Flooding last March closed Hillsboro Road at Third Avenue North in Franklin following several inches of rain.
PHOTOS BY STEPHANIE AMADOR, FILI/THE TENNESSEAN

County navigates shifting weather, flood science

Cole Villena Nashville Tennessean | USA TODAY NETWORK – TENNESSEE

Williamson County was pounded by 7 inches of rain just over a year ago in March 2021. The torrential downpour caused the Harpeth River to swell to nearly 35 feet, scattering debris and flooding the streets of downtown Franklin. ● It might have been remembered as a once-in-a-generation flooding event – if not for the 2010 flood, when the Harpeth crested at 35.3 feet. That storm, which also pounded downtown Nashville and other parts of Tennessee, caused more than $2 billion in private property damage and $120 million in public infrastructure damage in Nashville. ● "The last 15 years, we've seen an increasing rate of above average precipitation," National Weather Service hydrologist James LaRosa said. "When you start to see that much more precipitation, you start to see additional flooding." ● As growth and construction continues in Williamson County – and as flooding events become more of a risk – flooding experts and governments are wading through a storm of factors to develop safely along floodplains.

One major tool is updating

At least one major flood risk assessment tool is being revamped to provide more accurate information for homeowners.

Since the 1970s, the Federal Emergency Management Agency has produced National Flood Insurance Program floodplain maps that show whether or not a given property is at risk of flooding during a 100-year flood (a flood that has a 1% chance of happening in a given year). The system maps out floodplain zones and sets insurance rates based on whether or not a given property is "in the floodplain."

As of 2021, however, the agency is phasing in a new system called the Risk Rating 2.0. The new system will assign individual properties a flood risk score based on a variety of factors including geographic characteristics, proximity to water sources and property improvements.

"This is described as the largest change in the National Flood Insurance Program in 50 years," said Roger Lindsey, chair of the Tennessee Association of Floodplain Management. "Now, it's more a calculation of premiums based on the characteristics of the structure."

Old data may muddy the waters for predictions

Other tools have been slower to update. One major model that predicts the impact of severe storm events, the NOAA Atlas 14, last updated its data set for Tennessee in 2006. That means meteorologists and cities are less able to accurately predict how much rain would constitute a 100-year storm.

"The issue is that we use these precipitation frequency estimates when we model to determine what the 100-year flood level is," Lindsey said. "If these numbers haven't been updated to reflect the typical statistical rain events since 2006, then they don't contain

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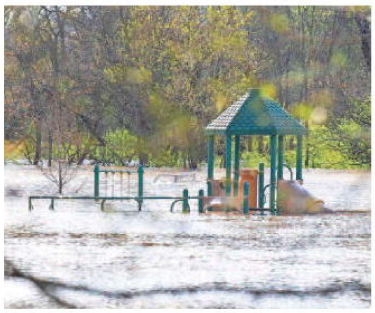
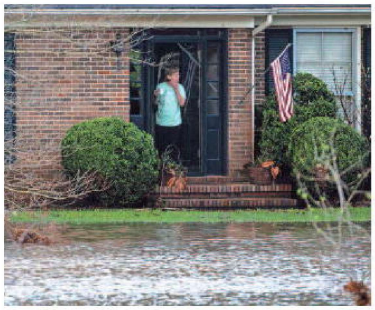

Lynwood Park in Brentwood on March 28, 2021.


A woman surveys flooding outside her home in Brentwood on March 28, 2021.

People walk along Harpeth River Drive in Brentwood on March 28, 2021, after a night of flooding. PHOTOS BY STEPHANIE AMADOR, FILE/THE TENNESSEAN

Factors

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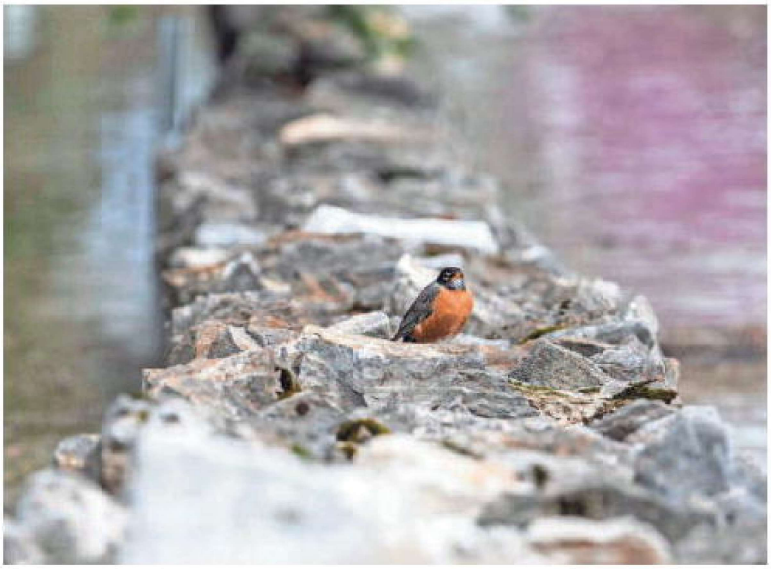
data from the 2010 flood event, and they don't include the multitude of different more intensive rain events we've had in recent years."

Dorie Bolze, president and CEO of the nonprofit Harpeth Conservancy, said it's important to update models as often as possible to make sure building codes and regulations are up-to-date.

"Let's say that the rules are, your house and your HVAC when it's built need to be a foot above the 100-year floodplain," Bolze said. "What if – and this is true – the 100-year floodplain level is too low? The reason it's too low is because the statistics are not being done appropriately to capture that it rains harder and faster in the last 15 years than it ever has."

How cities are revamping their thinking

LaRosa said there is some good news: Meteorologists and scientists are better at detecting and monitoring severe storms.



An American red robin sits on a rock fence surrounded by floodwaters in Franklin on March 28, 2021.

"Our ability to monitor, predict and detect the weather has improved with new technology," LaRosa said. "I think we're starting to maybe see these extreme events that, they probably were always there, but the resolution of our radar has improved, and the amount of rain gauges has improved, the number of personal weather stations (has improved)."

Williamson County communities are doing what they can to stay up-to-date from a policy perspective. Brentwood held two public meetings in March to get community feedback on its floodplain ordinance, which sets construction guidelines for properties in potential flooding areas.

Flood Risk Rating 2.0 allows communities to improve their base risk score – and win insurance discounts – for implementing policies that go beyond the base safety requirements mandated by FEMA. By tightening the city's floodplain ordinance, Brentwood could reduce insurance premiums for homeowners.

In Franklin, assistant city manager Vernon Gerth said the city updates policies and zoning practices to mitigate flood impact in light of changing weather patterns. He said Franklin has standards that allow the Harpeth River to be an "amenity."

"If you're doing due diligence and have a little bit higher standards, then you mitigate the loss of damaged property," Gerth said.

Cole Villena covers Williamson County for the Tennessean. Reach Cole at cvillena@tennessean.com or 615-925-0493. Follow Cole on Twitter @ColeVillena and on Instagram @CVinTennessee.