Central Region Progress Overview

Galveston Bay Estuary Program, Monitoring and Research Subcommittee
March 11, 2026

GLO River Basin Flood Studies (RBFS)

Commissioner Dawn Buckingham, M.D.

Central Region Team

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Melissa Washington
IGR REPRESENTATIVE
Community Revitalization and Development

Agenda

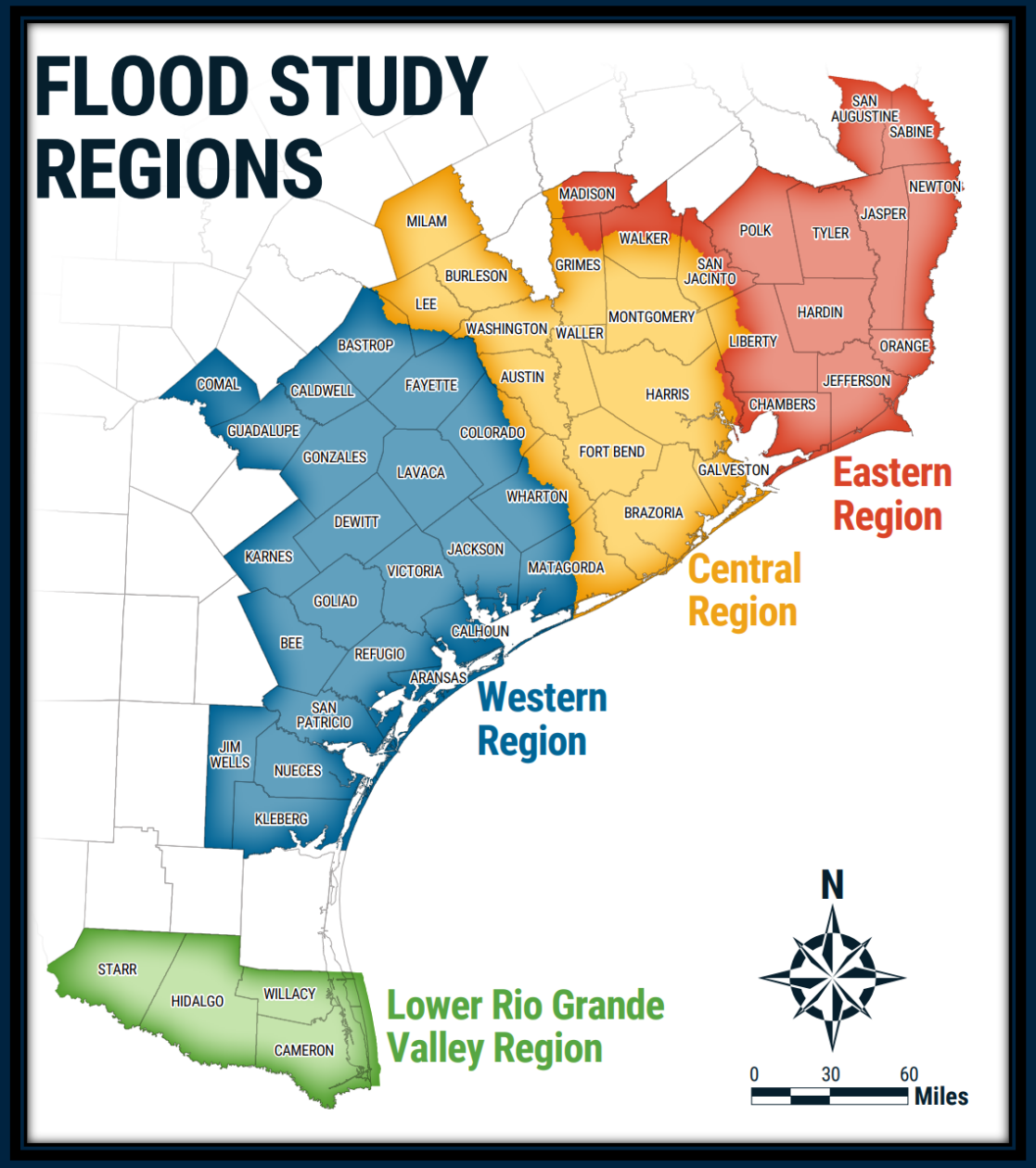
- Study Overview
- Central Region Modeling Recap
- Accessing RBFS Modeling
- Hot Spot Analysis
- Alternatives Analysis
- Study Outcomes
- MATCH Tool
- Next Steps

GLO's River Basin Flood Studies (RBFS)

The Texas General Land Office (GLO) initiated the RBFS to provide declared disaster-impacted counties with flood modeling that identifies flooding hotspots and supports project development. The goals for the flood study are to:

- Develop modeling to support flood mitigation and understanding of flood risk
- Identify large-scale or regional flood projects that strengthen the resilience of our communities
- Align identified projects with funding opportunities

This is a one-time planning effort, and the data produced by RBFS will also be used to support current and future Texas State Regional Flood Plans.



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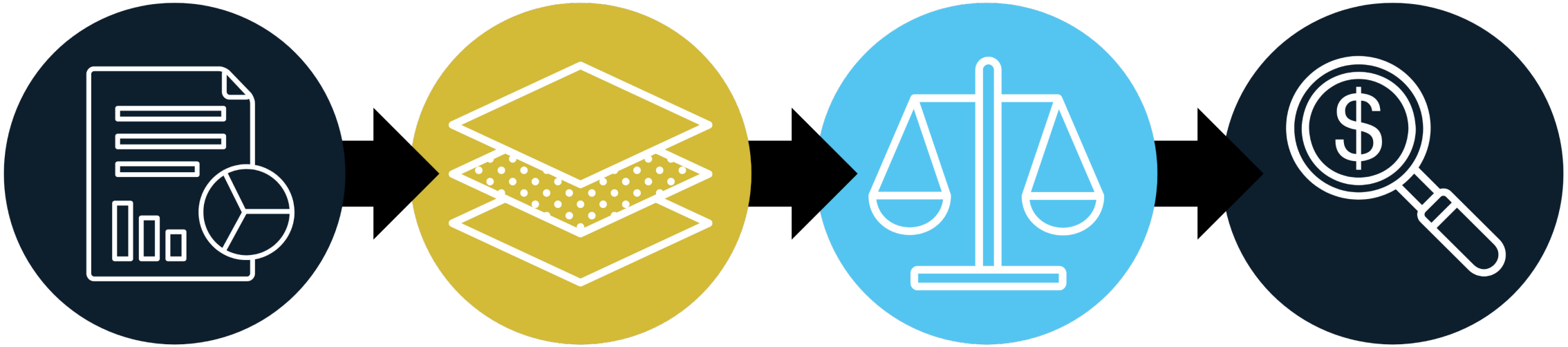
Study Phases

Stakeholder Outreach



Data Collection

Evaluation of Flood Risk (Baseline Modeling)

Alternative Analysis and Project Identification

Funding and Technical Assistance Support

Central Region Milestones

60+ Meetings Held

78,956 Pieces of Data Received

Baseline Modeling covering 5,941 square miles

1,010 Projects Identified

Input from 40 Jurisdictions

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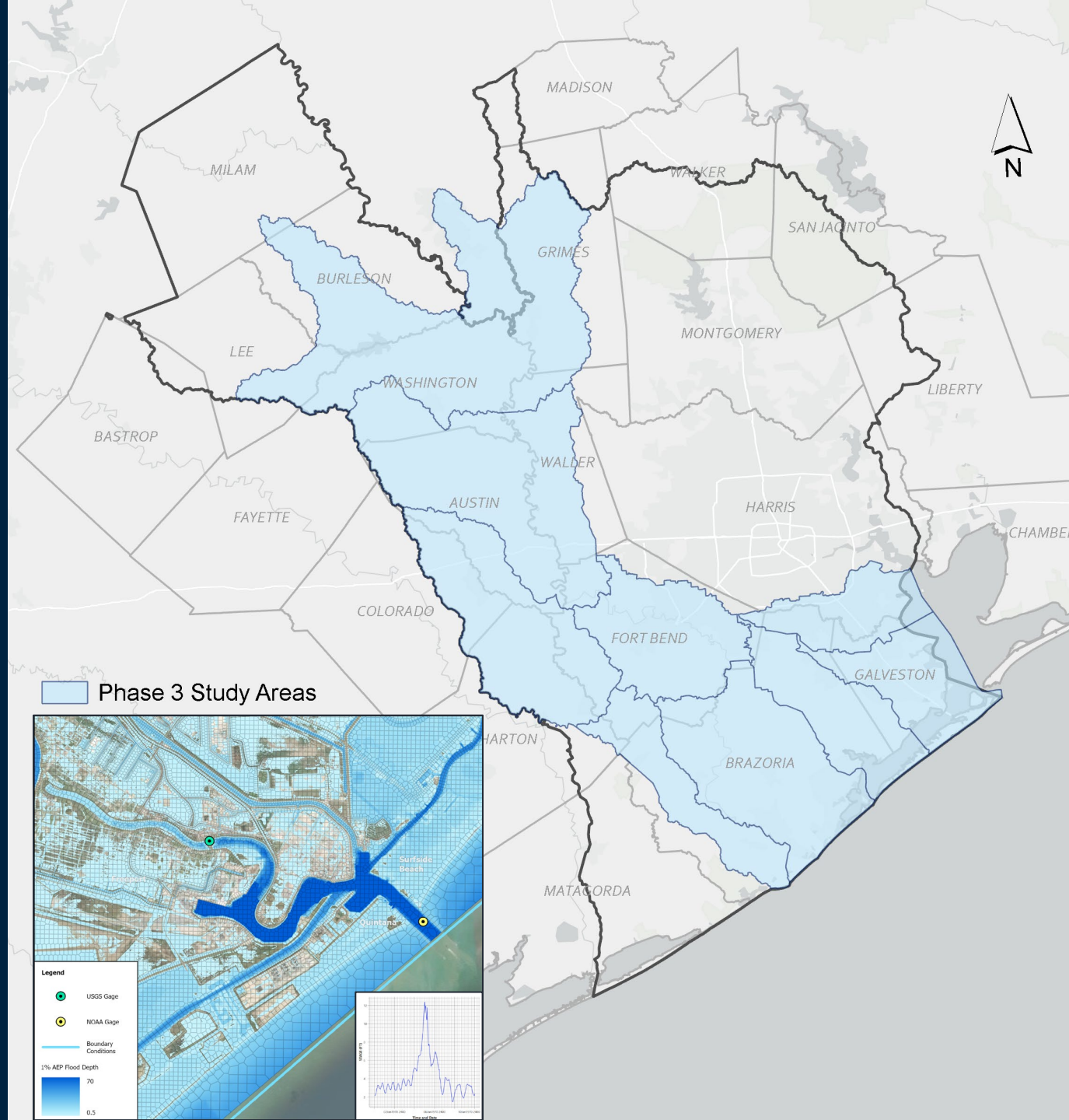
RBFS Baseline Modeling Overview

- 9 individual study areas covering 5,941 mi²
- Modeling approach aligned with RBFS Baseline Modeling SOP
- Comprehensive modeling of flood risk:
  - 50% - 0.2% Annual-Chance Events (2 YR – 500 YR)
  - Riverine Atlas 14
  - Coastal and Compound Flooding
- Rainfall-Runoff and Rain-on-Mesh Hydrology
- Detailed 2D HEC-RAS hydraulic models
- Calibration and Validation w/ historical events
- Reviewed and approved by GLO's Technical Flood Model Review Team



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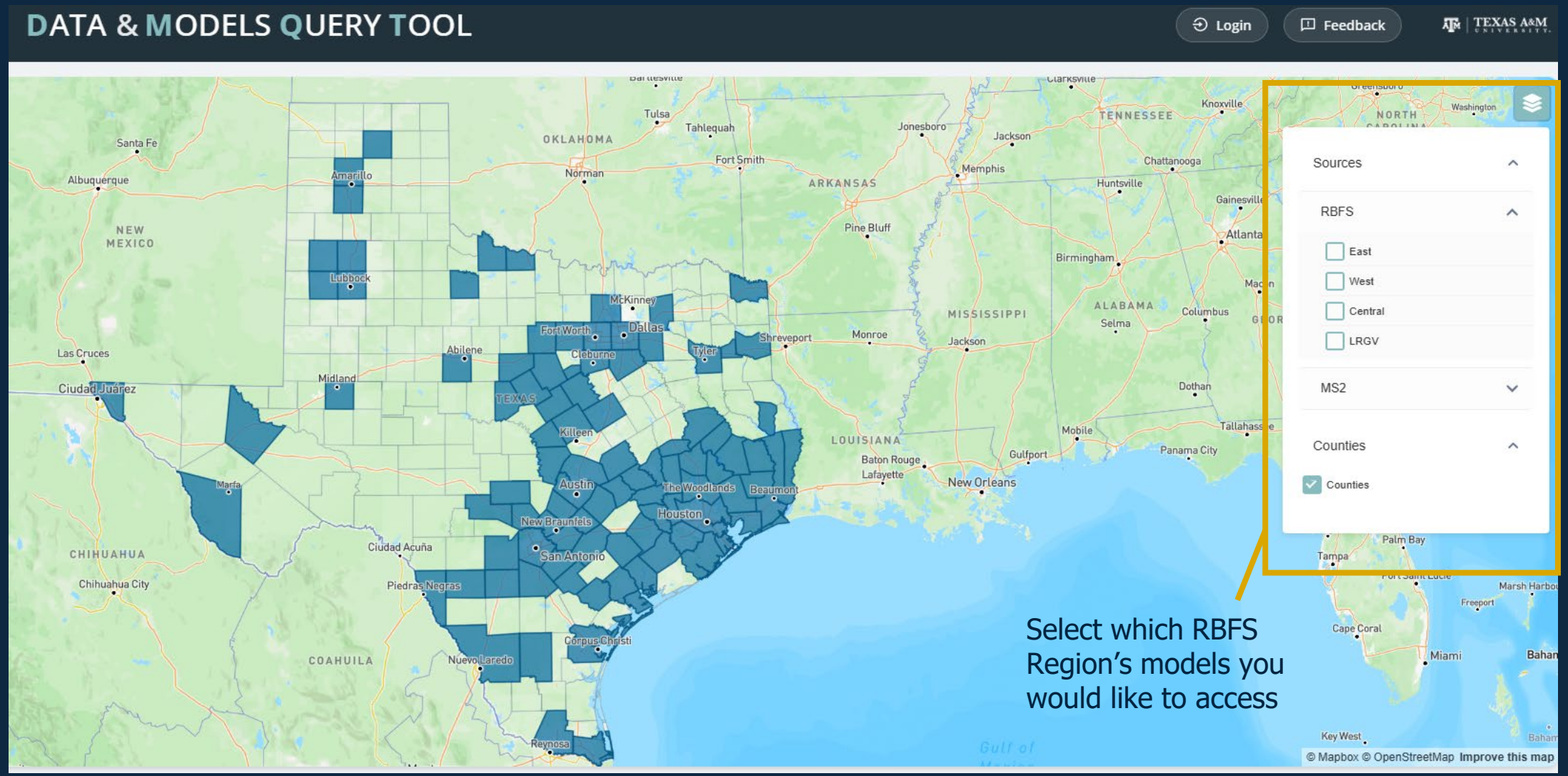
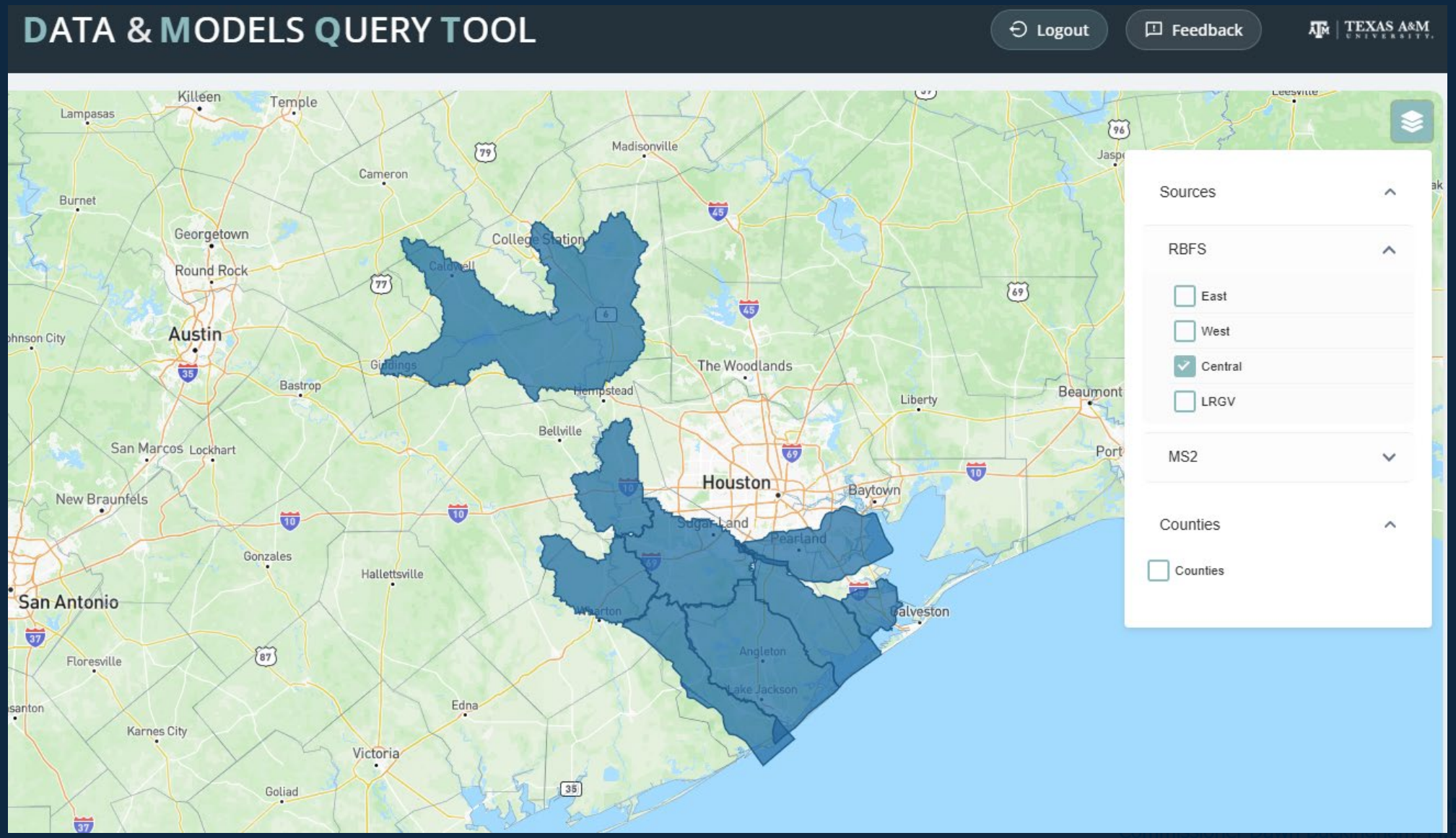
TDIS Data & Models Query Tool (DMQT)

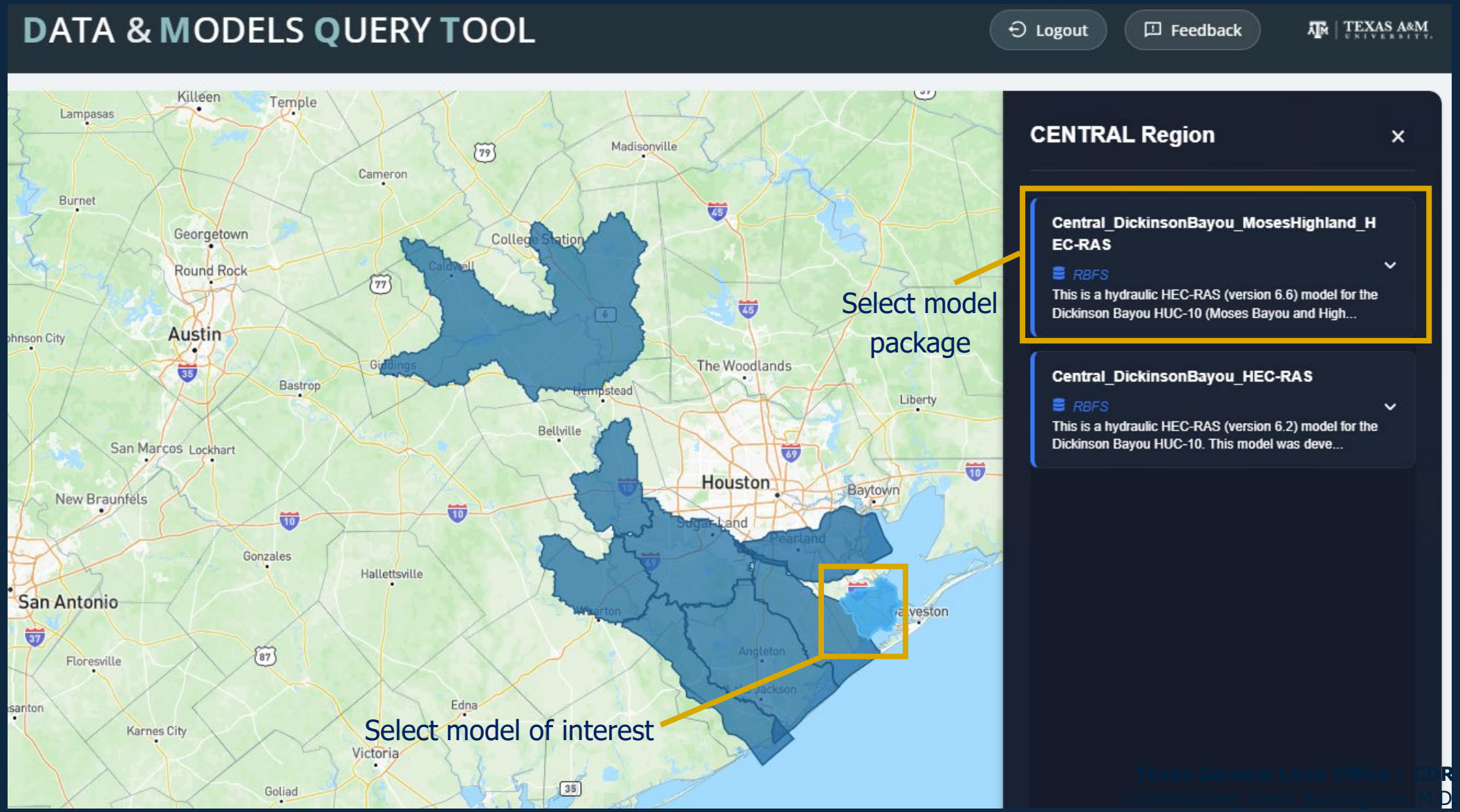


Access the DMQT here: https://dmqt.cloud.tdis.io/

TDIS Data & Models Query Tool (DMQT)



TDIS Data & Models Query Tool (DMQT)



TDIS Data & Models Query Tool (DMQT)

Central_DickinsonBayou_MosesHighland_HEC-RAS

General Information | Contact Information

HUC:

120402040200

County:

Galveston

City:

La Marque, Bayou Vista, Hitchcock, Santa Fe

Model Description:

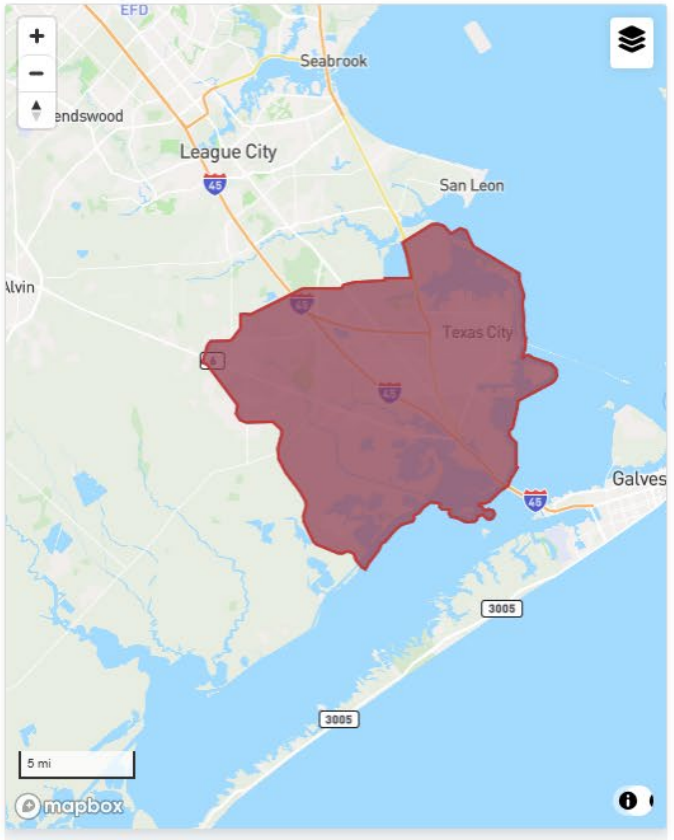
This is a hydraulic HEC-RAS (version 6.6) model for the Dickinson Bayou HUC-10 (Moses Bayou and Highland Bayou). This model was developed by the Central Region team for the Texas General Land Office's River Basin Flood Study during Phase 3 of the study.

Model Purpose:

The enclosed hydrologic and hydraulic models, final report, and GIS data were developed for the Texas General Land Office (GLO) for its Regional River Basin Flood Study project. The purpose of these models, final report, and associated GIS data is to better understand existing conditions for the

N/A* - Not Available/Not Applicable/Not Specified

Model metadata



Map of model boundary

Model Files Listing | Available Files for Download

Complete Model Package

12040204_Dickinson Bayou.zip 206.70 GB

Model Results

Results.zip 35.34 GB

Reports

Dickinson Bayou GLO RBFS Baseline Results Presentati... 61.8 MB

Appendix A - Dickinson Bayou Coastal Methodology An... 32.2 MB

Dickinson Bayou (Moses Highland Bayou) GLO RBFS Ba... 15.8 MB

Spatial Data

DickinsonBayouPhaseIII.zip 1.60 GB

Study_Area.zip 21 KB

Choose to download full package, results, boundary, or report

Close

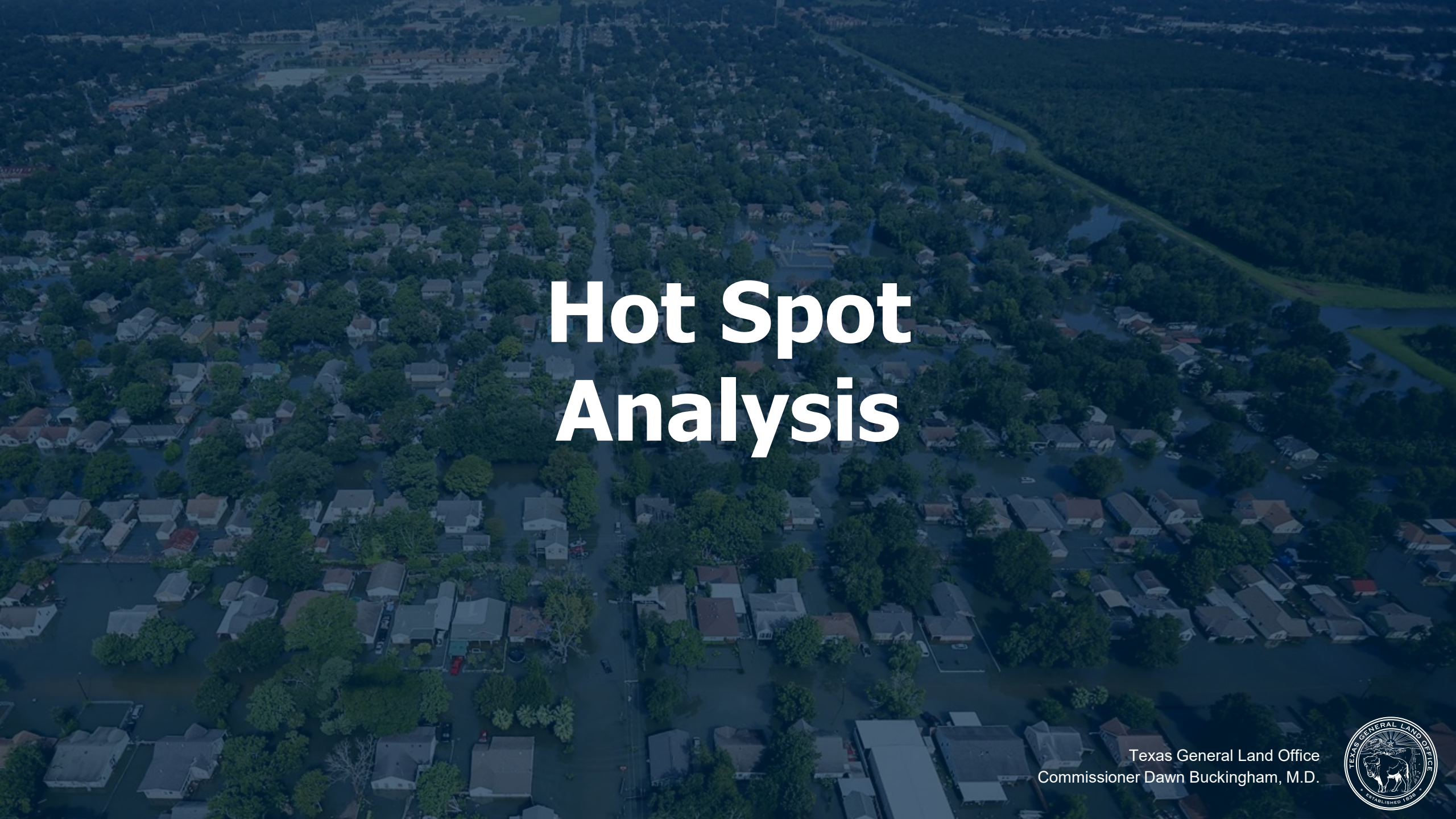
Data & Models Query Tool (DMQT) Use Cases

RBFS Baseline Modeling stored in the DMQT can be used to:

- **Integrate** into the risk assessment in your local Hazard Mitigation Plan
- **Represent** existing flood risk in 2028 Regional Flood Plans
- **Update** to assess impact of anticipated changes for future conditions
- **Analyze** flood mitigation solutions and use as support for funding applications
- **Inform** boundary conditions in local drainage studies
- **Adopt** as best-available data to communicate riverine and coastal flood risk and manage development around floodplains
- **Inform** your CIP and prioritization

Select which RBFS Region's models you would like to access

Access the DMQT here: https://dmqt.cloud.tdis.io/



Hot Spot Analysis

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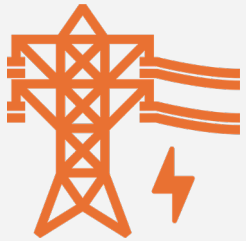
Hot Spot Determination

RBFS Regions established hot spots based on several factors including:

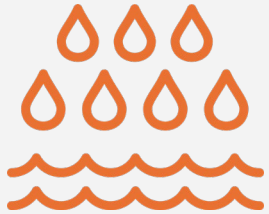
Flood risk to structures



Flood risk to critical infrastructure

Flood risk to agricultural land

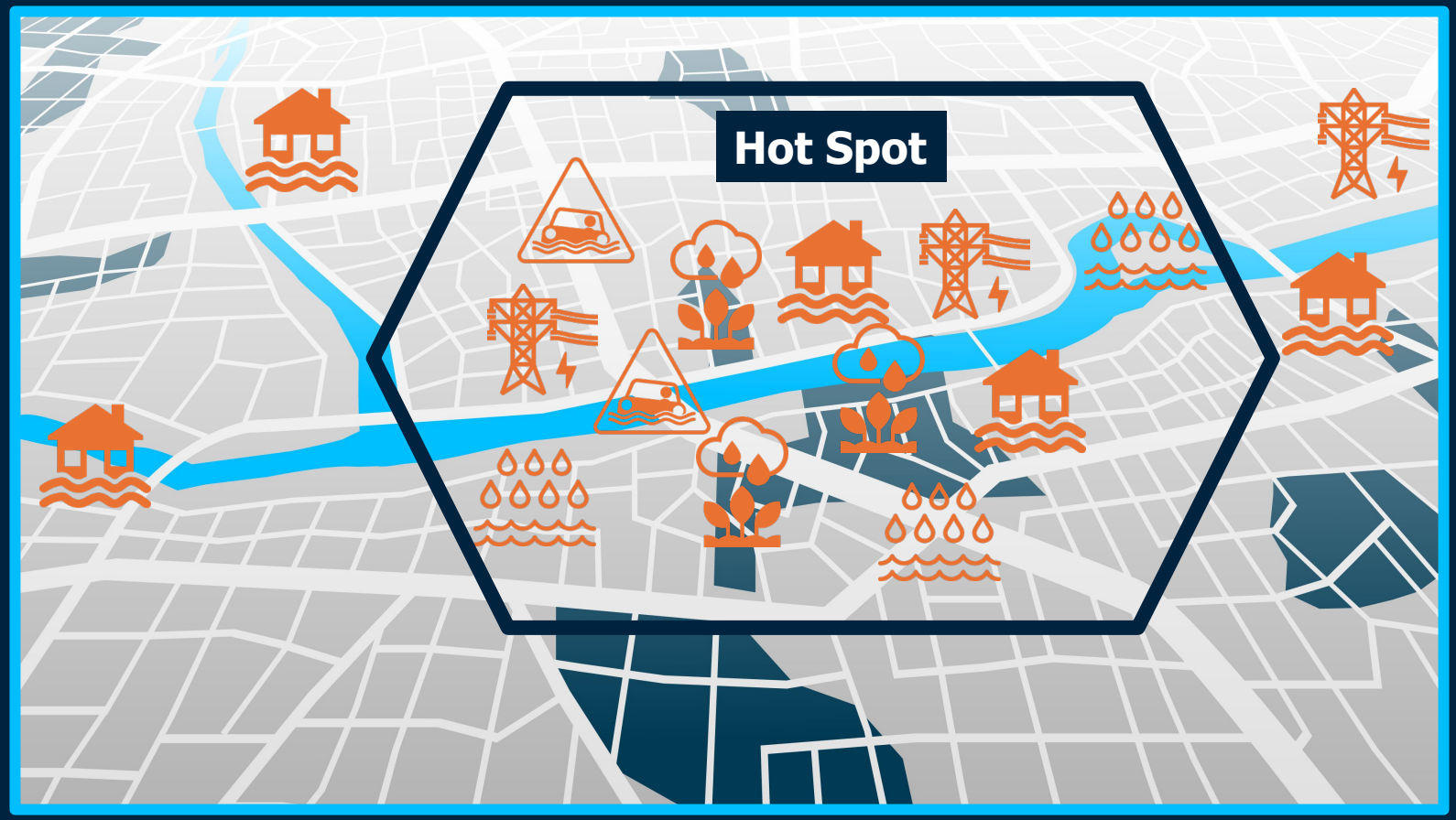
Flood risk to roadways



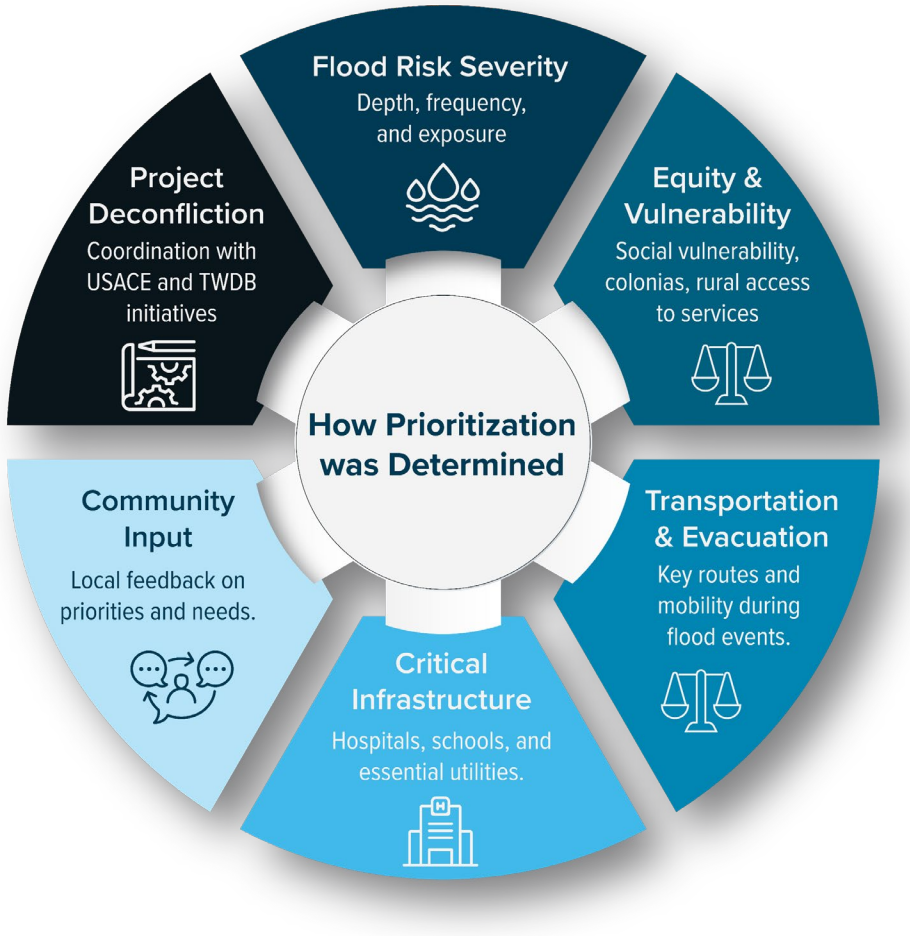
Flooding extent

Hot Spot Indicators

- Flood risk to structures
- Flood risk to critical infrastructure
- Flood risk to agricultural land
- Flood risk to roadways
- Flooding extent



River Basin Flood Study Prioritization



Input from 40 Jurisdictions

78,956 Pieces of Data Received

243 Hot Spots Initially Identified

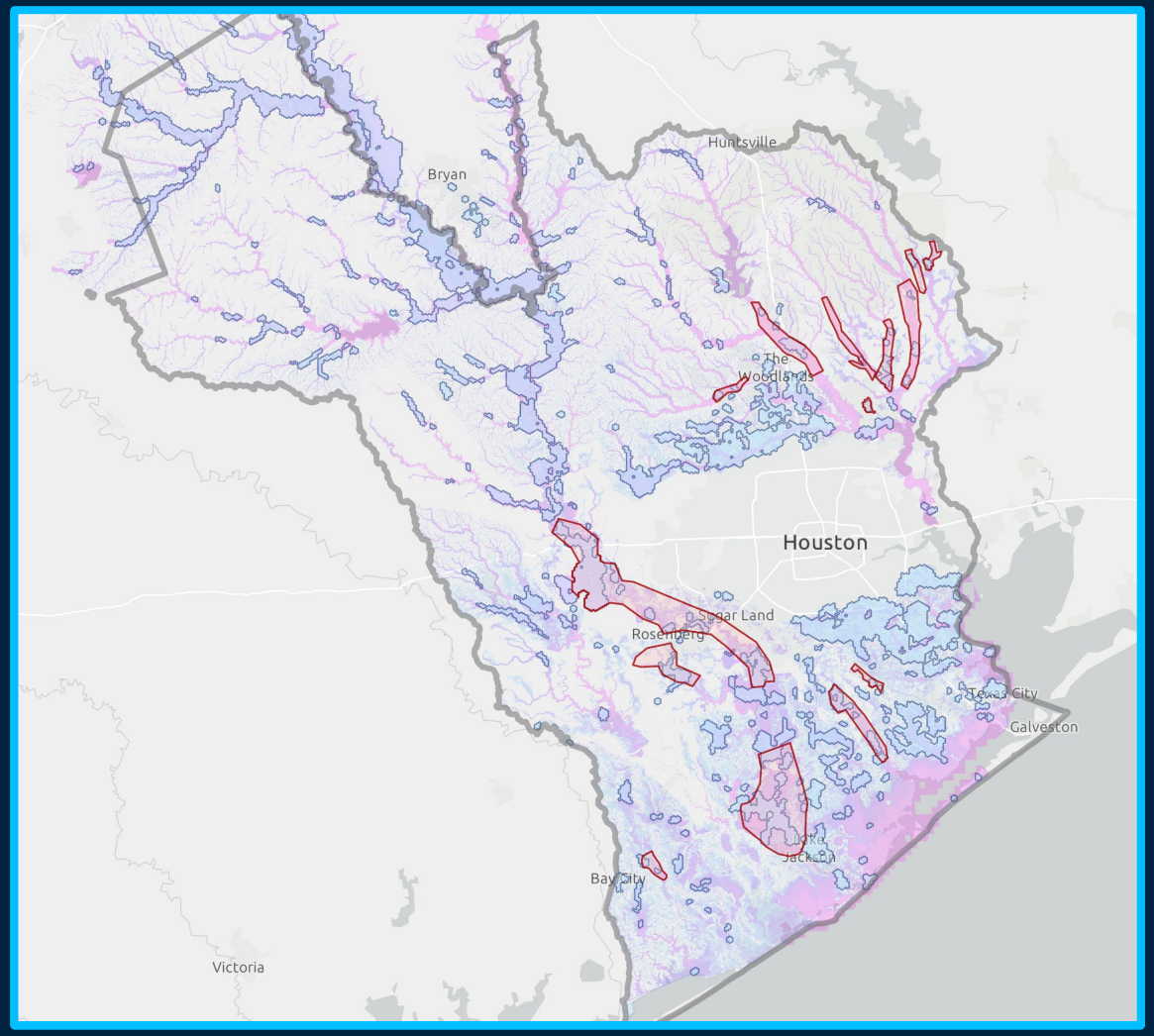
Hot Spot Analysis

Filtered, grouped, and prioritized based on numerous factors:

- Benefit to General Public
- Scale of Flood Mitigation Benefit (Local vs. Regional)
- Overlaps with Similar Studies
- Complexity of Area
- Impact on vulnerable populations (SoVI, LMI)
- Anticipated ability to identify structural mitigation improvements
- Other available funding sources

Resulted in Delineation of 14 "Mitigation Areas"

Hot Spot to Mitigation Area Process



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Alternative Analysis

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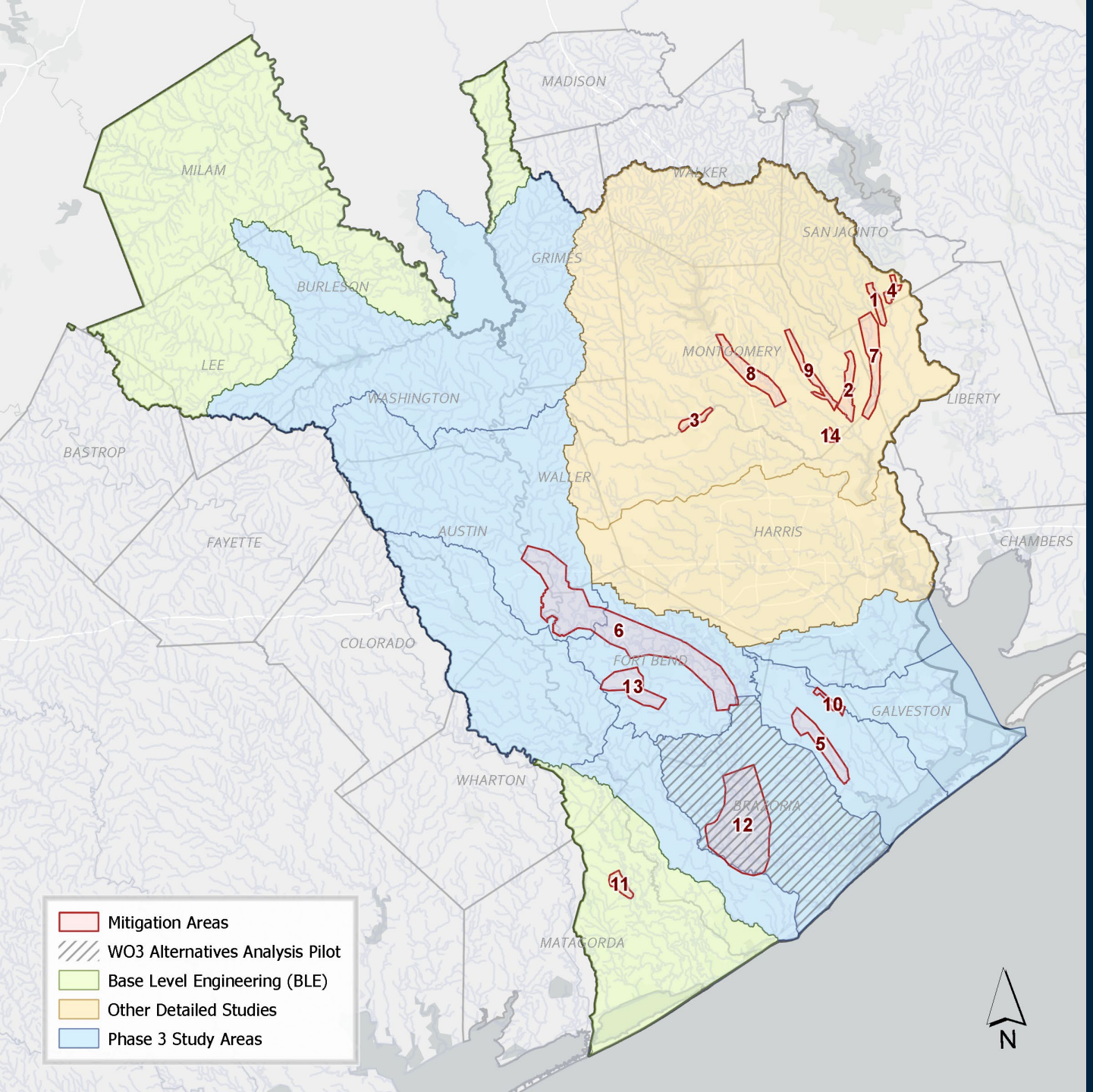
Central Region Mitigation Areas



Map Key Label No	Mitigation Area Name	Area (sq mi)
1	Reese Bayou	8.7
2	Lower Peach Creek	17.8
3	Spring Creek Near Tomball	7.0
4	Luce Bayou Near Cleveland	5.4
5	Chocolate Bayou	30.6
6	Middle Brazos River	202.5
7	Lower East Fork San Jacinto	33.9
8	West Fork San Jacinto Near Conroe	32.8
9	Lower Caney Creek	17.0
10	Mustang Bayou Near Alvin	5.5
11	Lower Hardeman Slough	8.9
12	Lower Brazos River	135.3
13	Big Creek	33.3
14	Bens Branch	2.7

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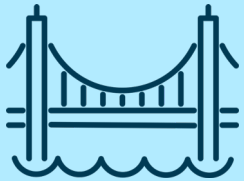
Alternative Analysis

- Regional-scale flood mitigation projects developed and modeled in detail
  - Baseline models or best-available models will be used as a starting point
  - Emphasis on multi-jurisdictional mitigation projects and strategies
  - Coordination with ongoing studies/projects to avoid duplication of effort and maximize benefit to communities in Central Region

Potential Mitigation Strategies



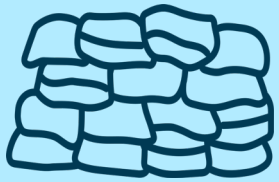
Conveyance Improvements

Structure Elevation

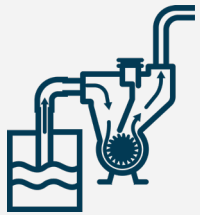
Detention

Infrastructure Elevation

Nature-Based Solutions



Flood Barrier/Levee



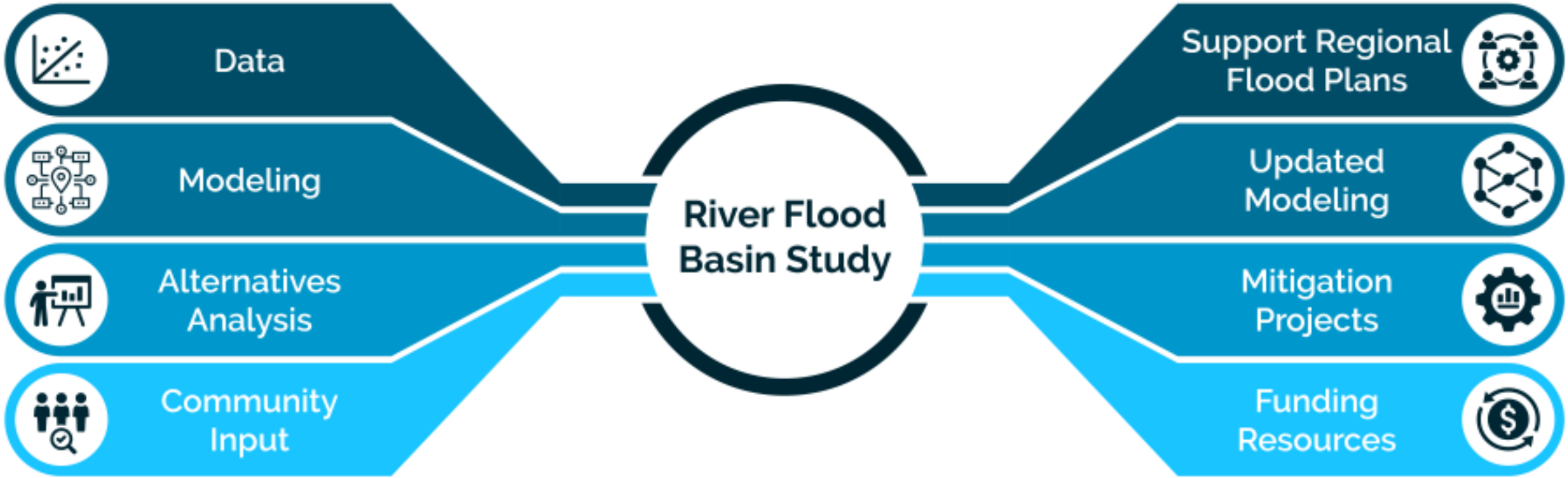
Pumping Systems

Diversion

Mitigation Strategy Considerations

- Flooding Characteristics
  - Source/Cause of flooding
  - Severity, frequency, duration of flooding
- Watershed / Site Conditions
  - Topography, contributing drainage area, soils, utilities and existing infrastructure, land use, future development potential, property ownership
- Regulatory Requirements
  - Design, permitting, negative impacts
- Community Considerations
  - Community acceptance, aesthetics, operations and maintenance needs, economic impacts
- Pragmatic Considerations
  - Cost-Effectiveness, ability to obtain funding, project timing/phasing

Study Outcomes



Mitigation Assistance for Tailoring Choices (MATCH) Tool

The Tool's objective is to align unfunded or concept mitigation projects with funding sources.

Access the MATCH Tool here: https://findfundingtx.cloud.tdis.io/

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The Approach

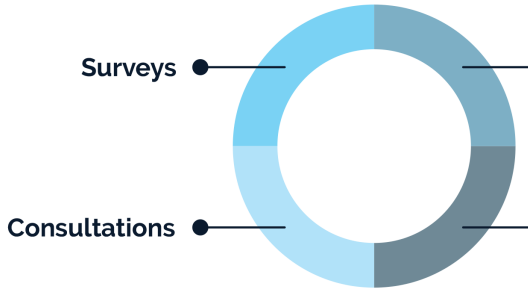
- Environmental Scan
- Engage Users and Refine Use Cases
- Requirement Analysis
- Implementation Road Map
- Agile Development and Training

Communities

State Resilience Planning & Emergency Management

State Data Management

Federal Partners



2 Virtual Workshops with Community Project Champions

1 Virtual Project Briefing with Community Project Champions

1 Virtual Workshop with Strategists & Visonaries

1 Virtual Workshop with Magicians

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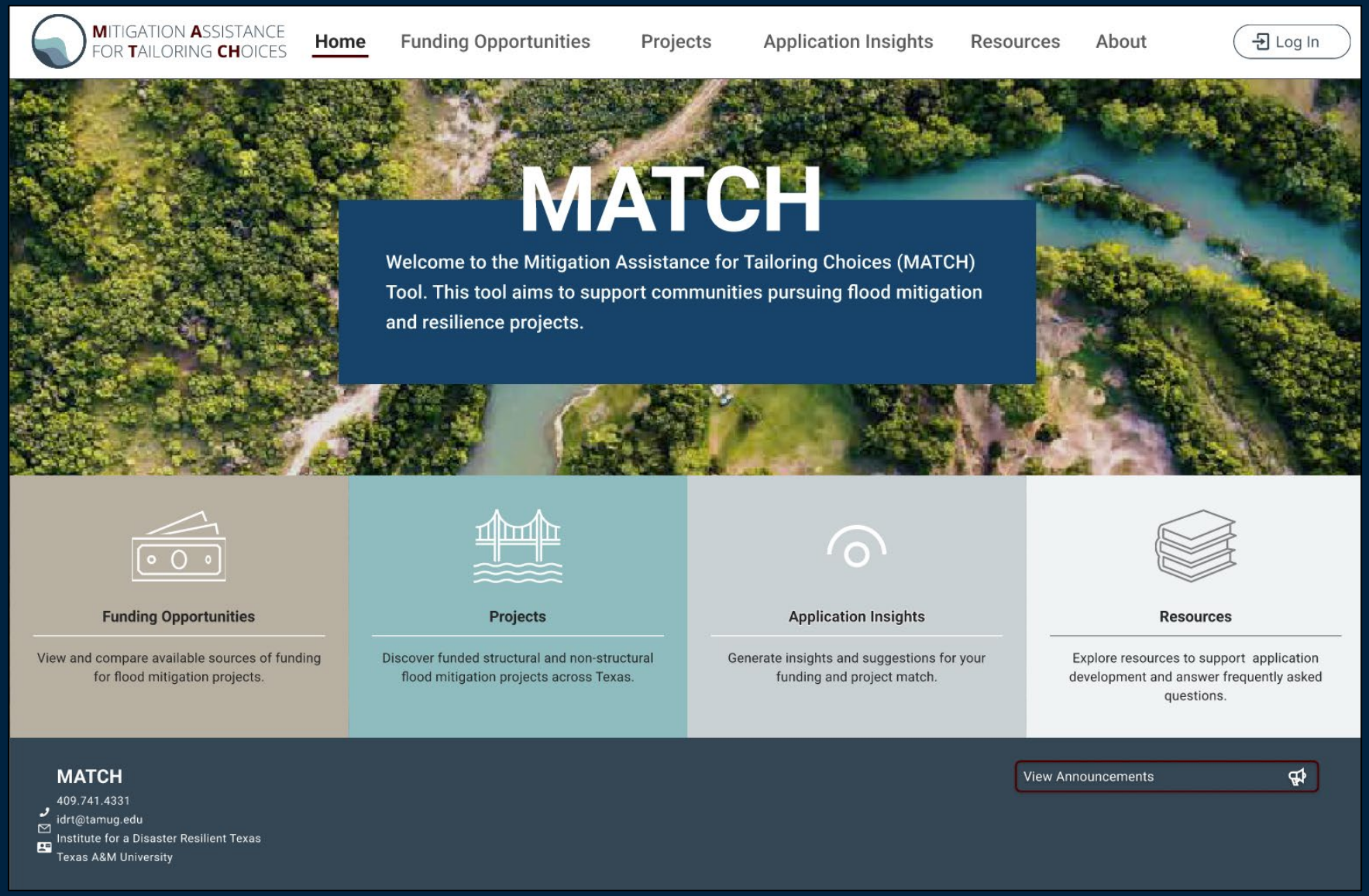
Draft Mockup



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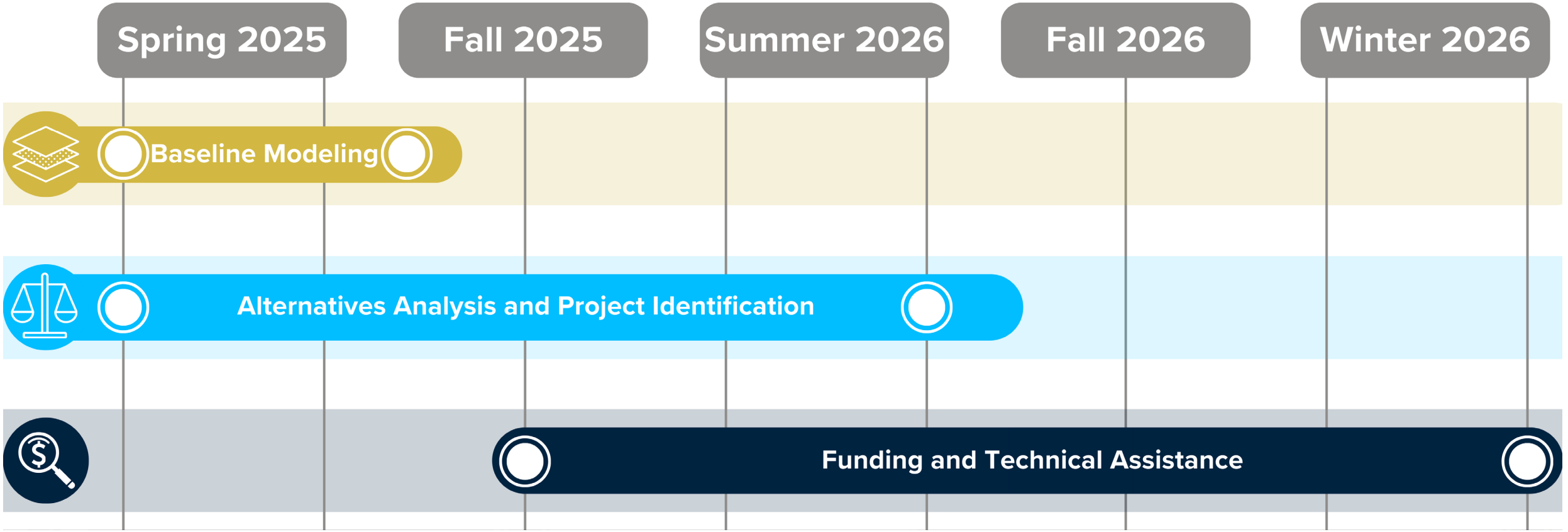
Central Region Next Steps

Alternatives Analysis Outreach and Workshops

Funding and Technical Assistance

Central Region Timeline



QUESTIONS?

Contact GLO-CDR by email at

glofloodstudies.central@recovery.texas.gov