

Hiccups met in Suffolk's plan to clean local waterways

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Suffolk County has launched an ambitious plan to clean the region's waters by getting homeowners to abandon cesspools and septic systems in favor of advanced and more costly treatment technology, but the effort is hitting technical and political hurdles, a review by Newsday/News 12 has found.

County-ordered tests show that only one of the four advanced systems approved by Suffolk in 2016 and 2017 has routinely met the threshold county officials set for reducing nitrogen, a key contributor to the polluting of Long Island's waterways. A fifth system, approved this year, also met the standard, although in a single round of the ongoing testing, county officials said.

Additionally, county officials have encountered resistance from legislators who say they fear a voter backlash over the increased per-household cost of improving wastewater treatment. "Alternative on-site wastewater treatment" systems — in essence, mini sewage-treatment plants that would be placed in thousands of yards across Suffolk County — are more effective than traditional cesspools and septic systems but, at an average of just under \$20,000, are also at least twice as costly and require more maintenance.

"Clearly we want to see the whole universe of these performing better," Walter Dawydiak, Suffolk's director of the Division of Environmental Quality, said during a February conference call with environmentalists, builders, officials and others involved in the effort. But he emphasized that the results were still encouraging. "Even the worst of these systems is showing 50 percent removal [of nitrogen]," he said later.

Most homes and businesses in the counties surrounding New York City, including Nassau, are connected to sewer systems. Nearly 75 percent of Suffolk homes, though, do not have sewer service. Suffolk officials estimated that some 252,000 cesspools — holding tanks that eventually leech untreated waste directly into the ground — are in place in the county. An additional 108,000 properties are served by traditional septic systems, which offer better overall treatment but do little to reduce nitrogen.

That decades-long legacy of nitrogen-rich waste moving from homes largely unfiltered to the ecosystem has in part led to harmful algal blooms, loss of shellfish stocks, degraded wetlands and lower oxygen levels in Long Island's surface waters, including its bays, rivers and Long Island Sound.

Suffolk County Executive Steve Bellone labeled nitrogen as "public water enemy No. 1" in 2015 and released a wide-ranging water-resources management plan to reverse declining water quality, which included the advanced systems. That same year, the county started a pilot demonstration program to test some of these systems, selecting homeowners via lottery to get equipment installed at no cost.

In 2016 Bellone and the legislature amended the county sanitary code, outlining how the advanced systems would be tested, and setting rules for the average amount of nitrogen the new technology could release before being approved for widespread use. Suffolk officials settled on 19 milligrams of nitrogen per liter, limits also used in Massachusetts and Rhode Island, where officials have been battling for more than 20 years to reduce nitrogen levels in wastewater. That level of nitrogen is less than a third of what is usually found in raw sewage, but also nearly twice the state's standard for what can be released by a large municipal sewage-treatment plant — the type to which sewer pipes are connected.

Supporters hailed the change, saying it had been a long time coming and necessary. They noted that for more than 50 years it's been known that disposing of waste into groundwater is not wise for the environmental and economic well-being of an island where tourism and recreation are big business. "This is as big or bigger than any other major policy issue that the Island has confronted," said Kevin McDonald, conservation project director for public lands at The Nature Conservancy on Long Island. "Any of these systems on their worst day can't be worse than what we have now," he added. "Even if they only perform at 50 percent that's better than what we're doing now."

Bellone declined to be interviewed, instead referring questions about the *Newsday*/News 12 review to Deputy County Executive Peter Scully. The county's so-called water czar, Scully said manufacturers will be given a chance to make adjustments to make their systems more effective, but over the long term, if they can't meet the standard, they won't be approved for general use in Suffolk County.

"It's very early in the process and the data set is small but the county is forcing the manufacturers to meet a standard that is very difficult to meet," he said. "But the standard is in place for a reason." As the county studies how the technologies perform, five systems are provisionally approved for sale. Although the lottery program is over, the county is offering loans for year-round homeowners who want to install them. East Hampton, Shelter Island and Southampton have their own grant programs.

Meanwhile, discussions are ongoing between county officials, environmentalists and home builders over whether to mandate the installation in certain areas of the county, including for new construction or at the time of a sale of an existing home, Scully said. East Hampton already requires it in all new construction. Other solutions are part of Suffolk's response to its nitrogen problem, including new sewer systems in some areas and bolstered efforts to reduce fertilizer runoff. But officials expect the alternative waste systems to play a large, if still unquantified, role especially in the remote — and in many cases environmentally sensitive — areas where sewers are impractical.

"We know a combination of solutions is part of the overall plan that includes sewers where it makes sense, use of the alternative septic systems when sewerage does not make sense and using clustered systems in some situations," Scully said. Putting advanced treatment systems and sewage systems throughout Suffolk County would cost \$8 billion, according to official estimates.

'From Roman technology to full-on on-site treatment'

Advanced on-site wastewater treatment systems, already in place in parts of New England and elsewhere in the country, use bacteria, oxygen and natural chemical reactions aided by blowers, calibrated mechanics and other technology to reduce nitrogen.

“It’s going from Roman technology to full-on on-site treatment systems, which is unbelievable,” said Bryan McGowin, the owner of Southampton-based Advanced Wastewater Solutions who is also a distributor for a Fuji Clean USA system, the fifth treatment system that was approved in January for provisional use. But the systems have their drawbacks. They can be highly variable in their performance, according to the U.S. Environmental Protection Agency, as well as manufacturers, scientists and distributors interviewed by Newsday. They can also be touchy. Chemotherapy drugs, household bleach — even the children’s toy Silly String — in drain water can alter the way they work, experts say.

There is also no way to monitor in real time whether the systems are functioning properly and meeting county regulations. Officials now rely on manufacturers or county workers to take periodic samples that are sent to a lab for analysis. “Not all technologies work as well as they might say they work,” said David Bennett, president of Bennett Environmental Associates Inc. in Brewster, Massachusetts, a large firm on Cape Cod that maintains systems for homeowners. Even with the subsidies available, recent events show getting public buy-in may be a politically tortuous road.

County lawmakers in December pushed back on a Bellone administration proposal to make it mandatory for property owners to replace a failing cesspool with a regular septic tank after two pump-outs in a year. Their main concern was imposing an additional cost on homeowners, estimated at between \$2,000 and \$2,500. “We considered these to be the easy steps, but as you can see, it’s complicated,” Scully said at the time.

The legislature ultimately passed a law that is less onerous on property owners. Instead of requiring the upgrade of a cesspool that is failing, it bans only the installations of new stand-alone cesspools, and delays the implementation of that provision until July 2019. Starting July of this year, the law requires that wastewater professionals simply report cesspool pump-outs and replacements to the county. In addition, permits will be required to replace septic systems, in part to allow officials to get a better handle on what equipment is installed where.

Advocates of advanced systems said the experience taught them that the county’s efforts need to be more narrowly focused to get the necessary political support for the advanced systems. “The differences amongst various legislators were more pronounced than I expected them to be,” said Legis. Bridget Fleming, a Democrat who represents the South Fork. “You have to learn from that.”

At the same time, talks are underway among county officials, environmentalists, building-industry representatives and members of local governments, about whether the county will — in some form, at some point — require the installation of the advanced nitrogen-reducing systems. “I recognize that it could be politically challenging to institute a mandate, but I think a mandate on new construction — when homeowners are making an investment and we can assist them with a grant and loan program — is where we put our focus in how to move forward,” Fleming said.

Other possible options could be requiring installation of an advanced system upon the sale of a home or the failure of an existing cesspool or septic system, Scully said. He added that he expected the conversation to take place over several years, saying that the county first wanted to see the approved systems develop a track record of success.

Cost and performance

Installing the new technology can cost from \$13,400 to nearly \$23,600 depending on design and site requirements, according to the county. The units also require periodic maintenance, add to electrical bills to run a motor and pump — ranging from \$57 to \$266 a year, according to county estimates — and require homeowners to stop using sink disposals for food waste or washing excessive bleach or oils down the drain.

“It’s not cheap at all especially when people think they’ve been paying nothing to get rid of their waste,” said Tom Montalbino, president of Roman Stone Construction Co. in Bay Shore, which installs two of the county-approved systems for the Ohio-based Norweco company.

Of the four systems approved by the county by 2017, only the technology from Indiana-based Hydro-Action consistently met the county standard in the testing, which was conducted between August and March. The system released an average of 14.85 milligrams of nitrogen per liter.

Hydro-Kinetic, a Norweco product, was at 25.78 milligrams per liter. A second Norweco system, the Singulair, averaged 39.08, and the Orenco Advantex, from Oregon, measured in at 32.57 milligrams per liter, according to data released by the county.

Test results for the Fuji CEN Series model, the fifth system just approved by the county in January, averaged 9.26 milligrams per liter, well below the standard, testing data provided by the county shows. The county received the results on Tuesday, officials said, and they pertained only to a round of testing done in April. The results come as 145 advanced systems have been installed or approved for installation across Suffolk. As of Tuesday, more than 1,100 homeowners had registered for the county grant program, which covers as much as \$11,000 in costs for the new systems. Of those, more than 300 had completed applications and 180 had executed grant agreements, according to the county. There is also a loan program available, managed by Community Development Corp. of Long Island, for up to \$10,000.

The state Department of Environmental Conservation has approved a streamlined permit for installation of the systems, said DEC regional head Carrie Meek Gallagher.

EPA: Systems’ performance ‘highly variable’

Even as county officials launched the program and announced standards and goals, data was available to suggest that the systems, while generally effective, might not consistently hit the 19-milligram-per-liter goal they set for nitrogen reduction.

In a draft analysis of the county’s proposed code changes, the U.S. Environmental Protection Agency said that while the systems Suffolk officials were endorsing can meet requirements, their performance is “highly variable.”

“Individual sewerage system performance ranged greatly . . . and very few systems managed to meet the project’s desired nitrogen effluent concentrations consistently,” the EPA report said, citing a 2010 study that evaluated 20 systems.

That finding is echoed in the experience of places where similar systems are already common. An EPA-funded study published in September about the three types of advanced systems most-commonly installed in the Narragansett Bay area of Rhode Island found that compliance with local codes ran between 64 percent and 75 percent.

The study, published by the journal *Water, Air and Soil Pollution*, concluded that the advanced systems are capable of meeting the 19-milligram-per-liter threshold, but the final effluent concentration “varies as a function of technology, time and by individual systems within a technology type.”

During the early phase of the implementation of Suffolk’s pilot program in 2016, some systems donated by manufacturers notched elevated nitrogen numbers, which in some cases were discounted in an averaging methodology used by the county, according to data reviewed by *Newsday*. Outlying high numbers were typically removed because of the small number of results included in the sample.

None of the systems would get provisional approval using all the test results, said Dawydiak, Suffolk’s director of environmental quality. “We were not actually testing the ability to remove nitrogen,” Dawydiak said. “We were building a program to vet the expertise and operations.”

All the systems approved by the county have been certified by a national accrediting agency NSF International, an independent, Ann Arbor, Michigan-based group. NSF subjects systems to six months of tests designed to mimic taxing instances of family life, such as when people visit or when a family comes home from vacation with weeks of laundry. It cautions about how the performance of the systems can vary greatly outside the lab.

“When you’re looking at a system in a home, it’s completely dependent on who lives there,” said Sharon Steiner, NSF’s manager of wastewater services.

‘Cautiously optimistic’ about monitors

The EPA has issued a challenge to manufacturers to come up with cost-effective monitors to measure nitrogen levels in real time, said Jay Benforado, chief innovation officer in EPA’s Office of Research and Development. A six-month testing period of technologies is scheduled to begin in May.

“We’re cautiously optimistic they will give us a huge tool to use,” Dawydiak said. “This represents a major step forward.” Beyond measuring the effectiveness of the installed systems, gathering feedback on their real-world operation allows manufacturers to make adjustments. Homeowners should also be aware in case their behavior is altering how the system should work, Benforado said.

“The technology hasn’t been available to have inexpensive, reliable monitoring for systems . . .,” he added. “This monitoring question is central to bringing online these new systems.”

Lottery winners’ experiences with systems

Newsday and *News 12* conducted interviews with some of the people who have had the systems installed, and they were mostly complimentary. In late 2015, Ronkonkoma resident Robert Candela

traded his low-tech cesspool for a high-tech advanced on-site septic system that uses oxygen and bacteria to treat the waste and reduce nitrogen.

“It’s like a biology experiment under the ground,” said Candela, who unwittingly disturbed the chemical processes when he bleached some coral for a salt-water fish tank and dumped it down the sink drain.

“Apparently, it put the system back a little.”

Candela grew up in Massapequa and was surprised when he and his family moved to Ronkonkoma and learned the property used a cesspool. He applied for the county lottery and was selected to have a test unit installed for free.

“I thought it was a pretty good idea,” Candela said. “Cesspools and everything leaching into the ground where our water comes from is a little disturbing.”

“You see the water in the septic tank and it’s absolutely disgusting,” he said. “It’s impressive how clear it comes out.”

In Lake Ronkonkoma, Etta Rosenberg and her family were also selected by the county lottery and had a system installed in early 2015 at their home. Four people live in the house with one bathroom, but Rosenberg said she was told the installed system could serve a three-family home. “It’s a little bit of an overkill,” she said. “I don’t know why I got that system.”

But she added, “I love the fact that it’s ecological and I didn’t have to pay for it.” Still, there are some issues. There are now seven manhole-sized lids in her backyard. If the family were to install a deck, it would have to be put up in sections so that the system would be accessible.

“We look in the backyard and go, ‘Oh, hmm, are we going to be able to sell the house with it looking like that?’ ” she said. “Be aware of what it will look like.”

Michael Knipper and his wife, lifelong Long Islanders, wanted to do what they could to protect the environment. “The quality of the groundwater is very apparent to all,” said Knipper, whose family of five lives in St. James.

They were selected by the lottery and had an EcoFlow system installed in late 2016, a system not among the five provisionally approved by the county. The family has not had any problems, he said. “If you look at the current setup that has been in place for decades, something has to be done,” Knipper said. “If it leads to improvement for future generations, that’s the main goal for all.”

For those who want to apply:

- To apply for a Suffolk County grant of up to \$11,000 for an advanced wastewater treatment system, go to www.reclaimourwater.info, call (631) 852-5811 or email septicdemo@suffolkcountyny.gov. The homes must be the owner’s year-round residence. Once you qualify for a grant, you can apply for a low-interest loan of up to \$10,000.

- East Hampton residents can call (631) 324-0496 or visit the website <https://ehamptonny.gov/584/Septic-Rebate-Program>
- Southampton residents interested in the rebate program can visit www.southamptontownny.gov/1083/IA-OWTS-Rebate-Program or call (631) 287-5720.
- Shelter Island residents can pick up applications in person at town hall or online at www.shelterislandtown.us/town-clerk