# STATUS UPDATE ON INTEGRATED TRANSPORTATION AND STORMWATER MANAGEMENT PROJECT

NCTCOG Executive Board
April 25, 2019

North Central Texas Council of Governments

# Flooding continues to be a challenge in North Texas

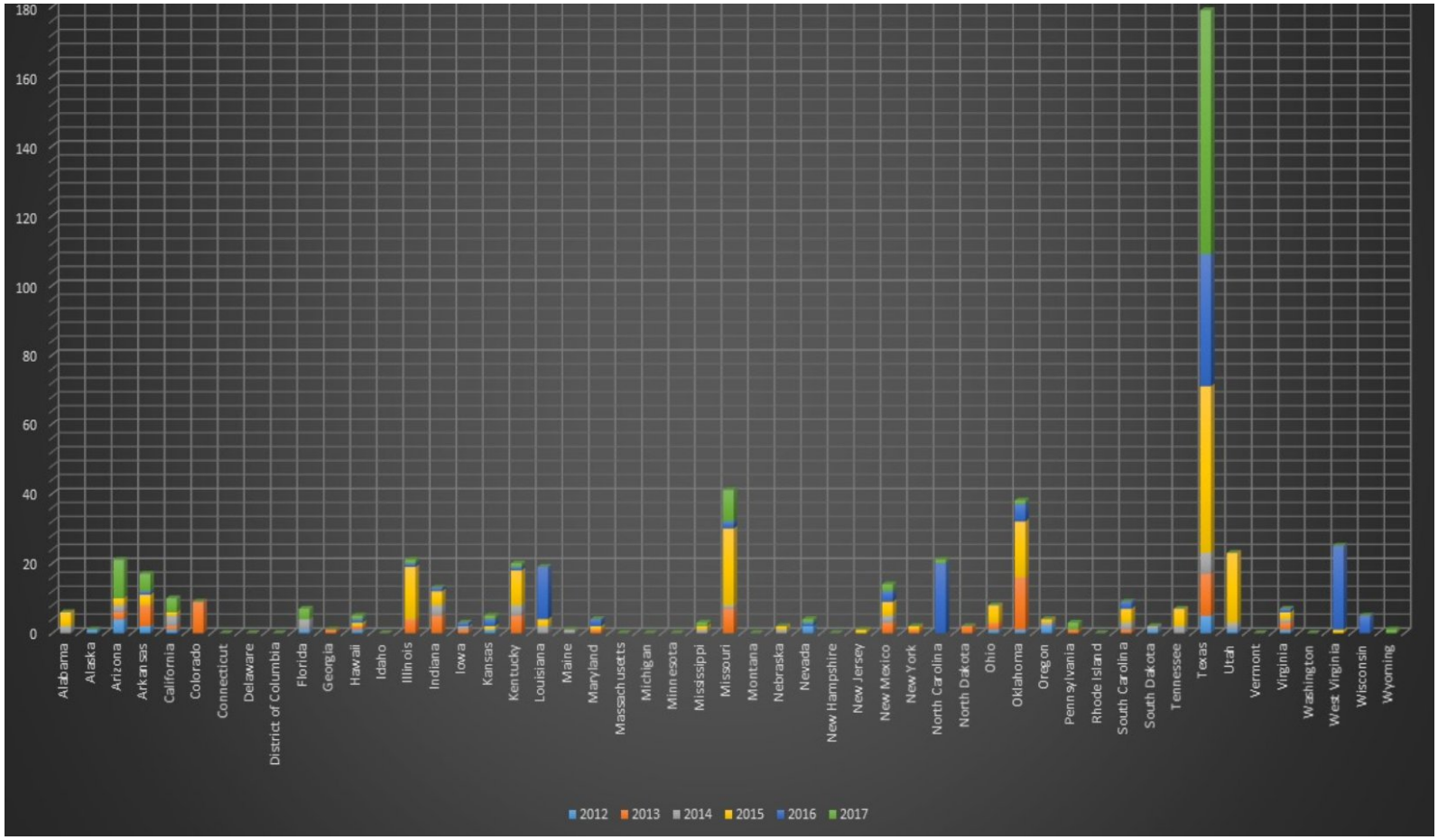
**Threats:** Increased flooding and safety risks; cost of infrastructure, stormwater, environmental restoration


DeSoto Fire Rescue

**Solution:** Innovative partnerships and integrated infrastructure

**Perspective:** 5 year tally of flood fatalities

**Texas far outpaces all of the states in flood related fatalities**




(Source: Gregory Waller, Service Coordination Hydrologist, NWS – West Gulf River Forecast Center, http://www.nws.noaa.gov/om/hazstats.shtml, 11/18 TFMA)

INTERIM REPORT
*to the 86th Texas Legislature*

HOUSE COMMITTEE ON COUNTY AFFAIRS

*January 2019*

## State Recommendation:

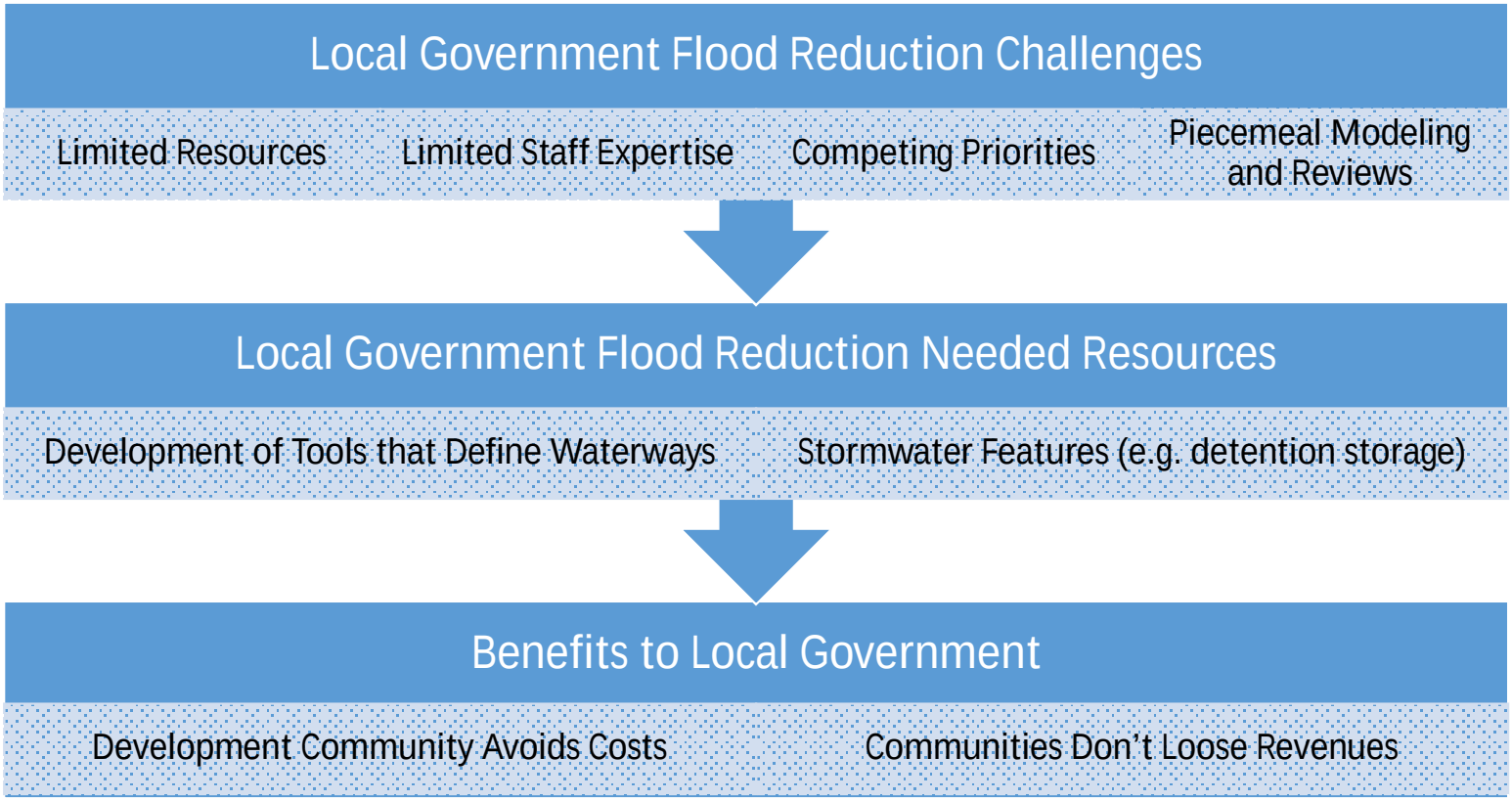
The January 2019 Interim Report to the 86th Texas Legislature from the House Committee on County Affairs contains a recommendation that the Texas Legislature should explore a regional approach to floodplain regulation, allowing counties that share watersheds to adopt similar regulations, as allowed by the Texas State Water Code.

**CHARGE II - Evaluate whether counties have the necessary ordinance-making and enforcement authority to deal with flood risk in unincorporated rural and suburban areas of Texas. Additionally, examine whether counties have adequate resources and authority to ensure that new development in unincorporated areas is not susceptible to flooding.**

3. **The Texas Legislature should explore a regional approach to flood plain regulation, allowing counties that share watersheds to adopt similar regulations.**
The Water Code also allows counties to restrict certain development and to regulate construction in the flood plain. Counties use this authority to mandate certain designs to mitigate flooding, to prevent flooding on neighboring properties, and to minimize erosion. However, although a county may adopt these standards for flood management, the impact of these regulations may be muted when surrounding counties do not adopt similar regulations.

https://house.texas.gov/_media/pdf/committees/reports/85interim/County-Affairs-Committee-Interim-Report-2018.pdf

# EXISTING CHALLENGES WITH FLOOD REDUCTION EFFORTS



# RETURN ON INVESTMENT

2017 "*Natural Hazard Mitigation Saves*" report by: National Institute of Building Sciences Institute, Multi-hazard Mitigation Council (MMC), at the direction of the U.S. Congress

Riverine flooding – for $1 invested in mitigation strategies and higher standards (versus recovery from flooding actions), communities save $5-7


| National Benefit-Cost Ratio Per Peril *BCR numbers in this study have been rounded | Federally Funded | Beyond Code Requirements |
|---|---|---|
| Overall Hazard Benefit-Cost Ratio | 6:1 | 4:1 |
| Riverine Flood | 7:1 | 5:1 |
| Hurricane Surge | Too few grants | 7:1 |
| Wind | 5:1 | 5:1 |
| Earthquake | 3:1 | 4:1 |
| Wildland-Urban Interface Fire | 3:1 | 4:1 |

Table 1. Benefit-Cost Ratio by Hazard and Mitigation Measure.

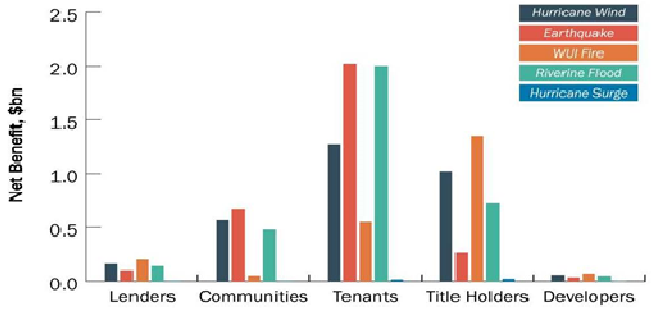
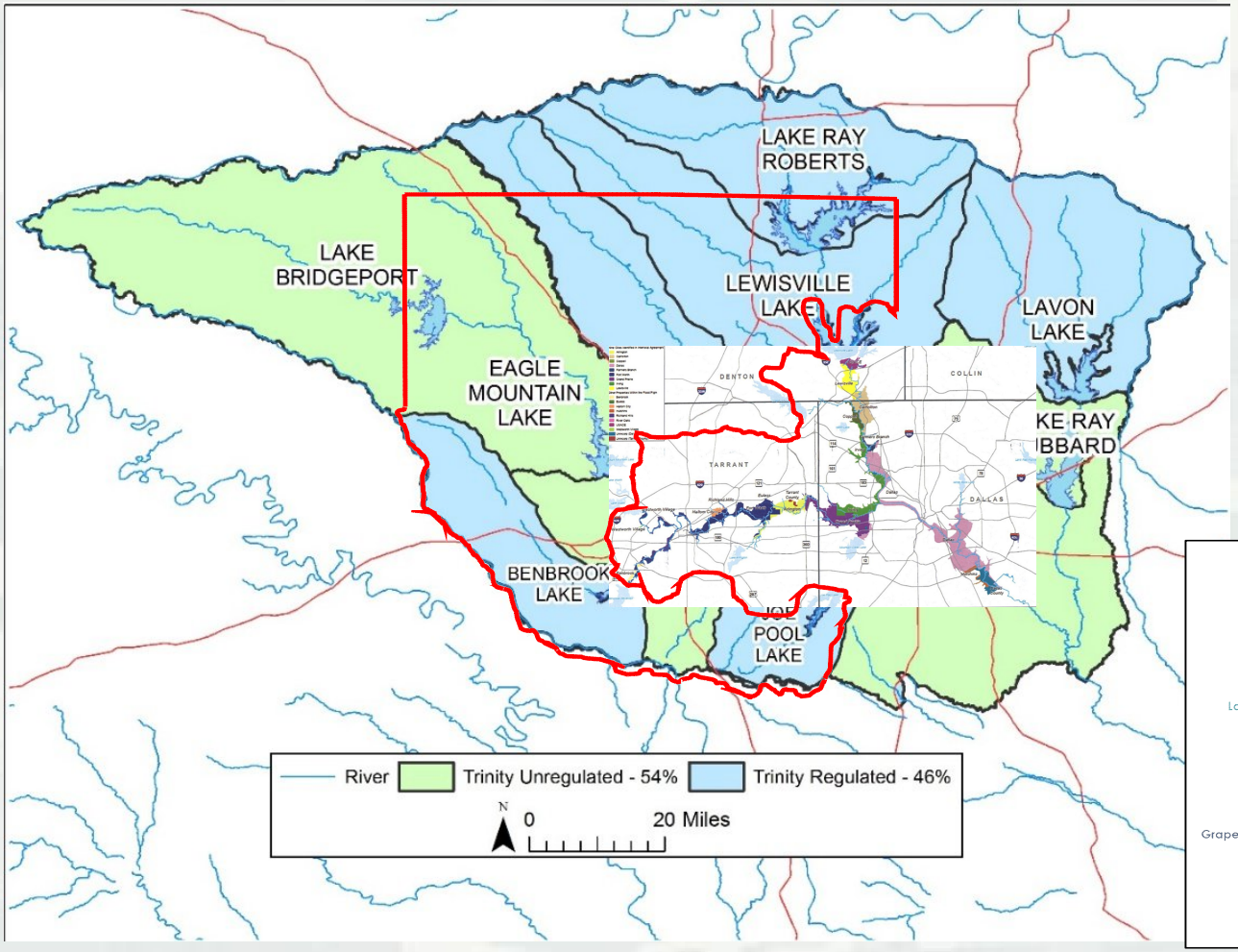


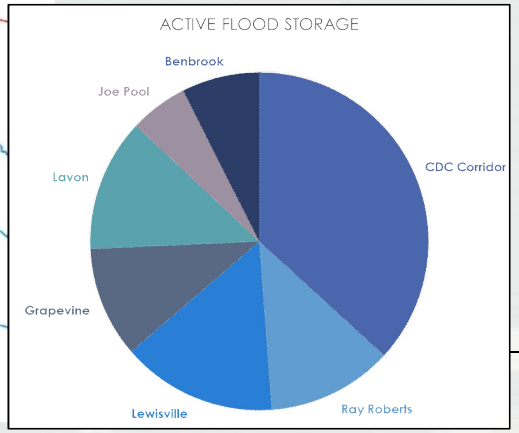

Figure 8. Stakeholder net benefits resulting from one year of constructing all new buildings to exceed select 2015 IBC and IRC requirements or to comply with 2015 IWUIC.

Source:[http://www.wbdg.org/files/pdfs/MS2_2017Interim%20Report.pdf](http://www.wbdg.org/files/pdfs/MS2_2017Interim%20Report.pdf)

# USACE Dallas-Fort Worth - Flood Reduction and Water Supply System

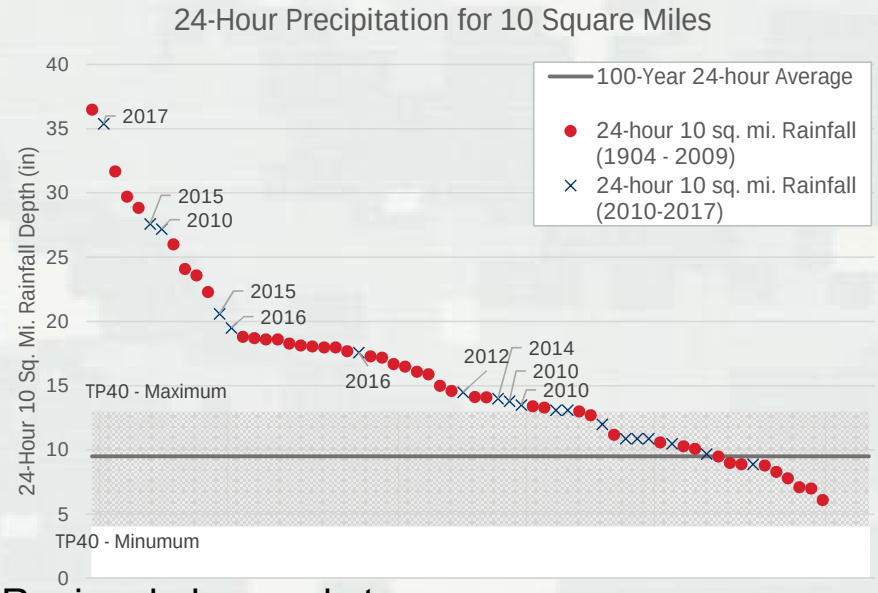



- Devastating floods, 1908, 1942, 1949
- 6 multi-purpose reservoirs (1952-1987)
- 2 federal levee systems
- DFW Flood Control System
  - ► 7.4 million people
  - ► $100+ billion in damages prevented
  - ► $2 - $3 billion annually
- Water supply system
- Total cost $2.5 billion
- ***Must be operated as a system***



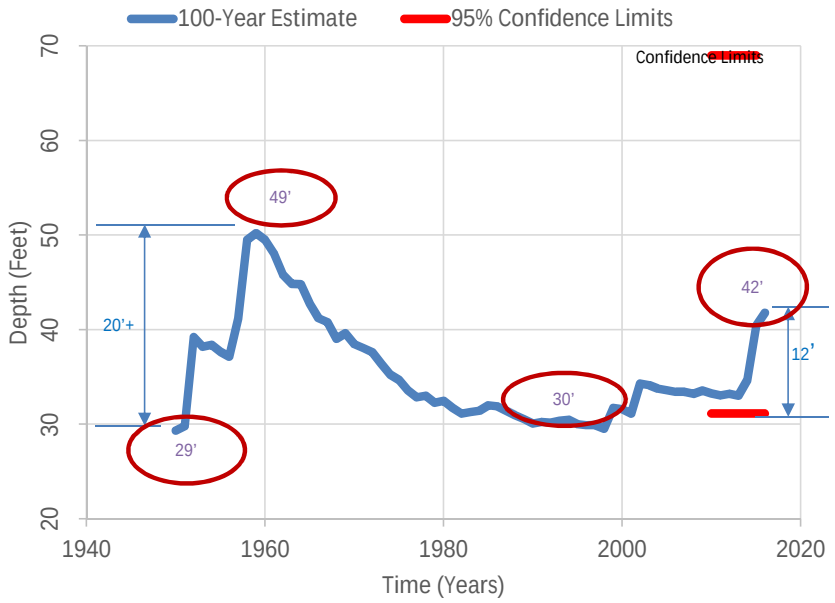

BUILDING STRONG®

# Storms Exceeding Infrastructure and NFIP Standards




- Regional observed storms
  - ► USACE extreme storm database
- 24-hour rainfall for 10 mi$^2$
- 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 exceed 100-year
- 18 events exceeded the 100-yr design standard

## Uncertainty

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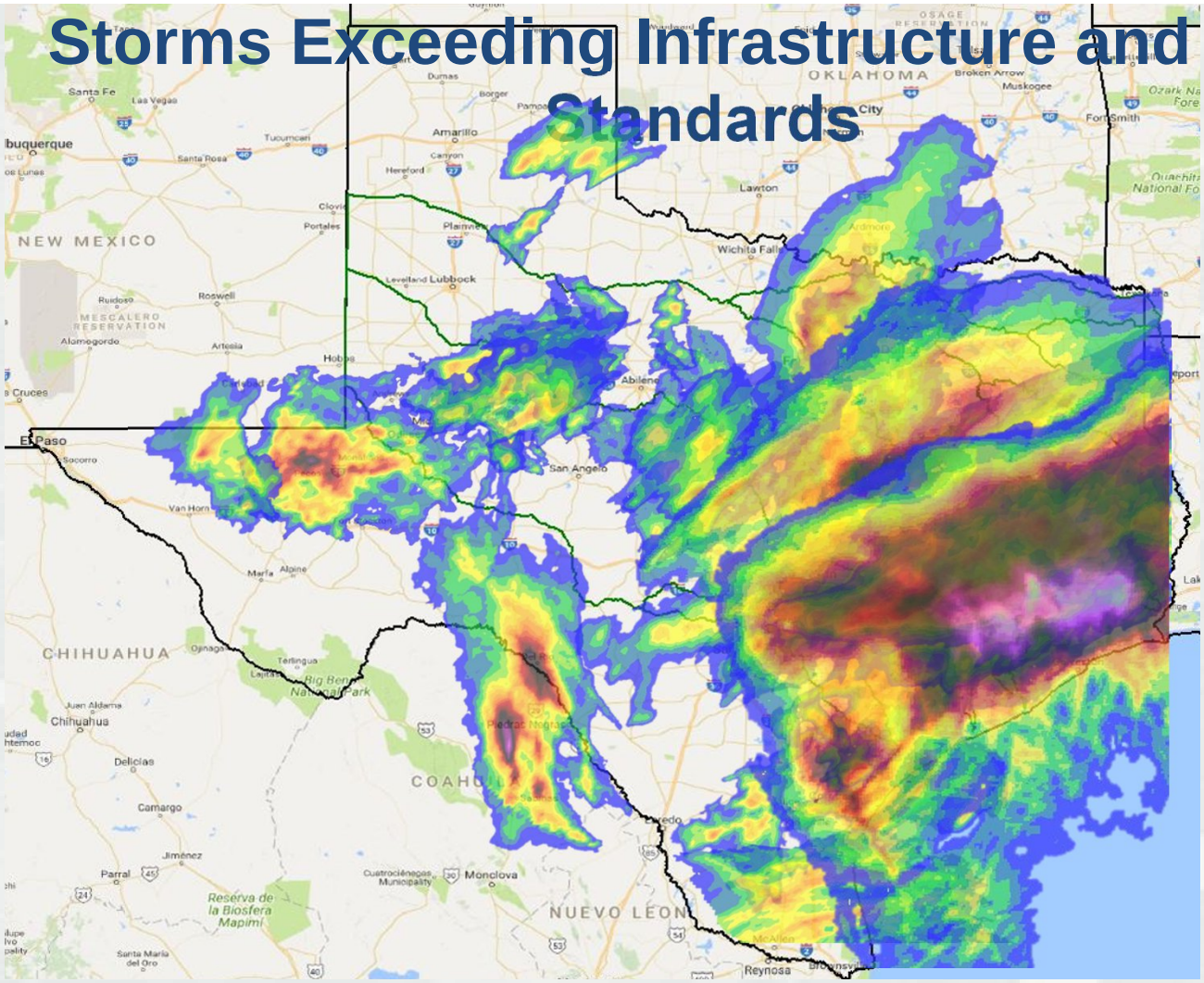


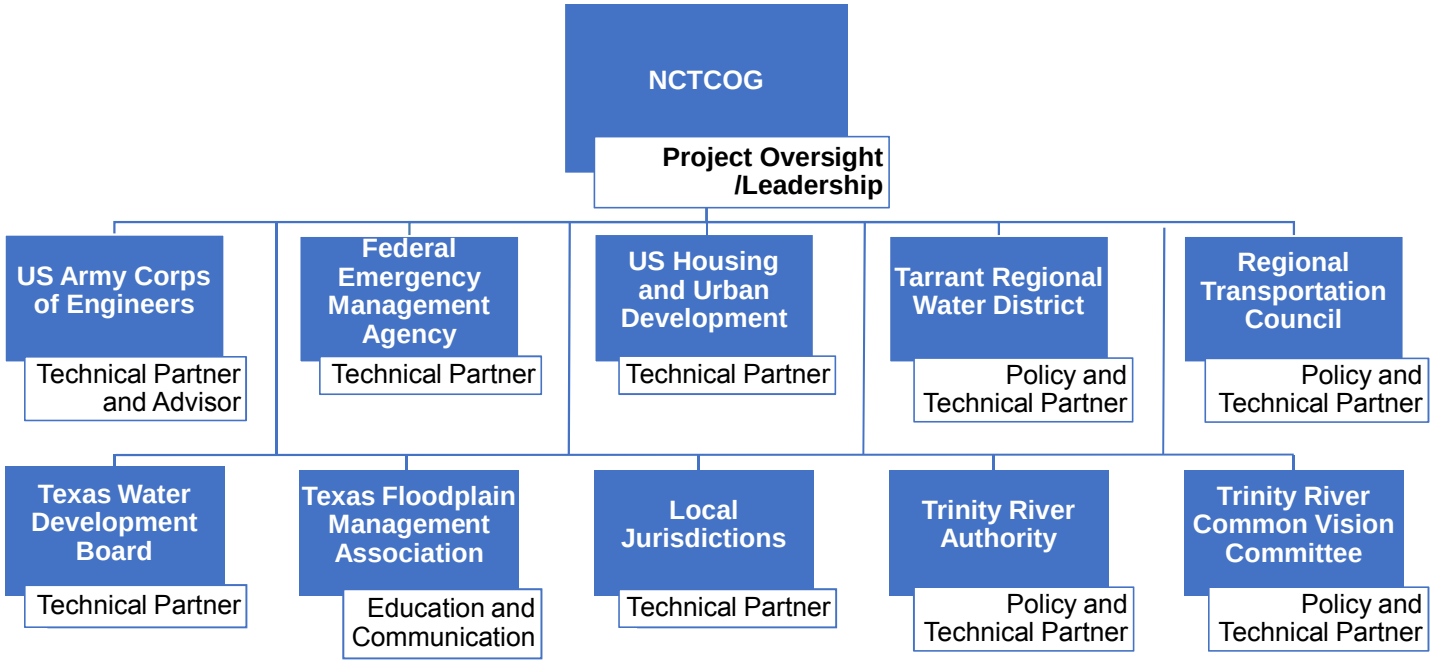

BUILDING STRONG®

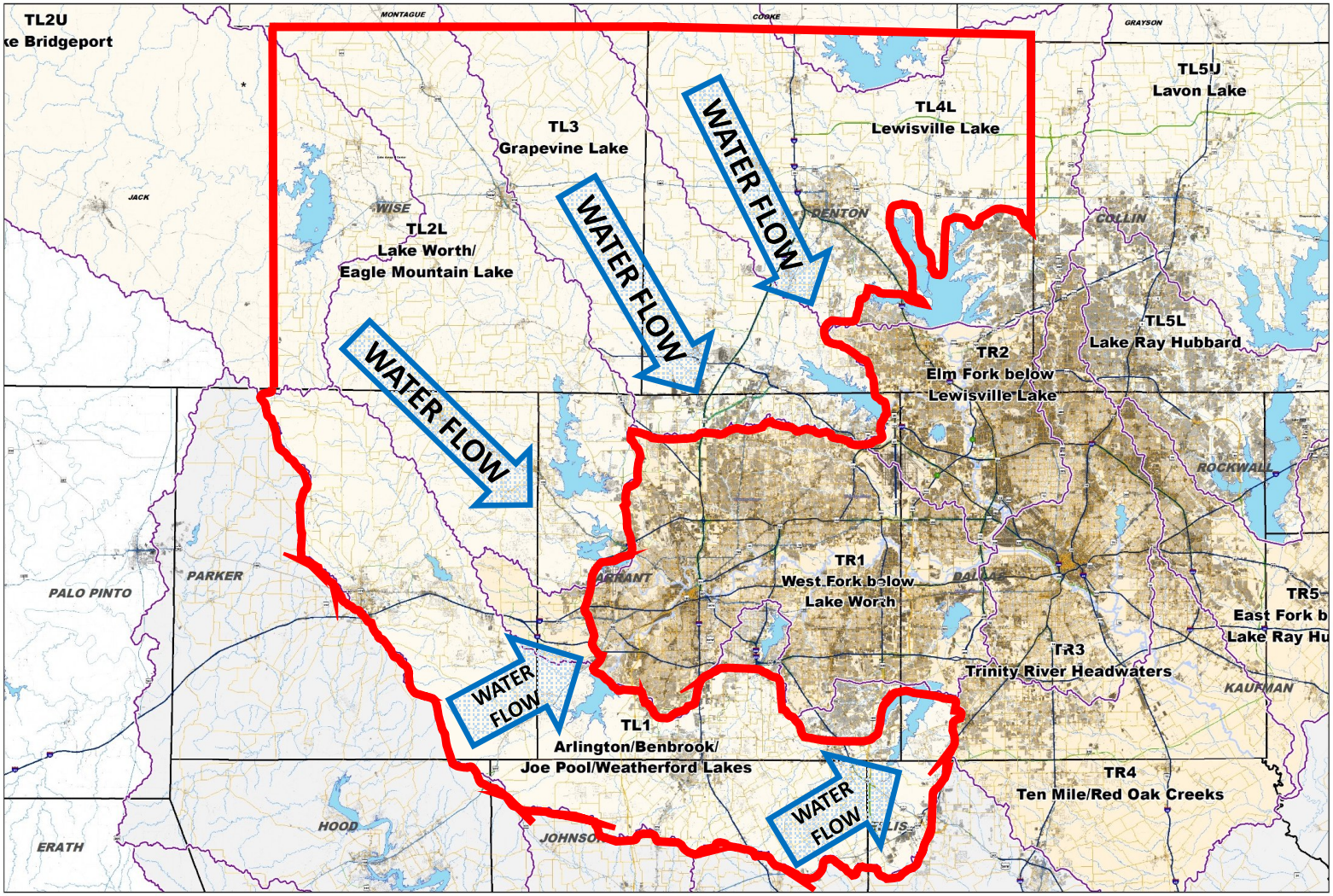
# Flood Risk Products and Uses

- Numerical models
  - ▸ Existing conditions
  - ▸ Future land use conditions
  - ▸ Climate change
- Regulatory
  - ▸ Update technical basis for NFIP mapping (100-yr flood)
- Stormwater infrastructure planning
- Emergency preparedness
  - ▸ What-if scenarios
- Emergency response
  - ▸ Basis for real-time inundation mapping

**WHO:** Project Team Members

A working group of partners and stakeholders to carry out a comprehensive planning effort in Wise County and portions of Dallas, Denton, Ellis, Johnson, Parker, and Tarrant counties






**WHERE:** Proposed Study Area

North Central Texas Council of Governments

N

0 3 6 12 18 Miles

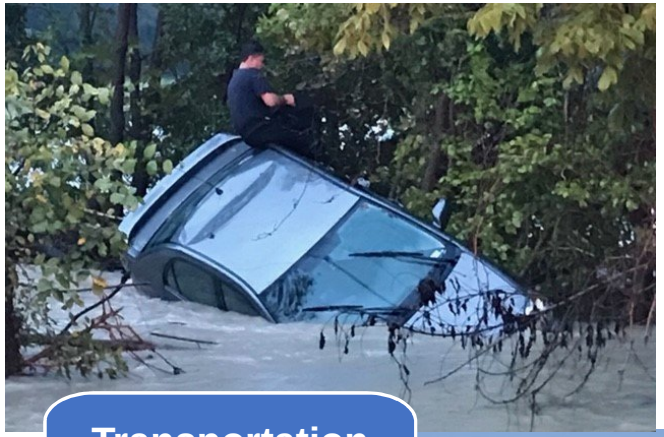
*HUC - Hydrologic Unit Code

Data Source : Watershed Boundary Dataset (WBD) by USDA - Natural Resources Conservation Service

Stream Data by National Hydrography Dataset (NHD)

This map/data was created by the North Central Texas Council of Governments (NCTCOG) for use "as is" and as an outline graphic representation only. This data is not verified by a Registered Land Surveyor for the State of Texas and is not intended to be used as such. NCTCOG, its officials, and its employees do not accept liability for any discrepancies, errors, or variances that may exist.

**WHY:** Comprehensive, collaborative planning will dissolve silos and improve delivery of consolidated, adaptive infrastructure *before* expected population growth makes addressing these issues more difficult and costly



DeSoto Fire Rescue

**Transportation Infrastructure and Safety**

City of Waxahachie

**Stormwater Runoff**

Teague Nall and Perkins, Inc.

**Environmental Features and Tools**

# PREVENTION VS. RESPONSE

**Transportation Infrastructure**

- Structure Elevation / Culverts / Model Growth
- Mechanical Culverts?
- Transportation “LEED” Certified (Ray Roberts / Lewisville)
- Green Parkway Widths / Detention

**Safety**

- Technology / Routing
- Prioritization / Low Lying Facilities

**Stormwater**

- Minimize / Reduce Downstream
- Detention
- Tools, Data, Experts

# PREVENTION VS. RESPONSE CON'T.

**Environmental Features**

- Tree Farms / Intentional Saturation
- Filtration / Recharge

**Wetland and Stream Bed Mitigation Banking**

**Environmental Stewardship as a Revenue Element**

- Mitigation Banking
- Horse Farms
- Eco-Tourism

## CONTRIBUTIONS:
Partners are critical to making this possible

| US Congress | US Housing and Urban Development (HUD) | US Army Corps of Engineers (USACE) | Federal Emergency Management Agency (FEMA) | Texas Department of Transportation (TxDOT) | Texas Water Development Board (TWDB) | Regional Transportation Council (RTC) |
|---|---|---|---|---|---|---|
| $ | $ | $ | $ | $ | $ | $ |

**Project Funding Goal: $10 Million**

***Project Has Begun With Getting the Money***

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## QUESTIONS/CONTACT:


**Transportation**
Michael Morris, P.E.
817-695-9241
mmorris@nctcog.org

**Environment & Development**
Edith Marvin, P.E.
817-695-9211
emarvin@nctcog.org