

**NEWS**

# Saturation Point: Some North Jersey towns flood often. It'll only get worse without action

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When the remnants of Tropical Storm Ida hit New Jersey with such intensity this summer, claiming the lives of 30 people and causing extensive damage, the degree of flooding took many by surprise.

But floods have plagued many North Jersey communities for decades, and experts say that, due to more intense storms caused by climate change — combined with continued development, aging stormwater infrastructure and the forbiddingly high cost of flood mitigation projects — the problem will only get worse.

“It has become clear that, unfortunately, what used to be a 100-year storm is taking place far more frequently than anyone ever thought,” said Thomas Duch, the administrator for Bergen County, where 37 bridges and multiple roads were damaged by Ida's floodwaters.

“We have to begin addressing where we are going,” Duch said. “Going forward, how do we build a more flood resilient future?”

For areas of North Jersey that already endure chronic flooding, and for those spots starting to flood that hadn't previously, future development will need to be “smarter,” Duch said.

“Is there a quick fix? No, but going forward there needs to be an awareness, and public officials need to account for overdevelopment,” Duch said. “That’s going to take time to teach and train people to help us confront storms in the future. It’s going to take a lot of time and effort.”

In light of all that, NorthJersey.com asked experts why some North Jersey neighborhoods and streets are prone to flooding, what has already been tried to address the issue — and what more can be done to mitigate the threat of future flood damage.

## **NJ flood zones growing with population**

New Jersey's population has continued to grow — by 20% in the past 30 years.

That growth has sparked more development, which brings more impervious surfaces such as parking lots, highways and warehouse roofs. These surfaces accelerate the flow of rainwater into local streams, causing them to crest and overflow — since there's less vegetation and exposed soil to absorb the water.

Many North Jersey towns have allowed development in flood plains, exacerbating the problem, said Geoffrey Goll, president of Princeton Hydro, a group that specializes in water resources engineering.

The flooding that results will only be worsened by the impact of climate change. Warmer air can hold more moisture, bringing more intensive rainfall. Since 1990, New Jersey has experienced its 10 warmest years in 126 years of record-keeping. It's been deluged with more precipitation, and not just from extreme weather.

New data suggests that storms are growing in intensity and frequency, said David Robinson, a Rutgers professor and state climatologist. "There's 7% more moisture in the atmosphere," Robinson said. "All it needs is a triggering event."

And much of the state's stormwater infrastructure is old — it was not designed to handle today's larger volumes of rainfall.

While building standards have required new developments to include such flood mitigation measures as retention basins to detain water, they have not necessarily kept pace with climate change, said Goll. A detention basin designed for storms in the 1980s may be out of date for the intensity of storms North Jersey gets now, he said.

Meanwhile, some flood remediation plans date back to the 1980s — but have sat on shelves for decades due to high price tags.

It is never too late to add flood storage capacity, said Qizhong Guo, a professor of civil and environmental engineering at Rutgers University. It is, however, difficult and expensive.

Regardless, Guo said adding flood storage needs to be a multifaceted effort.

To slow river rise during and after storms, development even outside a flood zone should be outfitted with rain barrels, green roofs that have a layer of soil and vegetation to absorb rainwater before it reaches gutters and streets, and other tactics to retain or decelerate runoff, Guo said.

Downstream infrastructure such as bridges over a stream need to be altered to improve the capacity of the water to flow beneath and prevent cresting, he said. Underground storage reservoirs and even flood tunnels are

possible solutions to incessant flooding.

"The question is, do you want to make it where people can stay there or not," Guo said.

Major projects, such as a proposed 20-mile, nearly \$5 billion tunnel to take floodwaters from the Passaic River basin out to Newark Bay, would be expensive, "but their value proposition is increasing," Guo said.

More frequent storms and their flood impacts are causing more expenditures to mend aging and questionably maintained infrastructure, he said. "Why not use the money we're going to spend over the next 50 years and do something?" he said. "I think we have an opportunity when we upgrade infrastructure to add storage to it."

Still, Guo said the hard infrastructure improvements need to be combined with programs to buy out homes in flood-prone regions, and efforts to return wetlands in developed areas to their original state, which would allow natural flooding to occur with minimal damage to infrastructure.

But in such a highly developed area as North Jersey, that's hard to do.

"Some of the area is just not savable," Guo said. "Yes, buy them out and convert it [to forest or wetland], but you can only do so much. You can't move the entirety of Englewood out, for example."

Educating current and future public officials will be key, Duch said.

"Anyone in government needs to be aware of their responsibilities to the public," he said. "Going forward, the construction of some monstrosity in a flood plain cannot be tolerated."

## **Lower Saddle River flooding: Stalled plans**

Scan an aerial photo of the lower Saddle River and its tributary the Sprout Brook from 1930, and the area is covered with open fields, farmland and woods. Today, it's paved over with the lanes and sweeping ramps of the Route 4/Route 17 interchange, the Westfield Garden State Plaza mall in Paramus and its sprawling parking lots, the Bergen Town Center shopping complex, and other large commercial buildings, as well as the miles of sidewalks and driveways in residential developments.

All of those impervious surfaces quickly shoot rainwater into the Saddle River and Sprout Brook, hurtling it toward the communities downstream.

As a result, flooding has become a way of life for towns along the lower Saddle River.

Lodi, Garfield, Wallington, South Hackensack, Saddle Brook, Rochelle Park, Paramus and Fair Lawn all experience flooding during heavy rain from the Saddle River and Spout Brook.

Significant flooding dates back to 1968. The problem remains, despite proposals to alleviate it.

The U.S. Army Corps of Engineers authorized a project in 1986 that would include channel modifications along 5.2 miles of the lower Saddle River and 1.7 miles of the lower Sprout Brook. A dozen bridges would be modified to accommodate the deeper channel.

If the plan is ever executed, it would provide protection for up to a 150-year flood event.

Congress authorized the project in 1986. At the time, it would have cost \$36.5 million, said Rifat Salim, the Army Corps' Lower Saddle River project manager.

A design was completed in 1996, but the project stalled due to insufficient funding, Salim said.

Another holdup is contamination. The area has hazardous toxic and radioactive waste. The Army Corps requires contamination to be addressed before they begin a project, Salim said.

After major flooding in 2006, a \$2 million reevaluation study was authorized. In 2007 and 2008, hydraulics and hydrodynamic studies were completed.

An updated economics analysis was completed in 2018, and the project is currently going through another \$2 million reevaluation.

“The plans have been dormant for some time,” Salim said. “In light of recent flooding there has been a lot of interest in the project again.”

More analysis is needed to update the plans. "This is more than updating an old design now — we have to update the benefits and look at 20 years of major developments in the area to see if the design needs to be modified," she said.

Salim expects the study to be completed in three months, but then it will be up to local officials to fight for project funding and a cleanup of the contamination.

### **Lodi flooding: 'How do we combat this?'**

The fight to get the Saddle River and Sprout Brook project rolling is one that Lodi officials are prepared to take to Washington.

Mayor Scott Luna said that years ago his father, Tony Luna, who was mayor at the time, and then-Congressman Steve Rothman did go to Washington to plead their case to get funding for the Army Corps of Engineers project. "They were told it was our problem," Luna said. "We were just one duck in a small pond."

Before the COVID pandemic, officials from Lodi and other towns met with Bergen County Executive Jim Tedesco to discuss the chronic flooding, and a flood mitigation committee was created.

"How do we combat this? How do we prevent it from happening again? We want answers," Luna said. "We're tired of Lodi being the brunt of everyone's jokes."

Since then, the flooding has only grown worse — and then Ida in September brought flooding to parts of Lodi that had never experienced it before. Residents along Main Street needed to be rescued by boat. Washington Elementary School was flooded with 5 feet of water, which pushed sludge, dirt and sewage into and around the school.

Despite having their flood doors up, the Boys & Girls Club basement flooded. Across the street, a playground was destroyed and an adjacent bridge that takes Passaic Avenue across a narrow stretch of the Saddle River was damaged, closing it for weeks.

"We need help from Congress and the Army Corps of Engineers," Luna said. "We need federal money from Washington."

Lodi has organized a meeting with officials from towns that border the Saddle River on Nov. 29 to figure out their next moves. By joining together, Luna hopes the group of local leaders will be harder to ignore when they ask federal officials for funding and answers.

In the meantime, Lodi's public works department has snaked all the sewer lines with cameras to look for blockages and leaks. They are also buying caps for the manhole covers to keep stormwater from infiltrating the sewer lines, which Lodi pays for.

Lodi uses 4.2 million gallons of water on a typical day. During Ida, it jumped to as much as 6 million gallons, Municipal Manager Marc Schrieks said — showing how much rainwater got into the sewer lines.

## **Edgewater flooding: Drenched from both sides**

Flooding in Edgewater is a two-pronged problem. The town borders the tidal portion of the Hudson River and can flood easily during a normal rainstorm at high tide, said Greg Franz, the borough administrator.

In addition, the town sits below the Palisades, where rainwater runoff from Cliffside Park, Fort Lee and Fairview pours down on the borough.

“None of these systems are built to handle the sheer quantity of rain in a short period of time,” Franz said.

To combat the flooding on River Road, Edgewater has discussed with Bergen County increasing the diameter of the outfalls where water flows back into the Hudson River, but the price tag would be millions of dollars.

Instead, the borough created a rigorous cleaning and maintenance schedule to keep the outfalls, catch basins and culverts clean. “I can’t tell you how much debris we’ve found in them,” Franz said. “We even found a refrigerator one time.”

Last year, the DPW started work along 100-year-old unused trolley tracks across the Fort Lee border to help with flooding in that part of town. Piping diameters were increased, and additional water vaults and catch basins



were created to hold up to three more feet of water.

## **Peckman River flooding: 'It's like a funnel'**

After a storm in 2018 took Woodland Park by surprise, Mayor Keith Kazmark made sure the town was prepared for Ida.

"I don't buy into the idea of common storms anymore," Kazmark said. "We are getting so much more rain than we are accustomed to."

The borough, which hugs a bank of the Passaic River, has been working to improve drainage along the Peckman River, a tributary that joins the Passaic in the borough. It spent \$1.6 million to put in a pumping station and removed the impediment of 12-inch sewage pipes from underneath the McBride Avenue bridge to improve the Peckman's flow.

One of the challenges is to improve the flow of rainwater along the Peckman and into the Passaic. Currently, the opening under each bridge crossing the Peckman becomes narrower as water flows downstream.

"It is like a funnel," Kazmark said.

Fast-rising water from the Peckman River caused a flood that killed a Little Falls man during Hurricane Floyd in 1999, and another flood in 2011 that caused tens of millions of dollars in damage during Hurricane Irene.

In 2018, an August storm dumped 5 inches of rainwater in just a few hours and caused the river to overflow again. Dozens of vehicles from a nearby dealership were swept down the river, and homes and businesses suffered hundreds of thousands of dollars in damage.

The larger solution is to install \$148 million in flood mitigation projects in Little Falls and Woodland Park. The Army Corps has developed a plan which includes a 1,500-foot long tunnel or culvert on the Little Falls side of Route 46, which the Peckman flows beneath. The culvert would divert floodwater from the Peckman River into the Passaic River. The project would also include elevating some homes along the river and building a levee by Passaic Valley High School.

Little Falls Mayor James Damiano wants to see the Peckman culvert funded as soon as possible.

Storms have caused millions of dollars worth of damage, "all of which could be prevented in future rain events if the Peckman River project was approved for funding and constructed," Damiano said.

## **The Pompton and Pequannock: Flood-prone confluence**

Split between Riverdale and Pequannock, Harrison Road is the local bellwether for floods.

Just downstream from where the Pompton and Pequannock rivers join, it is among the first roads to flood, and hardest hit — even in the particularly flood-prone Passaic River basin, a prehistoric lakebed that stretches across 800 square miles.

After a massive Passaic flood in 1903, federal surveyors sought to dot the region with reservoirs for drinking water and flood storage.

Aerial images of the area in 1930 show few roads or structures amid the farmland and woods. Then, rampant residential development took over. Developers sought profits. Politicians sought property tax revenue. Growing families sought homes.

Harrison Road transformed from floodplain to dense suburban neighborhood.

But chronic flooding, occurred, which prompted proposals to mitigate future floods.

The Army Corps of Engineers initially proposed a dredging project along the Pequannock and Pompton rivers. It returned in 1984 with plans for a \$1 billion flood tunnel near Harrison Road that would siphon water from the Pompton River to Newark Bay. That proposal — which would cost about \$5 billion today — has never gained traction.

Considering that fix's improbability, FEMA stepped in with a pledge of \$2.2 million to buy out some flood-damaged homes. Two dozen along North Pequannock Avenue and Harrison Road were among the first 41 homes eligible.

Despite opposition from local officials who said they would pledge no money for the program, buyouts started following a massive April 1984 flood that forced about 90 residents from their homes. Today, just three homes remain on Harrison Road. None are left on North Pequannock Avenue, where vegetation battles pavement. The last home there was bought by Pequannock Township in 2011 for a shade under \$200,000, and was promptly leveled.

Since Hurricane Irene in 2011 flooded about 1,100 homes in the township, federal officials pledged \$6 million to elevate homes in Pequannock. More funding has since poured in to elevate structures, an alternative to buyouts that allows homeowners to stay in their homes, preserves sources of property tax revenue for local governments, and helps FEMA reduce flood-related payouts.

In 2015, FEMA allocated \$4.6 million to raise 26 homes around Pequannock Avenue and Madison and Roosevelt streets to limit exposure to future flood insurance claims. The next year, the agency offered another

\$4.3 million to elevate 22 more homes. In 2018 came two additional grants, totaling \$10 million, to raise 50 additional homes.

## **Bergen and Passaic flooding: More rescue equipment**

Many infrastructure projects to mitigate future flooding in North Jersey remain paper proposals at the moment. In the meantime, some North Jersey communities are looking to expand their flood rescue equipment.

Passaic has two lethal flood-prone spots around McDonalds Brook, whose headwaters begin in Clifton and which empties into the Passaic River. One trouble spot is by a culvert near Main Avenue, and the other is near where Van Houten and Passaic avenues meet.

For much of its length, the brook runs underground through culverts. When the remnants of Ida passed through, these spots were the locations of three fatalities.

To combat increasingly intense storms, the city plans to buy more rescue equipment, signage and barricades to keep people away from those trouble areas.

For years, Bergen County has been developing new water rescue programs. After Irene and Sandy in 2011 and 2012, the county took steps to better outfit towns for water disasters.

The county now has 15 water rescue vehicles, three times what it had during Sandy. The county has also put together a new tracking system of all county assets, including water rescue teams and boats to help send resources to towns in need.

During Ida, prestaging was key for the unexpected flash flooding, said Lt. Matthew J. Tiedemann, Bergen County's emergency management coordinator. Resources were moved throughout the county into flood-prone areas before it rained. "Prestaging was huge," he said. "We wouldn't have been able to get help otherwise."

For weeks after Ida, streets were lined with waterlogged furniture, ruined toys, and disintegrating boxes of people's memories from living in a house for years.

The images of pain and anguish still haunt Lodi's Schrieks.

"It's the disruption of people's lives and the mental load of cleaning out your house over and over again," Schrieks said. "We don't want people to leave."

"Flooding will happen, but we will be proactive instead of reactive," he said. "We will be as aggressive as possible to try and alleviate the damage."