

MID-SOUTH REGIONAL RESILIENCE PLAN

PUBLIC WORKSHOP SERIES 1: KICKOFF

TUESDAY, JANUARY 30TH MEMPHIS LEADERSHIP FOUNDATION, 1548 POPLAR AVE, MEMPHIS

WEDNESDAY, JANUARY 31ST BAKER COMMUNITY CENTER, 7942 CHURCH ST., MILLINGTON

THURSDAY, FEBRUARY 1ST SOUTHAVEN PUBLIC LIBRARY, 8554 NORTHWEST DRIVE, SOUTHAVEN

RESILIENT
SHELBY



SASAKI

Ritchie Smith Associates



BLDG
MEMPHIS
BUILD. LIVE. DEVELOP. GROW.

PIQUE
PUBLIC RELATIONS

POWERS HILL DESIGN
CIVIL ENGINEERING. CIVIL RESPONSIBILITY.

WHY ARE WE HERE TONIGHT?

Following the 2011 Mississippi River Floods, Shelby County was identified by the U.S. Department of Housing and Urban Development as TN's most impacted area. To fund post-flood recovery, the County entered the National Disaster Resilience Competition (NDRC) and was successful in securing a major Federal grant for local flood mitigation projects and to plan for a more resilient region.

This project—**the Mid-South Regional Resilience Master Plan**—is one of those NDRC projects and will identify strategies to make the Mid-South more secure against future climate and weather related disasters and chronic stressors. The geographic extent of the plan includes all of Shelby and DeSoto Counties, as well as parts of Fayette and Marshall Counties.



NDRC RESILIENCE DEFINITION

Resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience.

— U.S. Department of Housing and Urban Development (HUD)



THE 2011 MISSISSIPPI RIVER FLOODS

Three storms — April 4th, 25th, and 27th, 2011:

345,000+

people lost power

\$2B+

in property damages

198

homes flooded

WHAT CAUSED THE 2011 MISSISSIPPI RIVER FLOODS?



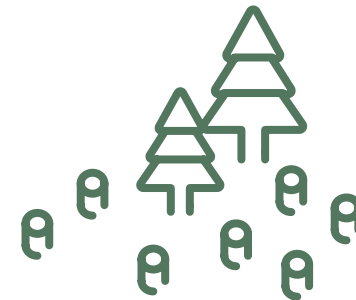
SPRING THAW

Heavy snowfall in the Upper Midwest during the previous winter lead to saturated soils and river flooding during the spring thaw.



URBAN AREAS

The increasing urbanization and imperviousness in the region caused the rapid runoff of rainwater into the rivers, leading to flooding and erosion.



LOSS OF RIPARIAN FORESTS AND FLOODPLAIN MEADOWS

Natural areas that slow and absorb stormwater disappearing because of agriculture and urbanization.



RECORD RAINFALL

In April 2011, Memphis experienced two major storms, which dropped a record rainfall of 11.76 inches in Memphis, more than 2x the average. Cities upstream saw 3x–4x the average rainfall for April.

RESILIENCE IS REGIONAL

STORM #1: APRIL 25-27, 7.8 INCHES

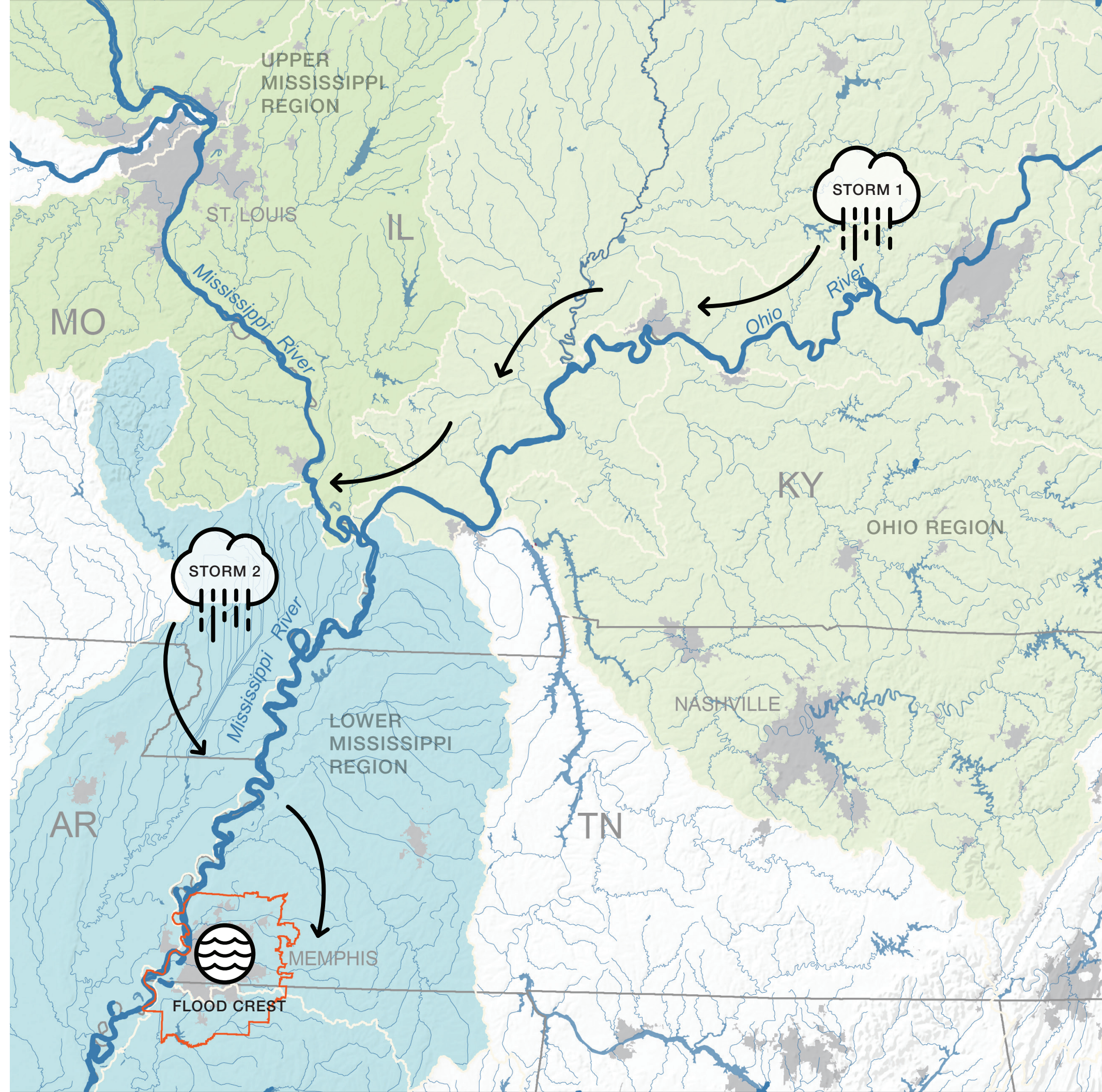
A record storm dropped 7.8 inches of rain on Memphis in 3 days. At the same time, the Ohio River crested upstream in Louisville, KY.

STORM #2: MAY 1-2, 3.9 INCHES

Memphis saw almost 4 more inches of rain during this second storm. At the same time, the Mississippi River crested upstream on May 3 at Cape Girardeau, MO

FLOOD CREST IN MEMPHIS: MAY 10, 2011

With all of this water from upstream converging on the already saturated Memphis, the Mississippi crested at 48.03', the second greatest flood in Memphis' history.



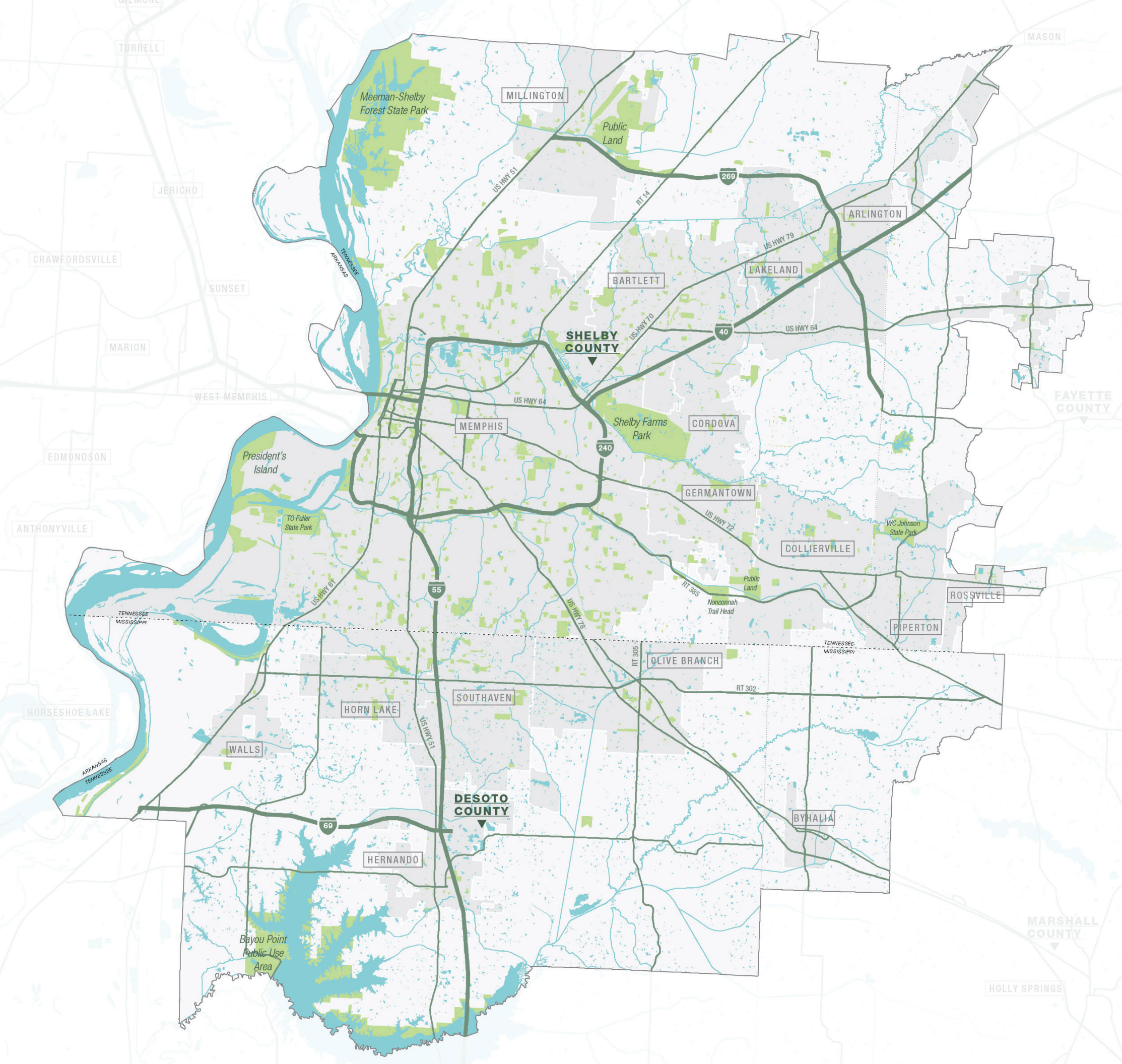
PROJECT EXTENT

23
Cities and
Towns

4
Counties

2
States

1
Region



THREATS



River Flooding



Flash Flooding



Extreme Heat
& Drought



Damaging Wind



Tornadoes



Earthquakes



Winter Weather

RIVER FLOODING

\$3.1B

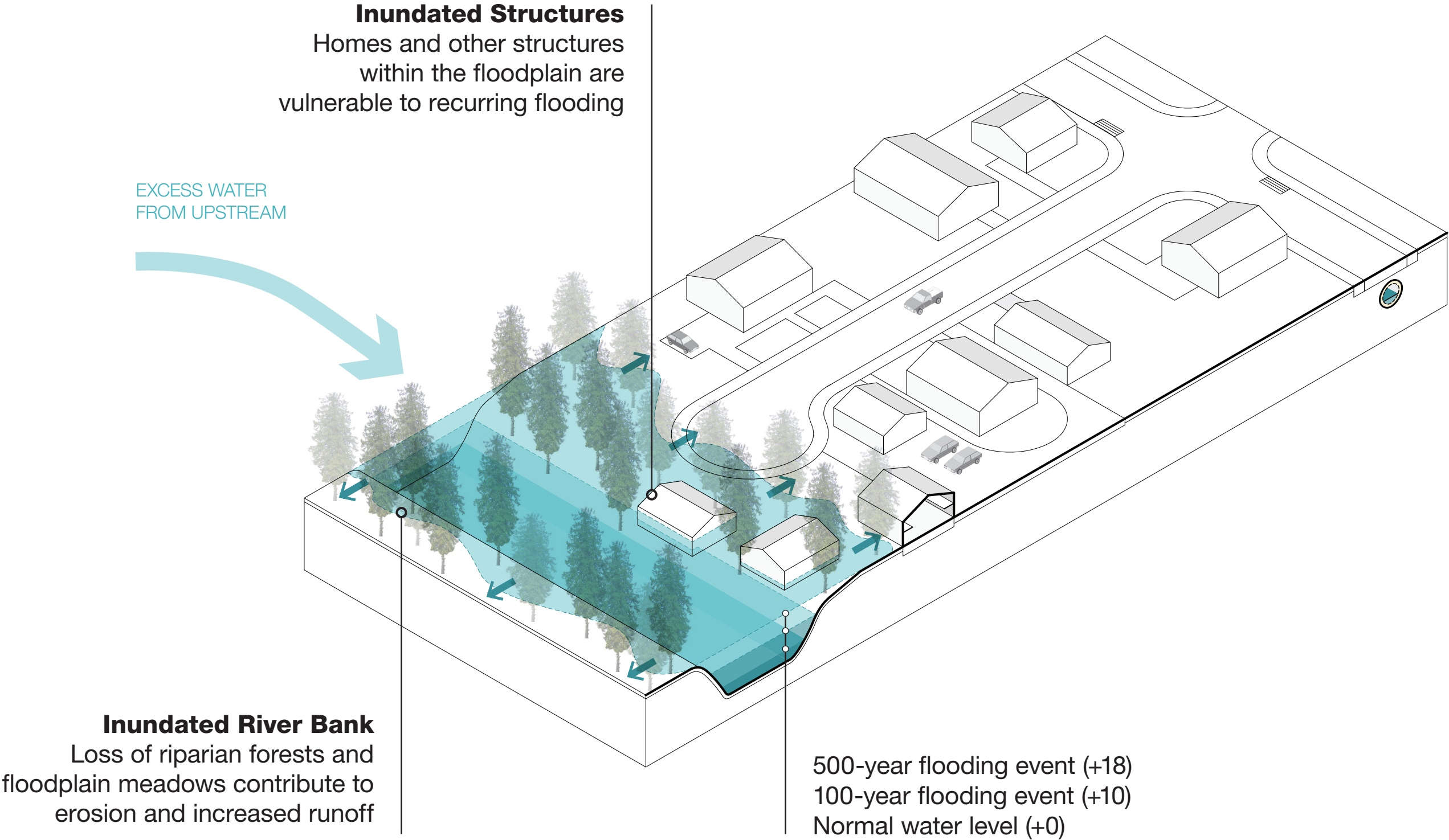
In property damage from river flooding between 2007–2017

When the Mississippi rises, it pushes excess water into the Region's smaller creeks and rivers causing widespread flooding.

Short duration, intense heavy precipitation events are increasing in Mid-South, causing more flooding and flash flooding to ensue.



RIVER FLOODING

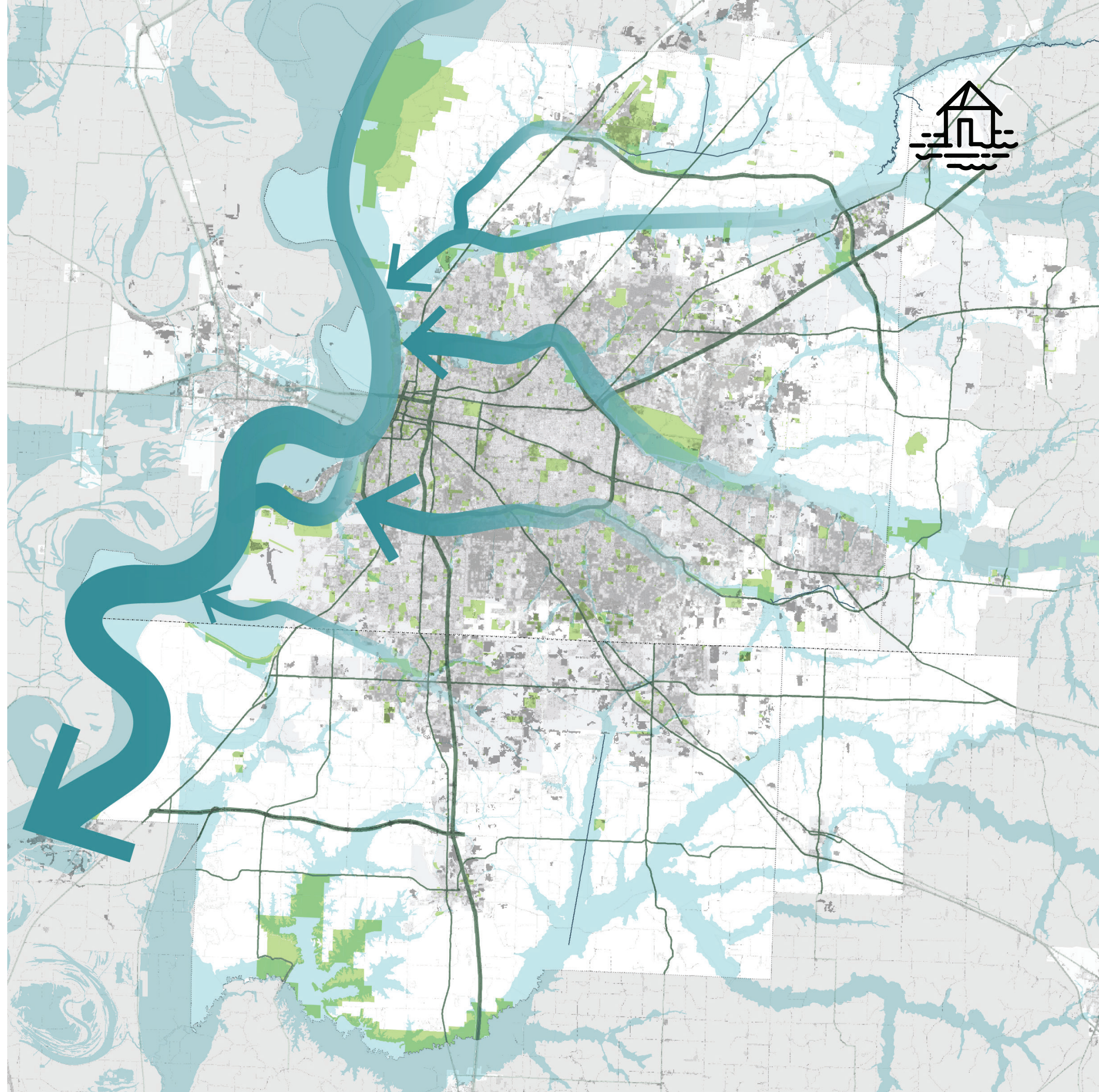


FLASH FLOODING

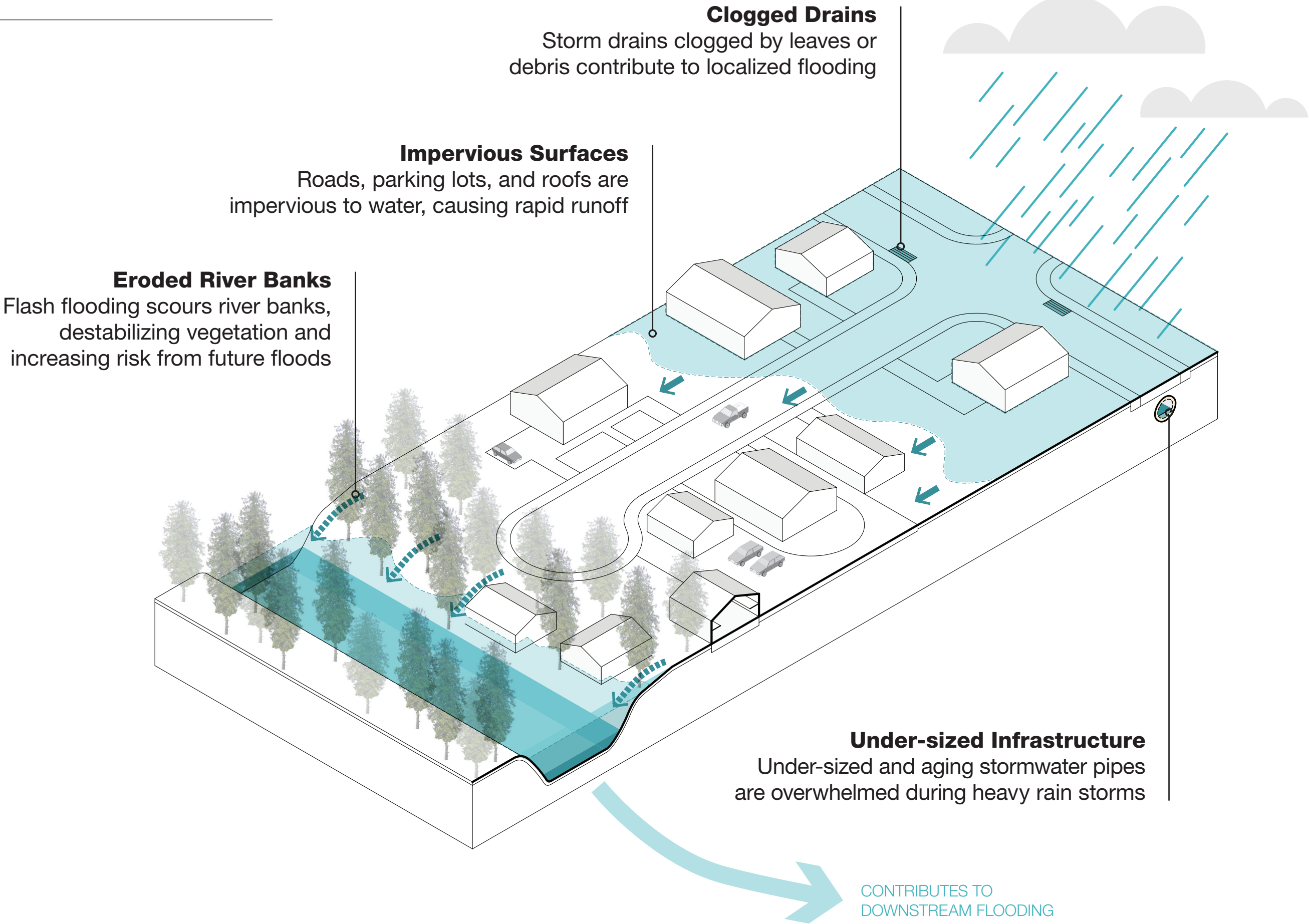
\$89M

In property damage from
flash flooding 2007–2017

Intense precipitation and
insufficient drainage cause
dangerous flash floods and
chronic nuisances like standing
water, ponding, and mosquitoes.



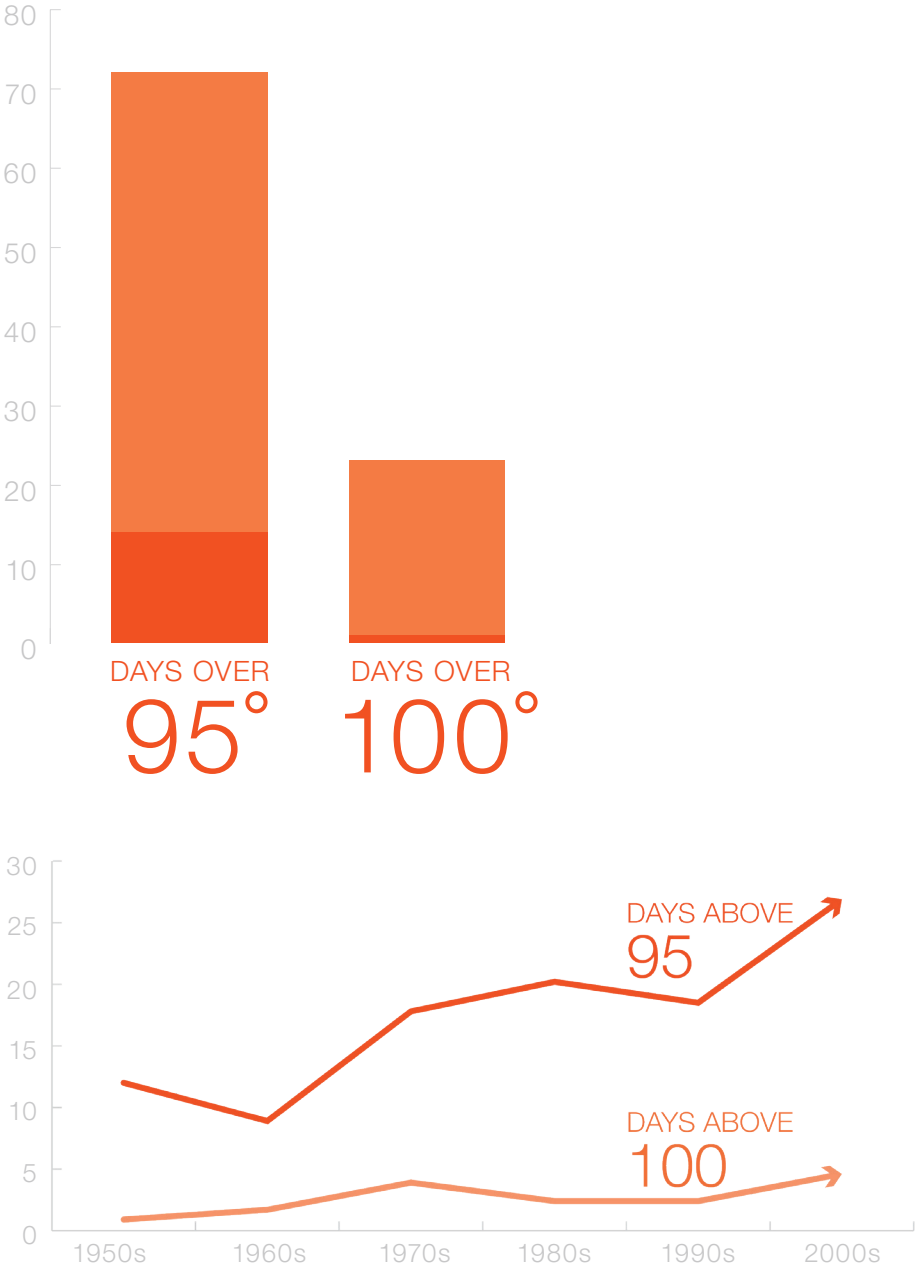
FLASH FLOODING



EXTREME HEAT & DROUGHT

The Mid-South
is getting hotter.

TODAY 2046



DAMAGING WIND

6.82

Average wind events per year

\$17.8M

Wind-related damage
between 9/2007–9/2017

2HRS

The amount of time, on
average, that customers
lose power 3X per year.



TORNADOES

.84

Average tornadoes per year

\$104.5M

Tornado damage between
9/2007–9/2017



EARTHQUAKES

4,000

Earthquakes have been recorded since the 1970s. Most were too small to be felt.

7.7 M

This level magnitude earthquake could cause 34,000 casualties.

An earthquake of this magnitude hasn't occurred in the region since 1812.

■ HIGH SUSCEPTIBILITY ■ MEDIUM ■ LOW



WINTER WEATHER

7

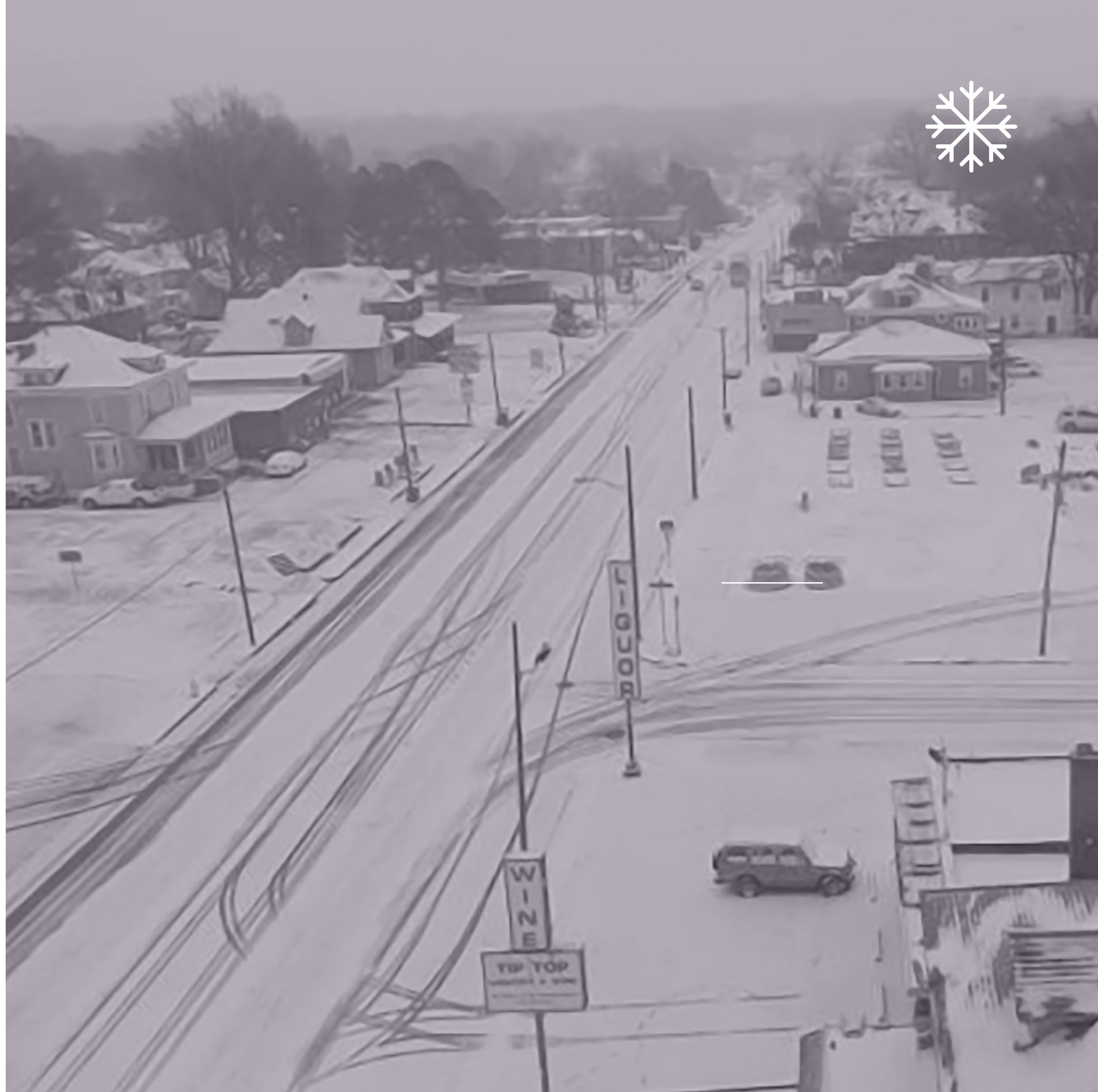
deaths or injuries due to hypothermia since 2012.

13%

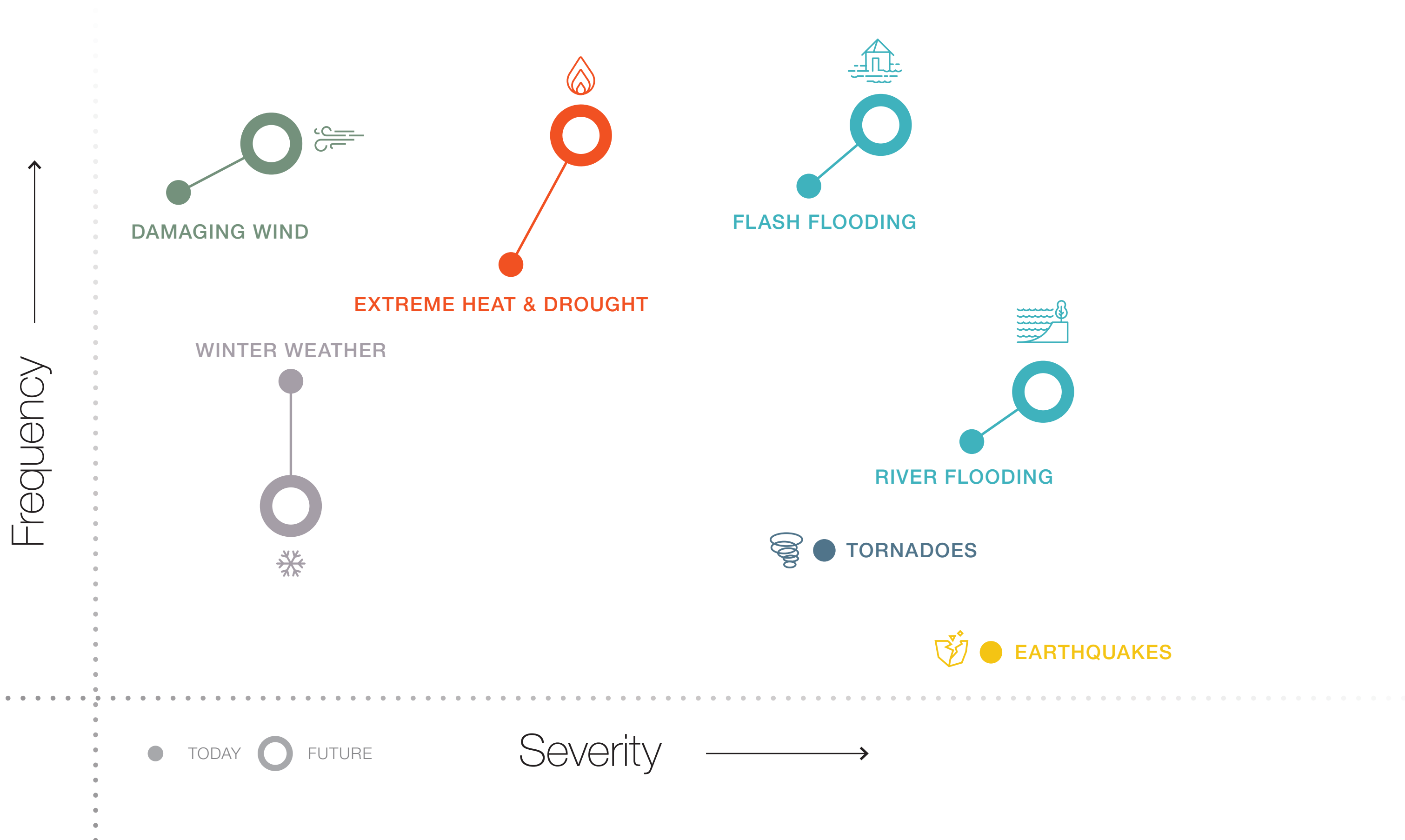
Low income households spend 13% of annual income on energy costs, on average.

50%

fewer days below freezing by 2065.



THREATS OVERVIEW

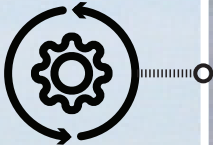


PROJECT GOALS



Safeguard Regional Infrastructure
energy, transportation, waste,
drinking water, and food

Prevent Interruptions
to business and school operations



Protect Property
from damage and value loss

Promote Public Safety
during and after natural disasters
and extreme weather



Provide Multi-Benefit Solutions
prioritize resilience strategies that also protect
natural resources and promote public health,
outdoor recreation, and economic development



Enhance Quality of Life
provide new amenities, mitigate extreme
heat and drought and cold, and eliminate
standing water

MID-SOUTH REGIONAL
GREENPRINT

GREENPRINT 2015/2040OUR PROGRESSGET INVOLVEDRESOURCESABOUT

PLAN

GREENPRINT 2015/2040

CONNECTING COMMUNITIES FOR OUR FUTURE

A 25-year Plan To Create 500 Miles of Greenway Trails & 200 Miles of Bicycle Paths Across Three States

Designed to enhance livability & sustainability through a unified vision for a regional network of green spaces in the Mid-South.

VIEW THE PLAN

WATCH STORIES

VIEW THE PROGRESS

MIDSOUTHGREENPRINT.ORG

CASE STUDY

TRINITY RIVER FLOOD OF 1990, DALLAS, TEXAS

225+

houses and businesses in
Dallas damaged by flood

19.5'

above the river's flood stage

\$30M

in local damages



CASE STUDY

CHAIN OF WETLANDS, DALLAS, TEXAS

270

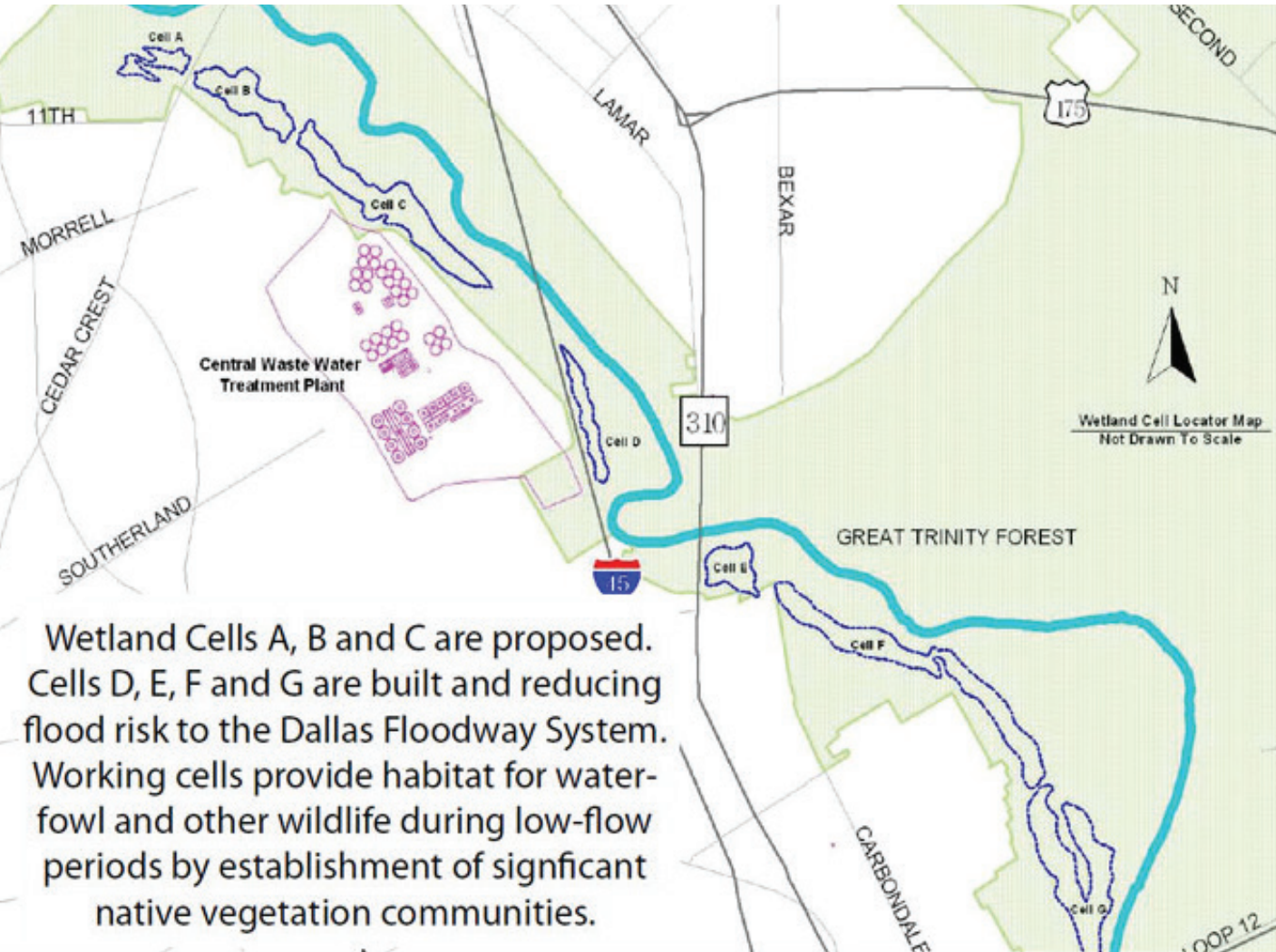
acres of improved habitat

4'

reduction in floodwater levels

12,500+

structures protected



SCHEDULE



Phase 1

VULNERABILITY ASSESSMENT

- Data Collection
- Plan Review
- Threat Definition
- Vulnerability Analysis



Phase 2

RESILIENCE STRATEGIES

- Site Suitability
- Design Strategies
- Policy Options



Phase 3

FINAL MASTER PLAN

- Refine Recommendations
- Funding and Implementation Research
- Final Revisions and Documentation

