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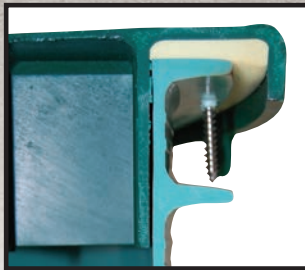
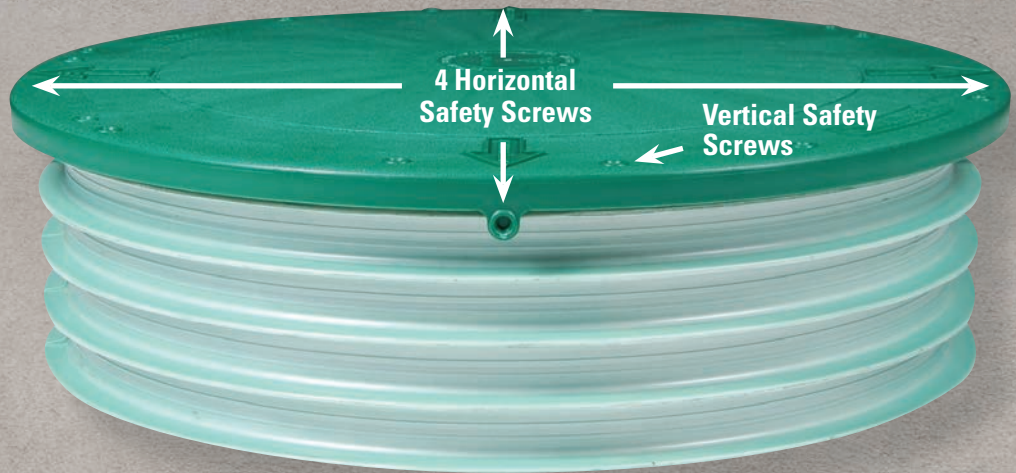
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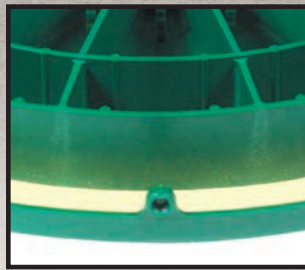
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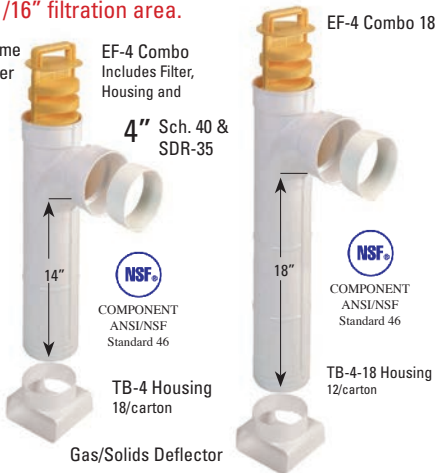


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6" Sanitary T-Baffle™

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INSTALLER PROFILE:

In Good Hands
By David Steinkraus

ON THE COVER:

Marut and Sons Excavating in Perry, Ohio, has successfully navigated the ups and downs of the economy and technology advances in the 15 years since they were first featured in *Onsite Installer*. Owners Scott (left) and Jeff Marut are shown standing in the bucket of a Cat 314 excavator on a job site. (Photo by Amy E. Voigt)

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We've Been Serving the Installing Community for 15 Years and Counting

The onsite industry has weathered a recession and adapted to an explosion of technology to emerge as a force for environmental good.
By Jim Kneiszal

8 @onsiteinstaller.com

Be sure to check out our exclusive online content.

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Enjoy this issue!

Established in 2004, *Onsite Installer™* 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.

We've Been Serving the Installing Community for 15 Years and Counting

The onsite industry has weathered a recession and adapted to an explosion of technology to emerge as a force for environmental good

In 2004, *Onsite Installer* magazine was launched by COLE Publishing with a simple premise: Decentralized wastewater is here to stay and we need to serve the hardworking men and women who design, construct and maintain the private wastewater infrastructure.

The first editor of this publication, Ted J. Rulseh, kicked off the inaugural issue 15 years ago, sharing the message that the U.S. Environmental Protection Agency had recently determined onsite systems should be considered “a permanent part of the nation’s wastewater infrastructure.”

With improving treatment technologies and the realization that not every home can be served by a sprawling municipal sewer, septic systems would no longer simply be considered a stopgap measure on the way to a better solution. From then on, these systems would serve as a practical wastewater solution for fully one-third of the homes being constructed.

Rulseh noted that the U.S. Department of Commerce estimated annual housing starts at nearly 2 million per year, meaning more than 660,000 new homes with onsite wastewater systems. The market boomed, busted and boomed again over ensuing years, but it has remained clear that expectations are high for the industry you all cherish.

“It follows that if the EPA, and by extension state and local governments, are going to trust onsite systems to protect environment and health, they are going to expect similar rigor from the onsite industry,” Rulseh wrote. “They will demand quality installations. They will expect designers and installers to behave like professionals. They will demand that treatment technologies meet effluent-quality standards reliably and for the long term.”

The challenge today isn't finding the work, but broadcasting the message to young people that the onsite industry is a great place to start a successful and profitable career.

OVERCOMING CHALLENGES

It has not been an easy road for installers since 2004, but the challenges were not of the making of the guys and gals behind the controls of the excavator. When this magazine launched, home construction starts were shooting up at a record pace. Seldom has there been a construction market as good as it was up through 2007. But then the Great Recession struck in 2008, and those days were dark and difficult for many installers and system designers.

Construction ground to a halt when the bottom fell out of the real estate market. Buyers couldn't secure mortgages to move forward. Widespread foreclosures threw a glut of recently built homes back on the market. As a result, many installers were left to trim their staffs to a bare minimum to ride out the downturn. Many others closed shop and sold their equipment. Anyone working in the industry in those days will recall the devastation of layoffs, phones that never rang and payments that couldn't be made for machines that sat idle.

It would be several years before the economy righted itself and installers felt more secure in their businesses. Anything but overnight, the industry gradually got back on its feet. Slowly but surely, many of the small family companies that work in this trade were able to add back jobs, fill out full installing crews and build up an inventory of work.

Today, many of you are at full strength, and I often hear reports of companies with several months of work backed up. Much like 15 years ago, you are now looking to hire new people to become the lifeblood of this industry. The challenge today isn't finding the work, but broadcasting the message to young people that the onsite industry is a great place to start a successful and profitable career.

BETTER TREATMENT OPTIONS

In all of the upheaval, one thing has remained constant in the onsite industry. That's a commitment on the part of manufacturers to provide better solutions for a cleaner environment. It seems like regulations have stiffened in every U.S. state or Canadian province. Governments and health departments recognize the importance of protecting drinking water supplies and watershed quality and have demanded higher standards for septic system performance.

Answering the call, companies are constantly evolving treatment train components and a broader range of technologies to fit every type of development or replacement system situation. Products are designed to perform better and last longer. Compact and lightweight solutions allow installers to work more efficiently and bring effective wastewater treatment to lots that are smaller and have poorer site conditions. I don't see innovators relaxing until it's common for onsite systems to take the precious water resource from the toilet to the tap.

You can see their handiwork in each issue of *Onsite Installer*. Decentralized technologies are featured in our monthly Product Focus and Case Study stories as well as in advertising throughout the issue. Also, we feature the latest products in our System Profile feature, where we talk to an installer about tackling a significant project challenge.

You can see new products at the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show every February and at state and regional association meetings throughout the year. I have watched the installer side of the WWETT Show grow every year as manufacturers show their latest and greatest technologies. If you haven't been to the biggest wastewater exhibition in the country, consider going in 2020. It's one place where you can see and get your hands on the products that are advertised every month in this magazine, as well as talk to the experts.

CONTRACTOR PROFILE REWIND

We have a real treat in store this month to help celebrate 15 years of serving the onsite community. We returned to feature one of our first profile companies, Marut and Sons Excavating in Perry, Ohio. The tale of the last 15 years for brothers Jeff Marut, the president, and Scott Marut, the vice president, is a microcosm of the onsite industry in general.

The brothers are older and wiser than when we first visited them a few years after they bought the business started by their grandfather in 1945. They learned to cope with the ups and downs — getting through the real estate crisis — to emerge with an eye toward profitability and pointing the 74-year-old business to the amazing goal of reaching the century mark.

The fellas told writer David Steinkraus that learning new technologies and evoking smart small-business practices saw them through the tough times. Drip systems were coming into use in 2004; they embraced alternatives to the most conventional systems and it paid off. With new statewide regulations in 2015, the brothers have been working on more elevated systems utilizing advanced treatment units and UV disinfection.

On the business side, they resisted narrowing to serve a few big homebuilders, preferring to spread out their customer base to keep fewer eggs in each basket. This proved beneficial as some of the biggest builders fell the hardest in tough times. Also, in answer to new demands from customers, they refocused the workload away from the excavator to a degree, moving into system maintenance contracts and real estate inspections.

Like everyone in the onsite world, they've had to adjust to sweeping technology advances that have forever changed the way any business runs. In 2004, there was no such thing as a smartphone; today, expectations are for communication to be constant and instant, and the pace of the work is swift.

THE PROMISE CONTINUES

In looking toward the future, editor Rulseh said it well 15 years ago:

“Contractors who prosper will not be those who merely work cheap but those who build systems that function dependably, protect the quality of life and enhance the homeowner's property. The industry will be driven by value and performance — not price,” he wrote. “That is good news. It means, quite simply, that the industry has grown up. Now, onsite designers and installers have a chance to win the respect they deserve for performing an absolutely essential service.”

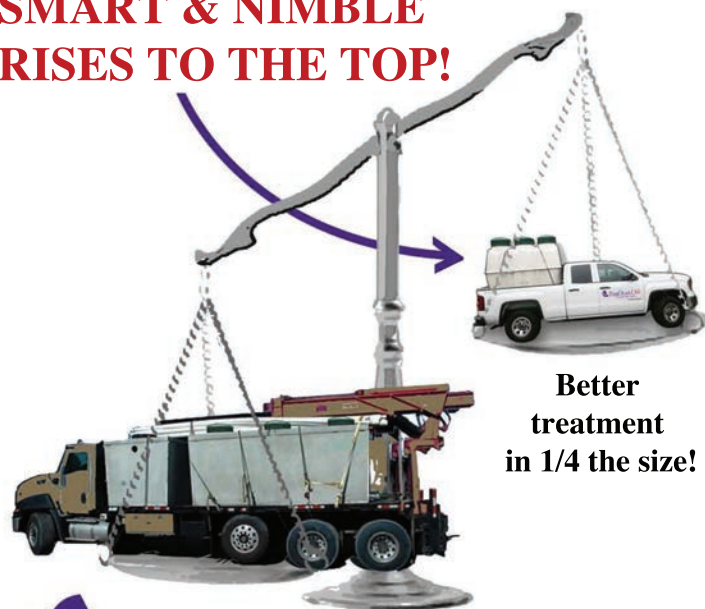
What he advocated for then has come true. As for the role of this trade publication, Rulseh set a goal, saying, “Our aim is to help the industry in its continuing efforts to raise its standards and stature.”

Today I repeat that commitment. We want to partner with you to build on the successes of the past and continue to make strides in professionalism and technology in the future. Future construction development and a fragile environment are depending on us to meet those goals. □

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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PERFECT COMPLEMENT Rainwater Collection & Onsite Systems

It may not be a primary source of income, but installing rainwater systems can be a beneficial added service in water-poor areas. In this exclusive online article, Luke Snyder, owner of JerNan Septic and Rainwater Solutions, discusses how he learned to install rainwater collection systems and why it's the perfect service addition to his onsite business. onsiteinstaller.com/featured



DIAGNOSING PUMP PROBLEMS

Odor Complaint

When property owners complain they have sewer gas smells by a sewage ejector or grinder in the basement or by their pump tank, you should take that complaint seriously. Continuing the pump troubleshooting series, this article outlines steps to take to get to the bottom of an odor complaint. onsiteinstaller.com/featured



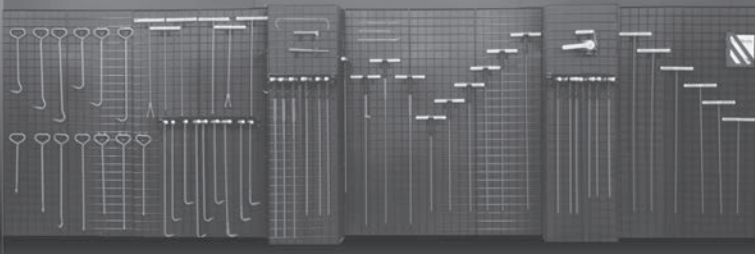
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Equipment Replacement

When it comes to timing the replacement of worn-out equipment, using some intuition is fine, but you'll get the best results if a metric of hard data is backing up your decisions. There are a few different ways to go about determining when a piece of equipment needs to be replaced. This article will help you figure out what method will work best for your company. onsiteinstaller.com/featured

Overheard Online

"You need to think things through so that two years down the road you're not disappointing your bank, your family and your investors. Nobody goes into business to lose money, but there's a high percentage of startups that don't make it."

- Finding a Financing Option for Your Company

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IN GOOD HANDS

Marut and Sons Excavating keeps on digging after 74 years, relying on technology and a diversified client list to build a strong future

By David Steinkraus

Marut and Sons Excavating was a seasoned, multigenerational family company that had always successfully adjusted to a changing marketplace when *Onsite Installer* chose it for one of the magazine's first contractor profile subjects 15 years ago.

Back in 2004, Jeff and Scott Marut were only four years into their control of the business started by their grandfather, Bill, in 1945, with the legacy carried forward by their late father, Bob Marut.

Jeff, 47, is still president, Scott, 49, is still vice president, but the business has changed considerably. They've weathered the financial downturn, refocused what they do and now they're aligned for a secure future driven by technological advances.

DIVERSE CLIENT LIST

Their road as young owners started with what they didn't do. They resisted doing all the excavation work for just one, or maybe two, big homebuilders in their area.

"We've had opportunities to work for a guy who does 40 homes in a year, and we always shied away from that. I just never felt comfortable relying on one person," Scott Marut says. "When things are going good, it makes life easy. But we never did that, and when that economy hit, a lot of guys were working for builders who stuck them for tons of money, and they folded up."

Marut and Sons still took a financial hit. "Fall is really busy for us, and we cram in a lot of jobs before the bad weather comes. We were very busy in the fall of '08, and we ended up not collecting close to \$80,000. But we made it through," Marut says.

What saved them was a dedication to learning new technology and to diversifying their business.

In 2004, drip systems and other new technologies were just starting to come into use in their area. Marut and Sons learned those technologies and built these systems steadily in their territory. Demand for this expertise led them into other counties surrounding metro Cleveland. The company also began servicing those systems. When construction work dried up, they had the service business to fall back on, and they expanded it.

Marut and Sons now manages the wastewater needs of about 800 homes. Much of that work is done under contract with homeowners' associations that pay the company to do biannual inspections. From that also comes a large amount of related repair work.





The team at Marut and Sons Excavating includes (from left) Bobby Derezic, Mindy Powell, Mike Heitmen, Bill Pike, Bob Adams, Jeff Marut and Scott Marut. They are shown with a Cat 314 excavator at Parkside Elementary School in Painesville, Ohio. (Photos by Amy E. Voigt)

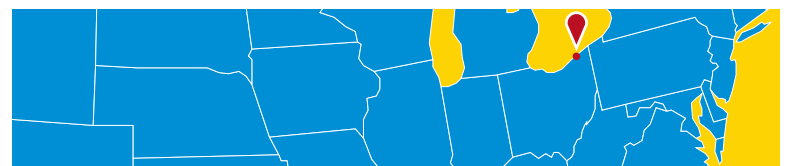
◀ Marut and Sons Excavating was one of the first companies featured in *Onsite Installer* when it launched in 2004.

Real estate inspections for property sales are another profitable and growing part of the company's work. In the last three to four years, it has become the largest part of the business. It also includes repairs or replacements of troubled systems before a sale. Installations for new construction are only about a quarter of the business now.

INSPECTION AND REPAIR

Although homebuilding is healthy again in northeastern Ohio, the company has chosen not to jump back in, but to stick with what it's doing, Marut says. "My cash flow is better, and my profit margins are better." Construction now is more of a rat race, and the work is less consistent, he says. There is also less certainty about payment.

"Many times in new construction, we were the bank. You know, we're owed \$20,000, and the builder can pay us or make the interest payment on the four lots they have, and they'll do that until the next bank draw two weeks later. Meanwhile, 30 days has turned into 45 days, and my suppliers want their money," Marut says.



Marut and Sons Excavating

Perry, Ohio

Owners: Jeff and Scott Marut

Founded: 1945

Employees: 7

Service area: Lake, Cuyahoga, Ashtabula and Geauga counties

Services: Onsite system installation and service; general excavation; inspection and maintenance

Affiliations: Ohio Onsite Wastewater Association, Ohio Home Builders Association

Website: www.marutandsons.com

In real estate sales work, money moves in a different way. Often in their part of Ohio, a house will be unoccupied or for some reason the system can't be inspected, Marut says. So the agent or bank will estimate a worst-case repair cost and hold 1.5 times that amount in escrow. If repairs are required, the money is in place.

Problems can still crop up when a buyer's expectation of work is different from what the seller agreed to in the contract, Marut says. A common trouble was a buyer's expectation that Marut would do site restoration, although the seller wasn't paying for it. Marut prevents such disputes now by having both seller and buyer sign off on a contract so both understand the scope of work.

WORKING SMART

Because they are focused and specialized, the company can also work faster. The key to increased efficiency, according to Marut, is Mindy Powell, office manager.

▼ Bob Adams, left, and Bobby Derezc work on construction of a sand mound that is part of the two-year Parkside Elementary School project in Painesville, Ohio.



"So much of our efficiency starts right in the office. My guys come in the morning, and she has a file for them with phone numbers and underground information. So they take this file, they get in the truck, and when they get there, they know material has been ordered and everything is ready," Marut says.

The office is also key to dealing with real estate sales. Powell has systems in place to handle all the paperwork from real estate agents, banks, title companies and other players in a property transaction, he says. Having that office support made it easier for the company to refocus its business, Marut says. A one- or two-man operation would find it difficult or impossible to do the same work because of the paperwork demands, he says.

Before Ohio onsite rules changed in 2015, conventional systems were common. Now that's not the case because work is tightly linked to extensive soil analysis.

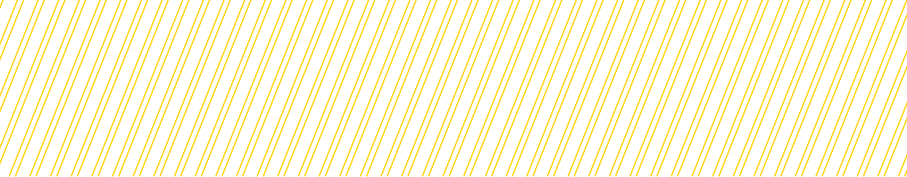
"We've had opportunities to work for a guy who does 40 homes in a year, and we always shied away from that ... when that (economic downturn) hit, a lot of guys were working for builders who stuck them for tons of money, and they folded up."

Scott Marut



watch them in action

To learn more about Marut and Sons Excavating, watch a video profile of the company at www.onsiteinstaller.com.



“We’ll be involved in something, and my brother and I will laugh and say, ‘Could you imagine if Dad saw us tackling this thing?’”

Scott Marut

“A lot of our stuff is elevated in the form of mounds or something along that line,” Marut says. “If the soil allows, then we still do conventional systems. If we don’t have enough property or have conditions where we can’t put a system on somebody’s property, the people have to apply for a surface discharge permit.” Permits from the Ohio Environmental Protection Agency typically require some kind of advanced treatment unit with UV disinfection as a final step.

An unintended consequence of the new state rules was an increase in demand for soil scientists, but the number of available scientists was quickly exceeded by the workload. At the moment, replacing a failing system can take weeks because Marut has to find someone to do soil work before he can propose a solution.

“Designing a system based on the soil is the right way to do it. It just slows the process down and makes it a challenge,” Marut says.



▲ Scott, left, and Jeff Marut review complex plans for another phase of the complex school project, the biggest Marut and Sons Excavating has ever taken on.

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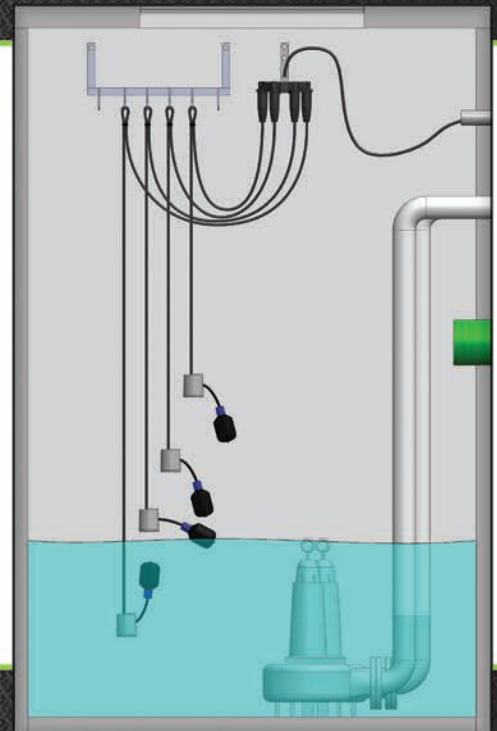
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➤ TUF-TITE lids and risers are shown in the foreground and EZ-Treat recirculating sand filters in the background as part of the complex system at Parkside Elementary School.

➤ Bob Adams works on control panels for the system, provided by Alderon Industries and American Mfg.



KEEPING CONNECTED

It's a good thing for Marut and Sons that it has systems in place to handle the demands of its business because time is harder to come by 15 years after the first *Onsite Installer* story was published. In 2004, mobile phones were just becoming items that people carried regularly. Introduction of the iPhone, with its email and pocket internet access, was still years in the future.

"The paperwork and cellphones have really made the amount of time you can spend on a job a challenge," Marut says.

Customers expect instant contact with cellphones, even when you're in the field, he says. "So many people want to meet during the day now. They have flexible schedules, and they'd rather not meet you at night because they're off at football games or whatever."

Social media is one tool the company should use more often because it's a good way to market at no cost, Marut says. Yet the company also has a lot of referrals.

The company has made itself known by raising money for local schools, and the crew built a couple of baseball fields for local high schools.

IN THE YARD

Focusing the business means simplifying the equipment needed. For its tasks, Marut and Sons runs:

- Three excavators: a 2017 Cat 314, 2014 Cat 305 and 2015 Cat 305
- 2019 Kubota skid-steer
- 2012 Bobcat skid-steer
- 2011 International single-axle dump truck
- 2005 Mack tandem-axle dump truck
- Ford F-800
- Several Ford box trucks for service vehicles.

FORWARD THINKING

After 74 years in business, Marut and Sons at some point will face the question of passing the company to the next generation, yet Jeff and Scott

HELP WANTED

"In the construction industry in general, it's very difficult now to find people in the trades. Plumbers, electricians — it's tough out there to find those. The local builders struggle," observes Scott Marut, vice president of Marut and Sons Excavating in Perry, Ohio.

A shortage of skilled workers slows the onsite trade, too. If he gets 10 calls from potential clients, Marut says he has to tell eight of them that he can't commit to the job because he doesn't have enough people.

"We get summer help, but it's hard to find competent people out there," Marut says.

The core employees of Marut and Sons are longtime workers. Technician Mike Heitman has been with the company for 18 years and Bob Adams for 11 years. Mindy Powell, office manager, came 15 years ago. Bill Pike, service technician, was a great addition a decade ago, Marut says.

Marut would like to expand a bit, if only he could find the people.



“Designing a system based on the soil is the right way to do it. It just slows the process down and makes it a challenge.”

Scott Marut

have no intention of forcing that to happen.

Scott’s son, Jake, 21, is studying mechanical engineering at the University of Mississippi and is interning this summer with a large engineering company retrofitting a large wastewater plant. Scott and wife Carrie’s other children are Jessica, 22, and Abbey, 18. Jeff and his wife Jennifer’s children are a bit younger. They are Brock, 18; Cole, 15; Vance, 12; and Milan, 7.

In 2004, it was Scott’s dad, Bob, who grounded him. When he or his brother had wild ideas, Bob would pull them back to earth. Bob died in 2017 but still grounds Scott — although it’s through the voice that many sons carry in their heads.

“We’ll be involved in something, and my brother and I will laugh and say, ‘Could you imagine if Dad saw us tackling this thing?’” Marut says.

“My dad was a simple guy. He worked for Jeff and me a few days a week, but when he was 55, he was semiretired. He was always active and busy, but he got away from the pressure part of the business,” Marut says.

Bob worked until about 2013, and he was a father figure to the other people in the company. Every day someone has a story about what he did, Marut says.

After 74 years, there’s a lot to appreciate at Marut and Sons. There’s a lot to reflect on, but because of hard work and a vision of the future, there is also a clear direction. □

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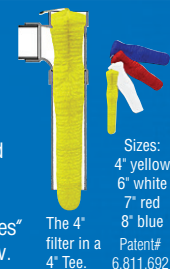
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Hawaii Groundwater Issues Reach the U.S. Supreme Court

By David Steinkraus

Oral arguments before the U.S. Supreme Court are set for Nov. 6 in a water pollution case that could reshape the regulation of wastewater, including use of onsite systems. That potential for change means a large number of organizations have opinions about why the justices should rule one way or the other.

In dispute is whether pollution from a point source can be regulated under the Clean Water Act if it first passes through groundwater. The county of Maui, Hawaii, for years has used deep injection wells to dispose of its treated wastewater. Some of that effluent moves through groundwater and into the Pacific Ocean. This led the Hawaii Wildlife Fund and other conservation groups to file a federal lawsuit asserting that the county's discharge violates the Clean Water Act.

A federal district judge ruled that it does and the 9th Circuit Court of Appeals in San Francisco upheld that ruling, so the county appealed to the Supreme Court.

The Hawaii case combines two continuing and important questions in law, according to Erin Ryan, a law professor at Florida State University. One question is whether groundwater can be reached by law, and the other is how to deal with point and nonpoint sources of pollution.

She says the two questions ask: How should we think about the connections between surface water and hydrologically related groundwater, and what do we do about the sources of pollution that are really genuine threats to the nation's waters but are conveyed by something not as easily attached to a point source designation, such as a factory pipe?

The Clean Water Act was drafted to exclude some sources of pollution, such as agriculture, Ryan says. Instead, lawmakers focused on pollution sources easy to clean up, such as pipes coming out of factories.

In the run-up to the Supreme Court hearing, where attorneys for the county and conservation groups will argue the case before the Supreme Court, interested groups submitted friend of the court (*amicus curiae*) briefs. These written arguments come from organizations or individuals who have an interest in the outcome of a case but are not parties to it.

Among the groups supporting Maui County's position with a brief is the National Association of Home Builders, which worries that extending the reach of the Clean Water Act will have a negative effect on the regulation of onsite systems and the business of its members. West Virginia, joined by 19 other states and the governors of Kentucky and Mississippi, argues that state sovereignty is at risk and says the current division of water regulation between state and federal governments offers better protection because federal power can be used when necessary, while states can adjust solutions to meet complex local problems.

The U.S. Chamber of Commerce says while businesses support effective environmental regulation, applying the Clean Water Act to groundwater will create a mess of duplicate regulations and impose a burden on the public. The American Farm Bureau Federation and other agricultural interests are concerned that farming will be adversely affected because there is no way to prevent excess fertilizer from being picked up by stormwater and diffused into groundwater.

Among the groups supporting the position of Hawaii Wildlife Fund are Maryland, California, 11 other states and the District of Columbia. They ask the Supreme Court to rule in favor of Hawaii Wildlife because nothing in the Clean Water Act says point sources must discharge directly to a body of water if they are to be regulated. Trout Unlimited says the county's position is clearly at odds with what the law says and if upheld would roll back important protections for the nation's fisheries and the economies and people they support. The Fond du Lac Band of Lake Superior Chippewa worry about the quality of water that supports the wild rice and fish its tribal members eat, and write that the Clean Water Act already says pollutants can't be added to waters without a permit.

And the Craft Brewers say Maui County's argument is simply flawed. If pollution moving through groundwater were to be exempt from the Clean Water Act, the group writes, then any factory discharging into a river could escape regulation by shortening its pipes by 20 feet and dumping pollution into a gravel pit so groundwater would carry the pollution into the river.

Minnesota

A district judge denied a request from four Amish men to amend his ruling or grant them a new trial in their long battle to escape Fillmore County wastewater rules.

While Minnesota law exempts outhouses from its pollution control laws, it does not exempt graywater. The county took the Amish men to court because they refused, on religious grounds, to install septic tanks for their household graywater. But in his ruling at the trial, Judge Joseph Chase says the Amish rejection of septic tanks puts the health of their neighbors at risk, and the health of their neighbors outweighs their religious beliefs.

The four men are expected to next take their case to the state Court of Appeals.

Michigan

The Keweenaw Bay Indian Community, on the shore of Lake Superior, is petitioning the federal government to give it control of quality standards

for its bodies of water. If granted this authority, it would become the first Michigan tribe with this power, according to *Capital News Service*.

In its petition to the U.S. Environmental Protection Agency, the tribe writes, “pollution of waters within the reservation boundaries is a threat to the political integrity, the economic security and the health and welfare (of the tribe).” The petition lists septic systems as a threat to water quality along with development, agriculture, forestry and other activities.

The Clean Water Act allows tribes to have power over their local environment. A tribe in New Mexico exercised that authority to require less pollution from the city of Albuquerque in the 1990s, and a tribe in Wisconsin used its authority to fight a mine project that threatened the water supply for wild rice.

New Hampshire

In July the state adopted a rule requiring local landfills and water and wastewater plants to test for and treat for four PFAS chemicals. The Legislature’s Administrative Rules Committee approved the new limits on a vote that split roughly along party lines, according to New Hampshire Public Radio.

PFAS stands for per- and polyfluoroalkyl substances and is an umbrella term for a category of chemicals used in a wide variety of products from stain-resistant coatings to firefighting foams. Although some are no longer produced, the chemicals are persistent in the environment.

The New Hampshire rule sets limits of 12 ppt for perfluorooctanoic acid (PFOA), 15 ppt for perfluorooctane sulfonate (PFOS), 18 ppt for perfluorohexane sulfonate (PFHxS) and 11 ppt for perfluorononanoic acid (PFNA).

Research on the effects of PFAS is not complete, but results so far suggest that high concentrations in humans may increase cholesterol levels, decrease response to vaccines, increase risk of thyroid disease, decrease fertility in women and increase the risk of high blood pressure or preeclampsia in pregnant women.

The PFAS issue also extends to the onsite industry. This summer the state notified Biological Recycling Co. — which processes septage and land-spreads sludge — that it is the likely source of PFAS contamination in wells on neighboring properties. A news report says tests of four drinking-water wells found combined concentrations of PFOA and PFOS ranging from 83.5 to 174.8 ppt. The state limit for these two chemicals in groundwater is 70 ppt (also the federal standard), but officials of the state Department of Environmental Services suggested those limits should be lowered to match the new rule for water and wastewater plants.

In other news from New Hampshire, two people are going to the state Supreme Court with a complaint that they were harmed when the city of Concord failed to keep accurate records of wastewater disposal for their property.

James and Kath Marhan say their home was listed in the city of Concord assessment system as being connected to the sewer system when they bought it in 2003, and they were billed for service, reports the *Concord Monitor*. But in 2015, wastewater started backing up into their home. They discovered the house was connected to a metal septic tank in the backyard, and the tank had collapsed.

The couple hired a local company to install a replacement tank, but they were required to connect it to municipal sewer at their own cost. The couple asserts the city had a duty to maintain accurate records, and the city’s failure to do so caused them harm.

A lower court judge dismissed their claim in March after the city said it was immune from damages. The city’s attorney argued the couple’s complaint did not meet the requirements of state law, and he argued that the couple should have verified the wastewater service on their own.

Ohio

Richland County is on the verge of enforcing new rules for onsite systems. County health inspectors will be required to review all property divisions of less than 5 acres to see whether they are suitable for septic systems, reports the *Mansfield News Journal*.

Property owners will have to file a formal application for a land division and have a soil evaluation performed. “The reason why this program is so important is because individuals have been splitting off parcels and cutting off their septic systems,” says Heather Decker, sanitarian. “It’s an insurance policy so they’re not affected in the future.”

The county is in central Ohio, between Cincinnati and Cleveland.

New York

Four public entities on Shelter Island, part of Suffolk County on Long Island, will explore a unified onsite system to reduce nitrogen pollution along the Atlantic Ocean shore. John Cronin, the town engineer, planned to submit an application to the state for funding for an engineering study, says the *Shelter Island Reporter*.

The Shelter Island School, Fire Department, town complex and Legion Hall are all interested in joining a cluster system. If the Fire Department opted out, Cronin told fire commissioners that the department would still have to replace its onsite system at some point, and building an individual replacement system would be more expensive than contributing to a unified system.

Cronin says an engineering study could be started by January and a plan could be in place by next fall.

In other news, Suffolk County officials have developed a long-term plan to reduce nitrogen pollution in surface waters. The Subwatersheds Wastewater Plan would last more than 50 years and proposes a countywide wastewater management district and a new and unspecified source of revenue, reports the newspaper *Newsday*. Beginning in 2024, that money would provide grants and loans to homeowners.

A county press release says the study identifies more than 180 watersheds and establishes nitrogen-reduction goals for them. The plan also sets priority areas where the replacement of cesspools will have the most immediate benefit. Overall the plan proposes investing \$2.7 billion during those 50 years to eliminate 253,000 cesspools.

Iowa

A Grundy County couple is suing their county and its insurer, the board of health and a county sanitarian for what they say was improper installation of a septic system on their property. Greg and Lisa Melcher filed the suit in

RULES AND REGS



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April. They say *E. coli* in their water caused Lisa Melcher gastrointestinal illness after the system was installed, reports *The Grundy Register*.

The Melchers allege the county approved a permit without requiring a perc test, approved a drainfield inconsistent with state code, failed to inspect sites before issuing permits and failed to show competence in licensing installers. The suit also says the county was negligent in hiring the sanitarian, failed to supervise her properly and ignored warnings about the failure of the Melchers' system after it was installed in 2017.

Wisconsin

Washington County, northwest of Milwaukee, planned a public hearing about charging an annual fee to owners of private onsite systems. Proceeds from the fee would be used for tracking the systems, reports the *Washington County Insider*. About 20,000 parcels would be charged \$11 annually, and about 100 others would be charged fees from \$22 to \$66 depending on how many onsite systems are located on each property. □

"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.

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Consistent Regulations, Timely Inspections Needed to Advance Onsite in Virginia

The management team at Virginia's Triple R Construction Co. motivates their crews to do the best for their septic system customers

Compiled by Betty Dageforde

In States Snapshot, we visit with a member of a state, provincial or national trade association in the decentralized wastewater industry. This time we learn about company members from the Virginia Onsite Wastewater Recycling Association.



(L to R)

Charlie Seamon, vice president and owner

Ronnie Thomas, principal owner and consultant, former president

Mark Burns, president and owner

Business: Triple R Construction Co., Manassas, Virginia

Services offered: We do septic installations, maintenance and repair. We've put in close to 10,000 systems.

Age: Seamon, 60, Thomas, 63; Burns, 64

Years in the industry: Thomas, Burns and Seamon — all since the mid-1970s.

Association involvement:

Thomas: I was on the board of the Virginia Onsite Wastewater Recycling Association back in the mid-1990s, and I've been back on the board for about a year. I've also been on the NOWRA - National Onsite Wastewater Recycling Association Board of Directors and the Board of Appeals for the state of Virginia Department of Professional and Occupational Regulation.

Benefits of belonging to the association:

Thomas: From an install standpoint, it certainly improves your KSA — your knowledge, skills and abilities. It's very informing, and I gain a lot of knowledge.

Biggest issue facing your association right now:

Thomas: A big issue is improving communication both to members and with the local health departments. The more information we can provide the members from a regulatory standpoint, the better. That's a big part of what we try to do. As far as the health departments, there are so many things associated with all this — inspections, enforcement, all the things the health department does nowadays. In northern Virginia, we deal with about seven different county health departments and the regulatory requirements will vary a little bit from county to county.

Our crew includes:

Burns: I love all of the 24 people who work with us. Joel Swicegood, our estimator; Esther Burns, our bookkeeper; and Dezi Thoden, our newest addition, all work in harmony to keep the wheels turning. Crew leaders include Herick "Misial" Diaz (1997), Jose "Senior" Espinol Sr. (1997), Jose "Leon" Garcia (2002), Daniel Randall (1993), Edwin Chua-Lemus (1997) and Chadwick Garrison (2006). And we receive more compliments about Isail "Chico" Marquez (2014), our maintenance leader, than anyone.

Typical day on the job:

Thomas: My primary role now is to bring work in the door wherever I can. As the former president, I ran day-to-day operations for a number of years, and now I've been trying to get some more work. And I'll go out and look at something if it is problematic.

Burns: Mine is a reactive position: What contract needs to be read and signed, what service call needs to be taken care of, and what job has problems? Those are the types of fires I put out.



◀◀ Triple R employees attending a safety meeting include, from left, Rene Lemus, Chappy Velasco, Herick Diaz, Jose Garcia, Jose Espinol Sr., Chadwick Garrison and Daniel Randall.

▼ Installation of a drip field for a single-family home.

Seamon: I'm kind of the day-to-day field general. I make sure the guys have their job assignments. I resolve issues during the workday and any problems that need to be attended to, get equipment moved to the sites, and handle issues builders may have if they have a job that needs something in particular.

The job I'll never forget:

Burns: We installed a low-pressure distribution system for an elementary school in Haymarket. It was the first time we had a low-pressure distribution of that magnitude — 6,000 gallons a day, if I recall right — and it was a huge learning experience for us as far as collaborating with the engineers for installing the best design. It was originally designed with 9.7% flow variation where 10% was the limit, and there wasn't enough cushion for any errors that occurred in the field. So, we collaborated with the engineer, redesigned it, worked with them and made sure we got distribution the way it was intended. It was successful and lasted until the school was hooked onto sewer. It was hugely important to us, and we've continued that collaboration with the engineers we work with.

Seamon: We had a job to install a new system at a shopping center in Great Falls. There was limited space to install the components and an underground power line that had to be moved. The new tanks had to be set with a crane. The power company came in and set up a temporary power line and took away the separation we needed between the crane and the power line, with the potential danger of the power arcing over to the crane. The power company worked with us to insulate those wires.

My favorite piece of equipment:

Thomas and Seamon: John Deere 410G backhoe. It's a good all-around machine for what we ask it to do. It has plenty of power. It holds up very well. It doesn't have a whole lot of maintenance expenses with it. It's a good piece of equipment that's pretty stout.

Burns: If you'd asked that question in 1980, I would have said a Case 580B Construction King backhoe, but these days the John Deere 331 skid-steers allow us to leave a polished product — and you are what you leave behind. If you leave a good-looking job, that's how people perceive you.



Also, the innovation of laser technology has been huge to us for accuracy in determining elevations of everything and making sure we have proper fall and positioning products. Of course, on any given day your favorite machine is what you're on that day.

Most challenging site I've worked on:

Thomas: We did a community drip system that was going to be taken over and operated by the Fauquier County Service Authority after we got done. It was a very challenging site to work with because the dripfields themselves were scattered all over God's creation. What sticks out in my mind is I got a lot of compliments on David Hoyle, crew chief, who really outdid himself there.

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

Thomas: One was, "Why are all these nonbiodegradable products in my system?"

Burns: The funniest, most unusual one for me was from a lady who had purchased a home and had the alarm go off. I checked it out and it had been a running toilet. We got it corrected, but she asked me, "Where does all the water from that pump tank go?" I said, "Out there in the front yard: There's a soil treatment area out there." She goes, "What?! You hillbillies are crazy." That was where her daughter played. She sold her house and moved back to New York.

Seamon: After installing an AquaO2 Wastewater Treatment Systems mound system, the owner told us to move it because it blocked their view of the lake — a \$50,000 job. Not happening.

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

Thomas: I would like to see more consistent implementation of state regulations. The county health departments implement the state regulations but only to the extent the local regulations allow them to, so you've got a fair amount of variation from one health department to another.

Burns: In northern Virginia they're trying to privatize, and as they do, it's challenging to see which regulatory authority you have to answer to. It might be an engineer, soil scientist, individual health department or all three. And it changes. But it is what it is — it's growing pains.

Seamon: I'd like to see limited time to have an inspection on the installed systems. There are times around here when I can't get an inspection for a week. Our jobs are very weather sensitive, and at times we have to have two, three inspectors inspecting the same thing, so it takes a little coordination.

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

Thomas: My father always told me you must have a plan when you start a job of any type.

Burns: Be clear in your expectations of the people you work with. We put up a sign that's just for our guys, and it's my expectation: "Triple R — we do very good work." They see that sign every day, and I expect them to fulfill it. It's been a successful recipe so far.

Seamon: Pay attention to the fine print in a contract. If you're not careful, you could misprice your quote.

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

Thomas: Be a car mechanic.

Burns: Be retired and traveling in my old 1964 Ford Falcon that I've had since 1972.

Seamon: Be traveling the West — in the back of Mark's Falcon!

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

Thomas: I see continuing education for designers, onsite soil evaluators, installers and professional engineers. Everybody needs it, not just installers and designers.

Burns: I see it as improving. It's constantly growing. Innovative ideas are challenging, but I think we, with close collaboration with academia, can successfully implement those ideas. We're going to have to do a lot better with taking care of the systems. But the education of homeowners as the end user has advanced tremendously in the last few years, and I look to see that continue to grow. □

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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SYSTEM PROFILE



Joe Celuch of Beagle Hill Services uses a John Deere 50G compact excavator to set the Singulair Green Bio-Kinetic aerobic treatment unit (Norweco). Earl Ridgley assists with a rake while Bill Arnold monitors the tank's position. (Photos courtesy of Beagle Hill Services)

Industry Volunteers Meet a Wastewater Challenge on an Impossibly Tight Waterfront Property

A Norweco Singulair system and spray irrigation system was the solution for a new system at the Save A Warrior retreat house

By Scottie Dayton

Warrior Village, a Save A Warrior retreat in Heath, Ohio, lacked adequate sleeping quarters and bused 10 participants to a different location each night. Patrick Atkinson, chief financial officer, and Jake Clark, founder and president, believed converting a large garage into a bunkhouse would solve the problem.

They hired a general contractor and Howard Goodin of Goodin Electric to transform the building and add an onsite system. "Howard called us when it became apparent that the extensive landscaping and tight quarters took installing the system beyond their normal capabilities. However, the realization came only after they built the bunkhouse," says Joe Celuch who, with his wife, Brenda, owns Beagle Hill Services in Frazeytsburg.

Joe Celuch, his daughter, his son and some employees are military veterans. When they learned the Save A Warrior program is dedicated to ending the staggering suicide rate among active-duty military, veterans and first responders dealing with post-traumatic stress, they committed to designing and installing the \$45,000 system at no cost and as fast as possible.



◀ Drew Nickoli (left), Norweco sales representative, helps Earl Ridgley of Beagle Hill Services assemble the AT 1500 ultraviolet disinfection unit (Norweco).

▼ Joe Celuch of Beagle Hill Services backs up an 18% slope as he digs a 30-inch-deep trench for the force main with a John Deere 50G compact excavator.



Regulatory agents agreed. Besides waiving fees, Chad Brown, RS, M.P.H., director of environmental health at Licking County Health Department, partnered with Celuch to expedite permits, approve the drawings and establish the hydraulic flow. “Bunkhouses don’t appear on standard hydraulic flow charts,” Celuch says. “The veterans get up, shower and don’t return until evening.”

Norweco, hearing of the project through Celuch, a distributor, donated the major components. Beagle Hill Services donated the design, dose tank, pump, electrical, labor and equipment. Other contributors included Joe Sidwell, trucking; Shelly Materials, aggregates; and WinSupply of Zanesville, pipe and fittings.

“I’ve never worked on such a harmonious project or one that came together this fast,” Celuch says. In late October 2018, his crew installed the pretreatment irrigation system in three days.

Site conditions

Soils are silt loam with the seasonal high water table 20 inches below grade. The 43-acre estate has a 3.3-acre pond, mature woods and an 18% slope behind the bunkhouse.

System components

Celuch designed the system to handle 500 gpd. Components are from Norweco unless specified otherwise.

- 600-gpd Singulair Green Bio-Kinetic aerobic treatment unit
- AT 1500 ultraviolet disinfection unit
- 1,500-gallon, single-compartment, low-profile polyethylene dose tank (Norwesco), Simplex high-head 1/2 hp effluent pump model HB105, and risers (TUF-TITE)
- 368 feet of PVC force main
- Two electric frost protection spray heads with No. 3 nozzle
- Service Pro weatherproof advanced surge protection (or WASP) 311T control panel.

System operation

Wastewater from the bunkhouse gravity-flows 29.5 feet through a 4-inch Schedule 40 PVC lateral to the aerobic treatment unit with nonmechanical flow equalization. Treatment occurs in the pretreatment, aeration and final clarification chambers. Activated sludge recirculates to the first

System Profile

- Location:** Heath, Ohio
- Facility served:** Save A Warrior bunkhouse
- Designer/Installer:** Joe Celuch, Beagle Hill Services, Frazzysburg
- Type of system:** Pretreatment with spray irrigation
- Site conditions:** Silt loam; seasonal high water table
- Hydraulic capacity:** 500 gpd

SYSTEM PROFILE



◀◀ The 995-pound Singulair Green Bio-Kinetic aerobic treatment unit (Norweco) has a 55.5-square-foot footprint.

▼ Earl Ridgley of Beagle Hill Services carries cans of PVC primer and cement to the work site.

chamber via a Bio-Static sludge return mounted in the aeration/clarification wall.

Effluent in the clarification chamber enters the Bio-Kinetic filter and is equalized and filtered. On discharge, it gravity-flows through the disinfection unit as it travels 6 feet to the dose tank. The pump sends liquid 292 feet up a 1:6 grade through a 1-inch Schedule 40 force main to the first head, then 76 feet through a 3/4-inch Schedule 80 force main to the second head. Beginning at 5 a.m. daily, the system runs 69 minutes, spraying 500 gallons over 4,538 square feet of mixed woods.

Heat tapes protect the irrigation system from freezing, as do King Drains (King Innovation), which drain aboveground spray equipment to No. 8 gravel weep pits. The 1-inch force main drains to the dose tank.



Installation

Norweco sent Drew Nickoli and Don Carabin, sales representatives, to assist with the installation. “They weren’t afraid of work and got along great with my guys,” Celuch says.

Celuch used a John Deere 325G compact track loader to cut a path up the hill and through the woods from the parking lot to the rear of the bunkhouse. Excavating the tank holes with a John Deere 50G compact excavator tested his 32 years of experience.

“It was an impossible location with almost nowhere to stockpile spoils,” he says. “Where to put each bucketful was a challenge. I used flower beds and built temporary mounds against trees. A pond was directly below where we were working, so I packed the soil to prevent it from sliding down the hill.” The 995-pound, 55.5-square-foot ATU and the 157- by 69- by 51-inch-high dose tank required a 9- and 7-foot-deep excavation respectively.

There was no way to transport the tanks mechanically from the parking lot to the holes. Taking a page from ancient builders, the crew set the ATU on PVC pipes and rolled it along the plastic wood deck surrounding the bunkhouse. Once at the rear of the building, Celuch used the excavator to lift the tank over the railing and set it in a flower bed. The dose tank traveled the same route.

“We transported aggregate with the track loader, weaving and waltzing to avoid bird feeders on posts, decorative lighting and similar obstacles,” Celuch says. “Everything else was carried in by hand.” The crew bedded the tanks on 6 inches of gravel and backfilled with 50 inches of aggregate.

“It was an impossible location with almost nowhere to stockpile spoils. Where to put each bucketful was a challenge. I used flower beds and built temporary mounds against trees.”

Joe Celuch

Nickoli helped Earl Ridgley install the disinfection unit, then Celuch dug a 30-inch-deep trench for the force main. The machine just fit between a brick wall and the trees as Celuch worked backward up the slope. Bill Arnold used a Spectra Precision/Trimble laser to check elevations. Scott Bates laid the pipe, and Arnold solvent-welded the sticks. Arnold and Bates are veterans.

The spray heads, color-coded purple, were simple to install. “Just balance the pressure with the valves and make sure the spray trajectory meets the required radius,” Celuch says.

A day later, Celuch returned to find the area carpeted with freshly fallen leaves. “As challenging as this site was, disturbance to it was minimal,” he says. “Except for the spray heads, you couldn’t tell we’d been there.”

Maintenance

Every six months, a technician from Beagle Hill Services checks the pumps and alarms, spray heads and pattern, and confirms the irrigation



▲ The perfectly landscaped Warrior Village site required extensive attention to logistics and a gentle touch with the excavation equipment.

area receives no more than 0.2 inches per day. He reviews the site, looking for landscape changes that would block the spray. The property owner is responsible for removing woody vegetation within a 5-foot radius of the heads, and trees 10 feet or taller within 10 feet of the irrigation area. □

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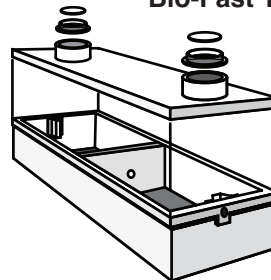
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How Does a Neighbor's Property Impact Your Next Septic System Design?

Look over that hedgerow bordering the site you're evaluating to look for wells, ditches or other factors that may dictate onsite placement or system sizing

By Jim Anderson and David Gustafson

We have spent a lot of column space highlighting how soils, system location and users affect the long-term operation of soil treatment systems. However, a reader recently asked an interesting related question: Are there other things to worry about, such as what is happening on the property next door? This got us thinking about aspects of system siting, installation and design that may be impacted by neighboring properties.

Two obvious items leap immediately to mind because we have seen them numerous times: One is making sure the system to be installed is going to be on the property and not next door. And second is the location of the neighboring well! Numerous times we have looked at systems and then looked past the line of shrubs or other plantings to find the neighbor's well is too close to the system.

As an aside, we have seen the well issue multiple times after the systems have been approved and installed! Of course, according to those involved, it is because the well is not where it is supposed to be ... and then the finger-pointing starts! All required setbacks should be determined relative to neighboring properties as well as your property. This includes buildings, driveways, any part of the other septic system and easements.

CALL THE POWER COMPANY

Another area where we see numerous problems is easements and covenants. Often this involves the power company or another type of utility. There is a movement in northern Minnesota and Wisconsin to bury electrical lines to avoid trees constantly taking down power lines. Power lines you see overhead may have the potential to be buried, and if the septic system is sitting in this location, there's a very real possibility it will have to be removed to accommodate the power line. Talking to the power company is important to determine how electricity is supplied to adjacent properties and if any changes are planned.

Right-of-way easement or covenants can also become a problem. These issues take at least two forms; one is where the local municipality, county or state has a road right-of-way identified. These may not be obvious without investigating with the municipality or county highway department. If a system encroaches on the right-of-way, the transportation authority can require its removal.

In waterfront property areas where former resorts are broken up and cabins are sold to multiple owners, we often see access routes to the different properties have been identified that are different from the previous access

to the resort. Often these access points have not been used; yet the access remains "on the books" to be used. We have often seen a system sited in one of these access areas, and even though that access point has not been used, the situation has led to lawsuits seeking system removal. The access was created to make sure each property cannot be cut off from service points. Just because it isn't the common route used in the past doesn't mean it is not there.

We increasingly see a watershed district or other government authority placing additional requirements for onsite systems. The one we see frequently is when a system is proposed in a groundwater protection area. Additional nitrogen treatment requirements are imposed to protect groundwater. Most often this is to reduce nitrate in groundwater where elevated levels are already found in private or municipal wells. We also see this in place to protect the estuary systems and fisheries when we visit the East Coast.

Power lines you see overhead may have the potential to be buried, and if the septic system is sitting in this location, there's a very real possibility it will have to be removed.

SEASONAL FLOODING

When we have done work in Arizona, a common restriction is to stay back from washes and other areas that conduct water during rainfall events. Most often, no water is present in these areas for long periods of time, but they can turn into a raging stream carrying large amounts of sediment, including large boulders in extreme conditions. To a person unfamiliar with the area, some of these conduits are not obvious. A discussion with local watershed and zoning officials is worthwhile.

Some consideration should be given to land use on adjacent properties. Is it now and will it continue to be residential in nature? Or are agriculture, industrial or business operations in the area going to expand or disappear in a few years? Agriculture areas often have different environmental requirements involving odors, manure application, fertilizer and pesticide use that could negatively impact the property where you are working.



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In our area, agricultural land is sometimes converted to residential lots with onsite systems. In some areas, this land has been extensively drained using tile systems. When these systems are cut off or altered, previous water conditions requiring drainage return. For a homeowner, this means paying more attention to the drainage condition on their property and it also means an aboveground system such as a mound or at-grade will be required. The difference in cost between a gravity-fed system and an aboveground system with pumps and pressure distribution is considerable.

Similarly, in the western states it's important to identify irrigation ditch locations adjacent to property you are working on. An adjacent ditch can raise the water level during irrigation season, affecting how a sewage treatment system functions.

TIME TO INVESTIGATE

Expanding businesses may bring sewer to the area long before it would have ordinarily happened. Ask local zoning authorities if there are plans to expand sewer service. Your customers need to understand their options if sewer or water system expansion is on the horizon.

These are just a few of the conditions we have seen a designer, site evaluator, installer and inspector encounter that could have a major impact on placement and design of new septic systems. From time to time, we expect to revisit this important topic in coming issues. □

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System Maintenance, Inspection and Installation Tools

By Craig Mandli

EXCAVATION EQUIPMENT



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R-Series E85 excavators from Bobcat offer a design geared toward increasing operator productivity and comfort, as well as machine uptime protection. Operators will benefit from the performance of the nondiesel particulate filter, turbo-

charged engine with increased horsepower, and an optimized integrated rear counterweight design that enhances the machine's stability. An optional automatic heating and air conditioning system provides complete control over the cab climate. Strengthened hinges and latches and more ridged, aligned excavator panels reduce vibration in the cab, making for a more enjoyable workday. Along with having the largest cab openings in the industry, there is increased floor space and additional glass surface area, which includes an improved top window and narrower side pillars for increased visibility. 800-743-4340; www.bobcat.com.



Ditch Witch HT275

The HT275 heavy-duty trencher from Ditch Witch has a Cummins 275 hp T4 engine and a hydrostatic trencher-chain drive with a variable displacement motor,

allowing operators to match chain speeds to soil conditions. The trencher can do installations up to 10 feet deep and 26 inches wide, and it has four hydraulic quick-disconnect blocks that reduce the time it takes to change attachments. The suspension mounts to the center of each track frame, providing the ability to float each track independently, taking stress off the main frame. 800-654-6481; www.ditchwitch.com.

Hitachi EX1200-7

The EX1200-7 excavator from Hitachi has a fuel-efficient Cummins Environmental Protection Agency Final Tier 4 engine with diesel exhaust fluid. For nonregulated countries, a Cummins engine featuring fuel-calibration optimization settings helps contribute to improved efficiency. Additionally, when the machine is in neutral, auto-idle reduces engine speed to save on fuel consumption. It also features a 4.5% increase in bucket capacity with a 9.2-cubic-yard capacity. Equipped with optimized swing control, the new machine also has an improved hydraulic system with a flow regeneration valve to reduce power requirements from the hydraulic system and engine, lowering fuel consumption and improving pump life. 866-973-0394; www.hitachiconstruction.com.



Hyundai Construction Equipment Americas R35Z-9A

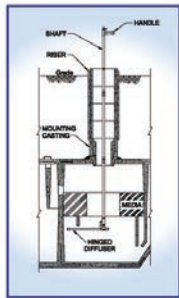
The 3.5-ton class R35Z-9A zero-tail-swing compact excavator from Hyundai Construction Equipment Americas includes a Werk-Brau-compatible thumb bracket, a diverter valve for easy switching between a thumb or attachment, proportional control levers with two-way piping, pin-grabber-style dual-locking quick coupler and Q/C piping, enhanced bucket design with lifting-eye and two-piece tooth design for easy replacement, an increased curve profile on the dozer blade for better grade and cutting ability, an easily replaceable cutting edge for the dozer blade, a wider-opening engine compartment and a durable LED work light on the boom for improved job site illumination. An optional feature is a four-way angle dozer blade. It has a boom swing function that can swing 75 degrees to the left and 50 degrees to the right for efficient work in congested areas. 877-509-2254; www.hceamericas.com.



HAND/POWER TOOLS

Crust Busters agitator

The hand-held power agitator from **Crust Busters** has an 80-inch shaft and two- or three-blade propeller designed to mix a 1,000-gallon septic tank in five minutes. Options include 2-, 4-, 6- and 9-foot extensions and a short three-blade shaft that adapts to the two-blade unit. 763-878-2296; www.crustbusters.com.



Jet Inc. BAT Media Cleaning Tool

The **BAT Media Cleaning Tool** from **Jet Inc.** allows efficient compressed air delivery below the effluent surface while service technicians remain above grade. The original swivel design can be used with readily available air pumps, vacuum trucks or the Jet Catalog compressor. Proper service removes accumulated solids with coarse bubbles, without a washing wand or harsh chemicals. The biologically treated solids then settle in the aeration chamber to reveal more BAT Media surface area for a new biological colony to form. 800-321-6960; www.jetincorp.com.

Milwaukee Tool PLUS-LOK SDS-Plus Extensions

PLUS-LOK SDS-Plus Extensions from **Milwaukee Tool** can be used for extended reach and deep-hole drilling and are universal with all SDS-Plus rotary hammers and accessories, including drill bits, chisels, core bits and rebar cutters. The extensions easily lock into the bit for a tool-free connection, providing the reach necessary to drill the hole in the desired location without the need for long drill bits. Each extension also outlasts several drill bits and is built to withstand aggressive applications such as side-loading or drilling through rebar in concrete. 800-729-3878; www.milwaukeetool.com.



T&T Tools Mighty Probe

The **Mighty Probe** from **T&T Tools** has a 3/8-inch hex rod (approximately 20% stiffer than a round rod) or a 7/16-inch hex rod (approximately twice as stiff as the standard round rod). Stiffer hex rods bend less to make the probe easier to push into the ground, especially when probing at deeper depths. Lengths are available from 36 to 78 inches in 6-inch increments. When the probe is combined with a slide adapter, an integrated mini slide-hammer probe is created, allowing the technician to pound through difficult spots. 800-521-6893; www.mightyprobe.com.



LEVEL MEASUREMENT/CONTROL

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JETTER

Easy Kleen Pressure Systems Groundhog Jetter

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PRESSURE WASHER

HotJet USA HotJet II

The HotJet II sewer and drain-line jetter from HotJet USA is a dual-purpose machine that cleans drains and serves as a high-powered, hot-water pressure washer. It can be used to clean drains up to 300 feet long and 12 inches in diameter. It has a 35 hp Vanguard engine by Toyota, delivering 10 gpm at 4,000 psi using hot or cold water, and is mounted on a diamond plate tandem-axle trailer and powder-coated for durability. 800-624-8186; www.hotjetusa.com.



PUMPS

Ashland Pump effluent pumps

Heavy-duty effluent pumps from Ashland Pump are available in multiple horsepower sizes for various performance requirements, with efficient permanent split-capacitor motors. The oil-filled pumps have an upper and lower ball bearing design and handle up to 3/4-inch solids. They are made of cast iron, with cast iron impellers and equipped with a piggyback switch (20-foot standard cord) or in manual configurations. They are offered in 3/10, 2/5, 1/2, 3/4, 1 and 1 1/2 hp models. 855-281-6830; www.ashlandpump.com.



Flygt - a Xylem Brand Concertor



The Concertor smart, interconnected wastewater-pumping system from Flygt - a Xylem Brand senses the operating conditions of its environment, adapts its performance in real time and provides feedback to pumping station operators. It offers energy savings of up to 70% compared to a conventional pumping system; it also reduces inventory by up to 80% due to flexible performance. Its compact design reduces cabinet size by up to 50%. It offers a wide performance field to choose the right operating point, simplifying fine-tuning. 855-995-4261; www.xylem.com.

Gorman-Rupp SF Series

SF Series submersible solids-handling pumps from Gorman-Rupp use single-vane impeller designs requiring lower horsepower with increased flow and head. The line of pumps is available on more than 24 models in 3-, 4-, 6- and 8-inch flanged discharge sizes and power ranging from 3 to 75 hp. These combinations will provide flows up to 3,400 gpm and heads to 170 feet. 419-755-1011; www.grpumps.com.



HCP Pumps of America GF Series

GF Series grinder pumps from HCP Pumps of America come in a 1.25- and 2-inch discharge and ranges from 1 to 10 hp. Their radial cutters have four blades instead of two. The internal-capacitor-motor design provides higher torque, and all single-phase grinder models are equipped with centrifugal switches. Standard accessories include epoxy-resin-sealed and water-resistant cable base, auto-cut thermal motor protector and triple-seal design. 251-943-8080; www.hcppumpsamerica.com.

Orenco Systems Biotube ProPak

Biotube ProPak pump packages from Orenco Systems are complete and ready to install. They are used for filtering and pumping effluent from single- or dual-compartment septic tanks to gravity or pressurized discharge points. Pump vault technology eliminates the need for a separate dosing tank. Packages include a Biotube filter cartridge, which filters up to two-thirds of solids, so only liquid from the tank's clear zone is pumped. Filters are easy to remove and clean without pulling the pump vault. All components are designed to be quickly installed and easily maintained. The PF Series high-head effluent pump is field serviceable and field repairable, and pump controls are designed for specific packages. Multiple models are available. ProPak Select software is designed to provide fast, error-free hydraulic calculations and generate system curves, according to the maker. 800-348-9843; www.orenco.com.



Polylok PL-CPE5A

The PL-CPE5A from Polylok is a submersible 1/2 hp, 115-volt, single-phase effluent pump with a 2-inch NPT vertical discharge. It has a maximum head of 48 feet and a maximum flow of 64 gpm. It is designed with a 3,450 rpm, oil-filled, permanent split-capacitor motor and has an amp rating of 8.5 for 115 volts, cast iron housing and volute with a cast iron vortex impeller that passes 3/4-inch-diameter solids. The stainless steel shaft is supported by two single-row, oil-lubricated ball bearings. The shaft seal is an inboard design with a secondary exclusion V seal. Construction materials are carbon for the rotating face and ceramic for the stationary face. All elastomers are Buna-N, and the hardware is 300 Series stainless steel. It has a 20-foot UL/CSA-listed power cable suitable for submersible service and fitted with a three-prong plug. It is supplied with an integrated clip on its piggyback mechanical float switch for automatic operation. 888-765-9565; www.polylok.com.



Vertiflo Pump Series 800

The Series 800 immersion sump pump from Vertiflo Pump can be used for sump drainage, flood control and process drainage to meet U.S. EPA and Occupational Safety and Health Administration requirements. It offers heads to 230 feet, temperatures to 350 degrees F, pit depths to 26 feet and up to 3,000 gpm. It has a semiopen impeller, external adjustment and a standard NEMA C face motor. It is available in cast iron, 316 stainless steel fitted, all 316 stainless steel, alloy 20, Hastelloy or CD4MCu construction. 513-530-0888; www.vertiflopump.com.



SLUDGE SAMPLING EQUIPMENT

Sim/Tech Filter TruCore

The TruCore from Sim/Tech Filter is a large-diameter, accurate, user-friendly sludge sampler designed for use in the thicker sludge common to septic tanks. It allows samples to be taken quickly without creating excessive turbulence, as there are no restrictions caused by valves, stoppers or flaps. With a 1 3/8-inch I.D., the capacity per foot is almost 10 ounces. The straight-through design allows the sample to be effortlessly returned to the tank. The unit is made of a polycarbonate sampling tube (marked every foot) and PVC fittings. It comes as a single-piece, 8-foot unit or as two 4-foot units that slip together. Custom sizes and configurations are also available. A simple and customizable extension kit is available for deeply buried tanks. 888-999-3290; www.simtechfilter.com. □



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PRODUCT NEWS

PRODUCT SPOTLIGHT

Norweco Singulair R3 system allows nonpotable reuse for treated water

By Jared Raney

Water conservation, beneficial reuse — frequently heard buzzwords in the wastewater industry today — are becoming more important due to not only droughts and water shortages, but also a lack of economical small-scale treatment options.

Norweco's Singulair R3 residential treatment system provides simple treatment in a small footprint for domestic water and residential applications and ecologically sensitive areas. In short, the unit gives homeowners a new level of water conservation, as the system's high-quality effluent can be utilized in nonpotable reuse applications.

"The Singulair R3 system reduces water consumption, reuses treated effluent, and recycles water for indoor or outdoor use to conserve and recharge our resources," says Annette Simon, sales and marketing coordinator for Norweco. "The treatment system — an extended aeration process with nonmechanical flow equalization, pretreatment of the influent, attached growth filtration and disinfection of the final effluent — provides primary, secondary and tertiary treatment of wastewater flow with polishing and ultraviolet disinfection prior to discharge."



Using a five-stage treatment system, wastewater flows through pretreatment, aeration and final clarification chambers, a hydrokinetic biofilm reactor and an AT 1500 ultraviolet disinfection system. Domestic wastewater is preconditioned and flow-equalized in the pretreatment chamber. The outlet is equipped with a discharge tee extending vertically so only preconditioned, equalized flow is displaced to extended aeration, providing in excess of 24-hour retention of daily flow.

Performance exceeds the effluent requirements of NSF/ANSI Standards 40, 245 and 350, according to Simon. She explains that during the NSF/ANSI Standard 350 test, the Singulair R3 system produced effluent results of 5.0 mg/L CBOD, 4.6 mg/L TSS, 2.3 NTU turbidity and 2 MPN/100 mL *E. coli*. "The Singulair R3 system simultaneously met all requirements of NSF/ANSI Standard 245 by reducing total nitrogen by 65% to an average of 14.4 mg/L," she says.

The system is also LEED certified and qualified for green building credits under the National Association of Home Builders' ICC 700 National Green Building Standard.

"It can be used for any applications that require a system certified to NSF/ANSI Standards 40, 245 and 350, and it reduces any footprint. The research and development was a rigorous process conducted by an independent, third-party certification body accredited by the American National Standards Institute to verify the performance of wastewater treatment systems," Simon says. "The system is ideal for applications where water reuse is encouraged to conserve and recharge our water resources."

800-667-9326; www.norweco.com. □



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Advanced Drainage Systems acquires Infiltrator Water Technologies

Advanced Drainage Systems announced the acquisition of Infiltrator Water Technologies for approximately \$1.08 billion from an affiliate of the Ontario Teachers' Pension Plan and other stockholders. Infiltrator has been a long-standing supplier and customer of ADS for more than 15 years. In a press release, Scott Barbour, ADS president and CEO, says, "This acquisition will allow us to offer an enhanced suite of water management solutions to a broader set of customers and expand our addressable opportunity in the attractive and related onsite septic business."

Liberty Pumps names new president

Liberty Pumps named Robyn Brookhart as president. She replaces Charlie Cook who will remain CEO and chairman. She has been with the company for 22 years and has served in a variety of positions including sales and marketing, customer service and manufacturing. Most recently she served as executive vice president and chief operating officer, a position she will retain.



Robyn Brookhart

SJE-Rhombus and CSI Controls partner with Contractor Rewards

SJE-Rhombus and CSI Controls are partnering with Contractor Rewards starting Aug. 6. Contractor Rewards is a loyalty program company that partners with brands to reward qualified purchases. It is a free program and open to contractors, plumbers, septic system installers and trade contractors in the U.S. Invoices must be submitted online or via email within 60 days to earn points.

Jackel launches pumps and unveils new logo

Jackel launched its initial offering of sump and sewage pumps and unveiled its new logo and brand image in September. It now offers sump and sewage pumps and pump systems in addition to its existing basin and check valves. The company also announced it has a new branding strategy, revealing a new logo and colors. According to a release, Craig Nowicki, president and CEO, says, "These changes are part of our strategy to present a consistent image across all products and distribution channels."

Full In Partners makes growth investment in ServiceCore

ServiceCore announced that growth equity investor Full In Partners agreed to acquire a significant interest in the company to enable ServiceCore to continue its rapid growth and expansion. ServiceCore empowers more than 350 companies across the liquid waste industry to better manage their routing, scheduling, accounting and invoicing. □

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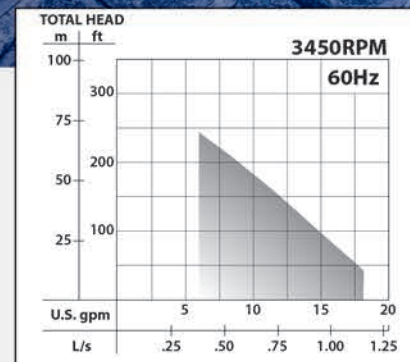
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