

Deep in the Delta, a town's sewage system is making residents sick

This Mississippi community is an example of an environmental crisis that could continue to fester amid Trump's funding cuts.

By **Claire Thornton** Globe Staff, Updated May 24, 2025, 6:00 a.m.



Stephanie Smith left her home to go to lunch alongside her daughter, Oliva. The Shaw, Miss. resident suffered mysterious bouts of abdominal pain and vomiting, and worried about sanitation in her hometown. RORY DOYLE FOR THE BOSTON GLOBE

SHAW, Miss. — Alone and sitting in bed, Stephanie Smith read the medical test results that would change how she saw her small hometown in the [Mississippi Delta](#), turning it from a quiet oasis into a health threat stalking her family.

Several months before, two anthropology professors tested adults and children in Shaw, Miss., for parasitic worms and bacteria that cause stomach and intestine problems. They chose Shaw for their research because of its high poverty rate, hot temperatures, and wet climate.

For years, Smith suffered mysterious bouts of abdominal pain and vomiting, and worried about sanitation in Shaw, where the sewer lines are plagued by backups. She took her three children and herself to get tested.

That afternoon in her bedroom, while her kids were at school, Smith felt like she was the one in the classroom. Reading the notice that said she tested positive for a bacterial infection, she had the horrible feeling you experience when a teacher passes back a test you failed. But it was worse, because it was Smith's health at stake.

"I was upset at the facts. You can't argue with the facts," Smith, 48, said.



A flooded field outside the public school and a city water tower in Shaw. RORY DOYLE FOR THE BOSTON GLOBE

A number of other residents of this town of 1,450, particularly children, have tested positive for intestinal infections that can cause severe abdominal pain and stunt development. The blame falls on a town sewer system that backs up and overflows after heavy rains, flooding ditches and lawns where children play with water contaminated with fecal matter, according to state environmental investigations. Municipal workers had to unclog both sewer pipes and pumps, but residents complain the town has failed to acknowledge the scope of the problem.

The Mississippi Delta may feel a world away from Massachusetts, but the cause of health risks in this small rural community are present here and elsewhere around the country: aging sewer and drainage systems overwhelmed by heavy rains, especially as climate change has triggered more intense storms.

Parts of Boston Harbor and the Merrimack and Charles rivers, for example, have been polluted with raw sewage. The Merrimack has had levels of *E. coli* bacteria beyond what state safety rules allow for swimming, and the Globe has previously reported an increase in complaints of gastrointestinal problems at hospitals after heavy downpours.

Across the country, scientists warn that several million people may exhibit evidence of worms that are transmitted through fecal-contaminated soil and enter the body orally.



Glory Hawkins-Scott, 75, washed dishes in her kitchen after adding a small amount of bleach. Hawkins-Scott said she doesn't drink the tap water and doesn't trust it's safe. RORY DOYLE FOR THE BOSTON GLOBE

Most high-quality studies of the problem are more than 50 years old, [according to medical researchers](#). But in Shaw, residents were fortunate that a [local nonprofit](#) hosted anthropologists who conducted studies in recent years. One published in March 2023 found [25 percent of the children tested](#) positive for worms. The infections require repeated treatment as long as sewage problems persist, experts said.

“We’re like Flint, Michigan, junior,” said 33-year-old Miracle Thomas, a Shaw resident who had to dig a ditch behind her mother’s home to contain sewage that doesn’t fully drain into the sewer main after big storms.

Though they have published only limited test results, the anthropologists believe the problem caused by ineffective sewage drainage is more widespread. In Texas, South Carolina, Alabama, and Louisiana, other researchers in have found parasitic worms in soil samples from [four low-income areas](#).

Smith, who grew up raising baby chicks on a farm here, tested positive for *Helicobacter pylori*, a common bacteria spread through feces, saliva, and contaminated water sources that can lead to gastric ulcers and cancer.

Shaw has a slow-moving bayou lined by thick cypress trees that runs through the center of town, where homes passed down for generations sit on gravel roads. For many, driving with the windows down past dewy fields and neighbors in lawn chairs can feel like a roaring parade, full of friendly faces and beckoning waves.



Porter Bayou runs through Shaw. RORY DOYLE FOR THE BOSTON GLOBE



Shaw is a very poor community, with more than half of households living below the poverty line. RORY DOYLE FOR THE BOSTON GLOBE

At only a square mile, the town is loosely divided by the Blues Highway into four quadrants nicknamed after landmarks past and present, such as “Icehouse,” once home to a chilly shack residents frequented for ice and cold beer before widespread refrigeration.

Shaw is also very poor, with more than half of households living below the poverty line, and 95 percent of residents are Black. Its grocery store closed long ago, and building facades downtown are crumbling. Abandoned homes destroyed by fires are scattered among its neighborhoods.

There are just two public works employees overseeing seven pumps that send waste to a sewage treatment lagoon just outside town. Some pumps were upgraded in recent years, but during a visit in March, the Globe observed one pump surrounded by murky water and others covered in overgrown foliage.



Sewage pumps throughout Shaw pump wastewater away from town, to a wastewater treatment lagoon on its outskirts. When heavy rains overwhelm the pumps, sewage pipes and drains overflow. RORY DOYLE FOR THE BOSTON GLOBE

But since the Trump administration made extensive cuts to [scientific research funding](#), the anthropology professors are concerned money to test communities such as Shaw won't be available, especially if there's any hint of DEI efforts in federal grant applications.

The research is important, the anthropologists said, because parasites and bacterial infections like Smith's are a neglected health risk linked to poverty and race that most Americans likely associate with the distant past or underdeveloped countries.

"We know the parasites have been here, and there's not really any evidence they went away, people kind of just stopped talking about them," said Theresa Gildner, an

anthropology professor at Washington University in St. Louis who conducted the study in Shaw.

Local doctors and community organizers are trying to get more residents tested and treated for worms and *H. pylori*, but their efforts could be futile without a permanent, long-term solution to Shaw's sewage issues. Kids can get infected over and over again if they're playing outside with basketballs and other toys that touch the ground, according to researchers.

Standing water drains slowly in the flat Delta's thick topsoil during rainy periods, overwhelming Shaw's handful of sewage pumps. When that happens, Thomas can't flush her toilet, so she disconnects the sewer pipe and lets wastewater drain into the yard.

For decades, sewer access in Shaw was even worse on the north side of town, where Smith lives. As the result of a class-action lawsuit, an appeals court judge ruled in 1972 that the town discriminated against Black residents by not providing sewer connections or surface drainage. As a result, more residences were connected to the city sewer, but the system continues to back up after heavy downpours.



Unfinished pipe repairs remain near city hall. RORY DOYLE FOR THE BOSTON GLOBE

Nearly 50 years after the lawsuit, nurse practitioner Nora Gough-Davis said she believes she was the first health care provider to test Shaw residents for parasites in 2017, after kids told her their anuses itched so badly they had to sleep on their knees.

“The parasites are attacking, doing what they do,” Gough-Davis, 48, said.

She tests children for parasites when they tell her they’re vomiting up meals and holding their stomachs in pain. Several have tested positive for worms and many more for *H. pylori*. Treatment is a prescription for a medicine that’s available over the counter in some South American countries, where medical professionals are trained to look for signs of parasite infections in patients.



Nurse practitioner Nora Gough-Davis said she believes she was the first health care provider to test Shaw residents for parasites in 2017. RORY DOYLE FOR THE BOSTON GLOBE

Pediatrician Braveen Ragunathan, 35, moved to the Delta in 2021 and soon began testing and treating kids for parasites. He said one, a 13-year-old boy, told him he saw a worm in his poop.

“I felt sick in my own belly,” Ragunathan said on learning the problem was more widespread. “We need to get kids treatment.”

That moment came after Gildner and Tara Cepon-Robins, an anthropology professor at the University of Colorado Boulder, released the results of their parasite testing from 2019. The pair chose Shaw because its subtropical climate is similar to Ecuador, where they had previously tested kids for worms.

“People in Ecuador can go talk to a doctor and get the medicine they need to treat it right away,” said Cepon-Robins. “And here, even for my dog, the same medicine is \$300 or \$400, and for humans, they amp that up even more.”

Since the parasites and other organisms are associated with underdeveloped countries, they can be “flying under the radar” in the US, where many people who have symptoms don’t know what’s wrong, Gildner said.

In Shaw, Gildner and Cepon-Robins found nine of 24 children tested positive for parasitic worms or single-cell organisms spread when fecal-contaminated soil makes contact with a person’s mouth.

The researchers were hosted by Shaw’s grassroots community hub, [Delta Hands for Hope](#), which gives kids groceries and homework help. The center’s large footprint downtown helped Gildner and Cepon-Robins gather the stool samples they needed, including one from Smith last summer. Before the end of this summer, Smith will receive results of tests to determine if worms called helminths have lodged in her small intestine.

Chiquikta Fountain, executive director of Delta Hands for Hope, said Shaw residents who participated in the studies are concerned about the findings, which she said could be the tip of a nationwide iceberg. "It's not just an isolated event here," she said. RORY DOYLE FOR THE BOSTON GLOBE

Researchers were hosted by Shaw’s grassroots community hub, Delta Hands for Hope, which raises awareness about the town’s historic civil rights struggles. RORY DOYLE FOR THE BOSTON GLOBE

On March 11, less than 500 feet from [Delta Hands for Hope](#), Mayor Evereth Stanton sat in his city hall office, sucking on a Life Savers mint while reviewing a \$600,000 federal grant award he’d received that day for waste-water infrastructure improvements.

Shaw's sewer problems long predate Stanton, who was elected in 2017, and the retired Army Command sergeant major has asked for federal aid to supplement local tax revenue. The town has tried to fix drainage problems as they arise, including re-lining sections of sewer pipes. During Stanton's tenure, a federally funded project "fully rehabilitated all the mechanical and control equipment for each pump," according to documents Shaw filed with the Mississippi Development Authority.

Before Shaw won the \$600,000 Community Development Block Grant this year, utility contractors said Shaw's waste water problems were so large the town could not afford to fix them on its own.

"Many improvements have been made to the city's collection system, however, there are known problematic areas that still need to be addressed," utility contractor Katetra Newman wrote in a letter included in Shaw's grant application.

Shaw's grant application shows money will pay for replacing PVC sewer lines, replacing manholes, and repairing points along sewer lines.

The sewer line repairs, which target sections damaged by tree roots, are unrelated to the failure of drainage pumps after heavy rains, but the grant money does not cover work on the pumps, Stanton said.

Shaw residents told the Globe they routinely call town hall for drainage backups; Public documents show the problems are fixed by blowing out backed-up pipes, which requires turning off water to the area.

Water remained near a culvert in Shaw, feet from a manhole leading to sewer lines. Residents said such covers overflow after heavy rains. RORY DOYLE FOR THE BOSTON GLOBE

During Stanton's tenure, three Shaw residents also complained to the Mississippi State Department of Health about busted sewage pipes, and toilet paper and sewage spilling onto lawns, according to documents the Globe obtained through a public records request. Residents also filed five reports with the Mississippi Department of Environmental Quality, according to public records.

The office of Mississippi Governor Tate Reeves did not respond to requests for comment.

Stanton contended Shaw's sewage drainage problems weren't the cause of the parasite infections in children. Instead, he blamed it on poor hygiene among residents, noting those who participated in the study allowed researchers to take a sample from a commode.

"I think that's a parental thing, I think you need to clean up, you need to make sure your children are in a clean environment," Stanton said. "You need to be sanitizing, you need to be making sure dishes are washed, making sure the kids are using hand sanitizer. I think it's a lack of education."

Stanton said he tried to make infrastructure improvements a priority while mayor, but said the town isn't responsible for preventing sewage pumps from backing up, which he said is unavoidable after heavy rains.

A mix of groundwater and sewage remained on the side of a street in downtown Shaw. RORY DOYLE FOR THE BOSTON GLOBE

"It's flat land, so when you get an exceeding amount of rainwater, it's going to flood your system, so whatever comes out, comes out. That's just the Mississippi Delta," Stanton said.

Bernice Boone, 60, one of two candidates running against Stanton in the mayoral election in June, said it was unfair of him to accuse Shaw residents of needing to keep their homes cleaner.

“I would be offended because only I know what goes on in my house,” she said, adding that everyone in Shaw knows sewage backups are a longstanding problem.

“Ninety-nine percent of the people that I talk to, that’s the first thing that comes out of their mouth,” she said, referring to her campaigning for mayor.

The health problems became more widely known among residents in January after a New Orleans-based freelance journalist reported [on the anthropologists’ research](#) in the British publication The Guardian. A local television [segment](#) aired in February.

“We’ve had several mayors, we’ve had all these people come through here and nobody told us that our lives were in jeopardy to live here or to raise our kids here,” said Smith, whose sons Corey and Elijah played basketball on a court behind town hall most afternoons during their recent spring break. Just feet away, a pipe stuck out of a hole in the ground filled with water that smelled like feces. It had been covered with a plastic orange traffic barrel.

Corey Smith (center) played basketball at a public court in Shaw. RORY DOYLE FOR THE BOSTON GLOBE

Elijah Smith, 12, with his mother, Stephanie, at their home in Shaw. RORY DOYLE FOR THE BOSTON GLOBE

Corey, Elijah, and Olivia Smith tested negative for parasites, but other children got sick with debilitating stomach pain possibly linked to contaminated soil.

In March, Stephanie Smith tested positive for an *H. pylori* infection again, after going to the clinic with abdominal discomfort and difficulty breathing. Around that time, her adult daughter Alicia and her baby, Kaylonie, decided to move back home from New Orleans to be with the family. Smith said she's most worried about what Shaw's water could do to her 1-year-old granddaughter and is considering moving. She recently requested a new Section 8 housing voucher, and may leave Shaw if she can find a landlord who accepts her rental application.

"Our town is messed up, and our sewer main is damaged, and I just pray and hope that it doesn't damage something in us, and I pray that it doesn't stop the growth of my kids," Smith said.

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Claire Thornton can be reached at claire.thornton@globe.com. Follow Claire on X [@claire_thornto](#).

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