

Texas Regional Flood Planning

Glenn Clingenpeel

Executive Manager, Trinity River Authority

Audrey Giesler Klump, EIT, CFM

Halff

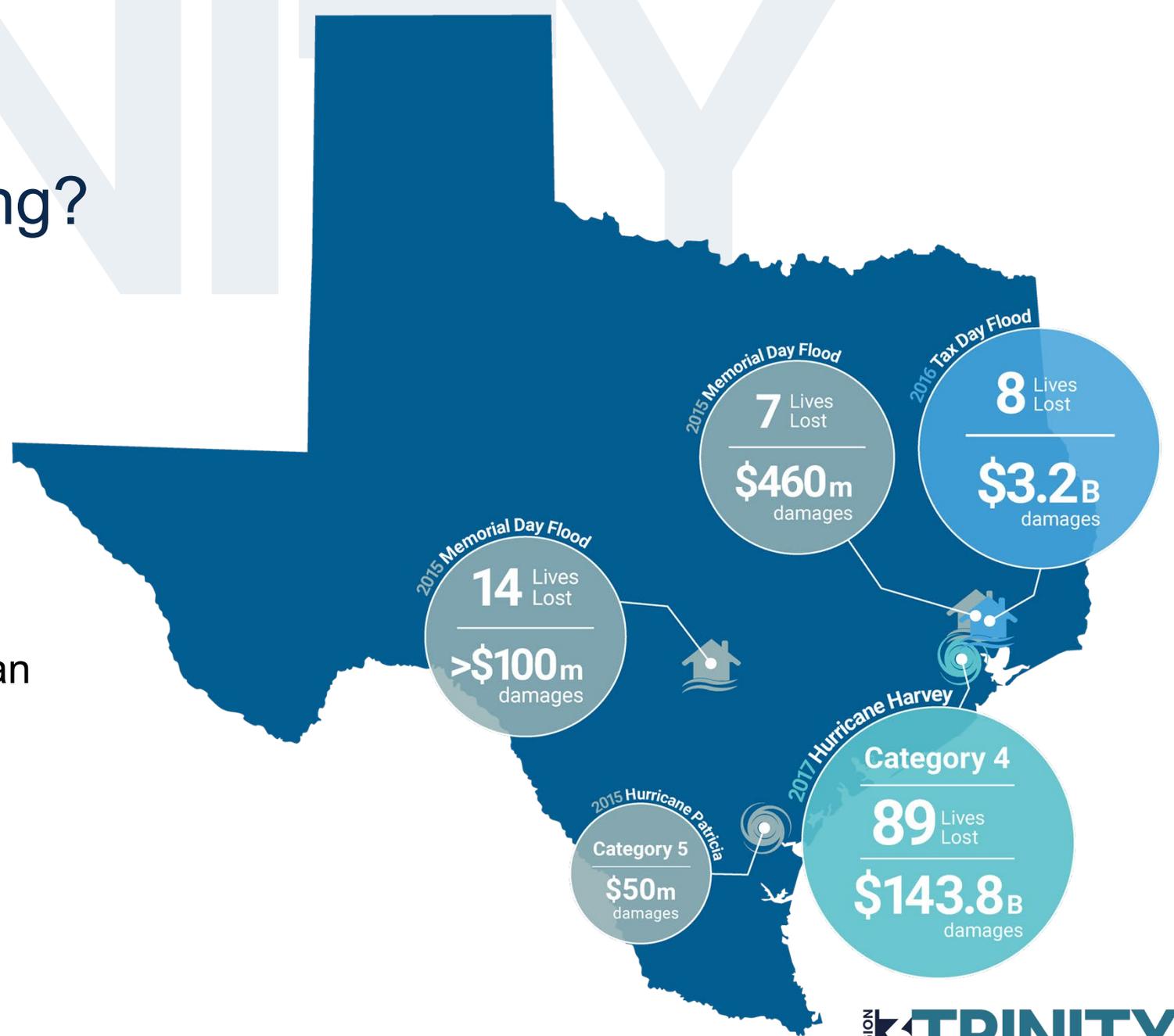
David Rivera, PhD, PE, CFM

Freese & Nichols Inc.

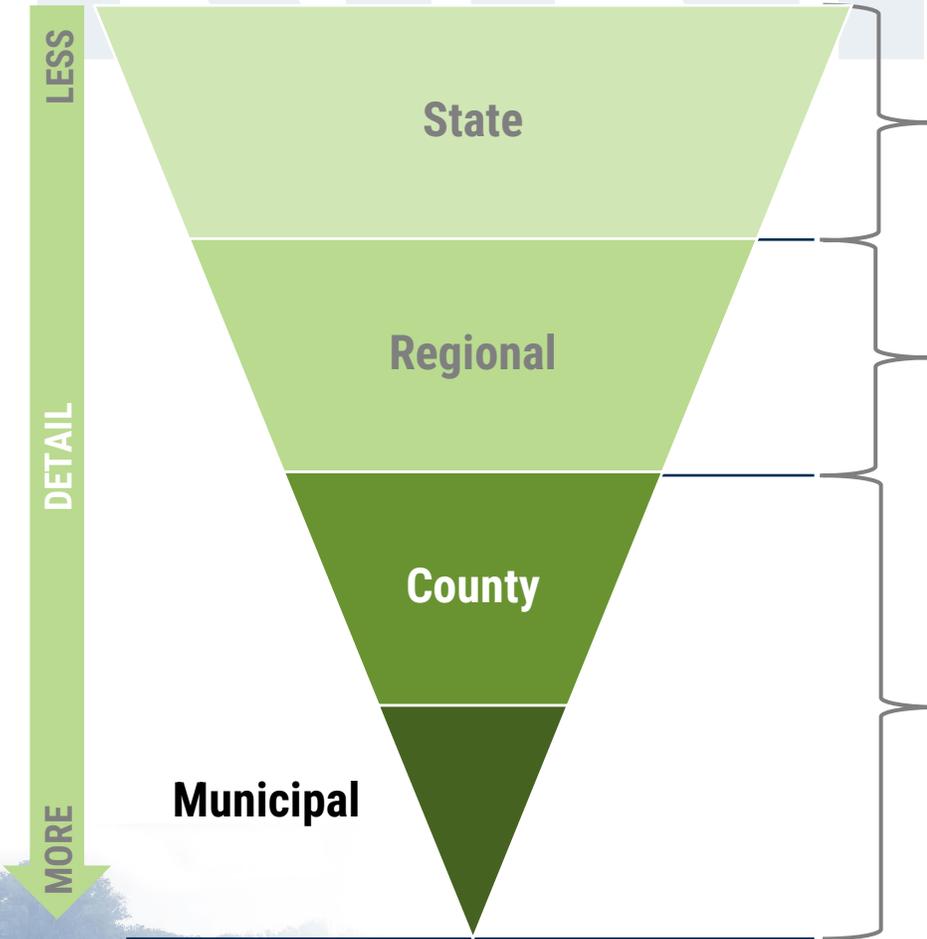


Why Flood Planning?

- Long history of flooding
 - NFIP Claims: \$ 17B
- Senate Bill 8 passed in 2019 requiring a statewide flood plan based on regional flood plans



Bottom-Up Approach



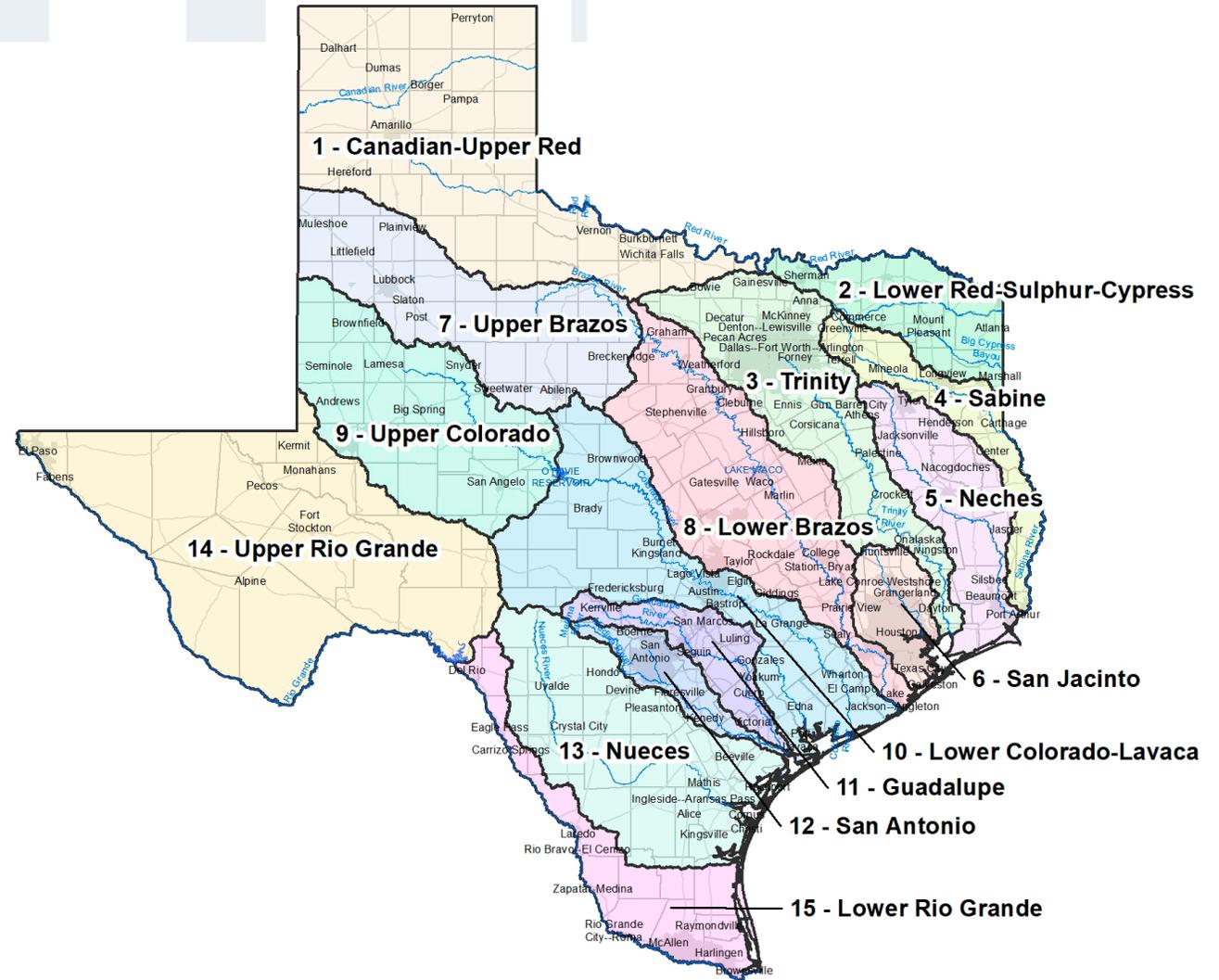
The State Flood Plan will aggregate 15 Regional Flood Plans

In this first planning cycle **Regional Flood Plans** will largely be a compilation of existing data, studies and identified projects

Local **drainage master plans** and **floodplain studies** have detailed information that can be leveraged by the Regional Flood Planning Groups

Regional Flood Planning Groups (RFPGs)

- 15 regions
- 12 interest groups for each region
 - Variety of interest categories
 - Appointments considered geographic representation
- The group selects contract administrators & consultants
- Prepare and submit Regional Flood Plans



The Trinity Regional Flood Planning Group

Voting members:

- Chad Ballard
- Sano Blocker
- Melissa Bookhout
- Glenn Clingenpeel
- Scott Harris
- Rachel Ickert
- Andrew Isbell
- Jordan Macha
- Galen Roberts
- Matt Robinson
- Lissa Shepard
- Sarah Standifer

Interest group represented:

- Small business
- Electric generating utilities
- Agricultural interests
- River authorities
- Water utilities
- Flood districts
- Public
- Environmental interests
- Water districts
- Industries
- Counties
- Municipalities



The Trinity Regional Flood Planning Group

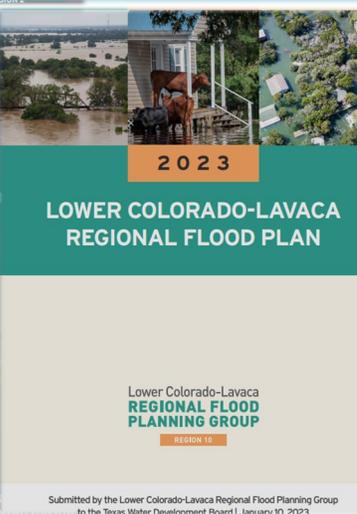
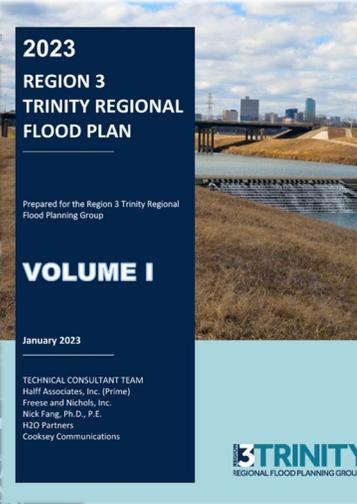
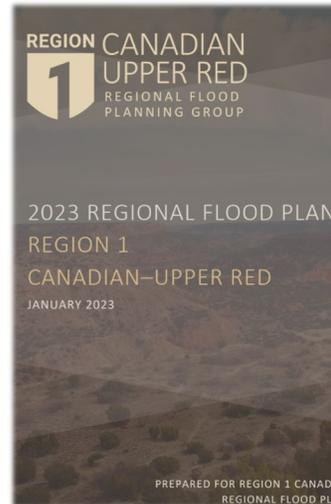
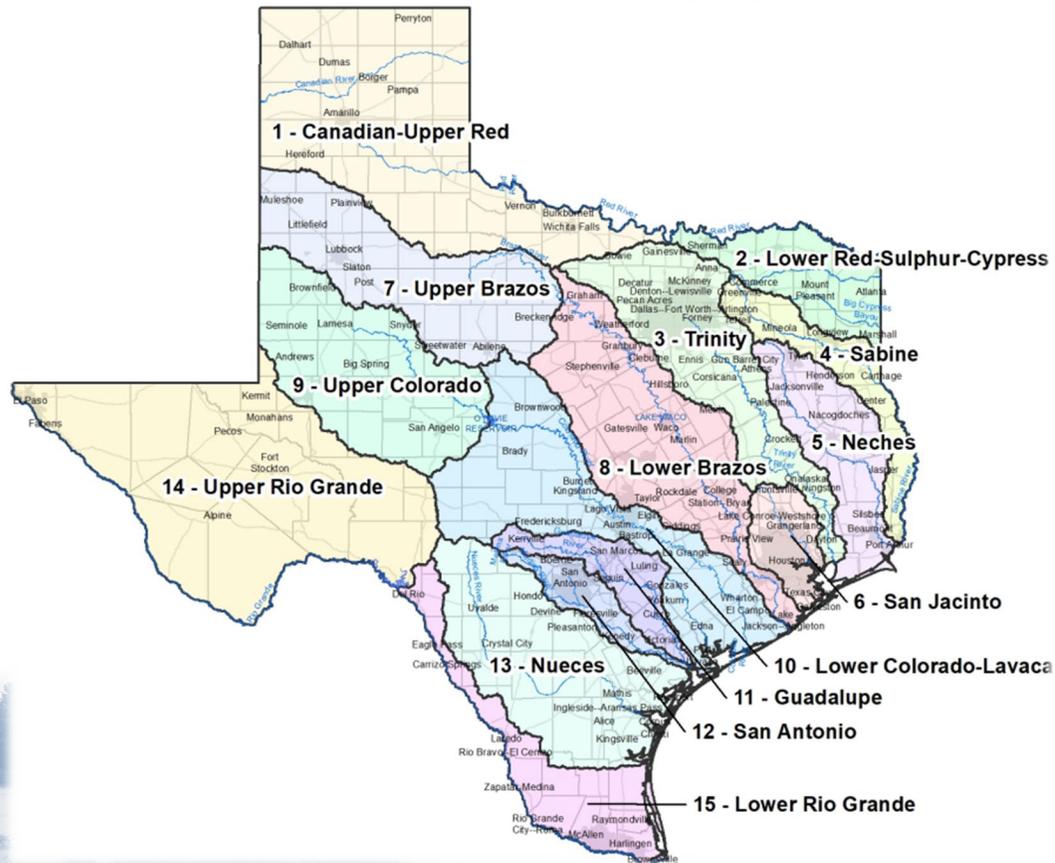
Organization represented (Non-voting members):

- General Land Office
- Texas Water Development Board
- Texas Department of Agriculture
- Texas State Soil and Water Conservation Board
- Houston-Galveston Area Council
- Region 5 Neches Flood Planning Group (liaison)
- Region 6 San Jacinto Flood Planning Group (liaison)
- U.S. Army Corps of Engineers, Fort Worth Rep.
- Federal Emergency Management Agency
- Deep East Texas Council of Governments
- Texas Division of Emergency Management
- North Central Texas Council of Governments
- Texas Commission on Environmental Quality
- U.S. Army Corps of Engineers, Galveston Rep.
- National Weather Service / West Gulf River Forecast Center
- Texas Parks and Wildlife Department

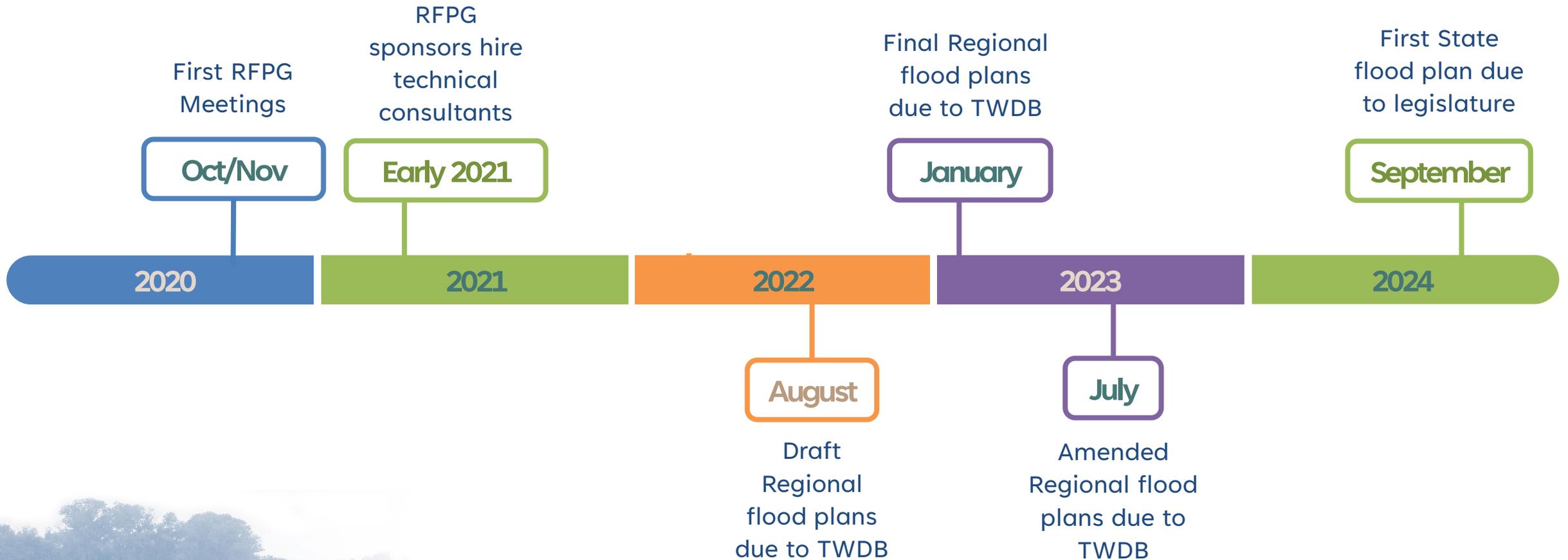


15 Regional Flood Plans → 1 State Flood Plan

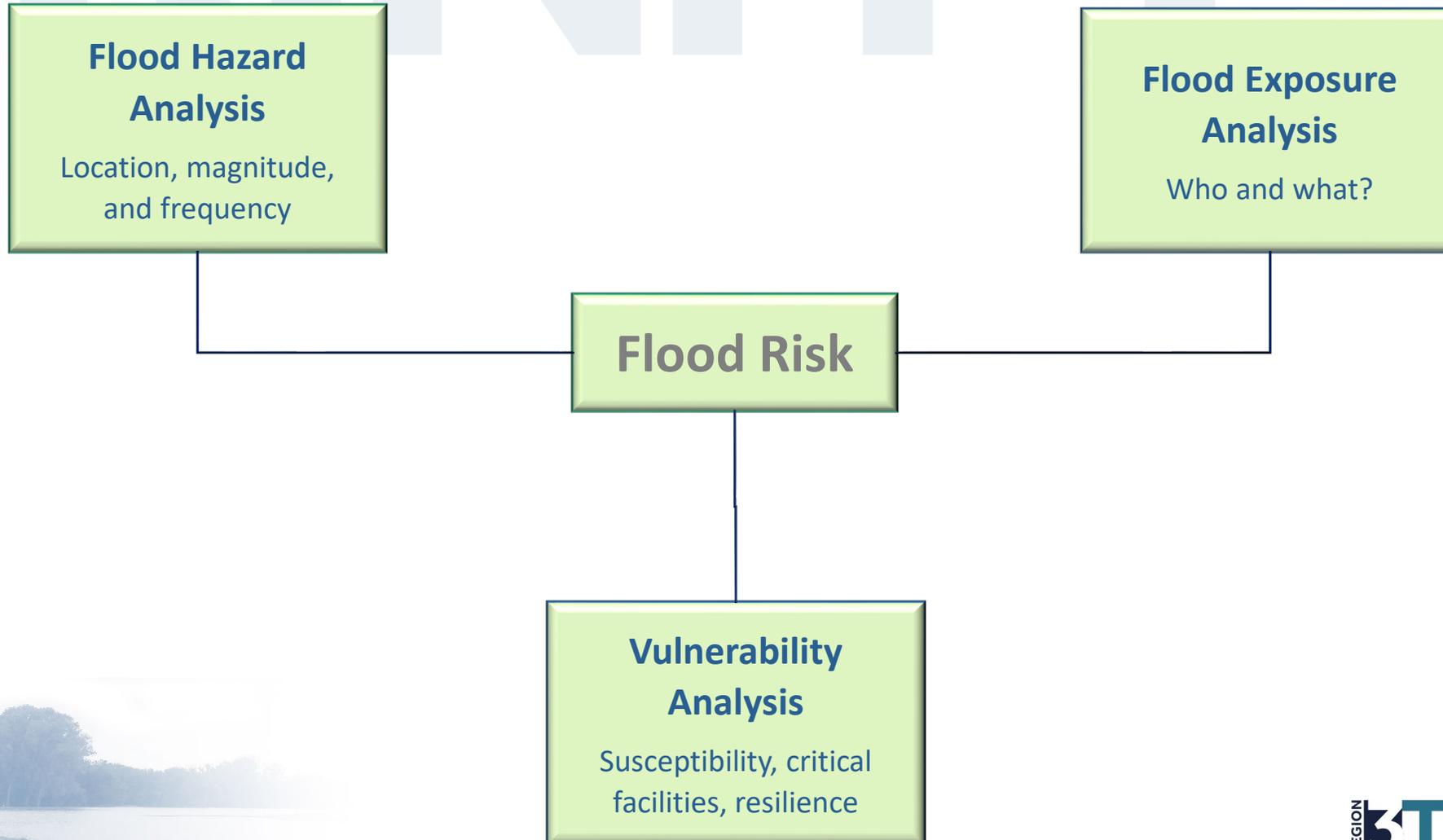
Flood Planning Region Boundaries



Accelerated Timeline

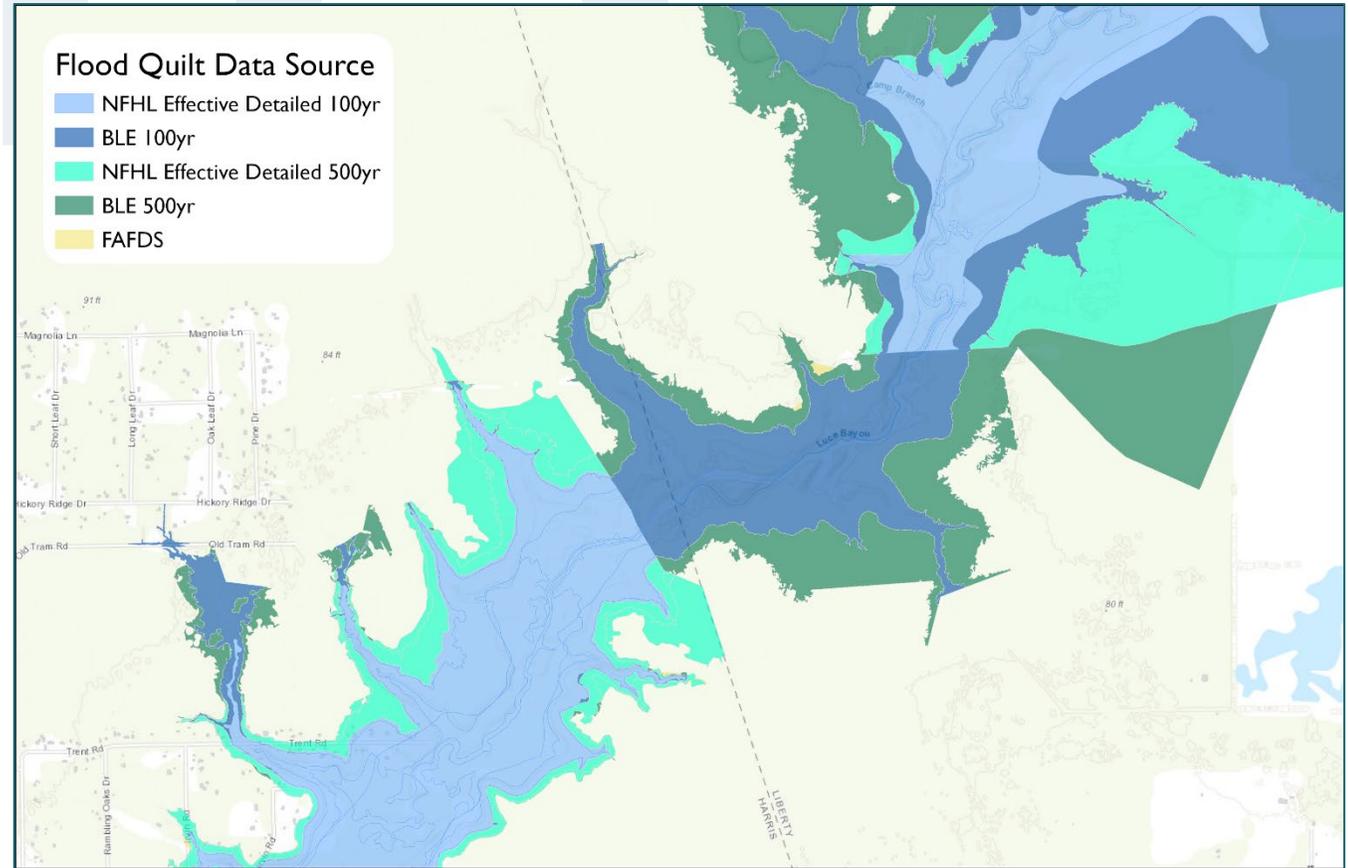
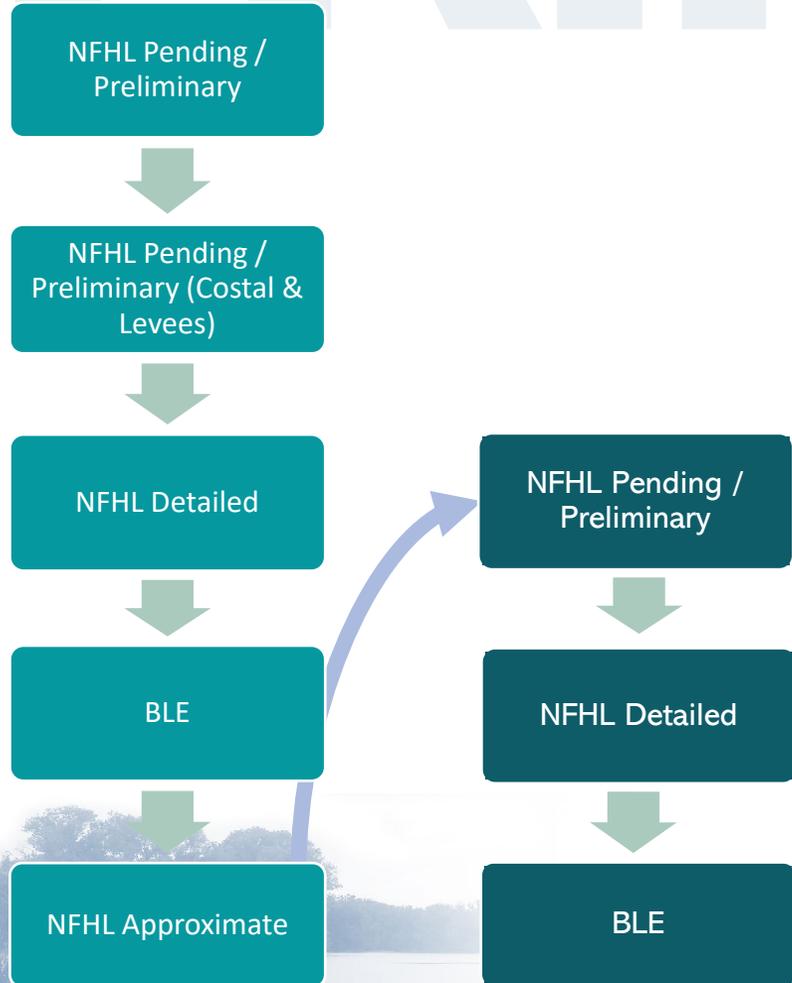


Key Plan Components



Flood Quilt Data Hierarchy Process

100-year floodplain

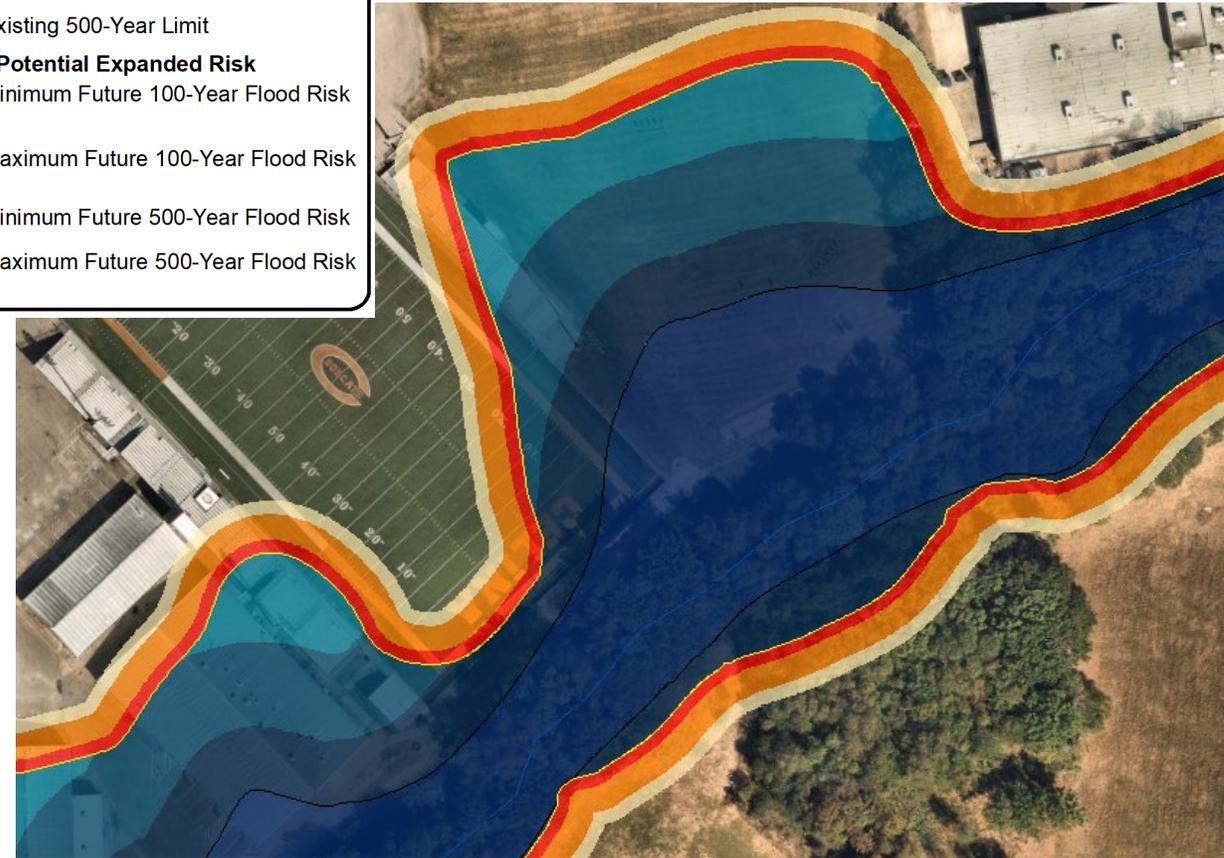
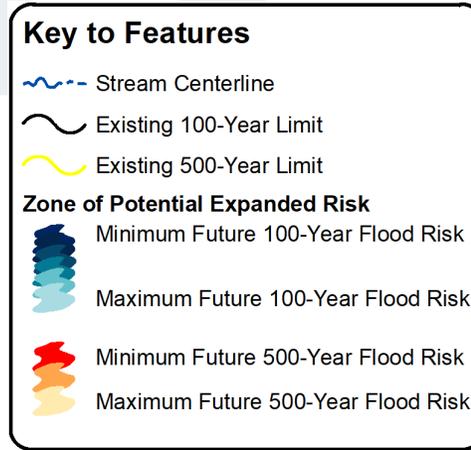


100- & 500-year floodplain



Key Findings: Existing Conditions

- Hard to assess because few communities map or model
 - RFPG recommended future 1% ACE floodplain as range between current 1% and 0.2% ACE events
 - RFPG recommended 40-foot max buffer for future 0.2% ACE floodplain
- Result: **29% more structures and 25% more people would be potentially impacted by future flood risk conditions**



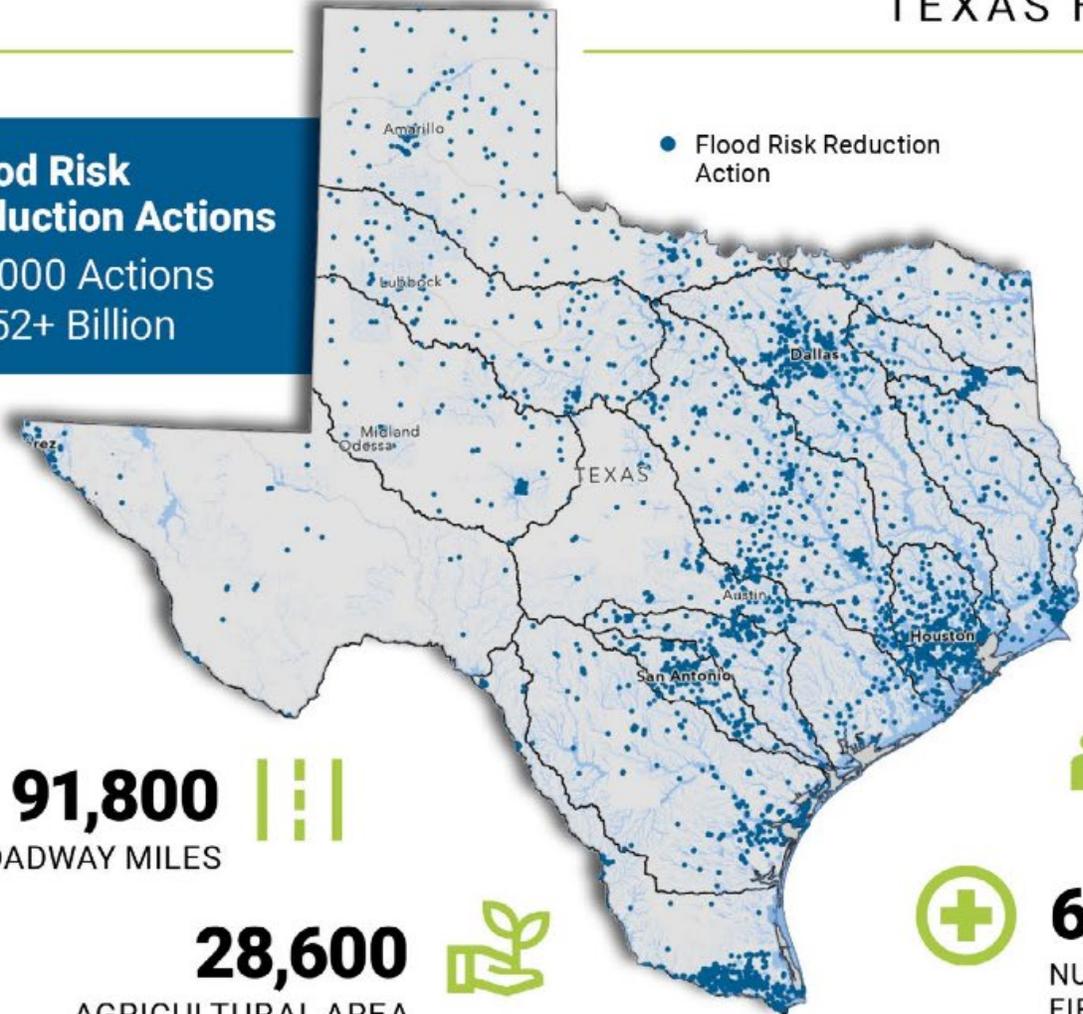
Texas Flood Plan Findings

TEXAS FLOOD PLAN FINDINGS

Flood Risk Reduction Actions

- 4,000 Actions
- \$52+ Billion

● Flood Risk Reduction Action



Existing Flood Risks

 **1,653,900**
NUMBER OF BUILDINGS

 **1,283,700**
NUMBER OF RESIDENTIAL BUILDINGS

 **5,884,000**
POPULATION

 **6,000**
NUMBER OF POLICE STATIONS,
FIRE STATIONS, EMS, HOSPITALS
AND SCHOOLS

91,800 
ROADWAY MILES

28,600 
AGRICULTURAL AREA
(SQUARE MILES)

Key Plan Components - Flood Mitigation Actions



FME - Flood Management Evaluations

Study to assess flood risk and evaluate alternative solutions



FMP - Flood Mitigation Projects

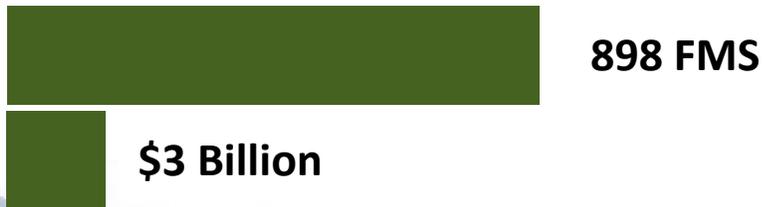
Project that has non-zero capital costs and mitigates flood hazards to life or property



FMS - Flood Management Strategies

Plan to reduce flood risk or mitigate flood hazards to life or property

Flood Mitigation Actions – Statewide



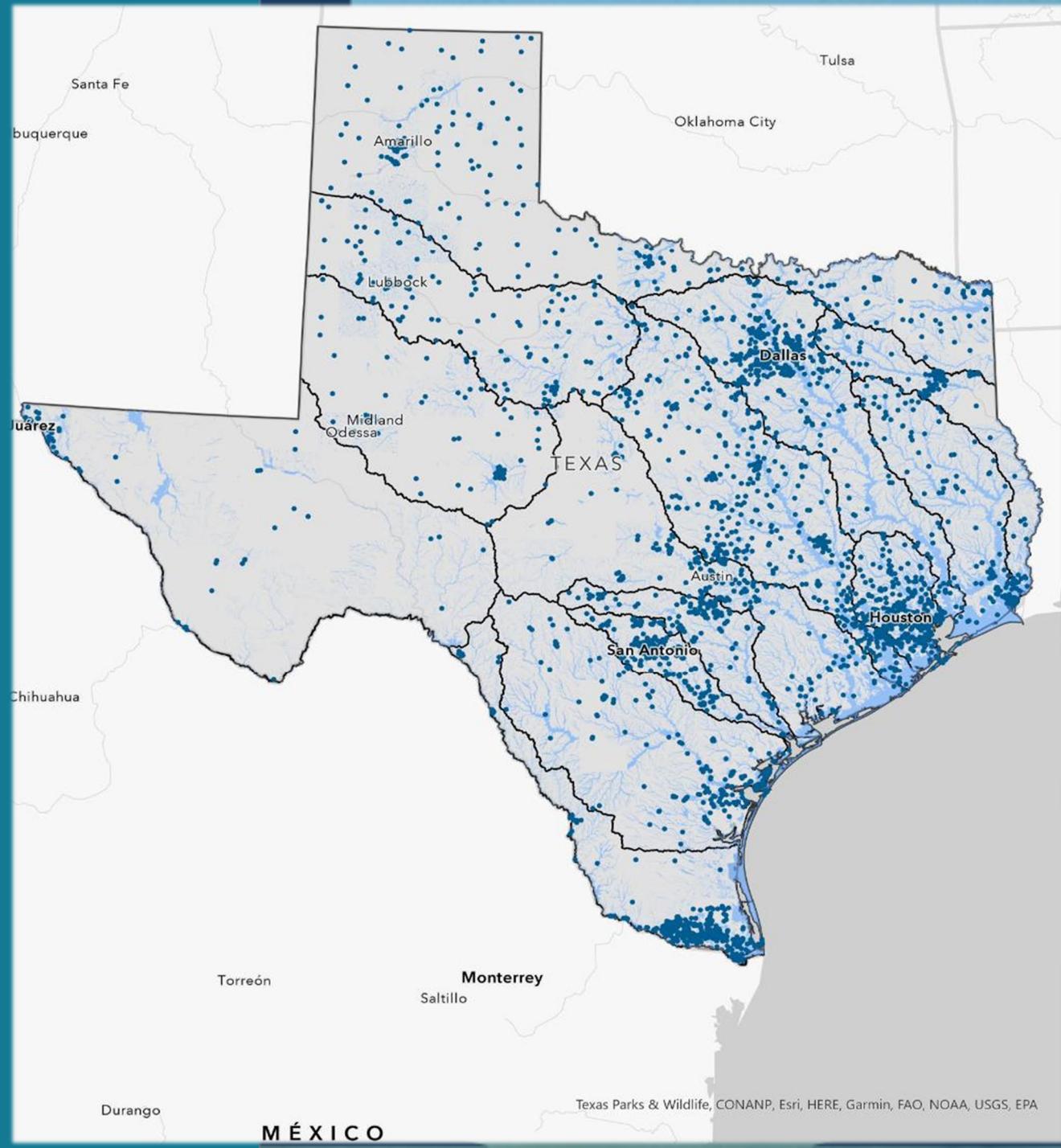
Flood Mitigation Actions – Trinity Region Sponsors



Flood Mitigation Actions – Trinity Region



Flood Mitigation Actions Examples



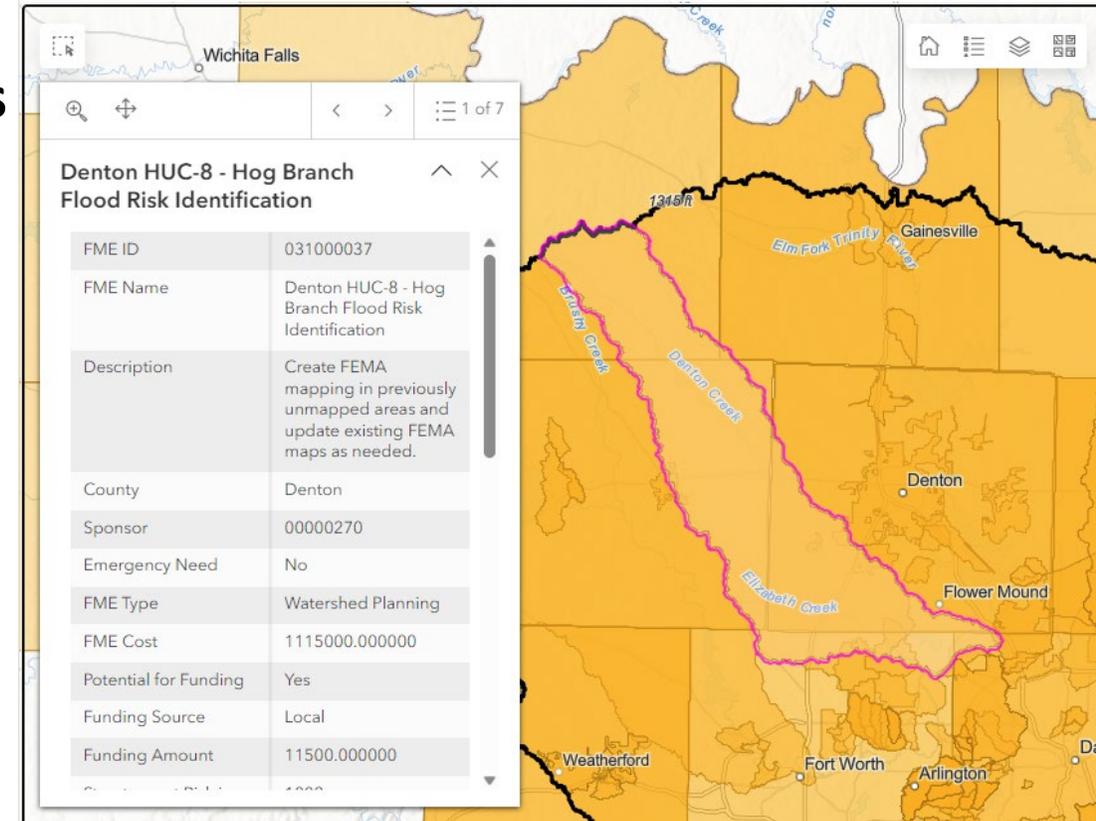
Flood Mitigation Actions



FME - Flood Management Evaluations

Requirements

- Approximation of Area of Concern
- Reasons for Concern
 - Public Comment
 - Aging Mapping
 - Lack of Useful Data



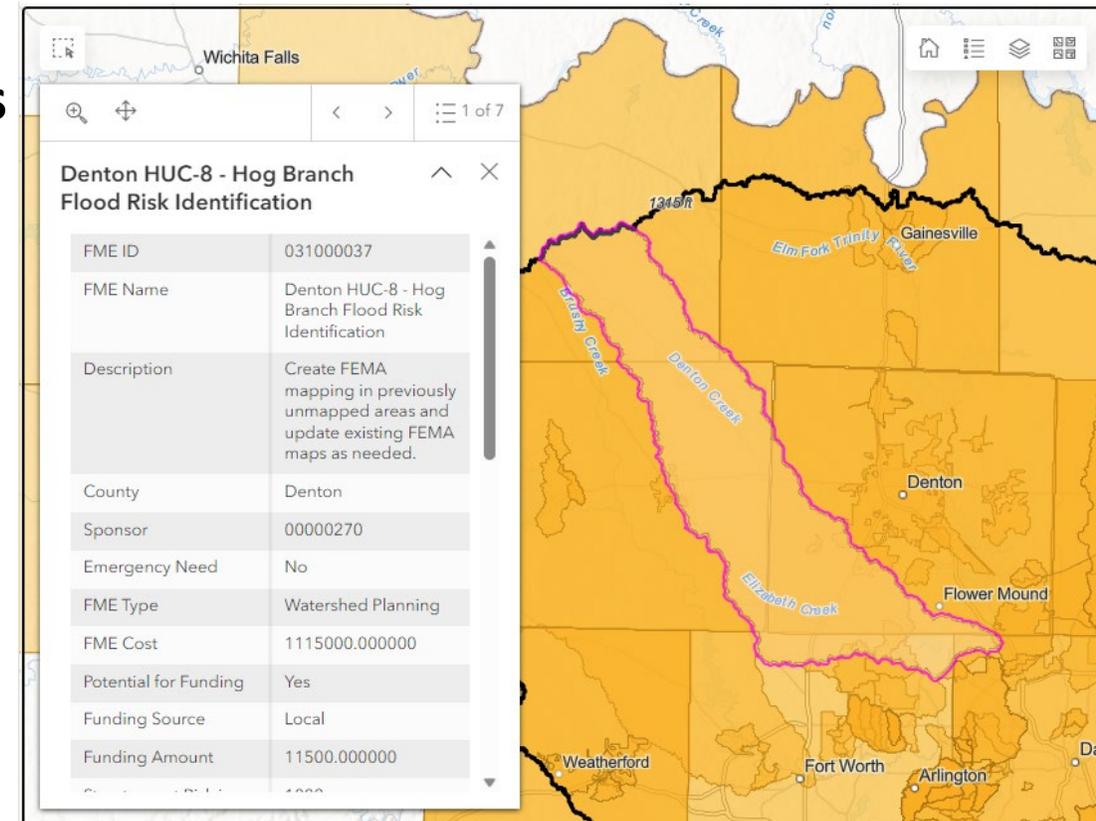
Flood Mitigation Actions



FME - Flood Management Evaluations

Examples

- Create or update floodplain maps
- Create dam failure inundation maps
- Storm drain improvement evaluations
- Drainage Master Plans



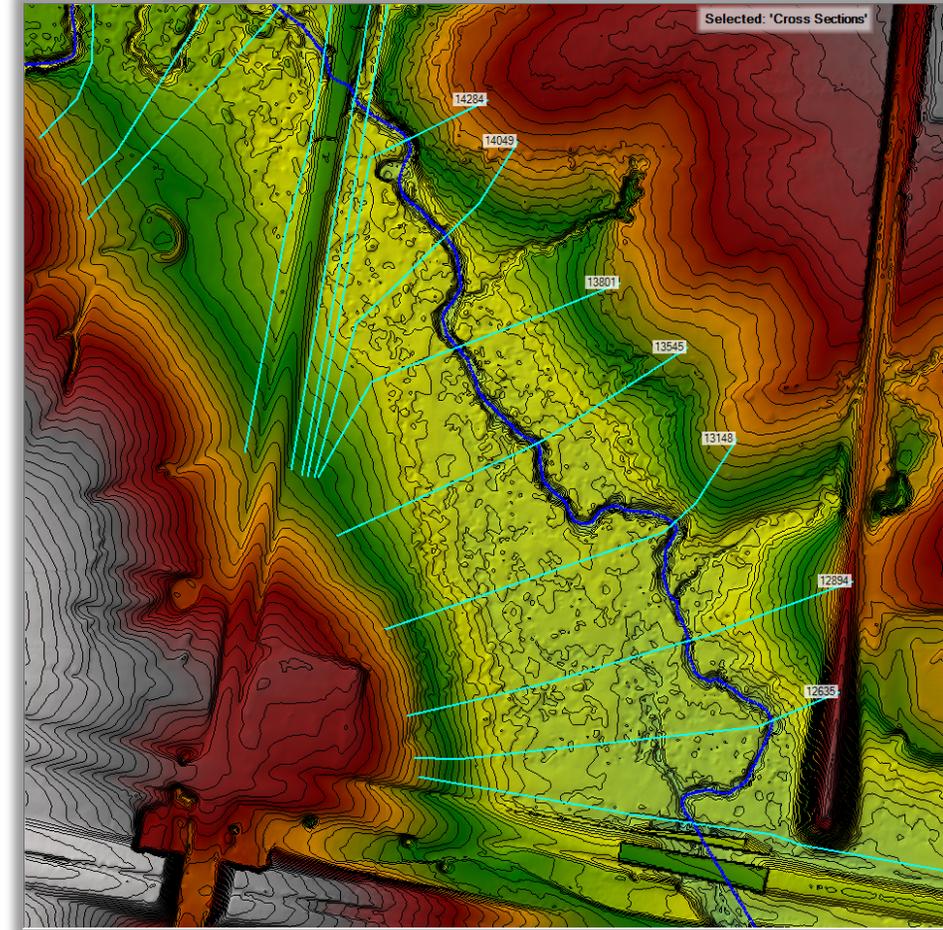
Flood Mitigation Actions



FMP - Flood Mitigation Projects

Requirements

- Detailed hydrologic and hydraulic (H&H) modeling results
- Quantifiable flood risk reduction benefits
- Associated benefits and costs (BCA)
- No Negative Impacts determination



Flood Mitigation Actions



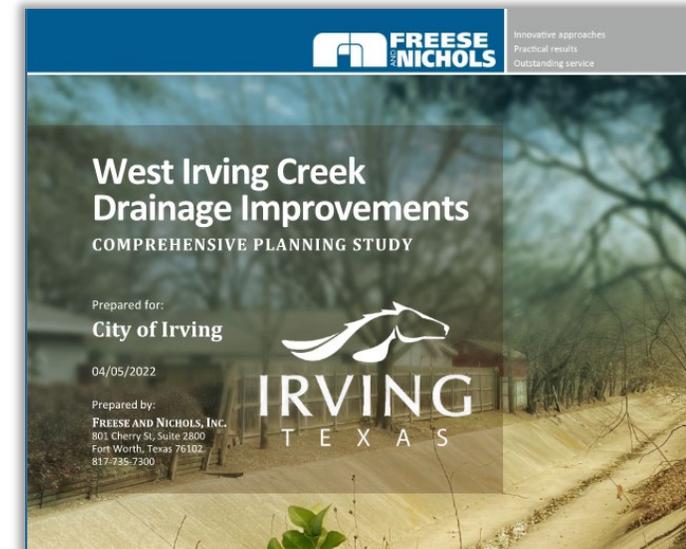
FMP - Flood Mitigation Projects

Sources

- Previous H&H studies and/or designs completed by potential Sponsors
- FME from Final RFP (Task 12)

CAPITAL IMPROVEMENT PLAN Cottonwood Creek Watershed

AVO 32024
December 2018



Flood Mitigation Actions



FMP - Flood Mitigation Projects

Examples

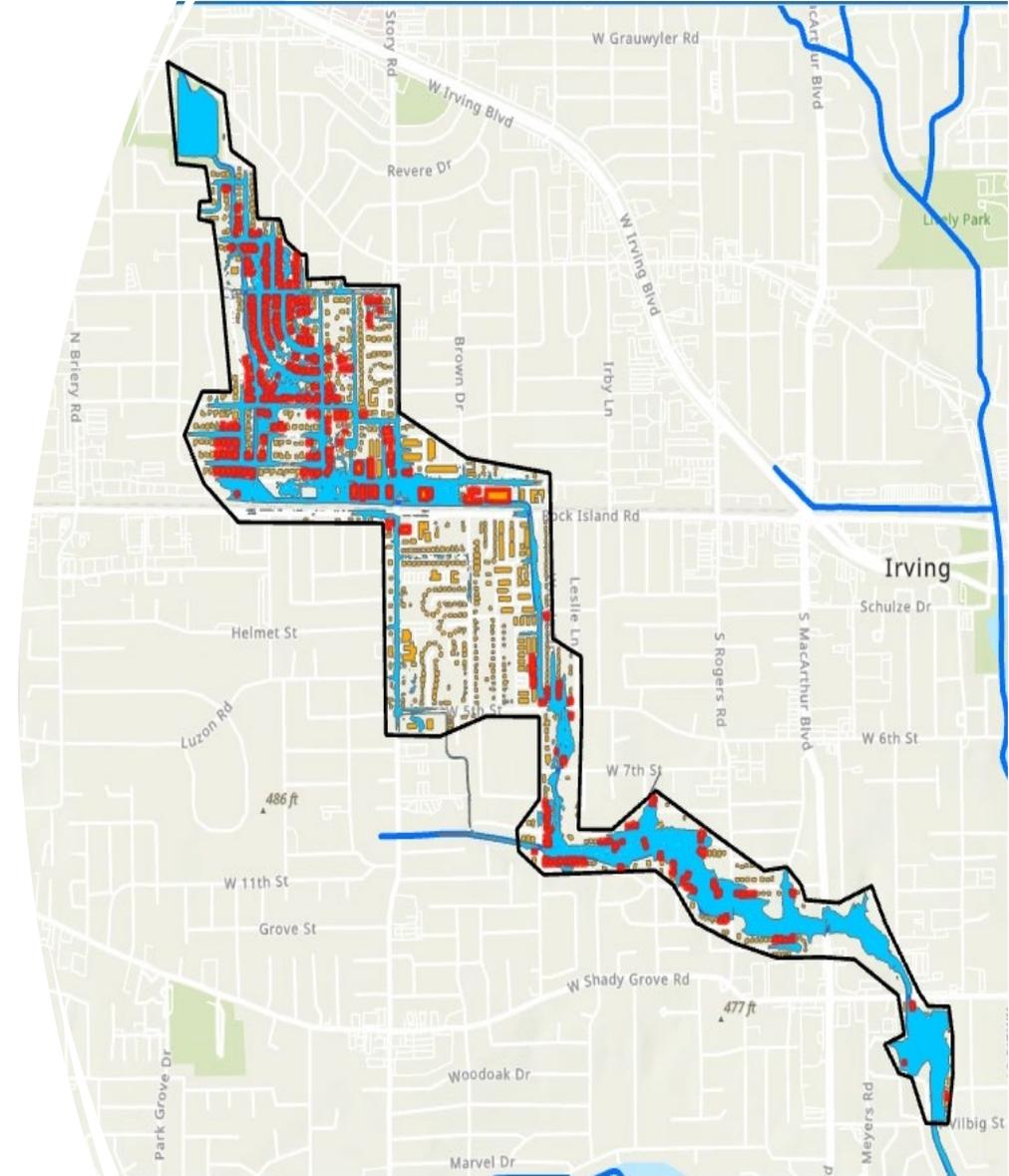
Region 3 - Trinity

○ West Irving Creek

Pre-Project Conditions

○ Buildings in FMP area = 876

○ Buildings at 100-yr flood risk = 244



Flood Mitigation Actions



FMP - Flood Mitigation Projects

Examples

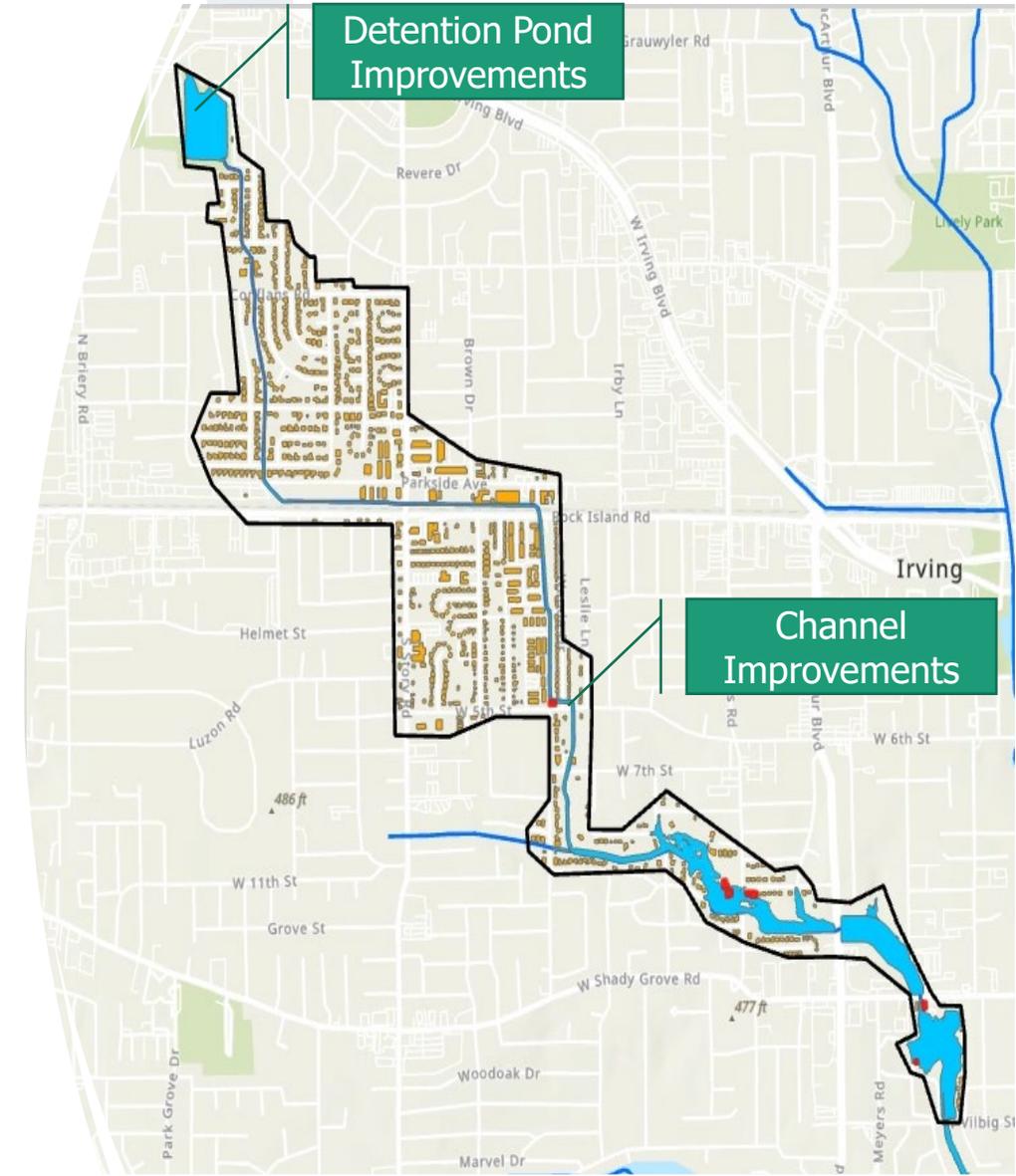
Region 3 - Trinity

○ West Irving Creek

Post-Project Conditions

○ Buildings at 100-yr flood risk = 7

○ Flood risk reduction = 237



Flood Mitigation Actions



FMS - Flood Management Strategies

Requirements

- Solutions to mitigate the 1% annual chance flood (lower level of service is acceptable)
- Quantifiable flood risk reduction benefits (as applicable)
- No Negative Impacts determination



Flood Mitigation Actions



FMS - Flood Management Strategies

Examples

- Flood warning systems
- Property acquisitions
- Identify Nature-based Solution priority areas for flood mitigation



Title Trinity Basin Stakeholder Nature-based Solutions Project Planning and Analysis

ID# 032000146 Sponsor The Nature Conservancy (TNC)

Timing of Flood Mitigation Actions Inclusion in Regional Flood Plans



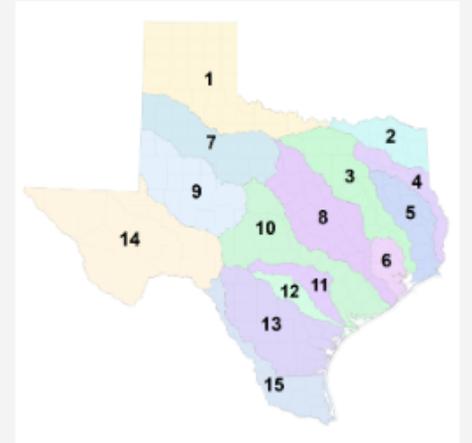
How to get involved?

- www.twdb.texas.gov/flood/planning/regions



Regional Flood Planning Groups

The TWDB hosts a region-specific webpage for each planning group that contains a general description of the region, the list of counties that lie within the regional boundary, and meeting updates. To view a region of interest, please click the region's name in the list.



[Search by address to find your Flood Planning Region](#)

- [Region 1 Canadian-Upper Red](#)
- [Region 2 Lower Red-Sulphur-Cypress](#)
- [Region 3 Trinity](#)
- [Region 4 Sabine](#)
- [Region 5 Neches](#)
- [Region 6 San Jacinto](#)
- [Region 7 Upper Brazos](#)
- [Region 8 Lower Brazos](#)



Thank you for your time!

Glenn Clingenpeel

ClingenpeelG@trinityra.org

Audrey Giesler Klump, EIT, CFM

aGiesler@halff.com

David Rivera, PhD, PE, CFM

David.Rivera@freese.com

