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2013

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By **Scottie Dayton**

ON THE COVER: Timothy Davis, owner of TR Davis, in Branchland, W.Va., often works in hilly terrain, and he uses a Toro TX-420 tracked trencher to get the job done when installing low-pressure pipe distribution systems. (Photo by Sarah Brinegar)

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Are You Getting Busy?

There's evidence housing starts are on the rebound. Will that translate into more work – and new equipment – for your installing business?

By Jim Kneiszel



I was at a local government meeting in my hometown a while back where we learned a glut of developable single family home lots a few years ago has disappeared, leaving a shortage of attractive building sites. Speculation was that subdivision developers, dormant following the housing crisis of 2008, were starting to consider paving new roads through long-neglected farm fields on the edge of town.

It was a surprising and uplifting report for most folks in the room.

A turn-around in home building fortunes is inevitable as young people start families and populations shift and grow. You don't have to search too far to find headlines predicting that the housing market is back on an upswing this year. While experts warn not to expect the exuberant market of the first half of the 2000s, they say a modest, steady climb in housing starts is in the offing.

When you start having to work sun-up to sundown this summer – and there's no wiggle room in the schedule to handle a breakdown – can you afford to keep running equipment with questionable reliability?

MILLION HOME MARCH

According to the *Dodge Outlook Report* from McGraw-Hill Construction, single-family home construction will advance by 615,000 units in the U.S. this year, multi-family housing units will be up 14 percent, and commercial building will grow by 12 percent. The numbers will be well below their peak before the economic bubble burst, but positive nonetheless.

An article in *Forbes* magazine said that under-building in recent years will provide the greatest impetus for the housing recovery. Contributing writer Bill Conerly predicted more than 1 million housing starts this year, but even that figure is modest compared to the 1.5 million new units he argued are needed annually just to keep up with factors including population growth, demolition of old housing and demand for vacation homes.

For installers, this might be the good news you were waiting for after several years of sluggish recovery. After housing starts fell off a cliff almost five years ago, I heard reports from contractors who had to cut staff, enact creative belt-tightening measures, and sell off some equipment to blunt the impact of lost revenues.

But I'm hearing a little more optimism from contractors these days. And so, apparently, has the Equipment Leasing and Financing Association, which recently released a forecast for 2013 that says equipment sales will be on the rise. Among other things, the report recognizes a pent-up demand for new equipment in construction-related industries. And the ELFA says that demand is being met with continuing favorable credit conditions to finance new equipment.

UPGRADE TIME?

The association's equipment acquisition trends list got me to wondering if more *Installer* readers are preparing to pull the trigger on a new mini excavator, dump truck or other equipment as they head into the busy season.

Many of you have maintained a conservative approach to big capital investments in recent years, and with good reason. Avoiding debt may have been the biggest self-preservation move for small businesses since the housing bubble burst. With little revenue coming in, you put off new equipment purchases and turned to careful maintenance of older equipment to get by.

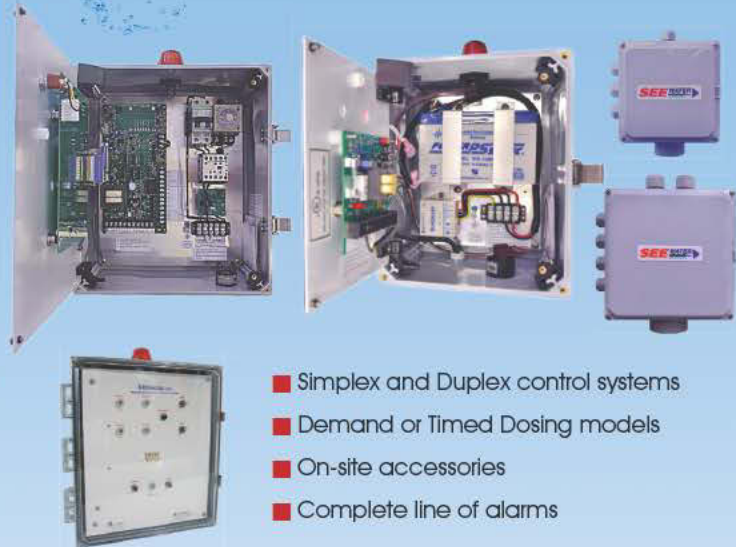
But as the work starts coming back, will that old equipment keep your crews moving at a brisk pace? When you start having to work sun-up to sundown this summer – and there's no wiggle room in the schedule to handle a breakdown – can you afford to keep running equipment with questionable reliability? Do you run the risk of alienating customers and losing future work if an older machine puts you behind schedule?

Then there's the ideal convergence of pent-up demand meeting favorable borrowing terms. If you can secure credit for a needed new machine, is now the time to take the plunge? According to the ELFA, "businesses will generally find an improving credit supply as they consider equipment acquisitions." They predict equipment investment will pick up in the second half of this year and that an improving housing sector will help.

YOUR STORY

I want to hear your outlook for the remainder of 2013. My hope is that you're able to schedule out at least a few months in advance with new system or replacement installations this summer. Maybe you've already been able to book out most of the year and are looking to add new members to your

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Timothy Davis operates the Toro Dingo TX-420 tracked trencher while technician Melvin Sias installs Geoflow dripline. (Photography by Sarah Brinegar)

ALWAYS *Flexible*



West Virginia's hilly terrain provides fertile ground for TR Davis and a specialty in secondary treatment systems with low-pressure pipe distribution

By *Scottie Dayton*

Success was a long, winding road for Timothy and Reba Davis of TR Davis in Branchland, W.Va. Although world events once threatened to sink their fledgling company, their hardscrabble background left them well prepared to cope with adversity.

Their ability to accomplish a lot with little and to diversify helped them crest the summit and enjoy the company's best year in 2010, and continued success since.

Timothy Davis, 53, holds licenses for excavation, onsite installation, electrical work, general building, general engineering and plumbing. Today, onsite installations generate 90 percent of company revenue; excavation provides the remainder.

"Residential systems are our bread and butter, and we specialize in low-pressure pipe systems," Davis says. "Only 10 percent of our work involves commercial systems, but that could be changing."

For several years, Reba Davis helped run the business from their home and wasn't afraid to shovel gravel if her husband needed help in the field. "She's been my partner since the beginning," Timothy says. "Reba became my wife when I was 21, and her steadfast support has made it possible for us to be where we are today."

Challenging sites

The mountainous setting of Lincoln County provides the first challenge of Davis' days. "Our 100-mile service radius doesn't sound like much until you consider that most of it is ups, downs, and S-curves," he says. "Lots are usually small. Homes are shoehorned between a hill and country road with a stream alongside. It's common for soils to fail percolation tests and to have water tables 3 feet below grade."

TR Davis, Branchland, W.Va.

OWNERS: Timothy and Reba Davis
YEARS IN BUSINESS: 23
EMPLOYEES: 4
MARKET AREA: 100-mile radius
ANNUAL REVENUE: \$550,000 (2012)
SPECIALTY: Installation and repair of residential and commercial systems



Word of mouth has always brought the vast majority of work. That includes occasional projects from health departments, such as demonstrating installation techniques for state and local officials and installers. "West Virginia doesn't require continuing education, so regulators ask us to provide training when they find an improperly installed system," says Davis. He and two employees recently raised and reset some peat modules, then added a dosing pump and control panel under the watchful eyes of 20 people.

Davis moved from installing conventional stone-and-pipe systems to aerobic treatment units (ATUs) with low-pressure pipe (LPP) dispersal when the Lincoln County Health Department designed such a system for a dam keeper's house. After installing it, Davis knew LPP was the answer to many of the area's site conditions.

Installers design most systems, then present the plans to the local or state regulatory agencies for approval. "LPP systems required math that pushed my high school education," says Davis. "It was a hands-on learning experience because there weren't many people around to help me."

"Residential systems are our bread and butter, and we specialize in low-pressure pipe systems. Only 10 percent of our work involves commercial systems, but that could be changing."

Timothy Davis

Tax accountant and neighbor Hal Ray Smith watched Davis struggle to design the systems, then wrote a computer program that did the math. Davis has used it ever since. "We've installed 25 to 30 LPP systems over the years," he says. "That may not be a huge number to anyone else, but it's major for around here. We also have installed more of them than any other contractor."

Tough times

That accomplishment took every ounce of grit the couple had. Davis worked in a machine shop after high school graduation, married in 1980, then joined his cousin as a partner in an excavation business launched in 1983. Davis bought a used John Deere 310B backhoe as his part of the deal.

Home construction was doing well, and the partners quickly noticed that installing onsite systems was a bigger piece of the pie than excavating holes for the tanks. Davis earned his Class I installer license, and the company branched into installing conventional systems. When they won the contract for the system at the dam keeper's house, Davis got his Class II license to install alternative systems up to 600 gpd.



ABOVE: Timothy Davis checks control panels from Delta Environmental (large box he is touching) and Aquaworx by Infiltrator (small open box on right). (Photo by Ric McDowell) **BELOW:** Davis (left) and equipment operator Bob Adkins use a Bosch laser level to measure lines and level the ground for trenches.



As the business prospered, the men went their separate ways, dissolving the partnership in 1990. Davis took his backhoe and opened Davis Construction and Excavating. That August, Iraq invaded Kuwait. "It was a terrible time to start a business because everyone had their minds on the war," he says. "Nothing was moving, and that slowed the economy. I was under heavy debt, and it became very difficult to make the payments."

His childhood had prepared him to live on the edge: "My father died when I was 10 and my mother raised the four of us. We were very poor and those were harsh times." He also credits his faith for getting the business through the first three years. "I wanted to quit more than once because it was so difficult financially," he says.

The expanding housing bubble brought work opportunities. By the mid-1990s, Davis was installing 100 systems a year and had hired two employees. When onsite jobs temporarily dried up, he returned to his excavation customers, and that work occasionally spun off into electrical and plumbing projects. "Maintaining my multiple licenses enabled us to hang on until the cycle reversed itself," he says.

"We've installed 25 to 30 LPP systems over the years. That may not be a huge number to anyone else, but it's major for around here."

Timothy Davis

Shot in the arm

A major turning point came in 1995 when Davis realized that if he was to stay in the wastewater business, he needed to associate it with a product. "We didn't have much going for us other than the LPPs, so I went at it hard," he says. "I researched how different ATUs were designed and made numerous calls." Seeking something simple, reliable and easy to service, he chose the Whitewater aeration unit and became a distributor for Delta Environmental Products (a Pentair company).

With secondary treatment in hand, Davis expanded his search to include multiple nonmechanical components and became a distributor for products from Infiltrator Systems. "The two lines improved the status of our company and boosted revenue considerably," he says. He is considering adding Eljen geotextile sand filters because the low-profile, narrow-trench drainfields have no moving parts, require minimal maintenance, and can be installed above the high water table.

In 1997, Davis incorporated the business and renamed it TR Davis. "The R is a tribute to Reba for all she has contributed," he says. "The funny part is some people call me TR now instead of Tim."



Timothy Davis (left) discusses an installation project with equipment operator Bob Adkins and Lincoln County assistant project director Ryan Jefferson. (Photo by Ric McDowell)

Tough conditions

Low-pressure pipe systems saved many home sites but also presented Davis with his toughest challenges. One of the worst was a new system that immediately began clogging. The soil was good, but the site had high groundwater. Davis traced the problem to tacky particles plugging the 5/16-inch holes in the discharge pipes.

"The health department didn't know what the material was but assumed it might be a byproduct from mining in the area," he says. "The system never did work properly, but it taught me that not all problems are due to bad components."

On another service call, Davis found soapsuds in an ATU: "I talked to the owners, who swore they used only the recommended amount of laundry detergent and dishwashing liquid. In later conversations, they finally mentioned having natural soft water." Using less soap cured the problem and underscored the importance of thoroughly investigating what happens in the home when designing a system.

The most complex systems the company installs today use Whitewater units or PuraFlo peat biofilters (Anua) and low-pressure drip tubing (Geo-flow). A recent project involved five peat modules and 1,400 feet of tubing snaked across a steep hill.

When working on slopes with more than 20 percent grade, Davis rents a Toro Dingo compact utility tracked trencher from the local Caterpillar dealer. "It's a very stable machine with good traction," he says. His standard equipment includes a John Deere 450 G bulldozer and 310 E backhoe, a Kubota U45 tracked mini-excavator, and an International dump truck.

Commercial side

During the past four years, Davis has watched residential installations decrease by 40 percent, yet in 2010 he increased the company's average

(continued)

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Balancing Energies

Like many small businesses, TR Davis began with an office in the home. Reba Davis handled the paperwork and answered the phone during business hours, but Timothy Davis fielded calls up to 10 p.m. "That's maybe okay while you're young," he says. "But it's crucial to get business calls out of the home once you're over 50. You'll burn out if you don't rest and get away from the business."

In 2010, the couple bought 52 acres with a run-down 670-square-foot concrete block building. They gutted it, installed a new floor, replaced the roof, and opened it as an office in 2012. Davis hired a part-time secretary to give Reba more time with their 9-year-old son.

The family also takes an annual week's vacation: "My little boy and Reba love the beach. They play while I read." He also takes half a week in the spring to fish for trout, and he sometimes hunts deer with his son.



The TR Davis family includes, from left, Timothy Davis, Christopher Davis and Reba Davis.

annual revenue of \$350,000 to \$792,000. The next year it dropped to \$261,000, but it rebounded to \$550,000 in 2012.

"2010 was a milestone because of a Lincoln County Commission Green Wastewater Project funded through the U.S. EPA," says Davis. "We installed Puraflo modules with surface discharge at 20 homes and added a part-time employee." It was the company's largest contract to date.

"I'm convinced one reason 50 percent of my competitors didn't survive is because they neglected what they installed."

Timothy Davis

Commercial clients include small businesses such as service stations, pharmacies and restaurants. He also handles the occasional industrial site.

To compensate for stagnant retail sales during the last three years, Davis focused on repairing or upgrading systems he installed in the 1990s. If sites have no room for a replacement drainfield, he installs an ATU with direct discharge. "We get lots of calls from original customers when their systems begin failing from age," he says.

Davis attributes the calls to his business principle of always servicing what he put in the ground: "I'm convinced one reason 50 percent of my competitors didn't survive is because they neglected what they installed," he says.

Personal touch

Committed to being the best in the game, Davis noticed that state agencies used IBM Lotus Approach to track permits in the early 1990s. He bought a computer and the software to track his customers. Today, he uses Microsoft Access.

Staying in touch with customers paid dividends, opening the door to work with real estate agents. Although the state doesn't require point-of-sale inspections, many real estate agencies and banks do. Without a list of certified inspectors, officials didn't know where to turn. Homeowners recommended calling Davis.

"Once we did an inspection, agencies continued to use us because we worked with sellers and buyers and we were willing to wait for our money," he says. "If properties had failed systems, we provided repair estimates and

were usually hired." The state requires installers to provide two-year service contracts on ATUs. Subsurface discharge requires four inspections, and surface discharge systems have quarterly inspections. The company maintains 700 systems and tries never to miss an inspection.

"Our technicians leave tags on people's doors so they know we've been there," says Davis. "Recently, we've begun sending a condition report to owners of surface discharge systems to comply with new Department of Environmental Protection requirements."

When contracts expire, the company mails renewal notices. "People with surface discharge renew at 90 to 95 percent," says Davis. "We're lucky if we pick up 50 percent of subsurface customers, and we lose 50 percent of them over the next six to eight years." Nevertheless, the company still services some units installed as early as 1995.

Looking ahead

Coming out of a period of economic doldrums, Davis remains resilient. In 2012, he installed a 2,000 gpd system with Salcor 3G UV disinfection for a medical facility, possibly a route to expansion in the commercial sector. He also wants to sell more quality products.

"Distributorships are essential to being in the onsite business long term," he says. "I'd love to see us average \$1 million or more in revenue per year and be able to build a 40- by 100-foot shop with one bay. I believe it's achievable with the right economic conditions." □

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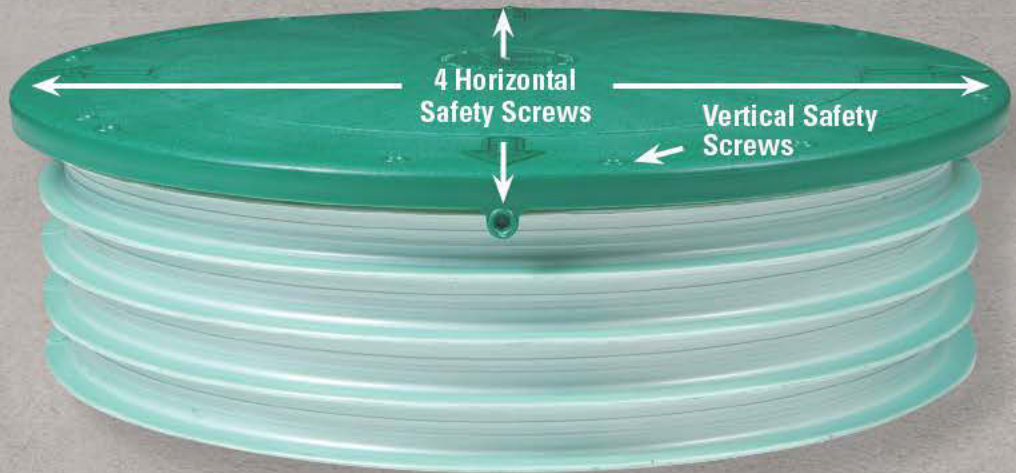
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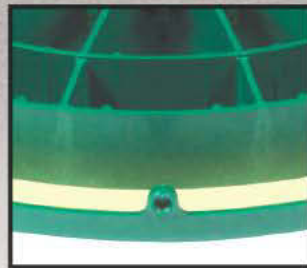
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Jim Anderson, Ph.D., and Dave Gustafson, P.E., are connected with the University of Minnesota onsite wastewater treatment education program. Dave is Extension Onsite Sewage Treatment Educator. Jim is former director of the university's Water Resources Center and is now an emeritus professor, as well as education program coordinator for the National Association of Wastewater Technicians. Readers are welcome to submit questions or article suggestions to Jim and Dave. Write to ander045@umn.edu.

Scratch Beneath the Surface

Be careful to avoid mistakes in soil sizing that are often the root of premature onsite system failure or poor performance

By Jim Anderson, Ph.D., and Dave Gustafson, P.E.

Last month we looked at preliminary information obtained in a site evaluation and why it is important for an installer to understand the information. Installers may question why they need to know about soils and landscape information. This is another topic we covered extensively at the Installer 2 class at this year's Pumper & Cleaner Environmental Expo International. As we have discussed in numerous columns, having this knowledge will save installers and the designer from making mistakes that result in time-consuming discussions with the homeowner, defending lawsuits and having to replace the system at their cost.

As we travel around the country, regulators, installers, inspectors and service providers most often explain that systems fail or do not perform properly because initial soils information is wrong, leading to poor designs and poor installations.

SIZING TABLES ARE THE NEW MEASURE

More states are adopting into their codes soil sizing tables that designate loading rates for septic tank effluent to soils on the basis of soil texture, structure and consistence. These tables have supplanted percolation tests to determine how large the system should be. This has caused a shift in how the site soil evaluation is conducted. In the past, the most common way to collect and evaluate soil samples was using a boring or probe device. Whether it is a push probe or a bucket auger, the sample is disturbed during the process, making it difficult to accurately determine soil structure and the depth of characteristics changes in the sample. The preferred method is to excavate a soil pit and get a close-up view of the entire soil profile.

When the pit is excavated – or in the case of an installer, when the trench or hole for the septic tank is excavated – the visual impression should be of



A soil pit is necessary to describe soils and properly obtain accurate information.



Some of the tools required for gathering soil information include a soil description manual, a soil color manual, a number 10 sieve and water bottles.

a series of layers. The soil science term for these layers is “horizons” and the sum of all of the layers is termed the soil profile. During the soil evaluation piece, each of these horizons is described for color, texture and structure. In undisturbed soils, there will be at least three distinct sets of horizons. In soil science terminology, these are labeled A, B, and C horizons. The general interpretation of these is A is topsoil, B is subsoil and C is the original parent material.



LEFT: The Munsell color book provides official soil color nomenclature. BELOW: Alternating bright reddish brown colors with dull gray or white colors indicate the presence of seasonal saturation.



The proper way to begin the evaluation is to work from the bottom up to provide the description. Similarly, during the excavation, the installer should look at the bottom to identify if there are any obvious limiting conditions that affect the depth of the system. The two primary examples would be the occurrence of bedrock or freestanding water. During excavation, an installer can often identify potential problems with soil permeability, such as dense layers that hard to dig through.

Most codes set separation distances from these subsurface limiting conditions to ensure unsaturated soil for treatment of septic tank effluent. Installers should know their state and local requirements.

STOP AND RE-EVALUATE

Most codes set separation distances from these subsurface limiting conditions to ensure unsaturated soil for treatment of septic tank effluent. Installers should know their state and local requirements. If any of these conditions are encountered while excavating the system closer to where effluent will enter the soil, work should stop and the designer and/or site evaluator and local regulatory authority should be contacted before installation proceeds.

During the description of the soil profile, color is the most easily recognized change in characteristics that define the soil horizons. Important characteristics can be inferred from soil color. Well-drained soils have uniform bright colors. Soils with a fluctuating water table have a mottled pattern of gray, yellow and/or orange colors. These fluctuating water tables are often seasonal, and from a design and site evaluation standpoint are treated the same as permanent or regional water tables. Distance from the point the effluent enters the soil to the first evidence of the gray and red mottled appearance is the same.

An example of how this might impact the installation or change the kind of system installed is as follows: The site evaluator/designer has indicated that to use gravity distribution to the soil treatment trenches, the trench needs to be excavated to a depth of 3 feet below the land surface. This depth allows the sewage to flow by gravity from the house through the septic tank and into the drop or distribution box to the trenches. In Minnesota, we have a required separation distance of 3 feet. This means the installer should see no evidence of limiting layers to a depth of 6 feet to allow this installation.

MAINTAIN PROPER SEPARATION

As the installer excavates for the septic tank, soil color indicates the presence of seasonally saturated conditions at a depth of 5 feet. To maintain the separation distance the maximum excavation is 2 feet. The designer should be consulted and an evaluation made as to whether the required drop in elevation can be maintained. If not, the

entire system design will need to be changed. The installer should be able to make this evaluation in the field, working off a benchmark elevation that either the designer or the installer has established.

Unfortunately, way too many installations have taken place without the proper separation distance being maintained. This leads to poor system performance and premature failure. The entire industry suffers when this happens and it could be prevented by the proper analysis of soil color.

In coming articles, we will take a closer look at texture and structure as ways to determine the soil sizing factors. □

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Keep It Cool

Today's machinery is built to work hard in the scorching summer heat, but inspecting and maintaining cooling systems is critical to avoiding costly equipment failures and losing time on the job

By Jim Edmondson

One of the best practices for maintaining equipment like skid-steers, mini-excavators and other machines used by onsite system installers is inspection of the cooling system prior to and during machine use. This practice might just make the difference between a long, productive machine life and an expensive, premature death.

Inspecting and maintaining cooling systems is a relatively easy thing to do, yet many service shops thrive thanks to contractors who don't bother with such simple practices. This practice is especially important when temperatures soar. Machines can overheat as the ambient temperature rises. The potential for overheating can also be related to the type of work being performed.

According to Gregg Zupancic, marketing product manager for John Deere skid-steers, "Frequently, a small, compact machine with a bucket is not likely to overheat as they're designed for that workload. What causes them to overheat more often is the type of attachments that get plugged into the hydraulic system."

The biggest Deere machine, says Zupancic, is on a 333D track loader. "If a guy is running a high-capacity hydraulic attachment like a mulcher full out, that machine is designed to run efficiently at a high ambient temperature, but if the coolers are not kept clean, an audible alarm will let the operator know if the machine ever gets close to red line. After that, there is a built-in machine protection system that will automatically shut the machine down if the operator keeps going."

Hydraulic attachments like trenchers or tree grinders require a lot of hydraulic capacity and flow. Extreme ambient temperatures could result in overheating.

Inspect for dirt and debris

"One of the ways these machines overheat most often is when cooling radiators get clogged with dirt and debris," explains Steve Perkins, service tech for Bingham Equipment, which operates 11 dealerships in Arizona. "In some areas of the country, like ours, powder-like dirt kicks up a lot of fine dust that gets into these radiators. That's the fastest way to create an overheating problem."

"I've seen radiators that actually exploded – where the tank just blows

off the machine," Perkins notes. "Some systems have dual fans, and if one stops, uneven heating takes place that can blow the tank." Often, you can hear if one fan has dropped off, he says. Thus, a good walk-around inspection includes listening to a machine as well as visual examination.

But if the machine is kicking up a lot of dirt, dust or sawdust from grinding wood, the fans will pull that debris through the radiator and clog it relatively quickly. Trained techs recommend blowing the coolers clean with air

"Hydraulic oil can soften and weaken hoses. Any hydraulic fluid that gets on hoses and belts should be wiped clean right way. A leaking or burst hose doesn't happen right away, but it can certainly lead to that problem over time."

Steve Perkins

every day. Under the same conditions when operating in 100-plus degree temperatures, this may need to be done on hourly basis.

Hydraulic oil can damage hoses

Perkins also suggests coolant hoses and belts be routinely inspected for cracking and other signs of deterioration. His biggest concern, however, lies with hydraulic oil spills. "Hydraulic oil can soften and weaken hoses," he warns. "Any hydraulic fluid that gets on hoses and belts should be wiped clean right way. A leaking or burst hose doesn't happen right away, but it can certainly lead to that problem over time."

Make sure coolant is fresh

Steve Overdeck, vice president of sales and operation for Kost USA, says 40 to 60 percent of engine failures are coolant-related. "What that means is maintenance technicians are using an improper coolant or topping off with the wrong coolant," he says. "It can also happen if they're not using proper maintenance."

Bobcat recommends coolant changes every 1,000 hours or every two years. According to Perkins, all Bingham Equipment locations follow this service interval. Flushing is also done only when the fluid looks questionable.

Mixing two or more types of coolants in equipment is a no-no. Bobcats, like many other compact machines, use propylene glycol vs. ethylene glycol

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coolants. Mixing the two will result in coolant "gelling" – which spells certain death for the radiator and risk to the entire engine.

Ethylene glycol is always green in color. Propylene coolant can be different colors. Bobcat's propylene coolant is a unique purple color while their hydraulic fluid is orange. This helps keep technicians from mixing the wrong fluids.

You should also decide whether to use an extended-life coolant or the type that is mixed with distilled water. Once you choose which coolant to use, stick with it and never combine the two.

You can purchase test strips from a local dealer to check your cooling system's protection levels. A hydrometer is another tool to measure your cooling system's specific gravity level and delivered degrees of protection. The degree of freeze protection – how much the temperature can drop below the freezing point before causing an adverse effect on the liquid in the system – is related to the density of the antifreeze.

Keep coolant levels up

If coolant is low, many technicians will "top off" the system with either water or more coolant mix. Adding hard water (not distilled) can result in radiator hot spots while lowering the temperature rating of the system. More often than not, topping off is when incorrect coolants get mixed. The best practice is to change coolant per manufacturer recommendations, keep a record of coolant changes and types, and when low, inspect the system to find out why. There's probably a leak somewhere.

Overheating can also cause coolant to gel. Once coolant gels, it will likely result in a blown engine. The radiator will be shot, too. Repair costs to your hardworking equipment may now range from \$5,000 to \$10,000 for a new engine and radiator.

Radiator cap gaskets can age and deteriorate. According to Perkins, when the psi drops too much, the machine will heat up a lot faster. The cap should be tested to be within the manufacturer's psi rating. Making sure pump belts are in good shape and have proper tension is another good step in inspecting the cooling system.

Be especially careful with diesel engines

Proper cooling system maintenance is especially important in diesel applications. Overcooling, pitting, overheating, cracked heads, cavitations, piston seizures and plugged radiators are some common cooling system failures. It is important to maintain the recommended SCA (supplemental coolant additive)/DCA (dry coolant additive) levels in your engine's cooling system and maintain the manufacturer's specs. □

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Setting Up Camp

Tough winter weather and a requirement to handle waste from 220 oilfield workers challenges the designer and installer of a Montana onsite system

By **Scottie Dayton**

An oil support services company decided to build a camp for 220 workers outside Fairview, Mont., to serve oil production in the Bakken region. Officials hired Travis West, RS/REHS, of Engineering West in Columbus to design the onsite system and related infrastructure.

Winter temperatures along the Montana-North Dakota border often hover in the single digits and can fall to -40 degrees F. To handle the cold and its effect on the biological treatment process, West specified the pre-engineered fixed-film bioreactor system invented by Thomas Kallenbach, P.E., of Eliminite in Belgrade, Mont., and Justin Buchanan, owner of E-On Northwest in Bozeman, Mont.

“These units have a proven track record for high-quality effluent in sub-zero temperatures,” says West.



Justin Buchanan of E-On Northwest in Bozeman, Mont., empties MetaRocks into the treatment chamber of an Eliminite fixed-film bioreactor. (Photos Courtesy of Eliminite, Belgrade, Mont.)

SYSTEM PROFILE

Location:	Fairview, Mont.
Facility served:	Oilfield support facility for 220 workers
Designer:	Travis West, RS/REHS, Engineering West, Columbus, Mont.
Installer:	Masco Construction Co., Moses Lake, Wash.; Eliminite, Belgrade, Mont.
Site conditions:	Clay loam with percolation rates of 32 minutes per inch and loading rates of 0.3 gpd per square foot
Type of system:	Eliminite fixed-film bioreactor with pressure distribution
Hydraulic capacity:	10,000 gpd

“They’re reliable and don’t require a wastewater treatment operator to maintain them. They also enabled us to reduce the drainfields’ footprints by 50 percent, which was major in conserving space for the mandatory replacement drainfields.” West used Squirt, a patented computer software program, to analyze drainfield hydraulics and determine pump criteria.

The technology achieved aerobic nitrification, anaerobic denitrification, solids settling, and BOD reduction in a unified process. The pressure-dosed system, which went online in March, met the worker camp’s tight startup deadline and is functioning properly.


Site conditions

Soils are clay loam with a percolation rate of 32 minutes per inch and a loading rate of 0.3 gpd per square foot.

System components

West designed four independent systems to treat a total of 10,000 gpd. Components are standardized for ease of replacement and stocking spares.

(continued)



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LEFT: Justin Buchanan guides the lid onto an Eliminite fixed-film bioreactor. RIGHT: Buchanan wires a control panel from SJE-Rhombus.



Each 2,500-gpd treatment train has:

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- A100-8 effluent filters (Polylok)
- Eliminite 620C bioreactor with integral pump chamber in concrete tank. Tanks made by Flathead Concrete Products, Kalispell, Mont.
- Duplex 1 hp SHEF 100 discharge pumps, Hydromatic, Pentair Pump Group
- 1 hp Hydromatic SKHS 100 recirculation pump
- 500 feet of 1.5-inch pressurized pipe inside standard 36-inch BioDiffuser chambers from Advanced Drainage Systems
- Control panel from SJE-Rhombus

System operation

The camp is divided into quadrants, each with its own onsite system. Wastewater gravity-flows through 4-inch PVC laterals to the septic tanks set in line, then into the treatment unit. The recirculation pump doses the attached growth media on a programmed schedule. When activated, the pump sends effluent into a spray bar that evenly distributes it through three heads over 500 cubic feet of MetaRocks.

MetaRocks are spheres of closed-cell polyurethane resins with three deep contoured channels that provide large, open pores for passive air transfer. A coating of coarse sand and finely crushed recycled glass enables a thin liquid film to cover the entire surface and promote even, consistent bacterial growth.

The 7-foot-deep packed media bed needs no cleaning or replacement. Nitrified liquid collects at the bottom of the tank. Each time the recirculating pump engages to dose the media, it returns a portion of the fluid through the denitrification line to the first septic tank.

The Lung, a proprietary air entrainment device driven by the recirculation pump, supplies oxygen to the microorganisms. Whenever the recirculation pump runs, it discharges air drawn into the Lung from the previous cycle into the bioreactor. When the pump shuts off, liquid drains by gravity back to the pump chamber, simultaneously drawing air into the Lung.

As wastewater enters the unit, the rising liquid engages the alternating float-activated discharge pumps in the pump chamber. “On-demand dosing doesn’t require a separate dose tank and it reduces the system’s complexity, and makes it far more predictable and reliable,” says Kallenbach. “It’s important that these systems run themselves.”

Each discharge pump sends 300 gallons through a separate 2-inch 160 psi DR 11 HDPE Schedule 40 force main to its dedicated half of the drainfield. “The only thing between the pump and drainfield is pipe,” says Kallenbach. “That gives the system true redundancy, and nothing mechanical to break down.”

Each section of drainfield has 1.5-inch pressurized pipe suspended with plastic snap-tie fasteners inside five 100-foot-long laterals on 7-foot centers. The 1/8-inch orifices on 5-foot centers spray up at 8 to 10 feet. “Based on similar systems serving the Montana highway rest areas, we’re seeing CBOD, TSS and total Kjeldahl nitrogen removal in the 99 percent range,” says Kallenbach. “Without using chemical additives, we’re also seeing total nitrogen removal in the 90 percent range, and these numbers are from winter samples.”

“On-demand dosing doesn’t require a separate dose tank and it reduces the system’s complexity, and makes it far more predictable and reliable. It’s important that these systems run themselves.”

Thomas Kallenbach

Installation

The week before Buchanan arrived at the camp, the project manager reported subzero temperatures with -60 degrees F wind chills. Buchanan packed a 13- by 20-foot wall tent to pitch over the excavations, a propane heater and survival clothing. He also shipped two semi-truck loads of MetaRocks 500 miles to the site.

Masco Construction Co. of Moses Lake, Wash., dug excavations for the tanks, set them, and installed the drainfield and camp infrastructure. Mild weather arrived the first week of February, making the wall tent unnecessary. It also thawed the soil late in the day, producing a challenging, sticky mud that clung to boots.

Daytime temperatures ranged from the teens to the thirties with little wind. “The days were sunny and pleasant, but we still had to bundle up,” says Buchanan. Bulky clothing made moving more difficult and added time to every operation.



To keep the microorganisms warm, Buchanan lined the tanks and lids with 2-inch-thick polystyrene (subgrade) insulation. The lids and risers were designed to reduce surface exposure. "Open a large hatch riser on a subzero day and the heat loss will cool the whole system," says Kallenbach. "Using 24-inch risers on these tanks restricts heat loss."

Buchanan and Masco coordinated their efforts to install the media. Using the excavator arm, the Masco operator suspended two bags of MetaRocks at a time over a treatment unit, then Buchanan pulled the chute on the bottom of the bags to release the flowable media. It took nine bags to fill a treatment chamber, then the operator set the lid. Buchanan plumbed and wired the unit while Masco workers installed the drainfields.

After setting floats and mounting control panels, Buchanan used a generator to connect and test the panels. The installations took six days. Meanwhile, Masco pumped trucked-in water from one septic tank to the next to leak-test them. They also transported 1,500 gallons to each bioreactor for testing, then Masco covered them with 2 feet of soil. They buried the septic tanks to the same depth and mounded soil around them.

Maintenance

E-On Northwest has the maintenance contract. Buchanan provided a site-specific maintenance manual with photographs and site plans showing where components were installed. The state Department of Environmental Quality requires effluent testing twice per year for the first two years, then annually. □

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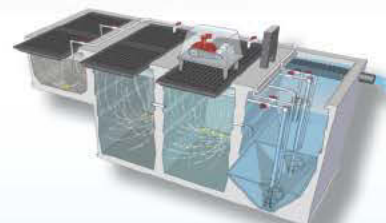


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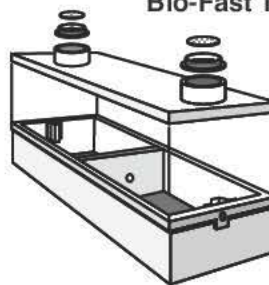
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ABOUT THE AUTHOR

Robert B. Mayer, MSPE, is president of American Manufacturing Company, Inc. and serves as the National Onsite Wastewater Recycling Association Secretary/Treasurer. NOWRA is dedicated to representing and educating all segments of the onsite/decentralized industry. For more information, visit www.nowra.org, or call 800/966-2942.

Who Performs Maintenance?

Designers and installers are challenged to offer onsite systems to meet the needs of users and match the local requirements for O&M

By Robert B. Mayer

Designers of alternative onsite systems have a very real challenge in states that don't mandate operation and maintenance. I characterize systems designed in jurisdictions without an O&M mandate as having an *owner-operator* (mandated areas would have *professional operators*). As a manufacturer of onsite systems that require periodic O&M, how do I design a system to work in jurisdictions with no mandate so that it is affordable on both the front end (installation) and also over back end (O&M)?

A conventional system has two modes of failure. The wastewater either surfaces or backs up into the house. These are the alarms the owner operator uses to initiate maintenance. If the system contains a pump, a high-level alarm will indicate a possible pump failure. This would be owner-operator compatible. Alternative systems are another matter, however. Because they are designed to overcome limitations of the site where the system will be installed, there are more ways for treatment quality to be compromised. How do we know when the system is not working? What constitutes a failure? Can an owner truly operate the system or does it take a professional?

Designs should be around systems you can fix after they break. When they break, they should not cause irreparable system damage or environmental harm. The starting place for me was to try and make the alternative system act like a conventional system with a pump. If there were a failure, then there would be either a backup into the house or a wet spot in the field or a high-level alarm. The owner would then be expected to call someone to fix the problem. A better conventional system design protocol would be to put a time-dosed pump in every system. Design the pump to discharge the design flow only so excess flow (leaky toilets) would cause a high-level alarm, not a failed drainfield. The designer can then control one more non-compliant event: excess water use.

A low-pressure distribution system can be designed with this philosophy. Once the hydraulic layout has been designed, deliver the wastewater to the network on a time-dosed basis. In the event of clogging, a professional operator would note the loss in capacity and perform necessary maintenance. The owner-operator would have to wait until capacity has been lost to service the facility and a high-level alarm is triggered – and pay a much larger repair bill.

A drip system can be designed with this philosophy. A drip system needs more management than a low-pressure distribution system and care must be taken in design to take advantage of its enhanced benefits. A drip system with solenoids, filters, emitters in addition to a pump, and control should be designed to alert the owner-operator to a problem with the same indicators as a conventional system. For example, in addition to a backup, a wet spot and a

high-level alarm for a pump failure, we can design the system to save the drip tubing and the soil treatment with similar alarming.

Unfortunately, gravity flow-through treatment units cannot be ignored by the owner operator until he gets a backup alarm or wet spot without considerable harm to the system or possible environmental damage. Time dosing to treatment is a considerable enhancement, but until we can affordably monitor and alarm low treatment quality, an owner-operator is not a good solution for many treatment system designs. Designers should only propose designs for owner-operators where treatment quality non-compliance is low-risk and manageable after a long period of non-compliance.

System manufacturers need to provide information to their designers to support O&M either by owners or professional operators. I would assume that systems designed for the owner-operator would be more costly in most cases to provide the appropriate level of operator interface. Each manufacturer would need to make their own case for this utility, but the industry needs to have this discussion.

In all cases, the designer needs to estimate long-term O&M costs. The designer should present owners with adequate information to make the appropriate decision for their budget. It is possible to design for long-term O&M so costs are in line with sewer bills in urban areas.

Time should show which systems are the most manageable for either the owner-operator or the professional. We need to have a better understanding of the expectation of the owner-operator for long-term sustainability. The only way to determine this expectation, in my view, is to first educate them more about what an alternative system is. The challenge continues. □

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Drainfield Media & Design

By Craig Mandli

Combined Treatment System

The Puraflo Peat Fiber Biofilter from Anua can be designed and installed as a combined treatment and effluent dispersal system. Treated effluent exits the modules via weep holes around the perimeter at the module base and flows into the dispersal system situated directly beneath. Available options include an in-ground or mounded pad. It features a small footprint and the ability to overcome site limitations such as seasonal high water tables, shallow soils or restrictive layers. Assistance is provided to designers and regulators on sizing and configuring the pad dispersal system. 336/547-9338; www.anua-us.com.



Spider Valve

Clarus Environmental's Spider Valve manifold assembly allows the appropriate distribution of effluent when regulations require pressurized splitting or when small lots require lateral lines of unequal length.



When combined with a pump, orifice diameters within the manifold may be modified to ensure no lateral receives more than its share of flow. The incoming line should maintain at least 3 feet of distal pressure to ensure equal effluent splitting. The assembly must be installed at the high point of the system, permitting the effluent to drain from the valve to the trenches. It is available in models that serve up to 10 laterals. The assembly should be installed level inside a 24- or 30-inch access riser with lid. 800/928-7867; www.clarusenvironmental.com.

Geotextile Sand Filter

The GSF Geotextile Sand Filter from Eljen Corporation provides advanced treatment and dispersal in the same footprint. The internal design provides sufficient void space to allow for aerobic conditions, while the Bio-Matt fabric promotes biological growth on its multiple surfaces. The fabric enhances system performance and keeps the biological growth away from the native soil, preserving the soil's long-term acceptance rate. The unit's lightweight and easy-to-handle modules allow for quick and convenient delivery and installation. 800/444-1359; www.eljen.com.



Low-Profile Chambers

Quick4 Plus low-profile chambers from Infiltrator are optimal for shallow installations, providing maximum strength through center structural columns. At only 8 inches tall, they can be installed with as little as 6 inches of cover. They feature the Contour Swivel Connection, which allows 10-degree turns, right or left. They come in easy-to-handle 4-foot lengths, and provide even distribution of effluent to the soil. They don't require heavy equipment for installation, and can be configured in a variety of inletting options and heights. 800/221-4436; www.infiltratorsystems.com.



Ornamental Septic Vent

The Pagoda Vent from Pagoda Vent Company is an ornamental, but functional, septic vent that is easy to install, cost-effective, and blends into the landscape. It is offered in heights from 1 to 14 feet. The vent slides onto the vent stub, fitting with a seal on the stub pipe concealed inside the vent. Optional odor control filter cartridges are packed with septic odor-eating media. 888/864-1468; www.pagodavent.com.



Distribution Boxes

Distribution boxes from Polylok/Zabel Environmental are available in 12- and 20-inch sizes, and accept 2-, 3-, 4- and 6-inch pipe. The 12-inch boxes come with stabilizing feet to anchor and prevent them from floating. They will accept risers to bring them to grade where necessary for convenient inspections. 877/765-9565; www.polylok.com.



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Carbon Filter

The Super Wolverine mid-size carbon filter from Simple Solutions holds between 8 and 10 pounds of activated carbon and is available with inlet sizes between 3 and 6 inches. It has a pressure drop of only 0.2 inches W.C. at 10 cfm, making it ideal for larger aerobic systems found at restaurants or on small commercial buildings. It also has an optional saturation indicator for monitoring the life of the carbon bed, and uses a 2-inch drain plug for easy media replacement. It is also available with a solar-powered fan for active ventilation. Common applications include grease trap vents, commercial building plumbing vents, holding tank vents, septic tank vents and gravity mainline sewer vents. 866/667-8465; www.industrialodorcontrol.com.



Pipe Stand

The STF-BTPS "bow tie" pipe stand from Sim/Tech Filter is designed for use in chamber systems where distribution piping is suspended above the soil. The stand is independent of the chamber, allowing the pipe to be installed prior to chamber installation and also before the squirt test is performed. It installs by a squeeze-and-release action that makes installation quick and easy. It can be installed on the pipe before placing in the trench, and is easily adjusted to any desired spacing. It stores flat for economical shipping and easy storage, and is available to fit 1-, 1 1/4-, 1 1/2- and 3-inch pipe. 888/999-3290; www.simtechfilter.com.



Roof Vent Filter

The Sweet Air Filter from Tuf-Tite is designed to eliminate offensive odors from roof vents. It is a self-cleaning D-Vent filter using activated carbon to remove odors. It uses heat from the sun to automatically clean and refresh itself. The filter comes with a removable cap for easy carbon replacement, and fits standard 2-, 3- and 4-inch pipe, with custom sizes available. 800/382-7009; www.tuf-tite.com.



ADS opens Canadian distribution yard

Advanced Drainage Systems opened a product distribution site in Morrisburg, Ontario, Canada. ADS has 56 manufacturing plants and 28 stocking service yards worldwide.

SJE-Rhombus adds sales manager, representative

SJE-Rhombus hired Tim Callander as regional sales manager for its wholesale controls product line. He will support customers in Mid-America from Texas to Canada. The company also named Dalcart & Associates as its product representative in Colorado and Wyoming.



Tim Callander



Ende wins Expo sewer blanket drawing

Scott Ende of Ende's Septic Service, Rogers, Minn., won the Matt's Sewer Blanket drawing at the Pumper & Cleaner Environmental Expo International in Indianapolis. The drawing was sponsored by MJM Industries, makers of the freeze-protection cover. □

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Drainfield Media & Design

By Craig Mandli

Onsite sand filter system required for site with shallow water table

Problem

A planned sand filter septic system for an Iowa farm was redesigned to save money and reduce installation time. The system would require a concrete or PVC-lined box, adding to material and labor costs. The system was designed for a four-bedroom house to handle a flow of 300 gpd, with a peak-day flow of 600 gallons. A water table of 5.5 feet limited maximum trench depth to 30 inches.

Solution

A pit was dug 100 by 12 feet for installation of 280 feet of GEO-flow pipe, a 10-inch-diameter, single-wall, high-density polyethylene (HDPE) corrugated pipe, surrounded in a polypropylene grid, both encased in geotextile fabric. The Advanced Drainage Systems pipe design creates equal distribution and enhances the biological reduction of wastewater.



Result

Three 70-foot-long runs of pipe, spaced 3 feet on center, connected to the distribution box. Sand was used as a 6-inch bed and a layer of fabric and filter sand were installed over the pipe. The system reduced the septic tank effluent to less than secondary treatment levels. 800/821-6710; www.ads-pipe.com.

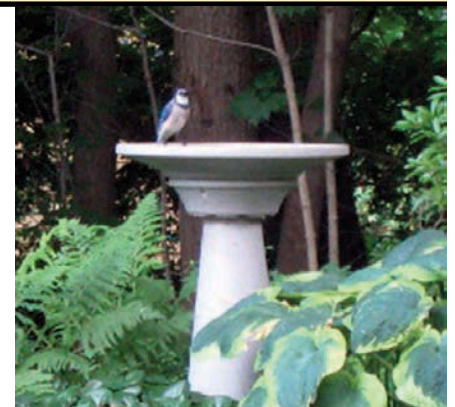
Aesthetic solution needed for septic pipe cover in landscaping

Problem

A Massachusetts homeowner spent thousands of dollars on a new porch and landscaping, only to have a 3-foot-tall vent pipe next to his porch in the middle of his landscaping. Traditional vent filters only addressed the odor problem, not the aesthetics.

Solution

Kevin Orlando from All Season Septic in Stoughton, Mass., was scheduled to pump their system, and the homeowner informed him of the problem. Orlando suggested **The Dirty Bird** septic pipe cover. The product addresses odor problems with an included charcoal filter, and fit into the landscape as a common yard ornament, a pedestal/birdbath.



Result

The homeowner was grateful for the simple solution. Now he has a focal point instead of an eyesore. Guests don't even know he has a vent in his yard, and Orlando can service the charcoal filter when he comes to pump the system. 866/968-9668; www.thedirtybird.com.

Unique system needed for Alabama school with downward slope

Problem

The Dekalb County, Ala., Board of Education was building a new elementary school. The drainfield design had to address both a challenging site and tight budget. The area reserved for the drainfield was on a small hill with downward slope.

Solution

Constantine Engineering selected the **Multi-Pipe** rockless drainfield system from **Plastic Tubing Industries (PTI)**. The design for the 13,200-square-foot system involved five separate fields utilizing 4,400 linear feet of the MPS-13 pipe configured in stepped trenches. The drainfield was installed in two days by Westbrook Grading, assisted by PTI's Alabama field representative Steve Pasky.



Result

The engineer was able to meet the project demands, a contractor discovered a quick and easy way to construct a reliable drainfield system, and the new school has almost 57,000 gallons of effluent storage capacity. 800/780-5121; www.pti-pipe.com. ▣

Blue Angel sump backup system

The Sump Minder battery backup system from Blue Angel Pumps provides up to 230 hours of basement protection. The microprocessor-controlled 12-volt system self-tests the battery status, float switch and pump operation and sends a voice alert in advance of a problem. The auto dialer calls up to five preprogrammed phone numbers. 888/636-6628; www.blueangelpumps.com.



Biowater residential wastewater treatment system

The prefabricated residential wastewater treatment system from Biowater Technology installs above- or belowground and is skid-mounted or trailered. The package plant can be configured with biofilm processes for flows up to 100,000 gpd. 401/305-3622; www.biowatertechnology.com.

PlumbStar radon sump dome

The PlumbStar USA Original Radon/Sump Dome from Jackel provides an odor-free and gas-tight fit over an existing sump or sewage basin. The cover, which can reduce the concentration of radon gas below 4.0 pci/L, fastens to the floor and allows for easy servicing of a sump or sewage pump. It also can support 1,000 pounds, eliminating the threat of falling into the basin. 574/256-5635; www.jackelinc.com.



Clarus Environmental effluent pumps

The model 51 effluent pump from Clarus Environmental has a maximum flow of 18 gpm at 5 feet of TDH and can reach 21 feet at shutoff. The model 142 produces a maximum flow of 18 gpm at 5 feet of TDH and can reach 62 feet at shutoff. Both pumps can handle 1/2-inch spherical solids. 877/244-9340; www.clarusenvironmental.com.



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Long-awaited California regulations take effect this month

By Doug Day and Scottie Dayton

Much-delayed onsite wastewater laws for California take effect May 13. The new policies follow years of work in response to AB-885, which was passed by the California legislature in 2000. The original deadline for the regulations was January 1, 2004. After objections over the one-size-fits-all laws originally proposed, the state Water Resources Control Board developed a tiered, risk-based approach to set standards and minimum operating requirements for onsite wastewater systems.

Colorado

The Colorado Department of Public Health and Environment is planning "sweeping" changes to its laws for septic tanks and drainfields to make them more flexible. State officials also say the regulations are outdated. *The Durango Herald* newspaper reports the department has been working on new regulations for three years and expects to have them finished in 2014. Public hearings began in March.

<http://durangoherald.com/article/20130124/NEWS01/130129777/-1/s>

Delaware

Proposed septic regulations in Delaware would require inspection and pump-out of systems before properties are sold. The state Department of Natural Resources and Environmental Control proposed a plan requiring Sussex County residents living within a quarter mile of bodies of water to upgrade their onsite systems. Homeowners must purchase nitrogen removal technology, have a service contract for the life of the system, have the system inspected every six months, and submit an annual written report by a qualified maintenance provider.

At least one provision of the state's proposed septic rule changes is prompting opposition. Among the law's requirements is semiannual

inspections of new enhanced nutrient removal systems within 1,000 feet of Chesapeake Bay tidal waters. The cost for each inspection, between \$350 and \$450, would be the responsibility of the property owner, and the state could require more frequent inspections.

<http://capegazette.villagesoup.com/p/dnrec-hears-sussex-woes/946007>

Florida

All 19 counties with first-magnitude springs voted to opt out of septic tank inspections as required by the Florida Department of Health. Three cities with first magnitude springs also voted to opt out. The deadline to do so was Jan. 1.

New Mexico

The New Mexico Environment Department requests submission of additional training courses to expand opportunities for liquid waste training and continuing education. The department seeks submissions that would increase the knowledge and expertise of onsite system installers and government regulators. It also seeks volunteers to serve on the panel that would review the material. To submit material or volunteer, contact Dennis McQuillan, NMED Liquid Waste Program manager, at 505/476-3236 or dennis.mcquillan@state.nm.us. □

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MINNESOTA

Water softener regenerate research

John Novak, keynote speaker at the Minnesota Onsite Wastewater Association conference and lead researcher on the water softener regenerate study at Virginia Tech, shared the effects regenerate has on septic system effluent. Novak stated that regenerate is better for average residential onsite systems provided water softeners regenerate based on demand (how much water is used) rather than at certain times. Time-based systems can introduce too much salt, which can cause too much resuspension of solids that can clog drainfield piping.

INDIANA

Association helps tornado victims

Members of the Indiana Onsite Wastewater Professional Association, state Department of Health and Purdue University installed new onsite systems for two victims of March 2012 tornados. Mike Haddon, Washington County Environmental Health Officer and IOWPA member, requested the association consider helping the women who lost their homes. Companies around the area provided the product, equipment and labor to make the day a success.

The IOWPA Certification Committee prepared an inspection and maintenance checklist for the state's new Inspection and Maintenance Certification. The state rule varies from IOWPA's Certified Installer Certification and the NAWT certification program.

Mallory Harnish received the association's 2012/2013 Ralph Reed Memorial scholarship. She is the daughter of Greg and Lori Harnish, owners of G & L Plumbing in Wabash. Mallory is studying accounting and finance at the Indiana University Kelley School of Business.

ONTARIO

Educating planners

A column by Rob Palin in the fall newsletter of the Ontario Onsite Wastewater Association stressed the importance of educating municipal planning and approvals staff about the benefits of onsite systems. When faced with frequent opposition from officials to onsite systems in large private developments, Palin seizes the opportunity to educate. He will explain how an onsite system works and why it is environmentally sustainable when properly designed, installed and maintained.

Palin recommends people in the industry comment on proposed rule changes and engage planning and approvals staff to demystify onsite processes. They should dispel myths surrounding groundwater and surface water contamination by detailing the advances in technology, understanding of soil mechanics and biomat interactions, and industry initiatives to better operate and manage the resource. The newsletter is a free download at www.oowa.org.

Contributions of the association's Government Relations Committee included representing the membership in stakeholder meetings with the director and staff at the Ministry of Municipal Affairs and Housing (MMAH) while it developed the new Ontario Building Code (regulates onsite). The agency also invited the association to contribute to a special Project Advisory Committee supporting a technical review on field testing Class 4 onsite systems.

NOWRA

Promoting growth in decentralized systems

The National Onsite Water Recycling Association is working to expand the decentralized systems market. One avenue is the joint NOWRA-Water Environment Federation workshop on onsite systems greater than 10,000 gpd at WEFTEC 2013 on Oct. 5-9 at McCormick Place in Chicago, Ill.

Another avenue was participating in a state revolving fund workshop hosted by the Council of Infrastructure Financing Authorities. Robert Rubin, Ph.D., professor emeritus at North Carolina State University and consultant for McKim and Creed Inc., and Robert Rebori, president of Bio-Microbics, gave presentations encouraging the council to make it easier for decentralized systems to receive monies from clean water or drinking water funds.

A third avenue is collaborating with the U.S. Water Alliance on a management and resource recovery research project with a decentralized component.

NOWRA executive director Eric Casey participated in a webinar to discuss the four two-page papers released by the U.S. Environmental Protection Agency Decentralized Memorandum of Understanding Partnership. The papers highlight how onsite systems can be sustainable and appropriate options for communities and homeowners.

"NOWRA and other groups are using the papers as a foundation document that undergirds many of our other activities," says Casey. "The EPA has said previously that decentralized systems are good, safe products, but these papers reinforce the statement and lend much more credibility because of their specificity."

The papers were developed for infrastructure decision makers such as engineers, developers, supervisory boards, county managers, and local and state officials. Download them for free at <http://water.epa.gov/infrastructure/septic/Decentralized-MOU-Partnership-Products.cfm>.

NOWRA's Technical Committee also submitted comments to the EPA on its extensive document titled "A Model Program for Onsite Management in the Chesapeake Bay Watershed." "We're generally supportive of the program and what it recommends," says Casey. "Our expectation is that it will become a template for management of onsite systems in other watersheds."

One recommendation in the document would make product and technology approval processes regional instead of by individual state. The agency is particularly interested in reducing the arduous procedure for denitrification technology and other technologies with the potential to significantly reduce pollution loads in the bay. If the model were to take hold, the regional entity would be driven by the watershed, not the geographic area.

"The fact that the EPA is taking a leading role in exploring a better way to approve new onsite products is really big," says Casey. "The benefit to manufacturers would be huge. It would lower the cost of doing business and remove the main impediment to research and development. The hurdle for regulatory approval is so high that it reduces the incentive to develop innovative technology."

While the task is difficult, Casey believes there is a precedence of cooperation in other states for complicated sets of laws that may provide a template for the onsite industry to rationalize its laws. "We're probably years away from anything actually happening, but these are positive first steps," he says.

CALENDAR OF EVENTS

June 7-8

Georgia Onsite Wastewater Association Conference, Sea Palms Resort, St. Simons. Call Bruce Widener at 678/646-0369 or visit www.onsitewastewater.org.

TRAINING AND EDUCATION

Alabama

Licensing classes are the joint effort of the Alabama Onsite Wastewater Association and University of West Alabama. Courses are at UWA Livingston campus unless stated otherwise:

- June 20-21 – Continuing Education, Dothan
- July 10-12 – Advanced Installer I
- July 24-26 – Advanced Installer II

The first day of Continuing Education classes is for installers and the second day is for pumpers and portable restroom operators. Call the training center at 205/652-3803 or visit <http://aowatc.uwa.edu>.

Arizona

The University of Arizona Onsite Wastewater Education Program has these classes:

- May 13 – ATUs and Media Filters, Tucson
- May 14 – Subsurface Drip Disposal, Tucson

Contact Kitt Farrell-Poe at 520/621-7221, kittfp@ag.arizona.edu, or <http://ag.arizona.edu/waterquality/onsite>.

Iowa

The Iowa Onsite Waste Water Association has a Design, Installation, Operation, Maintenance, and Remediation of At-Grade, Enviro Guard, and Sabre Septic Systems course on May 15 at Manchester. Contact Alice Vin-sand at 515/225-1051, execdir@iowwa.com, or visit www.iowwa.com.

Minnesota

The University of Minnesota Onsite Sewage Treatment Program has these classes:

- June 11-12 – Inspecting Onsite Systems, St. Cloud
- June 14 – Soils Continuing Education, Fergus Falls
- June 18 – Soils Continuing Education, Mankato
- June 20 – Soils Continuing Education, Farmington
- July 9-11 – Soils, Brainerd

Call Nick Haig at 800/322-8642 or visit <http://septic.umn.edu>.

New England

The New England Onsite Wastewater Training Center at the University of Rhode Island in Kingston has these courses:

- May 9 – Sand Media
- May 16 – Installing Advanced Onsite Treatment Systems
- May 16 – Innovative and Alternative Technology Field Training
- May 23 – Hands-On Component Installation
- June 6 – Bottomless Sand Filter Design and Installation
- June 10 – Introductory Soil Morphology and Evaluation for Siting Onsite Systems
- June 14 – Advanced Soil Morphology
- June 26 – Soil Evaluation and Morphology
- June 27 – Surveying Basics for the Onsite Wastewater Contractor
- July 11 – Microbiology for Wastewater Professionals
- July 18 – Surveying Techniques for the Wastewater Professional

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Call 401/874-5950 or visit www.uri.edu/ce/wq. For soil courses, call Mark Stolt at 401/874-2915 or email mstolt@uri.edu.

North Carolina

North Carolina State University has a Soils of the Upper Mountains in the Southeast U.S. Course June 5 in Laurel Springs. Contact Joni Tanner at 919/513-1678; soils_training@ncsu.edu.

The North Carolina Pumper Group and Portable Toilet Group have an educational seminar on septage management and land application June 22 in New Bern. Call Joe McClees at 252/249-1097 or visit www.ncpumpergroup.org or www.ncportabletoiletgroup.org.

Virginia

The Virginia Center for Onsite Wastewater Training has a Foundational Concepts of Pump Systems class May 10 at Pickett Park. Contact Latonya Fowlkes at 434/292-3101 or latonya.fowlkes@southside.edu or visit www.southside.edu.

Washington State

The Washington On-Site Sewage Association and Washington State Department of Health in cooperation with Washington State University offer these certification courses at the Puyallup training center unless stated otherwise:

- May 1-2 – Certification for Proprietary Devices
 - May 15 – Electrical Control Panels
 - May 22 – Design/Install and O&M of Subsurface Drip, Bremerton
- Call WOSSA at 253/770-6594 or visit www.wossa.org. □

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