counties and states that require an outlet filter. A septic filter will require service at the proper interval for that specific system, whether it is twelve months or twelve years.

All septic systems are not failing - at least not the ones with ZABEL® septic tank filters

HOW DOES AN NSF STANDARD COME TO BE?

By Tom Bruursema

Product standards in the United States is an age old concept, and one which NSF pioneered in the area of alternative, onsite residential wastewater treatment systems more than thirty years ago. NSF became involved with wastewater at the request of the regulatory community, as a means to provide for uniform, comparable performance test data on newly introduced, innovative products. Since that time, three unique standards have evolved to meet the needs of the regulatory officials, and of the greater stakeholder, the community.

Standards Process

The NSF standards development process uses the internationally recognized and accepted process of consensus building. The term "consensus" means those representatives of directly and materially affected interest categories have reached a substantial agreement. Further, consensus requires that all views and objections be considered, and that an effort be made toward their resolution.

Representatives from three primary interest groups, of equal numbers, work together as members of the Joint Committee on Wastewater Technology to determine the language and content of the standards. These three groups include the product manufacturers, regulatory officials, and users of the products. Each sector is represented by approximately 12 experts in the onsite industry. NSF's role is facilitation of the process, bringing thoughts and ideas to the Joint Committee for discussion and debate, leading to the development of new and revised standards.

Membership on the Joint Committee is by invitation and selection based upon the needs of the Committee for balanced participation and representative expertise. The Joint Committee on Wastewater Technology serves as the core group for the development of all standards in the onsite, residential treatment area. Members are not rotated based upon the changing of the standard or subject discussions. Instead, other individuals may be asked to participate, through Task Groups, to assist the Committee in the event that certain issues are outside the expertise of the Committee. To assure continuity and orderly development/maintenance of standards, each Joint Committee member is requested to serve a minimum three-year term.

Once a standard has been drafted through the Joint Committee, a formal balloting process takes place. Each member has one vote only, with four options including affirmative, affirmative with comment, negative with reason(s), and abstain with reason(s). Acceptance by a majority of the members is required, including an affirmative ballot of at least two-thirds of those meeting the ballot deadline, excluding abstentions. With a majority vote, the draft standard can be recommended for adoption.

Prompt consideration is given to all expressed views and objections received by the members. A concerted effort is made to resolve all expressed objections, with each objector being advised of the disposition of the objection. Any objections which require substantive changes to the standard in order to resolve, along with unresolved objections, are reported back to the Committee members. All members are then given the opportunity to respond and reaffirm or change their vote.

Once the Joint Committee on Wastewater Technology has recommended the final document for adoption, it is passed on to the NSF Council of Public Health Consultants (CPHC) for review. The CPHC membership is composed of representatives from regulatory agencies, academic institutions, and other national and international leaders in the public health and environmental fields. The Council contains approximately 45 members, as elected by their own membership. Unlike the Joint Committee, the CPHC is a single representative body for all of the NSF programs, rather than for wastewater alone, and it has no industry representation.

The role of the CPHC is to provide advice and guidance to NSF in the design and carrying out of its current and future programs. As a result, the Council reviews and ballots all new and revised standards prior to presenting them to the NSF Board of Directors for final adoption.

Once adopted, standards undergo a periodic review at intervals not to exceed five years. These reviews allow for a cover to cover assessment of content and opportunity for change. Such changes at five-year intervals are common, resulting from advancements in product technology and demands from the regulatory community and

marketplace for higher performance criteria. The same process as that described above for new standards is used for revision. The Joint Committee provides the core review and change, followed by the CPHC, leading to adoption by the Board of Directors.

American National Standards Institute

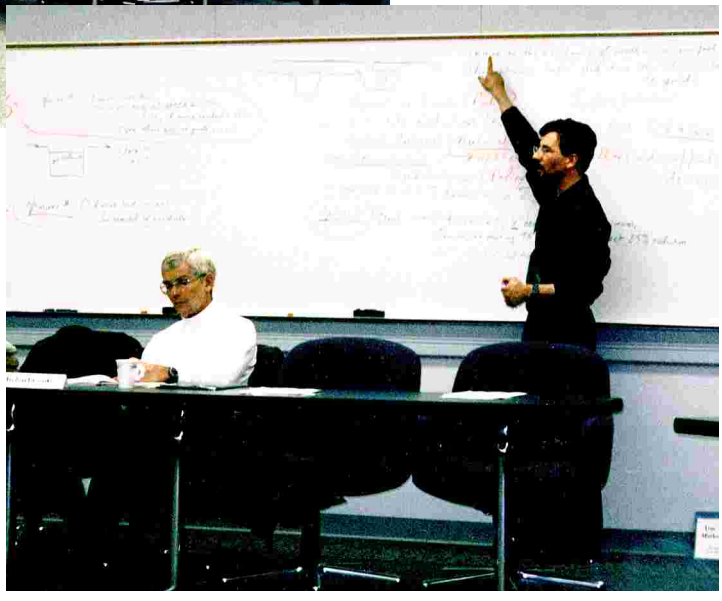
Upon completion of the first working draft by the Joint Committee, a corresponding and parallel process begins through the American National Standards Institute (ANSI). ANSI is a private organization providing for the oversight and accreditation of organizations, which offer, as services, standards writing and conformity assessment programs. NSF has been a member of ANSI since the 1980's, and has been accredited as both a national consensus standards writer and product certifier for all of its current programs, including wastewater treatment.

The process through ANSI begins with public comment whereby the NSF draft is made available to any and all interested parties. Comments are fed back into the NSF Joint Committee process for review. Once the standard has achieved approval by both the Joint Committee and CPHC, and adopted by the NSF Board of Directors, it is then presented to the ANSI Board for adoption as an American National Standard. If accepted, the standard can then bear both the NSF and ANSI designations.

Conclusion

NSF's standards development process has formed the foundation upon which North America has come to seek advice, in the case of decision regarding selection of proper, innovative treatment, technologies, and performance recognition. NSF has further supported these needs by offering the most recognized, relied upon certification program for wastewater treatment devices. Recognizing the growing need for such standards and credible testing and certification, NSF is committed to offering improved and expanded services to the stakeholder community. The future of the alternative, onsite treatment industry will be dependent upon a proven record of performance. NSF standards and certification are the paths leading to greater acceptance, recognition and value to the industry and their customers.

From left, Peter Casey, Doug Ebelherr, Don Alexander, Harry Nurse, Steve Berkowitz, and George Earle at the Joint Wastewater committee meeting at NSF.



Bryan Dayton leading the discussion and debate in regards to the new NSF Standard 46 for effluent filters

Spring 1998

Zabel's Travels

O Jerusalem, Jerusalem, the city that kills the prophets and stones those sent to her! How often I wanted to gather your children together just as a hen gathers her brood under her wings and you would not have it.
Luke 13:34

The Garden Tomb... Empty

The Wailing Wall

Harry's tour of Israel, with a group from Back to the Bible and led by Woodrow Kroll, was one of the spiritual highlights of his life. It also included trips to the seven churches of Revelation in Turkey.

Prescriptive Based Regulations Impact Small Communities

By Ewald Schwarzenegger, PE

Growing up in Lexington, New York (pop. 500+) a small rural community in the Catskills Mountains within the New York City watershed, I can appreciate the many hardships a small community faces when it comes to providing services for its residents. Lexington was settled in the 1700's. The first settlers were families who built their homes in the mountain top valleys that surrounded the streams. Other settlers moved in, families grew and grown children built homes near their parents. Isolated settlements developed into small hamlets and communities.

Back in those days there was no running water in the homes. Trips to the privy were made as quickly as possible due to the cold or the odor. Once indoor plumbing came along with the john right behind, water use increased dramatically and something had to be done with the waste. The cesspool was born. Often waste was piped to where the privies used to be. In the later part of the 20th century the cesspools were replaced by septic tanks with leachfields or seepage pits. However there are still a great number of homes utilizing the original cesspools some right under the building.

Because of the increased water usage and the proximity of septic systems to wells that supplied the homes with this drinking water, over time problems developed: water was contaminated and untreated sewage surfaced. With serious health risks the health departments and environmental agencies generally step in and require repair or replacement of treatment systems.

A standard replacement system required meeting today's standards, as defined by the regulatory agency, demand a considerable amount of land. In a hamlet now developed into a small village, land is often scarce making it almost impossible to install a conventional septic system. This dilemma causes house values to decline as no one wants to buy a problem and banks won't lend money on the chance they may have to take over a problem. Then along come the state health and environmental regulators requiring the community to clean up its waste. This can drive a community with few financial resources to its knees.

The community considers a sewer district with sewage collection and treatment and calls Mr. Big City Engineer. He says, "You need a conventional collection system and a state of the art treatment plant." However they find it will cost too much to construct and too much to operate. So Mr. Little Town Engineer comes in and says; "You should consider alternative collection and treatment methods." Now the price of construction and treatment appears to lessen but may still be unaffordable for the community.

So Mr. Little Town Engineer says, "Why don't we try innovative and alternative onsite septic systems? Other states allow these systems so why don't we find out what they are doing and do the same?" The energetic engineer accompanied by some town spark plugs start investigating these systems and find out that they work well and pursue them for their town - only to find a brick wall - the very regulators that have come down on the community to clean up. The regulator's position is that the regulations do not consider innovative or alternative systems since they are not outlined or discussed in the prescriptive-based regulations.

Being a little town engineer I have come across this scenario all too often.

In NY state the Department of Environmental Conservation, the Department of Health and the New York City Department of Environmental Protection has prescriptive based regulations and guidelines that do not allow for performance based system designs. If the systems proposed do not meet the agency's prescriptive guidelines it's a no-go. The intent of the regulation - i.e. to insure that septic waste is disposed of in a safe manner to protect the population - is ignored. This can create a hardship for the property owner who has a septic system problem, their neighbor and the community as a whole. The economic impact of not permitting innovative and alternative onsite septic systems is far reaching in small communities.

It is time that impact of prescriptive based regulations on small communities is taken into account. Professional engineers should be allowed and encouraged to create workable performance based solutions to meet the communities' needs to stay within a budget while at the same time protect the health and safety of the public.

Spring 1997

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HELPING HANDS IN KENTUCKY

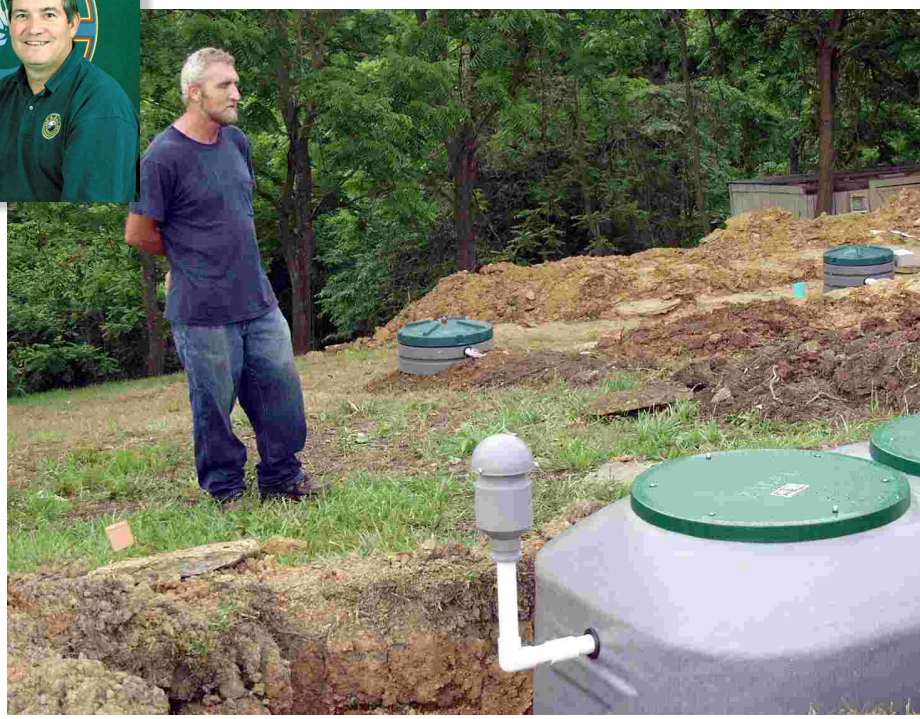
By Tom Petty

The Zabel Helping Hands program, started by our own beloved Bill Rawlins, made its way north to Clark County, Kentucky. The purpose of the program is to provide assistance to homeowners who, for a variety of reasons, cannot afford to install a suitable wastewater treatment system. The latest installment of the program stopped at the residence of Stephanie Stamper. She had recently moved from the mountains of eastern Kentucky and was attempting to start a new life in the countryside south of Winchester, Kentucky.

Mr. Bob Bentley of the Clark County Health Department contacted Zabel in February of 2001, in hopes that we might be able to help Ms. Stamper. After meeting on the site twice more in the ensuing months, approval was finally given by the State of Kentucky to install a SCAT advanced treatment system along with an appropriate amount of chambers to dispose of the wastewater. On June 26, 2002, all parties came together on the site to install the system.

The SCAT system had been recently approved by the State of Kentucky. This was the first SCAT system installed in the state and interest was high. Besides the likely suspects from Zabel, there were several installers from the area as well as regulators from the Central Office in Frankfort and local county representatives. Zabel provided the SCAT module, effluent filter, septic tank effluent pump system and recirculation basin at no charge. Tom Petty and Brian Borders, who got back to his roots in the Kentucky countryside, provided the installation advice. Tom Jenkins came along to record the event for posterity and kept the crew laughing.

Wilson Equipment donated the backhoe. Jerome, Shawn, Travis and Joe Griggs donated labor and expertise. Herschell Rawlins (no relation to Bill, fortunately for Herschell) also donated of his time and efforts. Concrete Materials of Winchester donated the septic tank and pump tanks and Waterflows donated the chambers, 4-inch pipe and D-Box.



Resident overseeing project!

While visibility is a goal of the Helping Hands program, we at Zabel feel it is important to give back to the community. We would especially like to thank those listed above who joined us on this project. Also, we would like to give a big thanks to Bob Bentley for his progressive efforts in seeking a solution for Ms. Stamper's

September 1957

By Lewis Grizzard

Harry's Note: The late Lewis Grizzard is a hero of mine. He was a Southerner and proud of it. He was funny. Sometimes his humor made you roll on the floor and frequently it brought bittersweet tears to your eyes.

From instant grits to Rebel flags he reminded us of simpler times - the times before the speech police arrived and everybody joined one victim group or another. Anyway, it is my pleasure to share with you the nationally recognized "Mark Twain" of our time by permission of his widow, Dedra Grizzard.
Thank you, Dedra.

I was going through some old boxes I've had in storage and I ran across a black-and-white photograph of my stepfather, my mother and me. The date on the photograph was September 1957. I was eleven. I had a flattop haircut and my ears stuck out.

I had forgotten my ears stuck out when I was a kid. My friends called me Dumbo, after the flying elephant who used his mammoth ears for wings. Thank the Lord long hair over the ears later became fashionable for men and I think my face also grew wider, so my ears don't stick out nearly as much as they once did.

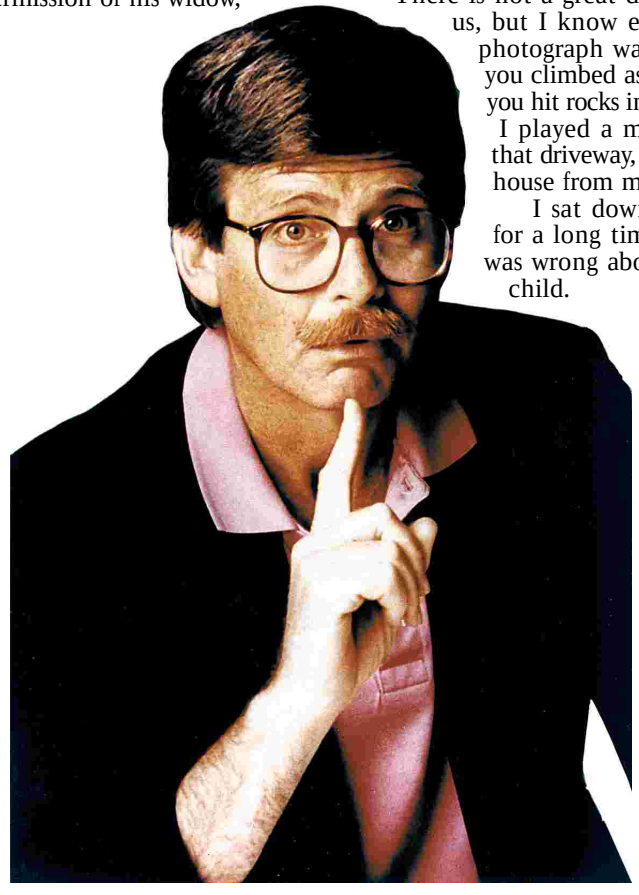
It's been nearly twenty-eight years since we had that picture taken. My mother used to say things like, "You'll be surprised how fast the years pass by once you get older." I didn't believe her at the time. My mother. She looks so young and strong in that picture. Her hands are resting on my shoulders. I remember those hands so vividly. They were warm loving hands that could turn into lethal weapons when applied forcefully to my backside.

In that picture my mother looks like I will always remember her. Today she is very sick and very weak. Damn age, how it ravages.

I am older now than my stepfather was when we had that picture taken. That's hard to believe. He was stern with me, but he was also kind. The one gesture I will never forget was that when I graduated from high school, he allowed my real father to take his seat and sit next to my mother to watch me receive my diploma.

There is not a great deal of landscape pictured around us, but I know exactly where we were when the photograph was snapped. You don't forget trees you climbed as a boy, or gravel driveways where you hit rocks into the cornfield with a broomstick. I played a million fantasy baseball games in that driveway, which separated my grandmother's house from my aunt's.

I sat down and looked at the photograph for a long time and what I realized was that I was wrong about adulthood back when I was a child.



I thought that when I became an adult, all my problems would cease. I wouldn't have anybody telling me what I could or couldn't do. I wouldn't be afraid of snakes or the dark anymore. And I'm certain even thought time would continue creeping at the pace it did when I was eleven and wanted desperately to be twelve.

I was dead wrong as a matter of fact and I had to ask myself an intriguing question: Would I trade all that I have now, including the experiences that aging brings, for the innocence on the eleven-year-old face in that photograph?

If I could just keep the ears I have now, most probably I would.

Spring 1997

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