

# **Combined Floodplain Seminar for Elected Officials and Trinity River COMMON VISION Steering Committee Meeting**

**September 18, 2025**

# Welcome

**Susan Alvarez, PE, CFM**

**NCTCOG Environment & Development Department**

# NCTCOG Regional Service Areas



## **Executive Director & Agency Administration**

Executive Board  
Membership  
Public Affairs, Strategic Plan  
Municipal Fee Survey  
City Management Association  
Agency Administration  
Training & Development Institute(TSI)



## **Community Service**

Aging Services  
Broadband  
Regional Community Economic Development  
Workforce Solutions  
Youth  
Workforce Development Training  
NCT 9-1-1



## **Emergency Preparedness**

Emergency Preparedness Planning Council  
Homeland Security Grant Program  
Collaborative Adaptive Sensing of the Atmosphere (CASA Wx)  
Urban Area Security Initiative Mitigation  
Technical Resources  
Public Safety



## **Environment & Development**

Watershed Management  
Open Space Planning/ Preservation  
Materials Management  
Regional Building Codes  
Public Works Development Excellence  
R.I.S.E



## **Transportation**

Regional Planning & Projects, Plans Studies & Reports  
Quality of Life  
State Implementation Plan (Air Quality)  
All things EV  
Energy Efficiency  
Climate Pollution Reduction Plan



## **Information and Innovation Services**

Regional Data  
Digital Elevation Contours  
Geospatial Information Systems (GIS)  
Population data and related land use projections

# Environment & Development Department Primary Focus Areas



## **Watershed Management**

Stormwater Management  
Water Quality  
Trinity River Common Vision  
Flood Risk Reduction  
Integrated Transportation & Stormwater Planning (TSI)



## **Development Excellence**

Principles of Development Excellence  
RISE Coalition  
Technical Tools



## **Materials Management**

Regional Landfill Capacity  
Recycling  
Waste to Energy  
Illegal Dumping  
Technical Resources



## **Natural Resources**

Water Supply  
Water Quality  
Open Space Planning/  
Preservation  
Energy



## **Public Works**

Construction Standards  
Wastewater Roundtable  
iSWM™  
Texas Community Block Grants  
Public Works Roundup!



## **Regional Building Codes**

Commercial & Residential  
Electrical & NEC  
Plumbing & Mechanical  
Energy & Green Construction  
Fire Codes

[www.nctcog.org/envir/](http://www.nctcog.org/envir/)

# Programs Related to Floodplain Management

NCTCOG brings local governments and stakeholders together to reduce flood risks.

## Programs:

- Trinity River COMMON VISION
- Corridor Development Certificate Program
- Transportation and Stormwater Infrastructure Project (TSI)
- FEMA Cooperating Technical Partnership
- *integrated* Stormwater Management Program
- TXShare

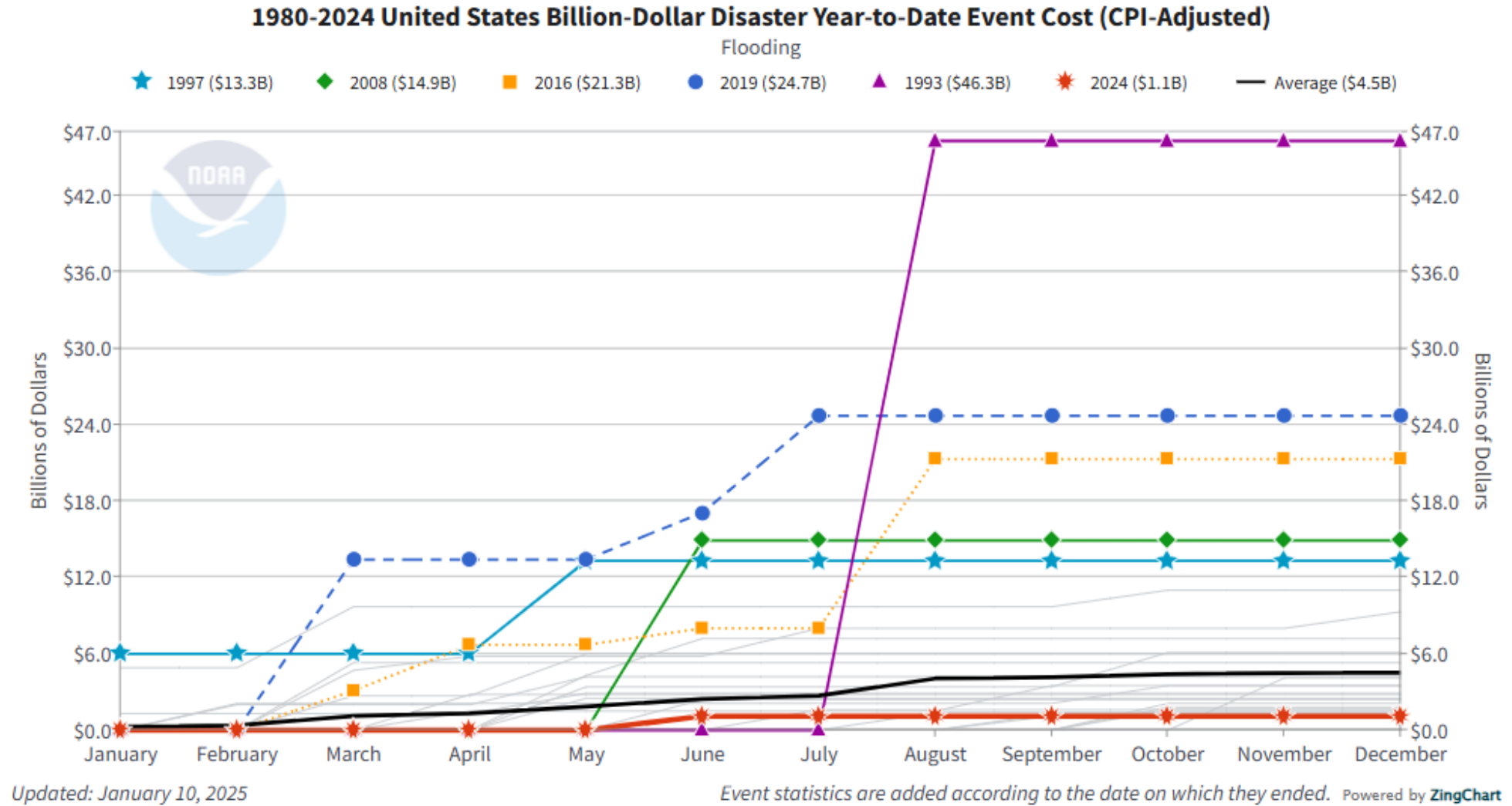
## Committees

- Trinity River COMMON VISION Steering Committee
- Public Works Council
- Transportation and Stormwater Infrastructure Steering Committee

## Funding Sources

- Local Funds
- Texas Water Development Board
- Texas General Land Office
- Texas Department of Transportation
- Federal Emergency Management Agency
- Federal Highway Administration
- U.S. Army Corps of Engineers

# Billion-Dollar Floods



- NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2025).
- <https://www.ncei.noaa.gov/access/billions/>, DOI: <https://www.doi.org/10.25921/stkw-7w73>

## Contact

### **Susan Alvarez, PE, CFM**

Director of Environment & Development  
North Central Texas Council of Governments  
salvarez@nctcog.org  
817.704.2549

## Connect



Facebook.com/nctcogenv



@nctcogenv



nctcogenv



youtube.com/user/nctcoged



EandD@nctcog.org

www

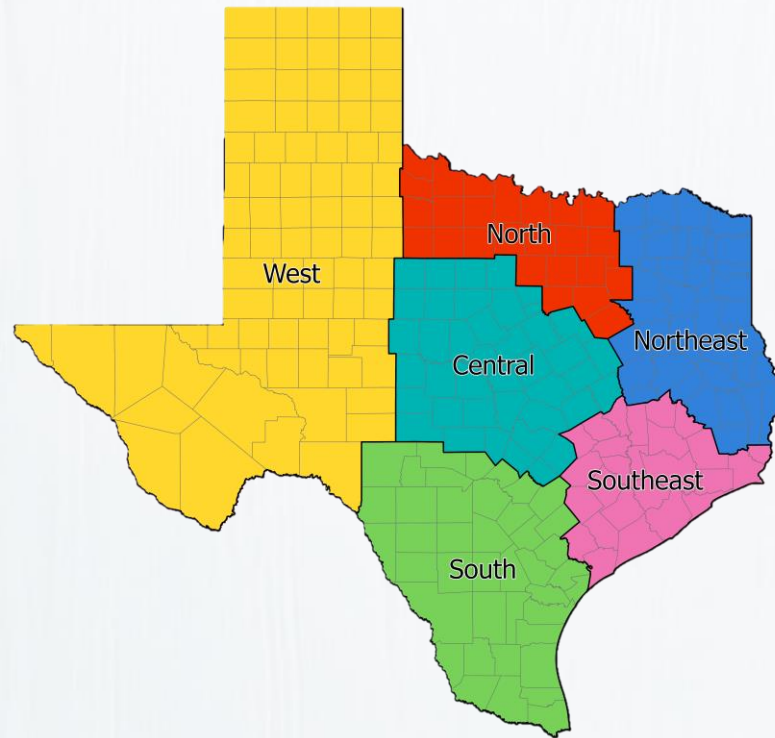
nctcog.org/envir

# Overview of Flood Community Assistance and Flood Planning Programs

Jasmine Ferrell and Katie Koslan

Texas Water Development Board

# Community Assistance Program (CAP) and Flood Planning Program



Texas Water Development Board (TWDB)

# What is the National Flood Insurance Program (NFIP)?

The NFIP was established by Congress with the passage of the National Flood Insurance Act of 1968 and with the intent to reduce socio-economic impacts of flooding and flood damage.



FEMA

- Agrees to make flood insurance available to local communities as a financial protection against flood losses.

TWDB

- Liaison between FEMA and local communities and helps maintain compliance.

LOCAL  
COMMUNITIES

- Agree to adopt and enforce floodplain management guidelines to reduce flood risk.

# Why is the NFIP important?

Participation in the NFIP provides many benefits to communities such as:

- ✓ Federally backed flood insurance policies
- ✓ Federal grants and loans for mitigation
- ✓ Federal disaster assistance to safely repair buildings in special flood hazard areas
- ✓ *Most importantly* – adoption of the mandatory, minimum NFIP flood damage prevention regulations help ensure development is happening in ways to minimize the impacts of flooding

# **CAP staff is here to provide:**

**Community assistance visits & Community assistance contacts**

**General technical assistance**

**Floodplain ordinance & court order assistance**

**Floodplain management workshops & training**

**NFIP & CRS enrollment assistance**

**NFIP-related disaster assistance**

**Coordination with other state programs & agencies**

# Other CAP Projects

## Texas Quick Guide – 2023 update

- provides a basic understanding of floodplain management, National Flood Insurance Program (NFIP), community resources available, and the role of communities

## State Model Floodplain Ordinances – 2024 update

- available for adoption by Texas communities
- include other flood-related hazards
- include language for Base Level Engineering data as “best available mapping data”
- include references to FEMA Technical Bulletins

# Other CAP Projects

in collaboration with  
UT Moody College of Communications

## Community Official Flood Resource Guide

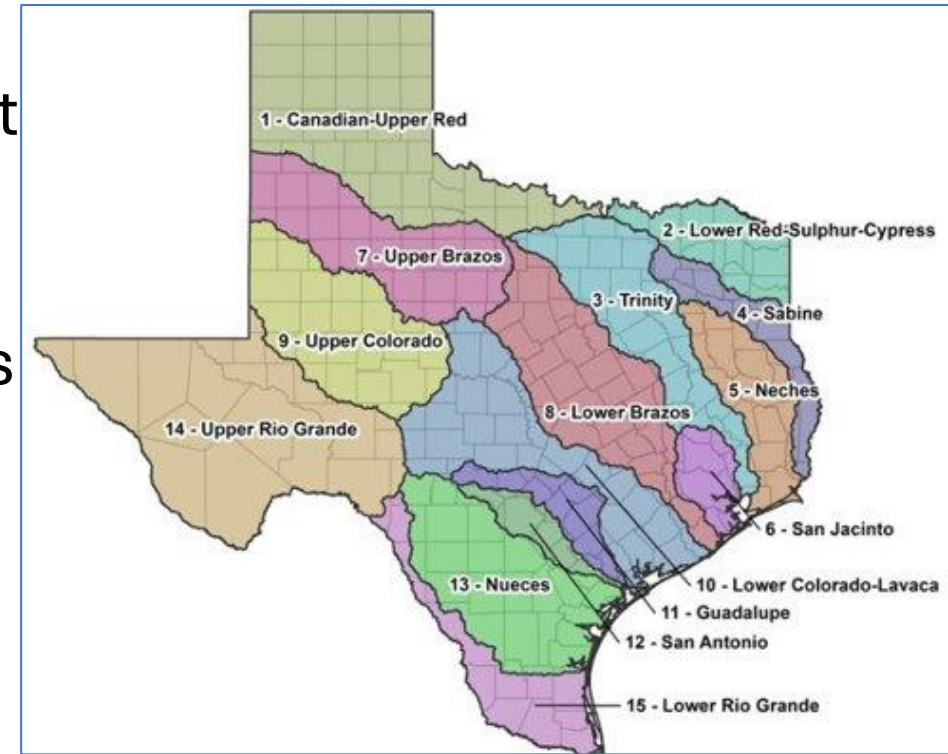
- rather than reinventing the wheel, this guide is a compilation of online resources for flood awareness, preparedness, safety, and recovery

## Flood Awareness Communication Toolkit

- identified specific end-user groups, and created relevant messaging, graphics, handouts, and social media posts

# Regional Flood Planning Program

- Regional Flood Planning Groups develop regional flood plans on a 5-year cycle
  - Hold public meetings and solicit public input
  - Identify specific flood risks and flood risk reduction goals
    - Flood hazard and flood exposure analysis
    - Vulnerability analysis
- Identify and recommend flood management evaluations, strategies, and flood mitigation projects (FMXs)



# Regional Flood Planning Groups

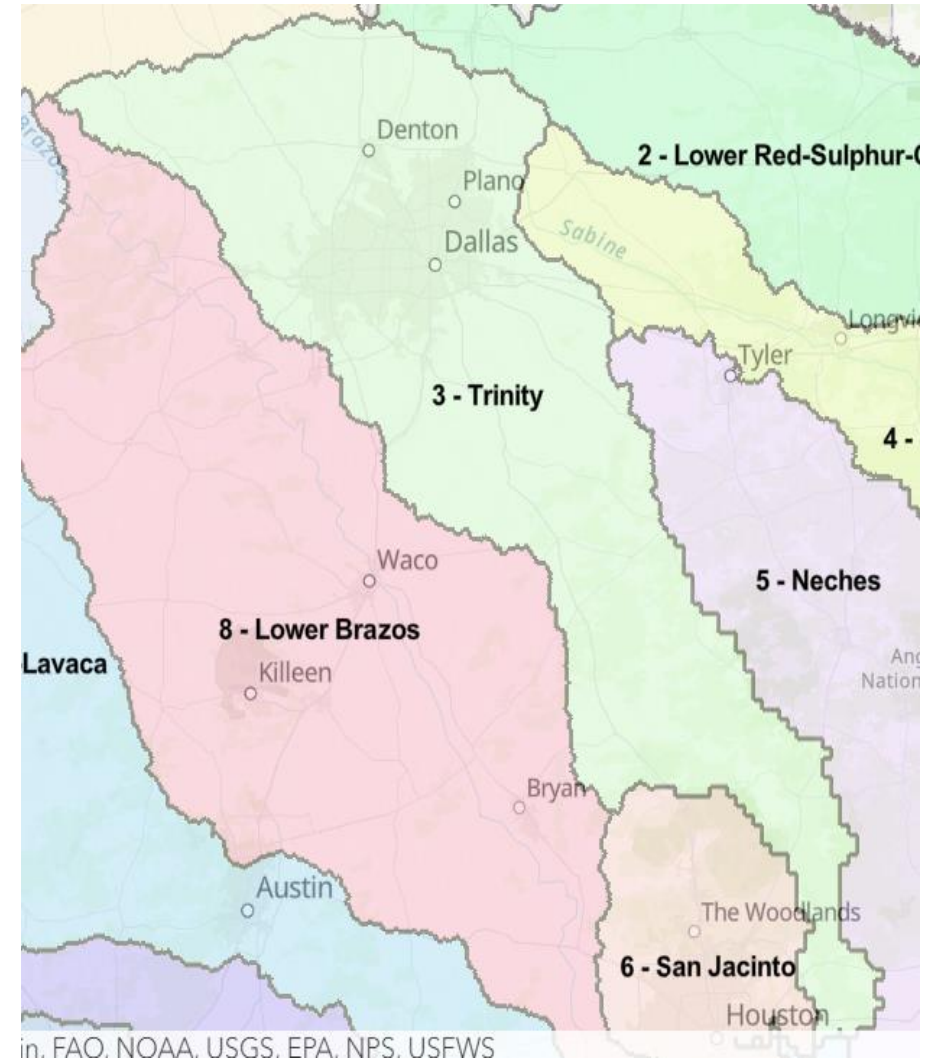
- NCTCOG is in Region 3 Trinity

## Major Cities

- Dallas, Fort Worth, Arlington, Plano

## Rivers

- Trinity River Basin
  - Smaller streams within the basin include the Clear, East, Elm, and West forks of the Trinity River and Cedar, Chambers, and Richland creeks



# Regional Flood Planning Group Members

## Voting members

1. Agricultural interests
2. Industries
3. River authorities
4. Counties
5. Municipalities
6. Water districts
7. Flood districts
8. Electric generating utilities
9. Public
10. Water utilities
11. Environmental interests
12. Small businesses

## Non-Voting members

1. TWDB
2. TCEQ
3. Department of Agriculture
4. GLO
5. TDEM
6. TSSWCB
7. TPWD

# What's in a flood plan?

- A regional flood plan consists of 10 tasks:

Description of planning region

Flood exposure and vulnerability – Existing and Future

Floodplain management practices and goals

Methodology for choosing flood studies, projects, and strategies

Recommending flood studies, projects, and strategies

Water supply impacts and Summary of Risk Reduction

Listing flood response and recovery activities

Legislative and administrative planning recommendations

Surveying financing options

Public outreach

Comparison to Previous Plan

## Region 3: Trinity

### Existing Flood Risk

(in 1 percent and 0.2 percent annual chance flood hazard areas)



1,006,200

Population



158,300

Buildings



1,352,600

Agricultural  
land (acres)



6,000

Roadway  
miles



122,000

Residential  
buildings



240

Critical  
Facilities\*

# How to get involved with Region 3

1. Utilize the Region 3 Website
  - Contact information for the sponsors, chairs, and full member list of the RFPG available there
  - Additional information on TWDB's website
2. Attend RFPG meetings (most are hybrid)
  - Can be found on Region 3's website
3. Provide input to the RFPG
  - Provide public comments in their meetings
  - Submit information to them
    - Examples:
      - Potential Flood Management Solutions
      - Data
    - Reach out to Sponsor for Stakeholder Surveys
4. Encourage others, including public officials, to engage and provide input

# Resources

- Flood Science and Community Assistance
  - [Contact Water Science & Conservation | Texas Water Development Board](#)
- State Flood Plan
  - [State Flood Planning | Texas Water Development Board](#)
- Interactive State Flood Plan Viewer
  - [Texas Flood](#)

# Questions?

# 89th Texas Legislature 1st Special Session Overview

**Jackie Nolasco**

**NCTCOG Transportation Department**



NCTCOG PRESENTATION

# 89<sup>th</sup> TEXAS SPECIAL SESSIONS OVERVIEW

JACKIE NOLASCO

COMBINED FLOODPLAIN SEMINAR FOR  
ELECTED OFFICIALS AND TRINITY RIVER  
COMMON VISION STEERING COMMITTEE  
MEETING | SEPTEMBER 18, 2025

# 89<sup>th</sup> TEXAS LEGISLATURE OVERVIEW

- January 14-June 2 – Regular Session
- July 21-August 15 – 1<sup>st</sup> Special Session
- August 15-September 4 – 2<sup>nd</sup> Special Session

## Bill Overview

Session	HB/SB Filed	HR/SR Filed	HB/SB Passed	HR/SR Passed
89th Regular	8719	2263	1213	2207
89th (1) Special	369	171	0	95
89th (2) Special	368	265	21	252



# PRIORITIES IN THE 89<sup>TH</sup> (1) SESSION

## GOVERNOR'S 18 PRIORITIES

- Flood warning systems
- Flood emergency communications
- Relief funding for Hill County floods
- Natural disaster preparation/recovery
- Eliminate STAAR test
- Cut property taxes
- Protect children from THC
- Regulate hemp-derived products
- Protect unborn children
- Ban taxpayer-funded lobbying
- Protect human trafficking victims
- Policy personnel records
- Protect women's spaces
- Attorney General election powers
- Redistricting
- Title theft/deed fraud
- Water project initiatives
- State judicial department



# PRIORITIES IN THE 89<sup>TH</sup> (2) SESSION

## ADDITIONAL GOVERNOR PRIORITIES

- Ensure and enhance youth camp safety
- Penalties/punishments for absent legislators
- Authorization to purchase Ivermectin at pharmacies
- Groundwater study of East Texas aquifers by the Texas Water Development Board prior to the issuance of permits or permit amendments by certain groundwater conservation districts



# WATER LEGISLATION FILED – 89<sup>th</sup> (1)

**HB 155 (Bell)** Would bar political subdivisions from using public money to plan, create, or operate environmental projects, while listing multiple exceptions (e.g., to comply with law, improve flood control/drainage or water supplies, implement water conservation, etc.).

**HB 190 (Zwiener)** Would allow Texas counties create drainage utilities, charge drainage fees, and set land-use rules for flood control, while keeping municipal regulations as the higher authority.

**HB 284 (Martinez)** Would mandate TxDOT to coordinate with local flood control authorities and include stormwater outfalls and other flood control features when building highway projects, while also considering nearby existing or planned roadways.



# WATER LEGISLATION FILED – 89<sup>th</sup> (1)

**HB 186 (Lopez)** Would mandate the Texas Water Development Board to conduct a study on how to streamline the state environmental review process for flood-control and drainage projects that seek funding from the Flood Infrastructure Fund, and then to implement internal guidelines based on that study.

**HB 183 (Isaac)** Would require subdivision plat applications that rely on groundwater to include a certification from a licensed professional showing that adequate groundwater is available, and direct local authorities to reject plats that don't meet this requirement. Additionally, would task TCEQ with setting the rules for how groundwater availability must be proven.



# WATER LEGISLATION FILED – 89<sup>th</sup> (2)

**HB 244 (Martinez)** Would mandate TxDOT to coordinate with local flood control authorities and include stormwater outfalls and other flood control features when building highway projects, while also considering nearby existing or planned roadways.

**SB 5 (Huffman)** Would allocate approximately \$278 million from the Economic Stabilization Fund to ramp up disaster preparedness and response plus contingent funding to support campground safety enhancements. **Sent to Governor on 9/9/25.**

**HB 287 (Virdell)** Would bar Texas cities, counties, and other political subdivisions from acquiring land outside their own county, whether by purchase, lease, eminent domain, or gift, for the purpose of obtaining or transporting water.

**SB 45 (Eckhardt)** Would allow Texas counties create drainage utilities, charge drainage fees, and set land-use rules for flood control, while keeping municipal regulations as the higher authority.



# CONTACT US



616 Six Flags Drive  
Arlington, TX 76011



[transinfo@nctcog.org](mailto:transinfo@nctcog.org)



817-695-9240



[www.nctcog.org/legislative](http://www.nctcog.org/legislative)

## **Jackie Nolasco**

Communications Specialist  
Government Relations

[jnolasco@nctcog.org](mailto:jnolasco@nctcog.org)

(817) 695-9255

## **Rebekah Gongora**

Program Manager  
Public Involvement and  
Government Relations

[rgongora@nctcog.org](mailto:rgongora@nctcog.org)

(682) 433-0477



# Flood Warning Communications, Outreach, and Regional Information Sharing

**Dr. Maribel Martinez-Mejia, CEM**

**NCTCOG Emergency Preparedness Department**



**North Central Texas  
Council of Governments**

# Flood Warning Communications, Outreach, & Regional Information Sharing

Dr. Maribel Martinez-Mejia, CEM  
Director of Emergency Preparedness, NCTCOG



**Enhancing lasting partnerships and proactive Emergency Preparedness initiatives through advocacy, communication, and collaboration.**

# FLOODING

## REGIONAL PREPAREDNESS

- Workgroup & Emergency Management list serves in place
- Recovery Plan Templates
- Public Education
- Training & Exercises
- Regional Response Framework in Place



# PUBLIC EDUCATION – REGIONAL PROGRAM

- Regional KnoWhat2Do website that covers All Hazards
- Maintain displays, banners, posters, etc. for regional use
- Cache of preparedness materials and giveaways are available
- KnoWhat2Do marketing campaign has been successful with the reach through social media and local broadcasting



# FLOODING OUTREACH

- KnoWhat2Do social media campaigns
- Sharing across state/regional Emergency Management Offices
- Can be used in blue sky or gray sky days



# FLOODS

## LIVES

**FLASH FLOODS**  
take more lives each  
year than any other  
severe weather  
hazard

## POWER

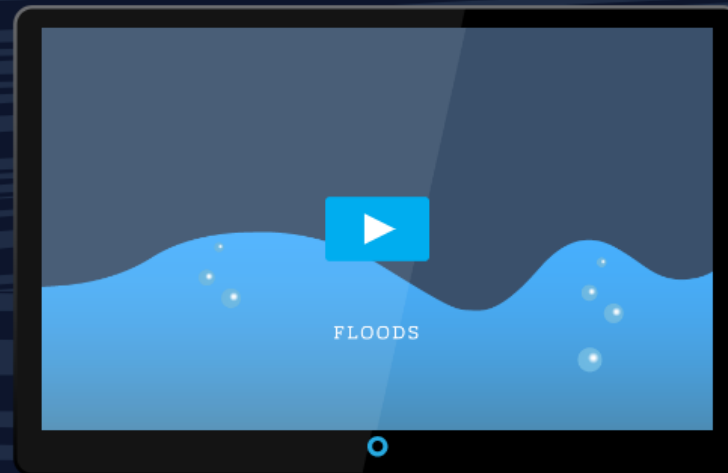
**SIX INCHES**  
of fast moving water  
can easily knock over  
an adult

## CARS & SUVs

**TWO FEET**  
of water can carry  
away most vehicles

## POPULATED

**HIGH DENSITY**  
areas are more prone  
to flash floods, due to  
less drainage



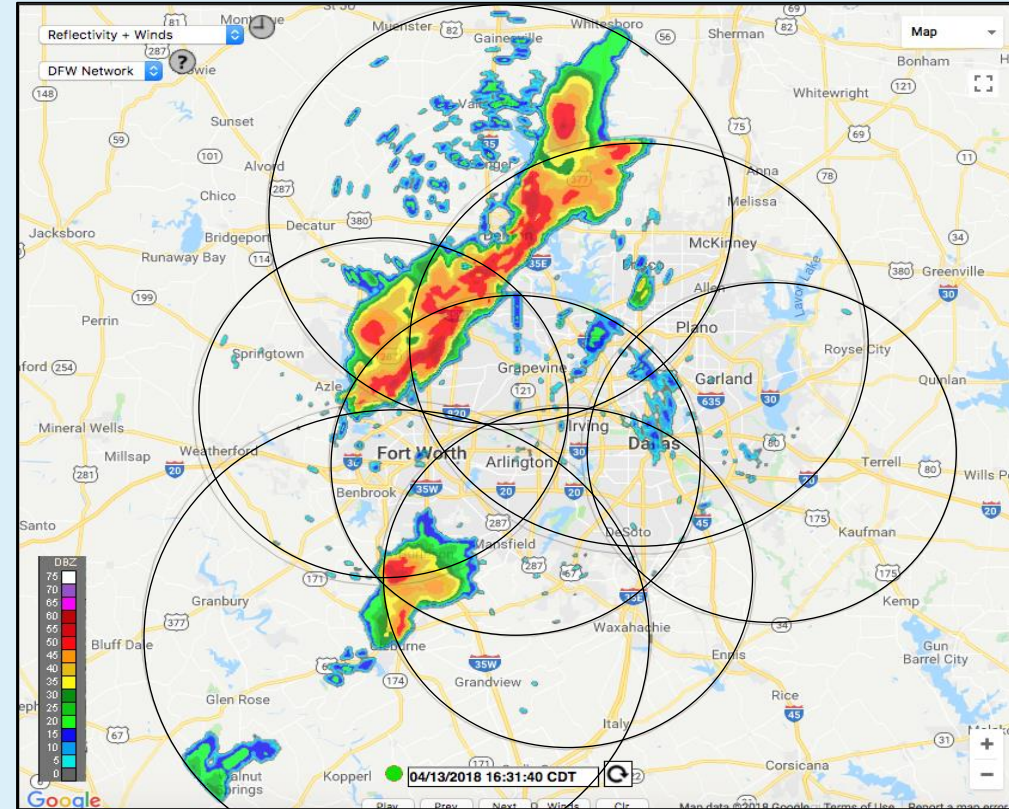
## SAFETY TIPS

WHEN ENCOUNTERING FLOODS AND FLASH FLOODS

# CASA WX Program

## 10 Year Collaboration Addressing Severe Weather Challenges

- 1-minute updates
- Street-level detail
- Data archive for post-event deployment & assessment
- Weather data can be customized
- Used by NWS Fort Worth
- Personalized warnings for the public based on App
- CASA rainfall data accuracy, short term accumulations show risk earlier, more precisely



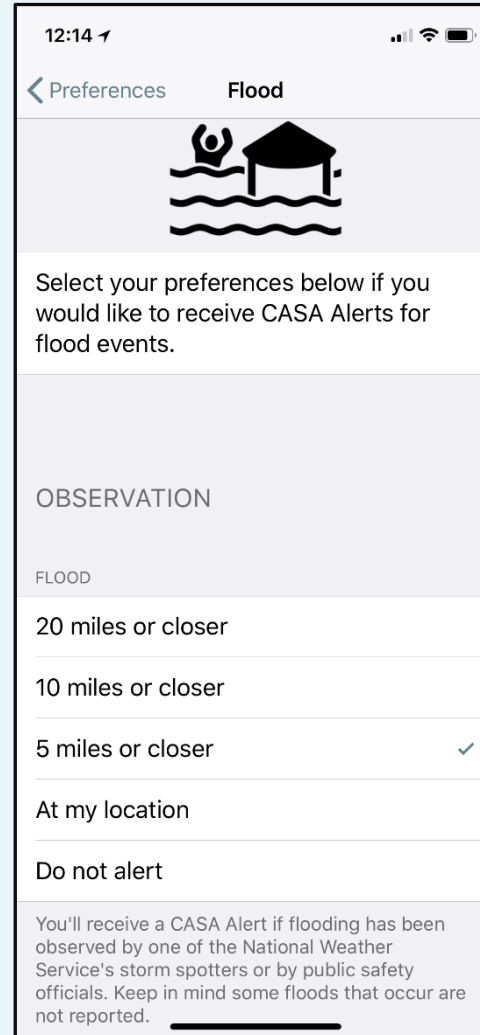
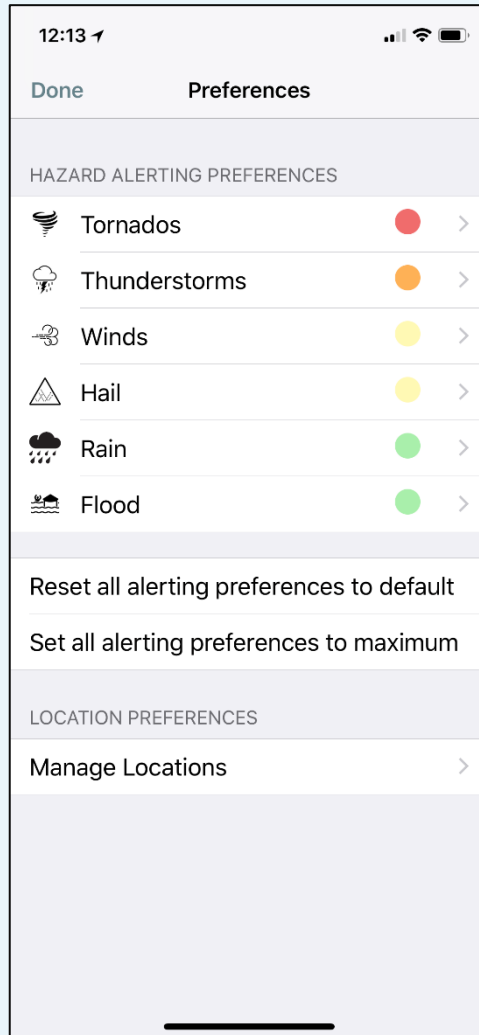
*CASA network covers approximately 32,000 sq. km. Radar range is 40 – 100km. Overlapping coverage improves data quality*

# CASA ALERTS APP

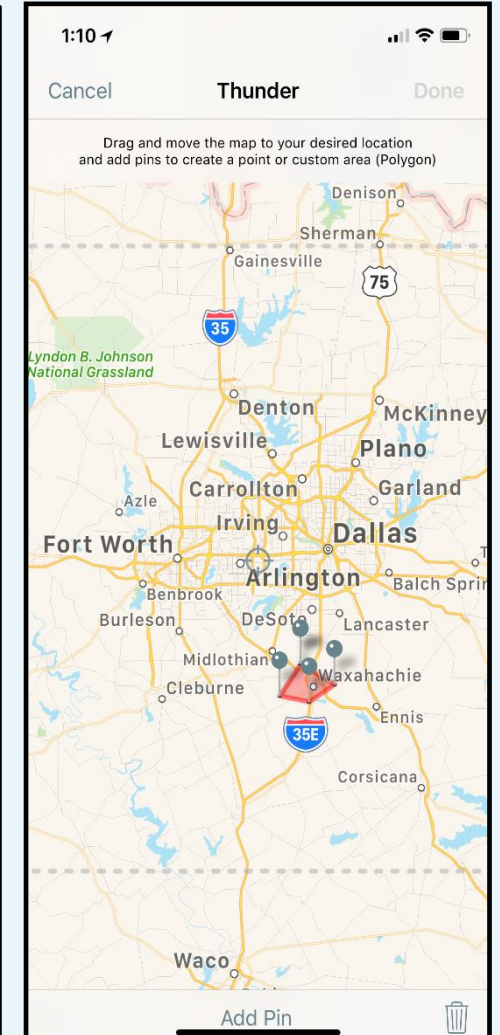
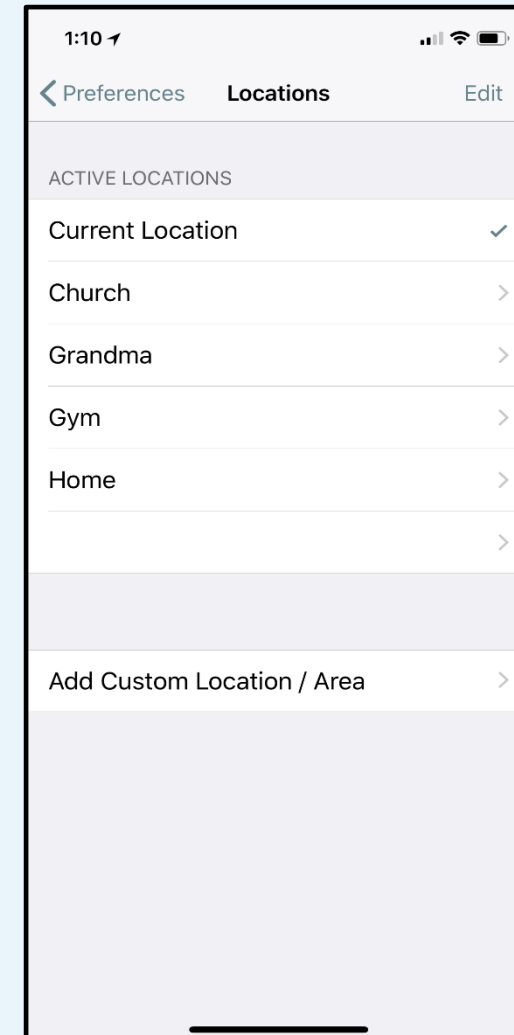
## Hazard Alerting Preferences



**FLASH FLOOD  
ALERTING &  
PUBLIC  
NOTIFICATIONS**



## Important Locations



# EOC COORDINATION

CASA rainfall data can  
target areas of flood risk  
within a flash flood warning  
CASA data demonstrated to  
provide more lead time for  
local response



**Fort Worth Fire Department**   
@FortWorthFire · [Follow](#)



Record Breaking Rainfall on 8/21-8/22.

- ◆ 2nd greatest 24-hour rainfall in DFW with 9.19" of rain (@NWSFortWorth)
- ◆ 174 high water investigations/rescues
- ◆ 500 calls for service
- ◆ A Flood Watch remains in effect until 8PM

This is a day we won't soon forget. Stay safe,  
[#FortWorth](#).



3:57 PM · Aug 22, 2022 from Fort Worth, TX



**NWS Fort Worth**  
@NWSFortWorth · [Follow](#)



We've broken several records at DFW Airport following the significant rain event over the past 24 hours. August 21st-22nd, 2022, is now the second wettest 24-hour period, coming in at 9.19"! That's only 0.38" shy of the #1 record. Daily records were also broken for 8/21 and 8/22.

## DFW Deluge Breaks Records

Since additional rainfall could occur, these totals are subject to change.

Weather Forecast Office  
Fort Worth, TX  
Issued August 22, 2022 2:05PM CT

### Greatest 24-Hour Precipitation Totals

Rank	Total	Dates
1	9.57"	Sep 4-5, 1932
2	9.19"	Aug 21-22, 2022*
3	8.81"	Apr 24-25, 1922
4	8.11"	Sep 21-22, 2018
5	7.44"	Sep 20-21, 1900

### Daily Records

3.53" on August 21  
previous record: 2.25" in 1919  
5.66" on August 22 \*  
previous record: 2.47" in 1916  
\* first back-to-back precipitation records since October 22-23, 1919

Wettest August: 10.33" in 1915  
August 2022 Total: 10.08"

Highest Daily Rainfall For The  
Month of August  
5.66" on August 22 \*  
Previous 4.28" on Aug 28, 1946

\* through 2 pm on August 22

[f](#) [t](#) [v](#) [NWSFortWorth](#)

[weather.gov/fortworth](#)

2:32 PM · Aug 22, 2022



♥ 327    [Reply](#)    [Share](#)

[Read 19 replies](#)

# REGIONAL RESPONSE: MULTI-AREA COORDINATION

- Maintain Regional Response Directory (specialized equipment & teams)
- Integrated with state and if needed federal teams
- Working Group specializations provide regional (or requested) support
  - EM Support
  - Public Works Emergency Response
  - Drone Support
  - Mapping Support
  - Citizen Corps Volunteer Coordination
  - Incident Management Team Support



## Contact Us

Main Phone - 817-695-9235

Group Email - [emerprep@nctcog.org](mailto:emerprep@nctcog.org)

<https://www.nctcog.org/ep>

Dr. Maribel Martinez-Mejia, CEM

817-704-5613

[mmartinez@nctcog.org](mailto:mmartinez@nctcog.org)

Emergency Preparedness Department

616 Six Flags Drive, Centerpoint Two

Arlington, TX 76011

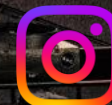


<https://www.facebook.com/NCTCOGEP/>

9/18/2025



<https://twitter.com/NCTCOGEP>



<https://www.instagram.com/nctcogep/>

# Flooded Roadway Information System Project

**Nathan Drozd**

**NCTCOG Transportation Department**



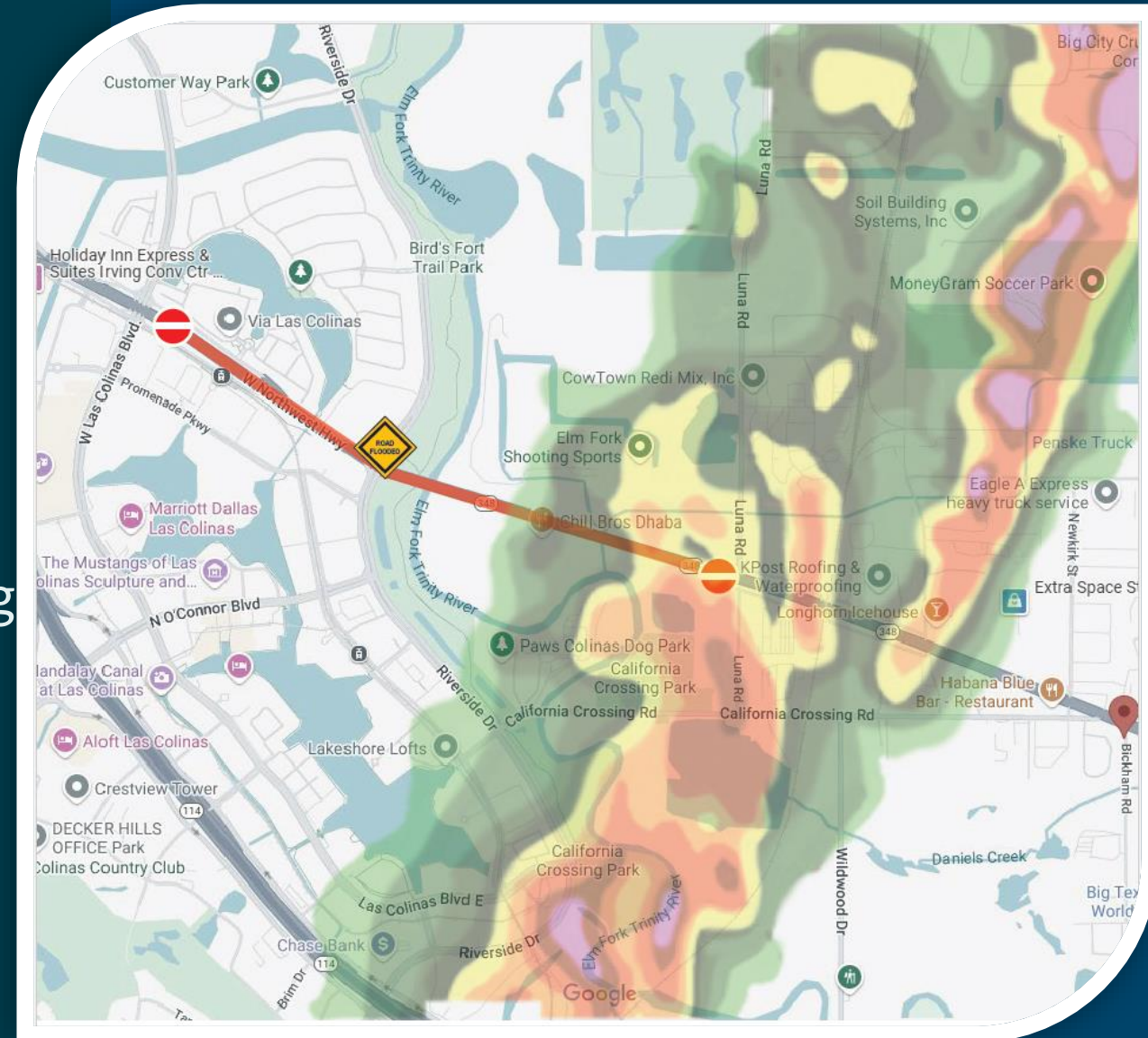
NCTCOG PRESENTATION

# FLOODED ROADWAY INFORMATION SYSTEM

NATHAN DROZD | COMMON VISION | 9.18.2025

# Project Description

- Creates a new preemptive warning system for potential flooded roads in DFW
- Predicts in real time where flooding may occur before it happens
- Reroutes traffic through existing navigational systems
- Informs emergency responders



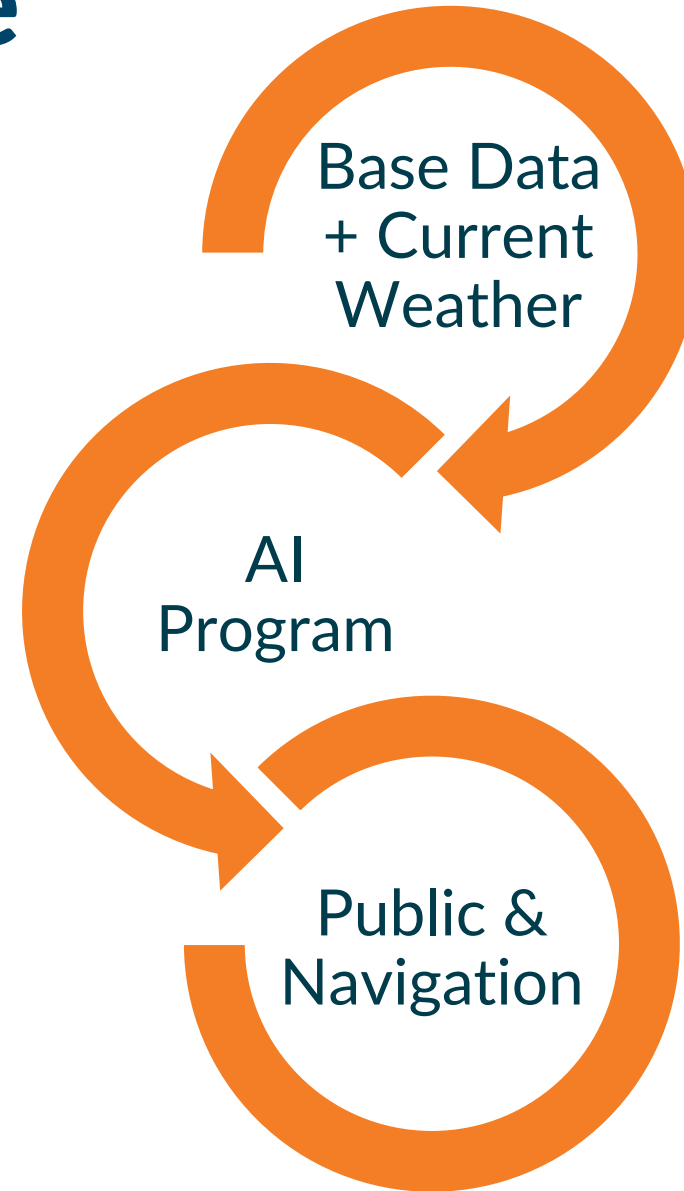
Source: Dewberry



# Development Of The Warning System

Historical and existing data will be combined with the current weather and imputed into an AI program to predict which roads will flood.

With the predictions, the information will be shared with the public, emergency responders, and updated in car navigational systems.



# PROJECT TIMELINE



# QUESTIONS



Nathan Drozd  
Project Manager  
ndrozd@nctcog.org  
(817) 695-9148



# Building a Flood Resilient Community

**Nick Fang, PhD, PE**

**Water Engineering Research Center**

**University of Texas at Arlington**

# Building a Flood Resilient Community

*Nick Z Fang, Ph.D., P.E.*

*Robert S. Gooch Endowed Professor*

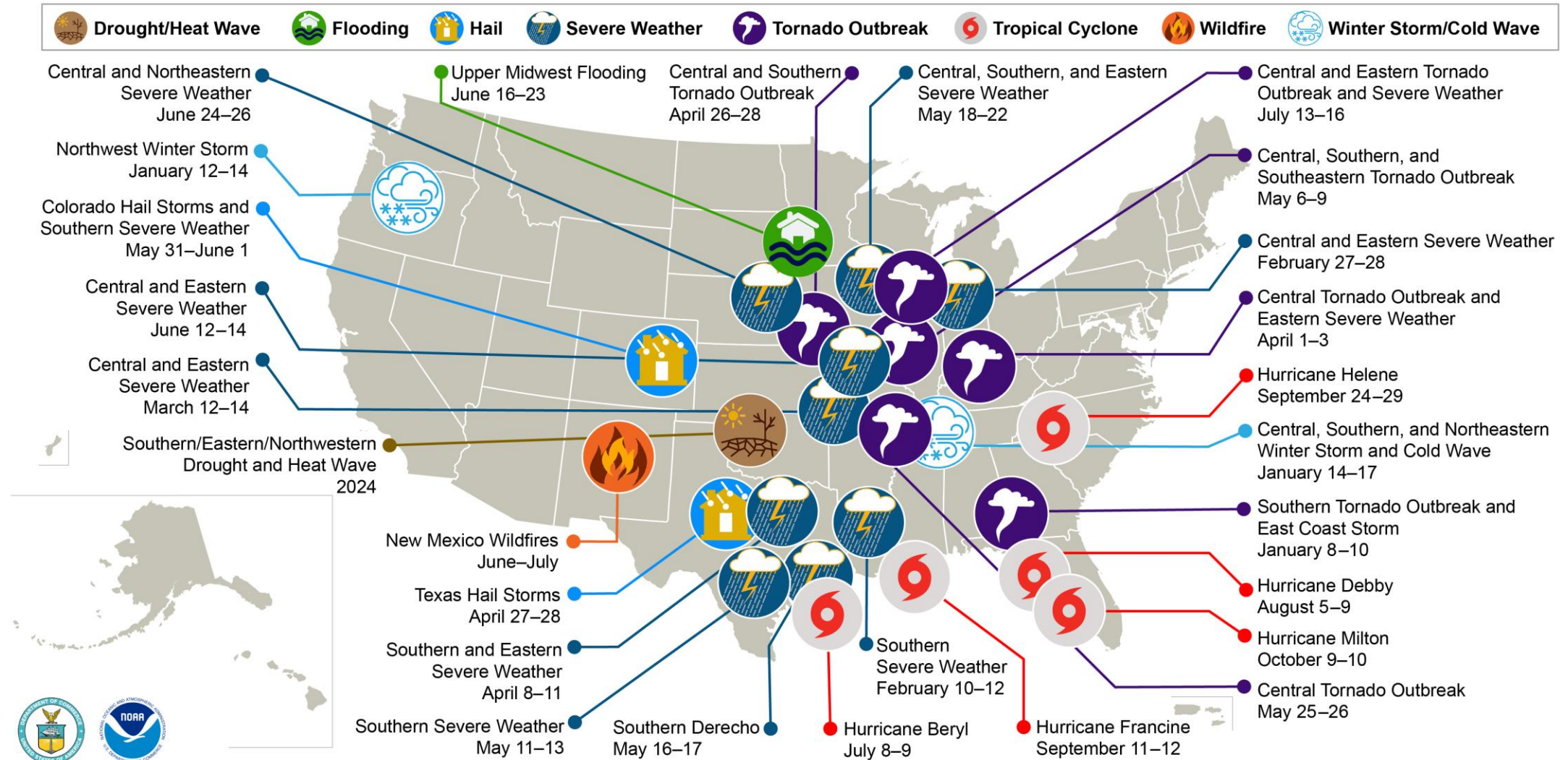
*Director, Water Engineering Research  
Center (WERC)*

*The University of Texas at Arlington*

Presented at Combined Floodplain Seminar for Elected Officials  
and Trinity River COMMON VISION Steering Committee Meeting - 9/18/2025



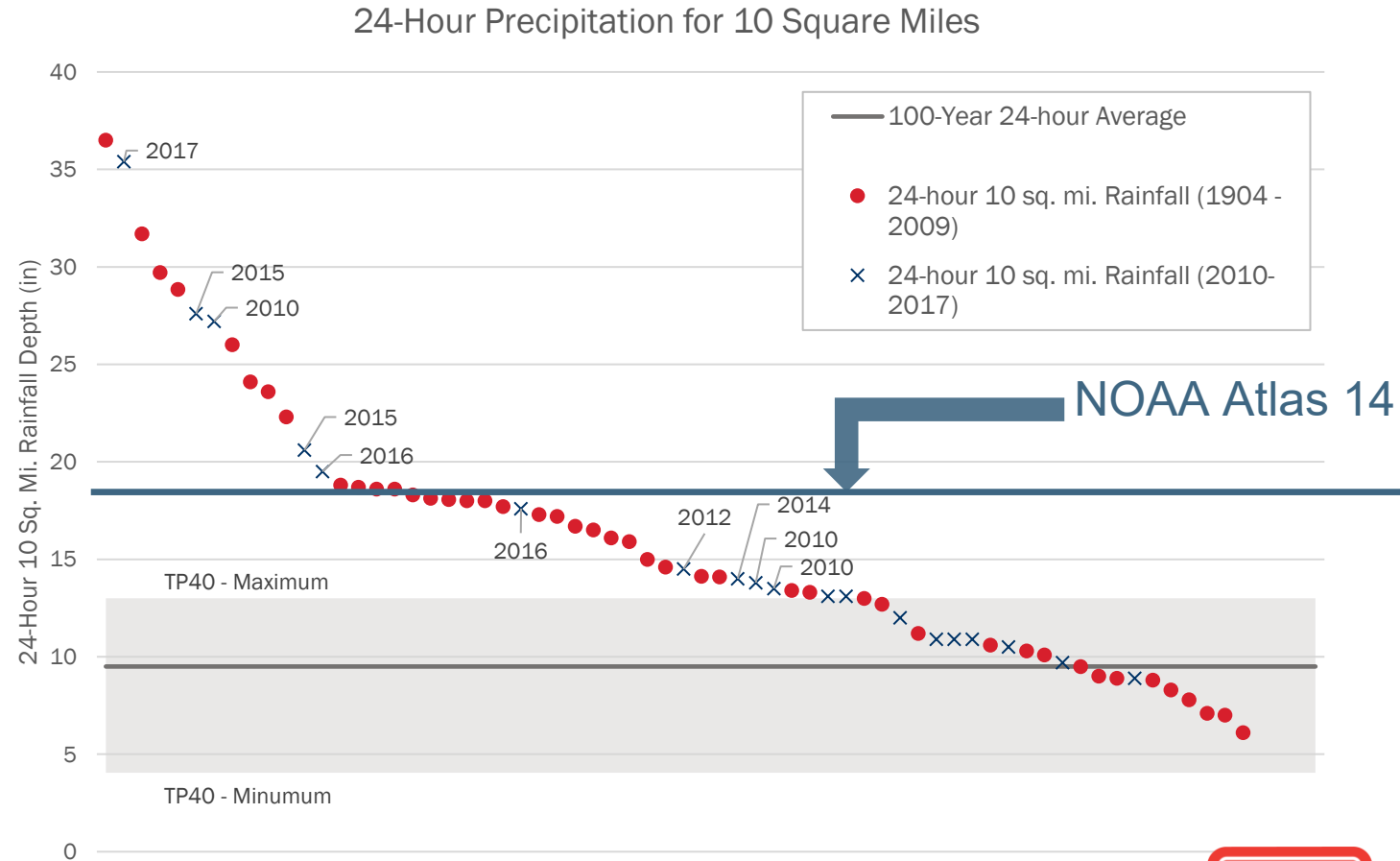
# U.S. 2024 Billion-Dollar Weather and Climate Disasters



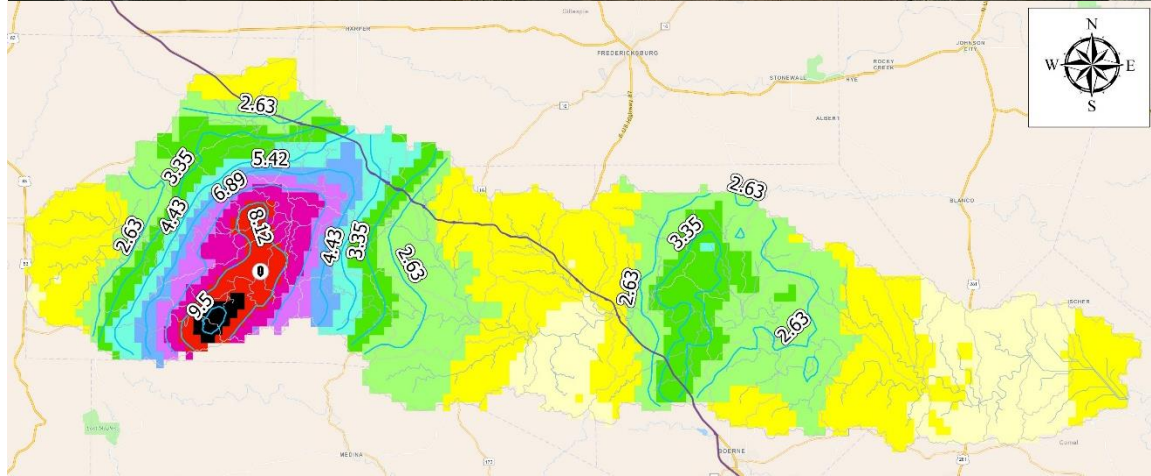
*This map denotes the approximate location for each of the **27 separate billion-dollar weather and climate disasters** that impacted the United States in 2024.*

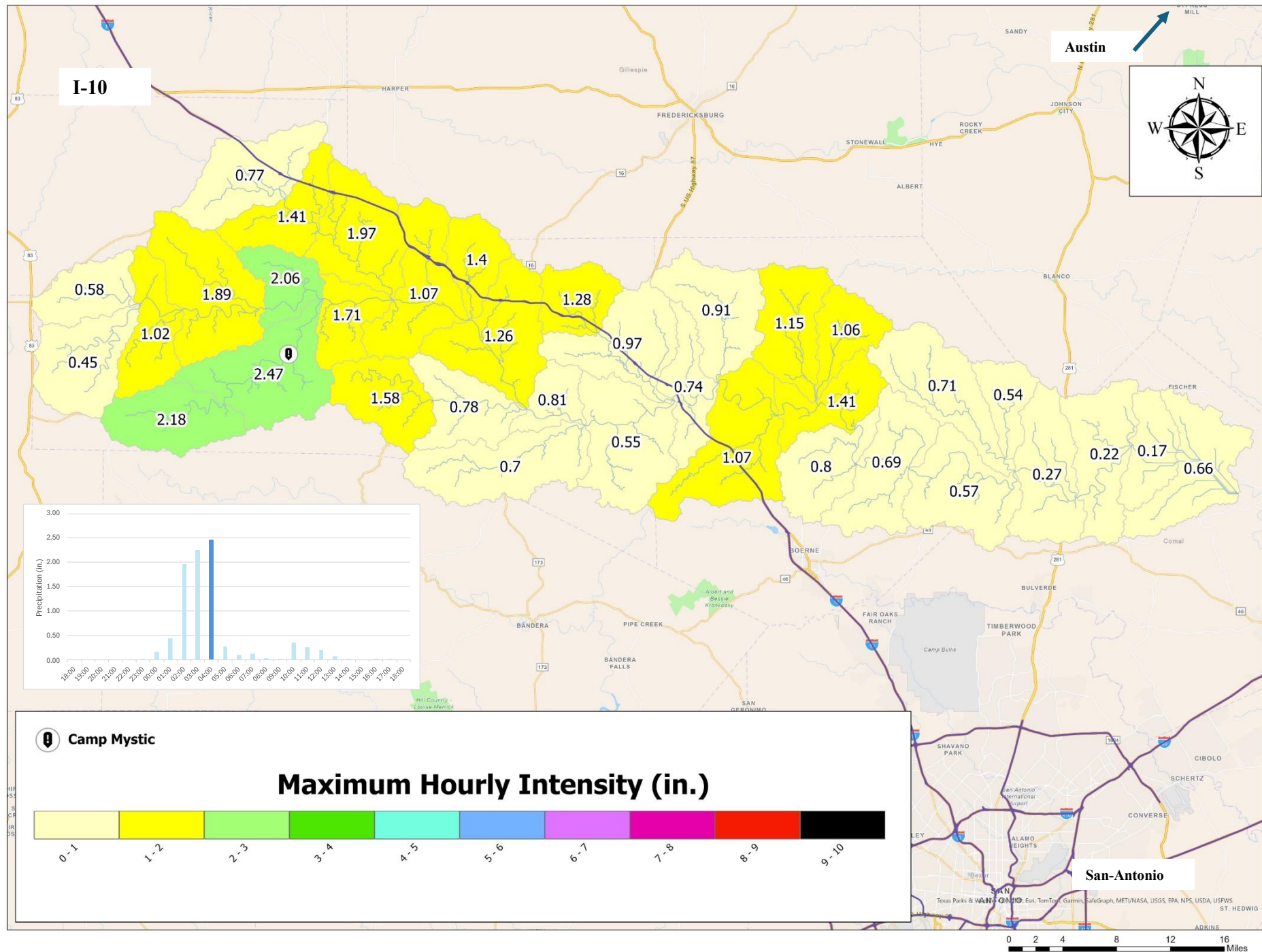
# STORMS EXCEEDING INFRASTRUCTURE AND NFIP STANDARDS

- Regional observed storms - USACE extreme storm database
- 24-hour rainfall for 10 mi<sup>2</sup>
- Plotted in descending order
- Grey band is current design standard (100-year) for all of TX
- Blue X's points are 2010-2017 storms that exceeded 100-year
- 18 events exceeded the 100-yr design standard

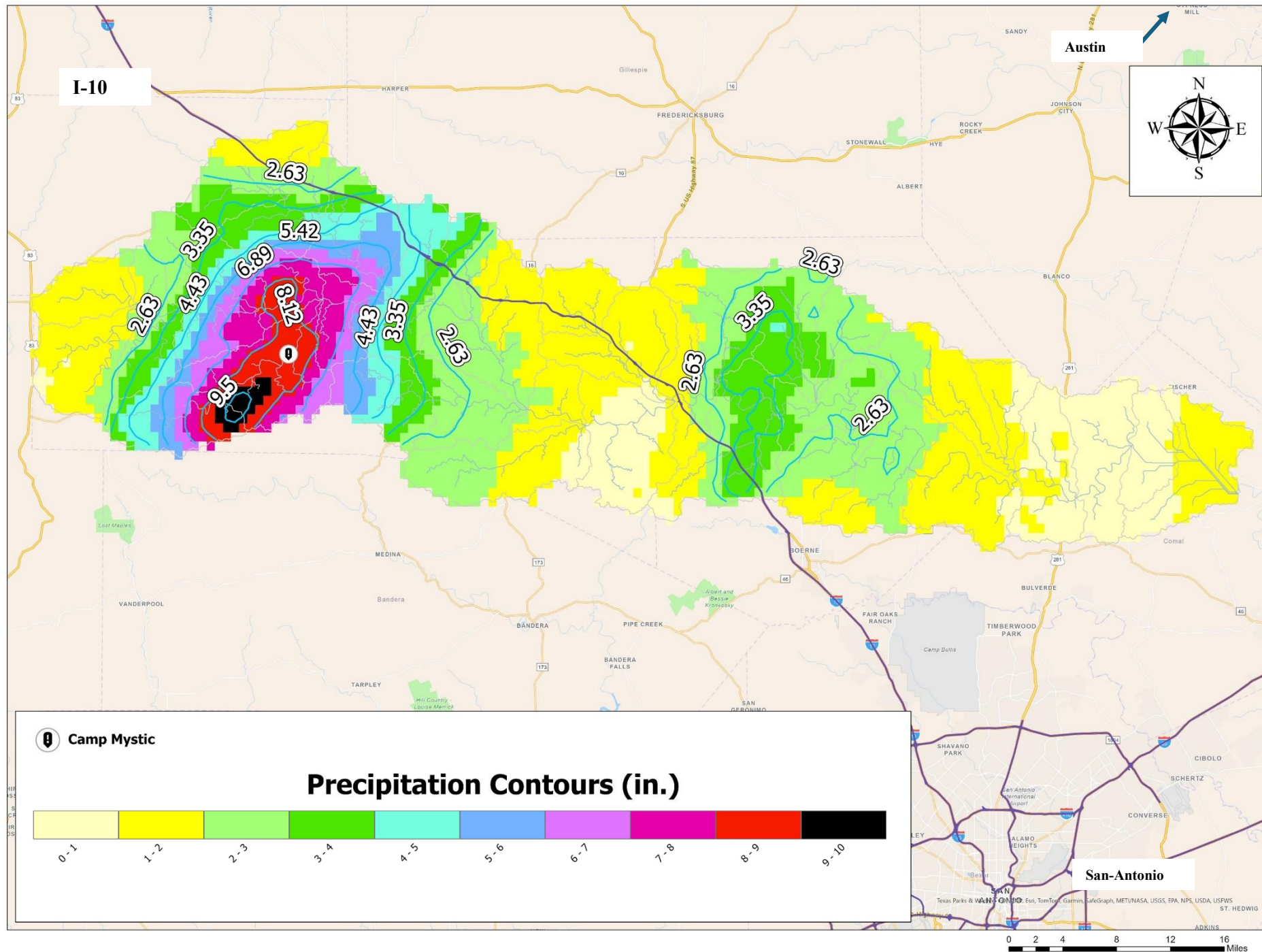


# KERR COUNTY FLOOD (7/4/2025)









# Historical Storms with Rainfall Intensity > 3in/hr

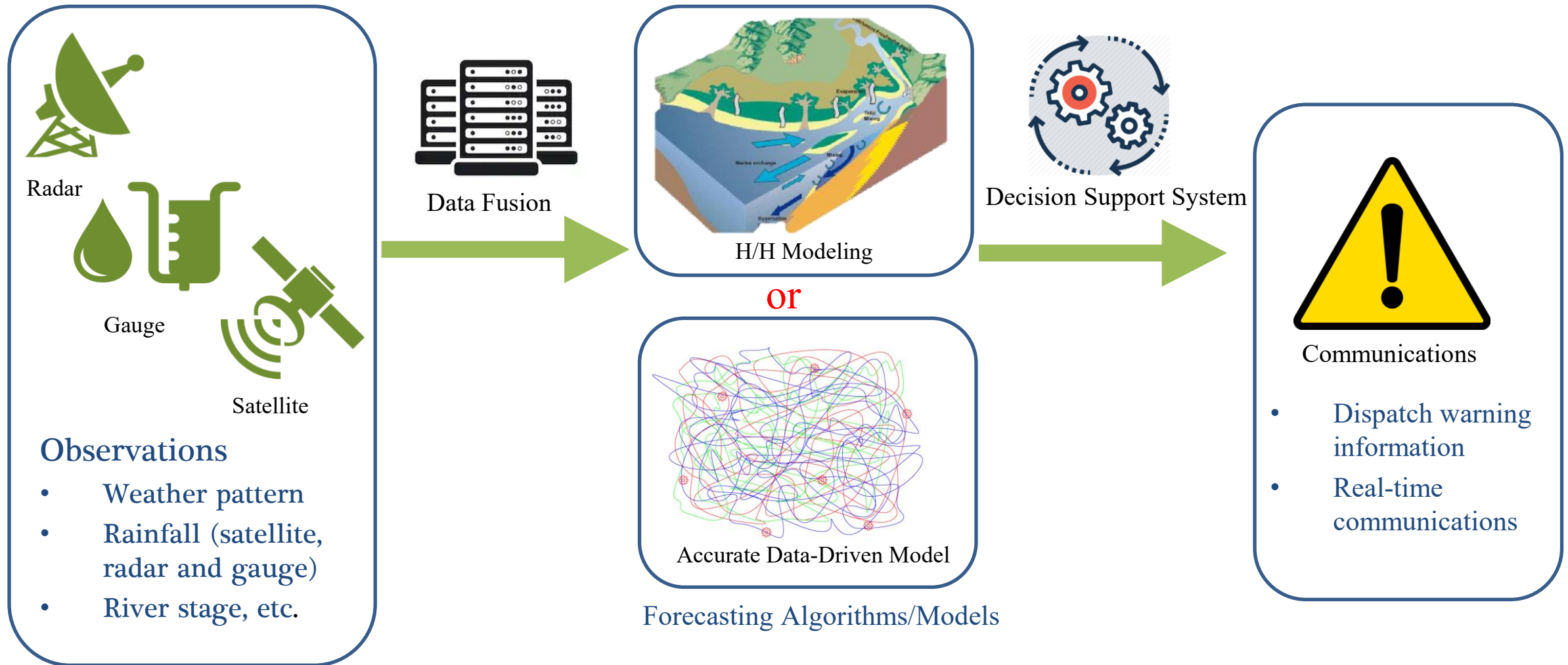
This map displays historical storms with rainfall intensity greater than 3 inches per hour across Central Texas. The map includes major highways, cities, and a compass rose. Storm events are marked with blue cloud icons and labeled with dates and rainfall intensity.

Key locations and storm events shown on the map include:

- San Antonio:** 2017-09-23 (6.5 in/hr), 2018-02-15 (3.9 in/hr), 2014-02-27 (6.4 in/hr), 2018-02-09 (4 in/hr), 2018-02-23 (8.5 in/hr), 2018-02-24 (8.4 in/hr), 2018-02-25 (8.1 in/hr), 2018-02-26 (8.1 in/hr), 2018-02-27 (8.1 in/hr), 2018-02-28 (8.1 in/hr), 2018-02-29 (8.1 in/hr), 2018-03-01 (8.1 in/hr), 2018-03-02 (8.1 in/hr), 2018-03-03 (8.1 in/hr), 2018-03-04 (8.1 in/hr), 2018-03-05 (8.1 in/hr), 2018-03-06 (8.1 in/hr), 2018-03-07 (8.1 in/hr), 2018-03-08 (8.1 in/hr), 2018-03-09 (8.1 in/hr), 2018-03-10 (8.1 in/hr), 2018-03-11 (8.1 in/hr), 2018-03-12 (8.1 in/hr), 2018-03-13 (8.1 in/hr), 2018-03-14 (8.1 in/hr), 2018-03-15 (8.1 in/hr), 2018-03-16 (8.1 in/hr), 2018-03-17 (8.1 in/hr), 2018-03-18 (8.1 in/hr), 2018-03-19 (8.1 in/hr), 2018-03-20 (8.1 in/hr), 2018-03-21 (8.1 in/hr), 2018-03-22 (8.1 in/hr), 2018-03-23 (8.1 in/hr), 2018-03-24 (8.1 in/hr), 2018-03-25 (8.1 in/hr), 2018-03-26 (8.1 in/hr), 2018-03-27 (8.1 in/hr), 2018-03-28 (8.1 in/hr), 2018-03-29 (8.1 in/hr), 2018-03-30 (8.1 in/hr), 2018-03-31 (8.1 in/hr).
- Austin:** 2018-03-01 (3.4 in/hr), 2018-03-02 (3.4 in/hr), 2018-03-03 (3.4 in/hr), 2018-03-04 (3.4 in/hr), 2018-03-05 (3.4 in/hr), 2018-03-06 (3.4 in/hr), 2018-03-07 (3.4 in/hr), 2018-03-08 (3.4 in/hr), 2018-03-09 (3.4 in/hr), 2018-03-10 (3.4 in/hr), 2018-03-11 (3.4 in/hr), 2018-03-12 (3.4 in/hr), 2018-03-13 (3.4 in/hr), 2018-03-14 (3.4 in/hr), 2018-03-15 (3.4 in/hr), 2018-03-16 (3.4 in/hr), 2018-03-17 (3.4 in/hr), 2018-03-18 (3.4 in/hr), 2018-03-19 (3.4 in/hr), 2018-03-20 (3.4 in/hr), 2018-03-21 (3.4 in/hr), 2018-03-22 (3.4 in/hr), 2018-03-23 (3.4 in/hr), 2018-03-24 (3.4 in/hr), 2018-03-25 (3.4 in/hr), 2018-03-26 (3.4 in/hr), 2018-03-27 (3.4 in/hr), 2018-03-28 (3.4 in/hr), 2018-03-29 (3.4 in/hr), 2018-03-30 (3.4 in/hr), 2018-03-31 (3.4 in/hr).
- San Marcos:** 2018-03-01 (3.4 in/hr), 2018-03-02 (3.4 in/hr), 2018-03-03 (3.4 in/hr), 2018-03-04 (3.4 in/hr), 2018-03-05 (3.4 in/hr), 2018-03-06 (3.4 in/hr), 2018-03-07 (3.4 in/hr), 2018-03-08 (3.4 in/hr), 2018-03-09 (3.4 in/hr), 2018-03-10 (3.4 in/hr), 2018-03-11 (3.4 in/hr), 2018-03-12 (3.4 in/hr), 2018-03-13 (3.4 in/hr), 2018-03-14 (3.4 in/hr), 2018-03-15 (3.4 in/hr), 2018-03-16 (3.4 in/hr), 2018-03-17 (3.4 in/hr), 2018-03-18 (3.4 in/hr), 2018-03-19 (3.4 in/hr), 2018-03-20 (3.4 in/hr), 2018-03-21 (3.4 in/hr), 2018-03-22 (3.4 in/hr), 2018-03-23 (3.4 in/hr), 2018-03-24 (3.4 in/hr), 2018-03-25 (3.4 in/hr), 2018-03-26 (3.4 in/hr), 2018-03-27 (3.4 in/hr), 2018-03-28 (3.4 in/hr), 2018-03-29 (3.4 in/hr), 2018-03-30 (3.4 in/hr), 2018-03-31 (3.4 in/hr).
- Other locations:** 2018-03-01 (3.4 in/hr), 2018-03-02 (3.4 in/hr), 2018-03-03 (3.4 in/hr), 2018-03-04 (3.4 in/hr), 2018-03-05 (3.4 in/hr), 2018-03-06 (3.4 in/hr), 2018-03-07 (3.4 in/hr), 2018-03-08 (3.4 in/hr), 2018-03-09 (3.4 in/hr), 2018-03-10 (3.4 in/hr), 2018-03-11 (3.4 in/hr), 2018-03-12 (3.4 in/hr), 2018-03-13 (3.4 in/hr), 2018-03-14 (3.4 in/hr), 2018-03-15 (3.4 in/hr), 2018-03-16 (3.4 in/hr), 2018-03-17 (3.4 in/hr), 2018-03-18 (3.4 in/hr), 2018-03-19 (3.4 in/hr), 2018-03-20 (3.4 in/hr), 2018-03-21 (3.4 in/hr), 2018-03-22 (3.4 in/hr), 2018-03-23 (3.4 in/hr), 2018-03-24 (3.4 in/hr), 2018-03-25 (3.4 in/hr), 2018-03-26 (3.4 in/hr), 2018-03-27 (3.4 in/hr), 2018-03-28 (3.4 in/hr), 2018-03-29 (3.4 in/hr), 2018-03-30 (3.4 in/hr), 2018-03-31 (3.4 in/hr).



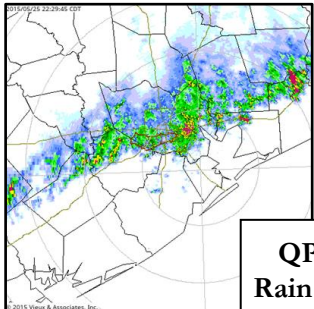
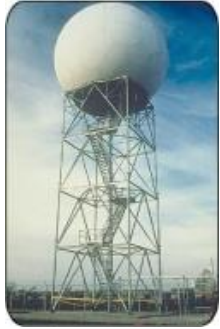
# FLOOD ALERT SYSTEM-CONCEPT



# FLOOD ALERT SYSTEM 5

## Data Retrieval

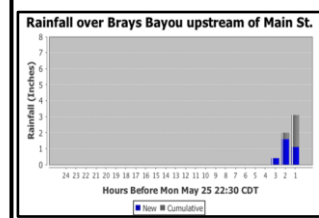
NEXRAD



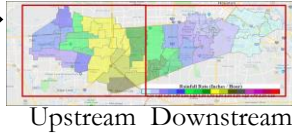
QPE &  
Rain Gages

## Flood Prediction Core Engine

### Real-Time Rainfall

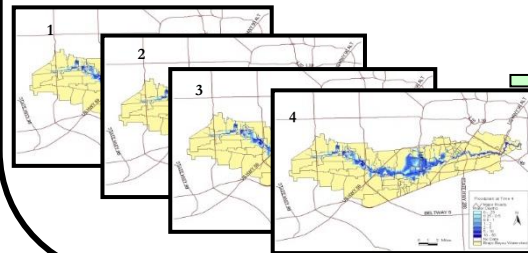


### RT Rainfall/Runoff Correlation



Indicator (Rainfall Intensity -RI)

Flood Plain Map Library



Inundation maps with IDs

Inundation depth at selected locations

## COH API/Data Portal

Watershed	Rainfall (inch)	Map ID
Brays Bayou	4	1
Huntington Bayou	5	3
...	...	...

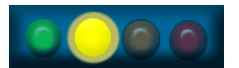
## Redundant Terminal

Real-Time Forecast Flood Map from 2<sup>nd</sup> Display Portal, also Includes Data Storage and Operation Engine



## Warnings & Communication

Alert Levels

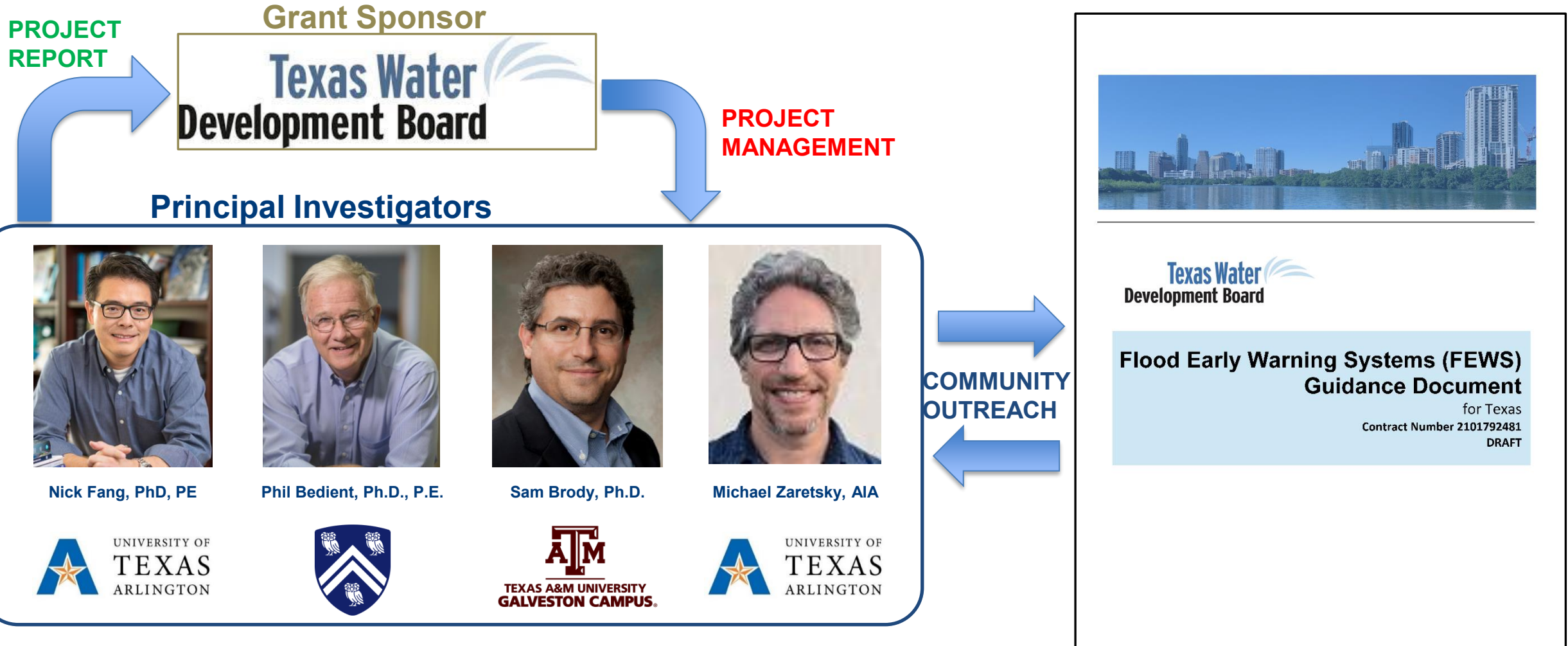


&  
Flood Protection Action Levels

Flood Protection & Emergency Actions

- Evacuations
- Flood door closure
- Recall of Personnel
- Backup Power

# Guidance Document of Flood Early Warning Systems



# The Washington Post



In South Dallas, Dk  
escaped his mother  
through a window, t  
through several feet  
reaching higher gro

Flood in Dallas , Texas on August  
2022 — (Source: Dallas Morning News)



integrating **Transportation**  
& **Stormwater Infrastructure**

<https://www.washingtonpost.com/climate-environment/interactive/2022/fema-flood-risk-maps-failures/>

# Integrated Transportation and Stormwater Infrastructure (TSI)

- 85 cities and portions of 8 counties
- 126% increase in population (2020 – 2045)
- 60% undeveloped (2015)
- 19% growth in impervious surface (2006 – 2016)
- > 7,000 miles of streams and  
274,000 acres of 100-year floodplain

>



North Central Texas  
Council of Governments



US Army Corps  
of Engineers®



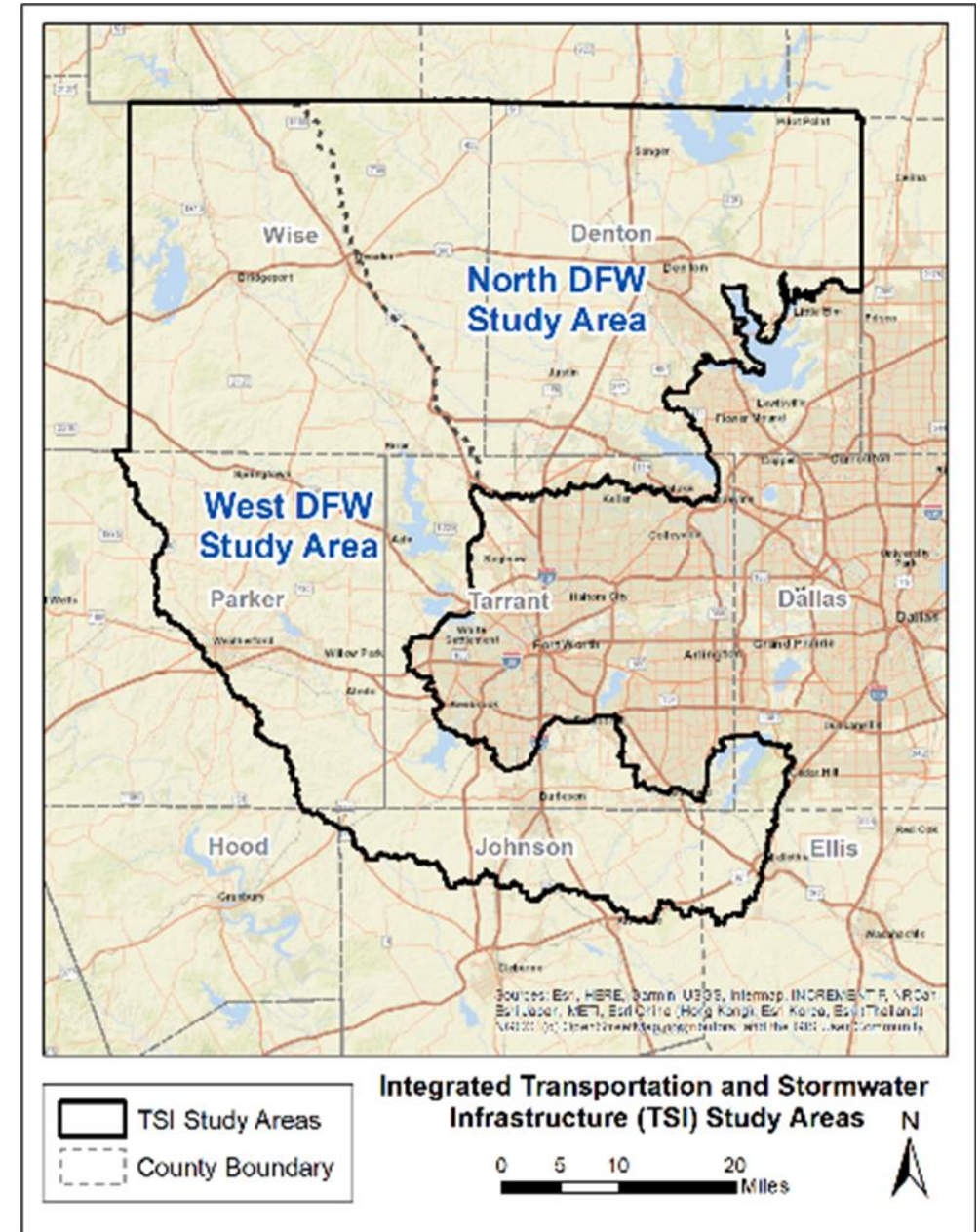
UNIVERSITY OF  
TEXAS  
ARLINGTON



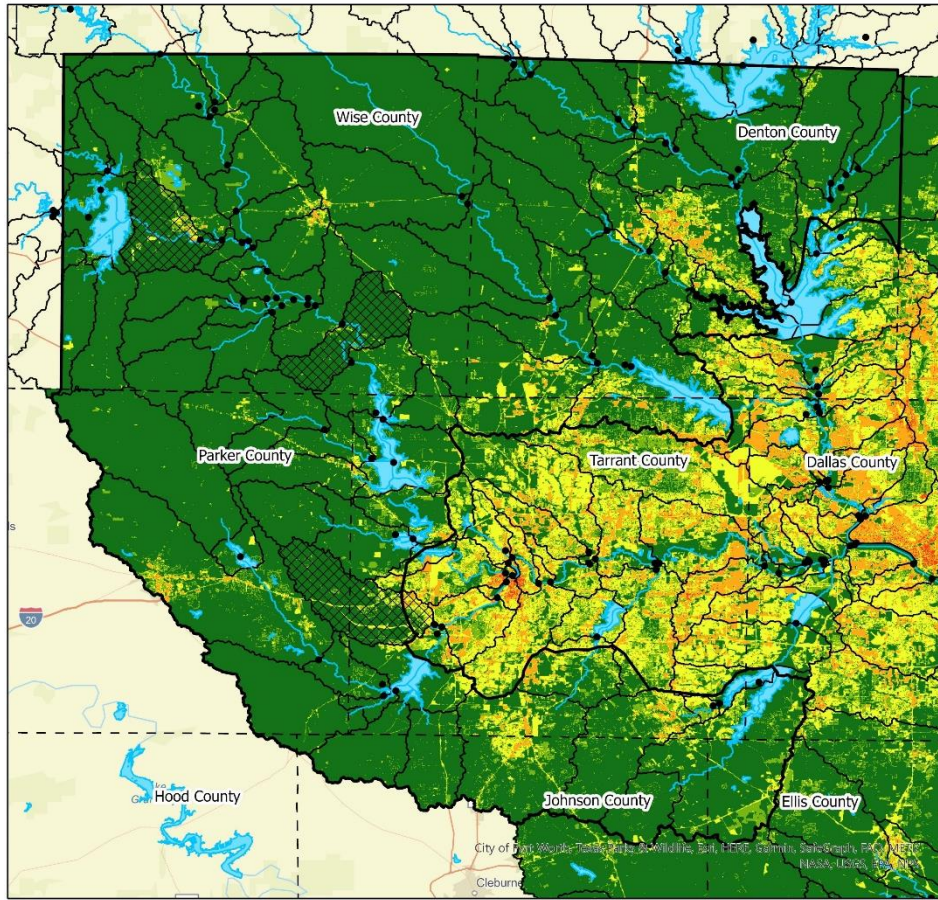
TEXAS A&M  
AGRI LIFE



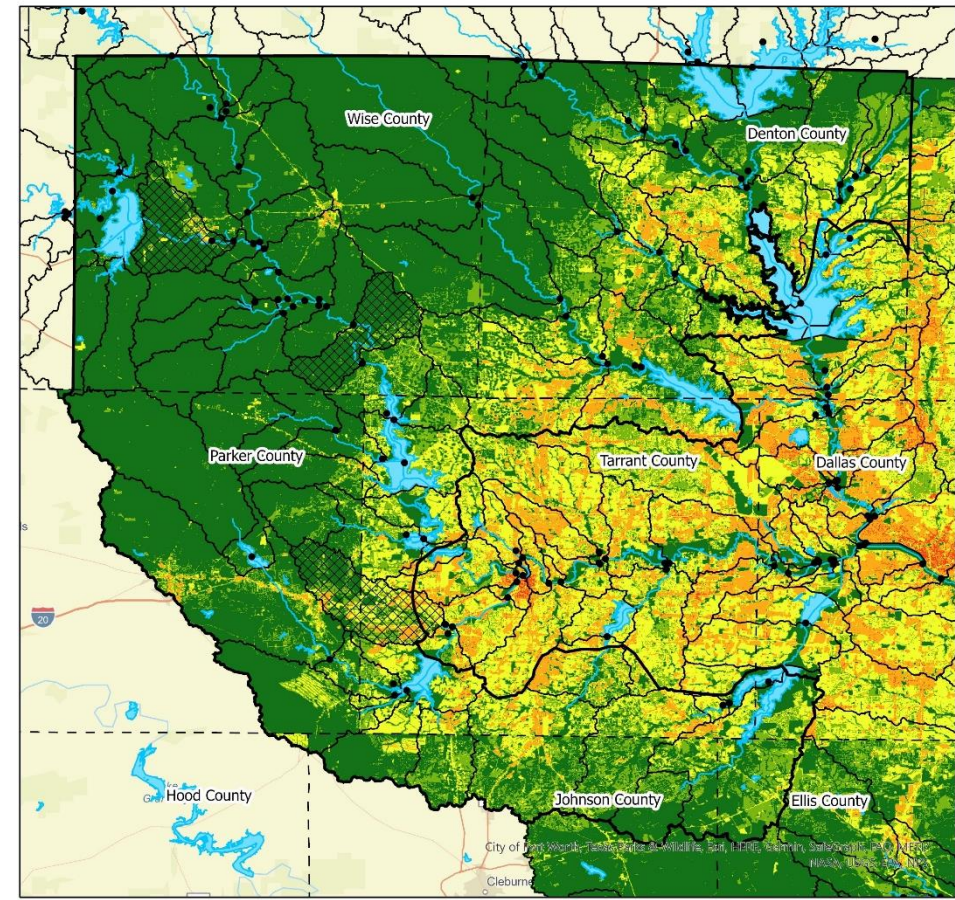
integrating Transportation  
& Stormwater Infrastructure



# Projected Imperviousness by Year 2020



2070



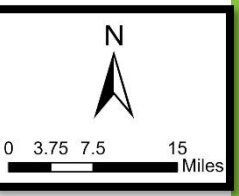
## Legend

- Texas County Boundary
- ▭ TSI Study Area
- Trinity CWMS Junctions
- Trinity CWMS Flow Reaches
- ▭ Trinity CWMS Subbasins
- Waterbodies
- ▨ Potential Pilot Study Areas

## Projected Imperviousness

Percentage (%)

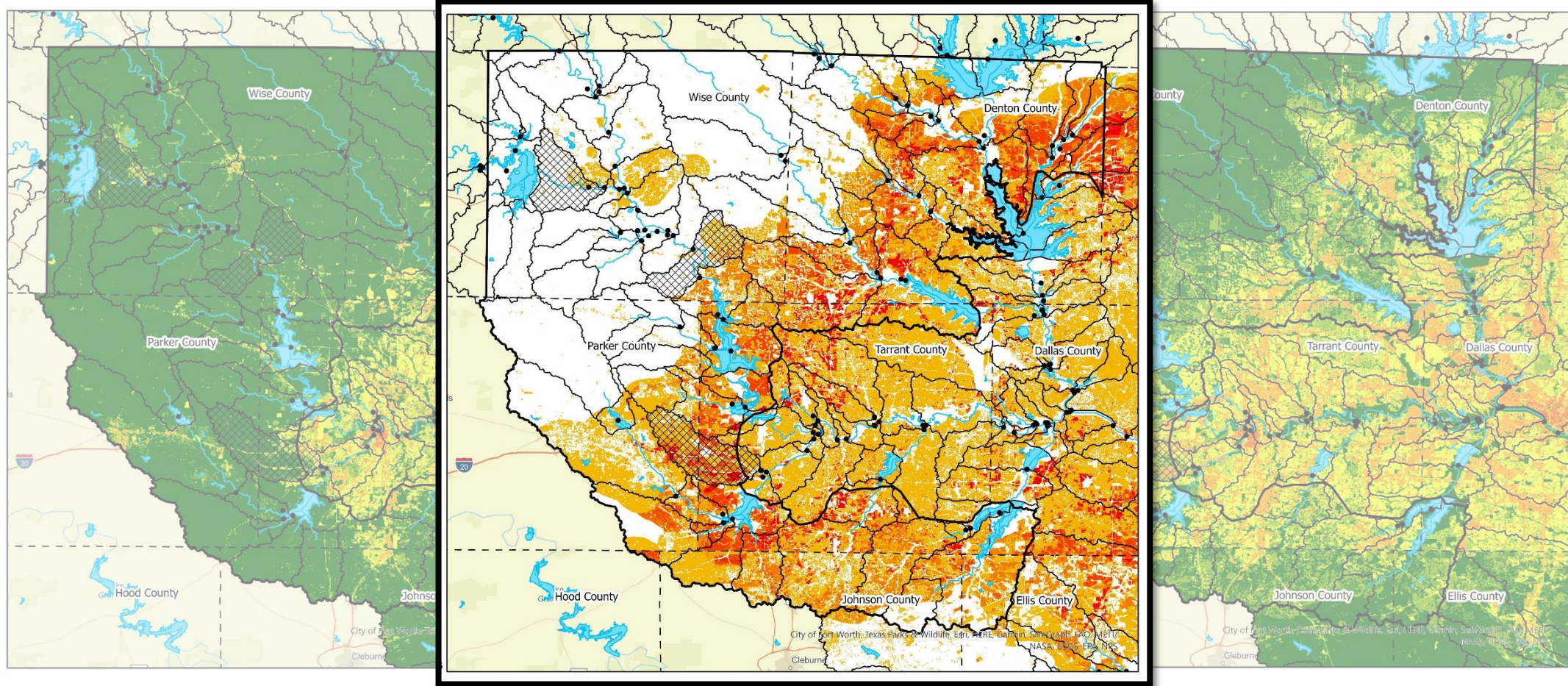
- 1 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100



# Projected Imperviousness Change

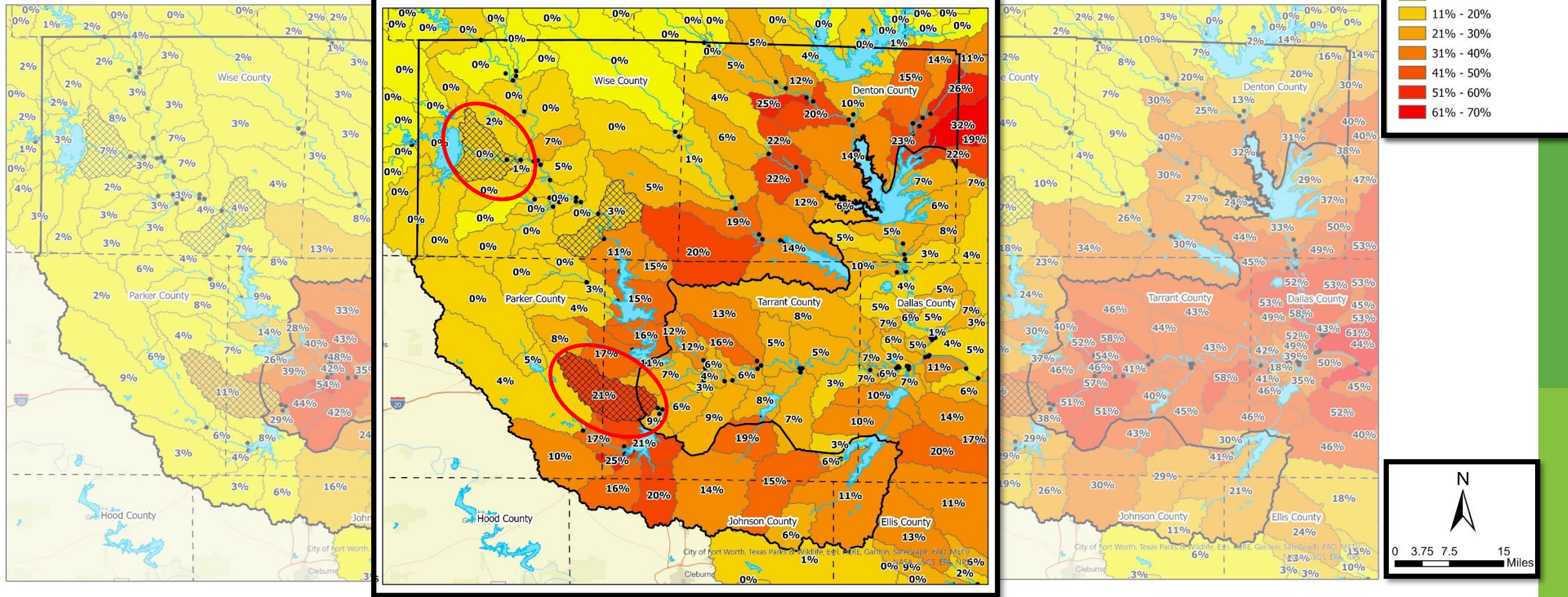
2020

2070



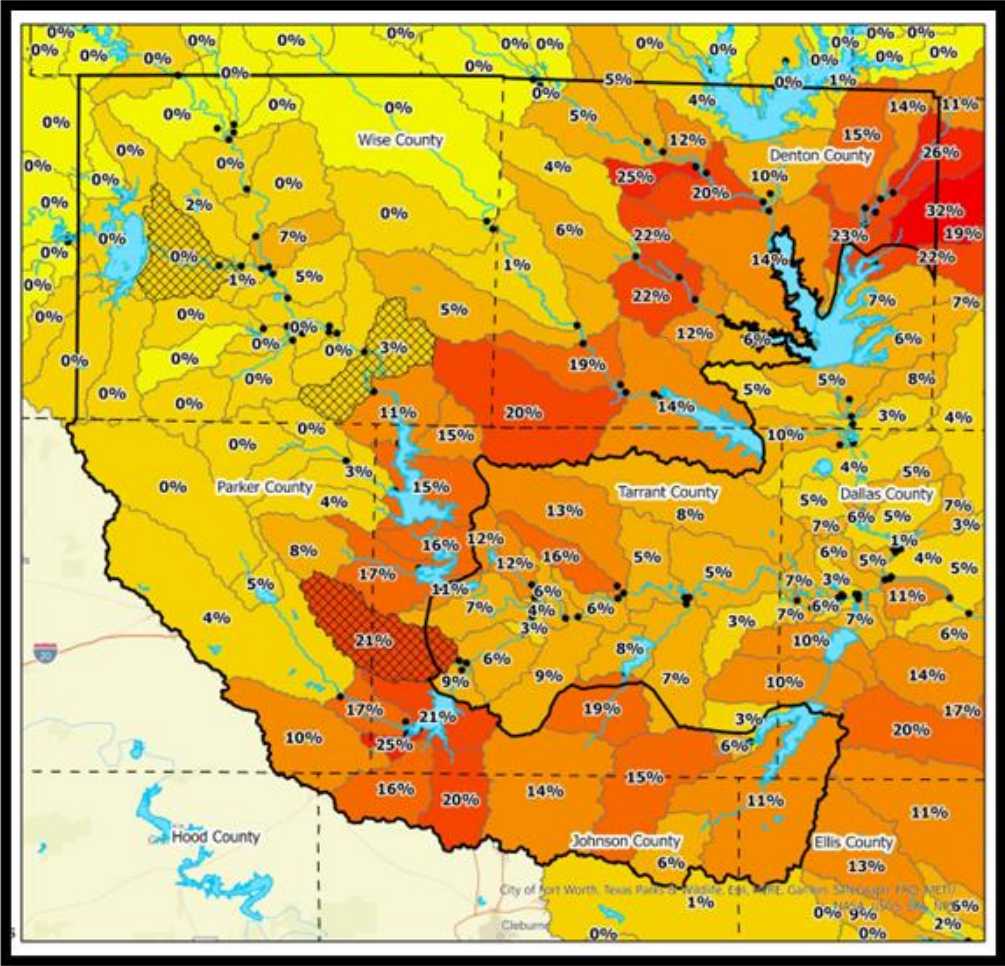
# Average Projected Imperviousness Change by Subbasin

2020 → 2070



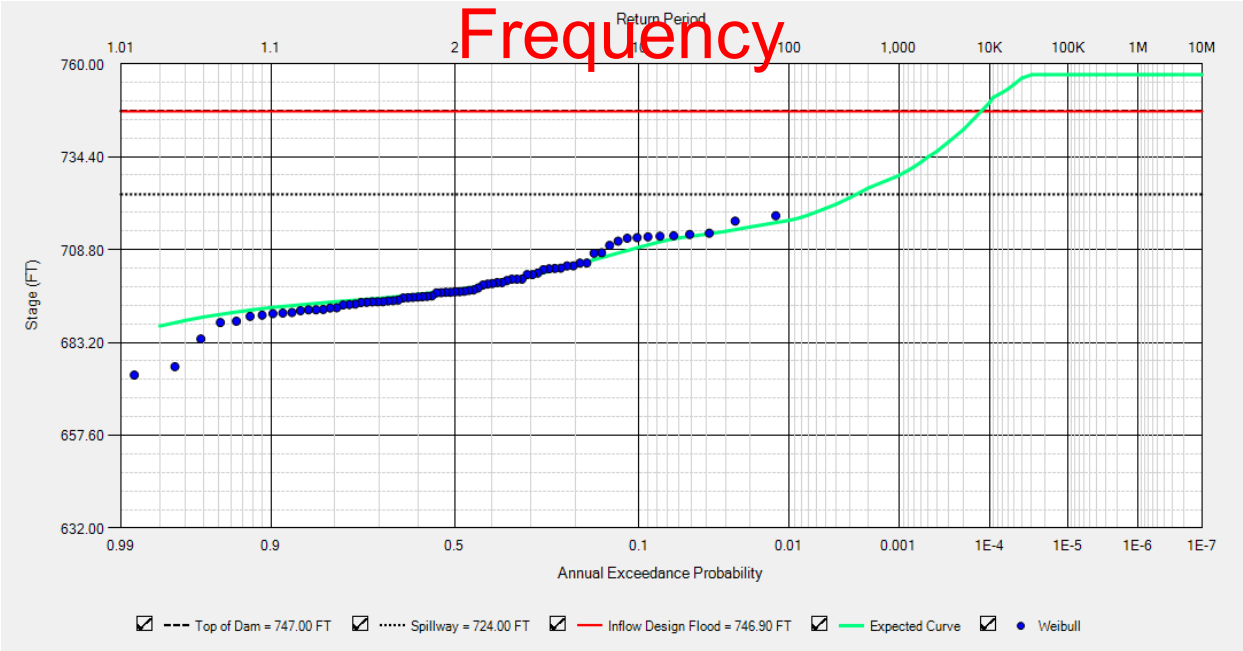
# Reservoir-Inflow Frequency Study

## 2070



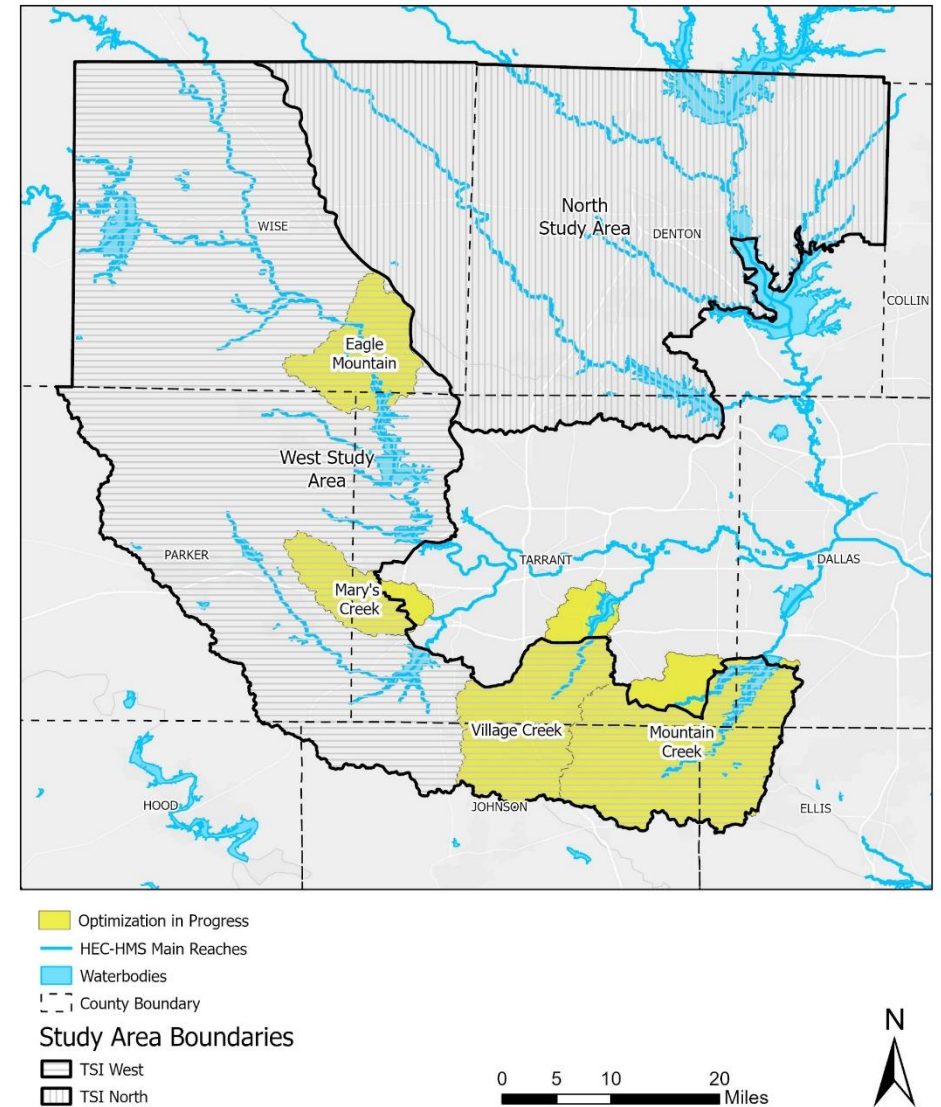
## Benbrook Stage Frequency

Preliminary



## Optimization Overview

- The optimization study aims to model ideal **location and sizing** for storage and consider potential alternatives (e.g., detention, GSI/NBS) **to reduce future flows to current levels** due to anticipated changes in imperviousness, using updated HEC-HMS models.
- Collaboration with Study Partners:
  - Transportation: Locations for flow limits
  - Environmental: GSI/NBS alternatives for storage allocation

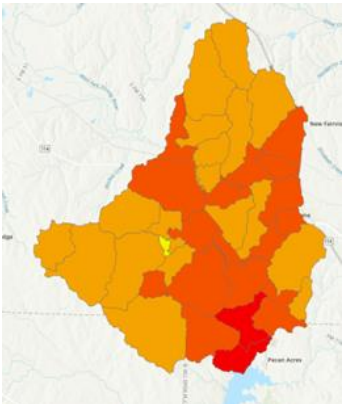


# Optimization Methodology



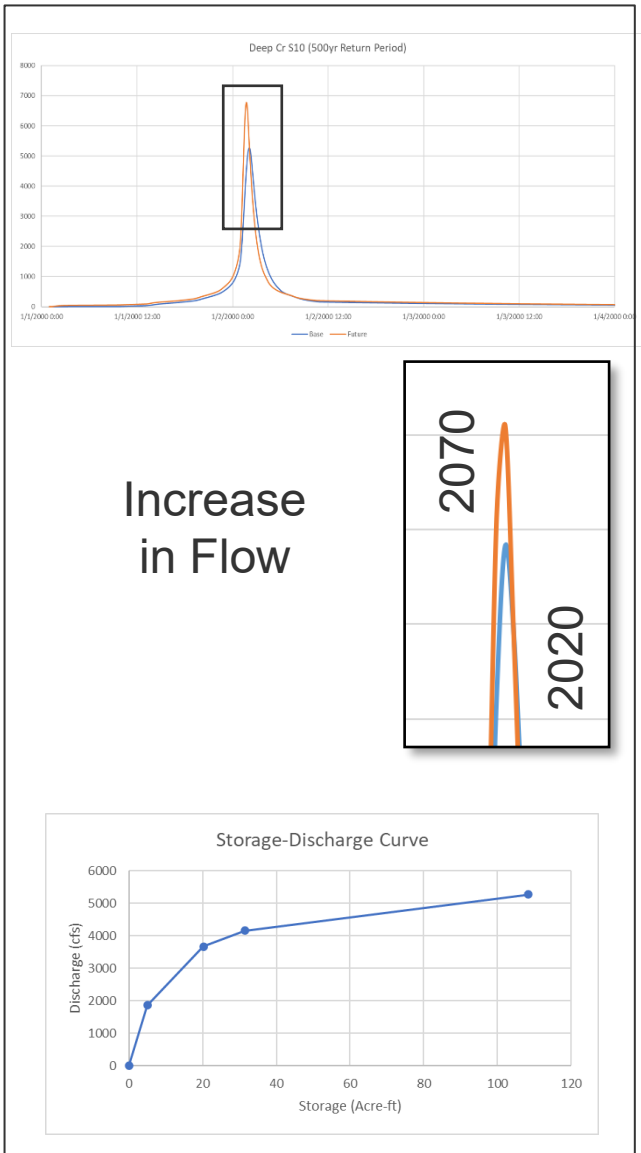
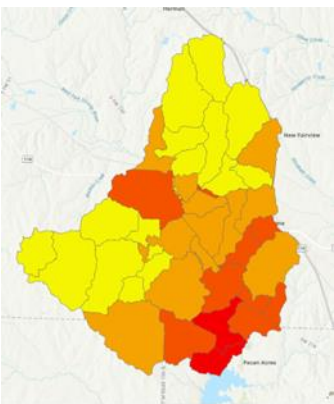
# TSI Optimization: Pilot Study Methodology

2070



Increased Imperviousness

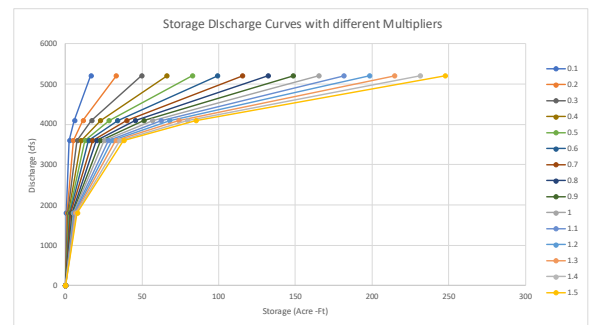
2020



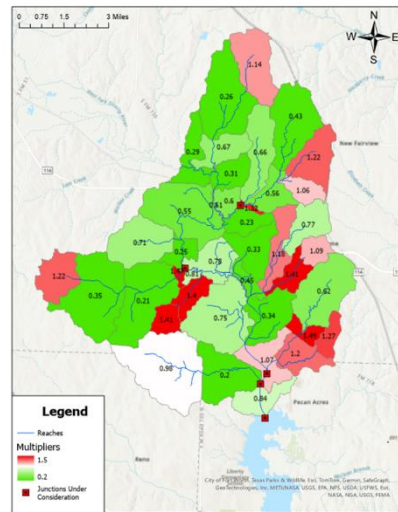
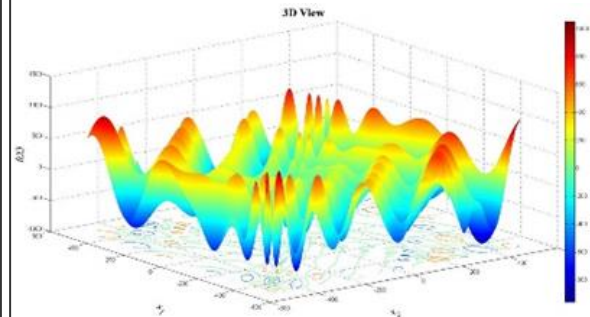
## Setting Up HEC HMS Model with Reservoirs



## Varying Storage Values to Best Reduce the Peak Flow

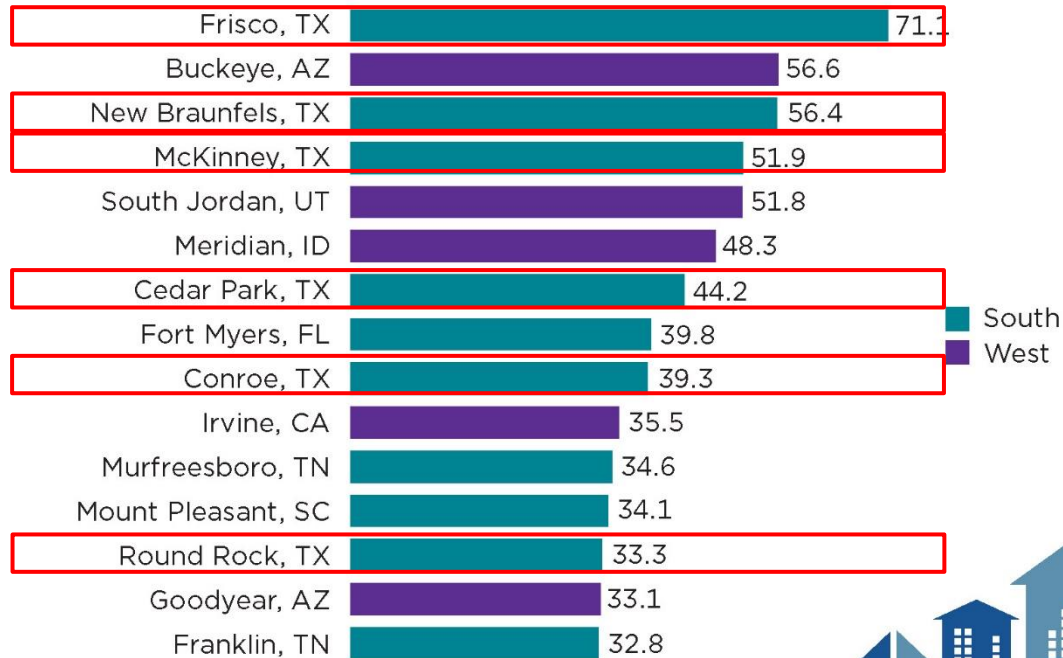


## Optimized Storage Values generated from HMS Runs



# The 15 Fastest-Growing Large Cities

By Percent Change: April 1, 2010-July 1, 2019



## POPULATION GROWTH

With respect to numeric change, cities in Texas are among those that have added the most people this decade. Collectively, Houston, San Antonio, Austin, Dallas and Fort Worth increased by almost 933,600 people. This equals 39.5% of the roughly 2.4 million increase by the top 15 numeric gainers.

United States<sup>®</sup>  
**Census**  
Bureau

U.S. Department of Commerce  
U.S. CENSUS BUREAU  
[census.gov](https://www.census.gov)

Note: Percent change for fastest-growing large cities and towns with populations of 50,000 or more on April 1, 2010.  
Source: Vintage 2019 Population Estimates

# Water Engineering Research Center

## Urban Waters

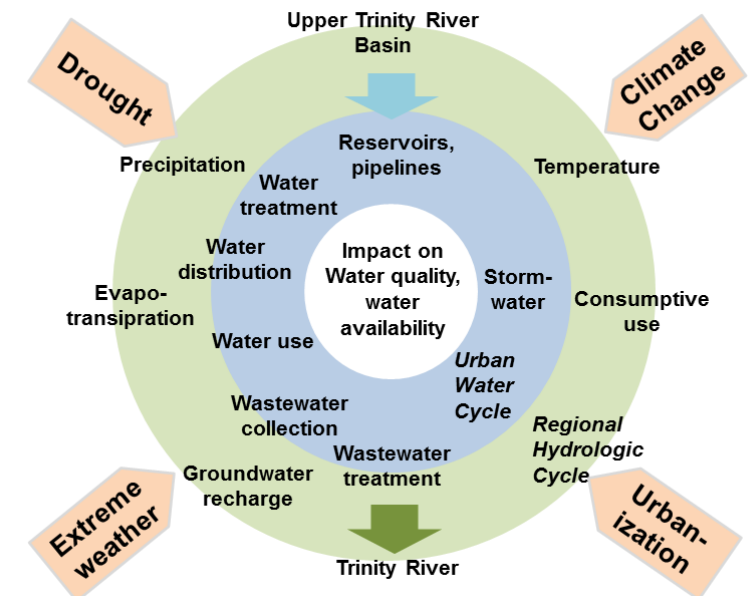
- Pollution from industrial waste, mobile sources, residential/commercial wastewater, trash and stormwater runoffs
- Population and economical growth
- Health hazards
- Environment impact

## Challenges to Urban Waters

- Droughts
- Extreme events
- Anthropogenic activities

## Water Engineering Research Center (WERC)

- To tackle emerging challenges related to population growth, increased development, and changing climate in North Texas.
- To gain solid knowledge to ensure safe, sustainable water supplies and mitigating the impacts of extreme events on North Texas.
- To transform challenges into opportunities via more performing holistic research in collaboration with interdisciplinary educators, researchers, agencies, industries, and regulators to develop multidisciplinary strategies and sustainable solutions for urban waters and energy
- To help build public-private partnerships to address pressing needs associated with urban water issues.



# InFRM Academic Council Members



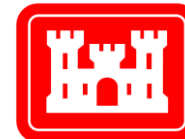
Nick Fang



## Collaborators



FEMA



Philip Bedient



Clint Dawson



John Nielsen-Gammon



Sam Brody



Hatim Sharif



Jamie Padgett



# OTHER THOUGHTS



Water-energy nexus  
under changing climate



AI-enabled water  
availability forecasting  
and planning



Water equity and  
sustainable  
environment



Resilient communities  
and cities of the future



Carbon Sequestration  
and Storage with  
nature-based Solutions



**Nick Fang, Ph.D., P.E.**  
*Robert S. Gooch Endowed Professor*  
Director, Water Engineering Research Center (WERC)  
Civil Engineering Dept.  
Email: [nickfang@uta.edu](mailto:nickfang@uta.edu)  
Web: <http://werc.uta.edu>



# Developing a Multijurisdictional Program for Public Information under the Community Rating System of the National Flood Insurance Program

**Randy Peterman, PE, CFM**

**Halff**

**Erin Blackman, CFM**

**NCTCOG Environment & Development Department**

# Multi-Jurisdictional Program for Public Information (PPI) Overview

September 18<sup>th</sup>, 2025

# WHAT IS A PPI?

- Ongoing public information effort to design and implement flood safety messaging
- Multi-Jurisdictional option
- Benefits
  - Consistency in messaging
  - Broad community engagement
  - Structured, repeatable, intentional outreach
  - Cost-sharing and efficiency
  - Shared expertise and resources
  - CRS credit bonuses and multipliers



# BRIEF COMMUNITY RATING SYSTEM OVERVIEW

- National Flood Insurance Program
- Voluntary
- Flood Insurance Premium Reduction
- Many North Texas Communities Participate:
  - City of Dallas – 35% Discount
  - City of Grand Prairie – 30% Discount
  - City of Arlington – 25% Discount
  - City of Denton – 25% Discount

CRS Class	Credit Points	Premium Reduction
1	4,500+	45%
2	4,000-4,499	40%
3	3,500-3,999	35%
4	3,000-3,499	30%
5	2,500-2,999	25%
6	2,000-2,499	20%
7	1,500-1,999	15%
8	1,000-1,499	10%
9	500-999	5%
10	0-499	0%

# STEPS TO DEVELOP A PPI



# STEP 1: ORGANIZE COMMITTEE

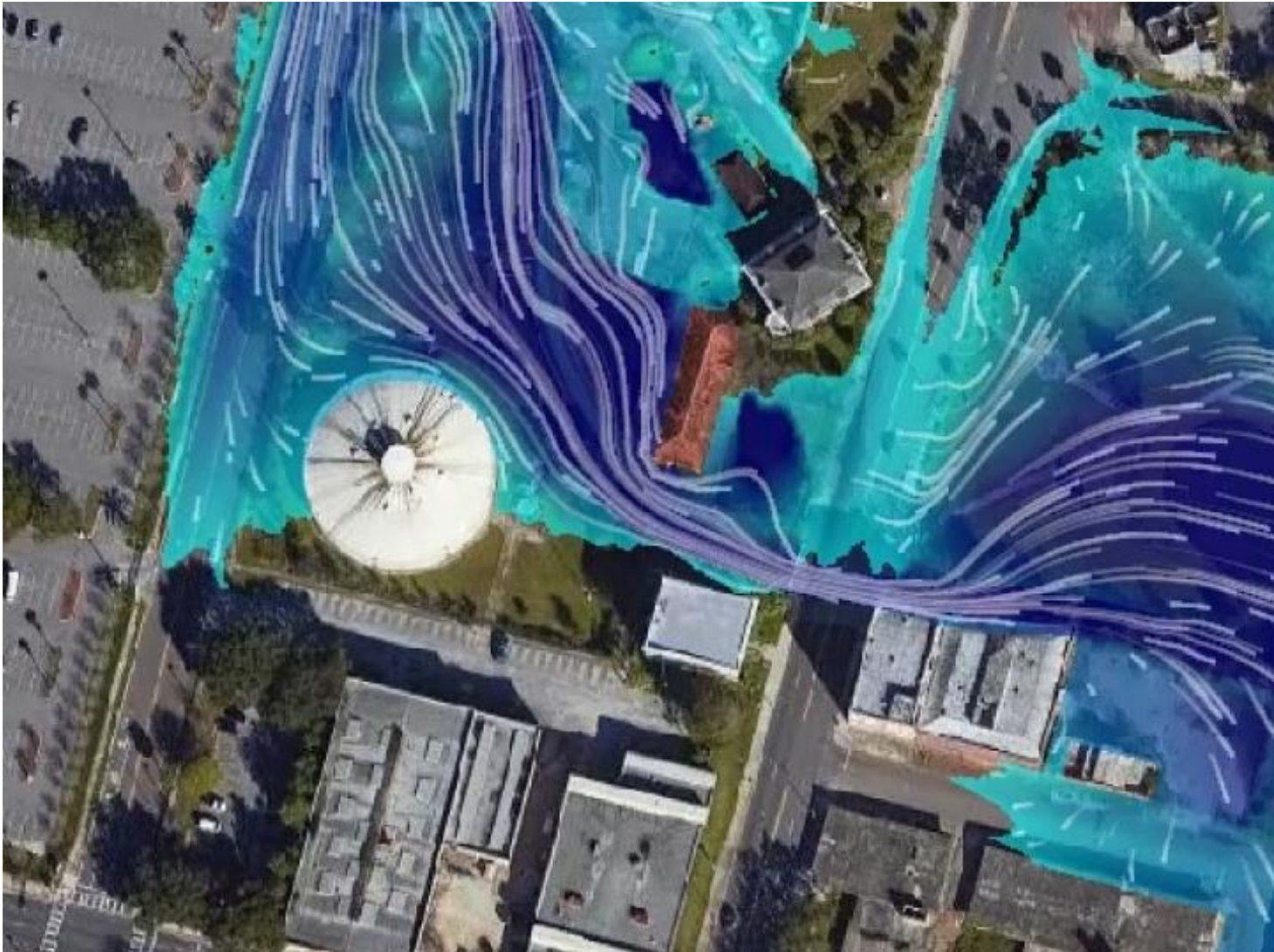


- Detailed requirements for membership
- Duties include attending 2-3 meetings, determining focus and scope of PPI, reviewing document and outreach, yearly review
- Multi-Jurisdictional – at least 2 representatives per community

# STEP 1: ORGANIZE COMMITTEE

Membership of the Jefferson Parish, Louisiana, Multi-jurisdictional Public Information Program Committee		
Community	Community Government	Stakeholder
Jefferson Parish	<ul style="list-style-type: none"> <li>– Director of Floodplain Mgmt. &amp; Hazard Mitigation</li> <li>– Floodplain Manager</li> <li>– Public Information Officer</li> <li>– Planning Department</li> </ul>	<ul style="list-style-type: none"> <li>– Wright Insurance</li> <li>– Metro Association of Realtors®;</li> <li>– Real estate</li> <li>– Resident of unincorporated area</li> <li>– Resident of unincorporated area</li> <li>– Resident of unincorporated area</li> </ul>
City of Gretna	<ul style="list-style-type: none"> <li>– Building Official</li> <li>– Floodplain Management</li> </ul>	<ul style="list-style-type: none"> <li>– Gulf Coast Bank</li> <li>– Jemison &amp; Partners, Inc.</li> <li>– Entergy (power utility)</li> <li>– Daul Insurance Agency, Inc.</li> <li>– Real estate</li> </ul>
City of Harahan	<ul style="list-style-type: none"> <li>– Regulatory Office</li> </ul>	<ul style="list-style-type: none"> <li>– Harahan resident</li> </ul>
City of Kenner	<ul style="list-style-type: none"> <li>– Director of Inspections &amp; Code Enforcement</li> <li>– Public Information Officer</li> </ul>	<ul style="list-style-type: none"> <li>– Orleans Shoring (building elevation contractor)</li> <li>– State Farm Insurance</li> </ul>
City of Westwego	<ul style="list-style-type: none"> <li>– City Clerk</li> </ul>	<ul style="list-style-type: none"> <li>– Orleans Shoring</li> <li>– Hispanic Chambers of Commerce</li> </ul>
Town of Jean Lafitte	<ul style="list-style-type: none"> <li>– Town Clerk</li> </ul>	<ul style="list-style-type: none"> <li>– Regions Bank</li> <li>– Business owner</li> </ul>
Advisors		<ul style="list-style-type: none"> <li>– University of New Orleans, Parish resident</li> <li>– NFIP State Coordinator's office</li> <li>– LSU Cooperative Extension</li> </ul>

## STEP 2: ASSESS NEEDS



- Priority Areas
- Priority Audiences
- Flood Insurance Coverage
- Inventory Existing Efforts

## STEP 3: CREATE MESSAGING FOR EACH AUDIENCE

- Must either state what audience should do, or provide basic information with a note on where to get more information
- “Turn around, don’t drown!”
- “You may live in a floodplain. Find out more by calling 555-1234”



## STEP 4: PICK PROJECTS FOR EACH MESSAGE

- Which media to use?
- Who will do it?
- When will it be done?  
(at least once a year)
- Multi-Jurisdictional – which communities benefit?
  - CRS credit adjusted



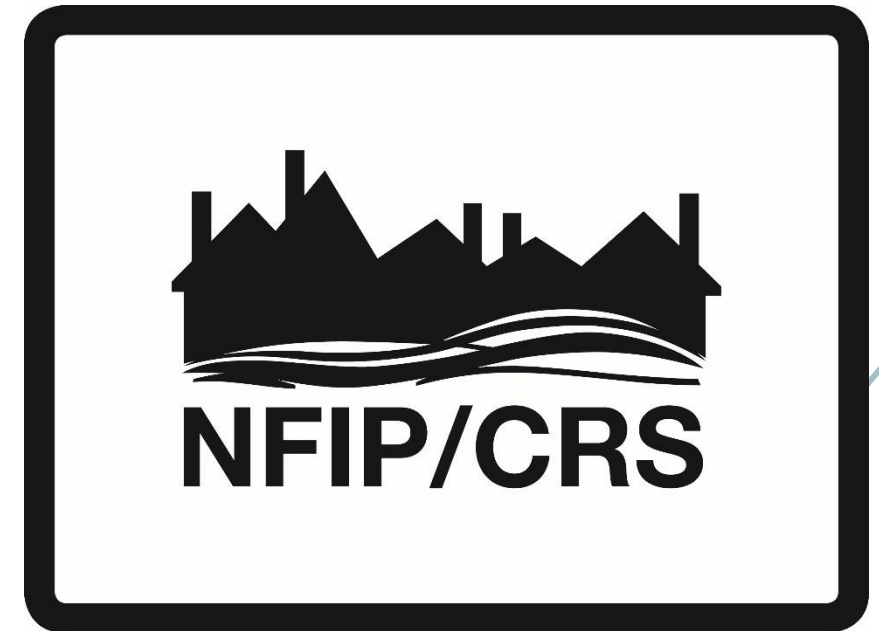
## STEP 5: INCLUDE OTHER INITIATIVES

- More opportunities for CRS credit bonuses
- 40% multiplier of Activity 330 outreach projects up to 80 points
  - Up to 70 additional points available
- Activity 340 Hazard Disclosure: 14 points
- Activity 350 Flood Protection Information: 28 points



## STEP 5: INCLUDE OTHER INITIATIVES

- Activity 360 Property Protection  
Advice: 35 points
- Activity 370 Flood Insurance  
Promotion: 27 points
- Activity 540 Drainage System  
Maintenance: 5 points
- Total of **259** points possible



## STEP 6: WRITE AND ADOPT REPORT

- Must be adopted or approved by governing body
- Alternative – adopted by another body with authority/funding to implement
  - Flood Control Districts
  - River Authorities
  - Levee Improvement Districts



## ■ STEP 7: IMPLEMENT, MONITOR, REVISE

- Annual evaluation by committee
- Must update every 5 years
- CRS credit only for implementation



# LEARN MORE

- CRS Resources
  - <https://crsresources.org/300-3/>
- CRS Resources PPI Document
  - [https://crsresources.org/files/300/developing\\_a\\_ppi\\_for\\_credit\\_under\\_the\\_crs.pdf](https://crsresources.org/files/300/developing_a_ppi_for_credit_under_the_crs.pdf)
- Multi-jurisdictional PPI examples
  - Lee County, FL  
<https://www.leegov.com/dcd/Documents/FloodMapping/5%20year%20updated%20PPI%20-%202020.pdf>
  - Hillsborough County, FL  
<https://assets.contentstack.io/v3/assets/blteea73b27b731f985/bltb162a6bb681c06f3/Multi-Jurisdictional%20Program%20for%20Public%20Information.pdf>
  - Jefferson Parish, LA  
<https://www.jeffparish.gov/DocumentCenter/View/876/Updated-in-2020-Program-for-Public-Information-PPI-PDF?bidId=>
  - Sarasota County, FL  
<https://www.scgov.net/home/showpublisheddocument/63042/638376274714730000>

# CONTACT INFORMATION



**ERIN BLACKMAN, CFM**

Environment & Development  
Planner

North Central Texas Council of  
Governments

[eblackman@nctcog.org](mailto:eblackman@nctcog.org)



**RANDY PETERMAN,  
PE, CFM, ENV SP**

Civil Engineer

Halff

[rPeterman@halff.com](mailto:rPeterman@halff.com)

# Break

# Transportation and Stormwater Infrastructure Study and Preliminary Findings on Valley Storage

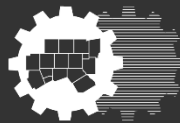
**Kate Zielke, CFM**

**NCTCOG Environment & Development Department**

**Landon Erickson, PE**

**U.S. Army Corps of Engineers**





North Central Texas  
Council of Governments

# Integrating Transportation and Stormwater Infrastructure

Trinity River COMMON VISION Steering Committee | September 18, 2024



Funded by the Texas General Land Office,  
Community Development Block Grant,  
Disaster Recovery Program.



Also Funded by the Texas Water Development Board and  
Texas Department of Transportation.

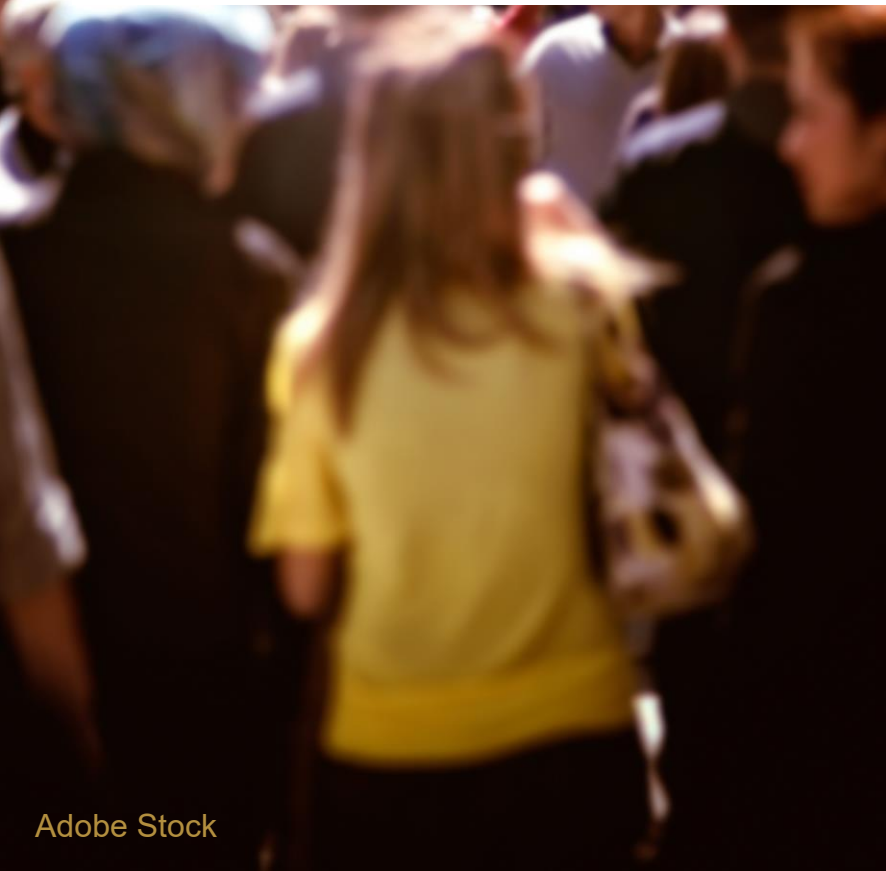
# Historic flooding led to improvements in flood control infrastructure. But a need remains.



Fort Worth, May 1949

Wise County, May 2015  
Courtesy Tarrant Regional Water District

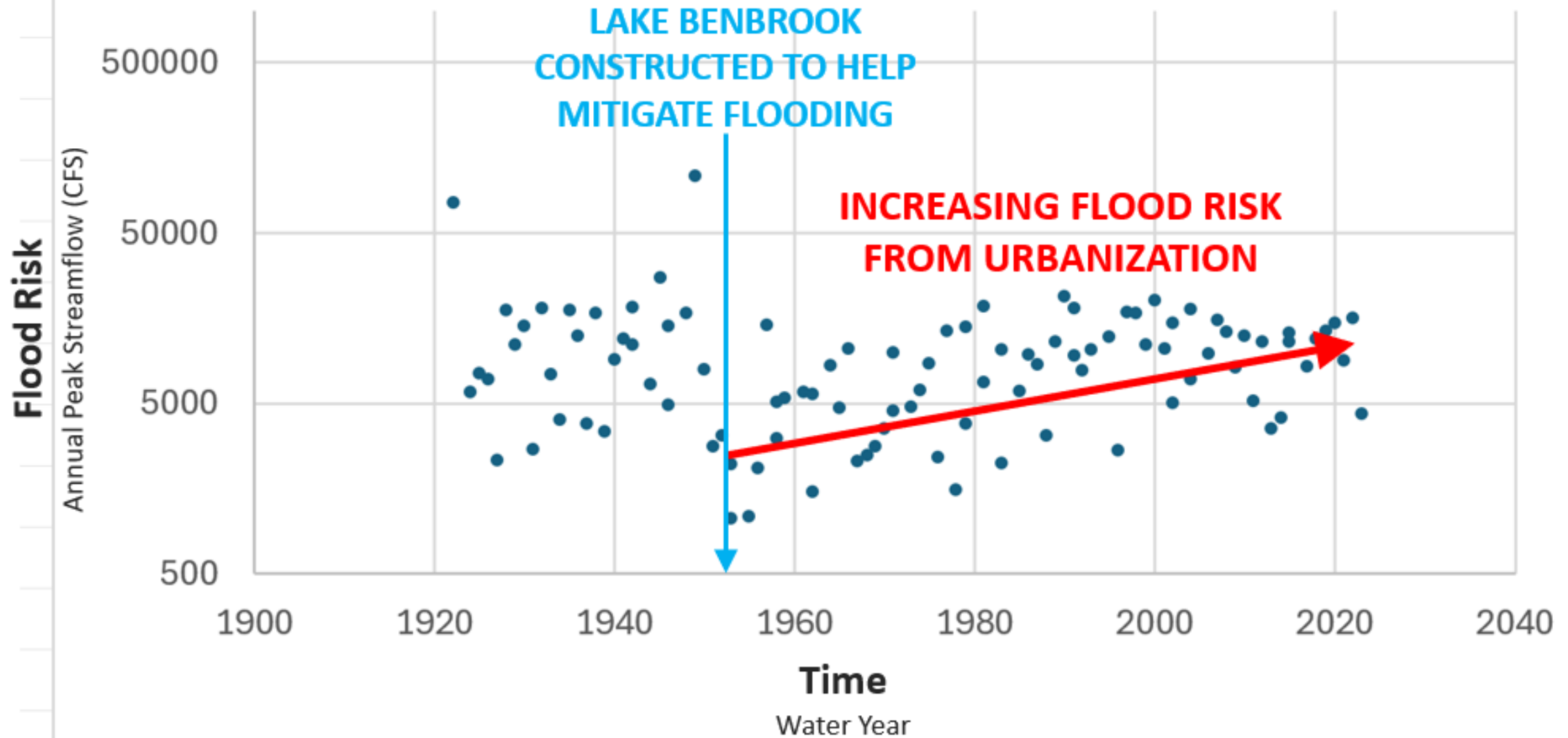
**The integrated Transportation and Stormwater Infrastructure study proactively addresses the increased flood risk resulting from extraordinary population growth in the Upper Trinity River basin.**



Courtesy  
City of  
Newark

# Increasing Flood Risk in North Texas

Fort Worth, TX: Clear Fork of Trinity River



# **TSI outputs will empower engineers, local governments, and developers to reduce the threat to people, property, and infrastructure.**



**Collect and  
Analyze Data**



**Assess Hydrology  
and Hydraulics  
Scenarios**



**Identify  
Transportation  
Infrastructure Impacts**



**Conduct  
Environmental  
Planning**



**Evaluate a Real-  
Time Flood  
Warning System**



**Support and  
Empower  
Communities**

# Study Benefits for COMMON VISION Communities

- Potential reduced flows to downstream communities
- Participation possible via Technical Advisory Group, annual Project Update meetings, training workshops
- Developer exposure to TSI concepts
- Documented methods for updating hydrologic and hydraulic models and incorporating data into real-time flood warning systems
- Documented methods for identifying optimal locations for green stormwater infrastructure and nature-based solutions
- Universal model policies, codes, and ordinances
- Universal transportation planning recommendations
- Pilot expansion of Corridor Development Certificate Program
- Identified funding strategies to implement TSI recommendations

# Estimated Study Timeline

## Winter 2025/2026

Continue training workshops and site visits to individual communities

## Spring 2026

Conduct project update meeting to present findings and seek stakeholder feedback

## Late Summer 2026

Submit deliverables to funding agencies

## Winter 2025/2026

Complete H&H modeling and identify transportation and other policy recommendations

## Summer 2026

Conduct project update meeting to present final products incorporating stakeholder feedback

# UPCOMING TSI PROJECT UPDATE MEETINGS

SEP 15

WEATHERFORD COLLEGE: WORKFORCE & EMERGING TECHNOLOGIES BUILDING  
225 COLLEGE PARK DRIVE, WEATHERFORD, TX 76086

SEP 22

BURLESON CITY HALL  
141 W. RENFRO STREET, BURLESON, TX 76028

SEP 23

DECATUR CONFERENCE CENTER  
2010 W. HWY US 380, DECATUR, TX 76234

OCT 01

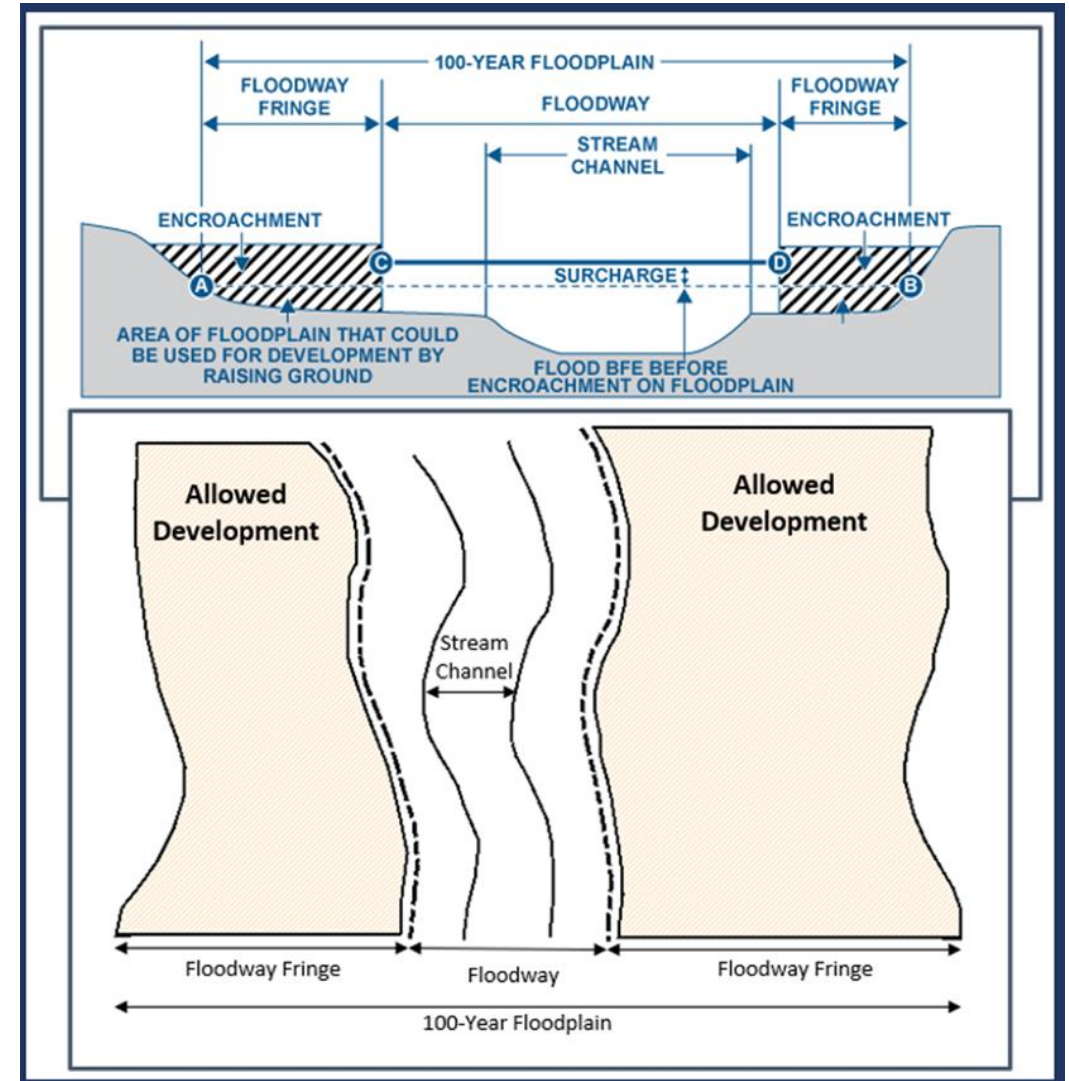
DENTON COUNTY SOUTHWEST COURTHOUSE  
6200 CANYON FALLS DR, FLOWER MOUND, TX 76226

ALL MEETINGS FROM 10AM - 12PM ALL MEETINGS FROM 10AM - 12PM

# Future Valley Storage

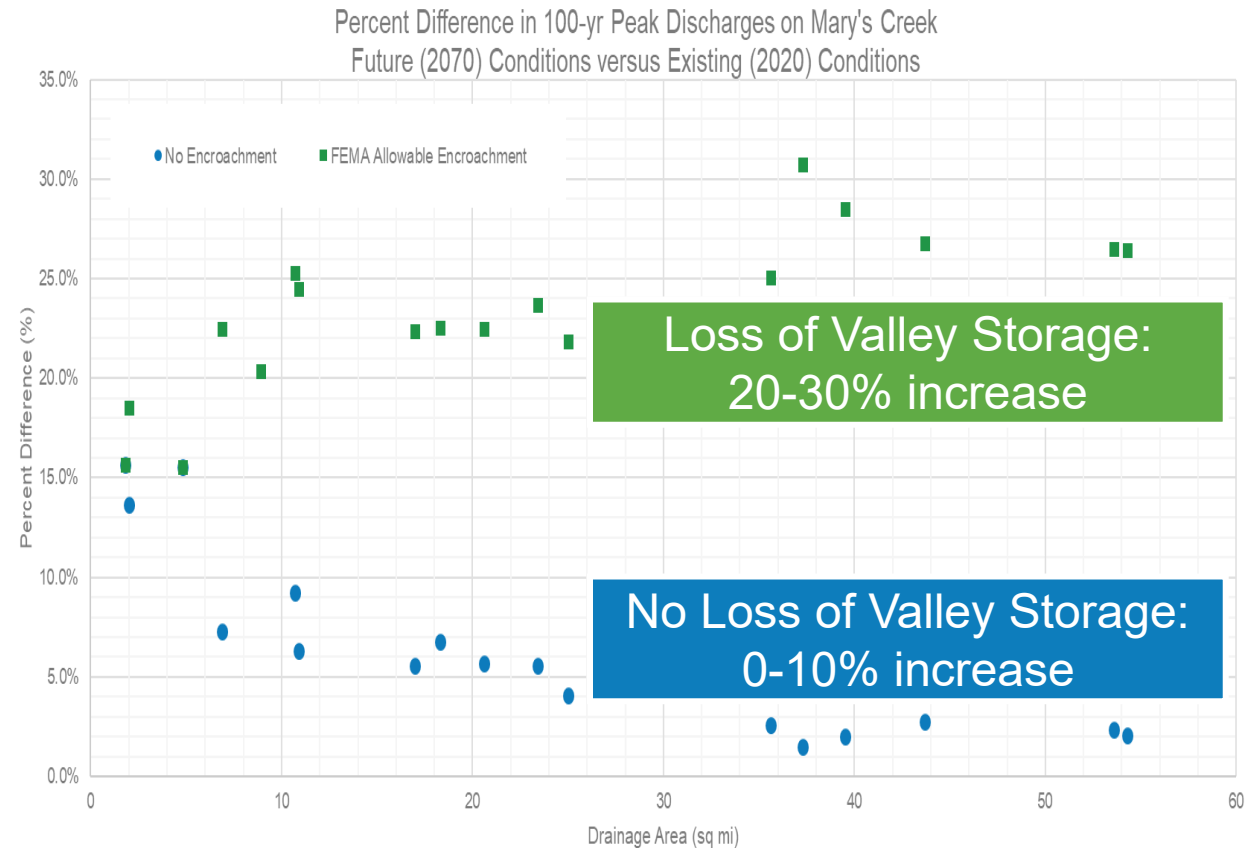
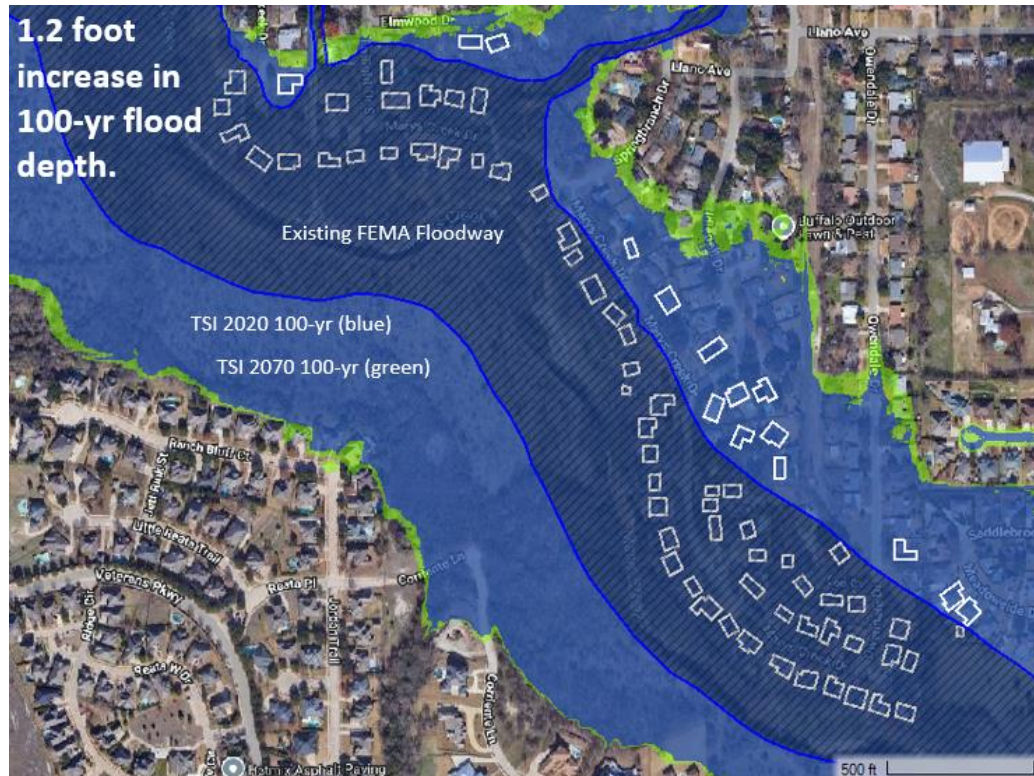
# Preliminary Findings on Valley Storage

- **Definition** – The volume of water in a river's floodplain during a flood
- **Function** – Flood water storage...like a reservoir
- **Regulation** – FEMA NFIP
  - Development allowed within Floodway Fringe
- **Impacts of Valley Storage Loss**
  - Peak flow increases
  - Peak water surface elevation increases
  - Deeper and more frequent roadway overtopping
  - Shorter flood response times
  - Life safety threat



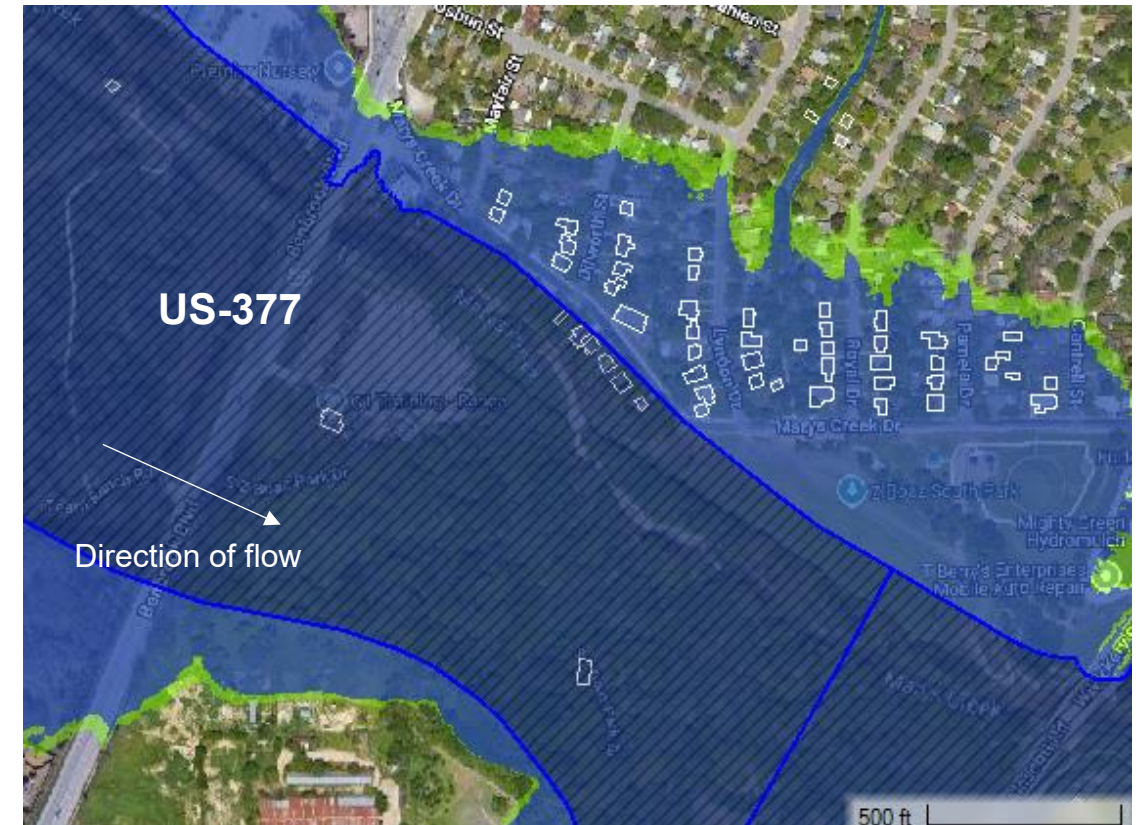
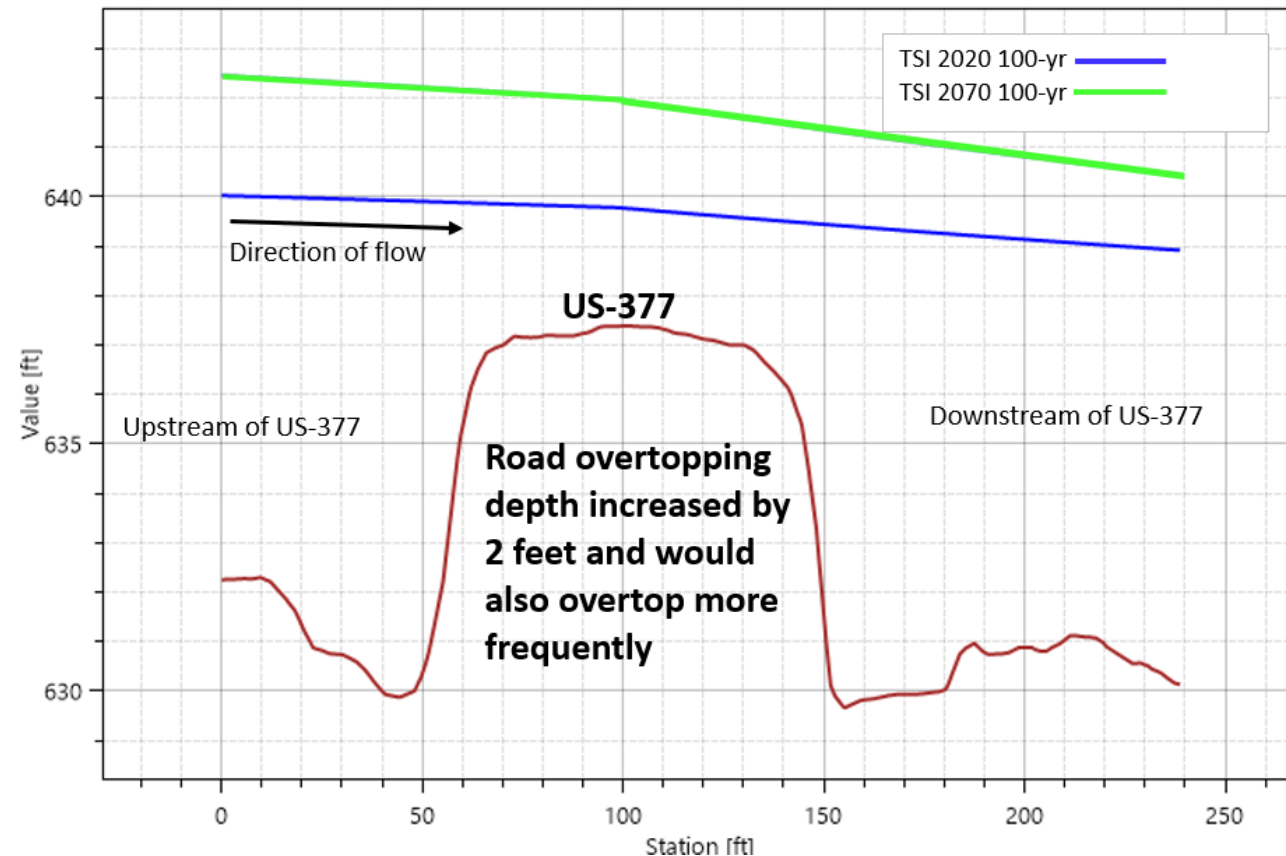
# Impacts of Valley Storage Loss

- Peak flow increases
- Peak water surface elevation increases



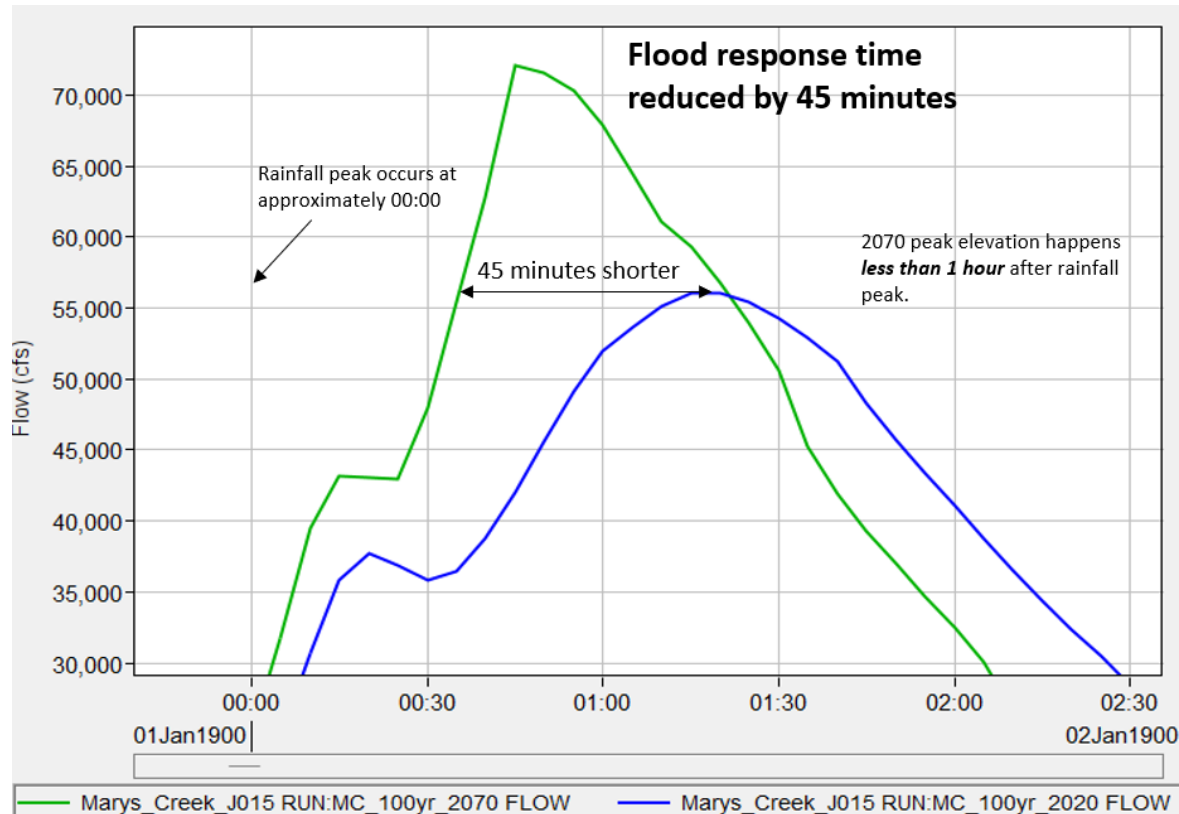
# Impacts of Valley Storage Loss

- Deeper and more frequent roadway overtopping

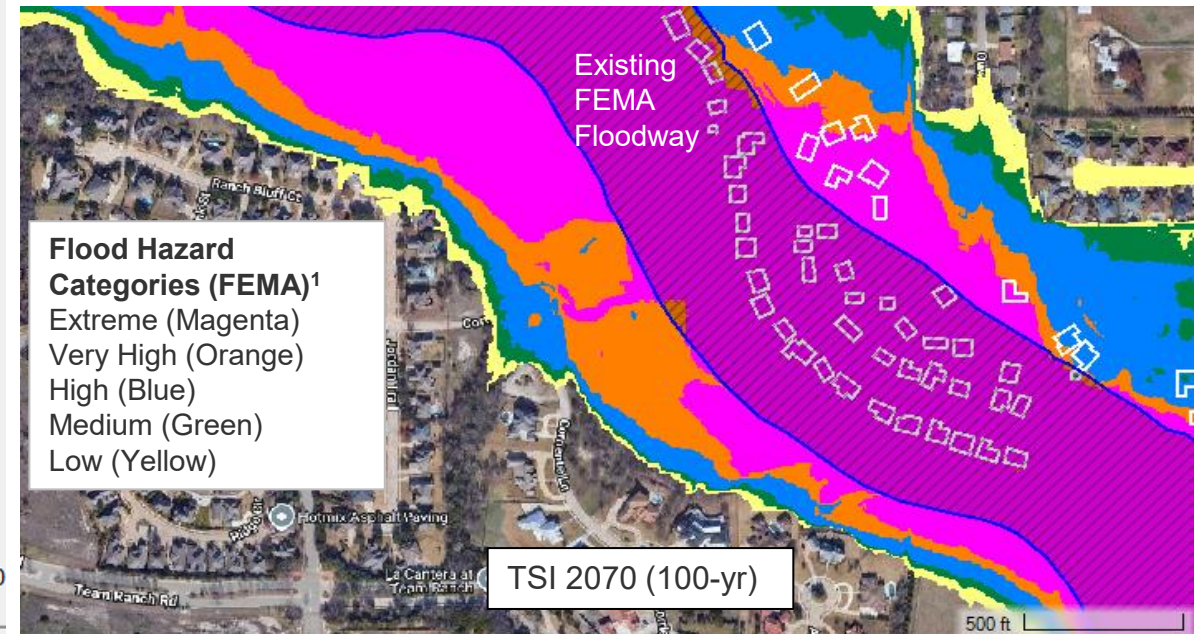


# Impacts of Valley Storage Loss

- Shorter flood response times
- Life safety threat



- ❖ 100-yr Flood Depths, **7-9 feet**
- ❖ 100-yr Flood Velocities, **7-10 ft/sec**



<sup>1</sup>Federal Emergency Management Agency. Guidance for Flood Risk Analysis and Mapping: Flood Depth and Analysis Rasters. FEMA, Dec. 2024

# Preliminary Findings on Valley Storage

- **Impacts of Valley Storage Loss**

- Peak flow increases
- Peak water surface elevation increases
- Deeper and more frequent roadway overtopping
- Shorter flood response times
- Life safety threat

*The infrastructure we've built may not have the same level of service/safety intended...*



# Contact Us



Kate Zielke, CFM

Program Manager

NCTCOG Environment &  
Development Department

817.695.9227

kzielke@nctcog.org

C. Landon Erickson, PE

Lead Hydraulic Engineer

U.S. Army Corps of Engineers

817.886. 1692

charles.erickson@usace.army.mil

# Funding Partners

Texas General Land  
Office/U.S. Department of  
Housing and Urban  
Development

Texas Water Development  
Board

Texas Department of  
Transportation/Federal  
Highway Administration

Federal Emergency  
Management Agency

U.S. Army Corps of  
Engineers

# Study Partners

North Central Texas Council  
of Governments

U.S. Army Corps of  
Engineers

University of Texas at  
Arlington

Texas A&M AgriLife  
Extension Service

Tarrant Regional Water  
District

Upper Trinity Regional  
Water District

Halff

Freese and Nichols, Inc.

Highland Economics, LLC

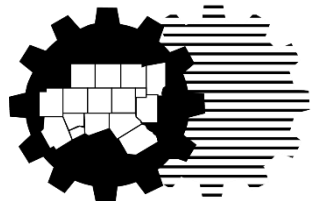
# Expanding the Trinity River **COMMON VISION** and Corridor Development Certificate

**Kate Zielke, CFM**

**NCTCOG Environment & Development Department**

**Michael A. Danella, PE**

**U.S. Army Corps of Engineers**



# Trinity River COMMON VISION

## What is the COMMON VISION?

Trinity River COMMON VISION Program brings together local governments, regional authorities, and state and federal agencies to promote:

- a **SAFE** Trinity River, with stabilization and reduction of **flooding risks**,
- a **CLEAN** Trinity River, with **fishable and swimmable** waters,
- an **ENJOYABLE** Trinity River, with **recreational opportunities** linked by a trails system within a world-class greenway,
- a **NATURAL** Trinity River, with preservation and restoration of **riparian and cultural resources**, and
- a **DIVERSE** Trinity River, with local and regional **economic, transportation** and other public needs addressed.

# Trinity River COMMON VISION

## Corridor Development Certificate Program



### Provides Oversight

Provides oversight for projects constructed in the 1% annual chance floodplain



### Review Process

Establishes a consistent regional criteria and review process

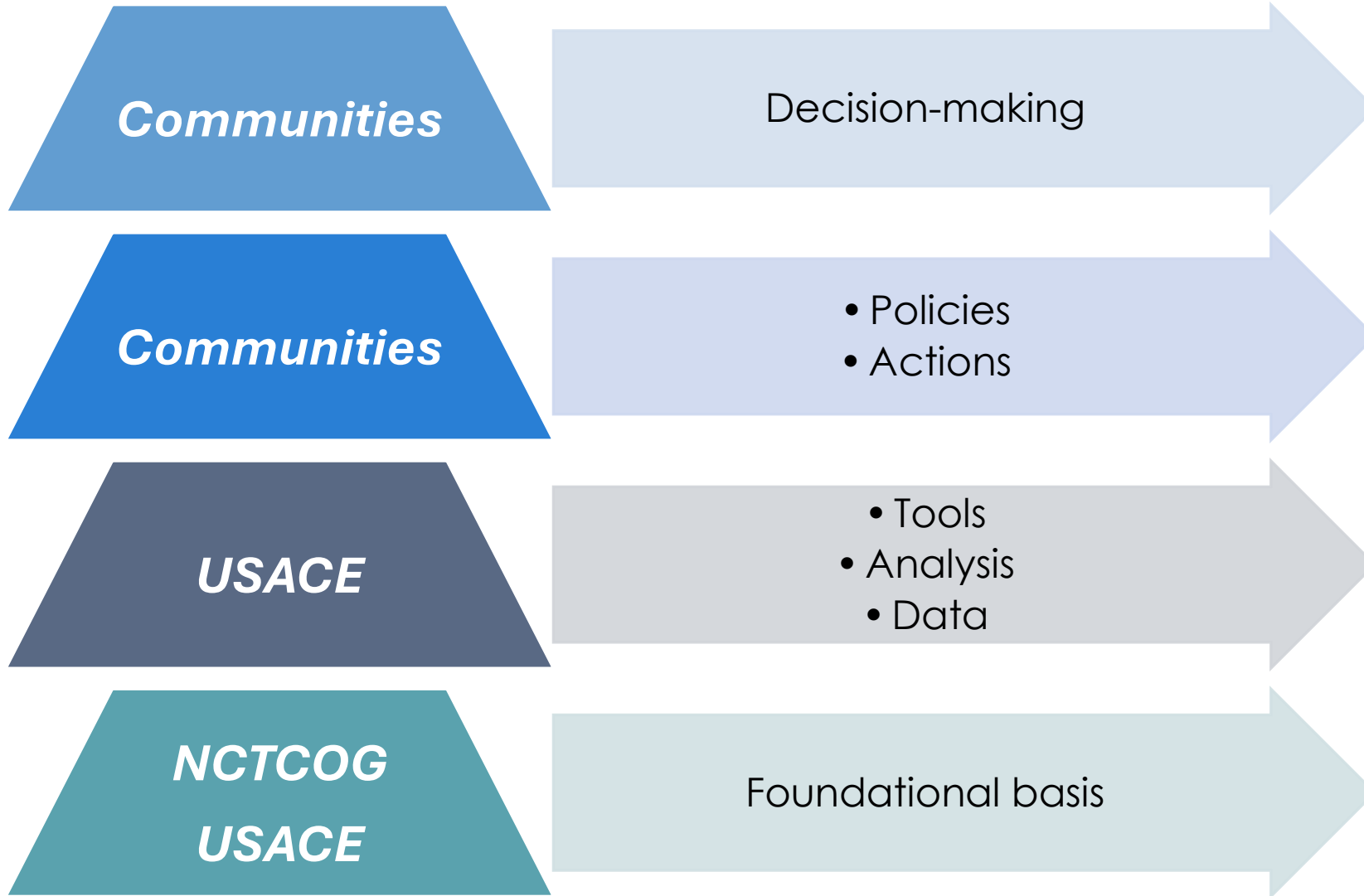


### Limits Impact

Limits (but does not eliminate) the impact of floodplain encroachments for regulated streams on downstream areas

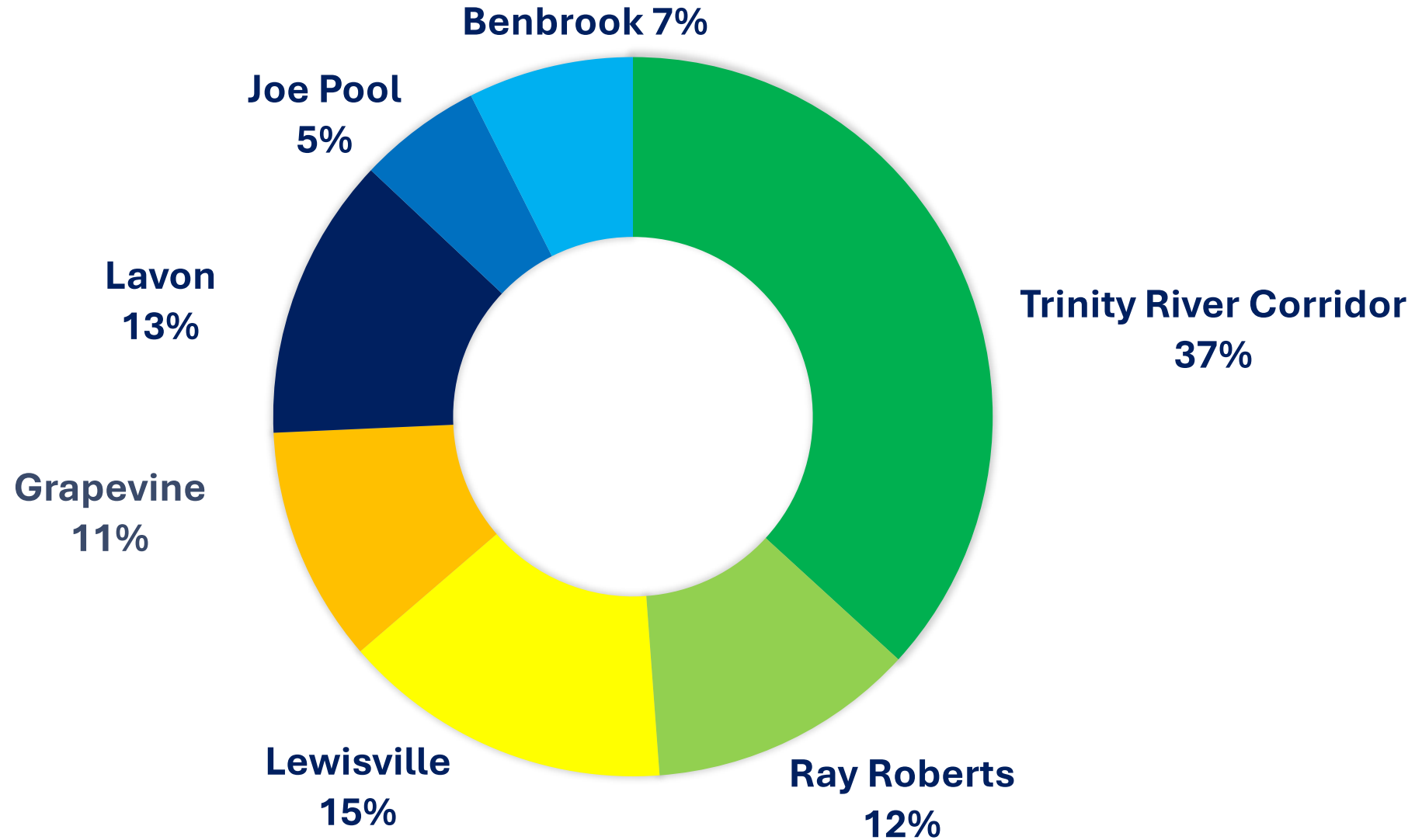
# Trinity River COMMON VISION

Local Governments Retain Decision-Making Role



# Trinity River COMMON VISION

## Active Flood Storage



# Trinity River COMMON VISION

## Participating Members

### Ten Cities

Arlington  
Carrollton  
Coppell  
Dallas  
Farmers Branch  
Fort Worth  
Grand Prairie  
Irving  
Lewisville  
Seagoville

### Four Counties

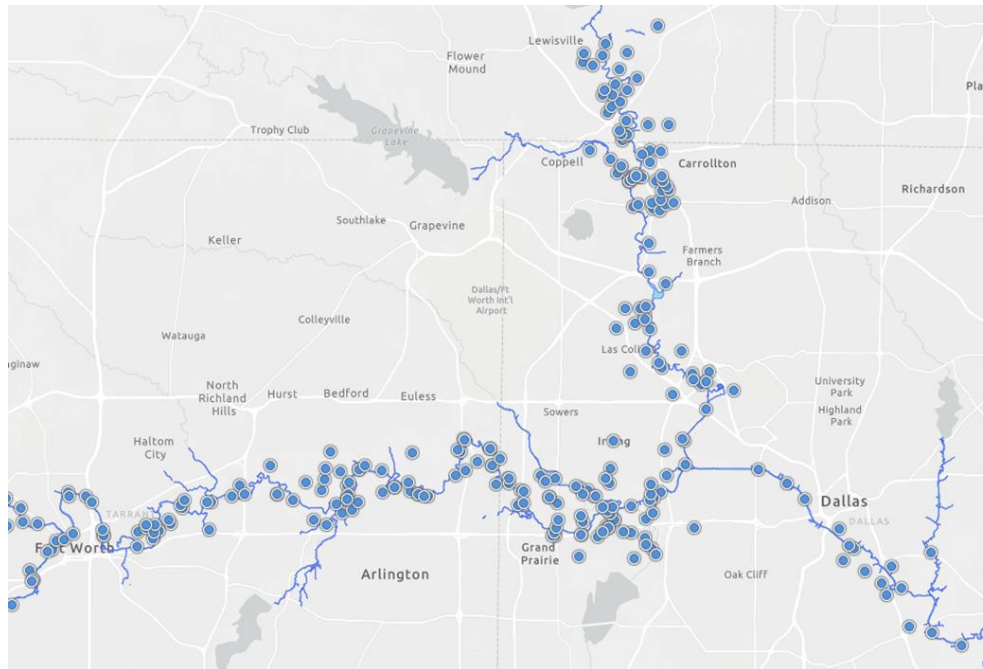
Dallas County  
Denton County  
Kaufman County  
Tarrant County

### Two Special Districts

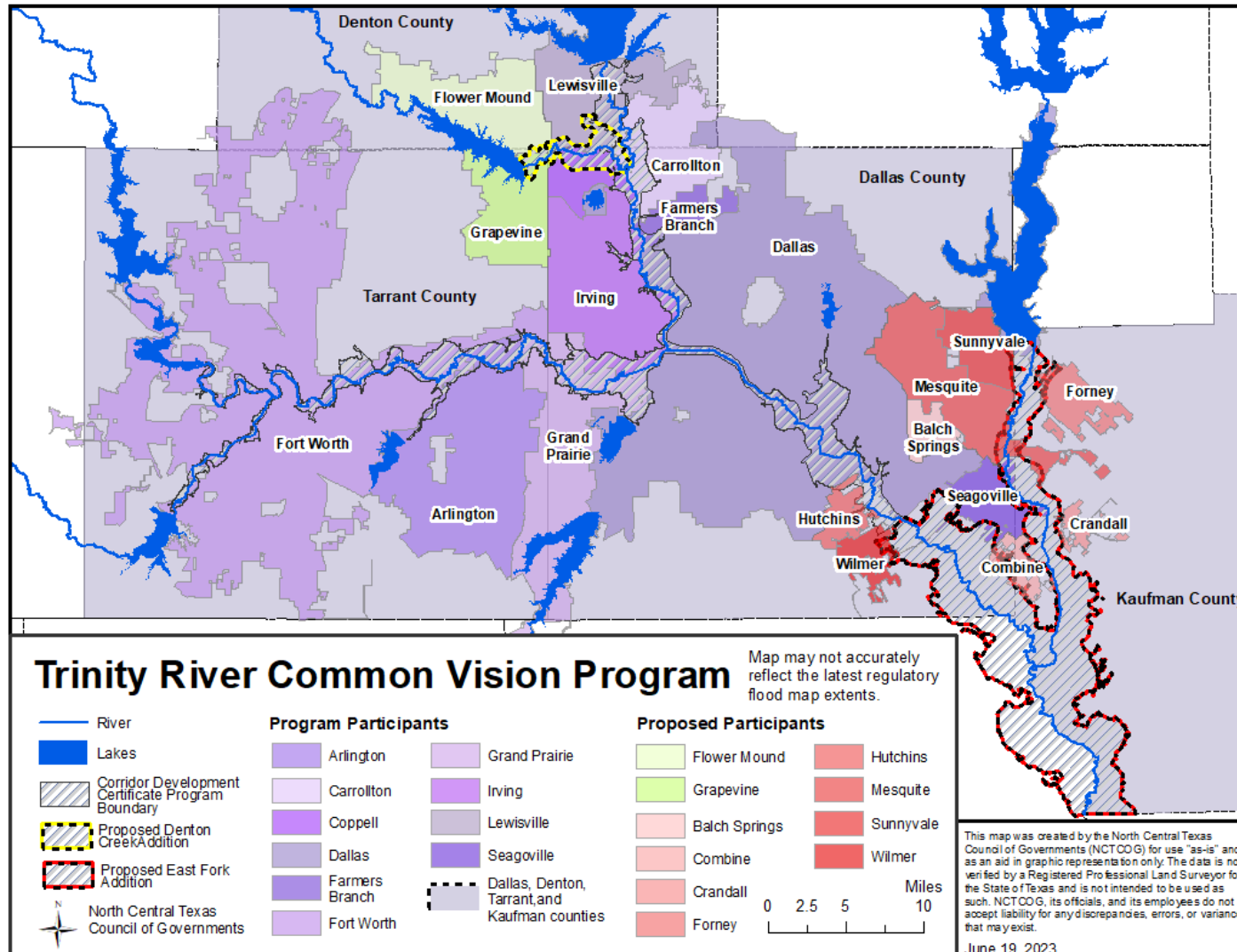
Tarrant Regional  
Water District  
Trinity River Authority

### Programmatic Partners

NCTCOG Environment &  
Development  
U.S. Army Corps of  
Engineers  
Federal Emergency  
Management Agency  
Texas Water Development  
Board



# East Fork Trinity and Denton Creek Community Integration



## Prospective Members

### East Fork Communities

- Balch Springs
- Combine
- Crandall
- Forney
- Hutchins
- Mesquite
- Sunnyvale
- Wilmer

### Denton Creek Communities

- Flower Mound
- Grapevine

### Westward Expansion Pilot

- City of Weatherford

# Trinity River COMMON VISION

## Regional Work Program

### Ongoing Support Activities

- a. Supporting Trinity River COMMON VISION Steering Committee and Flood Management Task Force
- b. Supporting CDC process and mapping
- c. Maintaining the CDC application and tracking website
- d. Sponsoring FEMA's NFIP training courses
- e. Coordinating for flood science training
- f. Exploring partnership and outreach opportunities
- g. Exploring regional cooperative detention/retention strategies
- h. Coordinating for regional flood warning software program
- i. Participating in the Trinity Regional Flood Planning Group
- j. Reviewing legislative updates

# Trinity River COMMON VISION

## Regional Work Program

### Ongoing Technical Activities

- a. Participating in the Model Consolidation Committee
- b. Updating the CDC Manual to the 5<sup>th</sup> Edition
- c. Continuing East Fork Trinity and Denton Creek Integration
- d. Updating Communities' Acreage in Floodplain (FIRM)

# Corridor Development Certificate Program

# **OPPORTUNITIES TO EXPAND THE CORRIDOR DEVELOPMENT CERTIFICATE PROCESS INTO THE NORTH CENTRAL TEXAS TSI PROJECT AREA**

**SEPTEMBER 2025**



**US Army Corps  
of Engineers**  
Fort Worth District

# PURPOSE/OBJECTIVE

- **NCTCOG and the Texas Water Development Board (TWDB) signed a grant contract agreement in November 2021 and subsequent agreements with other organizations for the development of a Regional Planning Study of Wise County and portions of Dallas, Denton, Ellis, Hood, Johnson, Parker, and Tarrant counties**
- **NCTCOG is lead agency of this effort, known as the integration of Transportation and Stormwater Infrastructure (TSI)**
- **Project team: NCTCOG, U.S. Army Corps of Engineers – Fort Worth District (USACE), Tarrant Regional Water District (TRWD), Texas A&M AgriLife, the University of Texas at Arlington (UTA), and others**
- **Per the Agreement, “development of model regulatory tools cities and counties could integrate into their existing development and planning processes.”**
- **Managing Land Task Deliverable item: “Evaluate opportunities to expand the Corridor Development Certificate process into the Project area”**

# **CORRIDOR DEVELOPMENT CERTIFICATE HISTORY**

- **Rapid population growth and urban sprawl contributed to increased land values such that the undeveloped Trinity River bottomlands, located in the heart of the metroplex and adjacent to both downtown areas and regional transportation centers, were potentially worth the cost of the reclamation efforts necessary to make them buildable.**
- **Late in 1984 and early in 1985, it became apparent that numerous unrelated development projects were being proposed along the Trinity River and its tributaries in Dallas, Denton, and Tarrant Counties, Texas. Most involved modification of the river channel and/or floodplain and most required a USACE permit as a result.**
- **The enormous surge of interest in floodplain development presented problems to those agencies, including USACE, who have the responsibility to determine if these projects are in the public interest.**

# CORRIDOR DEVELOPMENT CERTIFICATE HISTORY

- Disjointed nature of the planning and design efforts which are the inevitable result of fragmented jurisdiction.
- Because, individually or cumulatively, these projects were felt to have the potential to compromise the existing protection afforded to flood plain residents ... the USACE District Engineer determined that it was necessary to develop a regional perspective.
- On April 17, 1984, the North Central Texas Council of Governments requested that the U.S. Army Corps of Engineers "examine existing and potential uses" of the Trinity River from Fort Worth to Dallas.
- The Draft Regional Environmental Impact Statement (DEIS), published in May 1986, analyzed a number of scenarios which were specifically designed to identify possible, significant cumulative impacts associated with different permitting strategies for the Trinity River flood plain.

# CORRIDOR DEVELOPMENT CERTIFICATE HISTORY

- Public meetings were held – controversial!
- Comments on the DEIS and close coordination with the NCTCOG Steering Committee formed under its interjurisdictional management program led to the revised development scenarios in the Final Regional Environmental Impact Statement (FEIS).
- Public meetings were held – more controversy!
- Issuance of the USACE “Trinity River Record of Decision”, 29 April 1988
- “This document will therefore provide the specific framework within which we will operate the Fort Worth District's Regulatory Program within the Regional EIS study area.” Issue: It does not cover all proposed development projects!

# CORRIDOR DEVELOPMENT CERTIFICATE HISTORY

- **Two major conclusions emerged from their Final Regional Environmental Impact Statement. The first "reemphasizes that a widespread lack of Standard Project Flood (SPF) protection currently exists" throughout the river corridor. Damages to property if a Standard Project Flood were to occur today could approach several billion dollars.**
- **The second conclusion is that "different permitting strategies have a measurable and significant impact on the extent of increase of this lack of SPF protection."**
- **In response to the EIS and Record of Decision, the cities and counties in the Trinity River Corridor formed the Trinity River Steering Committee, facilitated by the North Central Texas Council of Governments.**

# CORRIDOR DEVELOPMENT CERTIFICATE HISTORY

- A technically-oriented Flood Management Task Force was formed, comprised of city and county staff. The Steering Committee directed the Task Force to develop a process and manual based on the criteria outlined in the USACE Record of Decision.
- The result was the 1<sup>st</sup> Edition of the Corridor Development Certificate (CDC) Manual, drafted by the Flood Management Task Force following a two- and one-half-year period of intense discussion and negotiation. The Trinity River Corridor Steering Committee approved the first edition of the manual on May 23, 1991.
- Nearly two years later, all participating communities had officially amended their floodplain ordinances to adopt the CDC common regional criteria and process.

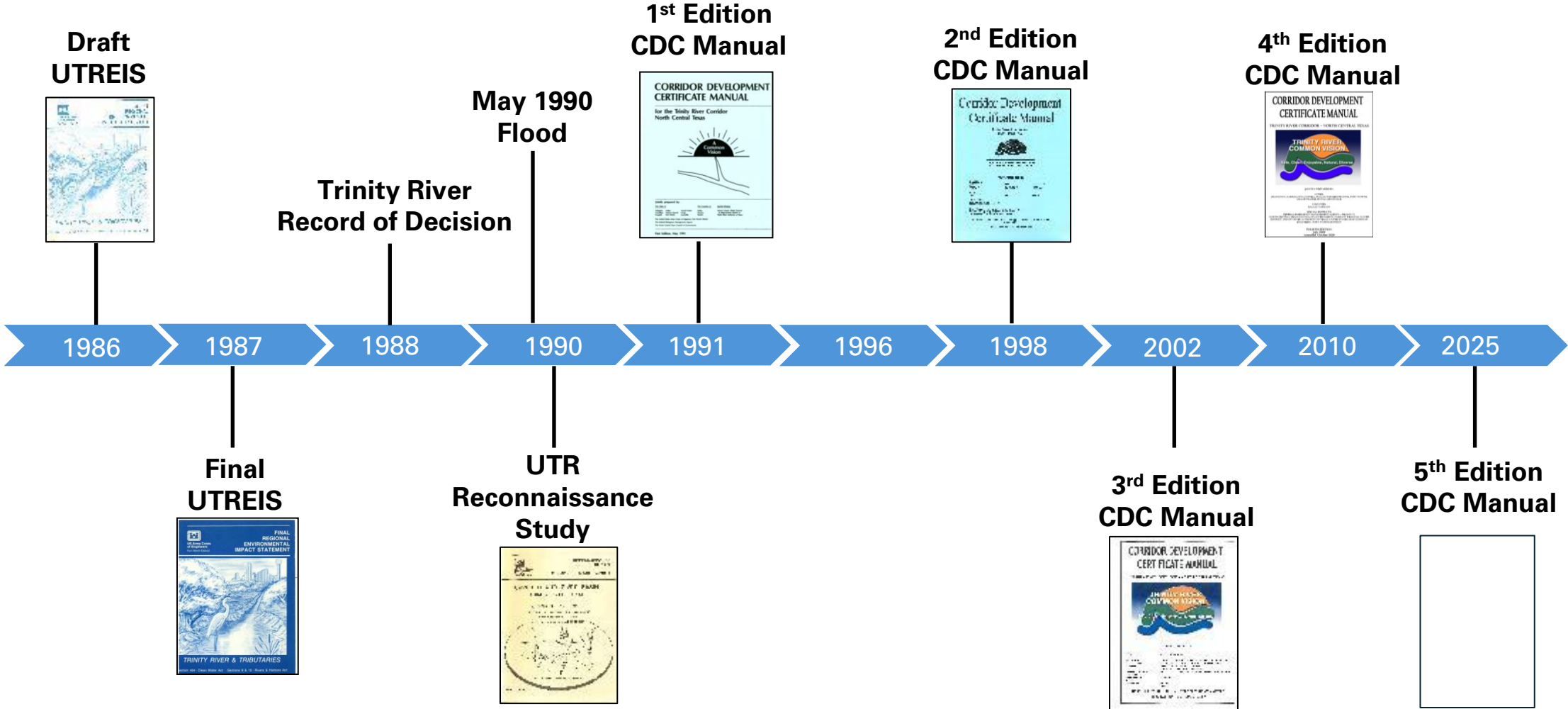
# 1989 AND 1990 FLOODS



# 1989 AND 1990 FLOODS



# CORRIDOR DEVELOPMENT CERTIFICATE



# CURRENT CDC PROCESS/MODEL EXTENTS

Extents as developed since the beginning of the CDC Process in the early 1990s

- Clear Fork ~12.4 miles
- West Fork ~58 miles
- Elm Fork ~ 29 miles
- Trinity River main stem ~23.5 miles
- Total ~123 miles

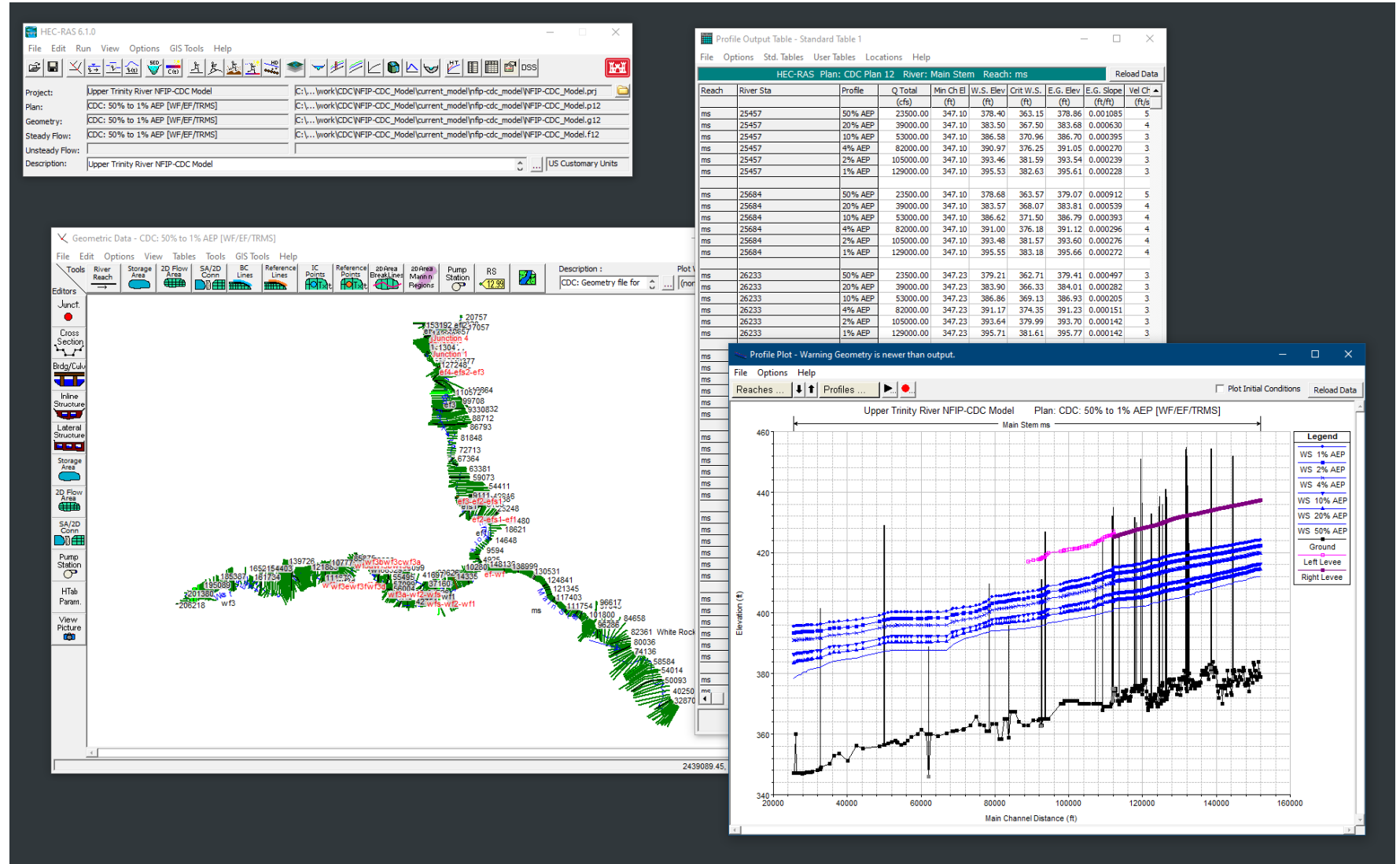


# **CURRENT CDC PROCESS/MODEL EXTENTS**

- **Development projects (private and public) located with the 123-mile reach and within the current FEMA 100-year floodplain require a CDC**
- **Since the CDC began in 1991, NCTCOG has processed more than 200 applications**

# CURRENT CDC PROCESS/MODEL EXTENTS

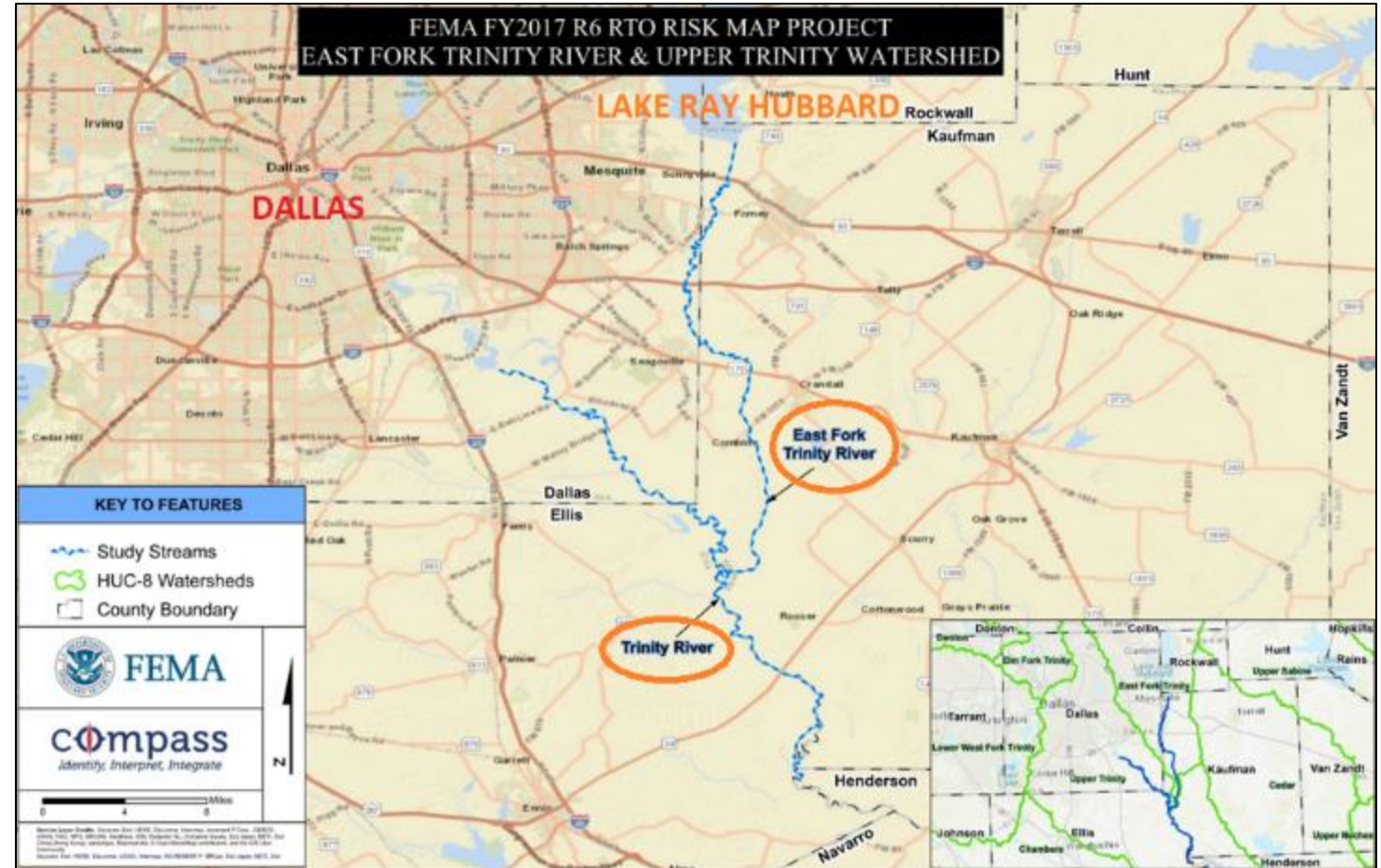
- The CDC Model uses **future conditions watershed (year 2055)** flood event flows and floodplain information to compute water surface elevations



# EXPANSION OF CDC PROGRAM/MODEL

Expansion to the east (Kaufman County) and south (Henderson County). Work is ongoing – final adoption anticipated for 2025.

- East Fork ~29 miles
- Trinity River main stem ~30 miles
- Total ~59 miles



# WHY EXPANSION?

- **Development growth to the east and west (and north and south)**
- **Increased in impervious cover creating increased runoff**
- **Local and regional challenges (transportation, water quality, open space)**



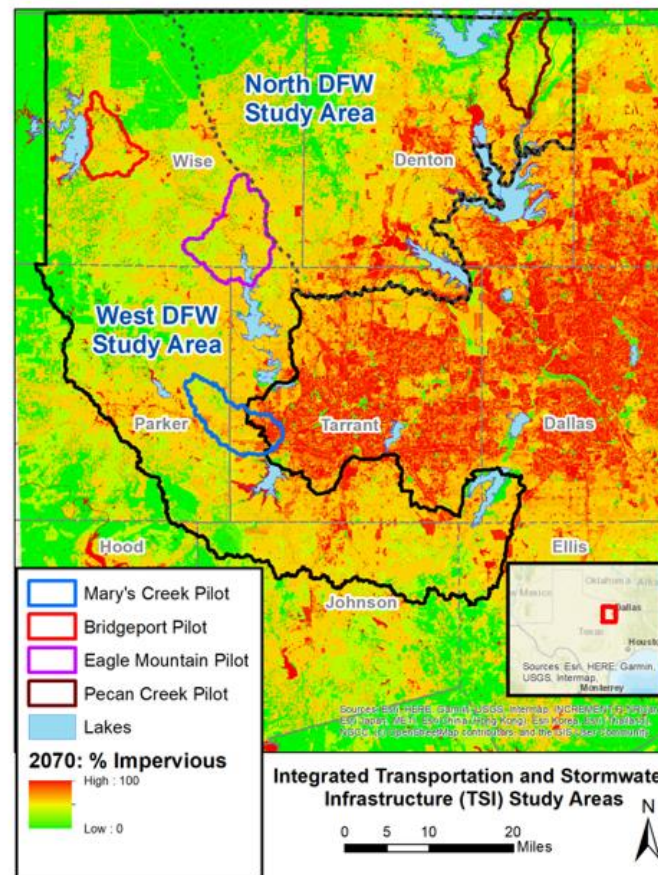
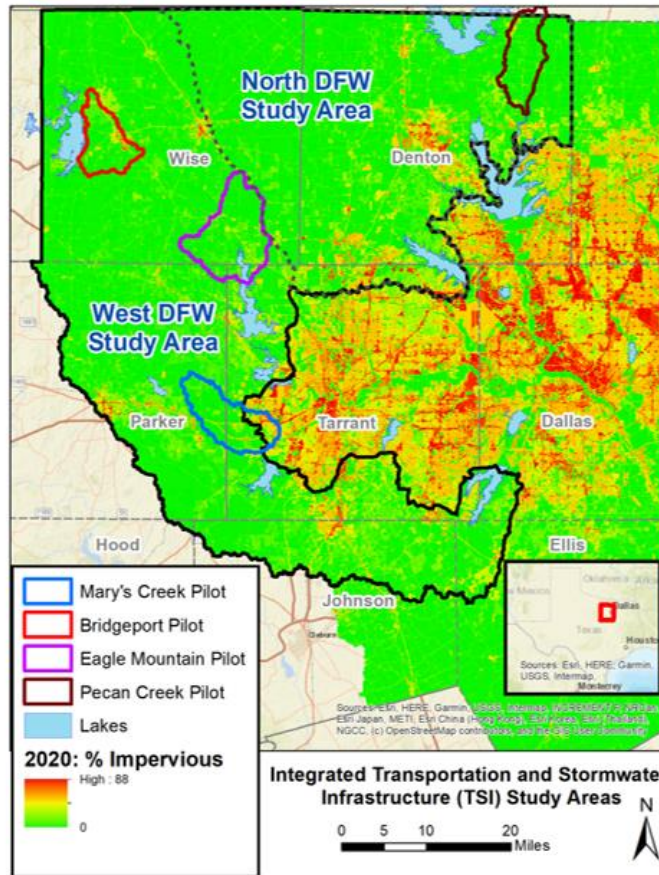
# WHY EXPANSION?

## Typical Urbanization Adds Impervious Surfaces

2020 (6.4% Impervious)

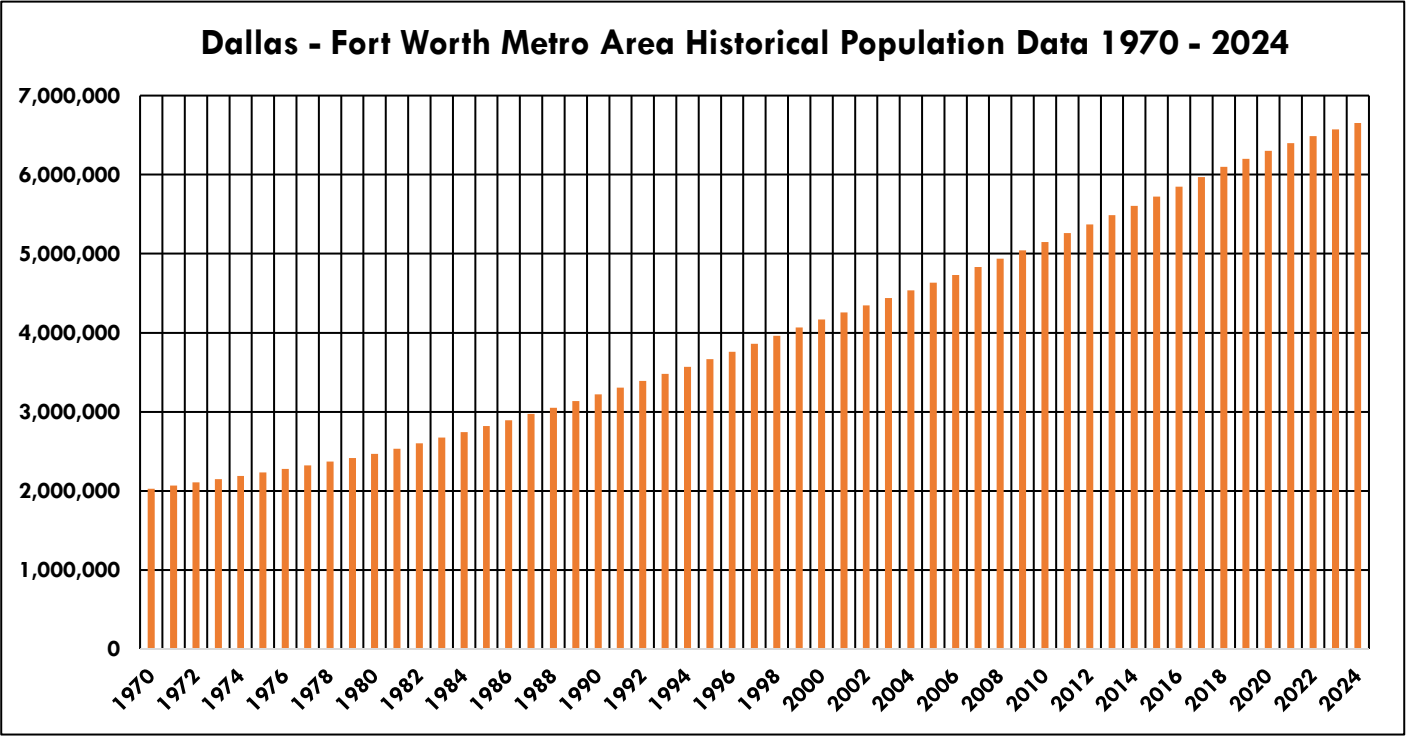
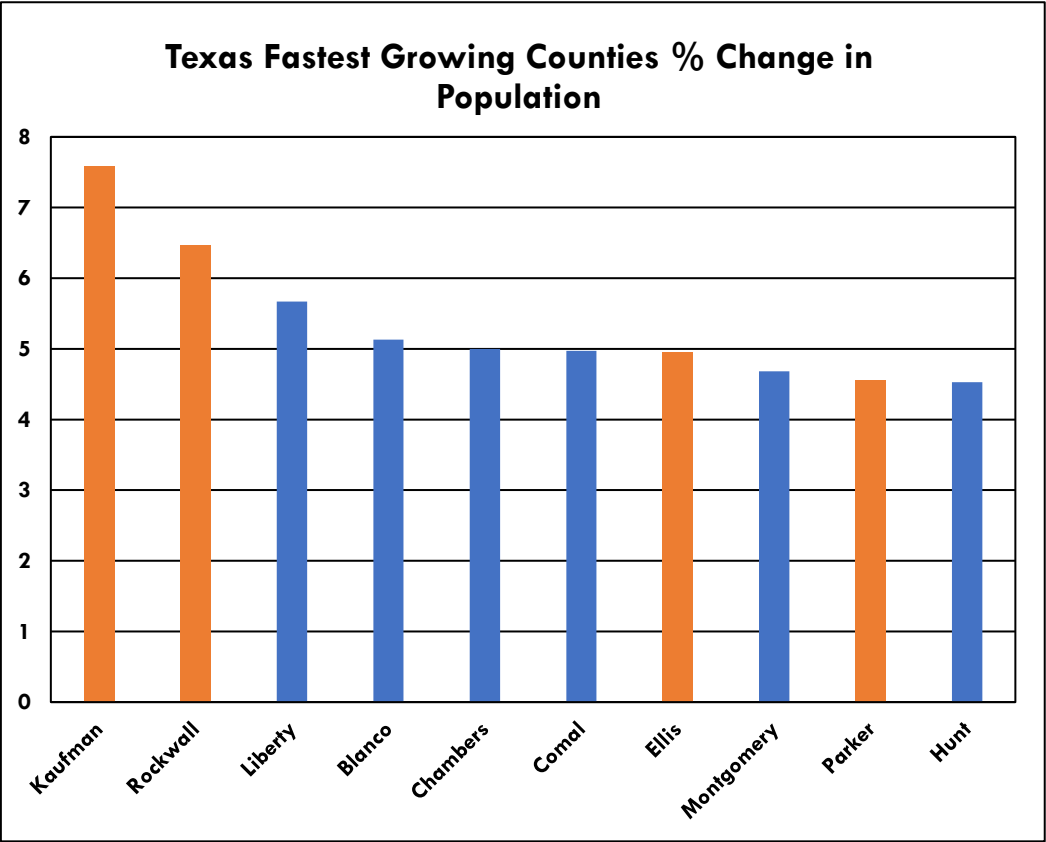


2070 (35.2% Impervious)



# WHY EXPANSION?

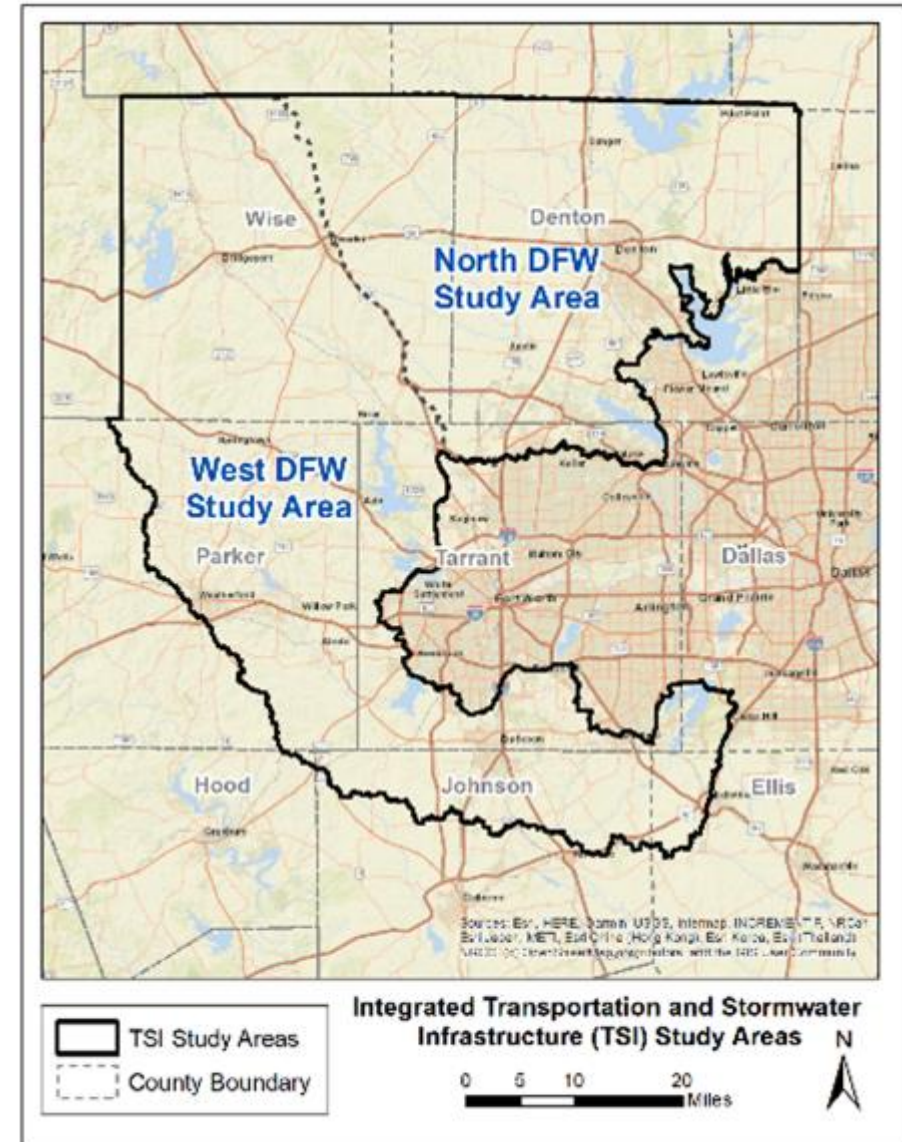
## Population growth



# PROJECT AREA

## Project area details:

- **85 cities and portions of 8 counties**
- **126% increase in population (2020 – 2045)**
- **60% undeveloped (2015)**
- **19% growth in impervious surface (2006 – 2016)**
- **> 7,000 miles of streams**
- **> 274,000 acres of 100-year floodplain**



# PROJECT AREA

## West DFW Study Area

- Dallas County
- Ellis County
- Hood County
- Johnson County
- Parker County
- Tarrant County
- Wise County
- Mansfield, Burleson, Midlothian, Weatherford, Crowley, Decatur, Bridgeport
- ~ 1,690 square miles



# **OPPORTUNITIES TO EXPAND INTO THE PROJECT AREA**

- **USACE developed “Evaluation of Opportunities to Expand the Corridor Development Certificate Process into the North Central Texas TSI Project Area” 2024**
  
- **Plan of Implementation**
  - 1. Solicit stakeholder interest by establishing a Technical Advisory Group, conducting training opportunities, preparing and issuing surveys, hosting scenario planning workshops throughout the Project Area**
  
  - 2. Meetings/workshops with the participation of NCTCOG staff, floodplain administrators/staff of current member communities, and USACE**

# **OPPORTUNITIES TO EXPAND INTO THE PROJECT AREA**

- **Plan of Implementation (continued)**

- 3. Recommended meeting agenda**

- **History of the CDC program**
    - **Benefits of the CDC program**
    - **CDC administrative procedures (reviews, fees)**
    - **The Technical Review process**
    - **Comparisons with the NFIP program and policies, modeling procedures**
    - **How to integrate the CDC in local ordinances**
    - **Discuss local master development plans and future land use for each community/county**
    - **Hydrology and hydraulics modeling**
    - **How the CDC program be applied to the stakeholder area of interest**
    - **Display NCTCOG/CDC program online products**

# **OPPORTUNITIES TO EXPAND INTO THE PROJECT AREA**

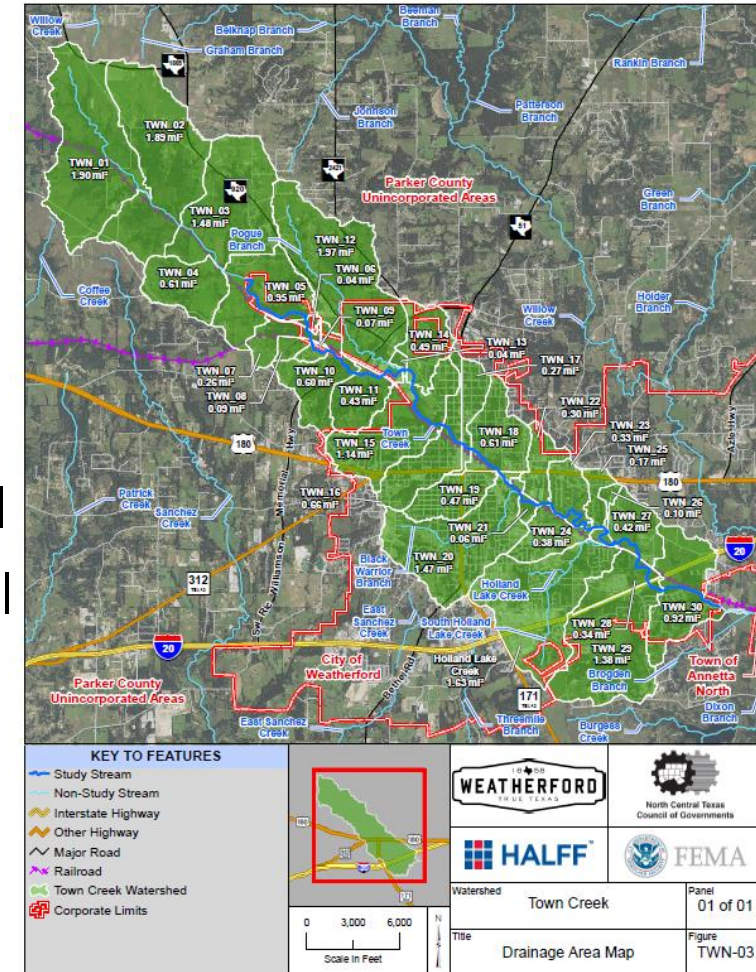
- **Plan of Implementation (continued)**

- 4. Perform a pilot study**

- **Identify a community through the previous efforts**
- **Deliverable products will include hydrology and hydraulic modeling and Standard Operating Procedure to serve as a guide for implementation of future studies**

# EXPANSION OF THE CDC PROGRAM INTO WEATHERFORD

- City of Weatherford expressed interest in participating in a Pilot Study in May 2024
- Several meetings between Weatherford and USACE HH staff
- USACE developed a Scope/Plan of Procedure specific for Weatherford in August 2024
- Specific study tasks:
  1. Obtain and update the Town Creek FEMA HEC-RAS model
  2. Obtain and update the Town Creek FEMA HEC-HMS model
  3. Develop future land use HEC-HMS model
  4. Develop future flows
  5. Incorporate CDC Flows into HEC-RAS model



# EXPANSION OF THE CDC PROGRAM INTO WEATHERFORD

- **Specific study tasks (continued)**
  6. Compare Model results with FEMA model
  7. Floodplain Delineations
  8. Documentation
- **Modeling and report completed in 2025**
- **The report documents the TSI pilot study modeling procedures and lessons learned from converting the Town Creek existing models.**

# **FUTURE PLANS - EXPANSION OF THE CDC PROGRAM**

- **The report and the modeling processes are intended to be a replicable guide for communities with similar existing models to create CDC modeling for their community.**
- **Expanding the CDC program to communities in the TSI project area would expand the benefits of the program to new communities.**
- **Expanding the CDC program would also provide communities with technical review assistance from USACE and would improve regional flood planning efforts.**
- **Engagement with other communities for possible future studies**

**THANK YOU**

# Key Websites



Trinity River COMMON VISION  
Program:

<https://www.nctcog.org/envir/watershed-management/trinity-river-common-vision>



CDC Program:

<https://www.nctcog.org/envir/watershed-management/corridor-development-certificate-program>



CDC Models:

<https://www.nctcog.org/envir/watershed-management/corridor-development-certificate-program/trinity-river-corridor-development-certificate>



Floodplain Seminar Presentations:

<https://www.nctcog.org/envir/watershed-management/floodplain-management>  
(Scroll down)

# Contact | Connect

## **Kate Zielke, CFM**

Program Manager

NCTCOG Environment & Development

[kzielke@nctcog.org](mailto:kzielke@nctcog.org)

817-695-9227

## **Michael A. Danella, P.E.**

U.S. Army Corps of Engineers

[michael.a.danella@usace.army.mil](mailto:michael.a.danella@usace.army.mil)

817-886-1690



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nctcogenv



youtube.com/user/nctcoged



EandD@nctcog.org



nctcog.org/envir

# Voting Items

**Emilie Fryksater**

**NCTCOG Environment & Development Department**

**Kate Zielke, CFM**

**NCTCOG Environment & Development Department**

# Summary of September 19, 2024, COMMON VISION Steering Committee Meeting

- NCTCOG staff are seeking approval of the 2024 Trinity COMMON VISION Steering Committee Meeting Summary.
- [Link to the 2024 summary.](#)
- Vote to approve.

# Approval of FY 2026 Trinity River COMMON VISION Work Program and Budget

- NCTCOG staff are seeking approval of the FY 2026 Trinity COMMON VISION Work Program.
- [Click here for draft of the FY25 Work Program.](#)
- Review of changes/additions.

# Work Program Review

[Click here for draft of the FY26 Work Program.](#)

## Continuation of existing Ongoing Support Activities:

- ▶ Ongoing Trinity River COMMON VISION Information and FMTF Committee Support
- ▶ Ongoing CDC Process and mapping support
- ▶ Continued sponsorship of FEMA NFIP training courses
- ▶ **Coordination for Flood Science Training – updated**
- ▶ Ongoing effort to explore partnership and outreach opportunities
- ▶ Continued exploration of regional cooperative detention/retention strategies
- ▶ Administrative Coordination for Regional Flood Warning Software Program Contract
- ▶ Maintenance of the CDC Application and Tracking Website
- ▶ Participation in the Trinity Regional Flood Planning Group
- ▶ Monitor Adopted Legislation
- ▶ **Support Participation in the FEMA Community Rating System (CRS) – additional**

# Work Program Review

## Cont. Additional Technical Activities for FY 2026:

- ▶ Participation in the Model Consolidation Committee – **updated/adjusted**
- ▶ Update the CDC Manual to the 5<sup>th</sup> Edition
- ▶ East Fork and Denton Creek Integration
- ▶ Update Communities' Acreage in Floodplain (FIRM).
- ▶ Ensure Functionality of the Trinity River CDC Website ([www.trinityrivercdc.com](http://www.trinityrivercdc.com))

No change anticipated in cost shares.

# Work Program Review

## Updates/Adjustments to Ongoing Program Activities for FY26:

- ▶ **Coordination for Flood Science Training** – NCTCOG will continue to offer relevant training to the region's floodplain professionals. NCTCOG is partnering with the USACE to offer training regarding flood science. The USACE Hydrologic Engineering Center supports water resources management responsibilities with research, training, planning analysis, and technical assistance. NCTCOG will work with USACE to promote the use of free online trainings offered by USACE that include, but are not limited to, 1D/2D modeling, HEC-RAS, HEC-HMS, and other flood science software. USACE will develop training for city staff, developers, and engineers regarding the CDC process, including technical evaluation of proposed projects, the review process, common technical issues, and the use of the consolidated model.

# Work Program Review

## Additional program activities for FY26:

- ▶ **Support Participation in the FEMA Community Rating System (CRS)** – NCTCOG will facilitate a CRS Users Group for exchange of best practices related to communities' participation in CRS. This may include supporting a multi-jurisdictional Program for Public Information. This program could make CRS communities eligible for bonus points on outreach projects and other CRS public information activities.

# Work Program Review

## Updates/Adjustments to Ongoing Add. Technical Activities for FY26:

- **Participation in the Model Consolidation Committee** – A committee of regional partners and communities completed a series of meetings resulting in a memorandum in FY 2020 to ensure a smooth transition for the use of the consolidated model. In May 2023, the first ever consolidated model was approved by the Flood Management Task Force. In October 2024, work by the USACE to develop East Fork of the Trinity River (East Fork) future flows and hydraulic modeling was completed. Currently, there is not a timeline or funding mechanism to incorporate the East Fork modeling into the consolidated model. The USACE Floodplain Management Services (FPMS) program is a potential source of funding to incorporate the East Fork modeling into the consolidated model. The FEMA preliminary studies on the Trinity River main stem and the East Fork are scheduled to go effective in the future. NCTCOG will continue to have a representative on this committee to attend all meetings, inform the FMTF of committee activities, coordinate with FMTF communities, and conduct administrative coordination activities to establish this new process. These activities will also include coordination with the USACE related to technical work.

# Work Program Review

Updates/Adjustments to Ongoing Add. Technical Activities for FY26:

- ▶ **Participation in the Model Consolidation Committee** – Reflects change in model name.

# Budget Review

The cost share for cities is based on acreage within the floodplain. The cost per acre to communities is ~\$1.73.

“Any other Political subdivision with a voting member on the Steering Committee will pay 5%.”

There will be no increase to the cost share or rate for FY2026.



## COST SHARES FOR CURRENT COMMON VISION PARTICIPANTS

Participant	Acres in Floodplain (FIRM)	Cost Share
Arlington	3,351	\$5,802.78
Carrollton	5,941	\$10,287.77
Coppell	1,490	\$2,580.17
Dallas	25,787	\$44,654.18
Farmers Branch	1,472	\$2,549.00
Fort Worth	16,261	\$28,158.44
Grand Prairie	8,498	\$14,715.60
Irving	7,757	\$13,432.44
Lewisville	3,072	\$5,319.65
Seagoville	2,776	\$3,192.00
Dallas County		\$10,000.00
Denton County		\$5,000.00
Kaufman County		\$10,000.00
Tarrant County		\$7,500.00
TRWD		\$7,500.00
TRA		N/A
<b>Program Cost</b>		<b>\$170,692.03</b>

# Budget Review

- ▶ In 2024, the COMMON VISION Steering Committee approved use of not to exceed \$30,000 for matching funds for USACE involvement in TSI-North Study Area
- ▶ USACE has identified funding that does *not* require or allow a match
  - ▶ But total funding does not support total need for hydrologic and hydraulic model review in TSI-North Study Area
- ▶ NCTCOG requests COMMON VISION Steering Committee approval to repurpose not-to-exceed \$30,000 from USACE to Personal Services Agreement with former USACE staffer who had worked on TSI study

# Approval of FY 2026 Trinity River COMMON VISION Work Program and Budget

- ▶ Questions?
- ▶ Vote to approve?

# Contact

## **Emilie Fryksater**

Environment & Development Planner

North Central Texas Council of Governments

[efryksater@nctcog.org](mailto:efryksater@nctcog.org)

817-695-9110

## **Kate Zielke**

Environment & Development Program Manager

North Central Texas Council of Governments

[kzielke@nctcog.org](mailto:kzielke@nctcog.org)

817.695-9227

# Upcoming Events & Meetings

## ➤ 30th L0273 Floodplain Management Course

➤ Monday, October 6 • October 9 • 8:00am – 5:00pm

## ➤ Certified Floodplain Manager Exam

➤ Friday, October 10 • 8:00am – 11am

## ➤ *integrated* Stormwater Management Subcommittee Meeting

➤ Tuesday, October 14 • 1:30 – 3:30pm

# UPCOMING TSI PROJECT UPDATE MEETINGS

**SEP 15**

**WEATHERFORD COLLEGE: WORKFORCE & EMERGING TECHNOLOGIES BUILDING**  
225 COLLEGE PARK DRIVE, WEATHERFORD, TX 76086

**SEP 22**

**BURLESON CITY HALL**  
141 W. RENFRO STREET, BURLESON, TX 76028

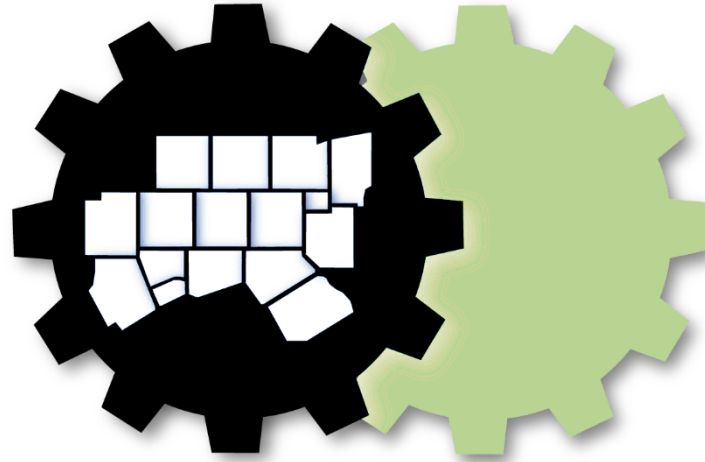
**SEP 23**

**DECATUR CONFERENCE CENTER**  
2010 W. HWY US 380, DECATUR, TX 76234

**OCT 01**

**DENTON COUNTY SOUTHWEST COURTHOUSE**  
6200 CANYON FALLS DR, FLOWER MOUND, TX 76226

**ALL MEETINGS FROM 10AM - 12PM**



# ROUNDTABLE

# Contact | Connect

## **Emily “Emilie” Fryksater**

Planner

Environment & Development

[EFryksater@nctcog.org](mailto:EFryksater@nctcog.org)

817-695-9110

## **Kate Zielke, CFM**

Program Manager

Environment & Development

[KZielke@nctcog.org](mailto:KZielke@nctcog.org)

817-695-9227

## **Sue Alvarez, P.E., CFM**

Director

Environment & Development

[SAlvarez@nctcog.org](mailto:SAlvarez@nctcog.org)

817-704-5489



Facebook.com/nctcogenv



@nctcogenv



nctcogenv



youtube.com/user/nctcoged



EandD@nctcog.org



[nctcog.org/envir](http://nctcog.org/envir)