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## FROM OIL TO ONSITE

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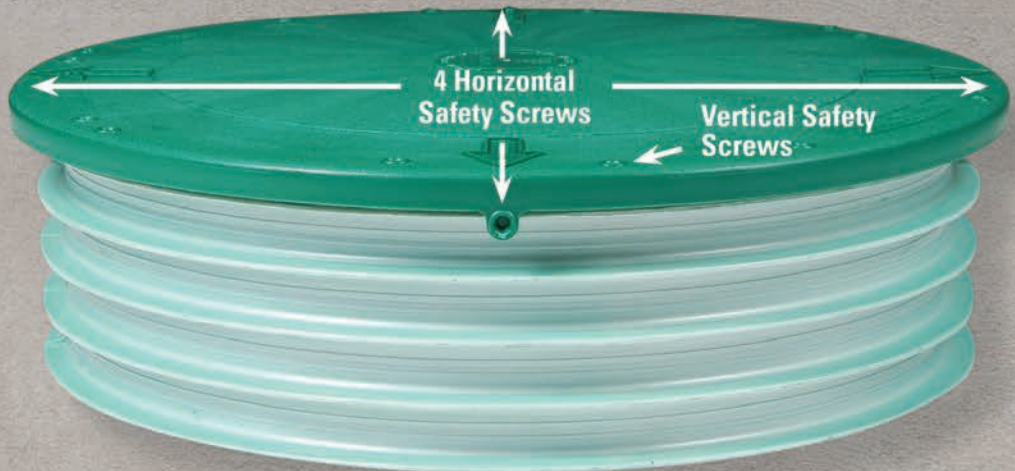


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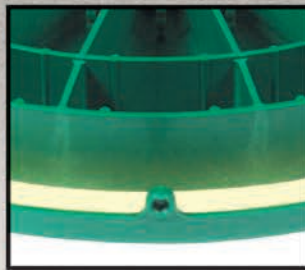
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- Easy to clean

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### INSTALLER PROFILE:

**From Oil to Onsite**  
By Ted J. Rulseh

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Dawn Rohrs, who owns Cyclone Septics with her husband Michael Rohrs, is shown in the field in Enid, Oklahoma. (Photo by David McNeese)

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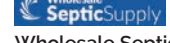
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Send your comments, questions or opinions to Jim Kneiszel at [editor@onsiteinstaller.com](mailto:editor@onsiteinstaller.com)

# Springtime Calls for a Tow Safety Refresher

Before you can start digging in the ground, you must transport equipment safely to the job site. Follow these tips to protect your crew and fellow motorists

**A** news brief outlining a fatal highway crash in North Carolina jumped out at me and I was momentarily horrified on behalf of onsite installers everywhere. A septic contractor was pulling a mini-excavator down the road when its trailer separated from the tow vehicle, crossed the centerline and collided head-on with a motorcycle, then continued on and struck two other vehicles. The 38-year-old motorcyclist was killed and the 57-year-old contractor was charged with causing a death by improper towing and operating a commercial vehicle without proper licensing.

This nightmare scenario would be concerning to any installer who sends a crew out with trucks pulling equipment to work sites far and wide. It's easy to take routine hauling tasks for granted, as perhaps this contractor did, and trust in the care and concern exhibited by your hardworking guys and gals.

But assuming the best safety practices are being followed is foolhardy. And especially in the springtime, when installers are ramping up the busy-

season schedule, it's not the time to take any chances where safe transport of heavy equipment and precious human cargo are concerned. This is the time to double down on safety training.

So here are some tips for safe towing:

## Walk-around inspections – there and back

Anyone can be lulled into complacency when performing the same tasks over and over. But remind your crew that not staying sharp and following all recommended pre-trip inspections can have fatal consequences. Refer to

Installers have a lot on their minds as they head to and return from their daily jobs. **But you have to push all the planning for earthwork and assembling septic system components to the back of your mind and focus on safe equipment transport.**



« It's easy to take routine towing tasks for granted. Be sure to complete a walk-around inspection every time you hook up a trailer and carefully secure all loads before heading out to the work site. (File photo)



the checklist protocols from the National Highway Traffic Safety Administration at the end of this story and review all points with your workers during a tailgate safety meeting. Clip the list to the visor in all of your trucks as a reminder. And don't forget to repeat the inspection when you return to the shop after the day's work is done.

### Check your connection

Are your hitch receiver and ball in good condition and properly aligned with the trailer tongue? Are you getting reliable electrical connection between the tow vehicle and the trailer to operate lights and electric brakes effectively? Are your safety chains free of wear and corrosion and adequately sized to secure the trailer in the event of an emergency? Test the hitch locking mechanism for proper latching.

### Level and secure the load

Take your time when you hitch up the trailer. When you drop the tongue on the hitch ball, step back and look at the rig from front bumper to the tail of the trailer. It should be level, indicating proper tongue weight on the hitch and a balanced load. As important as a balanced load, check that equipment is properly secured with chains. NHTSA lists these important elements to preparing the load:

- Balance weight from side to side.
- Secure and brace all items to prevent them from moving during travel.
- Adjust the height of the tow vehicle and trailer.
- Apply load leveling (weight distributing hitch bars) as needed.

### Watch the wear parts

Towing equipment takes a toll on many moving parts on your trailer. Start from the ground up, making sure your tires are fresh and have ample tread. Look for symptoms of aging rubber, such as checking and cracking between the treads. You may have ample tread but unsafe tires due to age. Avoid mixing and matching tires. Make sure wheel bearings are properly greased; friction is the enemy. Inspect trailer brakes for ample stopping surfaces on drums or pads. Regularly evaluate the components of your trailer's suspension, including hangars, leaf springs, shackle bolts, U-bolts and axle plates. Look for corrosion on tie downs to secure equipment. Inspect chains and straps and replace as needed. Keep careful records about all trailer maintenance.

### Choose the appropriate tow vehicle

Turn your attention to your tow vehicles and make sure their tow capacity matches the trailer loads. If you have questions about handling a new trailer or piece of equipment, consult your owner's manual for maximum load and

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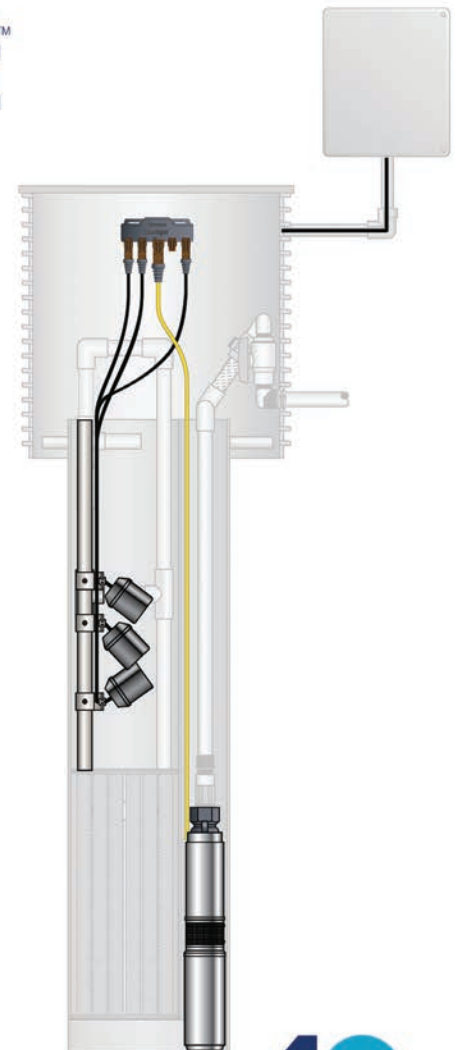
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## EDITOR'S NOTEBOOK

tongue weight of your trailer. Err on the safe side by making sure you are well within tow and tongue limits. As you buy new equipment and trailers, constantly evaluate your truck fleet to make sure you're still towing safely.

### Beware of fading tow performance

Drivers new to towing a heavy load — or those who haven't pulled equipment in a while — need to adjust to the change in performance characteristics of their tow vehicles when pulling equipment. Effective braking is lengthened significantly. Power off the line or to pass vehicles on the highway can be limited dramatically. Increase following distances and avoid sudden stops or steering maneuvers that can lead to disaster. Slow down when driving on rough roads and make wider turns to account for the length of your truck and trailer combination.

### HITTING THE ROAD

Towing a heavily weighted trailer is a serious business. You and your crew are responsible for the safety the motorists who share the roads with you. Installers have a lot on their minds as they head to and return from their daily jobs. Until you reach your destination, you have to push all the planning for earthwork and assembling septic system components to the back of your mind and focus on safe equipment transport. I wish you a safe and productive summer! 

The National Highway Traffic Safety Administration offers this handy daily safety checklist to share with your installing crew:

- Check and correct tire pressure on the tow vehicle and trailer.
- Make sure the wheel lug nuts/bolts on the tow vehicle and trailer are tightened to the correct torque.
- Be sure the hitch, coupler, draw bar and other equipment that connect the trailer and the tow vehicle are properly secured and adjusted.
- Check that the wiring is properly connected — not touching the road, but loose enough to make turns without disconnecting or damaging the wires.
- Make sure all running lights, brake lights, turn signals and hazard lights are working.
- Verify the brakes on the tow vehicle and trailer are operating correctly.
- Check that all items are properly secured on and in the trailer.
- Be sure the trailer jack, tongue support and any attached stabilizers are raised and locked in place.
- Check load distribution to make sure the tow vehicle and trailer are properly balanced front to back and side to side.
- Check side- and rear-view mirrors to make sure you have good visibility.
- Check routes and restrictions on bridges and tunnels.
- Make sure you have wheel chocks and jack stands.



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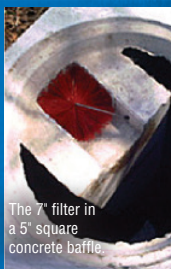
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The 4" filter in a 4" Tee.

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Patent# 6,811,692



The 7" filter in a 5" square concrete baffle.



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### WHEN IT RAINS Stabilizing Wet Work Sites

Many components in a septic system must be stable and dry during construction to protect the component and assure long-term viability. The surface should be maintained in as natural a condition as possible because soils that are wet at the time of construction are more likely to have problems with acceptance of wastewater due to compaction and smearing. When it comes to stability, dewatering may be needed on extremely wet sites to assure stable installations for tanks and treatment units. This exclusive online article outlines several options to achieve this. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

### LAYING THE GROUNDWORK Selecting Correct Bedding Materials

Proper bedding and cover materials help to ensure a long-term, sustainable septic system. In order for the backfill to serve as a solid base for the component, it should be a material that does not need to be compacted or it should be installed in lifts and compacted as these layers are installed. This online article outlines two key issues to consider to selecting bedding material for an installation. [onsiteinstaller.com/featured](http://onsiteinstaller.com/featured)

### Overheard Online

"Let employees know that you actually care what they have to say and are willing to listen to their ideas or even criticisms without any negative ramifications."

– 6 Tips to Eliminate Negativity From Your Workplace Culture  
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## INSTALLER PROFILE

▼ Dawn, Michael and Austin Rohrs look on as an excavation is dug for a new septic tank. (Photos by David McNeese)



# FROM OIL TO ONSITE

A slump in the Oklahoma petroleum industry led Michael and Dawn Rohrs to make a change. They launched Cyclone Septics and found consistent prosperity.

By Ted J. Rulseh

**F**or 20 years Dawn Rohrs worked as a drilling engineer in the oil fields in four states. When the oil industry crashed several years ago, she found herself laid off.

“I was driving my husband crazy sitting at home,” she recalls. “We decided we had better diversify, because both of our livelihoods were tied to the oil fields.” (Her husband Michael worked in an oil company machine shop.)

In 2016 they formed Cyclone Septic and Shelters, based in Guthrie, Oklahoma, about 20 miles north of Oklahoma City. They do a brisk business in onsite installations, the vast majority using aerobic treatment units with spray dispersal.

They manufacture their own concrete septic tanks and the tanks for NuWater ATUs from Enviro-Flo. The business has prospered with population growth around Oklahoma City and across the state. Their eight-member team includes sons Austin, 26, and Cody, 21. Dawn continued working in the oil industry off and on until 2021 and still does some consulting.



## GETTING STARTED

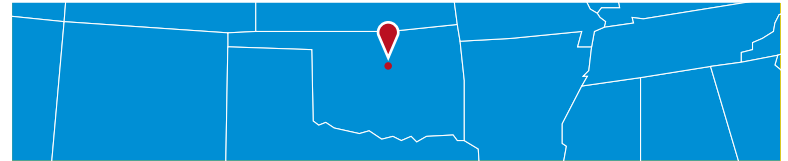
A personal connection helped the couple choose a new livelihood. “We had a friend who was a tank manufacturer for NuWater,” recalls Dawn, who holds a chemical engineering degree from the University of North Dakota and is working on an MBA. “He convinced us to try installing, and we jumped in feet first.”

They used Dawn’s severance from the oil company to buy an excavator and trailer. When their friend closed his business a few years ago, they bought some of his equipment and took on tank manufacturing. That propelled the company from \$400,000 in annual revenue to \$1.5 million in one year. They sell about 300 tanks per year.

In recent years they have made some key strategic decisions. They used to cast concrete storm shelters but have de-emphasized that side of the business; now when a customer calls for a shelter they purchase a unit and install it. Accordingly, they changed the company name to Cyclone Septics.

They have also cut back on the installation side to focus more on manufacturing, which requires fewer specialized and skilled workers; the local labor market is tight. From a peak of about 250 onsite installations per year, they now perform about 150, focusing on area builders with whom they have enjoyed the most mutually beneficial business relationships.

Dawn and Michael are state-certified onsite installers; Dawn is also a licensed soil profiler. She handles the business side of the company; Michael leads the field operation and performs all equipment maintenance.



## Cyclone Septics Guthrie, Oklahoma

**Owners:** Dawn and Michael Rohrs

**Founded:** 2016

**Employees:** 8

**Service area:** 50-mile radius

**Specialties:** Aerobic treatment system installation; manufacturer of concrete tanks

**Affiliations:** Oklahoma Onsite Wastewater Installers Association

**Website:** [www.cycloneseptics.com](http://www.cycloneseptics.com)

Technician Levi Karcher uses a Deere 50G excavator to install a new septic system for a home in Enid, Oklahoma.







▲ Levi Karcher helps guide a septic tank into the ground at a residential work site.

▼ Cody Rohrs gathers soil samples to develop a soil profile for a new septic system.



“In central Oklahoma aerobics are prevalent across the board.”

**Dawn Rohrs**

Austin Rohrs is service manager, an installer and “our technical guru,” says Dawn. “If there’s a system problem, he’s the guy who will solve it. He knows the NuWater systems inside and out.” Cody is the service technician and handles ATU maintenance and system inspections. Both are studying engineering at the University of Central Oklahoma.

The remaining team members are Alberto Duran, manufacturing lead; Levi Karcher, installer; Nate Karcher, ground crew member; and Stacy Forsyth, administration.

### CHALLENGING SITES

The area’s clay soils present design and installation challenges, and so do homeowners building large houses on relatively small lots.

In clay soils the company often installs evapotranspiration/absorption systems. “An ETA is essentially a conventional system with about double the footprint,” Dawn observes. “It’s just a little bit shallower. Instead of it being an absorption system where the water goes down, you depend on evaporation, so the water has to move up.

“We install the laterals in much the same way, except we put sand on top of the chambers (Infiltrator Water Technologies). Then we bring in a sandy loam soil as cover for the top three inches. All the soil that is excavated for the trenches is hauled off.”

Last year about 95% of the company’s installations were ATUs. “In central Oklahoma aerobics are prevalent across the board,” says Dawn. “In the subdivisions you don’t have space for conventionals because everybody wants to put a 5,000-square-foot house, a swimming pool and a shop on a half-acre lot.”

Aerobic systems with spray dispersal have the advantages of being quick to install and causing less disturbance to the site. “All we’re putting

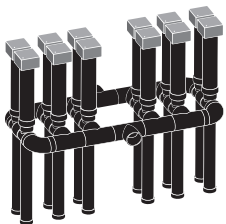
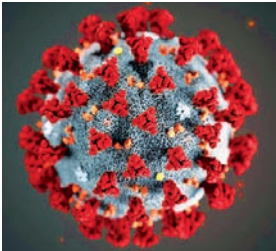
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◀◀ Installer Nate Karcher cuts PVC pipe for a new septic system installed by Cyclone Septics.

## A GROWING NICHE

Medical marijuana is legal in Oklahoma, and the expanding industry has created a niche market for onsite installers, including Cyclone Septics.

Grow houses for marijuana have special requirements, and no two are exactly alike, observes Dawn Rohrs, co-owner of Cyclone Septics. "I probably meet with two or three grow houses a week on putting systems in for their facilities," she says.

"It could be a metal building with grow rooms inside; it could be a greenhouse. Every one is just a little bit different." The septic system has to be designed to fit the size of the facility and the number of people working there, but there is also a special challenge.

Most growers produce reverse osmosis water for the laboratories where they test the potency of the crop, and for watering the crop. RO strips out all minerals from the water; growers can then add the exact combination of minerals and nutrients needed to optimize the quality of the plants.

Under Oklahoma law, RO water cannot be discharged to a septic system, since it is considered an industrial waste. "So we have to ask, 'What are you going to do with your RO water?'" Dawn says. "Generally we need to set a separate tank so they can capture that water and haul it off later. It's a matter of knowing the regulations."

in the ground is a tank," says Dawn. "Then we trench in the sprinkler lines. The footprint is a fraction of what it would be with a conventional system." The company uses Rain Bird and K-Rain sprinklers.

Spray field sizes are determined in part by climate. For example, in Oklahoma's western counties with limited rainfall, a four-bedroom house may need 3,000 square feet of spray field; systems in eastern counties with more rain may require twice that. Soil type is also a factor: heavy clay soils require larger spray fields.

Dawn and Michael have been well satisfied with NuWater treatment units. "What I really like is that they're easy to work on," says Dawn. NuWater has two alarm lights. "So that immediately tells us if there is an air issue or a pump issue. We can troubleshoot over the phone, and our maintenance techs know what they're getting into before they leave the office."

### IMPARTING KNOWLEDGE

Customer education is a key to the design of efficient treatment systems. About 90% of installations are for homebuilders, and sound advice on the front end can help them avoid poor decisions that cost money later on. "For instance, they would run the sewer line underneath the footings," says Dawn. "In Oklahoma, tanks can't be set more than 36 inches deep. When the sewer line comes out 28 inches deep, that causes problems."

Some builders placed the structures in ways that made it difficult to find space for a spray field. In other cases, they put the cleanout on a side of the house as close as 10 feet from the property line. "Now we have to put the tank 40 feet away and run the sewer line," says Dawn. "They really need to plan where the septic system is going to be before they start laying out anything else on the lot."

She has started offering a course for real estate agents on how to sell homes with septic systems. That's important because Oklahoma City and some other municipalities are not willing to extend sewer lines unless the developers pay for them. As a result, large subdivisions on the outer city limits are being built with septic systems. Her class for real estate agents covers basic ways to assess septic system condition, such as walking across the lateral field to see whether it is wet, a possible indication of failure.

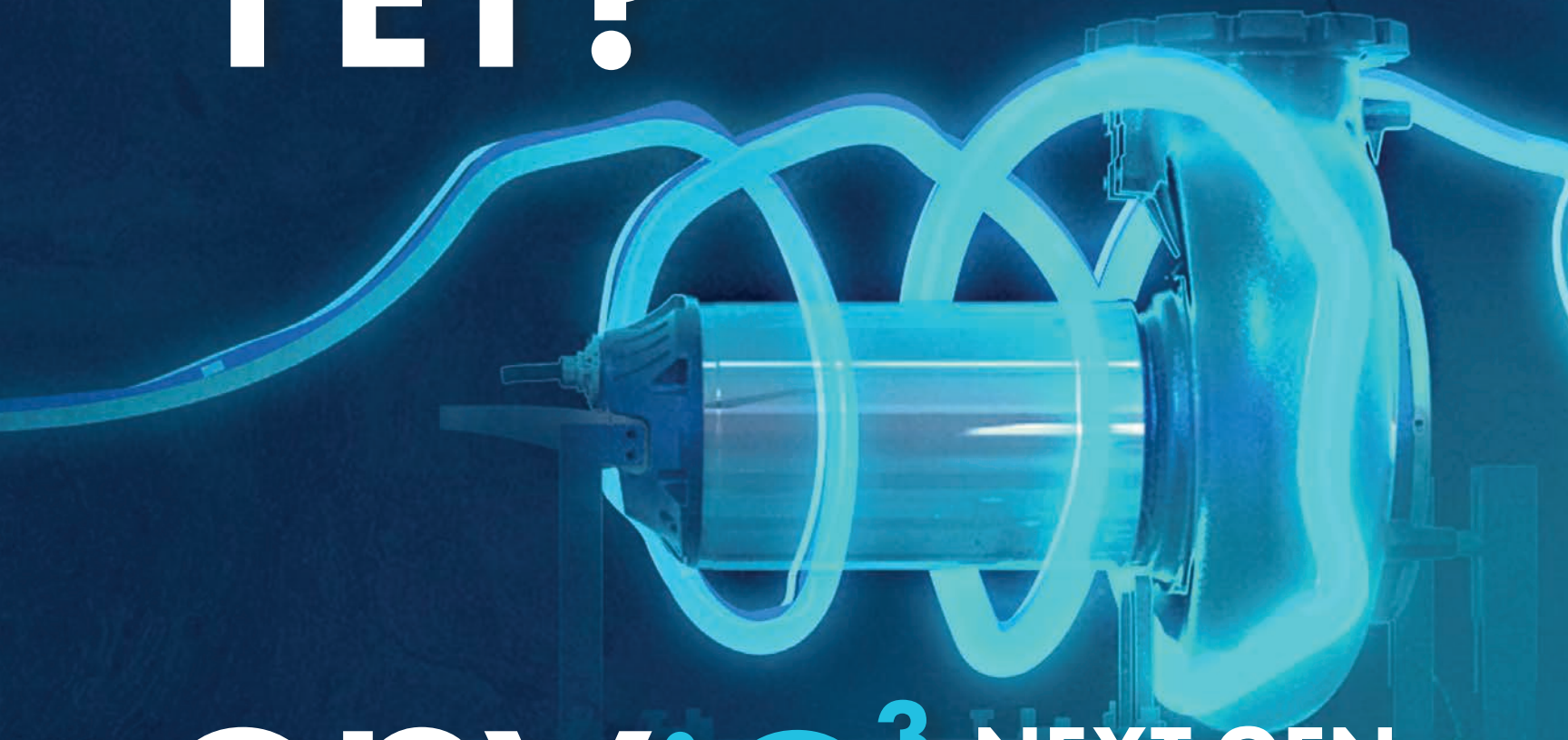
For homeowner education, the company created a website, [www.justadddbleach.com](http://www.justadddbleach.com), where other installers can share information with their customers on system care and troubleshooting. "A lot of installers buy tanks from us," says Dawn. "We understand that installers don't want to send their customers to a competitor."

"So we put the website out there. It doesn't mention that we're installers. It just tells them, 'You have a NuWater system; here are some things you need to know.' We put stickers on our NuWater system boxes, so even if homeowners don't know who their installer is, they can go to the website and get information on their system."

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>> The Rohrs family of Cyclone Septics are shown on a job site with their Deere 50G excavator. From left are Cody, Austin, Dawn and Michael Rohrs.

“They really need to plan where the septic system is going to be before they start laying out anything else on the lot.”

**Dawn Rohrs**

### KEEP THEM HAPPY

Whether dealing with builders, real estate agents or homeowners, Cyclone Septics team members aim to stand out with superior service. “We try to treat people the way we would want to be treated,” Dawn says. “Michael is a very nice guy. He bends over backwards to help people out.

“We all strive to keep all the customers happy. That means we return phone calls. If somebody calls me with a problem and it’s a simple issue, I’m going to walk them through it over the phone, rather than charge for a service call and send a technician to take care of something that can be fixed in five minutes.

“We don’t want to be going back to work on systems we install. That doesn’t make people happy, and it doesn’t make us money. We make sure everything is done right the first time. We talk to our customers so they understand their system — how it works and what needs to be done on it.

“I feel comfortable saying we have the most informative website of any installer in Oklahoma. We try to cover all the bases on what any homeowner would want to know. If people understand their systems, then they’re more likely to realize how to take care of them: what to do and what not to do.”

Oklahoma requires every onsite system to have a two-year warranty, and for aerobic systems a two-year maintenance contract is mandatory. Cyclone offers maintenance plans that include two visits per year and strongly urges homeowners to continue with regular maintenance after the initial two years have passed.

### MACHINE MATTERS

For installations, Cyclone uses a variety of equipment. The inventory includes:

- 2015 and 2013 John Deere 50G excavators
- 2014, 2013 and 2011 Ditch Witch RT 24 trenchers
- 2016 and 2015 John Deere HH20 hammers for breaking rock
- 2007 Bobcat S205 skid-steer
- 2001 Sterling and 2005 Kenworth rail trucks
- 2014 Kenworth knuckle-boom truck
- Six Chevy pickups from model years 2002 to 2020

On the manufacturing side, a 1965 Caterpillar 988A front-end loader does heavy duty pulling cast tanks out of the molds.

Installers let builders and homeowners know what to expect from heavy equipment on sites. “We try to be very clear that this is heavy equipment we’re moving into their yard,” says Dawn. “The tanks weigh about 20,000



pounds; you put that on a truck and it’s going to leave ruts. We let them know they’ll have dirt in their yard and it will be muddy if it rains.”

Cyclone team members smooth the site on completion but generally leave the landscaping to the builder or the homeowner.

### SERVE THE INDUSTRY

While growing the business, Dawn and Michael are working to raise the standards for onsite systems in their state. Dawn serves on the board of directors of the Oklahoma Onsite Wastewater Association, which is working with the Department of Environmental Quality on a variety of issues.

The association is advocating for a law requiring pre-sale onsite system inspections and to tighten inspection requirements. “Right now, the state allows home inspectors to do the septic inspections, but they are not trained in specific septic issues,” says Dawn.

Another aim is to tighten licensing requirements. At present, anyone in Oklahoma can install septic systems without being licensed as long as the Department of Health Services inspects them. “That includes homeowners, and it includes installers who don’t want to mess with inspections,” Dawn says.

“They can do up to 12 systems a year without being licensed. It is really causing some issues with the quality of systems that are going in. We don’t want to make it overly difficult for people to get licensed, but we do think that for the benefit of the general public there needs to be a little more regulation on installers.”

A more professional onsite industry can only mean good things for companies like Cyclone Septics and the customers they serve. □

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# Precast Concrete Tanks Provide Custom Solution



Photos courtesy of Camp Precast Concrete Products Inc.

**Challenge:** A school district in the Northeast required a highly customized onsite system that could be installed with minimal disruption to students and teachers. The tank lids required 16 access points for the treatment devices as well as other customizations.

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## SYSTEM PROFILE



# Onsite Designer Is Left High and Dry With Grand Canyon Cabins Project

AeroCell unit, GeoFlow drip system are employed to overcome poor soils at group of vacation rentals

By David Steinkraus

« This set of concrete tanks handle settling, pumping and recirculation for the system at Inn History in Williams, Arizona. The Infiltrator plastic tank at right rear holds an 800 gpd AeroCell pod. About 80% of water is recirculated through the pod with 20% moving on to a dripfield for disposal. (Photos courtesy Ian Braun)

About 50 miles south of the Grand Canyon, just north of Williams, Arizona, is a sprouting collection of cabins to serve this tourist area. Inn History is a group of new cabins that needed a new wastewater system, something capable of using the tough clay soils of this country. Cabins have one bedroom, sleeping space for four people, a bathroom, kitchen and other amenities such as a refrigerator, air conditioning and Wi-Fi.

It is only the first phase of the cabin complex has been built, but there is a wastewater system in place to serve what's on the ground, and plans are set for the second phase of the development.

## Solution

Wastewater from the first six cabins in the project, and from an office building, is collected in 4-inch schedule 40 PVC pipe. First in the treatment train is a 1,500-gallon concrete tank for settling and anaerobic treatment. That tank, like others for the project, came from Yavapai Precast in Prescott, Arizona, says Ian Braun of Civil Design & Engineering in Flagstaff, Arizona, who designed the system.

From that tank, wastewater flows about 2 feet into a 1,000-gallon concrete recirculation tank. Inside are duplex Little Giant 20 gpm high-head effluent pumps. Pumps send wastewater into an 800 gpd Anua AeroCell pod housed in an Infiltrator Water Systems tank. From the pod, 80% of wastewater returns to the recirculation tank while 20% flows about 6 feet to a SALCOR 3G UV system. UV was required because of the proximity of seasonal high water, Braun says.

Water next enters a 1,500-gallon concrete dosing tank. Because this tank has capacity to store a day's worth of wastewater, there is only a single pump inside, a Little Giant 20X high-head effluent pump. It sends water about 40 feet to the headworks box for the Geoflow absorption field with 1,352 feet of drip tubing.

Because of the long pipe runs needed to power the system by gravity, some of the tanks had to be set deep. Cover was 36 inches maximum.

The property covers 1.65 acres, and the owner has plans for nine more cabins that will use a





▲ The Inn History site covers 1.65 acres and is about 50 miles south of the Grand Canyon near Williams, Arizona. Soil is mostly clay and dry, and there is no municipal water service, so reusing water was an important part of the project:



▲ Geoflow tubing disposing of wastewater from the Inn History system irrigates native vegetation, in this case juniper trees on the development property.

▼ Shown on the work site are, from left, installer Mike Palmer, owner and developer Jeff Fox and system designer Ian Braun.



which is down a couple of thousand feet. “So any way you can reuse water is greatly beneficial and a huge cost savings.”

Before the site plan was done, engineers bored test holes all over the property to determine the best spot for wastewater disposal. But soils were consistently bad, Braun says. “We were driven by maximizing the number of cabin sites while still being able to fit disposal.

“I did the preliminary site planning just because so much of it was driven by where and how much wastewater disposal we could put on the site,” he says. It was a change from the typical order of projects, he says, where buildings are sited first and wastewater planning comes later.

## System Profile

**Location:** Williams, Arizona

**Facility served:** Vacation cabin complex

**Designer:** Ian Braun, Civil Design & Engineering, Flagstaff, Arizona

**Installer:** Palmerosa Construction, Flagstaff, Arizona

**Type of system:** Septic with AeroCell and UV

**Site conditions:** Flat with silty clay

**Hydraulic capacity:** 1,960 gpd

second treatment system with the same basic components but more capacity. The pretreatment tank, for example, will be a 2,000-gallon model, the AeroCell unit will have a capacity of 1,500 gpd, and the Geoflow field will have 1,872 linear feet of tubing.

Yavapai Precast also supplied risers and lids.

### Usual soils

One of his challenges on the site was the clay soil, but it’s not an uncommon challenge.

“Williams, Flagstaff, northern Arizona, this is typical: very challenging soil conditions, shallow rock and silty clays and clays,” Braun says. “They just don’t drain. They hold water, and they hold seasonal saturation.”

All test wells must be inspected by the county, and it’s common for them to discover signs of high seasonal water, which has a minimum separation of 6 inches from any drainfield, he says. High water typically means chlorination, but in this case the choice was for UV to provide an extra margin of safety, he says. Obviously bulbs need replacement, he says, but given the high flow, UV is also more convenient than frequently replacing chlorine tablets.

Water from the absorption field irrigates the natural vegetation. There is no municipal water service to this property. Freshwater is hauled in, Braun says. Groundwater saturation is seasonal and the aquifer is perched, meaning there are small pools of water in the soil but above the actual aquifer,



## SYSTEM PROFILE



◀ Mike Palmer, of Palmerosa Construction, works on the dripfield at Inn History near Williams, Arizona. This is the first phase of onsite work at the development. More cabins are planned along with a second larger-capacity onsite system.

▼ The Anua AeroCell treatment pod is housed in this plastic tank from Infiltrator Water Technologies. A slightly larger pod, and associated components, will be used for a second phase of the development.



“Williams, Flagstaff, northern Arizona, this is typical: very challenging soil conditions, shallow rock and silty clays and clays. **They just don’t drain. They hold water, and they hold seasonal saturation.**”

Ian Braun

### Factors in choosing the system

Under state and county rules there were dozens of pretreatment options, Braun says. His design was driven by two factors. First, he needed a system that treats to a very high degree, which would allow him to adjust the soil absorption rate and fit the disposal field on the site. Second, the contractor installing the system had limited onsite experience (and was doing other site work for the cabins), and Braun knew Anua would provide good technical support.

“With Anua’s support during the install, everything went very smoothly,” Braun says.

During installation, tanks and the absorption field had to move a few feet to preserve some trees on the property. Most of the trees are junipers.

“And it’s a nice thing to save on a site like this,” Braun says. “You have to understand these are little cabins. Everyone staying in the cabins pretty much is coming to visit the Grand Canyon so they want a real Arizona experience.”

Another reason for picking the Anua system was a strong concern from the owner to limit odors. “And I have never had any kinds of issues with Anua in that regard,” he says. ◻

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# Maine Community Considers Alternative Treatment Technologies to Boost Development

By David Steinkraus

Auburn, Maine, city officials are considering a new onsite design standard to allow development while keeping nutrients out of Lake Auburn, which is the city's source of drinking water. If the proposed standard were used, it would allow for new systems and new homes while achieving a net improvement to the lake, city officials told the Sun Journal of Lewiston, Maine.

Impetus for the proposed standard came from a study by FB Environmental, the Horsley Witten Group and the University of Maine. The city commissioned them to study rules governing the lake's watershed.

Current standards effectively prohibit the use of innovative and alternative treatment technologies, the group wrote in its report. More than 100 new homes could be built in the watershed if the onsite rules are revised, the group wrote.

Eric Cousens, the city's director of planning and permitting, said the goal is to use the new standard for both new construction and replacement of old onsite systems.

## Massachusetts

The Tisbury board of health set new denitrification rules for the Lake Tashmoo and Lagoon Pond watersheds. The area covers much of the town on the north side of Martha's Vineyard.

Rules require onsite technology that meets a nitrogen groundwater discharge standard of no more than 13 mg/L from septage or removes 75% of septic nitrogen waste, reported *The Martha's Vineyard Times*.

The regulation applies to new construction, an onsite system replacement, a change in property use that would increase nitrogen discharge beyond the board-approved system capacity, and if there is a determination by the board that a new system is required when a property is transferred.

## Missouri

For an eighth year, the Taney County Septic Tank Pump Out Program will be open for 2022.

The program covers all costs for pumping out a septic tank on a residential property every four years. Homeowners are responsible for locating the tank and exposing the access for pumpers.

Since 2014, the program has pumped 3,443 tanks, reported the *Branson Tri-Lakes News* of Hollister, Missouri. Money comes from the county's sewer sales tax.

## New York

Rensselaer County is making grants of up to \$10,000 available for onsite upgrades around Nassau Lake. The county announced in late January that homes on both sides of the lake, in Schodack and Nassau, are eligible for grants.

The state Department of Environmental Conservation and Environmental Facilities Corp. gave the county one grant of \$170,000. Homeowners are eligible for up to 50% of qualified upgrades, with a maximum payment of \$10,000 per project. Funds may be used only for the replacement of septic systems or cesspools, reported *The Times Union* of Albany, New York.

A second grant of \$218,000 for the work comes from the Housing Trust Fund Corporation and Office of Community Renewal.

County officials said the program will help maintain the quality of the lake, which will support property values and make the area attractive to prospective residents.

## Montana

So many people want to be in Montana that Flathead County is looking into a new facility to take care of their septage waste. The county commission has approved a \$700,000 design contract for a regional septage treatment and biosolids project. Biosolids composting would serve the regional septage plant and the cities of Kalispell, Whitefish and Columbia Falls, reported the *Daily Inter Lake of Kalispell*.

From 2010 to 2020, the county population increased 15%, to 104,357. Flathead County Health Officer Joe Russell told the news organization, "We could get to the point where there's no way to get rid of septage." He added that private septage haulers are being squeezed out as development consumes land where septage can be spread. □

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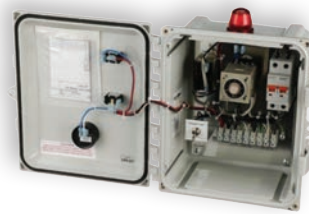
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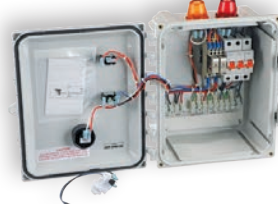
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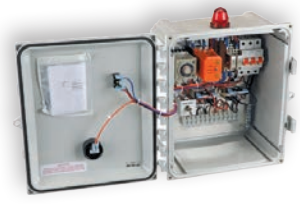
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952-933-5501  
www.cherneind.com

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info@crestprecastconcrete.com  
www.crestprecastconcrete.com

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## D

### Delta Treatment Systems, LLC

9125 Comar Dr.  
Walker, LA 70785  
800-219-9183  
info@deltatreatment.com  
www.deltatreatment.com

## E

### ECODRIP by Delta

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info@deltatreatment.com  
www.deltatreatment.com

### ECOFILTER by Delta

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### ECOPOD by Delta

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## F

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## K

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### Knight Treatment Systems Inc.

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## M

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www.PT-WaterEnvironment.com





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 info@presbyeco.com  
 www.presbyeco.com  
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## Q

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 info@infiltratorwater.com  
 www.infiltratorwater.com

## R

**Recycled Water Technologies, Inc.**  
 1048 S Hieland Rd.  
 St. Anne, IL 60964  
 815-401-5390  
 info@recycledwatertech.com  
 www.recycledwatertech.com

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 350 Cedar Ln.  
 Torrington, CT 06790  
 877-221-4426 • 860-482-1645  
 tanxrus@aol.com  
 www.flout.net



**Roth North America**  
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 Syracuse, NY 13211  
 315-475-0100  
 sales@roth-usa.com  
 www.RothMultiTank.com  
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 www.Salcor.World  
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### The Dirty Bird

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### TUF-TITE, Inc.

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 sales@tuf-tite.com  
 www.tuf-tite.com  
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## V

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 www.webtrol.com

### Whitewater by Delta

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 info@deltatreatment.com  
 www.deltatreatment.com

### Wholesale Septic Supply

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 Dayton, TX 77535-4220  
 936-681-8198  
 info@wholesalesepticssupply.com  
 www.wholesalesepticssupply.com  
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### Wieser Concrete

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 Maiden Rock, WI 54750  
 800-325-8456 • 715-647-2311  
 www.wieserconcrete.com  
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## Z



**Zoeller Pump Company**  
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 Louisville, KY 40211  
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# Listings by Category

## Advanced Treatment Units



**BioMicrobics, Inc.**  
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sales@biomicrobics.com  
www.biomicrobics.com  
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www.acuantia.com  
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**Delta Treatment Systems, LLC**  
Walker, LA  
800-219-9183  
info@deltatreatment.com  
www.deltatreatment.com

**ECOPOD by Delta**  
Walker, LA  
800-219-9183  
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www.deltatreatment.com

**Eliminite Inc.**  
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**Eljen Corporation**  
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**Enviro-Aire by Delta**  
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207-406-2927 • Fax: 888-789-1977  
info@fujicleanusa.com  
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U.S. Patent No. D874,960



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answers@smithandloveless.com  
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Presby Environmental, Inc.

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Whitefield, NH  
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### The Dirty Bird

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www.thedirtybird.com  
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### Wieser Concrete

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www.infiltratorwater.com

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## Association

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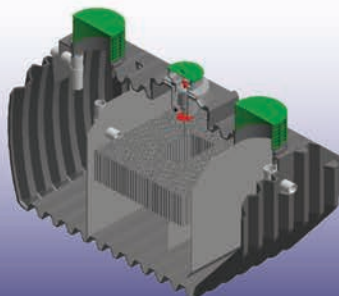
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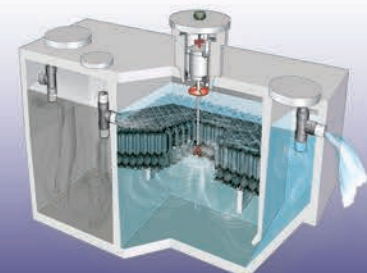


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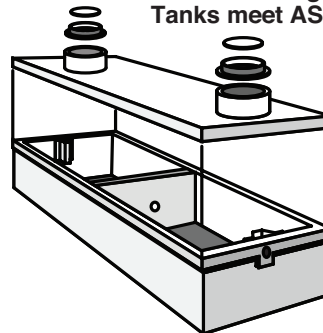
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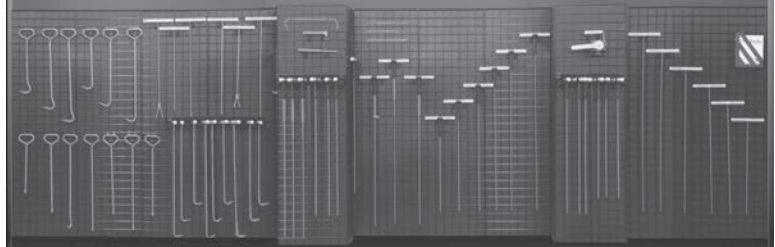


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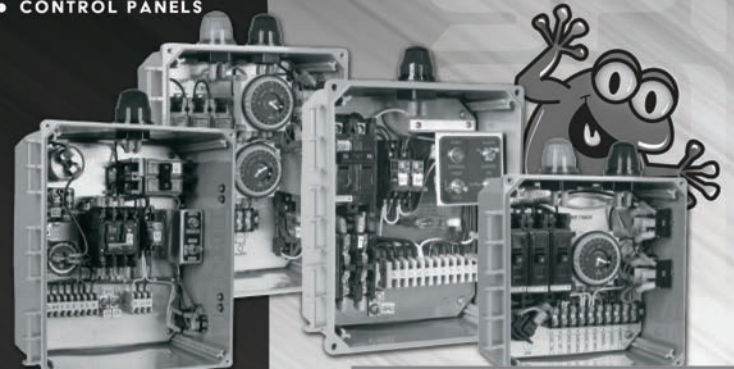
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# Illinois GPD Onsite Permit Rules Are Outdated, Need Revising

Installer and pumper Rick Maguire calls the 200-gallon per bedroom regulation "excessive" with modern septic systems and reduced water usage

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 the Onsite Wastewater Professionals of Illinois.*



**Rick Maguire**  
 co-owner with wife Jane  
 Business: Maguire Wastewater Solutions, Virden, Illinois  
 Age: 58  
 Services we offer: Installation of all systems, pumping, service contracts, inspections, sewer jetting, sewer camera and utility locating.  
 Years in the industry: 34

## Association involvement:

I have been a member of the Onsite Wastewater Professionals of Illinois for 15 years. I was president 2010 through 2012 and have been president again for the last four years.

## Benefits of belonging to the association:

Membership in OWPI allows us to provide input on code changes, stay in touch with current regulations, and meet great people in the industry.

## Biggest issue facing your association right now:

In 2014 the U.S. Environmental Protection Agency took over handling surface discharging if the effluent went to the waters of the U.S. The process for filing for a permit typically took about 30 days. The U.S. EPA was only going to do it for five years so in 2019 the Illinois EPA took it over. Now the process takes anywhere from four to six months. It's really hindered us. OWPI

was active in trying to get the permits processed faster. It has gotten better but there's still a lot of room for improvement.

## Our crew includes:

Jane Maguire, assistant general manager; Scott Connolly, operator; Steve Matli, service manager; Doug Bennett, installation manager, operator; Colean Smith, operations manager; Nick Watson, service tech, pump truck operator; Craig Jordon, service tech, pump truck operator; Rory Rossi, service tech; Aaron Lake, construction labor, pump truck operator; Kaden Gray, service tech; Justen Jorgenson, laborer; Skyler Maguire, administrative assistant.

## Typical day on the job:

I'm in the office one or two days a week and the rest of the time I'm in the field installing systems or sewers. When I had a heart attack two years ago, Doug Bennett, Steve Matli and Colean Smith stepped up and ran the business for a couple months. They did such a great job I let them continue in those positions. Now I'm more of an operator/laborer and try to stay away from the stress of the office work.

## The job I'll never forget:

Doug and I were working on a project by a lake and lost a chlorine barrel. We set it out and it rolled downhill, hit the water and started floating away. We both ran like we were half nuts. We saw a boat at the neighbor's and commandeered it. We jumped in the boat, paddled out and got the barrel.

## My favorite piece of equipment:

Our Caterpillar 305 mini-excavator is great for getting into tight places. It's also nice for any compaction issues we have installing systems.

## Most challenging site I've worked on:

At the Benton Coal Mine we ran into really wet and poor soils. We ended up having to plow the zone we were going to lay the sand on. We poured two big septic tanks in place because of the water table and proximity to buildings and duplex-paneled it out to a field that was comprised of eight different cells. We rotated the cells through a K-Rain valve where we dosed 1 and 5, then 2 and 6, 3 and 7, 4 and 8 to spread it out.

## Oops, I wish I could take this one back:

A contractor had installed a system at a multiple-duplex site that failed in about a year. They tried different things, but the ground just wouldn't handle



» The Maguire Wastewater Solutions administration includes, from left, Doug Bennett, Steve Matli, Colean Smith, Rick Maguire, Jane Maguire, Skyler Maguire.

∨ The excavation crew includes, from left, Scott Connolly, Rick Maguire, Aaron Lake, Doug Bennett, Justen Jorgenson. They are shown with a Caterpillar 305 excavator.



▲ The service crew includes, from left, Rory Rossi, Nick Watson, Kaden Gray, Steve Matli and Craig Jordon. The vacuum truck is a 2020 International with a 2500-gallon FlowMark aluminum tank and NVE 607 pump.

the effluent. It was bleeding all the time. We designed a newer system but tried to utilize the old aeration systems. We set lift stations behind them and then went to a low-pressure pipe system. Looking back, we probably should have just started from scratch instead of trying to save the customer some money. Another problem was, with a duplex scenario you're dealing with renters who don't really care what they do or don't do and so we couldn't control the water usage. We had a really hard time getting these existing units sealed. We got it under control after about three years. It was just one of those times where you're trying to help some people and it winds up costing you a lot of time and money. But in the end we got it.

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

"Can't you just put a system in that breaks down the wipes?"

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

Right now we design systems at 200 gpd per bedroom and I think that's excessive. I think it should be more around 125 to 150. This number is antiquated in our code. OWPI is working on it but changing a law is a long process.

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

You've got to take care of your employees. They are what this company is today. I started the company with a backhoe and dump truck as a one-man show but when you make the transition to having employees, you must trust them. They are the key to a successful business. Another bit of advice — before you walk away from a job, whether you made money or lost money, make sure it was done to the best of your ability and find employees that will do that. If you stand behind your work and do a good job, you'll be successful.

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

Drive quarter-mile race cars. I built my first car in high school. We had five kids and I told my wife when they were done with college I wanted to buy a car. So I did that and I race it at the track.

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

- The industry will continue to thrive as reuse systems become more important to protecting our natural resources.
- The technology regarding cleaner wastewater will launch a whole new landscape for soil treatment areas.
- I'm hopeful the younger generation will get involved in the industry.
- A lot of people are moving out of the cities and into rural America.
- With antibiotics and cleaning supplies going into the systems, maintenance is key. Typically people don't want to take the time to maintain their systems and are happy to let someone else do it.
- The average system out there is probably 40 or 50 years old and is going to need to be replaced at some point. □

**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](mailto:editor@onsiteinstaller.com).

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Yankee Onsite Wastewater Association;  
(Massachusetts, Connecticut, Maine, New Hampshire, Rhode Island and Vermont)  
www.yankeonsite.org; 781-939-5710

## NEW HAMPSHIRE

New Hampshire Association of Septage Haulers;  
www.nhash.com; 603-831-8670

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

## NEW MEXICO

Professional Onsite Wastewater Reuse Association of New Mexico;  
www.powranm.org; 505-989-7676

## NEW YORK

Long Island Liquid Waste Association, Inc.;  
www.lilwa.org; 631-585-0448

## NORTH CAROLINA

North Carolina Septic Tank Association;  
www.ncsta.net; 336-416-3564

## OHIO

Ohio Onsite Wastewater Association;  
www.ohioonsite.org; 740-828-3000

## OKLAHOMA

Oklahoma Onsite Wastewater Association;  
918-727-7113

## OREGON

Oregon Onsite Wastewater Association;  
www.o2wa.org; 541-389-6692

## PENNSYLVANIA

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

Pennsylvania Onsite Wastewater Recycling Association;  
www.powra.org

Pennsylvania Septage Management Association;  
www.pasma.net; 717-763-7762

## TENNESSEE

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

## VIRGINIA

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

## WASHINGTON

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

## WISCONSIN

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

National Association of Wastewater Technicians;  
www.nawt.org; 800-236-6298



## INDUSTRY NEWS

### Franklin Electric announces recipients for outstanding achievements

At its annual Commercial Summit, Franklin Electric announced winners of this year's awards for outstanding performance, sales and customer support. They were Field Salesperson of the Year, Jimmy Vela; Field Service Engineer of the Year, Ryan Horner; and Team of the Year, U.S. South Central Region. The team members, led by Darol Hayes, included Chase Ellsworth, Dave Batdorff, Erasmo Barron, Ilse Gallegos, Jennifer Ford, Jesse Zwiebel, Jimmy Vela, Hannah Kiningham and Woody Kunkel.

### Jim Felker joins SJE as regional sales manager

Jim Felker is the newest regional sales manager for SJE. He will be working out of Oxford, Michigan, covering the northeast territory for SJE Rhombus and CSI Controls. Most recently, he worked in outside sales at Sales Service Plus, a manufacturer's rep that represents SJE Rhombus. □



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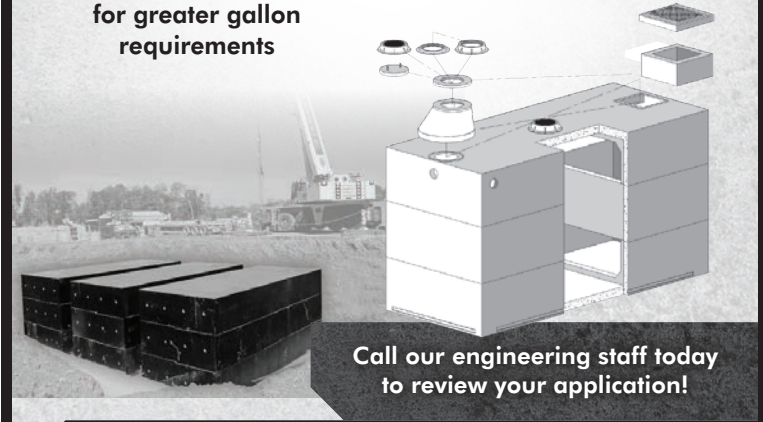
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### BRITISH COLUMBIA

British Columbia Onsite Wastewater Association; [www.bcossa.org](http://www.bcossa.org); 778-432-2120

WCOWMA Onsite Wastewater Management of B.C.;

[www.wcowma-bc.com](http://www.wcowma-bc.com); 877-489-7471

### MANITOBA

Manitoba Onsite Wastewater Management Association; [www.mowma.org](http://www.mowma.org); 877-489-7471  
Onsite Wastewater Systems Installers of Manitoba, Inc.; [www.owsim.com](http://www.owsim.com); 204-771-0455

### NEW BRUNSWICK

New Brunswick Association of Onsite Wastewater Professionals; [www.nbaowp.ca](http://www.nbaowp.ca); 506-455-5477

### NOVA SCOTIA

Waste Water Nova Scotia; [www.wwns.ca](http://www.wwns.ca); 902-246-2131

### ONTARIO

Ontario Onsite Wastewater Association; [www.oowa.org](http://www.oowa.org); 855-905-6692

Ontario Association of Sewage Industry Services; [www.oasisontario.on.ca](http://www.oasisontario.on.ca); 877-202-0082

### SASKATCHEWAN

Saskatchewan Onsite Wastewater Management Association; [www.sowma.ca](http://www.sowma.ca); 877-489-7471

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Western Canada Onsite Wastewater Management Association; [www.wcowma.com](http://www.wcowma.com); 877-489-7471 □

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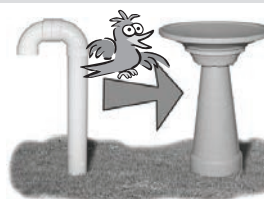
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# Avoid Digging Deep When Designing Drainfields

Keeping the trenches shallow allows the trench bottom to be located above the required separation distance from a limiting soil layer

By Jim Anderson and Dave Gustafson

A few months ago an installer we have worked with sent soil pictures to interpret with the comments that when he dug up an existing failing system “the best I could dig was about 8.5 feet deep in about 4 different spots. Soil was tight and when it broke out it was almost like rock, and hitting it with a hammer and it would break easily.”

His description would fit perfectly with describing soil layers massive in structure; very dense and compact in nature and very slowly permeable. Given his location, this describes natural soil layers and not soil that has been moved, compacted or manipulated. He asked what kind of replacement system should be installed?

The answer depends on more than just the soil conditions at the site, including conditions such as topography and slope; the elevation of the house sewer; and location of sewage tanks providing effluent pretreatment. In addition, while soil pictures are useful, it is often difficult to determine soil characteristics and depth to limiting soil area from photos due to light conditions, camera resolution and other factors. This may be a topic for a future column — how to take good soil photographs.

## AVOID PONDING

Our initial recommendation was to go with either an at-grade or mound system to utilize the natural soil surface. It was no surprise when he responded back that the homeowner would not go along with adding a pump tank, pump and pressure distribution to the system. Fortunately, the topography allowed the installer to extend the supply piping to an undisturbed soil area with enough elevation difference to install shallow trenches.

Keeping the trenches shallow allows the trench bottom to be located above the required separation distance from a limiting soil layer. In this case, the limiting layer begins at the top of the dense massive structure parent material. The dense layer will impede the downward movement of efflu-

ent and tend to pond the effluent where the soil layers change, leading to reduced treatment and lower rates of water movement downward.

By installing the trenches shallow and maintaining a minimum separation of 3 feet from the bottom of the trench to the beginning of the layer, treatment will be provided, and the effluent will be allowed to spread out laterally from the trenches using more area for the water to infiltrate. Other types of limiting layers that can be avoided using shallow trenches are impermeable bedrock, creviced limestone bedrock, seasonally saturated zones and permanent water tables.

The 3-foot separation distance we use in Minnesota was based on early research in virus and bacteria movement, which indicated using proper loading rates and resulting biomat formation movement of pathogens was about 2 feet beneath an operating system. Your state or local permitting authority may have a different set of separation criteria, so you always need to check your local requirements. Providing adequate separation distance is not the only advantage from installing shallow trenches.

In a natural soil profile, the horizon or area of the most biological activity, most well-developed structure and the best permeability for both oxygen and water is at the surface. When sizing the area of soil treatment trenches to accept the amount of water being generated in the house, using the most permeable area of the soil will generally result in the smallest system area-wise, while still providing adequate treatment. Shortening trenches can save the homeowner addition expense. It may also save on your equipment by not needing to dig deeper into or through dense layers.

Being in the most biologically active zone for naturally existing aerobic soil organisms enhances treatment of the effluent and controls formation and growth of the biomat. To break down the organic constituents of wastewater (BOD, suspended organic solids), aerobic soil organisms need adequate oxygen and water to be most effective. Since there are many more organisms in the soil surface, there will be more efficient breakdown of the waste.

## EASIER MAINTENANCE

In terms of treatment of pathogens and bacteria, the surface horizon with more organic matter and better structure provides more surface area for them to be captured on soil particles. This prevents their downward or lateral movement away from the system and makes them vulnerable to attack by the aerobic soil organisms or simply using their ability over time to be infectious.

**In terms of treatment of pathogens and bacteria, the surface horizon with more organic matter and better structure provides more surface area for them to be captured on soil particles.**



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Keeping excavation depths shallow also helps during rainy periods because the surface dries out first allowing installation to take place sooner. During system operation there is an advantage because there will be more evapotranspiration from a shallow trench versus a deeper trench. While in humid areas this may be an advantage for only a month or two in the summer, it can be significant. In drier or arid areas, evapotranspiration can account for up to 40% of delivered wastewater.

Finally, with trenches closer to the surface, inspection and maintenance are easier for service providers. It should not be hard to figure out why one of the overriding principles for good trench installations is to *keep it shallow.*

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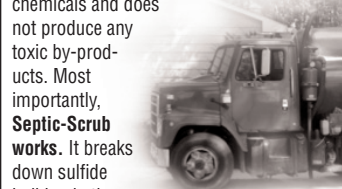
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## PRODUCT NEWS

### PRODUCT SPOTLIGHT

## Safety device locks down septic lids

By Tim Dobbins

Access into septic systems is obviously required for inspection, maintenance and cleaning. However, with this necessity and aboveground access becoming more popular, comes a safety hazard that has led to many unfortunate situations when certain precautions were not taken.

Covering and securing septic lids in a way to resist tampering by vandals, or accidental entry by children or animals is a smart move and it doesn't have to be difficult. Home and business owners have become creative over the years finding do-it-yourself options for securing lids, but many don't actually provide enough to securely lock lids. PolyLok's Lid-Lok safety device was developed as a sure solution to stop unwanted and accidental entry.

"We are always looking to create and develop products that make septic systems safer," says Pat Mulhall, vice president of PolyLok.

The device is manufactured to cover all screw ports so the only way to access them is removing the entire Lid-Lok. To withstand moisture and weathering over time, the Lid-Lok is constructed of a lightweight and non-corrosive solid aluminum ring and comes with a solid brass Master V-Line lock with two keys.



Polylok's Lid-Lok safety device is designed for simple installation, and it works on both 20- and 24-inch domed covers. "In the event a state or county wants risers brought to grade if properly installed by a licensed installer, this will bring an additional level of safety to any onsite wastewater system," Mulhall says.

Mulhall says that while most states and counties do not mandate use of these products, many installers and pumpers are using them regardless. "Currently many states, associations and boards are reviewing the mandatory usage of these products," he says. "Recently Canada made products such as these made by Polylok as well as other manufacturers mandatory in all new onsite septic applications."

Installers who employ the Lid-Lok have reported positive feedback to PolyLok saying the product is a simple way to prevent unwanted entry and that homeowners find comfort knowing children and pets can't accidentally wander into an extremely unfortunate situation. 888-765-9565; [www.polylok.com](http://www.polylok.com)



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## Felling Trailers Air Tilt trailer

The Felling Trailers' Air Tilt trailer has updates to improve ease of use and safety. The fixed approach ramp was extended in length from 14 to 22 inches. This reduces load angle by approximately 10 degrees, providing a better load angle with a more subtle break-over point. The new design also allows for the option of full-size oval recessed strobe lights. The Air Tilt's design utilizes air, powered from the tow vehicle, to tilt the trailer and optional ramps, eliminating the need for hydraulics. 800-245-2809; [www.felling.com](http://www.felling.com)



## Infiltrator Water Technologies CM-1060 septic tank

The Infiltrator Water Technologies CM-1060 septic tank is compression-molded and manufactured using recycled polypropylene. The CM-1060 is the first in a new line of CM Series tanks offered by Infiltrator. It is similar in design to the IM-1060 septic tank, introduced in 2010. The CM-1060 offers strength, efficient installation and easier assembly, according to the maker. Like the IM-1060, the CM-1060 is a two-piece septic tank offering shipping and storage efficiencies. 800-221-4436; [www.infiltratorwater.com](http://www.infiltratorwater.com) □





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