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A former Florida state inspector, Keith Wessner, knows how efficiently navigate the onsite wastewater permitting process. The managing partner of Harbor Septic, Melbourne, Florida, is shown on an install location with a Topcon laser level. (Photo by Preston Mack)

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New Eljen Sand Bed Drainfield Helps a Vietnam Veteran In Need Alabama wastewater professionals join forces to salute an aging

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New Eljen Sand Bed Drainfield Helps a Vietnam Veteran in Need

Alabama wastewater professionals join forces to salute an aging U.S. Marine with a donated replacement septic system

ou often hear unfortunate stories about soldiers returning from the war in Vietnam and not being shown the appreciation they deserved for their military service.

Well, members of the onsite industry in Alabama have been doing their part to make up for the slight to veterans so many years ago. Recently a group of installers, environmental health specialists and industry manufacturer Eljen Corp. joined forces to build a replacement septic system for aging Vietnam veteran Samuel Digsby. As they told me, they felt a calling to lend their labor and wastewater expertise to the retiree living in tiny Fyffe in northeast Alabama.

Adrian Casey, the DeKalb County environmental supervisor, was called out to the Digsby home on a report of a failing system, and it didn't take long for him to take on the project as a personal mission.

"I realized he was a veteran and it pulled at my heartstrings. Veterans have done a lot for this country, and I felt a need to find a way to help him," Casey says. He encounters desperate situations with onsite system failures a few times a year. "We can't always help everybody, but we try to help anyone we can. And this was one of those things where, as a good American

citizen, it's your duty to try and make it happen."

"I would definitely do it again in a heartbeat. I believe in supporting our veterans.

It was a lot of work, but it was worth every minute spent and many trips to get it done." Adrian Casey

SITE CHALLENGES

The heartwarming tale began when Casey received a permit application for a system replacement for the Digsby home. A quick walkaround on the property revealed that an engineered solution would be required and that could double the cost of a system with a conventional drainfield.

The failing drainfield, located in a low spot in the backyard, was likely original to the house built in 1960. At .24 acre, the small lot did not meet the 15,000-square-foot (or .26 acre)





Veteran Samuel Digsby of Fyffe, Alabama, and his wife visit with Adrian Casey, the DeKalb County environmental supervisor, after a group of installing professionals donated a new system to the couple. (Photos courtesy of Fred Vengrouskie)

minimum size for a conventional system. And the corner lot is bordered by streets on the front and side, with drainage ditches along both roads, causing further setback issues.

"Our rules allow the setback to be reduced if you use treatment, and the Eljen system is considered treatment. The bed size was much smaller than conventional products, which really saved us a lot of room," Casey explained. By reducing the 15-foot side yard setback, Casey says volunteer engineer Tony Hendon was able to fit a sand bed utilizing 15 donated Eljen B43 GSF modules laid in three rows beside the brick ranch home.

Hendon, who started a part-time onsite design company four years ago after moving to the area, decided to use the existing concrete septic tank because it remained in good shape. However, to reach the sand bed, he



Jim Kneiszel :



rerouted the outlet to go around the tank and to the side yard. He was able to design the system to move effluent using gravity throughout, which reduced cost and simplified maintenance.

"The biggest challenge for this particular system is the smaller footprint," Hendon says. "We experience a lot of tight lots up here because we have Weiss Lake as a popular destination. We have to overcome a lot of obstacles on those small lake lots a lot of times."

Casey and Fred Vengrouskie, of Maple Leaf Environmental Services and a representative for Eljen products, started looking for the machines and manpower to build the system. Vengrouskie turned to Joseph Lee, of Lee Boys Construction in Mentone, Alabama, who immediately felt a personal connection to the project. Lee's late father, Wilbur Robert Lee, Jr., was drafted in 1968 and served as a Marine in Vietnam. Whether it's as a volunteer fire chief in his hometown or through his excavation business, Lee says he always wants to help folks out of a tough spot.

START DIGGING

"This really hit home for me. When Fred told me he was struggling for a year, I says, 'Your struggles are over.' Any time I hear that there is something I can do, construction-wise or through the fire department to help a vet, I take care of it."

Lee and his team swung into action May 18, delivering an E50 Bobcat mini-excavator and T650 Bobcat compact track loader to build the sand bed. Joining Lee were his son, Dylan Lee, and helper Robert Walker, as well as Lee's great uncle, Kenneth Wright, owner of Fort Payne Paving, who delivered the sand in his dump truck. Installer and friend Josh Burt, of Josh Burt Construction, also took the day off of work to lend a hand.

Also on hand were a few other area installers who wanted to see an Eljen system go in the ground, Vengrouskie explained. This was the first time Lee installed the Eljen modules, but he put in a second Eljen system the following day. "I loved it. It was better than working with rock and pipe any day," he says.

After a day of digging, Lee says he was honored when Digsby came out to meet the crew.

"I thought he was a fine, outstanding gentleman to come out and meet us and he appreciated what we were doing for him," Lee recalled. The experience reinforced Lee's commitment to helping others where he can. "We're always doing something like this, but most times nobody knows about it and that's the way we'd like to keep it. This is what keeps the world turning." Joseph Lee (center) looks on as Josh Burt and Dylan Lee, left, and Robert Walker work on the Eljen GSF system.

Walker and Burt rake sand during the installation, while Diane Chastine, a Cherokee County senior environmentalist, observes the work.



"This really hit home for me. ...

Any time I hear that there is something I can do, construction-wise or through the fire department to help a vet, I take care of it." Joseph Lee

Vengrouskie says it was gratifying to see so many people in the onsite industry come together to help a veteran in need. From the Eljen donation to state soil scientists Rick Smith and Boyd Rogers, to Hendon's design work and the installing crew wrapping up the project, Vengrouskie says it was a rewarding experience.

And Casey was thankful that so many pitched in to finish the install project at no cost to the Digsbys.

"I would definitely do it again in a heartbeat. I believe in supporting our veterans," Casey says. "It was a lot of work, but it was worth every minute spent and many trips to get it done."

TIP OF THE HAT

Installers have been extremely busy this year and throughout the COVID-19 pandemic in 2020. It's heartening to see a group of our industry professionals drop everything to give of their time and talents to a veteran in need. Their efforts raise the level of respect the public has for wastewater professionals and reminds us how fortunate we are to work with a great group of people. I'm happy to share this good-news story and encourage installers from across North America to let me know about your own charitable efforts. Thanks to all who helped make a difference for the Digsbys.



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INSTALLER PROFILE

SLICING THROUGH THE RED TAPE

Knowledge of soils and local regulations helps Harbor Septic streamline installation work in environmentally sensitive areas on Florida's Atlantic coast

KUBOT/

By Ted J. Rulseh

ome installation businesses compete on quality. Some compete on price. Harbor Septic competes on its ability to expedite system permits in a coastal Florida county where the environment is sensitive and regulations are strict.

Managing partner Keith Wessner uses experience he gained as an onsite inspector with the state Department of Health to shave weeks off the time normally required for system permitting. That's a blessing for homebuilders in Brevard County, which is seeing a boom in housing construction.

"I handle the permit applications," Wessner says. "A builder will just

send me a survey, a floor plan and an address and say go. I'll do the soils, get all the paperwork together, and send it in. All the county health department has to do is review it, write the permit and sign off on it. It saves the builders two to three weeks, if not more. A lot of permits get issued without even any back and forth because they are done right from the start."

Although just three years old, Harbor Septic, based in Melbourne, last year installed about 225 onsite systems, a number of them using aerobic treatment units to accommodate homes on beachfront lots and in a watershed where regulators are clamping down on nitrogen discharges. Installers Adam Neave, left, and P.J. Murphy, center, help Keith Wessner set an Infiltrator Water Technologies tank for a new system in Palm Bay, Florida. A Kubota excavator was used to dig the hole and set the tank. (Photos by Preston Mack)

UNCONVENTIONAL PATH

Wessner took an unusual route into the onsite business. He grew up in Pennsylvania, earned a bachelor's degree in biology from Penn State, and went to work for the Department of Defense doing neurotrauma research to help with treatment of soldiers injured in the Afghanistan and Iraq wars after 9/11.

After that he worked for eight years with a pharmaceutical company, mostly involved in neuroscience drug discovery. After a merger involving the company, he took a voluntary layoff and in 2012 used his severance to move to Florida, where most of his family was living: "We moved so our kids could grow up with their grandparents, cousins, aunts and uncles."

Looking for a job in the environmental field, he landed a position as a state health department inspector in the Brevard County office. There he learned the regulatory side of the onsite business, including site and soil profile evaluation. "It turned out to be really beneficial," he says. "I have a huge advantage because of that. I used to do inspections and write permits, and now I'm on the other side. I've already installed systems that I permitted when I was with the health department."

He had dreamed for years of starting his own business, and suddenly the onsite sector made sense. He negotiated to buy the business of a local contractor who was retiring; when the deal fell through he used the money he had set aside to buy equipment and start from scratch.

"We're trying to expand the business to keep up with demand, while keeping a high-quality product," Wessner says. "We pride ourselves on going above and beyond the septic code. We focus on new construction installations, as we are in a rapidly expanding market, but we also do repair installations. We're certified with numerous ATU manufacturers for installation and for maintenance contracts."



Harbor Septic

Owner:	Keith Wessner
Founded:	2017
Employees:	6
Service area:	40-mile radius, mainly Brevard County
Specialties:	Onsite system installation, maintenance, repair, inspection, consulting, permitting, site evaluation
Associations:	Florida Onsite Wastewater Association
Website:	www.harborseptic.com

Veave installs a riser on a new Infiltrator 1050 tank.

<< Adam Neave hauls sand across a work site using a Kubota compact track loader.

The workhorse equipment includes a 2012 JCB 3CX backhoe loader, 2019 and 2014 Kubota SVL75-2 track loaders, and a 2020 Kubota KX057-4 compact excavator. The truck fleet consists of a 2019 Peterbilt 348 dump truck with a HilBilt Mongoose dumpbody, 2011 and 2020 Ram flatbeds, a 2008 Ford F-450 pickup, and a 2014 Ram 1500 Ecodiesel pickup. A dump trailer (Big Tex Trailers), two bumper pull trailers (PJ Trailers and Big Tex) and a gooseneck trailer (PJ Trailers) help move equipment and material.

FAST START

In its early days, Harbor Septic bought a vacuum truck and used it full-time to pump septic tanks. Those jobs led to a goodly number of system repairs and drainfield replacements. Today the truck, a 1988 Peterbilt with a 3,150-gallon Cusco steel tank and Fruitland pump, is used mainly to pump tanks for systems the company is working on.

The focus is on new construction to meet demand from homebuilders who like the expedited permits, and on replacing drainfields, some of them under a special program in the Indian River Lagoon watershed.

"It is a pretty sensitive area," Wessner says. "Two rivers converge there, the larger being the Indian River. Our county is long and skinny; so we border probably 70 miles of the river. It's all low lying. A lot of streams and canal networks eventually drain into the river. There is quite a bit of nutrient loading, so there are algal blooms and poor water quality resulting from a combination of things. Septic gets blamed for everything because it's an easy target."

To help deal with the problem, Brevard County imposed a 0.5% sales tax to help fund a wide variety of projects to clean up the lagoon. Part of the money helps connect homes to sewers,

BALANCING MARKETING AND WORKLOAD

Between a building boom and special government-funded system replacement in the Indian River Lagoon watershed, Harbor Septic has ample room to grow.

KUBOTA

One challenge is finding quality team members. At present, besides managing partner Keith Wessner, the team consists of:

- 1. Robert Wessner, mechanic, electrician, CDL transport driver, ATU maintenance
 - 2. Jackson Delao, lead installation supervisor
 - 3. Lawrence Harris, dump truck driver
 - 4. Pat Brooks, administrator
 - 5. Richard Wiles, project manager

The company gets regular business from homebuilders and gets calls that come from internet searches, a result of investing in search engine optimization. But Wessner is wary of too much promotion. "You do that and all of a sudden you have 50 requests for estimates on new systems," he says. "People don't want to wait six months for a system. They want it next week. We're trying to expand our team to keep up with demand."

Harbor Septic places ads on Indeed and Craigslist. People with experience in onsite treatment are rare, so Wessner looks for prospects who can operate equipment and can be trained on septic systems. "A lot of the good operators work for bigger construction companies, and it's hard to get them away to work for a small business." He's looking to expand the benefit package and added a 401(k) plan in January.

New team members work under Wessner's license. Delao, who has been with the company for two years, handles the bulk of the training in the field. In its first three years, the company has expanded by about 1.75 times per year. Wessner doesn't expect to sustain that pace, but more growth seems assured: "There is tons of work out there." and another part provides grants of up to \$18,000 to help homeowners in high-priority areas upgrade to onsite systems with NSF 245 certified ATUs to reduce nitrogen discharges.

CURTAILING NITROGEN

The first phase of the program covers about 1,800 addresses, most of them on the Indian River or a tributary, usually with poor soil for septic systems. The county sent flyers to the property owners alerting them to the program, and Harbor Septic has received calls as a result.

For ATUs on those projects and on many new construction jobs, Wessner chooses Delta ECO-POD systems (Infiltrator Water Technologies) for ease of installation. He also uses Fuji Clean USA systems for their compact size and high nitrogen removal. "They have a lift mechanism that uses air from the blower to recycle water from the third chamber back to the first chamber, so it gets multiple rounds of treatment." Wessner says.

That's valuable on Indian River projects, where the county code specifies 65% nitrogen removal from tank effluent. The state code generally requires 24 inches of soil between the drainfield and the water table and credits 15% nitrogen removal in that soil.

"When you do a repair, depending on the year the home was built, you only need a 6- or 12-inch separation from the water table, but you don't get that 15% credit for nitrogen reduction in the sand," Wessner observes. "So you need 65% reduction from the ATU. Fuji Clean USA systems deliver about 75% reduction out of the tank."

The \$18,000 grant usually covers Harbor Septic's work; some homeowners need to pay extra for an electrician to extend power to the ATU, or for sod to restore landscaping.

Wessner sees significant growth potential in Indian River projects; so far the response to the county's solicitation has been sparse. Harbor Septic has picked up some projects as neighbors see teams at work and stop by to ask questions. More aggressive marketing in the area has been largely on hold.

"We are so overwhelmed with new construction," Wessner says. "But it's definitely in our plans to direct market to those people, try and educate them a little more, and let them know exactly what they're eligible for."

CHALLENGING SOILS

Throughout the company's territory, the water table lies generally 12 to 18 inches down. "Most everything in Brevard County is a mound," says "We're trying to expand the business to keep up with demand, while keeping a high-quality product. We pride ourselves on going above and beyond the septic code." Keith Wessner





Wessner. "I would say maybe one or two out of 10 is a standard system." The company uses plastic septic tanks and low-profile drainfield chamber, both from Infiltrator Water Technologies.

In the Indian River area and elsewhere, Harbor Septic more often than not encounters clay and hardpan soil layers that make for labor-intensive installations. "On most of our drainfields, we're digging out six to eight feet to get through those layers," Wessner says. "Then we're trucking in, on average, eight or nine tri-axle loads of septic sand.

"Most everything in Brevard County is a mound. I would say maybe one or two out of 10 is a standard system." Keith Wessner

"If you don't do that, you'll have premature failures. The systems will last two years and then they'll back up because someone left a clay layer that's seven feet down. They've made a bathtub out of the drainfield. We don't skimp on the sand. We make sure it's dug out really well."

Other challenges involve waterfront areas. The city of Melbourne is on the mainland, but there is extensive development on barrier islands on the Atlantic coast, including Melbourne Beach and Satellite Beach. Parts of those islands are on septic systems. Wessner notes, "Brevard County





Utilizing a Spectra Precision laser, P.J. Murphy (left) and Keith Wessner level sand cover over a drainfield system.

🗸 Adam Neave places

Natural Resources about four years ago enacted an ordinance that requires any new construction on the barrier islands to have an NSF 245 ATU."

Some properties require performance-based treatment systems, which include ATUs discharging to drip irrigation. These must be designed by an engineer, and most use Fuji Clean USA ATUs. They come into play mainly on lots with short setbacks from the water. The code generally requires a 75-foot setback on new construction; a PBTS can reduce that to 65 or 50 feet. It can also enable a large home to be built on a lot otherwise too small to accommodate the flow to a conventional system.



and put our chamber drainfield in. If the tank is good enough to be recertified, we will reuse it. Sometimes we replace the tank and drainfield."

Harbor Septic has had a successful launch, and the future looks bright. "It's a good market," says Wessner. "We sort of timed it right for starting the business. It has worked out so far."

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Upstate New York Lake-Area Residents Push for Broader Septic Inspections

By David Steinkraus

Residents around Lake George in upstate New York have expressed concerns for several years about algae and pollution of the lake. Some area towns enacted inspection programs for onsite wastewater systems, but now calls are coming for more and broader action.

Officials in Warren County, on the western shore of the lake, are debating a law to require inspection of onsite systems near area lakes and two rivers. System repairs or replacements would be required for failing systems.

A draft law has been in development for about two years by a task force of county officials including Claudia Braymer, a county supervisor and environmental attorney, reported *The Sun* of Elizabethtown, New York. Braymer said having a county law would spur a statewide inspection law. Other local officials said the state is already working on the issue and a county law may discourage the state from acting. One town official said the county is not set up to enforce such a law, which would shift the oversight burden to towns.

A 2018 report about Lake George from the state Department of Environmental Conservation called for a mandatory inspection program to begin within three years. At the end of 2020, a group of public and elected officials and environmental organizations called on then-Gov. Andrew Cuomo to create a statewide inspection law for near-shore onsite systems.

The Adirondack Council, a nonprofit set up to help protect the wild character of Adirondack Park, recently released a position paper urging all local governments to require inspections. To fight water contamination, the council proposes education, regulation and financial help for homeowners who need to repair or replace failing systems.

The Lake George Park Commission created a committee to study the effects of septic systems on the lake's water quality. "With Lake George experiencing its first-ever harmful algae bloom in November of 2020, it is incumbent on the commission and partners to determine root causes of this event, and to implement measures to help prevent such events from occurring in the future," says the committee's mission statement, according to The Post-Star of Glens Falls.

The commission is an independent state agency set up to protect the lake and its drainage basin.

A couple of years ago, the nonprofit The FUND for Lake George did its own study of onsite systems. Using records of only one town, it located about 400 systems. Two-thirds of those were at or past the typical life expectancy of a system, or were of an unknown age. About half of the tanks found had not been pumped recently, or there was no record of pumping, and about 20% of systems were undersized.

Wyoming

A proposed revision of Teton County's regulations would allow onsite systems to be located closer to rivers. Present rules don't allow wastewater treatment components within 150 feet. Ted Van Holland, of the county's Engineering Department, proposed reducing that to 50 feet, reported the *Jackson Hole News & Guide*.

In four years, he said, only about a dozen applications out of 500 have stalled because of the 150-foot limit. In some cases, he said, the rule has discouraged people from upgrading systems.

Van Holland has been revising the county wastewater rules and said the 50-foot restriction would match the limit for other surface waters. "The dilution that occurs from a septic system into one of these major rivers is, for all practical purposes, infinite," he said.

He also suggested developing broader water protection standards for the county that would include pollution sources such as fertilizer.

Dan Heilig, senior conservation advocate for the Wyoming Outdoor Council, told the newspaper that the proposed rules would be a backward step without a basis in science.

Indiana

The Gibson County Board of Health suggested hiring a building inspector to enforce the county's onsite system rules. Diane Hornby, nurse administrator for the health department, told the county council that her department receives many complaints about onsite systems, reported *The Daily Clarion* of Princeton, Indiana. Twenty years ago there was no subdivision ordinance, but now enforcement is required, and her department doesn't have authority to do that, she said.

Minnesota

St. Louis County has launched an online permit system that allows contractors and homeowners to file applications, upload related documents and pay necessary fees. In 2020 the county issued 722 permits for onsite system repairs or replacements, and county staff performed 847 inspections for property transfers, land use or short-term rentals, reported the *Duluth News Tribune*. St. Louis County stretches north from Duluth to the Canadian border. The county's system can be accessed through stlouiscountymn.gov/septic.

Montana

People who live near water bodies in Lake and Flathead counties may be reimbursed up to \$200 to help cover the cost of maintaining onsite systems. Money can be used for system pumping and inspections, said the Montana Association of Conservation Districts.

The association received a \$70,000 grant from the state Department of Environmental Quality, reported the *Daily Inter Lake of Kalispell*. Of that total, \$30,000 is for onsite system maintenance, and \$40,000 is for general public education about onsite system issues.

Payments to property owners are for 50% of pumping and inspection costs, up to the \$200 maximum. Eligible systems must have been pumped three or more years ago and must be located with 500 feet of a lake, river or stream.

Missouri

The James River Basin Partnership expanded its Fresh Flush rebate program this year in some areas, and the overwhelming response led the organization to suspend the expanded program until it can clear the backlog. A note on the organization's website says it will reassess after 90 days.

For several years the partnership has helped property owners with pumping costs by offering \$50 rebates. This year, assistance increased to \$150 for people living in the upper James River watershed, reported KY3 News in Springfield. The river basin covers parts of seven counties in southwestern Missouri.

All residents of the river basin may still receive \$50 rebates. To receive a rebate, a property owner must apply for it before having a tank pumped.

"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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Innovation Will Make Decentralized Wastewater Treatment a Top Choice for Homeowners

When septic systems are built right and maintained properly, there should be no need to look to the big pipe, says a Washington On-Site Sewage Association member

Compiled by Betty Dageforde

In 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 Washington On-Site Sewage Association.



Justin Wells

president and co-owner

Business: Baker Septic, Ferndale, and Dano's Septic, Bremerton, Washington; Best Septic, Eugene, Oregon

Age: 35

Services we offer: Pumping, installs, inspections, maintenance, repairs and portable sanitation

Years in the industry: 35 — well, sort of. My grandfather started a septic company the year I was born. I grew up third generation in the industry. My grandfather sold the company to my now-partners, and I bought back my portion to keep it in the family. We then started to expand and now have three companies in two states.

Association involvement:

I have been teaching classes with the Washington On-Site Sewage Association for three years and have been a member since 2008.

Benefits of belonging to the association:

I have met some amazing people with some brilliant ideas. This has taught me tricks, made partnerships and allowed me to see things outside my bubble. I have learned many ways to improve my practices while also helping others do the same. Additionally, knowing what is happening and having a voice with legislation and regulations has made a huge impact in my organizations.

Biggest issue facing our association right now:

Lack of designers below the age of 55. Becoming a designer requires an internship or years in school. Most who spend that time in school do not know about the benefits of specializing in the onsite industry. And most who are in the industry do not have the time or chance to intern for the length of time currently required.

Our crew includes:

My companies are co-owned by Tom Strain, Julie Strain and Phil Merwin. Our septic managers include Jake Shoemaker, Jon O'Connell and Adam Wahlund. Tony Schnackenburg is our fleet, yard and portable restroom manager. Lisa Hanley is marketing manager. Emma Lindemann, Tarrin Smith, Jeanette Mix and Serena Kelly manage our offices. Jean Bates and Tricia Plymale manage our back end as well as installations. In total we have approximately 70 amazing employees and we could not do it without such a fantastic team.

Typical day on the job:

I check in on my management team and work with each of them to assist with any issues. I work through the numbers in our books. I travel biweekly to each company and spend time with them. I try to be in on every review and interview personally. I work with my teams one on one as much as possible to continue their training and education on the job. I take calls from employees as they have issues troubleshooting or quoting strange situations.

The job I'll never forget:

I started running a dye test on an old gravity septic system using green dye. About 10 minutes later the neighbor came over and asked me what I was doing. I explained I was inspecting the system. They said they were wondering because the water coming out of their garden hose was bright green. Needless to say, that system was replaced.

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SNAPSHOT

Justin Wells surprised his team with a new 2019 John Deere D50. (Photos courtesy of Justin Wells)

My favorite piece of equipment:

Tablets and phones! They allow me to effectively communicate with my team. They take video and pictures that really do say 1,000 words. They have programs that allow us to use less paper and stay organized.

Most challenging site I've worked on:

Many years ago a restaurant called for a leaking pipe cleanup under the restaurant. It was an old building in a downtown area and there was no access to get under the building. I learned that this sink had a leaking pipe 11 years prior and the restaurant owner decided to not fix it. So I was facing 11 years of leaking sink grease under a building with no access. I had to cut holes in the floor to access the different

areas under the floor. There was 12 to 18 inches of molding grease covering a dirt floor in about a 4,000-square-foot area. The space was about 28 inches tall and in some places as shallow as 8 inches. To add to it all, the only place to park a truck was on the main road so all work had to happen after midnight and wrap up by 5 a.m. per the city. I spent three nights on my belly in that 11-year-old molding grease. After about 3 hours it became clear that the most effective way to vacuum it up was to lay on my belly and use my arms in a swimming motion to pull it to the end of the vacuum hose and push it in by hand. Three long nights later the area was cleaned and sanitized.

Oops, I wish I could take this one back:

I took a pumping job for a large system serving a trailer park. They called me because no one else would accept the job. It was a 3.5-hour drive to get to the site. The tank was a massive 25,000 gallons. The only access was 6 feet of riser over one section of the tank. I brought two 4,000-gallon trucks with a game plan to pump and backflush my way through it. When I arrived and put my hose in, it bounced off of the scum layer because it was so hard and full of trash. We stayed at a hotel and spent four days pumping and attempting to break up the solid matter. At day four it was clear we were not going to be able to remove it all from the tank. I was unable to charge the customer and lost all that labor and time. I will not do commercial or large systems sight unseen again. Lesson learned.

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

I had someone ask me if the slow toilet could be because the septic tank had septic rats — "You know, like sewer systems."

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

I would make it easier for onsite professionals to get a license to install floats and pumps.



Best piece of small business advice I've heard:

Being right doesn't mean you win.

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

Be a cook. I love to cook and enjoy the fast-paced restaurant environment.

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

There's a hope I have for the industry, and I sometimes bring this up in my educational classes as a challenge. It breaks my heart when I hear, "I wish I was on sewer," or, "I'm not going to buy this house because it's on septic." I want us to look at the end user more with our innovations. We have innovated our way out of so many issues, but it typically involves regulations. We have made unbuildable sites safe to build on and have an onsite system. But people still are told the do's and don'ts of septic — don't do your laundry all on Saturday, don't flush wipes, don't have a garbage disposal, don't use those products — don't, don't, don't. "Live your life around your toilet," is what they hear. So my hope is that we can start to innovate and regulate in a way that people can live their life the way someone not on a septic system can and not pay the price for doing so. I believe if we try, we can achieve this.

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



Close Call

Tiny Upstate New York lake lot system wraps around the house and has treatment components confined under a deck overlooking the water

By David Steinkraus

he story is familiar. A lake house built in the 1940s needed a new onsite system. But the situation that technicians from Adirondack Septic Tank faced was a challenge.

With some creative design and installation, the house now has a new onsite system, but it took care to make everything fit. The entire system is under a deck, the only space available on a lot measuring about 128 feet by 56 feet, mostly covered by the house, and on the shore of Great Sacandaga Lake in New York state's Adirondack Park.

System

Wastewater leaves the east side of the house in a 4-inch Schedule 40 PVC pipe that runs about 25 feet and makes two 45-degree bends to line up with the inlet of a Norweco Singulair Green unit. There was about 4 feet of space between the east house wall and the property boundary, and this is where the influent line had to fit.

System Profile

Location:	Broadalbin, New York
Facility served:	Private home
Designer:	John King, J.M. King's Consulting Inc.
Installer:	Adirondack Septic Tank
Type of system:	Norweco Singulair Green
	discharging to Presby Enviro-Septic
Site conditions:	Loam
Hydraulic capacity:	330 gpd

From the Norweco tank, water flows about 3 feet to a Norweco AT 1500 UV unit. No pumping is used in the system. The grades and pitches worked out so flow through the entire system could be done with gravity, says Jeff Zielinski, project manager for Adirondack Septic.

Another run of 4-inch pipe takes water to a sand bed for the Presby Enviro-Septic dispersal system. Distance from UV treatment to the Presby bed distribution box was only 3 feet, but because of the positions of holes, water flows about 6 feet.

The box is a typical five-hole precast box, in this case from Miller's Ready Mix & Block, with TUF-TITE speed levelers on the two outlet holes used for the Presby bed.

When the deck was rebuilt at the home on Great Sacandaga Lake, the builder installed hatches so technicians can service the Singulair Green tank below the deck. (Photos courtesy Adirondack Septic Tank)

Bill Gifford, left, and Dan Zielinski, right, build part of the Redi-Rock wall at the house on Great Sacandaga Lake. In the background is the top of the Norweco Singulair treatment tank. The wall was built in sections as the system went in beneath a deck on the home.





The new Singulair treatment tank is lowered into its hole at the house on Great Sacandaga Lake by Zielinski, left, and Gifford, right. Because the porch roof was not removed, operators had to be particularly careful when swinging the Kubota mini-excavator.

Enivro-Septic pipes were laid on a minimum 12 inches of sand, with more depth where the grade sloped, and there is about another 12 inches of sand on top. In total the sand bed was about 3 feet thick.

There are two sections of Presby pipe, each 60 feet in total, but they wind back and forth in three 20-foot runs to remain within the confines of the bed.

Equipment

To do the job, the Adirondack team used a Kubota KX121-3 mini-excavator with a hydraulic thumb and six-way blade, and a Kubota SVL75-2 tracked skid-steer.

A six-wheel 2006 International 8500 dump truck with a box by Godwin Mfg. brought in sand. The small truck was best suited to the 14-foot space between houses that was the only access for equipment and material. To keep everything accurate, the crew used a DeWALT DW073 laser level.

Challenges

The deck, 21-by-38-feet, is on the lake side of the house, and it was removed for the installation and rebuilt later. Over it was a porch roof that was not removed.

Operators had to take care as they worked under the roof. "There were instances when we had only inches to spare," Zielinski says. "It was like a big game of *Operation*.

"Between two runs of the Presby lines, we had to nest in three 4-by-4 pressure-treated vertical posts for deck support," Zielinski says. The builder hired to replace the deck advised on placement of the support posts so reconstruction wouldn't disturb the Presby system, Zielinski says.

"You can't put a shovel in the ground, basically, beyond [Hudson River-Black River Regulating District's] taking line. You certainly can't put a septic over the taking line."

Jeff Zielinski



SYSTEM PROFILE





A new Singulair treatment tank and a Presby Enviro-Septic drainfield are now hidden beneath the sand at this house on Great Sacandaga Lake in upstate New York. The deck is yet to be rebuilt.

The crew from Adirondack Septic Tank — Bill Gifford, behind the post, and Dan Zielinski by the mini-excavator — construct a Redi-Rock wall as they build the new wastewater system. The yellow stake in the foreground marks the end of the property. On this side of the stake, land belongs to the Hudson River Black-River Regulating District.

"There were instances when we had only inches to spare. It was like a big game of *Operation*." Jeff Zielinski

The crew leveled the existing soil and brought in about 22 yards of concrete sand for the Presby system bed. About another 8 yards filled gaps between system components and behind a new concrete block wall built to contain the system.

Installation of the Singulair was staged so house occupants were never without wastewater service. The Singulair was installed first and plumbed to the house. For a few days it acted as a holding tank until technicians remediated the old tank, built the Presby bed on top of it, and connected the Singulair unit to the Presby system.

The retaining wall was built of Redi-Rock. The wall starts on the east side of the house where the influent line exits, runs toward the lake and wraps around the end of the house. Technicians used 63 full blocks and two half blocks. Blocks measure about 18 inches tall, 23 inches deep and 46 inches long, and each weighs 1,100 to 1,400 pounds.

Like the wastewater system, the wall was built in stages. First technicians built the wall along the side of the house, installed the influent line, topped it with 2-inch insulation board, and backfilled. Next they installed the Singulair tank and built half of the front wall while backfilling. Then they built the Presby bed, finished the wall, backfilled around the Presby pipes and added the final loads of sand to match the height of the wall. Behind the wall they installed fabric to prevent seepage.

"There is no green space on the road side of the house," Zielinski says. "There is road and then essentially blacktop to the garage." Material was staged on the driveway and moved through the narrow space on the west side of the home. That also held a buried oil tank, so Zielinski's crew laid standard 1-inch-thick steel road plates over it to prevent damage. Another complication was the property line, which almost touches one corner of the house. Beyond that line, land belongs to the Hudson River-Black River Regulating District. The lake was created in the 1930s to help control flooding downstream in the Hudson River Valley. It is the board that owns the lake and the shore up to a h water Zielinski says

certain point above high water, Zielinski says.

"You can't put a shovel in the ground, basically, beyond their taking line," he adds. "You certainly can't put a septic over the taking line."

Did the previous onsite system cross the line? "It probably did," Zielinski says with a laugh.

Homes began appearing around Great Sacandaga Lake in the 1940s and without much regulation, he says. Many of the old systems were based on metal tanks or old oil tanks, and they discharged through pipes that ended somewhere in the soil.

Normally an installation requires about four days. This one, he says, took all or parts of about 12 days.

"This isn't the first, and it certainly won't be the last of these tight jobs," Zielinski says. His company has a number of systems like this one going in around the lake to remediate systems from the 1940s and to help ensure that upstate New York's treasured park remains clean.



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

6 Wastewater Hazards That Can Compromise a Healthy Onsite System

Design and monitor systems to stop these common pollutants from endangering humans and animal health By Jim Anderson and Dave Gustafson

S ometimes you take for granted that everyone working in the industry knows why our systems are so important to the environment and human health. During the last few months, we have had some questions about what is in wastewater and why it is a problem. This is where we start our basic sewage treatment workshops. We thought it would be helpful to go back to the beginning and discuss pollutants and potential problems. We will follow up these discussions over coming months looking at some specific ways to address the concerns.

Professionally designed, sited and installed conventional onsite sewage treatment systems effectively reduce or eliminate most human health and environmental hazards. This is accomplished through physical, chemical and biological processes in the septic tank, in the biomat and in the unsaturated soil zone beneath operating soil treatment trenches.

Septic tank effluent typically moves into and through soil toward groundwater and final discharge through three zones. The infiltration zone (biomat), unsaturated soil zone (at least three feet are necessary) and a perched saturated zone or slowly permeable horizon. Treatment processes are ongoing in each of these zones and contribute to reducing or eliminating pollutant loads when final discharge to groundwater and surface water occurs.

Here is a summary of pollutants of concern and why they can be a problem:

Total suspended solids (TSS)

If discharged directly to surface waters, TSS can negatively impact aquatic organisms in a couple of ways. Sediment can smother bottom dwelling organisms such as mussels and clams and fish eggs. Solids remaining suspended in water can block sunlight from penetrating, harming aquatic plants and reducing oxygen available in water for other organisms. If drinking water has suspended solids it can interfere with disinfection and treatment.

Soil is not a perfect treatment system

by any means. But it is very good, and we can improve conditions by educating our clients about their systems.

Biological Oxygen Demand (BOD)

BOD depletes dissolved oxygen in surface waters when organisms breaking down the organic waste consume oxygen from the water. This is harmful to not only aquatic plants but fish and other organisms.

Pathogens

Parasites, bacteria and viruses can cause communicable diseases through direct or indirect body contact or consumption of contaminated water or shellfish. They are a threat to humans and animals. Direct movement to surface waters (lakes, streams) can occur when sewage surfaces in the yard, provides potential for direct human or animal contact or is washed directly to a surface water during times of heavy precipitation. With a direct discharge to groundwater, pathogens can travel long distances, particularly in aquifers within creviced bedrock.

Nitrogen and phosphorus nutrients

Nitrogen in surface waters can contribute to eutrophication and dissolved oxygen in surface waters. In freshwater systems, nitrogen is usually not the limiting nutrient but can still contribute. In saltwater and coastal estuaries, nitrogen is the major nutrient of concern for large algal growth, including some toxic types that can cause great harm or even death if consumed by animals or humans. In areas where drinking water is obtained from groundwater, excessive nitrogen levels can cause methemoglobinemia (blue baby syndrome). Livestock (dairy cows) can also suffer health impacts and death from high nitrates.

Phosphorus is the limiting nutrient in freshwater systems for algal and weed growth. Similar large toxic algal blooms can result if levels are high enough, and of course there are the aesthetic problems and corresponding lakeshore property value loss where algae blooms — even non-toxic ones — occur.

Household cleaners

Toxic organic compounds are present in household chemicals and cleaning agents. These cleaners can interfere with the biological operation of our treatment systems, reducing their ability to treat wastewater. Transferred directly to groundwater, they can contaminate drinking water with potentially cancer-causing chemicals. If delivered directly to surface water they can harm aquatic organisms (fish, shellfish), and humans if they consume the fish and shellfish.

Heavy metals

Heavy metals can be introduced to the wastewater stream through household use. This is not a widespread problem, but human and animal health problems can result in areas with elevated levels of arsenic or other compounds in groundwater. Similarly, elevated levels of chloride and sulfates may create negative impacts on the ability of our systems to treat the effluent. This is also true when excessive amounts of sodium are delivered to the system. It can be harmful to soil structure and the ability of the soil to accept sewage effluent.

TAKING PRECAUTIONS

All these potential pollutants are found in a household wastewater stream. The good news is if we do things right in siting, design, installation and maintenance, soils will do a good job of removing or reducing levels so they are not a concern. Soil is not a perfect treatment system by any means. But it is very good, and we can improve conditions by educating our clients about their systems to provide the balance we desire between accepting the effluent generated from the household and providing adequate treatment. Our discussions of how to do things "right" contributes to protecting human health and the environment.



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Franklin Electric	Franklin Electric 9255 Coverdale Rd., Fort Wayne, IN 46809 866-271-2859 (f) 866-271-2709 franklinwater@fele.com www.franklinengineered.com		~	~	~	~	~		~	~		Centrifugal
GORMAN-RUPP PUMPS	Gorman-Rupp Company 600 S Airport Rd., Mansfield, OH 44903 419-755-1011 (f) 419-755-1251 grsales@gormanrupp.com www.grpumps.com	~	~		~	~	~	~	~	~		Centrifugal
GRUNDFOS X	Grundfos 902 Koomey Rd., Brookshirex TX 77423 913-227-3400 www.grundfos.com/us		~	~	~	~	~		~	~	~	Centrifugal
ad on page 35	HIBLOW USA 1300 Tefft Ct., Ste. 8, Saline, MI 48176 734-944-5032 info@hiblow-usa.com www.hiblow-usa.com	~										
Founded on Imagine 41	Jet Inc. 750 Alpha Dr., Cleveland, OH 44143 800-321-6960 440-461-2000 (f) 440-442-9008	~	~			~				~		
	email@jetincorp.com											
ad on page 27	email@jetincorp.com www.jetincorp.com JMI Pump Systems, Inc. W194 N11695 McCormick Dr., Germantown, WI 53022 800-235-5490 262-253-1353 (f) 262-253-1248 sales@jmipumps.com www.jmipumps.com	~	~	~	~	~	~	~	~	~	•	Sewage, Condensate, Utility, Trash/Ditch, Gas Engine, Pump Alarms, Complete Pump Systems

		AERATION	EFFLUENT	GRINDER	LIFT STATION	PUMP CONTROLS	PUMP PARTS/ Components	PUMP REPAIR/ SERVICE	SOLDS/SLUDGE	SUBMERSIBLE	SUMP	OTHER
norveco Inguering the later of wate and watewater instance and on page 31	Norweco Inc. 220 Republic St., Norwalk, OH 44857 800-NORWECO 419-668-4471 (f) 419-663-5440 asimon@norweco.com www.norweco.com	V	v	v	~	V		~		~		
ad on page 17	Orenco Systems, Inc. 814 Airway Ave., Sutherlin, OR 97479 800-348-9843 541-459-4449 info@orenco.com www.orenco.com		~	~		~				~	~	
ad on page 44	Polylok Inc. 3 Fairfield Blvd., Wallingford, CT 06492 877-765-9565 (f) 203-284-8415 sales@polylok.com www.polylok.com	~	~	~		~			~	~	~	
ad on page 36	Septic Products, Inc. 1378 Twp. Rd. 743, Ashland, OH 44805 419-282-5933 (f) 419-282-5943 sales@septicproducts.com www.septicproducts.com					~						
SJE RHOMBUS ad on page 42	SJE Rhombus 22650 Cty. Hwy. 6, Detroit Lakes, MN 56501 888-342-5753 218-847-1317 (f) 218-847-4617 sje@sjeinc.com www.sjerhombus.com					~						
Smith & Loveless Inc. Pressy Ware Projector Press	Smith & Loveless, Inc. 14040 Santa Fe Trail Dr., Lenexa, KS 66215 913-888-5201 answers@smithandloveless.com www.smithandloveless.com				~		~	~	~			
VERUTERO PUMP COMPANY The Industrial Pump Specialist	Vertiflo Pump Company 7807 Redsky Dr., Cincinnati, OH 45249 513-530-0888 (f) 513-530-0893 sales@vertiflopump.com www.vertiflopump.com				~				~		~	Vertical
There when you need us most	Webtrol Pumps 8417 New Hampshire Ave., St. Louis, MO 63123 800-769-7867 314-631-9200 (f) 314-631-3738 customerservice@webtrol.com www.webtrol.com		~	~					~	~	~	
ad on page 25	Wholesale Septic Supply 395 CR 608, Dayton, TX 77535-4220 844-660-0901 info@wholesalesepticsupply.com www.wholesalesepticsupply.com	~	~	~	~	~	~		~	~	~	
ad on page 35	Zoeller Company 3649 Cane Run Rd., Louisville, KY 40211-1961 502-778-2731 www.zoeller.com		~	~					~		~	

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PRODUCT NEWS

PRODUCT SPOTLIGHT

Eljen's GSF is designed as a solution for systems in tight locations

By Tim Dobbins

Eljen designed the GSF, or Geotextile Sand Filter, for sites specifically in need of high performance in constricted areas. Each advanced wastewater treatment module is made up of a geotextile fabric and a plastic core material that provide vertical surface area and oxygen transfer to provide an alternative for onsite septic leachfield systems.



"The benefit of a GSF

system is that it provides secondary treatment, preserves the long-term acceptance rates of the soil and provides more surface area in a smaller footprint," says Eric Daniels, senior technical lead for Eljen. "These modules control and develop biomat and biological communities within the geotextile fabric, keeping it off the soil, and they start working on day one so there is no start up waiting period."

Each unit is built with open-air channels that promote aerobic bacterial growth by providing oxygen transfer and ample surface area to house the growing population. During dosing events, effluent is forced through the vertical primary treatment zone, which houses the geotextile fabric and established biomat. Following the primary treatment, a specified sand layer provides a secondary treatment zone and additional filtration preventing saturated conditions in native soil. It also protects the soil from compaction and helps maintain cracks and crevices.

GSF systems come in two main sizes, with the A42 model measuring 4 feet long by 2 feet wide and the B43 model at 4 feet long by 3 feet wide, with both models measuring 7 inches tall. "They can be installed in beds, mounds or trenches depending on the site and local code," Daniels says. "They've been installed for residential and commercial systems, breweries, RV parks, campgrounds and stores."

Installers appreciate the simplicity of using the GSF system, Daniels says. "It's pretty easy to install," Daniels says. "The product is lightweight and can easily fit in the bed of a pickup truck and trailer." Installation involves placing the modules along their 4-foot lengths on a base of stabilized specified sand. A 4-inch perforated pipe is then centered on top of the modules and secured with metal clamps. More specified sand is placed along both sides on the unit at the beginning and end of each row once the fabric is in place.

"It's not a new product and has been actively installed across the country since 1982, so that gives some reassurance as to the longevity and whether or not the product works," Daniels says. 800-444-1359; www.eljen.com

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220 Republic Street, Norwalk, OH, U.S.A. 44857 **PRODUCT FOCUS**

Pumps By Craig Mandli

AERATION PUMP

HIBLOW USA HP Series

HIBLOW USA is bringing back the safety screw to all HP Series air pumps. In 2016, the safety switch mechanism — which cuts power to the pump when the diaphragms



eventually rupture — was changed from a screw type to a slide switch type. The goal was to make rebuilds more efficient for service providers in the field. Over the past couple of years, the company received negative feedback from some and, after careful consideration and weighing the benefits of each option, HIBLOW decided to revert to the screw type safety switch for all HP Series pumps. **734-944-5032**; www.hiblow-usa.com

EFFLUENT PUMP

Ashland Pump effluent pumps

Heavy-duty effluent pumps from Ashland Pump are available in multiple horsepower sizes for various performance requirements and have efficient permanent split-capacitor



motors. The oil-filled pumps have an upper and lower ball bearing design and handle solids up to 3/4 inch. 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, 4/10, 1/2, 3/4, 1 and 1 1/2 hp models. **855-281-6830**; www.ashlandpump.com

Webtrol Pumps V-Series

V-Series sewage ejectors and effluent pumps from Webtrol Pumps are offered from 1/2 to 2 hp. The VS sewage and the VE effluent pumps have cast iron impellers and volutes with a stainlesssteel motor housing. The VS5A24 is a sewage ejector, ½ hp, 2-inch discharge and passes 2-inch solids. This pump shutoff head is 24 feet. The larger sewage ejectors have 2- or 3-inch discharges. Three phase models are available. Motors are



continuous duty. A double mechanical seal is standard. The VE5A46 is a $\frac{1}{2}$ hp pump with shutoff heads to 49 feet with a 2-inch discharge and a removable screen limits solids to 1/4 inch, or 5/8 inch without the screen. Models are available in single or three-phase. They can be guide rail mounted. 800-769-7867; www.webtrol.com

GRINDER PUMPS

Environment One Upgrade

The Upgrade from Environment One is designed to replace troublesome or maintenance-intensive residential grinder pumps. It fits into the grinder pump wet well with easy drop-in conversion, ready to connect. It is a progressing cavity, 1 hp, 1,725 rpm SPD grinder pump with a maximum TDH of 185 feet. It is designed not to jam and for minimum wear to the grinding mechanism. It comes with a self-contained level control system, eliminating float switches. The 1 1/4-inch slide face discharge connection is adaptable to any existing discharge piping. The internal check valve assembly,



located on the grinder pump, is custom designed for non-clog, trouble-free operation. A number of discharge hose lengths are available to accommodate a wide range of existing tank depths. If service is required, the pump can be removed quickly and easily for minimum system downtime. **518-346-6161**; **www.eone.com**

Liberty Pumps ProVore

The **ProVore** grinder from **Liberty Pumps** is designed for use in residential applications where addition of a bathroom or other fixtures below sewer lines requires pumping. It has the same V-Slice cutter technology utilized in the Omnivore series of 2 hp grinder pumps, but brings this advanced technology down to a residential level. Powered by a 1 hp motor, the smaller grinder is designed to operate on a standard 115- or 230-volt circuit, requiring only a 20 amp breaker,



meaning no special wiring, as is necessary with larger hp grinder pumps. The pump comes with a 2-inch vertical-style discharge and a standard leg pattern matching the LE-Series. This allows for an easy retrofit into existing systems. Compact factory-assembled systems are available in both simplex and duplex versions. **800-543-2550**; www.libertypumps.com

Pentair V2 Series

The V2 Series grinder from Pentair is designed with computational fluid dynamics software and has a volute and impeller design allowing shut-off heads up to 185 feet with a single-stage centrifugal pump. This design gives operators flexibility to change between the standard, high-head and high-flow design by swapping the impeller and cutter plate, simplifying maintenance and reducing service parts inventory for low-pressure sewage system projects. It is available with an optional quick-disconnect cord for easier servicing in the field,



double-row bearings to absorb axial and radial loads and an oil-filled motor for cooler operating temperatures and longer life. 855-274-8948; www.pentair.com

SUMP PUMP

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. Environmental Protection Agency and Occupational Safety and Health Administration requirements. It is designed for severe service at heads to 230 feet and temperatures to 350 degrees F, and it operates in pit depths to 26 feet and up to 3,000 gpm. It includes carbon line shaft bearings, semiopen impeller with external adjustment, high-



thrust angular contact ball bearing, 416 stainless steel shafts to 1 15/16 inches and a standard NEMA C face motor. Construction materials available are cast iron, 316 stainless steel or alloy 20. 513-530-0888; www.vertiflopump.com

SUBMERSIBLE PUMPS



Grundfos SE and SL

Designed for demanding situations, **Grundfos SE** and **SL** pumps ensure optimized performance with high wire-to-water efficiency. The SL range is for submerged installation and the SE range for dry and submerged installation. They are available with an S-tube impeller designed to meet today's wastewater challenges, such as dry solids content variation and water use fluctuation. The S-tube impeller offers hydraulic efficiency without compromising free

passage. 800-926-6688; www.grundfos.com

Polylok PL-CPE4A

The Polylok PL-CPE4A is a submersible, 4/10 hp, 115-volt, single-phase effluent pump with a 2-inch NPT vertical discharge. It has a maximum head of 38 feet and a maximum flow of 56 gpm. The pump is designed with a 3,450 rpm oil-filled permanent split-capacitor motor and has an amp rating of 6.6 for 115 volts, a rugged cast iron housing and volute equipped with a cast iron vortex impeller capable of passing 3/4-inch 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. It has a 20-foot UL/CSA-listed power cable suitable for submersible service and fitted with a three-prong plug. The unit is supplied with an integrated clip for the included piggyback mechanical float switch and used for automatic operation. **888-765-9565**; www.polylok.com

PUMP CONTROLS

Alderon Industries VertiMAC Sump Advisor System VM-Series

The VertiMAC Sump Advisor System VM-Series from Alderon Industries is a floatoperated pump switch system used in sump pump or limited space applications. A sensor is attached to the top of the pump switch, which eliminates the need to mount a separate alarm float switch. The sensor integrates high level alarm and pump run switches connected to an



alarm panel. When the water level rises activating the pump switch, it turns the pump on and continues to run until the float is deactivated to complete the pump cycle. The sensor sends a signal to the alarm panel activating the green pump run or red high sump LED indicators. The alarm panel auxiliary contacts are used to connect to BAS systems. It is available in 120/240 volts AC bare lead (no plug) and 120-volt AC or 240-volt AC piggyback plug, 13-amp models. **218-483-3034; www.alderonind.com**



Flygt - a Xylem Brand MAS 801

As part of a complete pumping system, the MAS 801 pump monitoring system from Flygt - a Xylem Brand helps reduce costs over a pump's lifetime, according to the maker. With 24/7 onsite overview of

pump data that simplifies methods for diagnostics, the technology enables continuous station health checks on pump operation. In addition, with three-axis vibration, current measurement and temperature and leakage measurements, the user can take timely, preventive measures for increased lifetime of the pumping equipment. **704-409-9700**; www.xylem.com

PRODUCT FOCUS

Jet Inc. Model 196 Control Panel

The Model 196 Control Panel from Jet Inc. is pre-wired and designed to control and monitor operation of Jet system aerator or aerators, as well as the function of one or two 120/1/60 or 240/1/60 pumps for flow equalization and various pressured distribution system applications such as time dose, demand dose and night spray. The panel allows for



optional cycle timer, cycle counter, remote telemetry and auxiliary alarms. All controls, audible and visual alarms are housed in a NEMA 4 control enclosure. **800-321-6960**; www.jetincorp.com

Orenco Systems 4-in-1 Controller

The **4-in-1 Controller** from **Orenco Systems** supports numerous electrical configurations and dosing schedules within a single panel. Both simplex and duplex models are



available and can be configured in the field for timed or demand dosing. While the control circuit operates on 120-volt power, the pump circuit is dual-rated for 120- or 240-volt power, meaning installers and service providers can reduce their panel inventories for new installations and repairs. It includes a programmable logic unit with multiple timing intervals for changing flow conditions and has a built-in elapsed-time meter and counter. It also displays float position and has a float error indicator. Each panel includes a reference chart to assist with troubleshooting during installation and testing as well as wiring diagrams. It is completely touch-safe. 877-257-8712; www.orenco.com

SJE-Rhombus Xpert Alert Wi-Fi

The **Xpert Alert Wi-Fi** indoor alarm system from **SJE-Rhombus** helps protect a home from costly damage due to flooding, pump failure or freezing pipes, according to the maker. The system monitors and reports residential alarm condition by notifying locally (audible and visual alarms) and remotely via SMS text messages and/or emails. It uses an existing Wi-Fi or Ethernet network to send messages. The



design incorporates an LED alarm light ring that illuminates red for alarm 1 and amber for alarm 2. The red low-temperature indicator activates at 40 degrees F to alert for potential freezing conditions, but it can be deactivated for cold climates. It is CSA certified. **888-342-5753**; www.sjerhombus.com



SPI 50B019-120-240DD

The **50B019-120-240DD** control panel from **SPI** is a duplex time-dosing panel for use in residential or commercial applications. It can be used with 120- or 240-volt power, and it accommodates two dosing pumps controlled by a repeat cycle timer. It has a durable, weather-resistant, NEMA 4X polycarbonate enclosure with SST latches;

large, easy-to-access terminal block; circuit breakers for the pumps and control circuits; a rugged, externally mounted, UV-resistant alarm light; audible alarm and run-mute-test switch with UV-resistant sealing boot; definite purpose motor contactors; alternating relay; and pump hand-off-auto switches. Compressor hookups are available. Wiring schematic and detailed connection diagrams are provided, as well as mounting feet for the enclosure. It is UL listed. **419-282-5933; www.septicproducts.com**

PUMP PARTS/COMPONENTS



Gorman-Rupp EchoStorm

The EchoStorm static venturi aeration device from Gorman-Rupp is designed to add dissolved oxygen into liquids as they are being pumped. It adds oxygen to wastewater, reduces the size of organic solids and degasses organic solids. It is available in 2-, 3-, 4- and 6-inch sizes. Depending on the pump it is paired with, it can provide flows from 50 to 1,300 gpm with up to 857 pounds of dissolved oxygen per day. It is suitable for aeration in a variety of municipal, industrial and agricultural applications, including wet well influent, aerobic sludge digestion, lagoons, oxidation ditches, fat, oil and grease digestion, landfill leachate and mine

water treatment, according to the maker. The device can be combined with Super T Series, Ultra V Series, Super U Series, 80 Series, 10 Series and 6500 Series pumps. **419-755-1011**; www.grpumps.com

Delta Treatment Systems ECOFILTER Pump Vault

The ECOFILTER Pump Vault tank filtration system from Delta Treatment Systems is designed to prolong downstream drainfield and treatment system life by reducing biological loading and clogging. The integrated system is easy to install in new or existing single- or double-compartment tanks and is suitable for S.T.E.P collection systems and effluent treatment, according to the maker. Featuring a dual compartment housing for simplex or duplex applications, it draws effluent from



the clarified zone of the tank minimizing suspended solids. The easy-access design maximizes filter surface area and streamlines filter inspection and maintenance by enabling filter cartridge removal without pulling the pump or vault. The system's float stem bracket is designed to simplify removal and adjustment of the float assembly. Constructed of high-density polyethylene with UV inhibitors for longevity, it is customizable to meet any project need. **800-221-4436**; www.infiltratorwater.com



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Problem: The East Cedar Creek Fresh Water Supply District in Mabank, Texas, needed a more reliable grinder pump solution that could be used throughout its system, which included 3,600 individual grinder pumps for residential and commercial use as well as pumps for 10 to 15 lift stations.

Solution: Franklin Electric's FPS IGP-A Series and IGP-M Series grinder pumps were specified. Franklin Electric invited district engineers into its local lab to see what FPS pumps in use. Grinding was the main concern, and Franklin put several products to the test, including the IGP-A Series and IGP-M Series — both designed for residential or light commercial sewage needs. The automatic and manual 208-230 volt/single phase pumps are specified for 2 hp, but perform closer to a 3.5 or 5 hp, according to the manufacturer. The cutter system on the units is also designed not to bind even if the pump stops running at the end of a cycle.

Result: The engineers liked what they saw and specified the pumps for known problem areas. Callouts are down significantly and failure rates have improved. Now the pumps are considered the preferred solution for the district's grinder applications and will be installed as needed as issues arise with the current equipment. **866-271-2859; www.franklinengineered.com**



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Photos courtesy of Shea Concrete Products Inc.

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Arkansas Onsite Wastewater Association; www.arkowa.com

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California Onsite Wastewater Association; www.cowa.org; 530-513-6658

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Colorado Professionals in Onsite Wastewater; www.cpow.net; 720-626-8989

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Delaware On-Site Wastewater Recycling Association; www.dowra.org

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Florida Onsite Wastewater Association; www.fowaonsite.com; 321-363-1590

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Georgia F.O.G. Alliance; www.georgiafog.com

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Indiana Onsite Waste Water Professionals Association; www.iowpa.org; 317-965-1859

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Iowa Onsite Waste Water Association; www.iowwa.com; 515-225-1051

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Kansas Small Flows Association; www.ksfa.org; 913-594-1472

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Kentucky Onsite Wastewater Association; www.kentuckyonsite.org; 855-818-5692

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Granite State Onsite Wastewater Association; www.gsdia.org; 603-228-1231

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PENNSYLVANIA

Pennsylvania Association of Sewage Enforcement Officers; www.pa-seo.org; 717-761-8648

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Tennessee Onsite Wastewater Association; www.tnonsite.org

TEXAS

Texas On-Site Wastewater Association; www.txowa.org; 409-718-0645

Education 4 Onsite Wastewater Management; www.e4owm.com; 713-774-6694

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Virginia Onsite Wastewater Recycling Association; www.vowra.org; 540-377-9830

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Washington On-Site Sewage Association; www.wossa.org; 253-770-6594

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Wisconsin Onsite Water Recycling Association; www.wowra.com; 888-782-6815

Wisconsin Liquid Waste Carriers Association; www.wlwca.com; 888-782-6815

NATIONAL

Water Environment Federation; www.wef.org; 800-666-0206

National Onsite Wastewater Recycling Association; www.nowra.org; 978-496-1800

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INDUSTRY NEWS

Franklin Electric appoints new VP and CFO

Franklin Electric announced that Jeffery Taylor has been appointed vice president and chief financial officer. John Haines has retired as vice president and CFO of the company but will support Taylor through an interim period. Most recently, Taylor was the CFO of Blue Bird, a manufacturer of school buses.

SJE acquired by Audax Private Equity

SJE sold a majority equity interest to Audax Private Equity. The investment from Audax comes as SJE aims for continued growth and expansion within the controls industry. Over the past 45 years, SJE has brought a number of new products to the market. SJE has seven locations worldwide and nearly 500 employees.

Infiltrator Water Technologies partners with Habitat, opens new facility

Infiltrator Water Technologies announced it is donating \$100,000 to Habitat for Humanity, continuing its four-year corporate partnership with the housing nonprofit organization. Infiltrator's most recent contribution includes over 40 donated septic systems to support 30 local Habitat organizations across the U.S. The company has donated over \$260,000 worth of septic systems to Habitat for Humanity since 2017.

Infiltrator also announced it opened a sixth facility to manufacture EZflow, a drainfield product made of geosynthetic aggregate. The new facility sits on Infiltrator's primary manufacturing campus within the Winchester Industrial Park in Winchester, Kentucky. The 36,000-squarefoot building includes five production lines, making it the largest EZflow facility to date.

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