PROPOSAL FOR INTEGRATED PLANNING OF REGIONAL TRANSPORTATION AND STORMWATER MANAGEMENT TOGETHER AS A SYSTEM OF IMPROVEMENTS: PREVENTION VS. RESPONSE

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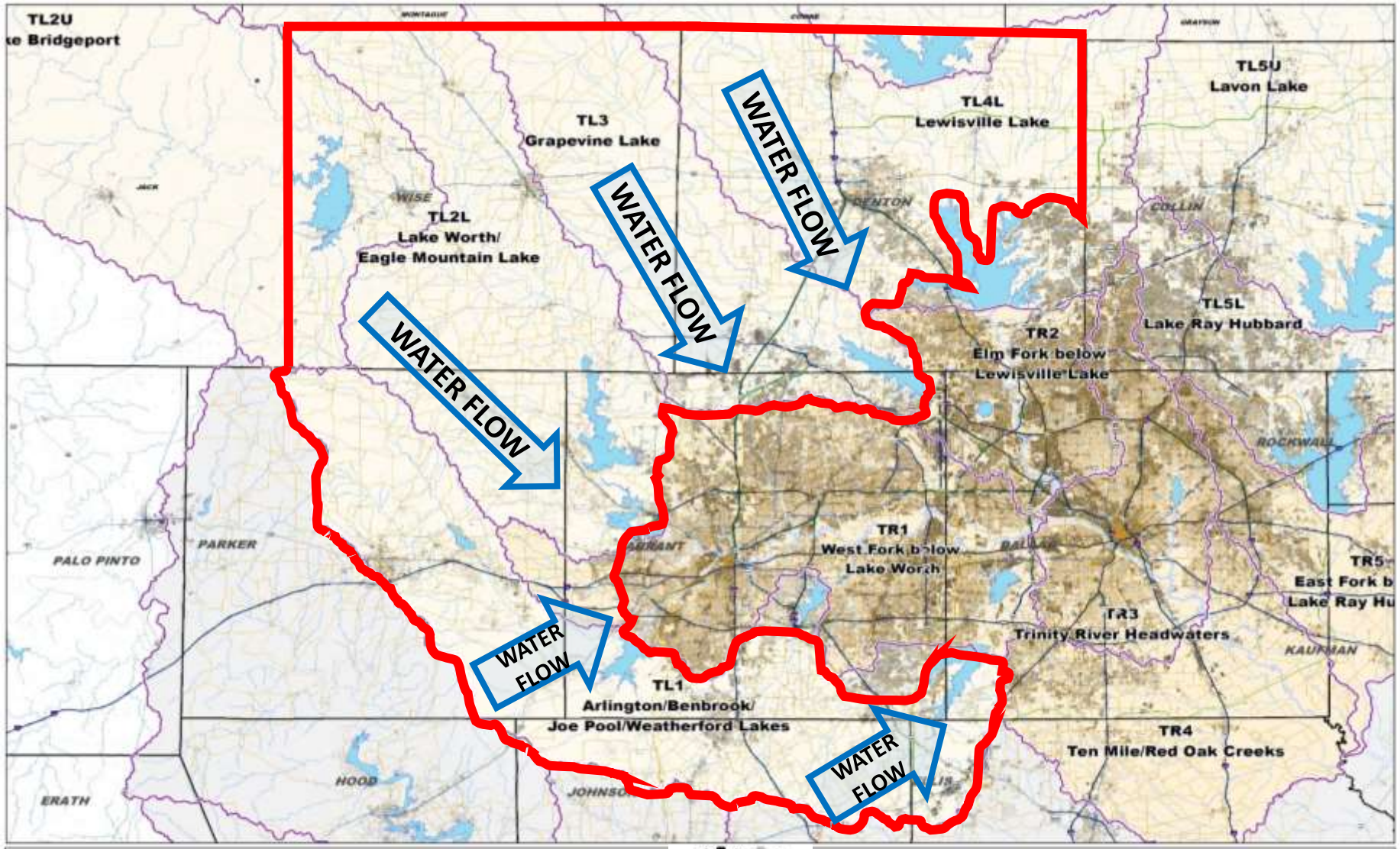
North Central Texas Council of Governments

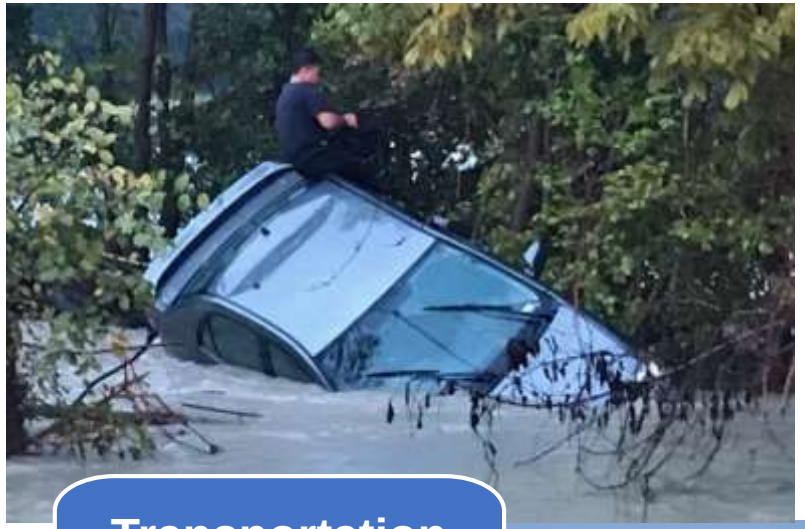
WHERE: Greater Focus on Vulnerable Area



Proposed Study Area

North Central Texas Council of Governments

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

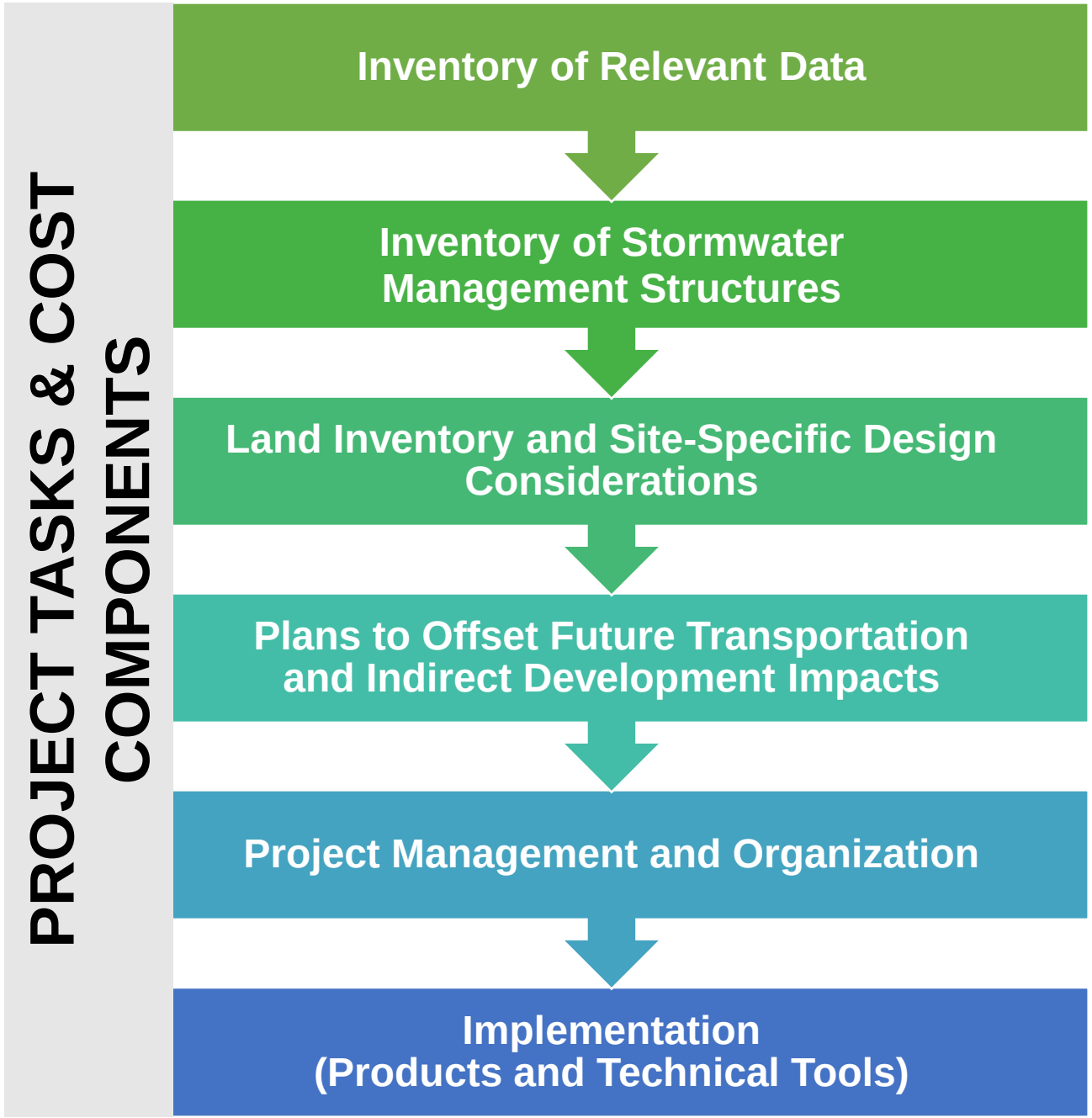
City of Waxahachie

Stormwater Runoff

Teague Nall and Perkins, Inc.

Environmental Features and Tools

HOW:
Integrate regional transportation planning, regional stormwater management planning, and environmental planning to develop consolidated, adaptive infrastructure



Flooding continues to be a challenge in North Texas

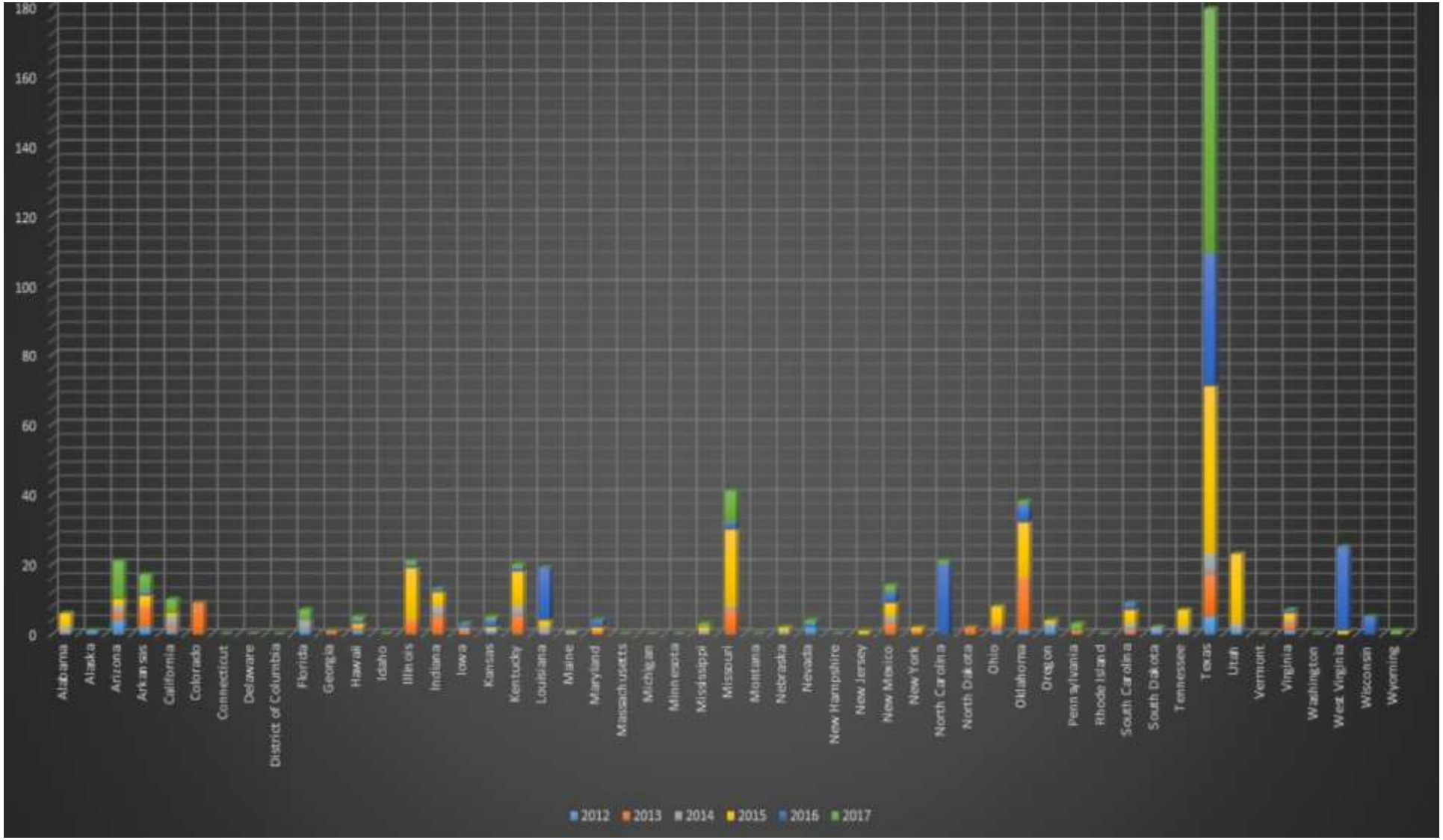
Threats: Increased flooding and safety risks; cost of infrastructure, stormwater, environmental restoration

DeSoto Fire Rescue

Solution: Innovative partnerships and integrated infrastructure

Perspective: 5 year tally of flood fatalities

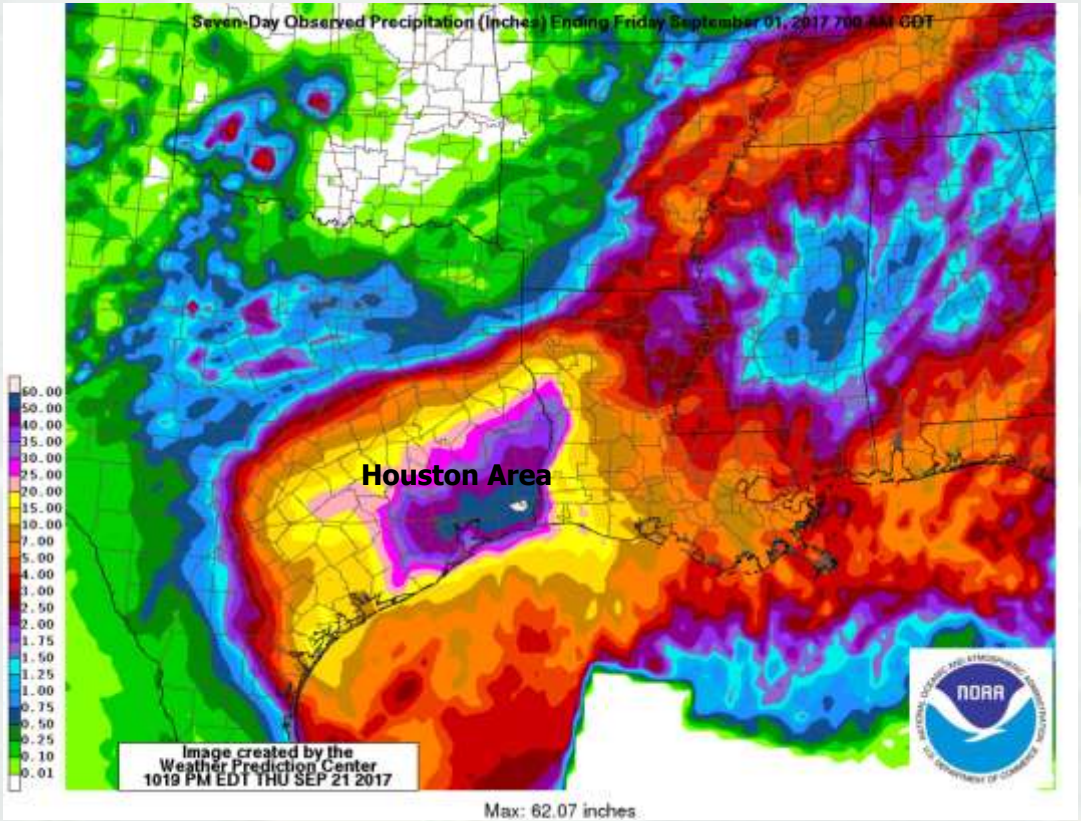
Texas far outpaces all of the states in flood related fatalities



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

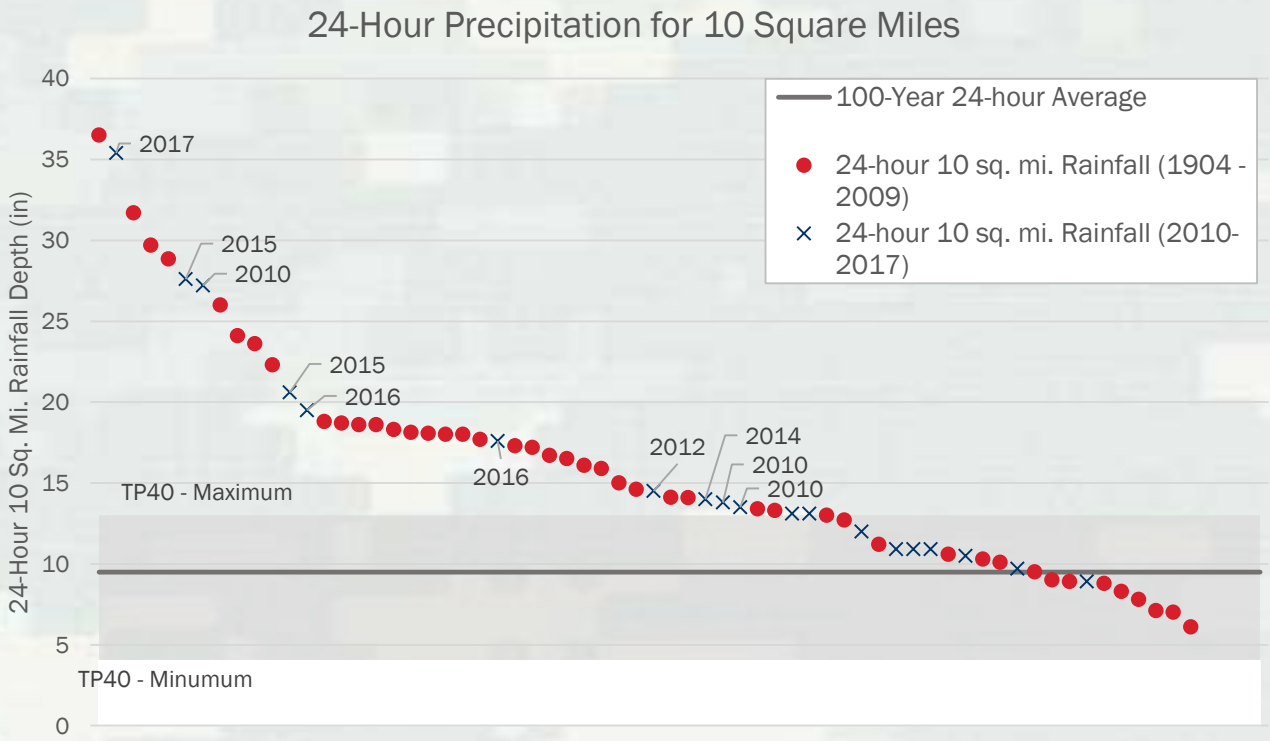
Hurricane Harvey Storm

- Rainfall totals up to 60”
- Approaching or exceeding maximum rainfall possible
- 23,000 + mi^2
  (CT, RI, DE, NJ)
- One of the largest storms in continental US history
- Blocking factors
- OFF THE CHARTS!

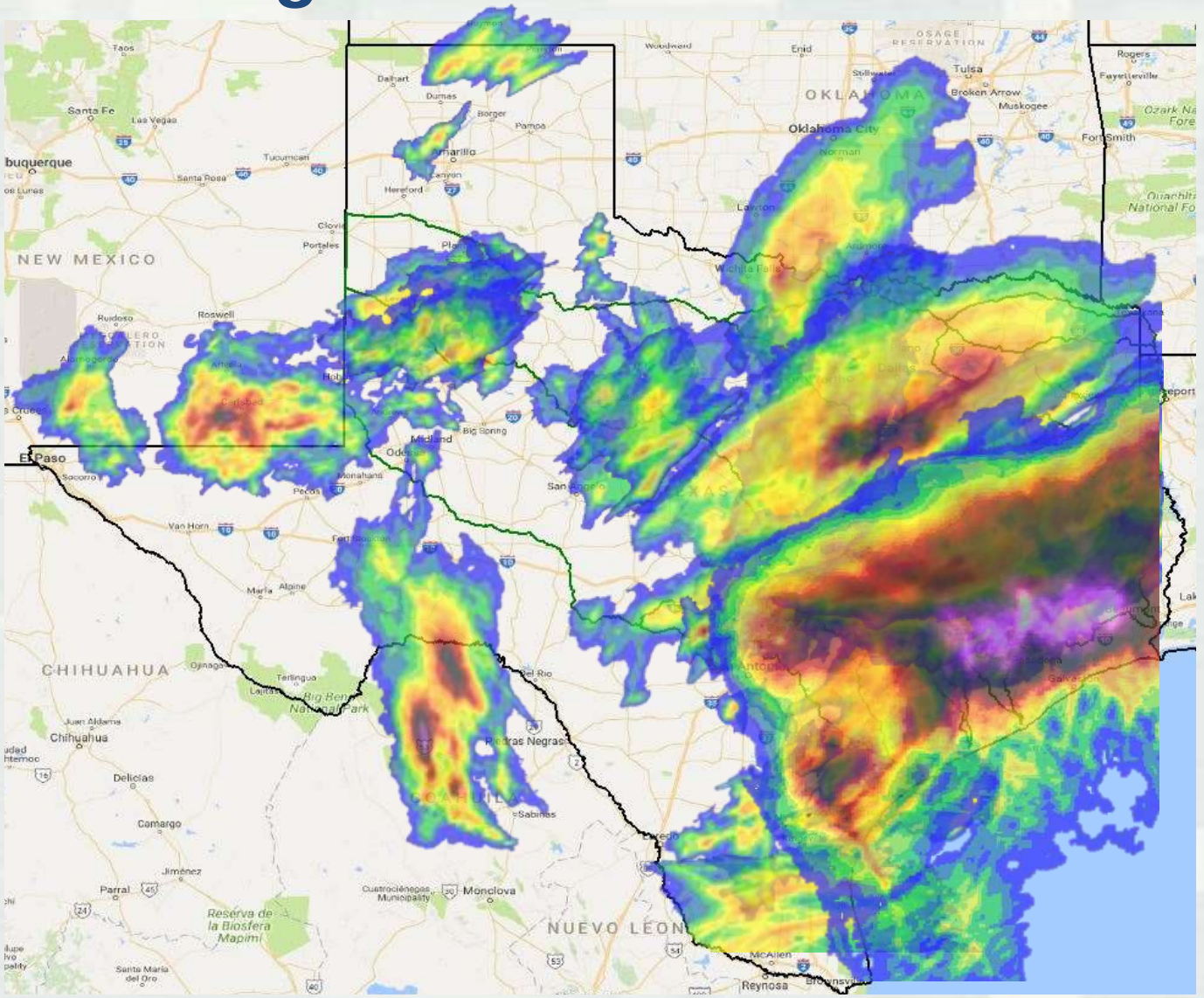


Storms Exceeding Infrastructure and NFIP Standards

- 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

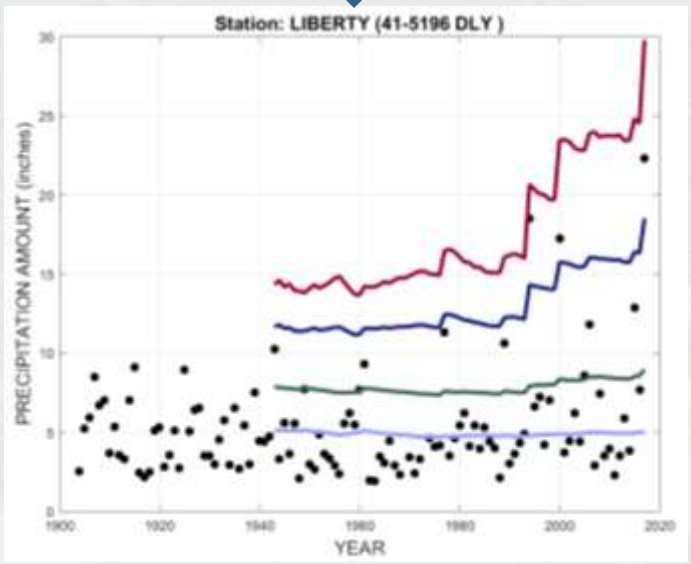


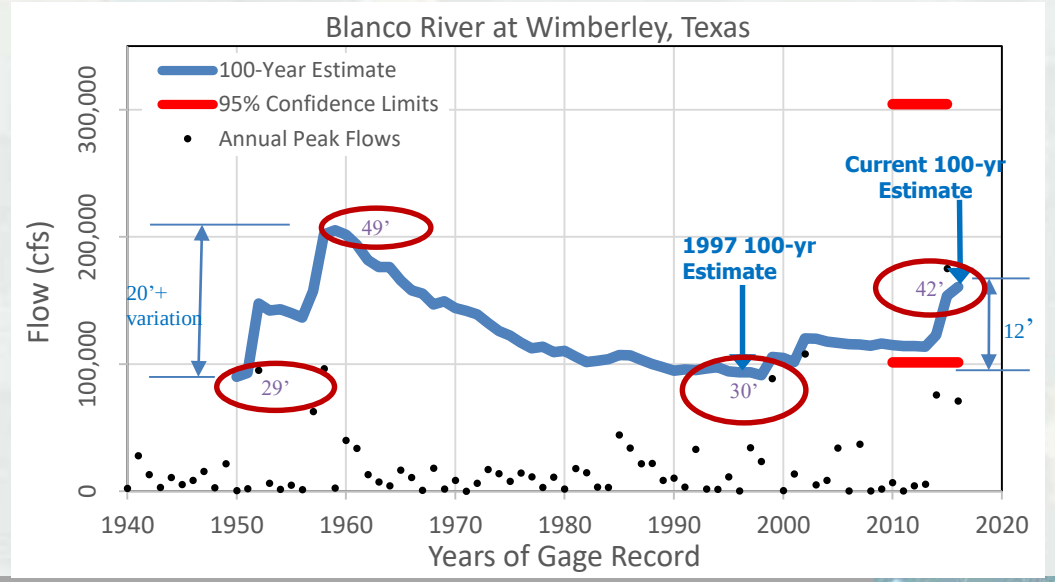
Storms Exceeding Infrastructure and NFIP Standards



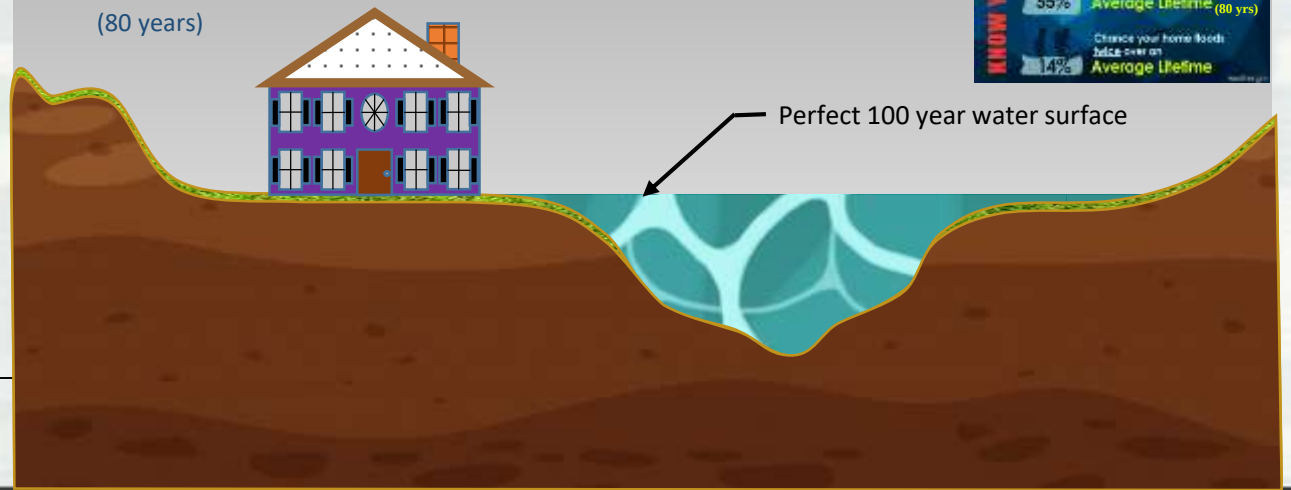
Uncertainty - 100 Year Base Flood Elevations (BFE)

- The most commonly used techniques to estimate flood and rainfall frequencies rely on observations
- Need record length 3-4 times estimated return interval
- Short Observation Periods - On average TX has 50 years of stream record and 70 years of precipitation records
- Significant variability and/or non-stationarity observed in flood flow and rainfall frequency estimates



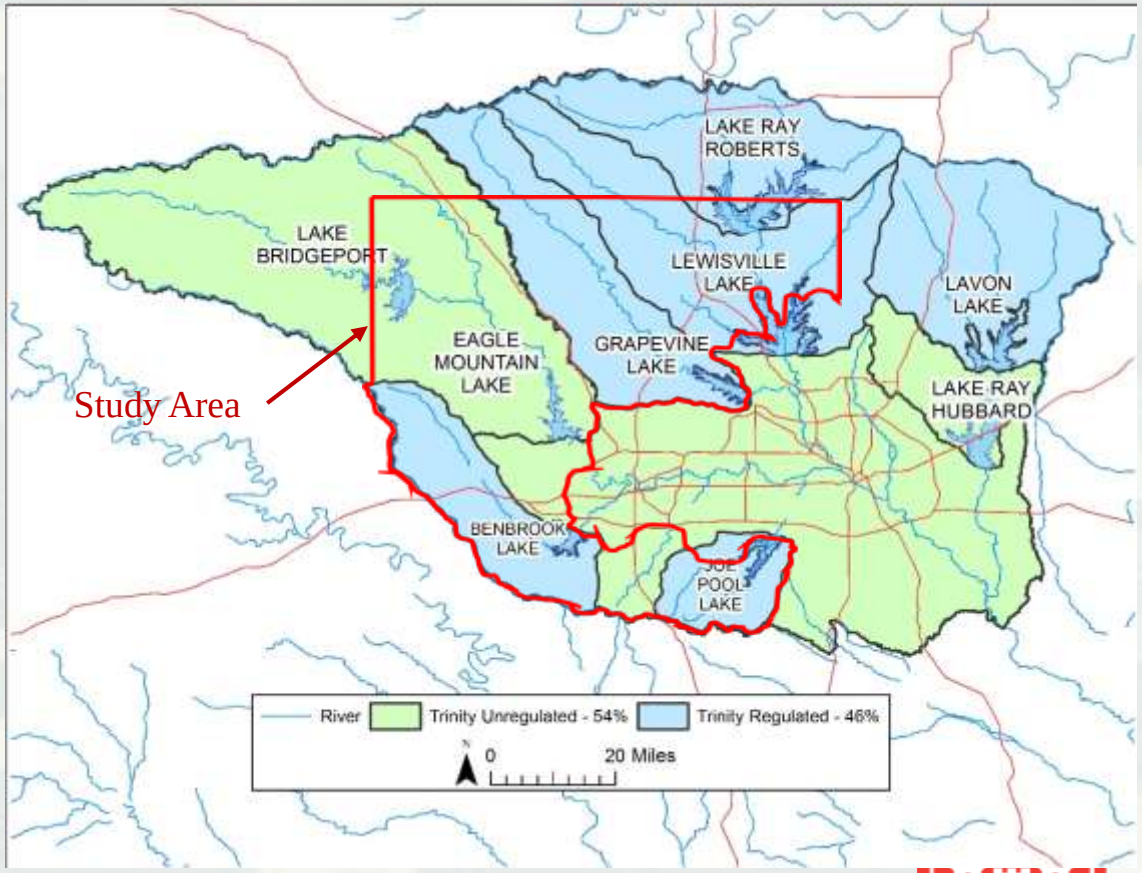


- 1:100 probability changes for blocks of years
- > 1:4 chance of being flooded over a 30 year mortgage
- > 1:2 chance of flooding over life of the structure (80 years)



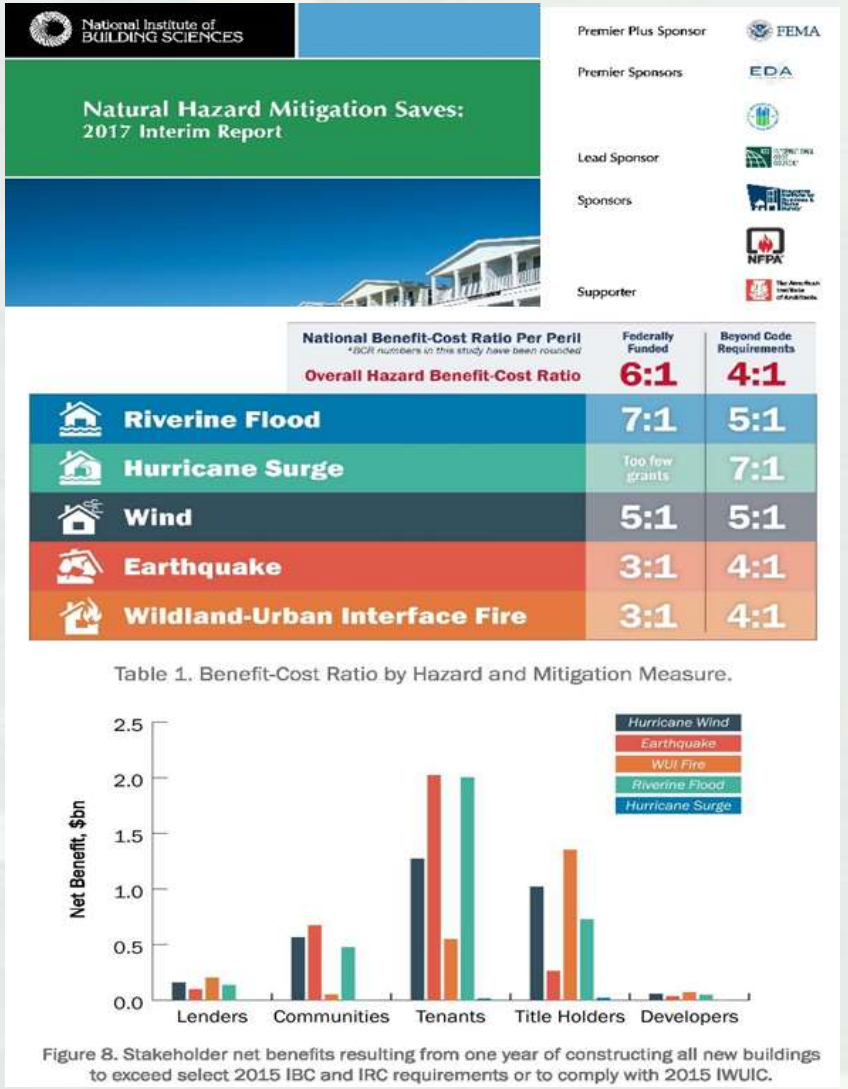
USACE Dallas-Fort Worth - Flood Reduction and Water Supply System

- Devastating floods, 1908, 1942, 1949
- 6 multi-purpose reservoirs
- 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***



Return on Investment

- **2017 "*Natural Hazard Mitigation Saves*" report by: National Institute of Building Sciences Institute, Multi-hazard Mitigation Council (MMC),**
- Prepared 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



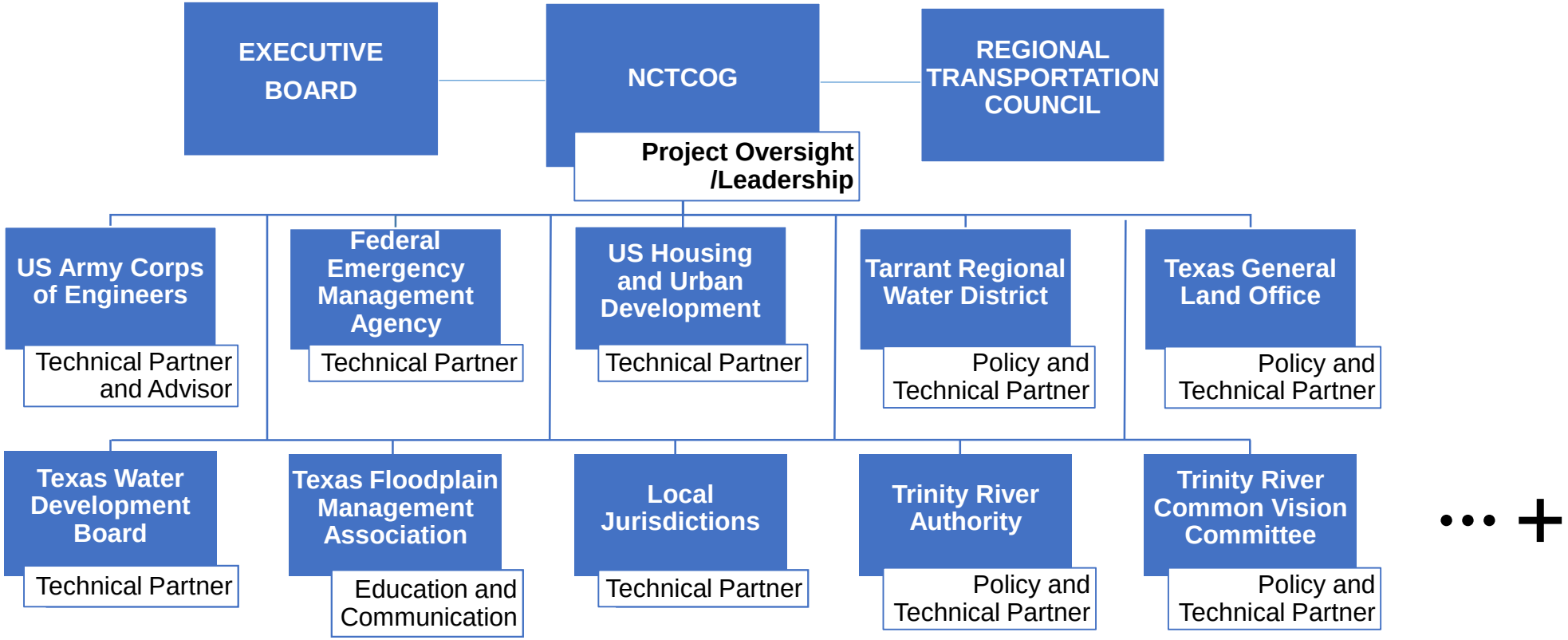
Source:http://www.wbdg.org/files/pdfs/MS2_2017Interim%20Report.pdf

What Will This Project Deliver

- Inventory of existing data, information and structures
- Develop state-of-the-art data, tools & analysis for:
  - Modeling
  - Emergency response
  - Emergency preparedness
  - Planning infrastructure and neighborhoods
  - Regulating the floodplain
- Develop planning level storm water infrastructure
- Develop environmental areas
- Develop environmental mitigation areas
- Groundwater recharge
- Open space connectivity opportunities
- Roadmap or documentation to allow duplication of this effort elsewhere

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



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

Texas General Land Office (GLO)	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)
$?	$ GLO	$?	$ ✓	$ RTC	$	$ 3M

… +

Project Funding Goal: $10 Million

Project Has Begun With Getting the Money

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QUESTIONS/CONTACT:

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