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## **Recent Hurricanes Strain U.S. Towns' Aging Sewer Systems.**

***Harvey and Irma caused untreated sewage to be released into streets, rivers and homes of affected towns and counties***

In the days after Hurricane Irma slammed Brunswick, Ga, most businesses and restaurants were shut down. The problem wasn't just flooding or hurricane damage, it was also untreated sewage mixing with floodwater, seeping out of manholes and overwhelming an aging system of pipes and pumps.

Residents were asked not to take showers, wash dishes or flush toilets for four days, and schools were closed for more than a week. Crews, facing extensive power outages, worked to bring the sewage system back online in order to restore service.

Downtown sandwich shop Wrap Happy had no damage or flooding, but lost days of business because the water and sewer restrictions made it difficult for evacuees to return home and kept life from getting back to normal.

"It shut down our customer base," said Taneka Beasley, whose family owns Wrap Happy. "We took a really big hit financially."

The Brunswick-Glynn Joint Water & Sewer Commission, which serves about 30,000 residential and commercial sewer customers and treats about 8 million gallons of wastewater a day, said on its website that the area saw widespread sewer overflows but the wastewater "contained very dilute and minimal human waste."

Hurricanes Harvey and Irma killed dozens of people, destroyed thousands of homes, and caused flooding that has lasted weeks in some cases. They also exposed the failings of aging sewer systems that were unable to cope with the heavy rainfall and flooding. As a result, many released untreated sewage into streets, rivers and homes of affected towns and counties.

Local governments in Florida have filed more than 250 notices of pollution with state regulators in the days since Irma made landfall in southwest Florida. In Texas, two wastewater treatment facilities in Harris County were destroyed by Harvey, and eight others remain nonoperational in five counties including Harris three weeks after the record-setting rainfall.

It is impossible to design sewage treatment facilities that can handle every storm, experts said, and recent hurricanes have delivered unprecedented rainfall and flooding in some areas.

But the recent storms magnified a problem that occurs regularly across the country albeit on a smaller scale: sewage spills from overburdened and underfunded wastewater treatment systems.

"We're still in a place where there's not enough funding to really take care of this underground infrastructure," said Rebecca Shelton, an Atlanta-based member of the American Society of Civil Engineers specializing in wastewater treatment.

Sewage spills can contaminate drinking water, kill fish and close beaches to swimmers. The Environmental Protection Agency, which regulates water quality under the federal Clean Water Act of 1972, said that while sewage spills have significantly decreased over the last 40 years, 23,000 to 75,000 sewer overflows still occur in the U.S. every year.

The EPA works with states to provide low-cost loans to municipal treatment plants for capital and environmental projects, and last year awarded \$7.6 billion in funding. But the brunt of operation and infrastructure costs for the nation's sewer systems are paid by customers.

Most American wastewater treatment facilities are operated by local governments as public utilities that charge rates based on usage, said Matt Fabian, partner at the research firm Municipal Market Analytics. Costs have increased in recent years as sewage systems grapple with meeting new federal environmental regulations and more consistent or extreme weather events as well as regular maintenance costs, he said.

Municipal bond sales for water and sewer projects have increased sharply in recent years, topping \$37 billion last year compared with \$22 billion in 2013, Mr. Fabian said.

"I wouldn't say that governments are ignoring the water and sewer problem," he said. "It is a major issue if you ask any mayor. But there's so many competing priorities."

Residential sewer bills, which consistently outpace water costs, soared from about \$22 a month in 2004 to more than \$42 in 2016, according to surveys by the American Water Works Association, a nonprofit organization of water supply professionals.

"One of the real pressures that governments are facing is that water and sewer rates are not progressive. They're the same regardless of what your income is," Mr. Fabian said.

In Georgia's southeastern Glynn County, residents complained of untreated sewage seeping out of manholes and mixing with floodwater. Evacuee Elle Hammarlund Woodcock stayed several days longer than she planned at her daughter's house in Enterprise, Ala., to avoid coming in contact with untreated sewage. The ground level of her home flooded and she said she was worried about what the waters may have contained. "I'm wiping everything down," she said, "with bleach."

Some components of the Glynn County sewer system date back to the 1940s, such as clay sewer pipes that are more vulnerable to leaks that let in groundwater and overwhelm treatment plants, said Todd Kline, director of engineering for the Joint Water & Sewer Commission.

Irma brought rainfalls of up to 10 inches of rain to parts of Georgia. Brunswick received 6 inches of rain, according to the National Oceanic and Atmospheric Administration, and average rainfall in Glynn County was more than 9.4 inches, according to National Weather Service estimates.

"Every drop of water that gets into the pipes—be it groundwater or storm water—you're pumping that and you're treating that unnecessarily," Mr. Kline said. "Every drop of water takes up capacity."

Extensive power outages are also a contributing factor to sewage overflows during storms, because pumping stations lose power and are unable to transport wastewater to the treatment plant.

Glynn County Commission Chairman Bill Brunson said sewer infrastructure faltered for a combination of reasons. Heavy rainfall from Irma as well as earlier storms strained a system already overburdened by fast and dense residential development, And maintenance of the system had been neglected for decades, Mr. Brunson said.

“Politicians don’t typically spend money on infrastructure,” he said. “It’s just easy to ignore.”

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