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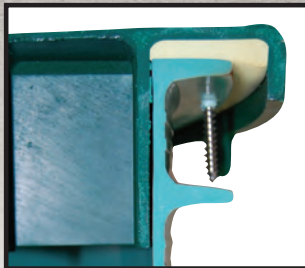
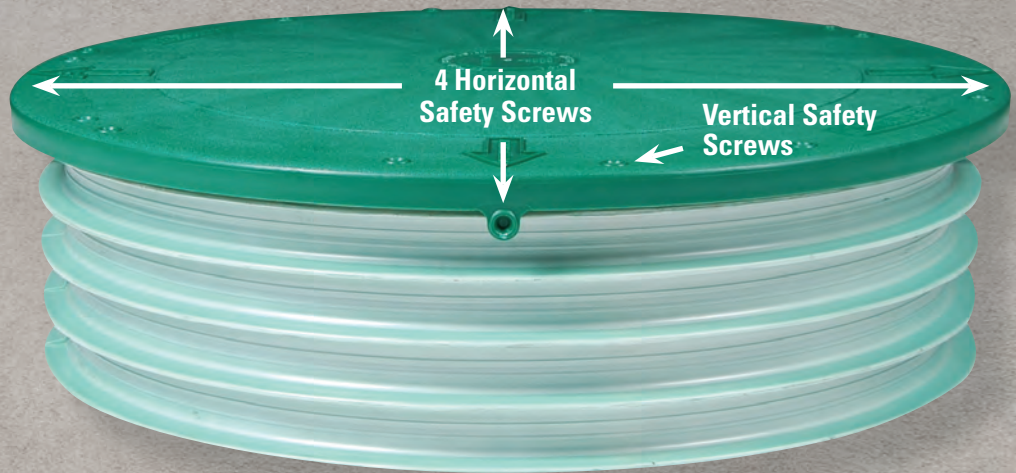
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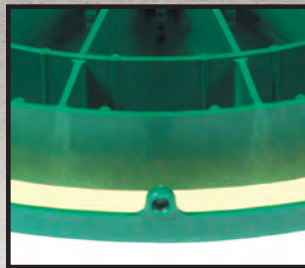
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INSTALLER PROFILE:

Know Your Stuff
By David Steinkraus

ON THE COVER:

Well-trained employees are the key to success at Allen's Environmental Services in Statesboro, Georgia. Owner Barney Allen Jr. uses a John Deere 50G excavator to dig a trench for a drainline. (Photo by Kaylenn Gilstrap)

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I Need a New Septic System? Bring It On!

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By Jim Kneiszel

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Be sure to check out our exclusive online content.

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Enjoy this issue!

Established in 2004, *Onsite Installer*TM fosters higher professionalism and profitability for those who design and install septic systems and other onsite wastewater treatment systems.

Jim Kneiszel



Send your comments, questions or opinions to Jim Kneiszel at editor@onsiteinstaller.com.

I Need a New Septic System? Bring It On!

An upstate New York homeowner embraces his role in creating a cleaner environment and voluntarily upgrades his lakefront septic system

How often do you have someone call your office and the conversation starts out like this:

“I bought a house recently and I’m not required to install a new septic system. But I’d like to do it anyway to make sure we can protect the water quality around here.”

Then you visit the property to make an assessment and inform the homeowner it will cost \$25,000 to \$30,000 for a new advanced system. And he answers, without hesitation, “Yeah, that sounds good. Let’s go for it.”

That doesn’t happen to you?

Well it would if you were talking to Paul Derby of the town of Queensbury in upstate New York, about 50 miles north of Albany. Derby, whose house is on a small, challenging lot on Glen Lake, would be your dream customer.

Derby made headlines in the local newspaper recently when he approached the town board asking for setback variances for a new onsite system. Appearing with system designer, Eric Murdock, P.E., of Onsite Engineering in Syracuse, Derby explains he was happy to replace the older — but still legal — conventional system at the home he purchased recently.

TINY LOT, BIG CHALLENGE

The Clarus Environmental Fusion system with a compact raised sand filter bed (20 feet long by 7 feet wide) would require some serious shoehorning to fit onto the 82-by-109-foot sandy lake lot and serve the two-bedroom home built in 1965. The house is only 4 feet above the lake level. Minimum setbacks from the lake and water well are supposed to be 100 feet, and Derby was requesting to locate the system 38 feet from the water and the well, and 18 inches from the house foundation.

“My goal is to be a model to show you can do this voluntarily,” Derby told the town board, according to *The Post Star* newspaper. The board quickly approved the variances.

I had to find out more about Derby and thank him for his interest in being proactive about his septic system. So I gave him a call.

While Derby’s enthusiasm for upgrading his onsite wastewater treatment is refreshing, it might not come as too much of a surprise if you know anything about the long-time Glen Lake resident. He’s lived on the water for 26 years and spent the past 18 years as president of the Glen Lake Protective Association. As part of that group, he advocated for a

“A septic system is something you can’t see unless it fails. If it’s not (an apparent) problem, people don’t think about it. But I think we’re turning a corner and people are thinking about it. I think it’s gotten enough critical mass and people can see this is a good thing to do.”

Paul Derby

property transfer septic inspection law approved by the town after he downsized into the ranch house. And he favors the idea of mandatory periodic system inspections around the lake.

“I purchased it just before the law kicked in,” Derby explains. “I didn’t have to upgrade my system, but I want to do it because it’s good for the lake.”

Glen Lake is a 320-acre kettle lake (50- to 60-foot maximum depth) that is fully developed with 288 homes, is about 2.5 miles long, and has springs and an inlet and outlet. The lake has required weed management and monitoring over the past 15 years. It has a healthy fishery and clean water, and the association aims to keep it that way. The group recently started a program through Adirondack Community College that will be testing the water for *E. coli* bacteria and free chlorine to figure out if aging septic systems are having a negative impact.

A HEALTHY LAKE

As wastewater professionals, you’ll be happy to hear that the Glen Lake homeowners have been forward-thinking about caring for their septic systems. They generally supported the new time-of-sale inspections. They’ve also been good in general about pumping, as the association has had good participation in a voluntary maintenance program they’ve developed to get a volume discount from area septic service providers.

“Our goal is to have a healthy lake, a healthy fishery and good water quality, and we feel like we have that,” Derby says. “We’ve been able to manage our nuisance aquatic plants very well, and septic systems are our next big push.”

When the time-of-sale inspections were mandated, the association also favored requiring five-year mandatory system inspections and upgrades as needed. The town wouldn’t go that far.

“I don’t think there was enough political will to get that through at the time,” Derby says. “If a system is bad, we should get rid of it. For now, this is where we are, and we’ll get more information and see where we can go in the future.”

Derby recognizes that many times homeowners resist inspections and the potential repairs or replacements that can be forced by a documented failure. But he thinks that, by and large, folks in his part of New York are becoming more comfortable with the notion of spending money to ensure a cleaner environment.

“People were skeptical in the beginning about the cost. A septic system is something you can’t see unless it fails. If it’s not (an apparent) problem, people don’t think about it. But I think we’re turning a corner and people are thinking about it,” Derby says. “I think it’s gotten enough critical mass and people can see this is a good thing to do.”

NEIGHBORS TAKE NOTE

What’s his evidence of changing attitudes? After his variance hearing at the town, two residents came up to him and wanted to know more about the advanced system he was installing. One of them, who had been utilizing two old holding tanks, has since decided to do a similar voluntary upgrade.

“It’s a pretty nice community up here, and people want to do the right thing,” he says.

Let’s hope that this understanding and enthusiasm for a cleaner environment and better wastewater treatment spreads across the country like wildfire. Kudos to Derby and others like him who realize the need to improve our decentralized wastewater infrastructure and are willing to invest in it for the common good of their communities. □

DROP US A LINE

Have a comment about an article you’ve seen in *Onsite Installer*? An experience from a job that you’d like to share? *Onsite Installer* would love to hear from you. Email comments and photos to editor@onsiteinstaller.com.

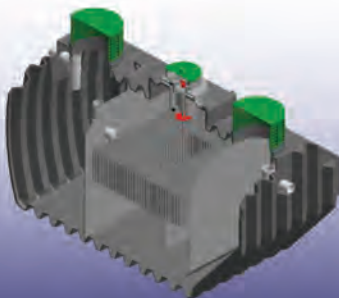


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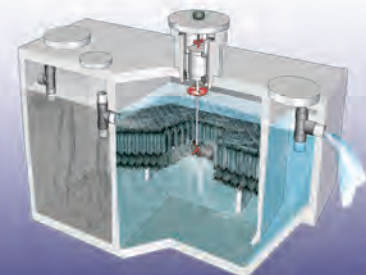
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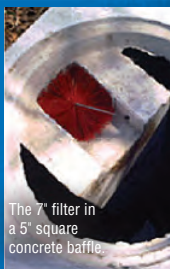
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FORGE A CONNECTION

Relationship Building

Fostering a relationship with your customers is so important. But so are the relationships you have with vendors, suppliers and even your competition. Those connections don't happen by accident — they take work. Here are six tips for building strong business relationships.

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SOLIDS RETENTION

Installing Baffles and Screens

Keeping solids in the tank and preventing their release to the downstream components is critical to proper septic tank performance. Excessive discharge of solids can cause plugging. This exclusive online story gives tips on installing baffles and screens correctly to retain solids.

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Overheard Online

“Great bosses don't scold or dictate; they work with an employee to figure out what happened and what to do to correct the mistake.”

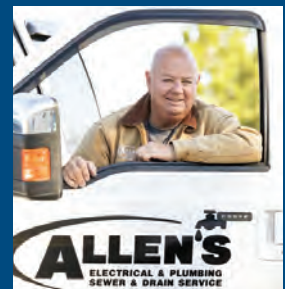
— *9 Signs of a Great Company Leader*
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LESSON LEARNED

Avoid Bidding Mistakes

Barney Allen of Allen's Environmental Services, featured in this month's issue, learned the hard way how necessary it is to do your homework before bidding a job. Go online to read the story of his mistake and what he learned.

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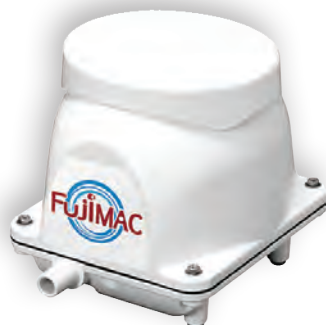
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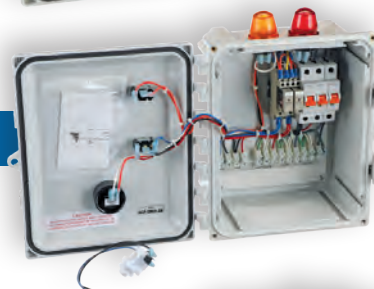
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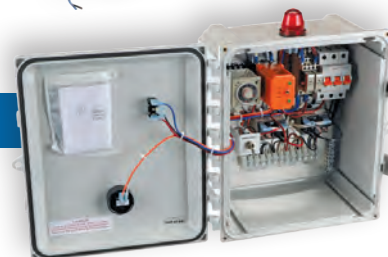
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KNOW YOUR STUFF

Barney Allen Jr. is building his own training center to give workers the skills necessary to provide quality customer service

By David Steinkraus

At Allen's Environmental Services in Statesboro, Georgia, the recipe for success is easy: Know your business. Barney Allen Jr. has followed this rule for years. Keeping that simple mantra in mind has led him to focus on what he knows he can do well and concentrate on his local area where he can control the quality of work. Success has followed.

» Josh Good cleans out a trench along a house that will be used to run drainlines.



A big part of knowing your business is having workers who also know the business. Allen has had trouble finding people like that, and he has come up with his own solution.

He's had people asking for jobs who claim a wide variety of skills. "And most of these people who come in can't wind a watch," Allen says. "And to be honest, there's very, very, very little common sense anymore. I hate to say that — I honestly do. But the common sense is about gone.

"I had a guy years ago who worked for me as an electrician. You could interview him all day long, and he could tell you how to do something. I put him to work, and I had to redo every job he had done. He could not do anything hands-on."

TAPPING INTO PEOPLE POWER

If you have promising recruits, Allen says you're better off paying them \$100 to spend a few hours with you and demonstrate their abilities. "If they screw it up, you didn't send them to a customer's house and lose a customer and over \$100," he says.

Even when he hires people who look like good self-starters, Allen always first sends them with trusted employees to ensure the new hires know what they're doing before they go out on their own.

Allen hopes to overcome labor issues by continuing to develop his own training center. It's in a 12-by-30-foot space — and he already thinks he needs to expand. It's hard to find the free time to finish the project, but it has a kitchen and a row of toilets where he can create problems and then watch technicians solve them.



▼ Barney Allen Jr. is shown out front. Members of the Allen's Environmental Services team include, from left, Justin Bunkley, Clay Lanier, Robert Boyd, Colby Whitaker, Mike Garrett, Josh Good, Jeremy Hyde, Kyle Oglesby, Clint Akins and Gene Thompson. (Photos by Kaylinn Gilstrap)



There is a selection of pipes that he can create clogs in using wooden pieces and other material he purchased from a vendor at the Water & Wastewater Equipment, Treatment & Transport, or WWETT, Show. He also picked up a good deal of free advice. “It’s good that we have people in the industry who will share,” he says.

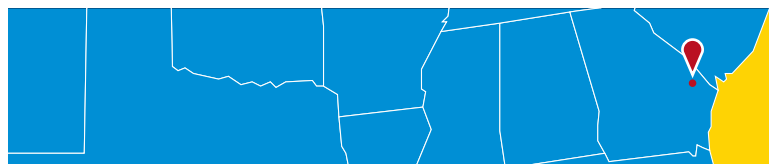
Allen eventually wants to use a TV to show video from pipe jobs so technicians can see how to use jettors properly and diagnose a variety of problems they will see on the job. “Before I get finished, I’m going to have a video showing a system all the way back to the septic tank,” he says.

He plans to add some water heaters — tanks and tankless. “You have to keep everybody up to date, but there are still homes with old gas water heaters that don’t have electronic ignition,” he says.

Training for septic system installations has to be done on the job, Allen says. He hopes to be able to clear an area outside where he could perform some onsite training.

When he tries to find people, he is not fighting a lack of pay or anything else that he can make up for.

“It’s the interest of the generation. You’re getting people who, honestly, would rather push a button on a computer than have to pick up a pipe wrench,” Allen says. “You can take the best person in the world, but if he



Allen's Environmental Services Statesboro, Georgia

- Owner:** Barney Allen Jr.
- Founded:** 1975
- Employees:** 19
- Service area:** 60-mile radius
- Services:** Onsite system repair and service, septic service, excavation, plumbing, sewer and drain cleaning, portable sanitation
- Associations:** Georgia Onsite Wastewater Association, On-Site Sewage Certification Committee, National Onsite Wastewater Recycling Association, Portable Sanitation Association International



Barney Allen center, instructs Josh Good, left, and Robert Boyd on water heater installation in the employee training center he's developing.

"It's the interest of the generation.

You're getting people who, honestly, would rather push a button on a computer than have to pick up a pipe wrench."

Barney Allen Jr.

doesn't want to do anything, you can spend all day long, all week long, all year long and he isn't going to learn anything."

In his local schools, the best workers are hired before they graduate, he says.

LICENSURE UPDATES

At the same time that Allen is seeking technically skilled people, he is also advising the state of Georgia on how to revise its licensing. He does this as a member of the On-Site Sewage Certification Committee that is under the state Department of Public Health.

The committee is considering what should be included in a license and whether categories should be split. For example, he says, one license may allow a person to only install septic tanks while drip systems will be under a different part of the license. Maintenance could be another license.

It makes sense to update licensing, given the increasing complexity of onsite technology. Consider drip systems and advanced treatment units, he says. It's hard to get training on some of the equipment, especially on the second or third installation after the dealer's representative has gone home. He would like to work with manufacturers to step up training and seminars on use of their equipment, and he hopes to make some headway this year.

Allen runs a diverse company that does onsite installations, pumping, plumbing and municipal sewer work.

ATU systems are few for Allen's business. Many companies that installed them in the past are no longer active in his area. The same goes for state-required engineers who design more complex systems; he has to look 200 miles away to the Atlanta area to find those designers.

But his technicians routinely work on established ATUs installed by other companies. One technician working on an ATU found a 240-volt line wired to a 110-volt pump. "You get into that kind of stuff, and you can understand the need for state rules," Allen says.

Now the technology used in his area is shifting back toward mound systems, he says. Although installations are not complicated for him, other challenges keep him and his team busy and give them an edge.

PROBLEM-SOLVERS

"I love problems," Allen says. "When I say problems, I mean we get into a lot of stuff people can't deal with, and they don't have the equipment to deal with it, and we do." For example, four new public schools were built in his area recently, and Allen's company was called in to fix all of their wastewater systems after backups.

Many of the lines had concrete in them. The worst was a 10- to 12-foot run of pipe that had been infiltrated by dry concrete mix that cured when water flowed into it. Allen's technicians milled the pipe and then had to break through a classroom floor to finish the rest because the pipe lost its roundness and the milling equipment was cutting into the pipe. Other pipes had grout in them because of workers washing equipment.

The pipe with the 10-foot blockage was the worst, he says. Concrete entered the pipes when some were broken by workers, but in other cases, no one was admitting how it happened, he says.

Proper troubleshooting involves more than simply having the right equipment; it's having the knowledge to understand and fix a problem, and that is not a common skill.

“You’re a little bit prouder when you can do something that another (contractor) can’t do,” he says.

His crew was hired to install a grease trap on Jekyll Island, located on the Atlantic Ocean coast about 125 miles from Statesboro. It was a restaurant on a pier, and Allen’s job was to install a grease trap on the shore. Next to the site was a sea wall. When the tide was high, water would come past the sea wall and infiltrate the site.

“We had to wait on the tide, then dig a hole and set the tank,” Allen says. There is a six-hour swing between high and low tides. His crew would show up in the morning while the tide was out, dig a hole and set a tank, then backfill as the tide was coming in. Then they would have to wait until the tide flowed out in order to start the next task.

To keep the plastic tanks in the ground, technicians put 80-pound bags of Sakrete on top of the tanks. When moisture penetrated the bags, continued >>

INCENTIVE PROGRAM BRINGS HIGHER WAGES

In his search to do the best for his workers at Allen’s Environmental Services in Georgia, owner Barney Allen Jr. has hit on an idea: an incentive program. It’s helped a lot in retaining good workers, he says.

He’s had the system in place for about a year, and it still needs tuning, and it doesn’t apply to every worker. So far, he’s using it only for plumbing and electrical service technicians. A technician making \$15 per hour, for example, can earn an extra \$10 an hour on a job. This depends on the technician working efficiently and not taking extra people out with him, which helps to control the company’s cost.

“I always say, ‘If you don’t look after the company, you won’t have a company to work for,’” Allen says.

If two technicians answer the call, the \$10 per hour is split between them. If a technician is called back to do a job again, the incentive comes out of his check. “This way the company is not paying extra twice for a bad job,” Allen says.

Vacuum truck drivers aren’t in the program yet because not all of their time is spent on a job; there are those long breaks when a driver is hauling a load of septage to a terminal for dumping.

“I tell my guys, ‘I’m trying to get it to where I can pay you as much as I can,’” Allen says.



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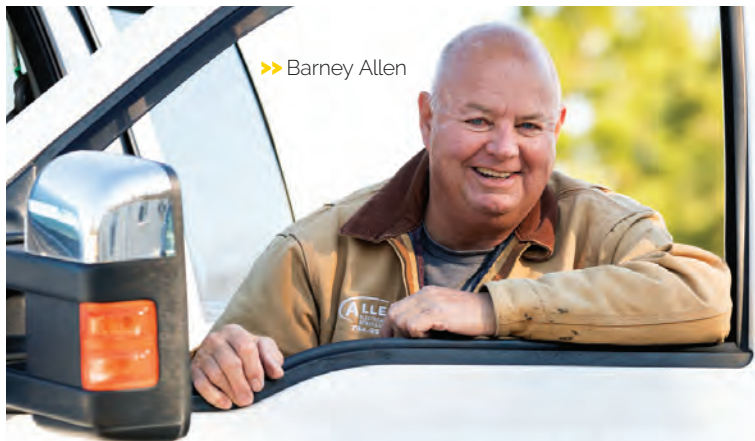
◀◀ Barney Allen digs a trench with a John Deere excavator.

✔ Allen checks out the progress during an installation job. Josh Good works in the background.



"I always say, 'If you don't look after the company, you won't have a company to work for.' ... I tell my guys, 'I'm trying to get it to where I can pay you as much as I can.'"

Barney Allen Jr.



▶▶ Barney Allen

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the mix would cure and become a permanent weight. Tanks in this situation are always pumped at low tide, too, and then refilled with water before high tide, Allen says.

The water table in his part of Georgia is typically 3 to 4 feet, and in many places, the soil is sugar sand that runs like water, Allen says. Because so many use plastic tanks, ATUs are especially prone to popping out of the ground, he says. "If you have a guy pumping who doesn't know what he's doing, then he pumps (the tank) and it about comes out of the ground before he can get back to the truck."

He and his technicians fixed one of those not too long ago: A customer suffering a wastewater backup had hired a service to pump out an ATU. The technician completely emptied the tank, and when the unit tried to come out of the ground, he put in water and walked away. But the initial shift caused more problems.

"It had changed the grade on the thing by about 6 inches," Allen says. The plumbing was out of alignment, and the customer called Allen because their pipes were always backed up. Again, it points to the need to know your business, Allen says.

"You can take something like this that's real simple and make a mountain out of it," he says.

continued >>

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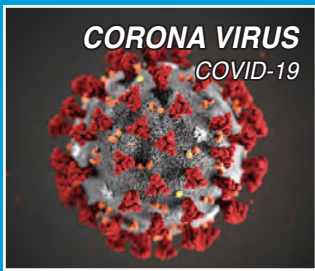
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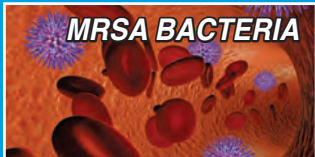
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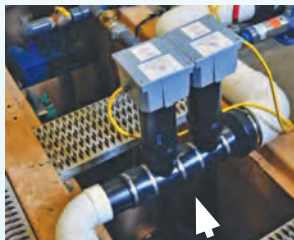
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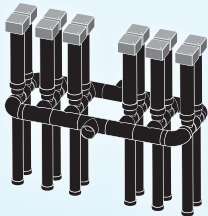
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IN THE GARAGE

To tackle a variety of work, Allen keeps a diverse group of equipment. It includes:

- 2001 and 2002 Vac-Con combination vacuum trucks for storm and sewer main work; they do a lot of this for municipalities and other contractors
- Vac-Tron Equipment trailer-mounted pumping unit 850 for digging and replacing waterlines
- 1997 Kenworth with a 3,500-gallon steel vacuum tank and Jurop/Chandler pump used primarily for grease traps
- 2001 Freightliner with a 3,000-gallon steel tank and pump from Keith Huber
- 1997 Chevrolet with a 2,500-gallon steel tank and Jurop/Chandler pump
- 1999 International vacuum truck with a 2,500-gallon steel tank and Jurop/Chandler pump
- Case 580 backhoe
- John Deere C50 series mini-excavator
- Volvo EX25 mini-excavator
- Earthforce (Bobcat) backhoe
- Two trailer jetties, one PipeHunter (Texas Underground) and the other from US Jetting

BUILDING A REP

Allen doesn't do a lot of marketing, yet he keeps all this equipment on the road. He tried listing the company on a home advisory service but ended that arrangement because too many customers just wanted to shop prices. Allen says his people put up with enough of that as it is.

"We have been very fortunate to build a reputation," Allen says. "It takes a long time to build that. I mean a long, long time. We need to keep our guys up to par about doing a great job and doing it right."

But he's done that. He works at it every day, and that's why Allen's Environmental Services is thriving.



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Florida Water-Quality Bill out of Committee

By David Steinkraus

After years of algae and water-quality problems, Florida's Legislature has a water-quality bill with broad support.

The bill by Sen. Debbie Mayfield, R-Indian River, received unanimous approval earlier this year from the Senate Appropriations Subcommittee on Agriculture, Environment and General Government. The Florida Chamber of Commerce and Audubon Florida were on board with it too, reports the *Florida USA Today Network* capital bureau.

"It blows me away, really, to see that kind of support," says Sen. Ben Albritton, a Republican citrus grower.

The bill would move oversight of onsite systems from the Department of Health to the Department of Environmental Protection and would direct the department to develop rules for the location of onsite systems. The department would also have to develop new rules to limit leaks from underground sewer pipes and for managing the application of biosolids.

Not everyone is happy with the bill. A lobbyist for the Everglades Foundation wanted the bill to apply more oversight to agricultural fertilizer, according to the *Tampa Bay Times*. Originally the bill would have required each agricultural producer to enroll in a program to reduce water and fertilizer use, provide its fertilizer records and undergo annual inspections. Mayfield proposed an amendment in committee to remove this provision, and the committee agreed.

Even so, Mayfield says, the required farm data collection will provide more information than is available now. She also says her bill proposes changes to the basin management plans — which govern the watersheds of Florida's springs — that would have a large effect on water quality. In watersheds where onsite systems contribute more than 20% of nutrient pollution, the bill requires remediation plans.

Leaders from the Florida Onsite Wastewater Association invested significant time over the last year talking to lawmakers and their staffs about technologies available in the onsite industry to solve pollution problems.

* * *

Since January, business owners in Sarasota County have been required to pump their grease traps more frequently. The intent is to reduce wastewater spills and grease runoff.

Under a new rule controlling fats, oil and grease, food service businesses must have a grease trap or interceptor installed, must pump it every 90 days (30 days for grease traps placed under sinks), must use licensed haulers, and must keep three years of quarterly reports prepared by haulers, as well as records of trap maintenance. Establishments will also pay a monthly fee of \$16.67 on water and sewer bills to support the FOG program.

Delaware

The New Castle County Council has extended its 18-month moratorium on the use of septic systems in subdivisions. The moratorium is now scheduled to end in August 2021. The county's Department of Land Use had asked for a permanent moratorium.

Debate over the moratorium was driven by explosive growth in the southern part of the county, which encompasses the city of Wilmington along the Delaware River and the upper portion of Delaware Bay. This part of the county has no sanitary sewer service, and the Department of Land Use had asked for a one-year moratorium in 2018, saying use of septic tanks in the subdivision would add pollution to state waters.

Opposition to the moratorium came from farmers who worried about the loss of land value if development is ended.

New York

After a year with its new onsite system inspection ordinance, the town of Queensbury is ready to tighten the rules.

When it passed the ordinance, the town board said property owners would not be forced to replace a functioning system, even if it did not meet current standards. Now the board is ready to say that systems are not functional if their treatment or holding tanks are too small. Any tank that is too small will have to be replaced with a larger one, reports *The Post-Star* of Glens Falls.

To calculate the required size for a tank, the town would use not the number of bedrooms, but the number of all rooms used for sleeping. This issue has appeared because of Airbnb rentals that list all rooms in a house as possible bedrooms. Town officials worry that too many temporary residents would overwhelm an onsite system. The town will also take into account the use of whirlpool baths and garbage disposals.

Holding tanks will be required to have two alarms: one for a half-full tank and a second for a full tank.

Queensbury is at the southern tip of Lake George and on the edge of Adirondack Park in northern New York's recreational country.

California

When its remodeled wastewater treatment plant is ready, Rosamond Community Services District will no longer accept septage. The risk of receiving contaminated wastewater is too great, Steve Perez, general manager, tells the *Antelope Valley Press* of Palmdale.

"We do not want to experience a shutdown of our plant if we get a 'hot load,'" he says. "We have no idea where they're picking their loads up."

District staff calculated that testing every septage load coming in would require two additional employees. Receiving contaminated septage



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also carries a risk of violating state regulations and incurring fines. Removing the seepage receiving station will save about \$500,000 annually, Perez says.

Rosamond is about 80 miles north of Los Angeles, on the other side of the coastal mountains.

Massachusetts

The Mashpee Health Department will require owners of properties within 300 feet of Santuit Pond to undergo onsite system inspections. The inspections are intended to reduce toxic cyanobacteria on the pond.

Runoff from onsite systems is one of the main sources of phosphorus seeping into the pond, reports *The Mashpee Enterprise* of Falmouth. Mashpee is on the southern side of Cape Cod.

Glen Harrington, the health agent, tells town officials he is trying to find sources of money that would reduce the financial burden for homeowners whose systems must be replaced.

Alabama

Residents of Hollinger's Island near Mobile are about to be billed for sewer service that many don't use. A spokesperson for the Mobile Area Water and Sewer Service, which is imposing the charge, tells WKRG News that money from people who don't use the service will be held in escrow and may be used to offset the cost of connecting to the municipal system later.

People not using municipal sewer and using septic tanks are not happy about being billed for the service. "I mean, the septic tank's been there since 1968 or '69. ... It's worked fine," homeowner Richard Mallini tells WKRG News. "I think we've only had to have it pumped one time in 50 years."

Charging for unused sewer service is legal under a 1990s ruling from the Alabama Supreme Court. The court says even people not connected to a sewer system receive an indirect benefit because a utility uses its money to help reduce pollution.

* * *

About 75 applications have been received for the Lowndes County Unincorporated Wastewater Program, according to the Alabama Department of Public Health. There is funding for 100 properties.

People approved for the program will receive a new onsite system for the cost of one down payment and maintenance payments of \$20 per month.

"This program targets people in the unincorporated area of Lowndes County, low income and need. So, anybody can apply, but you have to be in an unincorporated area," Sherry Bradley, director of the Bureau of Environmental Services, tells *Alabama News Network*.

Onsite problems have plagued the county for years. □

"Rules and Regs" is a monthly feature in *Onsite Installer*™. We welcome information about state or local regulations of potential broad interest to onsite contractors. Send ideas to editor@onsiteinstaller.com.

Employees from Ronny D. Jones Enterprises lay some of the 18,000 feet of Infiltrator Water Technologies chambers that make up the new drainfield for the Serenbe, Georgia, development near Atlanta. (Photos by Kaylinn Gilstrap)



New Urbanism Community in Georgia Seeks Cost-Effective Treatment Upgrade

Bioclere units, Infiltrator Water Technologies chambers and constructed wetlands are employed to serve network of 330 homes and businesses

By David Steinkraus

Managers of the development at Serenbe, Georgia, wanted to expand, but they were constrained by the size of the old shared onsite system.

Serenbe is a community built according to the styles of the new urbanism movement. Homes built on these principles follow the design ideas that prevailed before the use of automobiles became common: Houses are close, streets are narrow, shopping is nearby and buildings are spaced so people can walk to find what they need.

Originally the community had a constructed wetland with subsurface drip irrigation to handle wastewater, says Matt Vinson of Sustainable Water, which consulted on the project. Serenbe's managers asked Ronny D. Jones Enterprises of Newnan for help. The company had done extensive work at the development for several years. So Jones partnered with Integrated Science & Engineering, also of Newnan, for a design-build project. And Vinson, who managed the Serenbe system at the time, added his recommendations as well.

» This gravity line carries wastewater to the new treatment train from the splitter box at the existing treatment equipment. Risers and lids were from Infiltrator Water Technologies.

✓ Employees from Ronny D. Jones Enterprises check trench depth for part of the drainfield at the Serenbe wastewater system expansion.



To serve the 330 homes and businesses, the new system used Bioclere units (Aquapoint), Infiltrator Water Technologies Quick4 standard chambers and a couple of constructed wetlands. The result was an overall lower cost of labor and material for installation, plus ease of maintenance as the system is used, Vinson says.

Adding capacity

The existing system was retained, so the first new component that wastewater comes to is a splitter box. It regulates flow to all four cells of the old constructed wetlands and to the new system, and it allows the flow to be stopped when technicians need to perform maintenance on parts of the system.

The box is made with adjustable overflow weir gates. “So raise a gate to stop flow and lower a gate to increase flow,” Vinson says.

Eight-inch pipe comes out of the splitter box and takes water to a 15,000-gallon precast equalization tank. That came from Oldcastle Infrastructure of Newnan, as did the other concrete tanks for the project. Two Barnes 4 hp submersible pumps (Crane Pumps & Systems) move water from the equalization tank into a 30,000-gallon concrete settling tank through 2-inch pipes. Another splitter box, built like the first with adjustable weirs and with 8-inch pipe, divides water into two identical treatment trains.

System Profile

- Location:** Chattahoochee Hills, Georgia
- Facility served:** Development with homes and small businesses
- Designer:** Integrated Science & Engineering, Newnan
- Installer:** Ronny D. Jones Enterprises, Newnan
- Type of system:** Constructed wetlands, Bioclere (Aquapoint), subsurface irrigation
- Site conditions:** Woods and open pasture
- Hydraulic capacity:** 49,000 gpd



▲ Splitter boxes like this one subdivide the Infiltrator Water Technologies chamber zones into smaller groups. There are three main zones, and each one is time-dosed for no more than 15 minutes.

SYSTEM PROFILE



◀◀ Like the original wastewater system, the new one makes use of constructed wetlands. These not only filter the water, but serve to educate community residents about options for treating wastewater.

▼ When the Infiltrator Water Technologies chambers were in place, the drainfield was seeded with a mix of native Georgia wildflowers. Residents can stroll the walking path and get an indication of what modern wastewater treatment looks like.

“That was part of my concern with long-term operation of this new drainfield: How could this all be operated without having a big electrical panel, solenoids, wires getting broken and chewed by mice, and whatever else may happen?”

Matt Vinson

On each side are two trickling filters connected in series. All are Bioclere units from Aquapoint. Two pumps inside each unit spray water over the filter media. A third pump in the bottom of each unit recirculates sludge to the head of the plant. As the clarifier at the bottom of a Bioclere unit fills, water flows by gravity to the next unit.

Water coming out of the Bioclere units recombines into a single flow but then reaches another splitter box — with the same weir arrangement — where it is divided between two constructed wetlands. Each bed is 120 by 80 feet and full of native Georgia plants.

A manhole for access to the wetland outflow is next, and because the standard sewer manhole is cast iron, it was replaced with a plastic Infiltrator lid that is much easier to lift. Infiltrator risers and lids were also used on the concrete tanks.

A pump station equipped with 10 hp Grundfos pumps feeds effluent through a 4-inch Schedule 80 pipe to 18,000 linear feet of chambers (each is 34 inches wide, 53 inches long and 12 inches high) from Infiltrator. The field is about 3,000 feet from the treatment system.

At the head end of the Infiltrator field is another splitter box equipped with K-Rain valves that feed one of three zones. Each 6,000-foot zone is subdivided into six 1,000-foot zones, and each of those is divided into 10 100-foot lines of chambers. Each zone is dosed for a maximum of 15 minutes.



Aquapoint’s panel runs its Bioclere units. Vinson’s company made a panel for the tanks in the equalization tanks.

Education with treatment

Community wastewater treatment works here because of the proximity of buildings. Local zoning laws specify a density of one house per acre, and Serenbe meets that but only when one divides the number of homes by the number of acres in the development. What builders did — and this follows the principles of new urbanism — was cluster houses and other buildings close together on about 30% of their land and keep the remainder in a natural state for recreation and animal habitat. The treatment system went in the middle of the building cluster.

The Infiltrator field was sited where the soils were adequate, of course, but it also added to the atmosphere of the development. Jones company workers cleared trees to form a 15-acre meadow that was seeded with a native wildflower mix recommended by the Serenbe horticulturist, says David Warda, vice president for the Jones company. A walking trail allows residents to admire the flowers now decorating the top of their wastewater system.

Paths also lead residents past the plant area so they can understand how artificial wetlands can be used in treatment, Warda says.

The job went smoothly, he says. The only obstacle was a small creek that lay between the plant and the Infiltrator field. Directional boring about 8 feet

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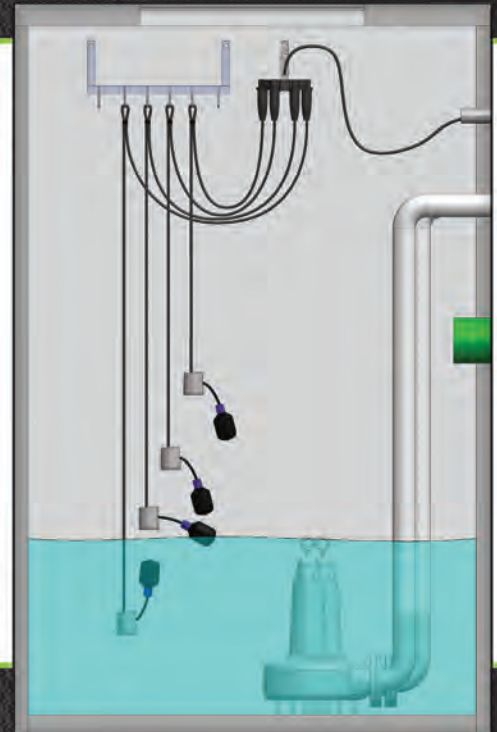
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below the creek bed took the HDPE force main on its route to the field.

About 5,000 cubic yards of dirt were excavated from the wetland ponds. That was used to create a high spot for the Bioclere tanks so gravity would move water from them to the ponds, Warda says.

To do the job, the Jones company used two Caterpillar excavators (a 325 and 336), a John Deere 700 bulldozer, rubber-tired Komatsu loader and BOMAG walk-behind roller.

Finding a signal

What was installed is not all of what will be there in a few years, Vinson says.

“For the treatment system, it makes sense to go ahead and build the whole thing, but they put 60% of the drainfield capacity in because that’s all they need for now,” he says.

When the current drainfield is near capacity, developers can return and build out the drainfield to its full 30,000 liner feet design. In addition to homes, there are a few restaurants, a school, general store, bakery, hair salon and several retail shops. This increases the strength of waste in the system slightly, but most is still residential-strength, Vinson says.

Each home has its own septic tank. Some town homes and apartments share a single large tank. All of these feed into a central collections system.

With the drainfield so far from the treatment trains,

designers faced the challenge of how to power the K-Rain valves.

“We didn’t want to run an electrical signal and bury a small wire in a few thousand feet of underground trench to our remote location for the drainfield. We ended up using solar power, batteries and a control panel on the valves rotating through the zones,” Vinson says.

To control the valves, designers used a signal they already had. When the pumps turn off, the pressure to the drainfield falls. The panel senses the pressure drop and rotates the valve to the next zone so it’s ready when the pumps come on again.

This idea was driven by what happened to the original system installed about 14 years ago. It was designed to be automated, but the automation wasn’t working when Vinson took over operation about seven years ago.

“We had small, very small, wires buried in the woods, through the woods, through the animals, through the whatever, and none of it worked. None of it was connected. The control panel had been fried by lightning. We had to manually open and close valves. That was part of my concern with long-term operation of this new drainfield: How could this all be operated without having a big electrical panel, solenoids, wires getting broken and chewed by mice, and whatever else may happen?” Vinson says.

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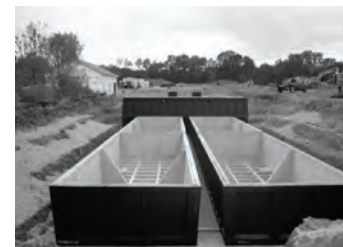
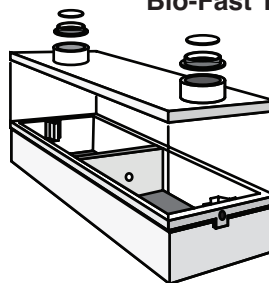
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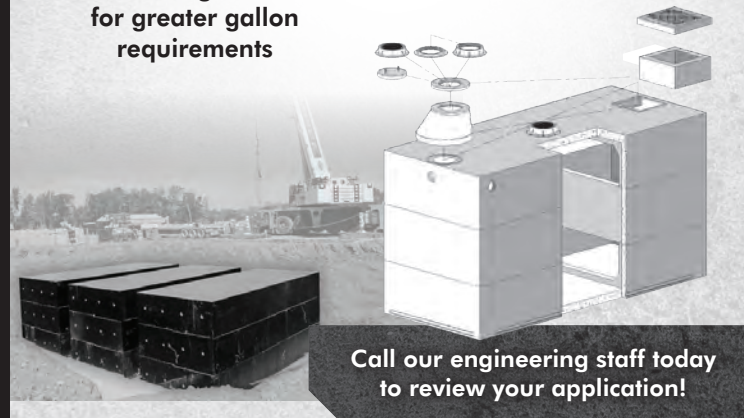
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Kansas Could Use a Statewide Septic Code

Plumbers and electricians only have one set of rules to follow. Joe Seiwert wonders why that can't happen for the onsite industry.

Compiled by Betty Dageforde

In States Snapshot, we talk to a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we visit a member of the Kansas Small Flows Association.



Joe Seiwert

part owner

along with his father, Ken; brother Jon; and their respective wives Stacie, Betty and Kristen

Business: Seiwert Services Inc., Garden Plain, Kansas

Age: 37

Services we offer: We provide design, installation and maintenance of conventional and advanced systems and lagoons. We got involved in the advanced systems in about 2012 as a way to keep busy during the downturn in the economy.

Years in the industry: I've been doing this for 19 years, but the business was started in 1955 by my grandpa A.C. Seiwert, so I'm third generation.

Benefits of belonging to the association:

I like the conference the association does and the continuing education it provides. On its website, there is a list of installers and maintenance people who are members of the association; this points customers who want a licensed contractor to these professionals. So it's a way to get customers.

Biggest issue facing your association right now:

We're having trouble finding new topics to discuss and get continuing education hours for learning about new processes and new products. It's on repeat right now. We just do the same stuff every year.

Our crew includes:

Stacie is president, Kristen is vice president and Betty is secretary/treasurer as well as the office manager and bookkeeper. Ken and Jon are equipment operators. Jeff Nunn drives a dump truck and delivers material for us.

Typical day on the job:

If we're doing a system, I gather supplies, go to the job site and lay out the job, then work on installing. When it's done, we meet with the homeowners to show them what they have and answer any questions so they understand how to use it. A lot of people are moving from the city to the country. They are used to city sewer and they never really paid attention to it. I believe the biggest problem with system failures is homeowners not understanding what they have in their yards.

If we're digging a basement, which we also do, then I'm involved in the design process from the very beginning, before the foundation is put in. I lay everything out and mark everything off so that other contractors can stay off the area we're going to use for the septic system and so that homeowners can decide where to put other stuff like sheds and outbuildings, how to position the house and where to come out with the sewer outlet. It's more difficult if you're not involved in that process.

And I'm on the phone quite a bit with county regulators getting approvals for designs. We work in nine counties, so I have nine separate inspectors and sets of rules to deal with.

The job I'll never forget:

There was a job where I crushed my thumb, and it took three surgeries and nine months to fix it. It was a real cold January and we were trying to get a piece of pipe shoved into a septic tank. I had a board and a 3-pound hammer and just had really bad aim that day. It put me out of commission for a couple months — at least for putting sewers in.

Association involvement:

I've been a member of the Kansas Small Flows Association for about seven years.

My favorite piece of equipment:

I have a Komatsu America PC210LCi. The “i” stands for intelligent controls. It’s all GPS-controlled and -monitored. I use the GPS to lay out the job site, and I make maps for the homeowners. I can do a lot of work by myself because the controls on the machine allow me to set grade and dig trenches at slope. It’s a one-person job now, and it’s also a lot more on target.

Most challenging site I’ve worked on:

We did a job for a lawyer who had a failed system. We had to fix the system and then add on to it to bring it up to the correct capacity of the house. He had a very nice yard and didn’t want it tore up. We used the excavator to cut the grass for the trenches and laid it off to the side, and then we put the dirt to the other side and carried the rock in from the street. Then we backfilled all the trenches and put the grass back on top of it. We only had a certain area to work in: He was very adamant about where we could and could not go. He sent me a note afterward — which we don’t usually get — that said we did a great job, so he seemed happy.

Oops, I wish I could take this one back:

We did a job for one of our biggest builders. They had poured a sidewalk in the way of where we needed to go for the tank truck. So, I decided, since the sidewalk was there and we couldn’t drive over it, we’d carry the tank in with the excavator. I had no idea how much the tank weighed but knew we had to try to do it. The machine couldn’t pick the tank up and travel at the same time. I picked it up and leapfrogged it toward the hole. Then when I got to the hole, I was trying to lift it down in there and actually dropped the tank. Luckily, it was sandy enough that it wasn’t damaged but the lid fell off. It was an advanced system and it damaged some of the stuff inside so we had to fix all that and then put the lid back on. In addition, our truck driver was delivering rock for the job and got stuck in the sand and broke the axle on the truck. I was glad to see that job done.

If I could add any wastewater-related service, it would be:

We’re so busy right now that we can’t really add anything, but if we could, I would add a (vacuum) truck. It seems like there’s a shortage of (pumping work) around here.

The craziest question I’ve been asked by a customer:

Someone asked if they could flush baby wipes and I said no. But I always tell people there really isn’t a dumb question and I’d rather they call me with a question than have an issue later and have to pay me to come fix a failure.

If I could change one industry regulation, it would be:

I wish, at the state level, we could get to a standardized code. Working in nine counties, I have to know nine different codes and processes. Everybody has their own opinion on the quality of the products and how to certify products. I wish they could get everybody together and come up with a standardized code. Plumbers and electricians have that, but wastewater regulations vary quite a bit for each county.

Best piece of small-business advice I’ve heard:

My dad told me when I was young that you have to spend money to make money.

If I wasn’t working in the wastewater industry, I would:

Be a heavy-haul truck driver.

Crystal ball time - This is my outlook for the wastewater industry:

One thing I hope for is some kind of remote monitoring of advanced systems. A lot of times I get called about an alarm and I’m glad they called, because some people don’t call, but some people can be a little dramatic and make it worse than it really is. So it would be nice if there were an inexpensive way we could remote monitor the systems. □

Would you like to see someone in your state or provincial wastewater trade association profiled in Snapshot?

Send your suggestions to Jim Kneiszel at editor@onsiteinstaller.com.



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Store Materials Properly to Get the Best Bang for Your Buck

Save costs by following best practices for storage and delivery of the pipe, chambers and raw materials used in assembling septic systems

By Jim Anderson and David Gustafson

During our installer workshops, we are frequently asked questions about proper materials for various applications. They include questions on quality of materials, proper installation of materials, potential storage of materials, and advantages and disadvantages of the materials. Before addressing some of the specific material questions, here are some considerations for acquiring and storing proper materials.

It is the installer's responsibility to use materials specified in the design. An installer who is also the designer is responsible for selecting the proper materials for each application. When a specified material cannot be obtained or the installer feels there is an equivalent material available, the change requires consulting with the designer to make sure it is equivalent and will do the same job. It is also the installer's responsibility to store and handle the specified materials to ensure they can be used as the designer intended.

When pipes are stored on a rack, it is important to support them the entire length. Bowing can occur, which makes those sections of pipe unusable for many applications.

Storage can occur in two locations: the installer yard or shop and at the site of installation. Having storage available at the shop allows for ordering certain materials, such as pipe and distribution media (chambers, rock, sand), in bulk. This gives the installer an advantage when bidding the system price. However, improper storage can result in the materials being unsuitable for use, so the installer needs to prepare suitable areas for storage.

It is important that materials are maintained to meet their original specifications. This means distribution rock or treatment sand are not contaminated with native soil. It's best if the materials are stored on a concrete slab and under cover. If these materials are stored in contact with soil — either at the shop or at the site of installation — some loss of materials (as much as 5% to 10%) can be expected because the sand or rock in contact with the soil cannot be used in the system. This needs to

be factored into price of materials. If a storage area is not provided to reduce these losses, it would be best to not try and store the materials.

AT THE JOB SITE

The best way to avoid potential problems at the job site is to not store the material, but to use it on the day of installation. This is not always possible, particularly when installing aboveground systems such as mounds or at-grades. For these systems, it is important to move the clean sand and rock into place from multiple directions. This means there will be some material in contact with soil and losses will occur in the process. Furthermore, the contaminated material needs to be removed from the site and disposed.

One good idea to minimize loss is to prepare a clean, undisturbed area to store the material and keep materials separate once they are delivered. Plan for the placement of the materials in locations where they are readily available for use during the different stages of installation. Having them separated and kept where they do not interrupt work areas or traffic patterns is important. And plan ahead for delivery. Don't wait until the trucks are there to deliver the materials to prepare an area or figure out "the plan."

Keep piles of distribution rock separate from the piles of final cover material. Maintain working space between the piles to assure the rock is kept clean and free from silt or clay-size particles that can wash through the rock after installation and seal the bottom of the trench. If rain is expected, it's best if the piles are covered with plastic to protect them.

STORING PIPE

Proper storage is just as important for other system materials, such as PVC piping, chambers and dropboxes or distribution boxes. Care should be taken when handling materials to avoid contact with sharp objects that can cause cracking or breakage. They should not be dragged across the ground or stored where they can be in contact with soil, which can affect their suitability by reducing strength or forming a crust of fine particles that can impact system performance.

If PVC materials need to be stored for any length of time, they should be kept out of direct sunlight. Sunlight and excessive heat can affect the strength of pipe, chambers and other system components.

A couple of additional comments about storing pipe specifically: It is best to store pipe indoors or at least under cover. When stacking pipes, the

BioMicrobics welcomes new team members

Amr Zaky joined BioMicrobics as associate vice president of engineering research and advanced process technology. He has a diverse background with multidisciplinary research and engineering experience in the fields of water and wastewater treatment. He also has experience in hydrology and groundwater contamination, with an emphasis on environmental impact and life cycle assessment. Kevin Sherman joined the team in the SeptiTech office as the director of environmental engineering and regulatory affairs. Sherman is an environmental scientist/engineer with 33 years' practical experience and a diverse background with environmental research. □




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thickest-wall pipe should be on the bottom. When pipes are stored on a rack, it is important to support them the entire length. Bowing can occur, which makes those sections of pipe unusable for many applications. If a section of pipe is damaged, it should not be used, rather cut out and discarded.

Other materials to be used in media filters or advanced treatment systems should be segregated and stored according to the manufacturer's directions. This includes materials such as peat, textile filters, Styrofoam peanuts and plastic media. Media of any type should be protected from soil contamination.

In future columns, we will take a closer look at the specifications for some of the materials, how to determine if the product you are purchasing meets the requirements and why these specifications are important. □

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PRODUCT NEWS

PRODUCT SPOTLIGHT

Toro Dingo TXL 2000 compact utility loader offers added reach

By Craig Mandli



The Toro Dingo TXL 2000 compact utility loader offers telescoping arms to reach over obstacles, dig below grade and extend the operator's working range. This go-to equipment for working in tight spaces consolidates the benefits of several machines into one to perform a variety of tasks on the job site.

Thanks to the telescoping loader arm technology, contractors can perform a number of tasks previously unachievable with this class of equipment. For instance, operators are able to backfill behind a retaining wall, dump material into the center of a full-size dump truck or container, or off-load both rows of a trailer from one side. Fully extended, the boom has a hinge pin height of just over 10 feet.

In addition, the TXL 2000 offers a rated operating capacity of up to 2,000 pounds, rivaling many skid-steer loaders and compact track loaders. It also offers many of the benefits of the compact utility loader class, including increased visibility and access, when compared to larger equipment classes with a sit-in cab. It provides operators 360-degree visibility by readjusting their body on the flexible, suspended operator platform. Additionally, this unit is more compact than other classes of earth-moving equipment, allowing it to reach areas where larger equipment cannot. The controls are intuitive and easy to use, allowing operators of all skill levels to confidently operate the machine, according to the maker.

"The TXL 2000 strikes a perfect balance of unprecedented reach, power and maneuverability for a compact utility loader, and we believe it's going to be a game changer," says Kyle Cartwright, marketing manager at Toro.

Equipped with a standard skid-steer loader attachment mount, the unit is compatible with most standard skid-steer attachments for versatility and productivity.

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