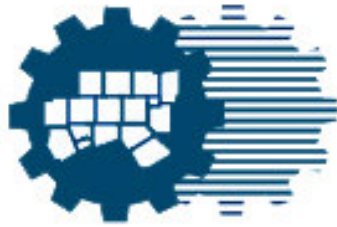


# NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS EAST FORK TRINITY DISCOVERY FINDINGS MEETING

JULY 31, 2019

## NCTCOG:

- Edith Marvin – EMarvin@nctcog.org
- Mia Brown – MBBrown@nctcog.org



## TWDB:

- Manuel Razo – Manuel.Razo@twdb.texas.gov
- Paul Gutierrez – paul.gutierrez@twdb.texas.gov



## Halff Associates:

- Jarred Overbey – jOverbey@halff.com
- Samuel Amoako-Atta – sAmoako-Atta@halff.com
- Alison Hanson – aHanson@halff.com
- Katy Onley – kOnley@halff.com



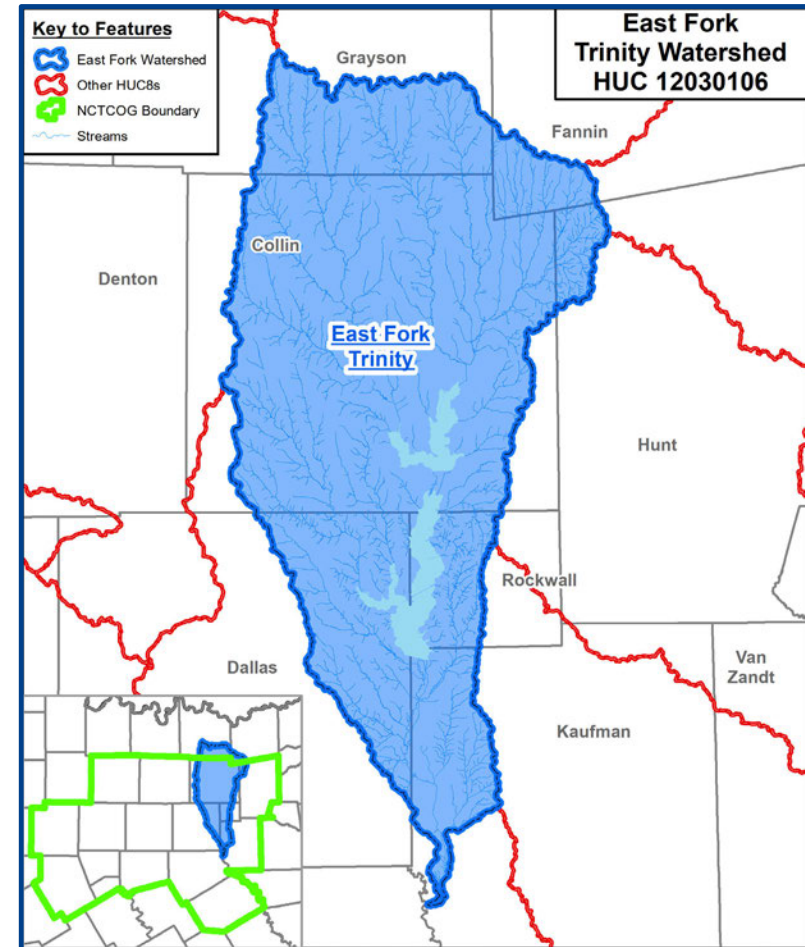
## FEMA:

- Alan Johnson – alan.johnson@fema.dhs.gov



# DISCOVERY | AGENDA

- NCTCOG Overview
- Risk MAP Overview
- East Fork Trinity Discovery
  - Activities
  - Findings
- Base Level Engineering
- Post Meeting Coordination



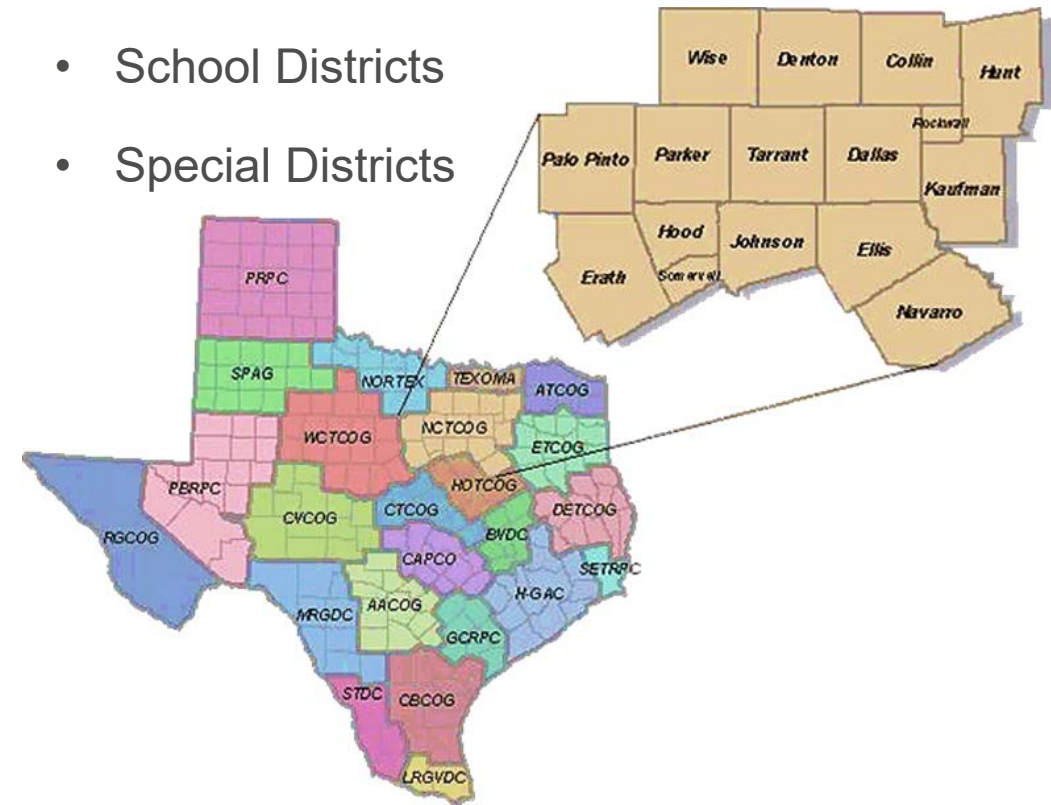
# NCTCOG | WHAT IS NCTCOG'S ROLE?

## **VOLUNTARY ASSOCIATION OF, BY, AND FOR LOCAL GOVERNMENTS, ESTABLISHED IN 1966, TO HELP THEM:**

- Plan for common needs
- Strengthen their individual and collective power
- Recognize regional opportunities
- Resolve regional problems
- Make joint decisions/cooperate for mutual benefit

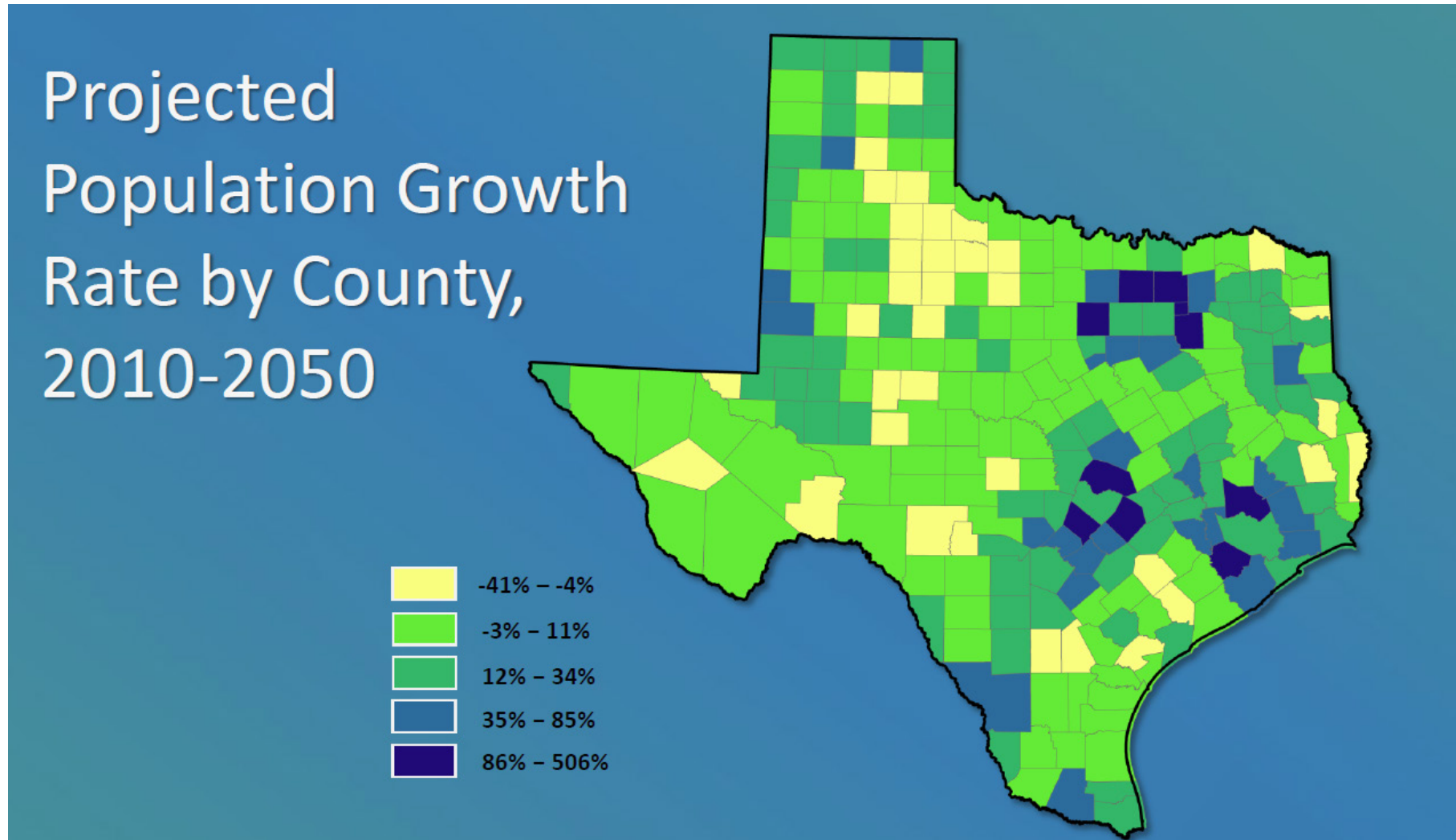
### ■ 230+ Member Governments

- Cities
- Counties
- School Districts
- Special Districts

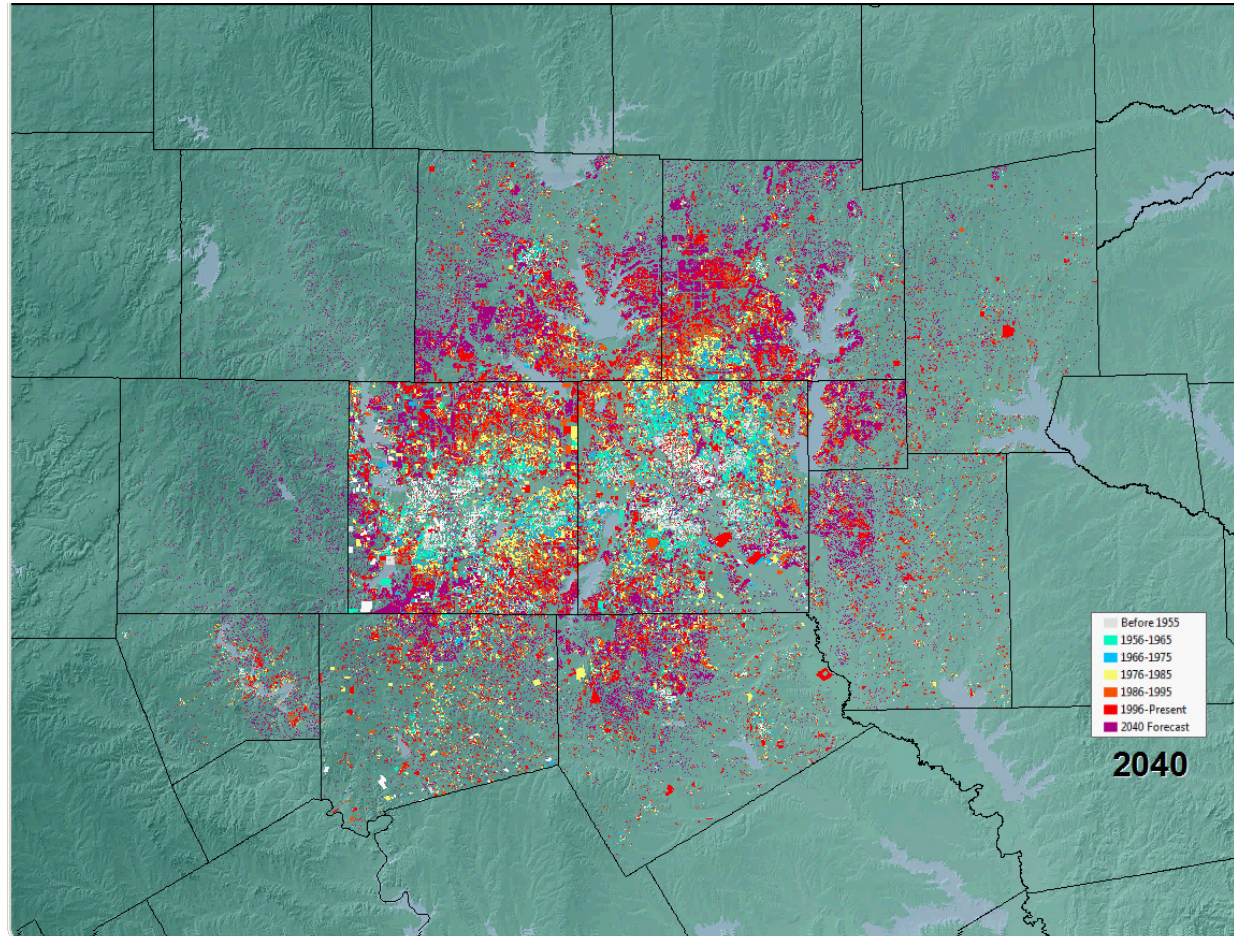




Source : Dr. Lloyd Potter, Texas State Demographer



## NORTH CENTRAL TEXAS 1950-2040 GROWTH



## NCTCOG GOALS AS A COOPERATING TECHNICAL PARTNER

### ■ Direct Goals:

- Better data for better decision making
- Coordination between communities and local/regional/state/federal organizations (what COGs do best!)
- Partnerships

### ■ Indirect Goals:

- Higher Standards



## FEMA'S RISK MAPPING, ASSESSMENT, AND PLANNING (MAP) PROGRAM

- Provide flood information and tools for better **protection**
- **Action-Driven** through local understanding and ownership of risk



## FEMA'S RISK MAPPING, ASSESSMENT, AND PLANNING (MAP) PROGRAM

- Provide flood information and tools for better **protection**
- **Action-Driven** through local understanding and ownership of risk



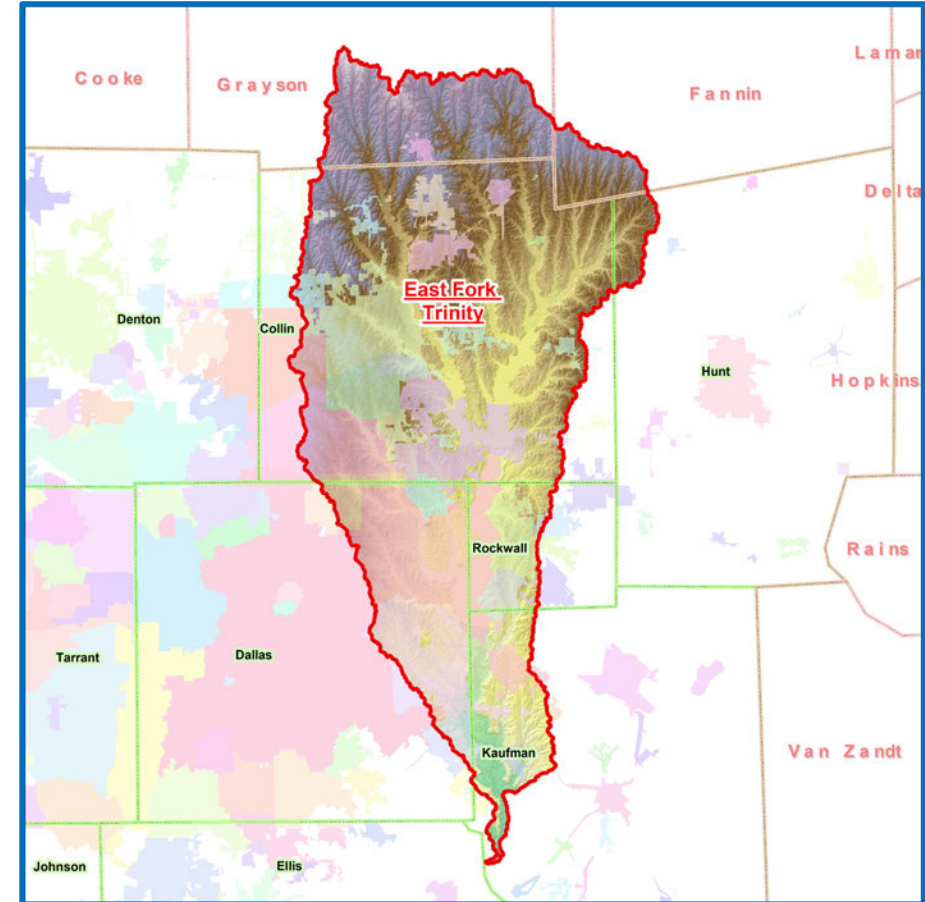
## NCTCOG LEADING EAST FORK TRINITY DISCOVERY

### ■ Gather Information

- Local flood risks and hazards
- Current mitigation efforts

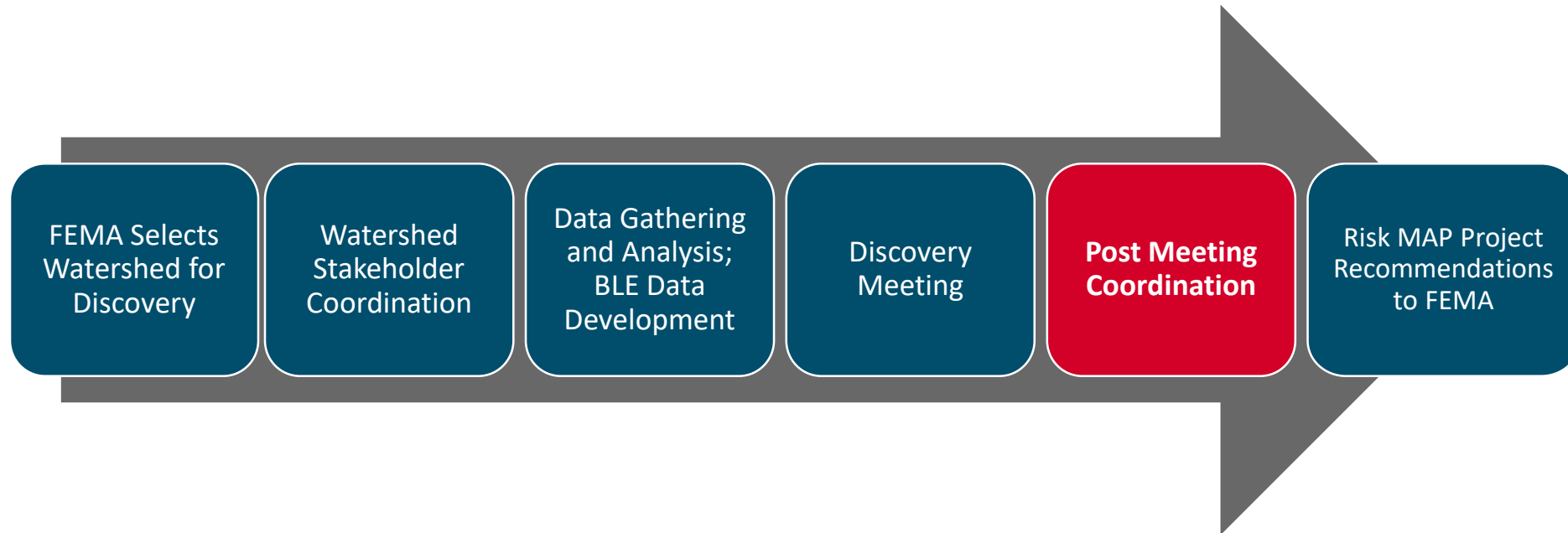
### ■ Provide Information

- Mitigation planning and actions
- Risk communication



# DISCOVERY | DISCOVERY PROCESS

---



## PRE-DISCOVERY WEBINARS

- Inform communities of process and timeline

**Pre-Discovery Newsletter**  
East Fork Watershed

“Capturing a More Complete Picture of Your Community and Your Watershed” June 2018

**Risk MAP Process and Discovery**

Risk Mapping, Assessment, and Planning (Risk MAP) is the Federal Emergency Management Agency (FEMA) Program that assists communities with flood information and tools they can use to enhance their mitigation plans and better protect their citizens. Discovery is the first phase of an overall process to achieve mitigation actions for reducing risks. The North Central Texas Council of Governments (NCTCOG) has been awarded a FEMA grant to conduct Discovery in the East Fork Watershed in 2018.

The Goal: To work closely with communities to better understand local flood risk, mitigation efforts, and other topics and spark watershed-wide discussions about increasing resilience to flooding.

Pre-Discovery Webinar #1: Tuesday, June 26<sup>th</sup> at 2:00 pm  
Link: [Tuesday Webinar](#)

Pre-Discovery Webinar #2: Thursday, June 28<sup>th</sup> at 10:00 am  
Link: [Thursday Webinar](#)

**Pre-Discovery Webinars**

In preparation for the upcoming Discovery Meetings, NCTCOG will be hosting two Pre-Discovery webinars. These webinars will introduce you to flood risk data being developed in the watershed, inform you about what to expect at the Discovery Meeting, describe who should attend, and communicate the data we need to collect from your community. Invitations to the webinars are currently being sent out. The webinars will be similar in content, so you are welcome to attend the webinar that is most convenient for you. To join us for the Pre-Discovery Webinar, call the number below, and type in the code below for the audio. The web address listed in the email invitation will provide you access to the Webinar at the meeting times indicated.

Phone Number: 1-415-655-0002

Event Number: (June 26) 661 184 499  
(June 28) 660 900 973

**Discovery Data Collection**

Customize Discovery: Enter your community's data at <http://nctcoadiscovery.halff.com>  
Password: NCTCOG\_2018

The section to the right lists some of the types of data requested from each community within the watershed. We would greatly appreciate your participation in providing mapping needs and flood risk data for your community.

**Requested Data from Communities:**

- Areas of flooding
- Historical local flooding locations, mitigation activities and grant projects (ongoing or planned)
- High water marks or flood photos documented from historical flood events
- Local development and floodplain management plans
- Infrastructure information, especially for levees and new bridges, dams, culverts and road improvements
- Flood study needs
- Regional watershed plans
- Stormwater management activities

NCTCOG requests communities to share whatever data they have, to provide as complete a picture as possible.

The North Central Texas Council of Governments (NCTCOG) is a voluntary association of, by and for local governments, and was established to assist local governments in planning for common needs, cooperating mutual benefit, and coordinating for sound regional development. For more information, please visit [www.nctcog.org](http://www.nctcog.org).

NCTCOG is a FEMA Cooperating Technical Partner (CTP), which allows for them to collaborate with FEMA to help maintain current flood hazard information. The results of the 2009 Map Needs Assessment Study conducted by NCTCOG and the Texas Water Development Board (TWDB) were used to develop a Mapping Activity Statement (MAS) as the basis of the FEMA CTP grant. FEMA awarded a CTP grant to NCTCOG to perform Discovery in this watershed. NCTCOG's MAS is included in the Risk MAP program. Please submit Discovery data or questions to Mia Brown ([mibrown@nctcog.org](mailto:mibrown@nctcog.org)), 817-695-9227.

FEMA RiskMAP Increasing Resilience Together

North Central Texas Council of Governments

# North Texas Discovery

“Capturing a More Complete Picture of Your Watershed”

Pre-Discovery Webinars  
June 26, 2018  
June 28, 2018

HALFF

0:01 / 43:02

## COMMUNITIES SUBMITTED FLOOD RISKS ONLINE

- Low Water Crossings
- Flooding Concerns
- Significant Land Use Change
- Issues with Effective Mapping

### NCTCOG Discovery

Overall Progress 100% THANK YOU!

Welcome ✓ Your Info ✓ Backgrounder ✓ **Questions ✓** Map and Report ✓ Meeting Info ✓

Use the buttons above to navigate

#### Community Questionnaire for: Mesquite

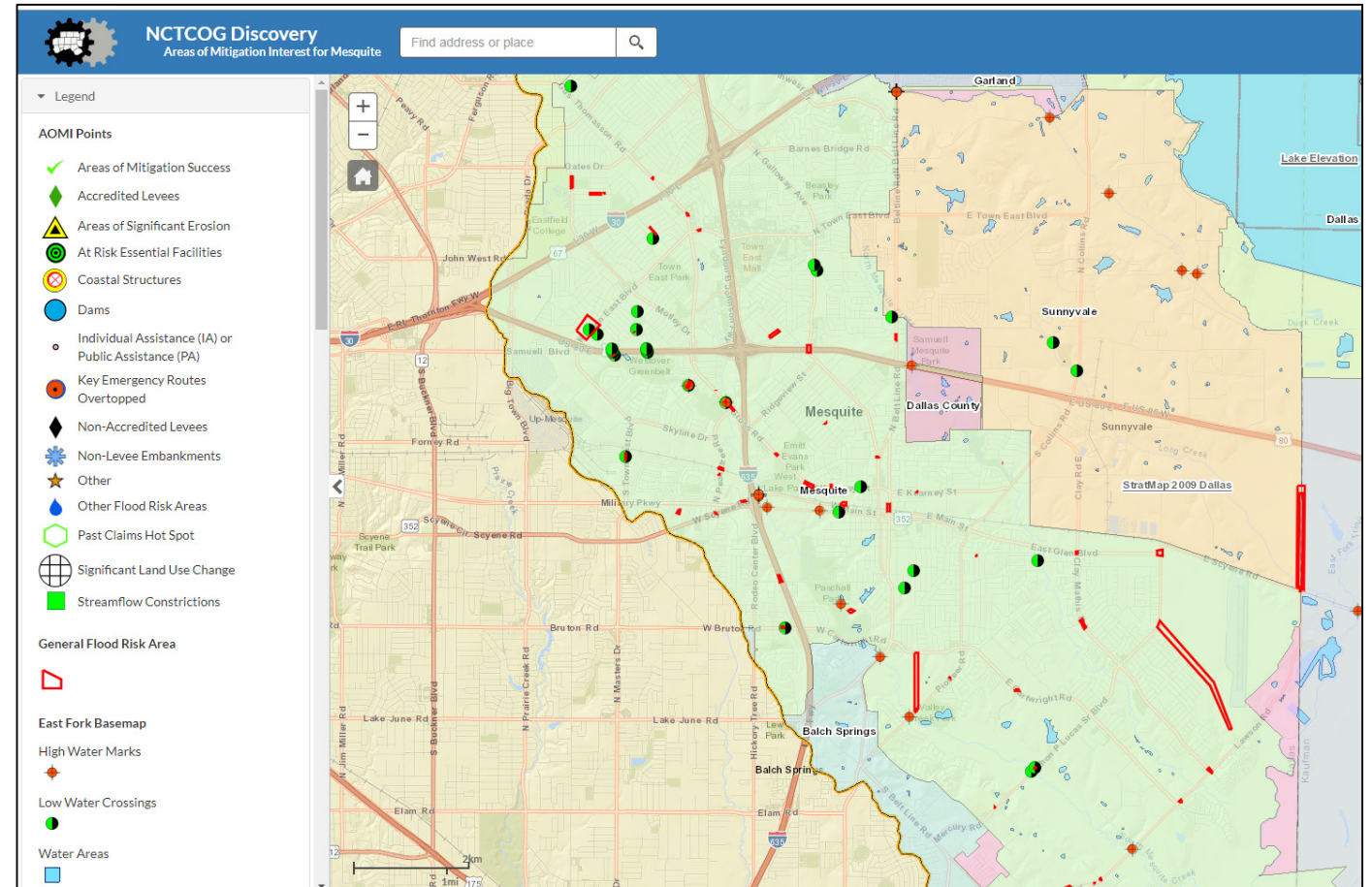
You may continue to edit, if needed, or click the next tab above to proceed.

Why do you need this? +

1: Do you have comments on the accuracy of the current floodplain mapping?  
\* Yes  No  (If yes, please explain)  
Mesquite participated in the Dallas County-wide effort to re-map flood zones by Halff. The new FEMA maps are effective as of July 7, 2014.

2: Are there any Completed or In-Progress Hazard Mitigation Projects within your community?  
 Yes  No (If yes, please explain)

3: Are there any Completed or In-Progress Capital Improvements Program (CIP) projects that involve flood hazard reduction within your community?  
 Yes  No (If yes, please explain)



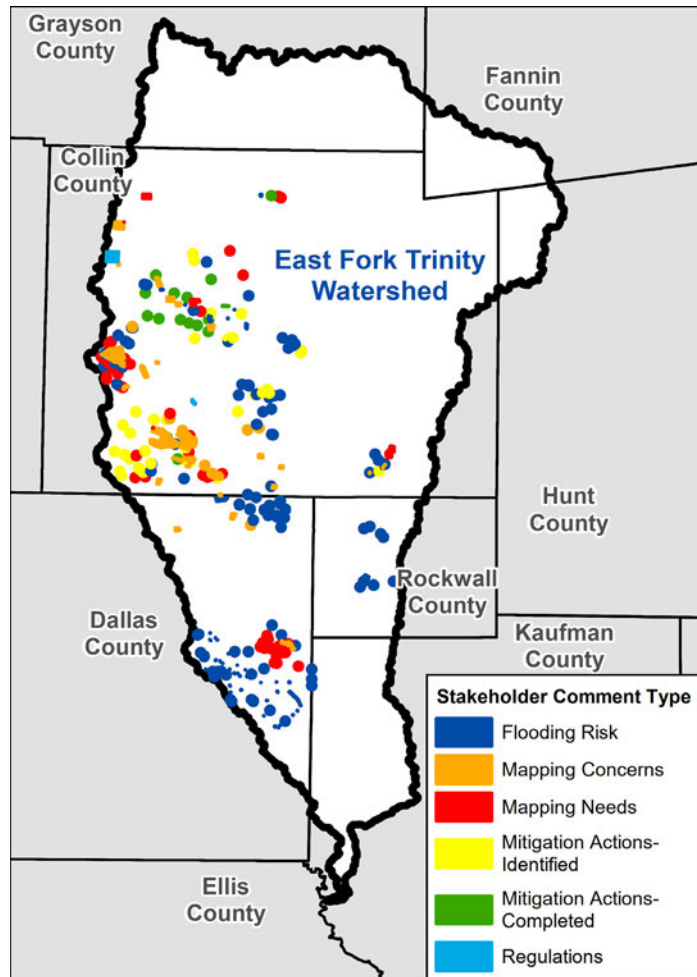


## DISCOVERY MEETING - MARCH 1ST

- Receive flooding issues
- Facilitate discussion among stakeholders



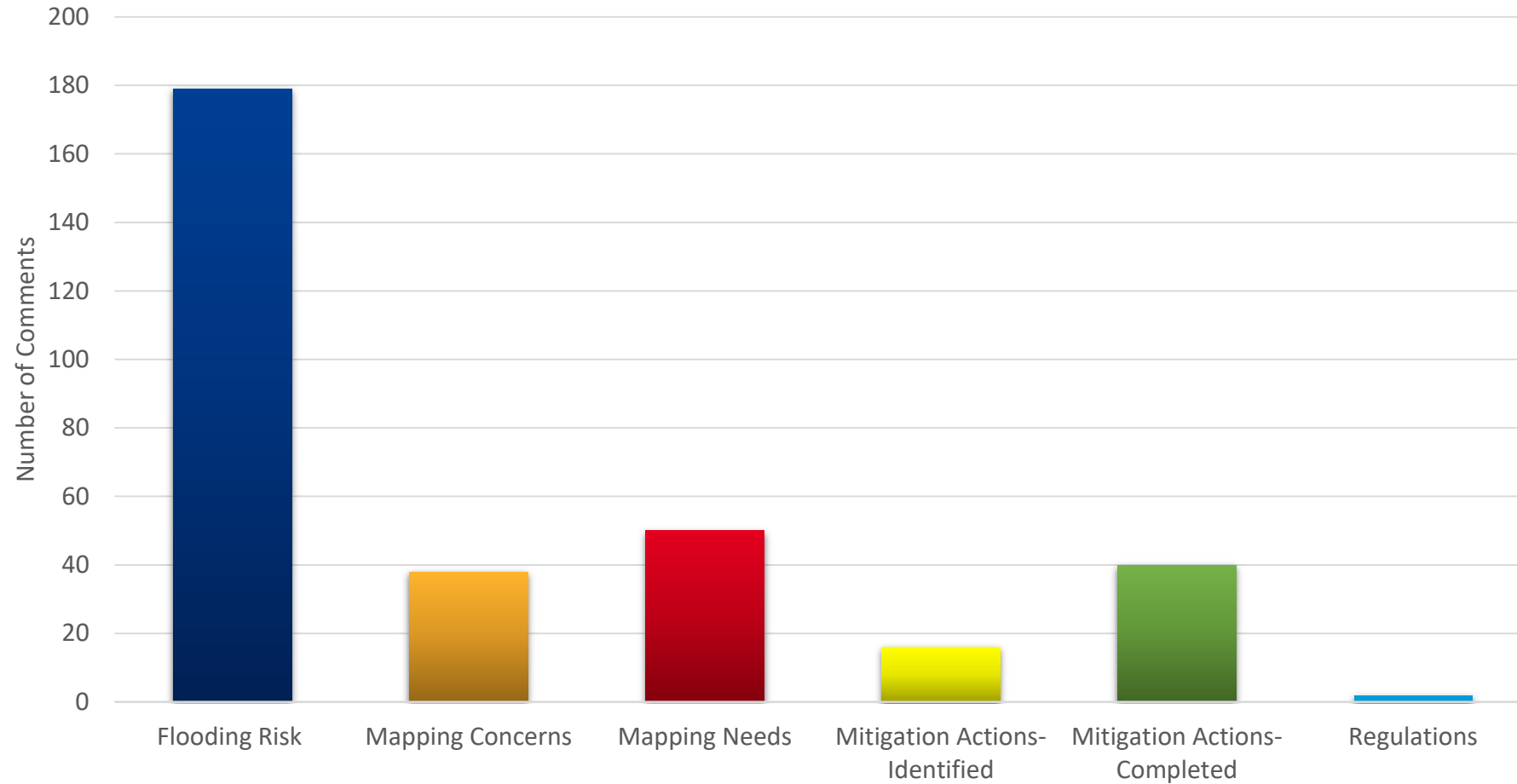
## 326 STAKEHOLDER COMMENTS SUBMITTED



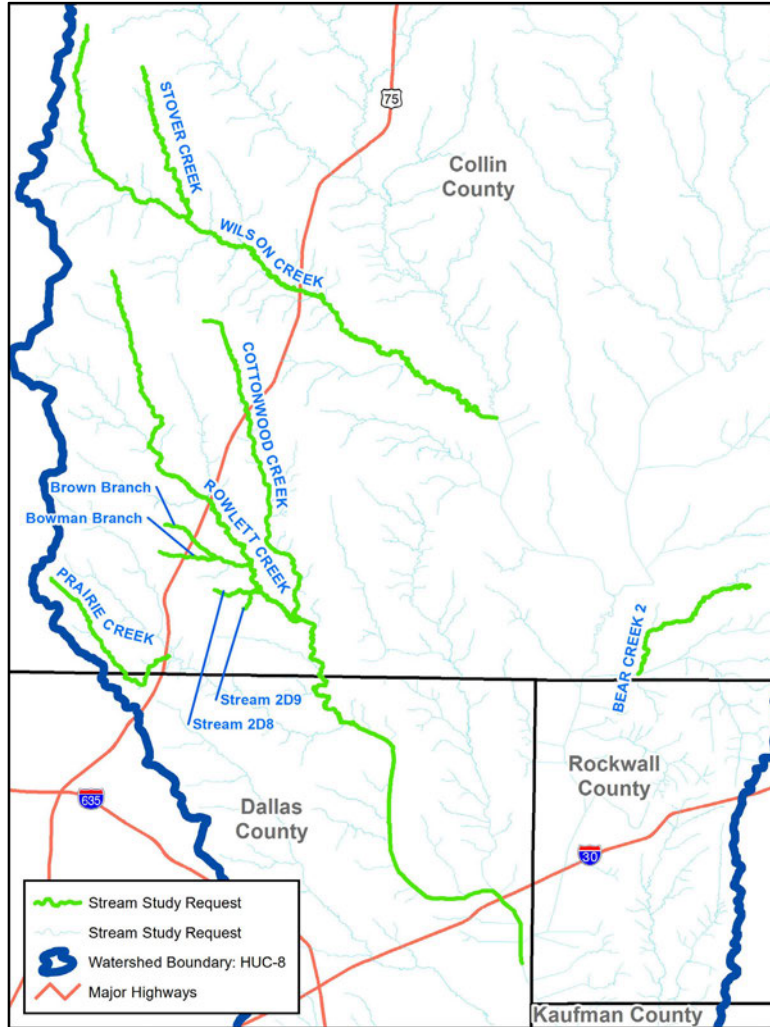
Number of Comments	Community
3	Allen
4	Anna
5	Celina
24	Collin County
1	Dallas County
25	Frisco
7	Garland
2	Kaufman County
1	Heath
13	Lavon
15	Lowry Crossing
21	Lucas
41	McKinney
79	Mesquite
1	Parker
54	Plano
1	Prosper
5	Richardson
9	Rockwall
1	Rowlett
16	Sachse
28	Sunnyvale
4	Wylie



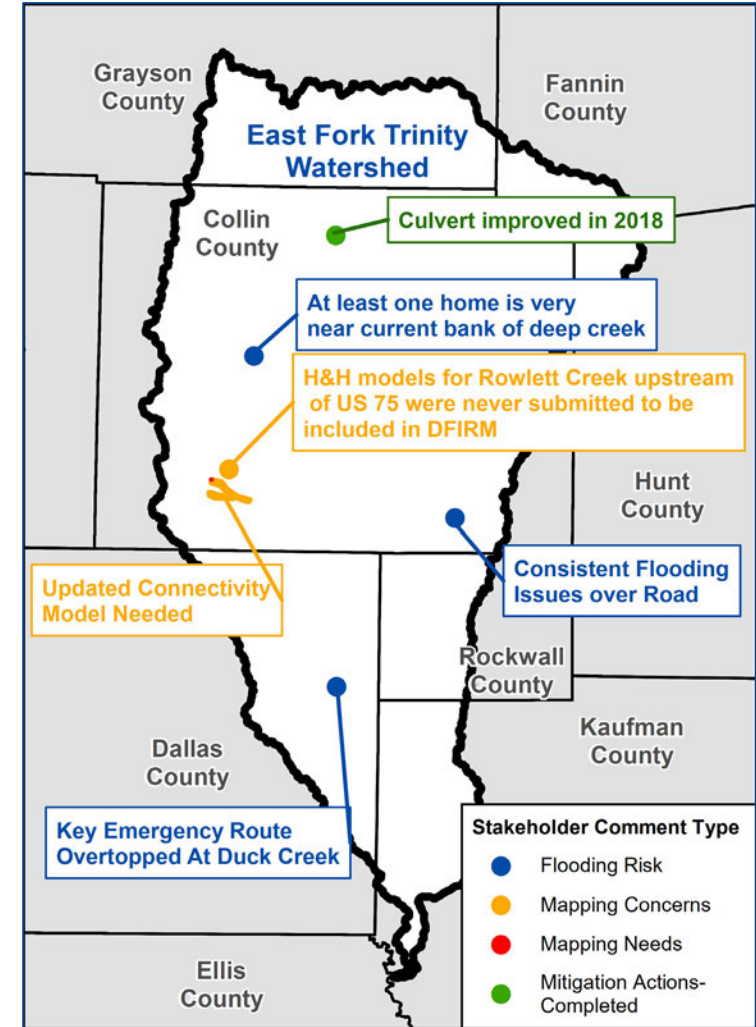
## STAKEHOLDER COMMENTS BY TYPE



## REQUESTED STUDY STREAMS

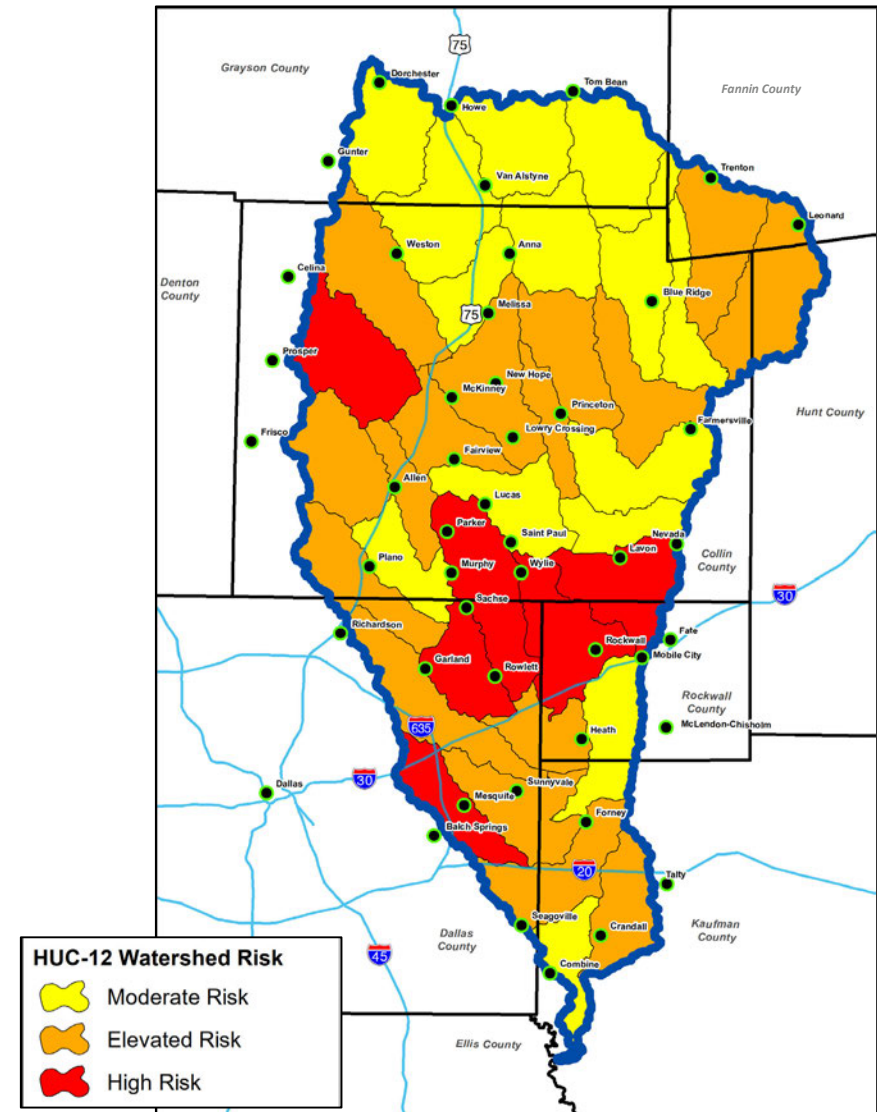


## SAMPLE COMMENTS SUBMITTED



## HUC-12 WATERSHED PRIORITIZATION

Criteria No.	Description	Max Weight
1	Population density (whole number)	10
2	Population change (decimal)	10
3	Predicted population growth (whole number)	10
4	History of flood claims (whole number)	10
5	History of flood events (whole number)	10
6	Number of Letters of Map Change (LOMR/LOMA) (whole number)	5
7	Available current topography (Y/N for LiDAR)	10
8	Age of technical data – hydrology (num. of years)	5
9	Age of technical data – hydraulics (num. of years)	5
10	Ability to leverage current studies (Y/N)	5
11	Potential for local funding (Y/N)	5
12	Potential for local “work in kind” (Y/N)	3
13	Previous contribution to a FEMA study (Y/N)	2
14	Stakeholder mapping request (number)	10



## BASE LEVEL ENGINEERING

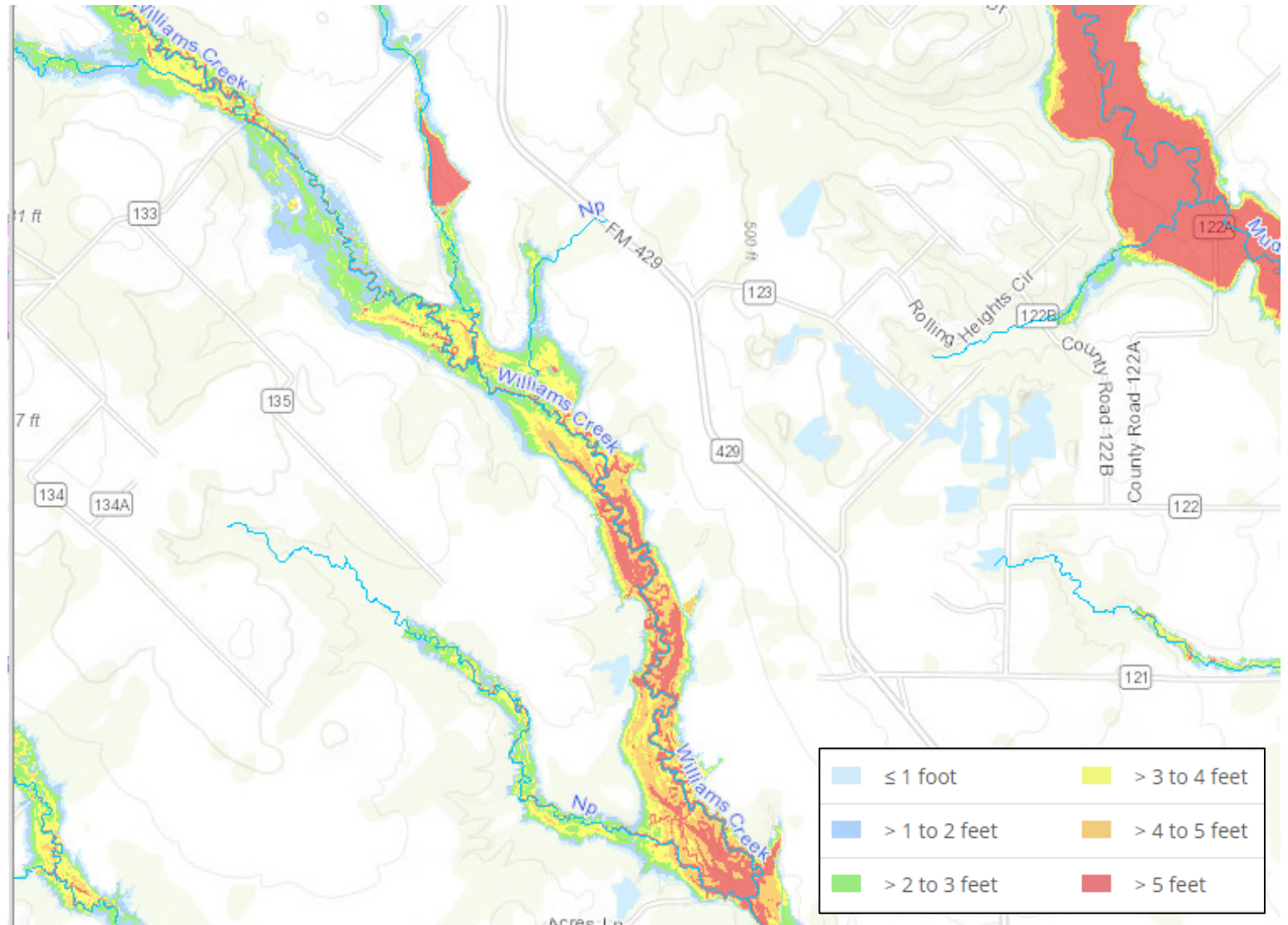
- Requires LiDAR
- Automated hydraulic modeling
- Model Review and Adjustments
- Gage Review included in hydrology





## BASE LEVEL ENGINEERING

- Depth and Analysis Grids
- Areas of Expanded Flood Risk
- Flood Risk Assessment

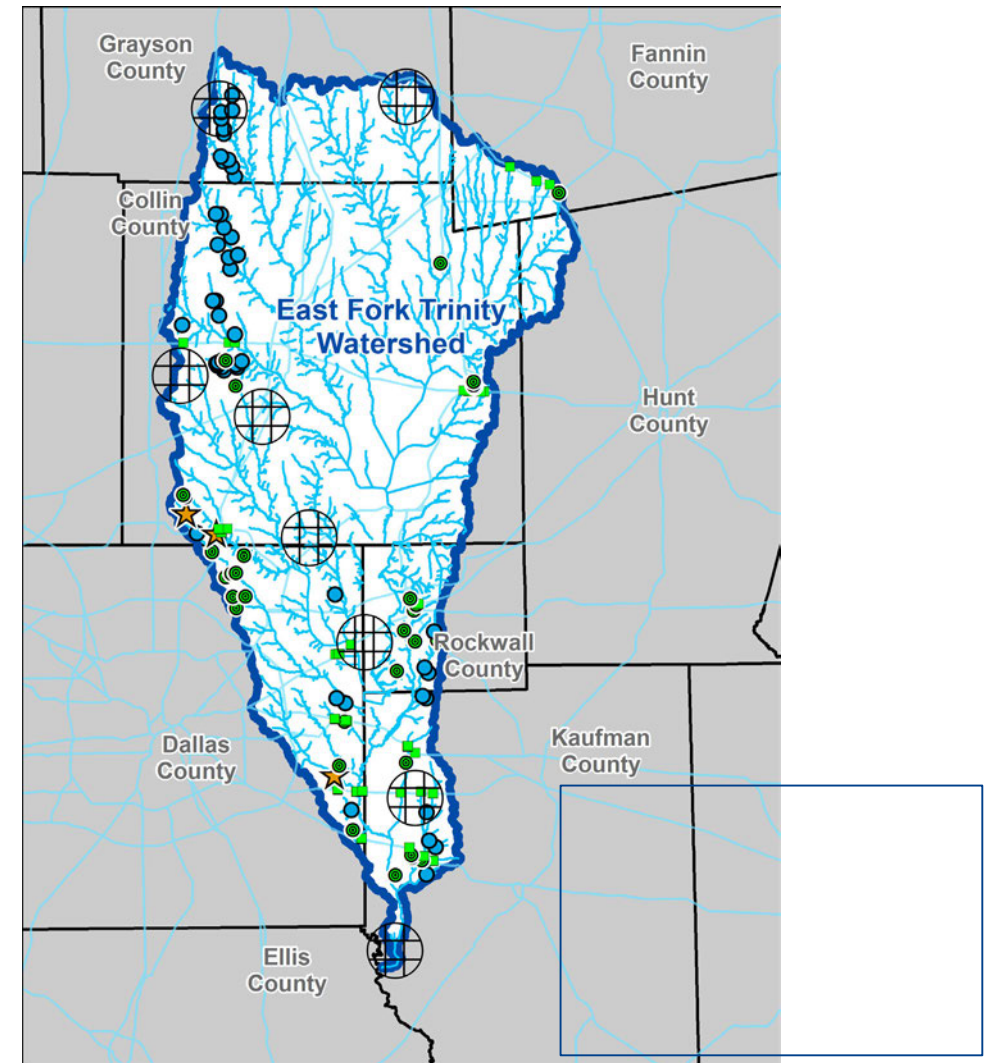


## AREAS OF MITIGATION INTEREST (AOMI)

- Structure inventory for future Discovery/Mitigation efforts
- Places with unknown or increased flood risk
- Identified by communities

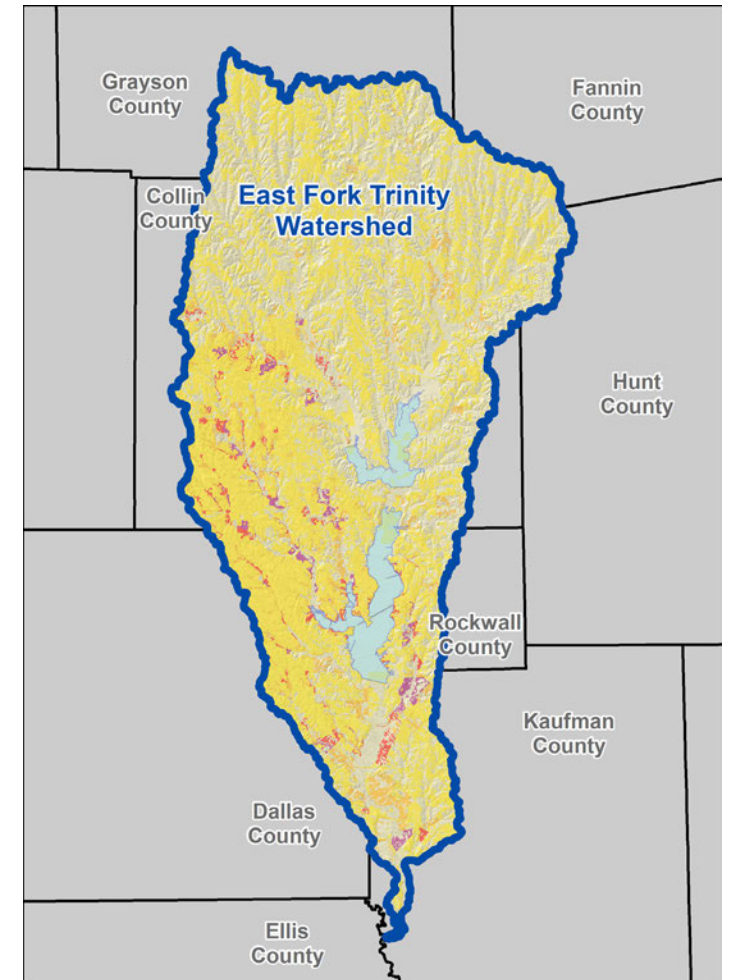
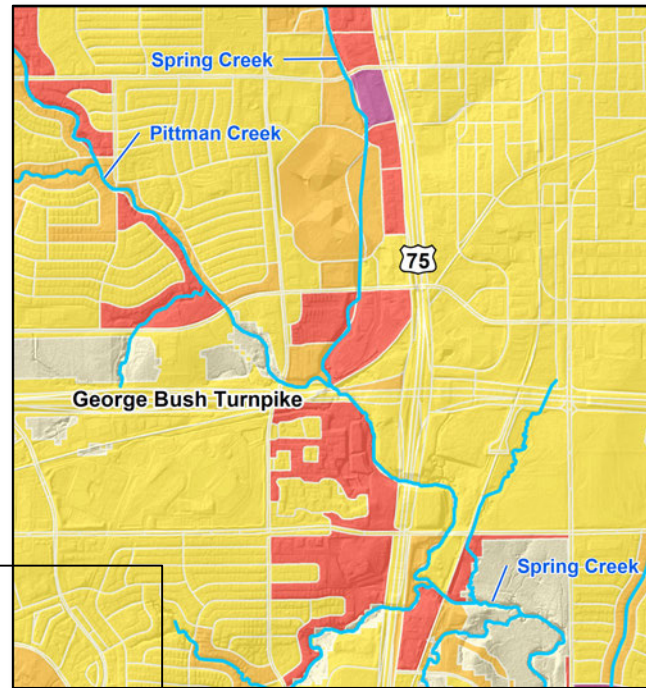
### Key to Features

- AOMI Points
- ~ Model Stream
- Mapping: 100-Year



## HAZUS-BASED AVERAGE ANNUALIZED LOSS ESTIMATES

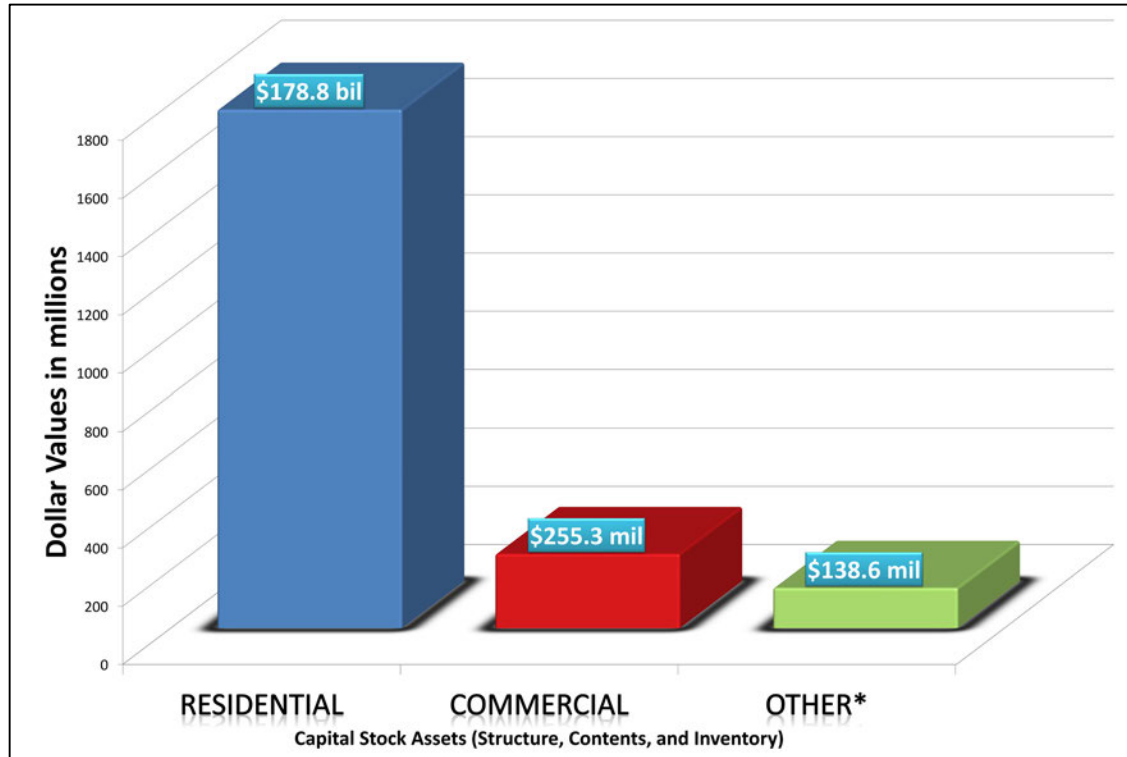
- Identify flooding consequences in damages and other losses
- Based on 100 Year Depth Grids and at-risk assets
- Can be further narrowed down



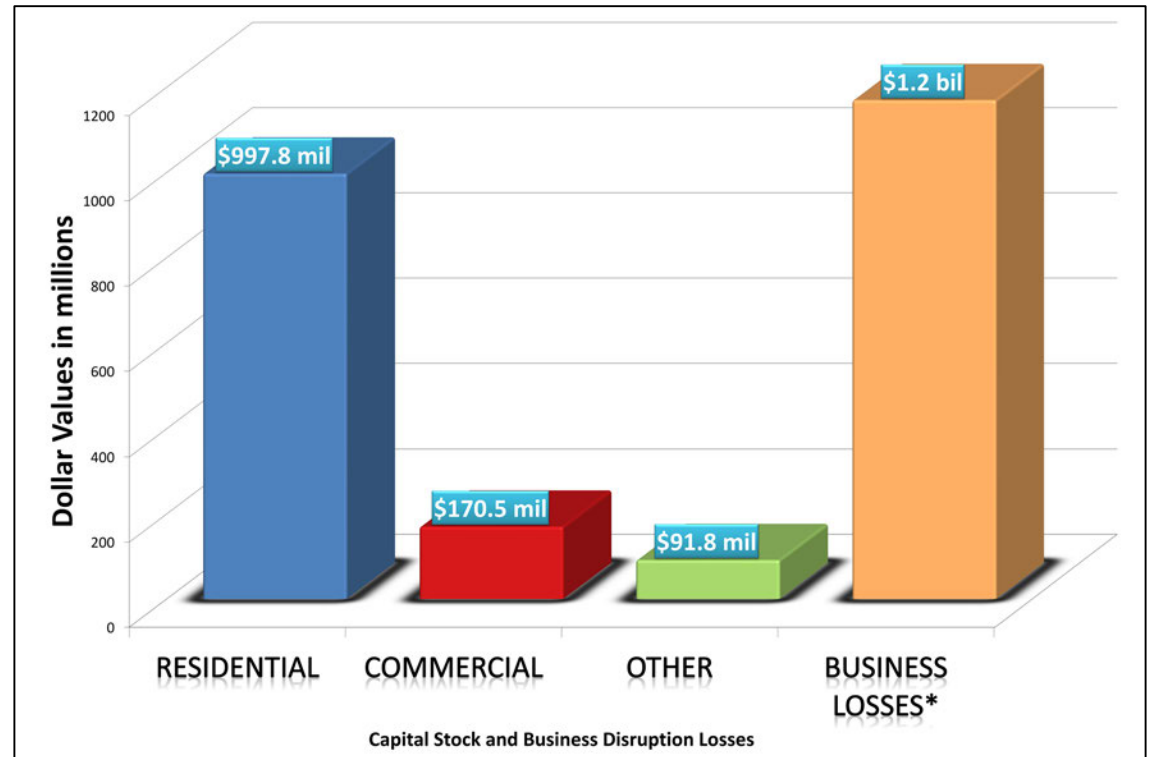


## HAZUS-BASED AVERAGE ANNUALIZED LOSS ESTIMATES

### Asset Inventory Values



### 100-Year Flood Event Potential Losses

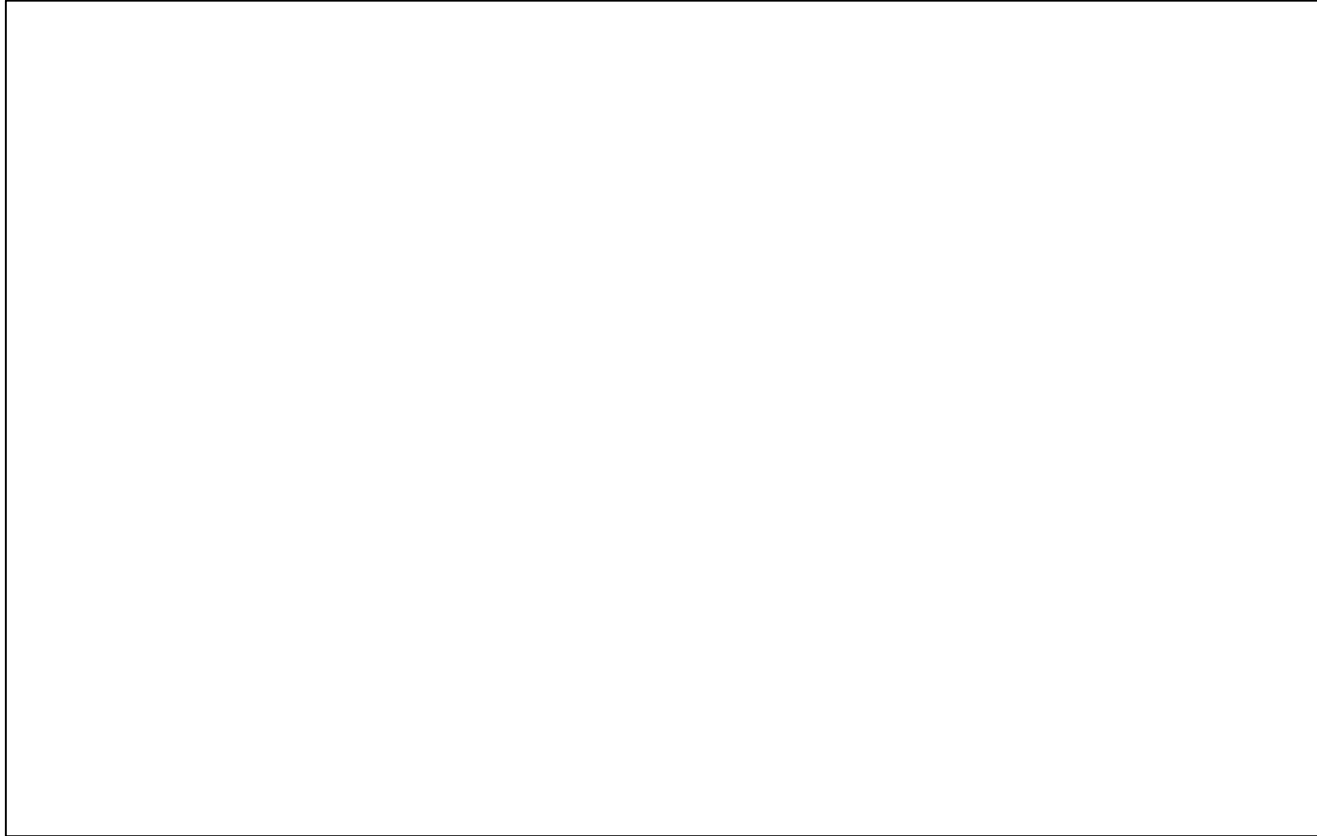


\*Other: structure types include Industrial, Agricultural, Education, Religious, and Government structures.

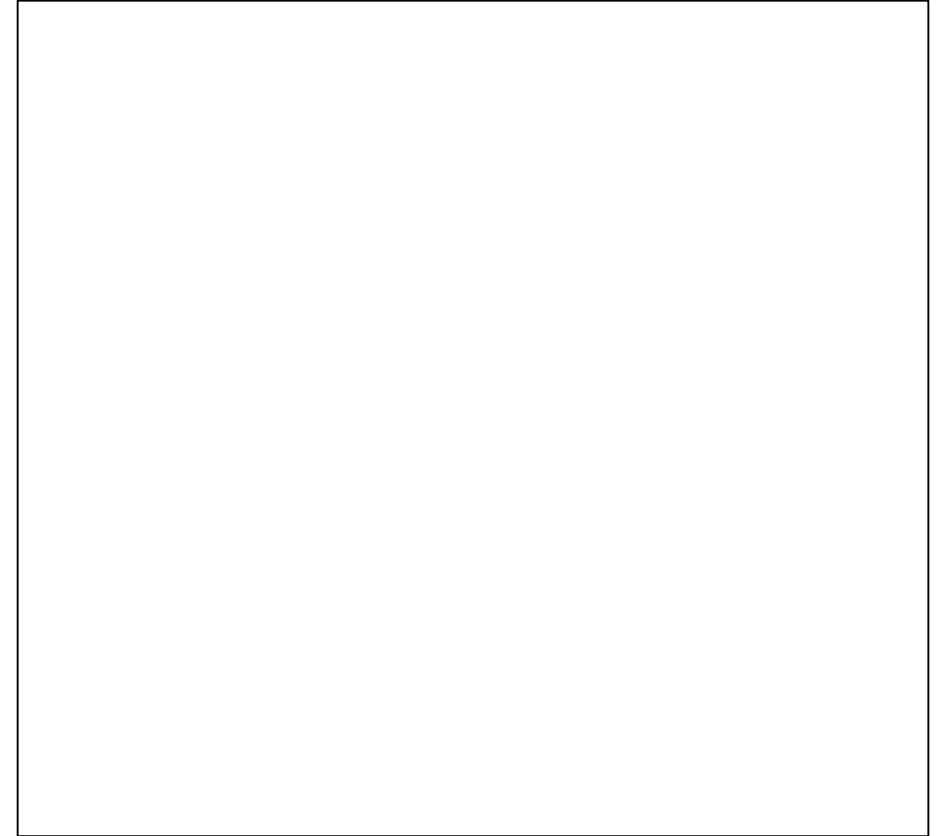
\*Business Losses are the sum of Inventory Loss, Relocation Costs, Income Loss, Rental Income Loss, Wage Loss, and Direct Output Loss.

## HAZUS-BASED AVERAGE ANNUALIZED LOSS ESTIMATES

Northern Communities

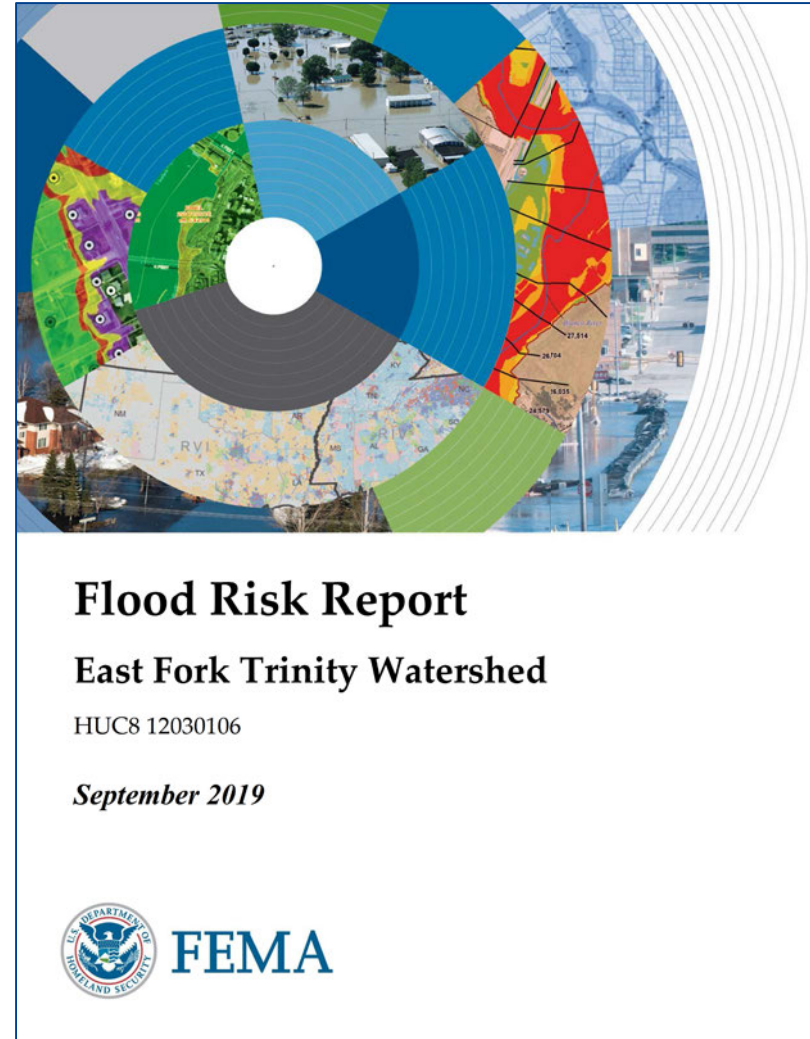


Southern Communities



## FLOOD RISK REPORT

- Prioritization Results
- Figures and Maps
- Summary of Discovery Activities
- BLE Report

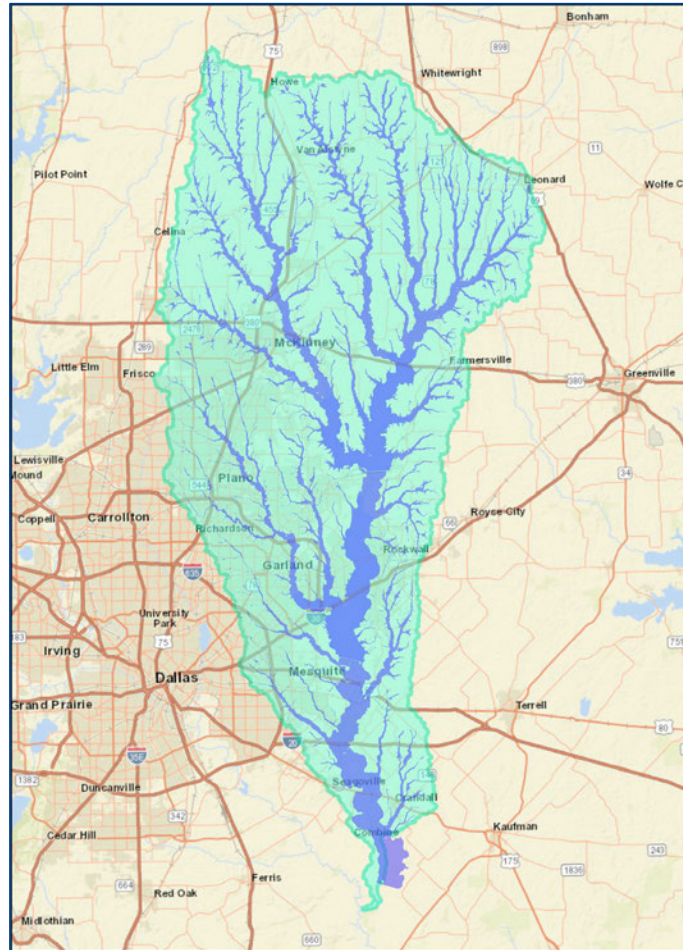


## FLOOD RISK REPORT

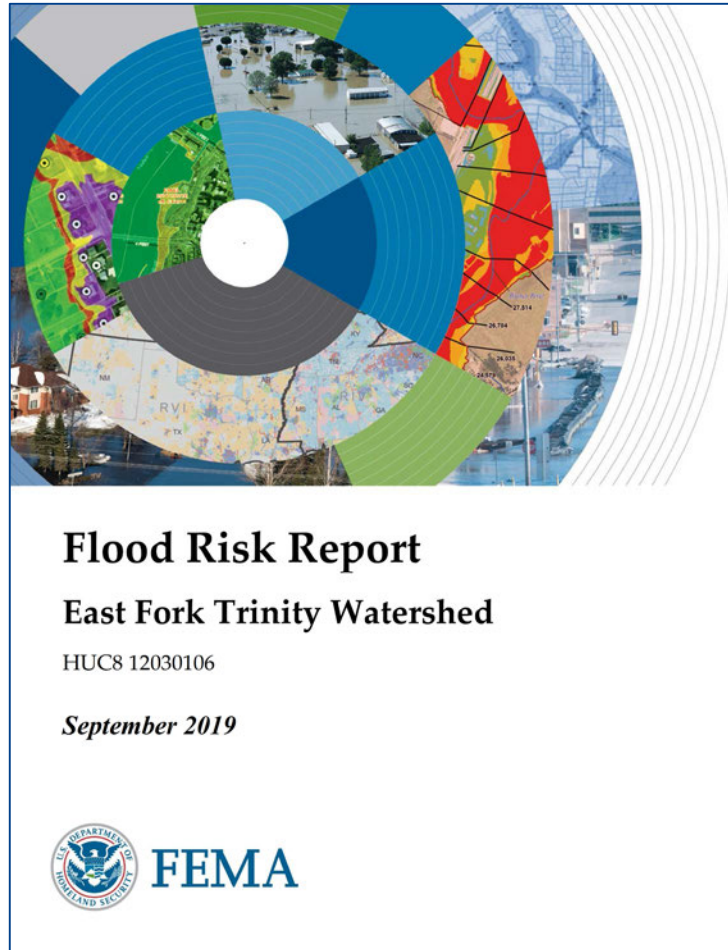
- Community Snapshots
- Historical Flooding
- Stakeholder Comments



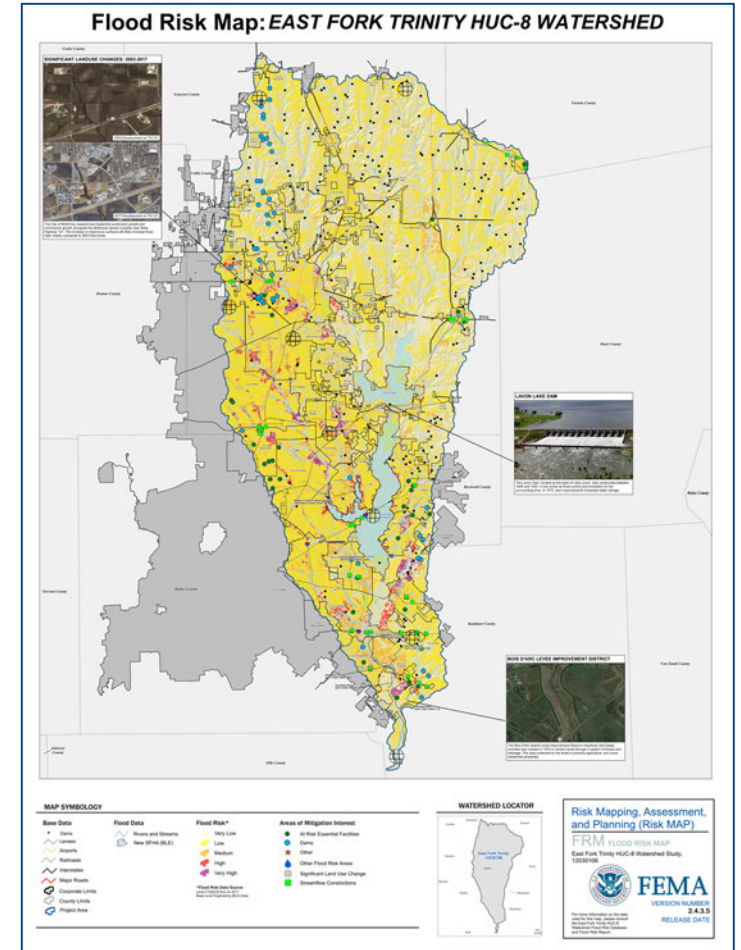
## BLE DATASET



## FLOOD RISK REPORT



## FLOOD RISK MAP





# BLE OVERVIEW | BFE VIEWER

<https://webapps.usgs.gov/infrm/estBFE/>

**Estimated Base Flood Elevation (estBFE) Viewer**

Downloadable Data (BLE) Remove

Base Map: Topographic

Comments: This base map includes administrative boundaries, cities, water features, physiographic features, parks, landmarks, highways, roads, railways, and airports.

Data Source: ESRI ArcGIS Online

Scale: 1 : 9,244,649

U.S. Department of the Interior | DOI Inspector General | White House | E.gov | Open Government | No Fear Act | FOIA

<https://webapps.usgs.gov/infrm/estBFE/>

## Welcome to the

Base Level Engineering assessments are produced using high resolution ground data to create technically credible flood hazard information that may be used to expand and modernize FEMA's current flood hazard inventory.



### View Base Level Engineering Data

Access all available Base Level Engineering data without GIS software.

- Click the **DATA LAYERS** button to add or remove map layers.
- Click the **LEGEND** tab to view an explanation of all data shown.
- Click the **MAP VIEW** button to open or close a second viewing window for side-by-side comparisons.

Click a topic to get started!

## Estimated Base Flood Elevation Viewer



### Download Datasets & Models

Download the Base Level Engineering data presented in the viewer.

- Click the **DATA LAYERS** button and add the **DOWNLOADABLE DATA** layer.
- Click shaded areas in the map to open a dialog for choosing datasets to download.



### Property Look Up

Where data is available, produce a property-specific report with estimated base flood information.

- Click the **REPORT** tab to create a flood risk report for a specific location.





<https://webapps.usgs.gov/infrm/estBFE/>

**Estimated Base Flood Elevation (estBFE) Viewer**

**Estimated Flood Extent (1% and 0.2%)**

- High risk (1% flood zone)
- Low to moderate risk (0.2% flood zone)

**Flood Depth (1%)**

- ≤ 1 foot
- > 1 to 2 feet
- > 2 to 3 feet
- > 3 to 4 feet
- > 4 to 5 feet
- > 5 feet

**Data Layers**

- Base Level Engineering (3 shown)
  - Estimated flood extent (1% and 0.2%)
  - Estimated flood extent (10%)
  - Flood depth (1%)
  - Flood depth (0.2%)
  - Opacity: 50%
  - 2D BLE elevations
  - 1D BLE cross-sections
  - Stream center lines
  - Stream center line labels
  - Opacity: 100%

**Data Layers**

- Base Level Engineering (1 shown)
  - Estimated flood extent (1% and 0.2%)
  - Estimated flood extent (10%)
  - Flood depth (1%)
  - Flood depth (0.2%)
  - Opacity: 50%
  - 2D BLE elevations
  - 1D BLE cross-sections
  - Stream center lines
  - Stream center line labels
  - Opacity: 100%

**Map View**

U.S. Department of the Interior | DOI Inspector General | White House | E-gov | Open Government | No Fear Act | FOIA

<https://webapps.usgs.gov/infrm/estBFE/>

**Estimated Base Flood Elevation (estBFE) Viewer**

Report Legend

Create a Flood Risk Report

More Info >

Search for a place

Enter an address or place of interest in the above search box. A popup will appear at the chosen location and you can create a report if BLE data are available there.

OR

My Location

Click this button to zoom the map to your actual location. A popup will appear and you can create a report if BLE data are available there.

Tip: Your web browser must support and have geolocation enabled.

OR

Map Click

Zoom into your area of interest. Click this button and then the map. A popup will appear and you can create a report if BLE data are available there.

Tip: Click on the center of the roof of your home or the most upstream point of your structure.

Quick Start Glossary About

U.S. Department of the Interior | DOI Inspector General | White House | E-gov | Open Government | No Fear Act | FOIA

FEMA

Map View Base Map

Enter address or city, stream, watershed

Click my location to enable GPS from mobile device

Once Zoomed, use Map Click to place the locator and run a report

<https://webapps.usgs.gov/infrm/estBFE/>

## Estimated Base Flood Elevation (estBFE) Viewer

Report Legend 5

Create a Flood Risk Report

More Info >

Search for a place

Enter an address or place of interest in the above search box. A popup will appear at the chosen location and you can create a report if BLE data are available there.

OR

My Location

Click this button to zoom the map to your actual location. A popup will appear and you can create a report if BLE data are available there.

Tip: Your web browser must support and have geolocation enabled.

OR

Map Click

Zoom into your area of interest. Click this button and then the map. A popup will appear and you can create a report if BLE data are available there.

Tip: Click on the center of the roof of your home or the most upstream point of your structure.

Quick Start Glossary About

Map Click Location

**High Flood Risk**

This location is in a 1% (100 year) flood zone.

Report Zoom To Close

Scale: 1 : 72,224

## Estimated Base Flood Elevation (estBFE)

FEMA

### Flood Risk Information Report

FEMA is providing a look at flood data availability and relative Base Level Engineering analysis through the Estimated Base Flood Elevation Viewer (Estimated BFE Viewer). Base Level Engineering uses high resolution ground elevation data, flood flow calculations, and fundamental engineering modeling techniques to define flood extents for streams. The viewer is an effective tool for property owners, community officials, and land developers to identify flood risk, estimated flood elevations, and flood depths for watersheds where Base Level Engineering has been prepared.

Kaufman County, Texas Latitude 32.4576 Longitude -96.2708

EXPLANATION

- Stream
- 1% flood depth:
  - ≤ 1 foot
  - > 1 to 2 feet
  - > 2 to 3 feet
  - > 3 to 4 feet
  - > 4 to 5 feet
  - > 5 feet

Flood Event	Estimated Flood Depth*	Estimated Base Flood Elevation*
1 Percent (100 Year)	2.2 feet above land surface	343.1 feet NAVD 1988
0.2 Percent (500 Year)	3.6 feet above land surface	344.4 feet NAVD 1988

\* The information included in this report is based on the location marker shown in the map. Results are not considered an official determination.

Information made available from the Estimated BFE Viewer needs to be accepted by local community officials to be used for insurance rating purposes.

### Knowing Your Risk

Base Level Engineering data availability and analysis information is important because it can be used to:

- Inform floodplain management decisions and ordinance administration;
- Identify significant floodplain changes;
- Serve as base modeling for map revisions; and
- Support the Zone A BFE information for a Letter of Map Amendment (LOMA) request.

Graphic is not to scale.

<https://webapps.usgs.gov/infrm/estBFE/>

**Print**

Tip: The map's zoom level can be adjusted by using the +/- zoom buttons. Users should zoom in and verify the location of the marker prior to printing.

Tip: The web address can be used to share or bookmark the report for this location.

### Estimated Base Flood Elevation (estBFE)

#### Flood Risk Information Report

FEMA is providing a look at flood data availability and relative Base Level Engineering analysis through the Estimated Base Flood Elevation Viewer (Estimated BFE Viewer). Base Level Engineering uses high resolution ground elevation data, flood flow calculations, and fundamental engineering modeling techniques to define flood extents for streams. The viewer is an effective tool for property owners, community officials, and land developers to identify flood risk, estimated flood elevations, and flood depths for watersheds where Base Level Engineering has been prepared.

Kaufman County, Texas Latitude 32.4576 Longitude -96.2708

Estimated Flood Extent Estimated 1% Flood Depth

### Using This Data

Consult the local floodplain manager and building department in your community before making any building or land modifications. Local officials may use this information to regulate development near flooding sources to create more flood-resilient communities. Local building and permitting requirements vary by community and are based on local decisions and ordinances.

**Everyone is at risk.** The chances of experiencing a flood can vary due to unevaluated conditions, such as the unstudied effects of community growth and development or intense storms uncharacteristic to historical trends. Maintaining or obtaining a flood insurance policy is essential to ensure a property owner is covered if a flood occurs. Visit <http://FloodSmart.gov> for more information on the costs of flooding and to locate an insurance agent in your area.

**Base Level Engineering and the Estimated BFE Viewer tool help identify the BFE in effective Zone As.** If a property owner believes that a structure is above or outside of the base flood extent in an effective Zone A, a LOMA request may be submitted and the flood risk report from the Estimated BFE Viewer should be included. To complete an application, use the online web-based tool or download the paper forms (<https://www.fema.gov/letter-map-changes>). Items needed to apply include the following:

- Copy of a **plat map** that identifies the property and includes the locality's recording information  
OR  
Copy of the **property deed** with both locality's recording information and the property's written legal description and a **parcel or tax map** identifying the location.
- **Elevation information** indicating the lowest adjacent grade to the building certified by a licensed land surveyor or registered professional engineer, except for buildings **clearly** shown outside the SFHA. If built recently, building permit files may contain this information. Note the professional may use the estimated BFE (estBFE) results for the BFE value on the elevation form or certificate.
- The **Estimated BFE flood risk information report** relative to the property indicating the estimated flood level and model.
- A **letter of acceptance and support from your local floodplain administrator** for the Estimated BFE information included in your report.

Please note other types of development may require additional documentation and possibly an application fee. A LOMA may result in removal of the SFHA designation and the Federal requirement for flood insurance. However, maintaining a flood policy may still be required by the lender. Flood insurance coverage to repair damage caused by flooding is available for areas outside the SFHA.

### Using This Data

Consult the local floodplain manager and building department in your community before making any building or land modifications. Local officials may use this information to regulate development near flooding sources to create more flood-resilient communities. Local building and permitting requirements vary by community and are based on local decisions and ordinances.

**Everyone is at risk.** The chances of experiencing a flood can vary due to unevaluated conditions, such as the unstudied effects of community growth and development or intense storms uncharacteristic to historical trends. Maintaining or obtaining a flood insurance policy is essential to ensure a property owner is covered if a flood occurs. Visit <http://FloodSmart.gov> for more information on the costs of flooding and to locate an insurance agent in your area.

**Base Level Engineering and the Estimated BFE Viewer tool help identify the BFE in effective Zone As.** If a property owner believes that a structure is above or outside of the base flood extent in an effective Zone A, a LOMA request may be submitted and the flood risk report from the Estimated BFE Viewer should be included. To complete an application, use the online web-based tool or download the paper forms (<https://www.fema.gov/letter-map-changes>). Items needed to apply include the following:

- Copy of a **plat map** that identifies the property and includes the locality's recording information  
OR  
Copy of the **property deed** with both locality's recording information and the property's written legal description and a **parcel or tax map** identifying the location.
- **Elevation information** indicating the lowest adjacent grade to the building certified by a licensed land surveyor or registered professional engineer, except for buildings **clearly** shown outside the SFHA. If built recently, building permit files may contain this information. Note the professional may use the estimated BFE (estBFE) results for the BFE value on the elevation form or certificate.
- The **Estimated BFE flood risk information report** relative to the property indicating the estimated flood level and model.
- A **letter of acceptance and support from your local floodplain administrator** for the Estimated BFE information included in your report.

Please note other types of development may require additional documentation and possibly an application fee. A LOMA may result in removal of the SFHA designation and the Federal requirement for flood insurance. However, maintaining a flood policy may still be required by the lender. Flood insurance coverage to repair damage caused by flooding is available for areas outside the SFHA.

### Required Action

Floods can happen anywhere at any time, which is why it is important to be prepared and to take steps before a flood event to protect your property from costly damage. Mitigation measures to consider include the following:

- **Elevating.** Elevating the lowest floor of new or existing buildings above the BFE reduces risk and may lower flood insurance premiums.
- **Interior Modification.** Raising the equipment servicing the building or infilling basements susceptible to flooding.
- **Dry Floodproofing.** Sealing your structure to prevent floodwaters from entering. Residential property insurance is not reduced if dry floodproofing is used. Only commercial properties receive reduced flood insurance when dry floodproofing is used.
- **Wet Floodproofing and Flood Vents.** Making portion of a building more resistant to flood damage or, in some cases, allowing water to enter during a flood to prevent damages by equalizing pressure on walls and foundations.

Depending on the right method to mitigate future damage and loss requires an assessment of various factors: the hazards to your home, permit requirements, the technical limitations of the methods, and cost.

Discuss the potential mitigation options with your local floodplain administrator and building department to determine the next appropriate steps.

# BLE OVERVIEW | BFE VIEWER

<https://webapps.usgs.gov/infrm/estBFE/>

**Estimated Base Flood Elevation (estBFE) Viewer**

Report Legend

Create a Flood Risk Report

More Info

Search for a place

Enter an address or place of interest in the above search box. A popup will appear at the chosen location and you can create a report if BLE data are available there.

OR

My Location

Click this button to zoom the map to your actual location. A popup will appear and you can create a report if BLE data are available there.

Tip: Your web browser must support and have geolocation enabled.

OR

Map Click

Zoom into your area of interest. Click this button and then the map. A popup will appear and you can create a report if BLE data are available there.

Tip: Click on the center of the roof of your home or the most upstream point of your structure.

Data Layers

- Base Level Engineering 3 shown
- Downloadable Data (BLE)
- Detailed Studies (FIRM) 1 shown
  - Detailed study available
  - Opacity: 75%
  - Tip: Click within a detailed study to launch the FEMA NFHL Viewer where higher resolution FIRM maps can be accessed.

Clear Map Close

Detailed Study

There is a detailed study (Zone AE) shown on the current effective Flood Insurance Rate Map (FIRM) in the area selected. These detailed analyses are the basis of insurance rating within this area and should be reviewed and used.

Leave this viewer and explore more detailed data in the FEMA NFHL Viewer?

Yes No

Scale: 1 : 72,224

U.S. Department of the Interior | DOI Inspector General | White House | E-gov | Open Government | No Fear Act | FOIA

# BLE OVERVIEW | BFE VIEWER

<https://webapps.usgs.gov/infrm/estBFE/>

**FEMA's National Flood Hazard Layer (NFHL) Viewer** with Web AppBuilt

Find address or place

**Print Flood Map**

1) Click the print icon, and click on the map to place the pin.  
2) Choose to create a print-size FIRMette or full-size FIRM.  
3) Press "Execute" - The process may take up to 1 minute.\*

Size\*  
FIRMETTE

File Format\*  
PDF

Run

**National Flood Hazard Layer FIRMette**

FEMA

32°29'14.93"N  
96°17'51.98"W

353.47 FEET  
355 FEET  
353 FEET  
352.45 FEET

AREA OF MINIMAL FLOOD HAZARD  
Zone X

KAUFMAN COUNTY  
430411

Zone AE

48257 C0425D  
eff. 7/3/2012

Zone A

USGS The National Map: Orthorectified, Data refreshed April, 2019.

0 250 500 1,000 1,500 2,000 Feet 1:6,000  
32°28'44.58"N

**Legend**

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**

- Without Base Flood Elevation (BFE)  
Zone A, V, A99
- With BFE or Depth  
Zone AE, AO, AH, VE, AR
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile  
Zone X
- Future Conditions 1% Annual Chance Flood Hazard  
Zone X
- Area with Reduced Flood Risk due to Levee. See Notes.  
Zone X
- Area with Flood Risk due to Levee  
Zone D

**OTHER AREAS**

- Area of Minimal Flood Hazard  
Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard  
Zone D

**GENERAL STRUCTURES**

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transsect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transsect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**

- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/17/2019 at 11:18:26 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# BLE OVERVIEW | BFE VIEWER

<https://webapps.usgs.gov/infrm/estBFE/>

**Estimated Base Flood Elevation (estBFE) Viewer**

Report Legend

Create a Flood Risk Report

More Info >

Search for a place

Enter an address or place of interest in the above search box. A popup will appear at the chosen location and you can create a report if BLE data are available there.

OR

My Location

Click this button to zoom the map to your actual location. A popup will appear and you can create a report if BLE data are available there.

Tip: Your web browser must support and have geolocation enabled.

OR

Map Click

Zoom into your area of interest. Click this button and then the map. A popup will appear and you can create a report if BLE data are available there.

Tip: Click on the center of the roof of your home or the most upstream point of your structure.

Quick Start Glossary About

Scale: 1: 72,224 Lat: 32.4792 Lon: -96.2988

**Data Layers**

- Base Level Engineering
- Downloadable Data (BLE) 1 shown
  - Downloadable data available
  - Opacity: 90%
  - Tip: Click areas to open a download dialog.
- Detailed Studies (FIRM)

Clear Map Close

**Download Data**

Cedar

Data Set	File Name	Size	Download this table
HECRAS models	12030107_Models.zip	145.70 MB	Description Download
1% event depths, raster	12030107_Depth01.zip	209.63 MB	Description Download
0.2% event depths, raster	12030107_Depth002.zip	229.76 MB	Description Download
1% event elevations, raster	12030107_Elev01.zip	134.65 MB	Description Download
0.2% event elevations, raster	12030107_Elev002.zip	144.44 MB	Description Download
Vector spatial data, file geodatabase	12030107_VectorData.zip	45.19 MB	Description Download
Reports and documents	12030107_Documents.zip	2.70 MB	Description Download

Close

# BLE OVERVIEW | BFE VIEWER

<https://webapps.usgs.gov/infrm/estBFE/>

The screenshot shows an Excel spreadsheet in Protected View. The table contains the following data:

Download	FileName	FileSize	DataSet	Description
<a href="#">Download</a>	12030107_Models.zip	145.70 MB	HECRAS models	A folder containing HECRAS models for streams.
<a href="#">Download</a>	12030107_Depth01.zip	209.63 MB	1% event depths, raster	A raster representing the estimated depth of floodwaters from a 1% event.
<a href="#">Download</a>	12030107_Depth002.zip	229.76 MB	0.2% event depths, raster	A raster representing the estimated depth of floodwaters from a 0.2% event.
<a href="#">Download</a>	12030107_Elev01.zip	134.65 MB	1% event elevations, raster	A raster representing the estimated elevation of floodwaters from a 1% event.
<a href="#">Download</a>	12030107_Elev002.zip	144.44 MB	0.2% event elevations, raster	A raster representing the estimated elevation of floodwaters from a 0.2% event.
<a href="#">Download</a>	12030107_VectorData.zip	45.19 MB	Vector spatial data, file geodatabase	A file geodatabase containing vector spatial data representing stream centerlines, study areas, cross sections, flood hazard areas, and more.
<a href="#">Download</a>	12030107_Documents.zip	2.70 MB	Reports and documents	A folder containing the Base Level Engineering report, and other documents.



North Central Texas  
Council of Governments

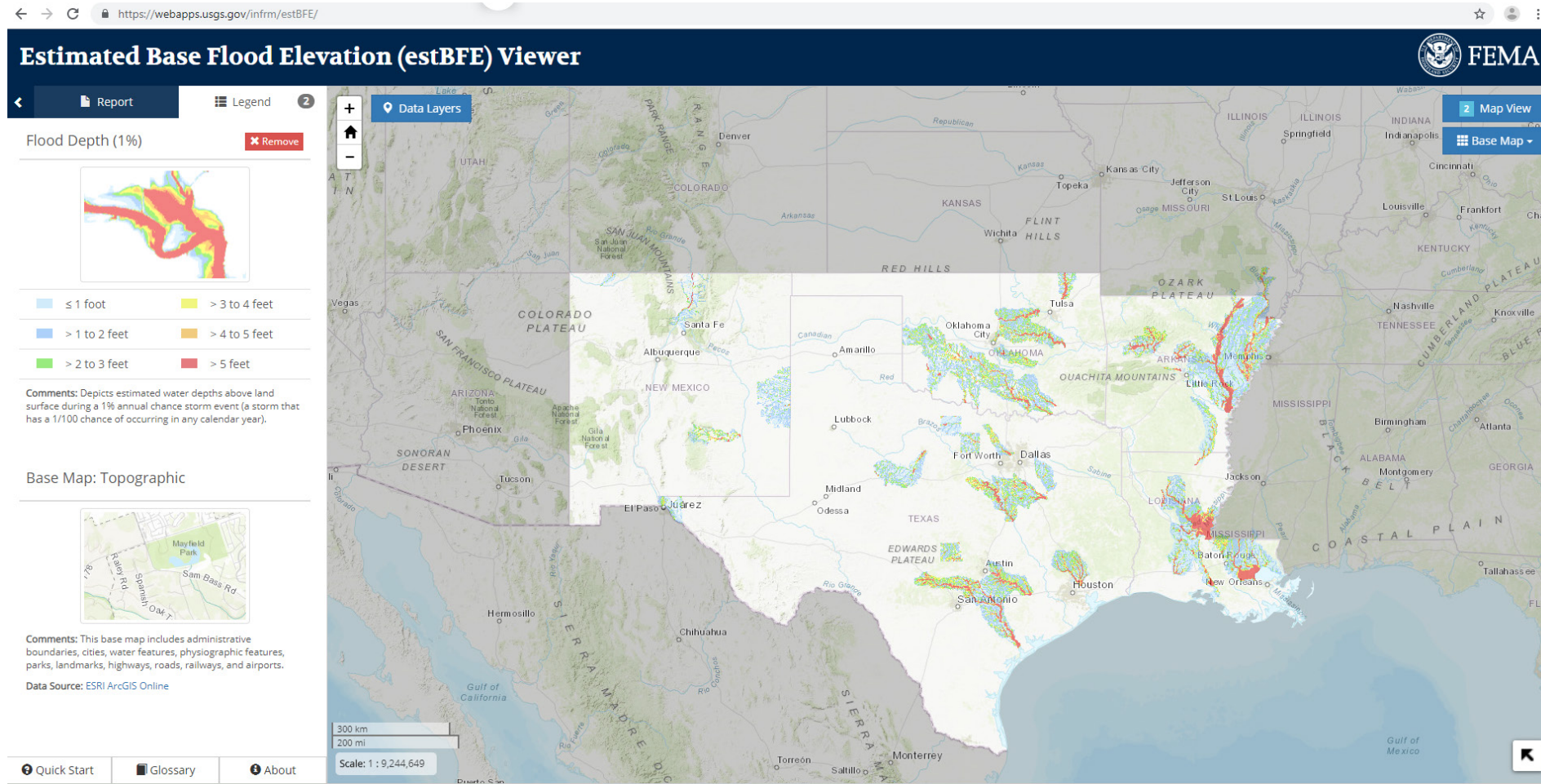


FEMA





[HTTPS://APPS.FEMADATA.COM/ESTBFE](https://apps.fema.gov/estbfe)

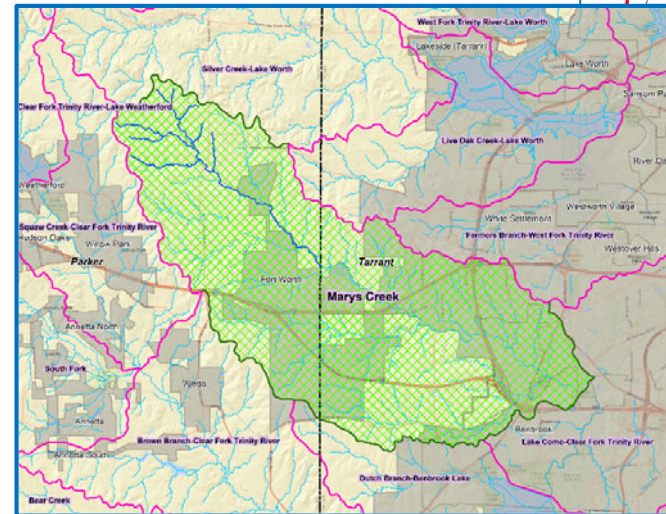
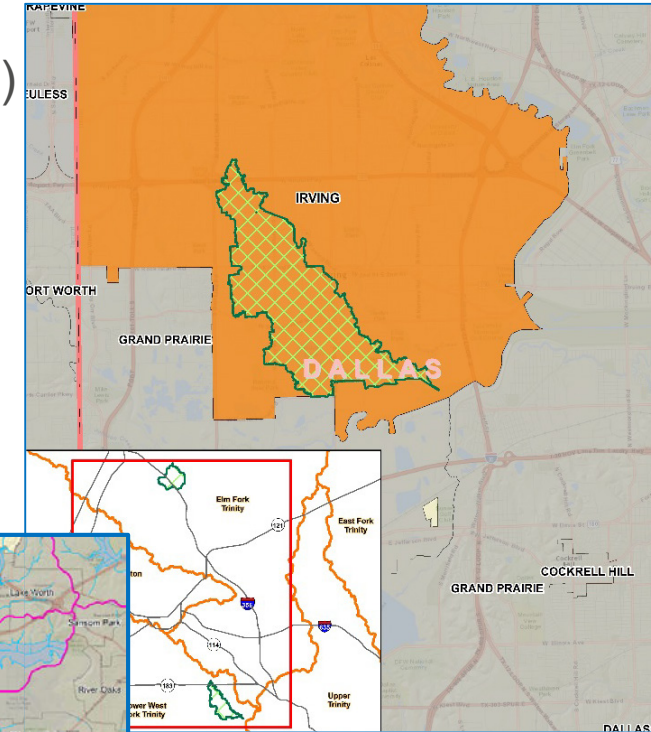


# DISCOVERY | RISK MAP PROJECT RECOMMENDATIONS TO FEMA

## RECOMMENDED STUDIES FROM DISCOVERY BECOME NEW PROJECTS

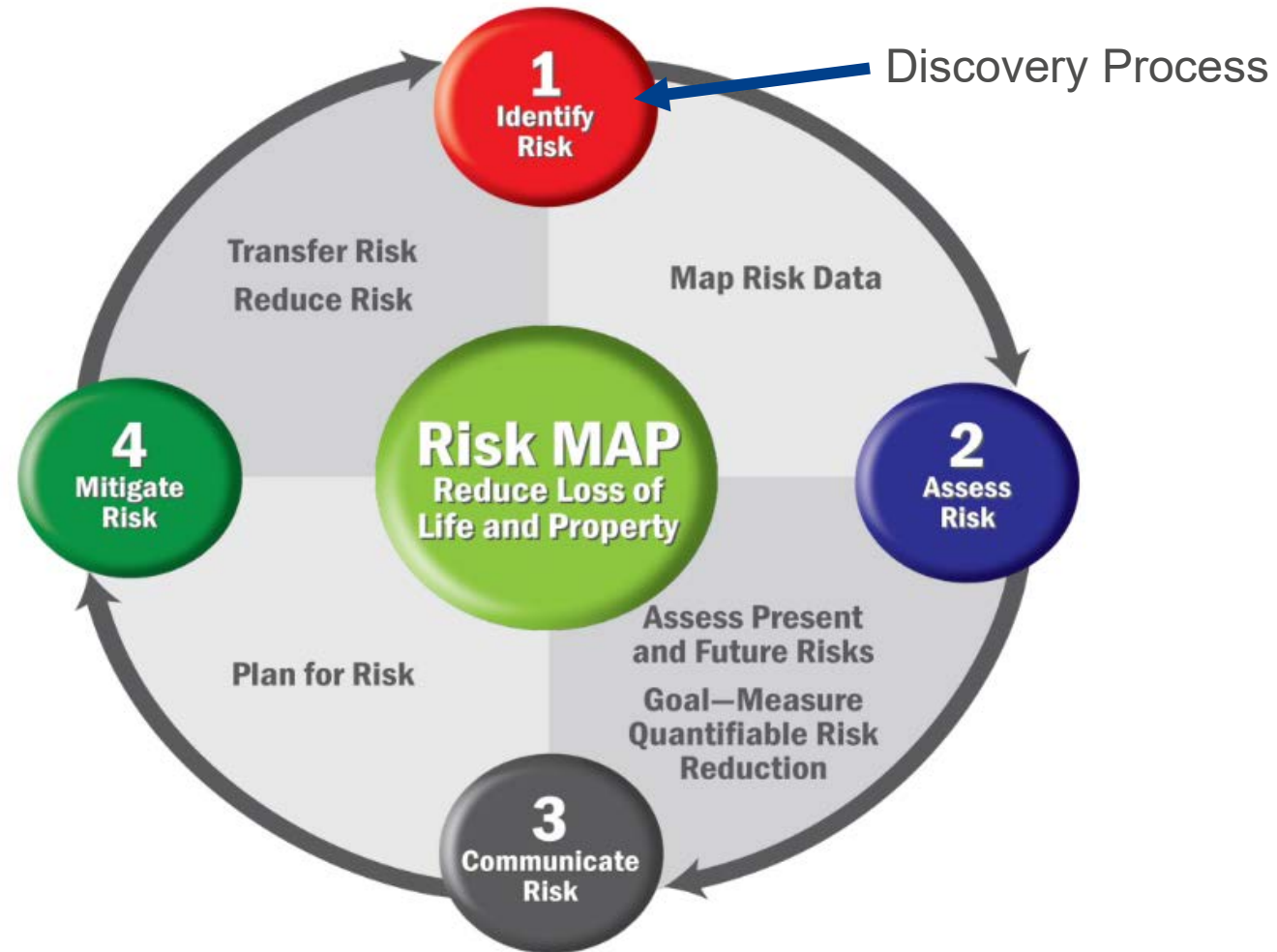
- 2013 Village Creek (Kennedale)
- 2014 Bear Creek (Southlake and Colleyville)
- 2015 Lynchburg Creek (Shady Shores and Corinth)
- 2015 West Irving Creek (Irving)
- 2016 McAnear Creek (Cleburne)
- 2016 Silver Creek (Tarrant County)
- 2017 Town Creek (Weatherford)
- 2017 Clear Fork Tributary 5 (Benbrook)
- 2018 Mary's Creek (Parker County)

West Irving Creek (2015)



Mary's Creek (2018)

## FEMA'S RISK MAPPING, ASSESSMENT, AND PLANNING (MAP) PROGRAM



## QUESTIONS?



## NCTCOG:

- Edith Marvin – [EMarvin@nctcog.org](mailto:EMarvin@nctcog.org)
- Mia Brown – [MBBrown@nctcog.org](mailto:MBBrown@nctcog.org)



## TWDB:

- Manuel Razo – [Manuel.Razo@twdb.texas.gov](mailto:Manuel.Razo@twdb.texas.gov)
- Paul Gutierrez – [paul.gutierrez@twdb.texas.gov](mailto:paul.gutierrez@twdb.texas.gov)



## Halff Associates:

- Jarred Overbey – [jOverbey@halff.com](mailto:jOverbey@halff.com)
- Samuel Amoako-Atta – [sAmoako-Atta@halff.com](mailto:sAmoako-Atta@halff.com)
- Alison Hanson – [aHanson@halff.com](mailto:aHanson@halff.com)



## FEMA:

- Alan Johnson – [alan.johnson@fema.dhs.gov](mailto:alan.johnson@fema.dhs.gov)

