

The Water Warrior

New Jersey's Joe Mayers uses a barge-mounted pumping system to keep island home septic systems in shipshape condition **By Scottie Dayton** Photos by Cathy Rosselli

On most mornings, Joe Mayers of Septic Experts in Sussex, N.J., pilots a barge to work, installing onsite systems on islands or lakefront properties inaccessible by road. In 2003, the Sussex County Health Department asked him who was going to service the septic tanks he was installing. Mayers spent three years researching and developing a solution.

Trained as a diesel mechanic, Mayers used his heavy machinery background gained while operating Joe Mayers Excavating to decide what equipment to buy and how to modify it for freshwater navigation. His patented, quad-sectional barge opened the door to subcontract work involving hydro-raking organics off lake beds, dredging, restoring shorelines, or ferrying landscaping materials.

Mayers' latest equipment addition is a low-profile, skid-mounted, 600-gallon steel vacuum tank from Pik Rite Inc., which mounts on any of his barges. He maintains that pumpers can do what he did because they know how to improvise and already have all the equipment they need except for the barges.

"I had no special training," says Mayers. "I just gave it a lot of thought, did my research, and used common sense."



Joe Mayers may be reached at 973-875-8000.

Pumper: How do pumpers service offshore septic tanks?

Mayers: These are typically gravity-flow systems to 1,000-gallon tanks, and most are between the house and water. With no lake vessel large enough to transport vacuum trucks, some companies use pontoon boats with trash pumps, sump pumps, or

Below: Joe Mayers' crew heads out to an island home to pump out a septic tank. In the region where Mayers works, codes recommend pumping island tanks every two to three years.



diaphragm pumps. However, paper clogs them, so they put a screen on the end of the hose and pump just the liquid to a 300-gallon plastic tank on deck. The method isn't efficient or cost-effective.

Pumper: When did you begin installing onsite systems?

Mayers: I began in 1983, but began installing on islands in 2000. Three years ago, we bought a pre-owned 2002 Peterbilt Model 375 tri-axle truck with 4,500-gallon steel tank and Masport pump. That's when I began thinking about a small vacuum tank for the barges.

Pumper: How did you research naval architecture?

Mayers: I read books on building ships and barges and searched the Web for articles on buoyancy, stabilization, center of gravity, and the engineering behind how vessels work in water. I also talked to contractors who used barges for different purposes and even an offshore driller.

Tank and barge configurations depend on the size and depth of the lakes, the volume of septage, and accessibility. I wanted to drive on the interstate without a wide load permit and back down lake right-of-ways the width of goat paths. Weight-wise, I was limited by what my 1-ton pickup truck could pull and the trailers I had. My goal was to utilize what I owned and not buy more equipment. From there, it was trial and error. For example, I bought my first barge built of steel sectional boxes and learned that a square box doesn't move through water very well.

Pumper: What equipment had to fit on your first barge?

Mayers: A Kubota 007 mini excavator for digging test pits. I learned from my mistakes and built my next barge 8 by 12 feet long and 2 feet high. At



Above: Septic Experts workers empty a load of septage from the barge onto a truck for transport to a disposal facility. The company likes to piggyback island pumping jobs for the greatest efficiency.

1.5 tons, it draws 6 inches empty and has 4 to 6 inches of freeboard when loaded. A 15-hp four-stroke outboard powers it, but the vessel is sometimes too small and can't handle the chop of larger lakes. We only run it when the lake is still.

That led to my designing the sectional barge in 15-foot quarters because sometimes you can't back a 20-foot-long barge section into some lake right-of-ways. The

barge is 30 by 16 by 4 feet high, weighs 18 tons, and has two four-stroke 25-hp outboard motors. I only put small to mid-size equipment on the barges. Anything larger makes the center of gravity too high, and the vessel becomes

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- Joe Mayers

unstable and prone to capsizing. My safety limit is 6.5 tons of machinery.

Driving machinery onto the barges stresses the hulls because the sterns want to lift out of the water. Therefore, they need thicker steel in the hulls and live-load decks with structural reinforcement along the centerline.

Pumper: How do you transport them?

Mayers: I used to pull them on a tilting gooseneck trailer behind the pickup truck. In 2008, I purchased a 20-foot single-axle rollback truck with a winch to transport the barges. We welded a 6-inch angle iron onto the sides of the bed to prevent the barge sections from slipping off when they came out of the lake wet and often covered in algae.

Pumper: What was the most difficult part of designing the pumping barge?

Mayers: Designing the vacuum tank was tricky because deck space is limited and we wanted multiple hose connections to pump off any side of the barge. I'm using a model VHXL75V11 Masport vacuum pump displacing 230 cfm with a 24 hp electric start Honda engine. We overbuilt the design in anticipation of pumping septic tanks with more than 30 years of accumulated scum and sludge.

Pumper: How will you pump the septic tanks?

Mayers: We'll float up to the property, run out the hose, pump the tank, and return to the mainland to offload into a vacuum truck. Because we will pump downhill to the barge, the vacuum hose has a shut-off valve to prevent spills should the tank fill before finishing the service call.

Piggybacking calls should be no problem. I have many island and lakefront customers needing service and they can tell their neighbors when I'm coming. Our code recommends pumping septic tanks every two to three years.

When we are in larger lakes with many islands and homes, we will put multiple storage tanks on deck, then transfer wastewater from the vacuum tank to the storage tanks. This makes it affordable by reducing the amount of trips to and from the islands.

Pumper: How late in the season can you operate?

Mayers: That all depends on the weather and when the ice begins forming, usually around the end of December or beginning of January.

Pumper: What hazards are associated with this work?

Mayers: The biggest hazard is being hit by speedboats and yachts on the larger lakes, as the barge's black hull is often invisible in the water. I improved its visibility by adding strobe lights and mounting a 3-foot-tall traffic safety cone with reflective tape in each deck corner.

Lightning is the next greatest hazard. Working in mountain lakes, we can't see or hear storms until they're on top of us. The iron in the rocks attracts lightning, as does the steel hull. It's very important to watch the weather. We use a lightning app on our cellphones, which is very helpful in tracking approaching storms.

Pumper: How difficult is it to pilot the barges?

Mayers: It depends, as wind, weather, currents and depth all affect maneuverability and control. Much of what I did was common sense and gut instinct. If I wasn't sure, I did things overkill, because you have only one chance on water. ■

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