

Waller County, Texas

Brazos River Flood Update Study

Public Meeting

October 11, 2023

Agenda

PUBLIC MEETING #3

- Study Background and Goals
- Summary of Existing Conditions
- Proposed Projects
- Flood Response Plan Overview



Background and Goals

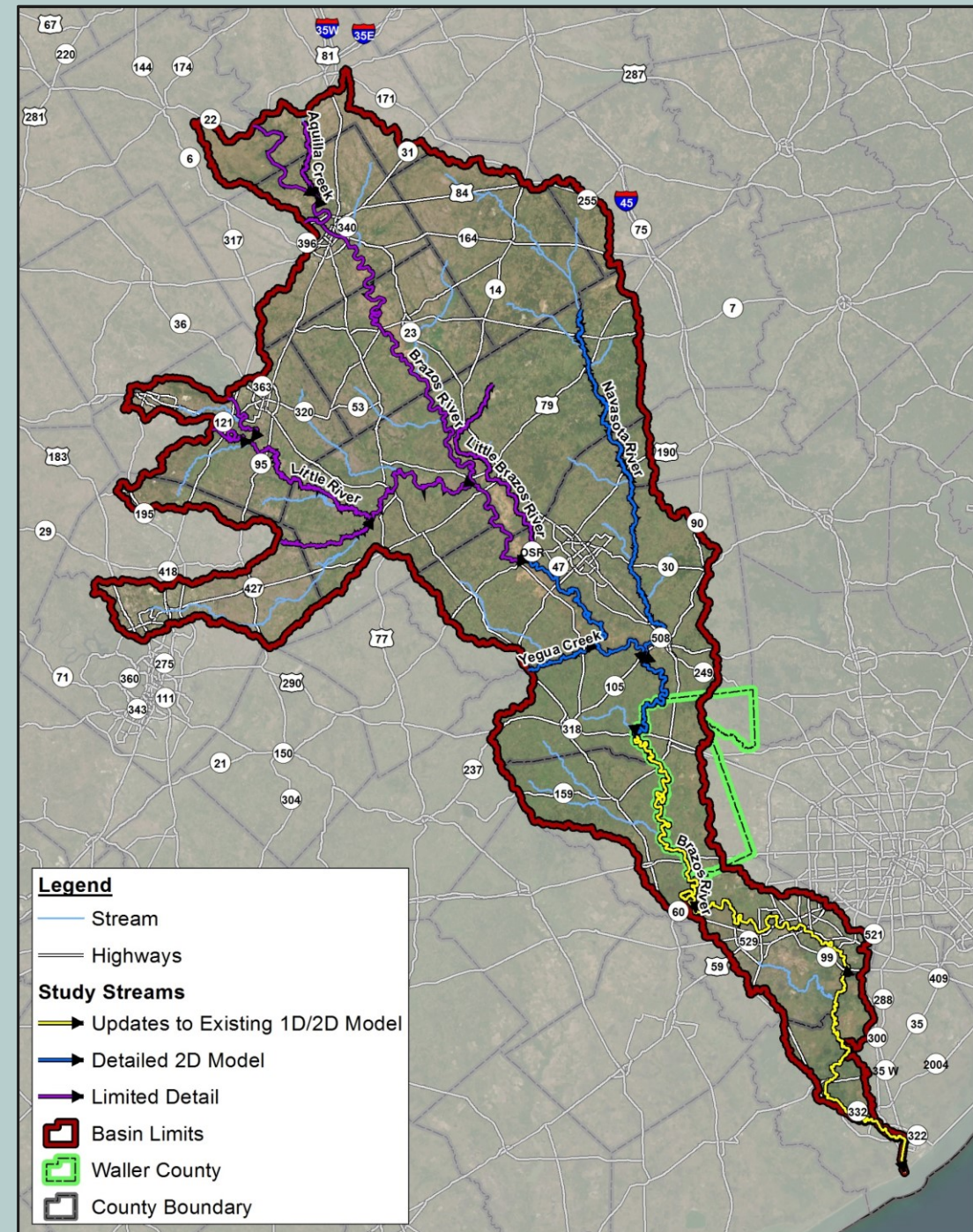
BACKGROUND

- Mapping is relatively outdated
- Unstudied areas to the north
- Impact of Navasota River flows
- Previous modeling to build upon



GOALS

1. Provide better **Brazos River flood risk** information for Waller County
2. Develop **flood protection projects** for flood prone areas
3. Integrate with existing information to validate results and **create continuity** across the region.
4. Recommend flood response measures to **protect and notify residents** during flooding events.

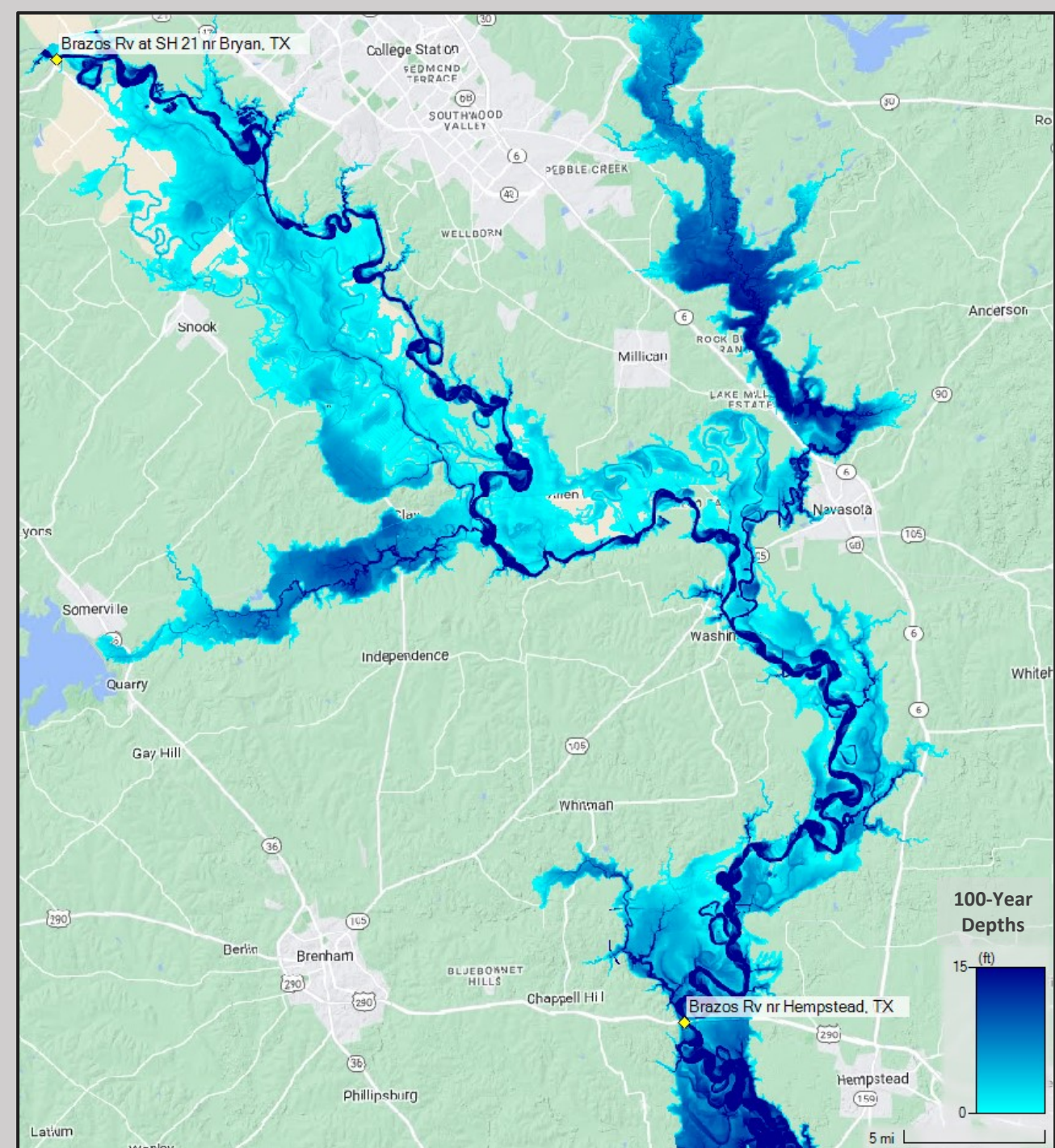




Existing Conditions

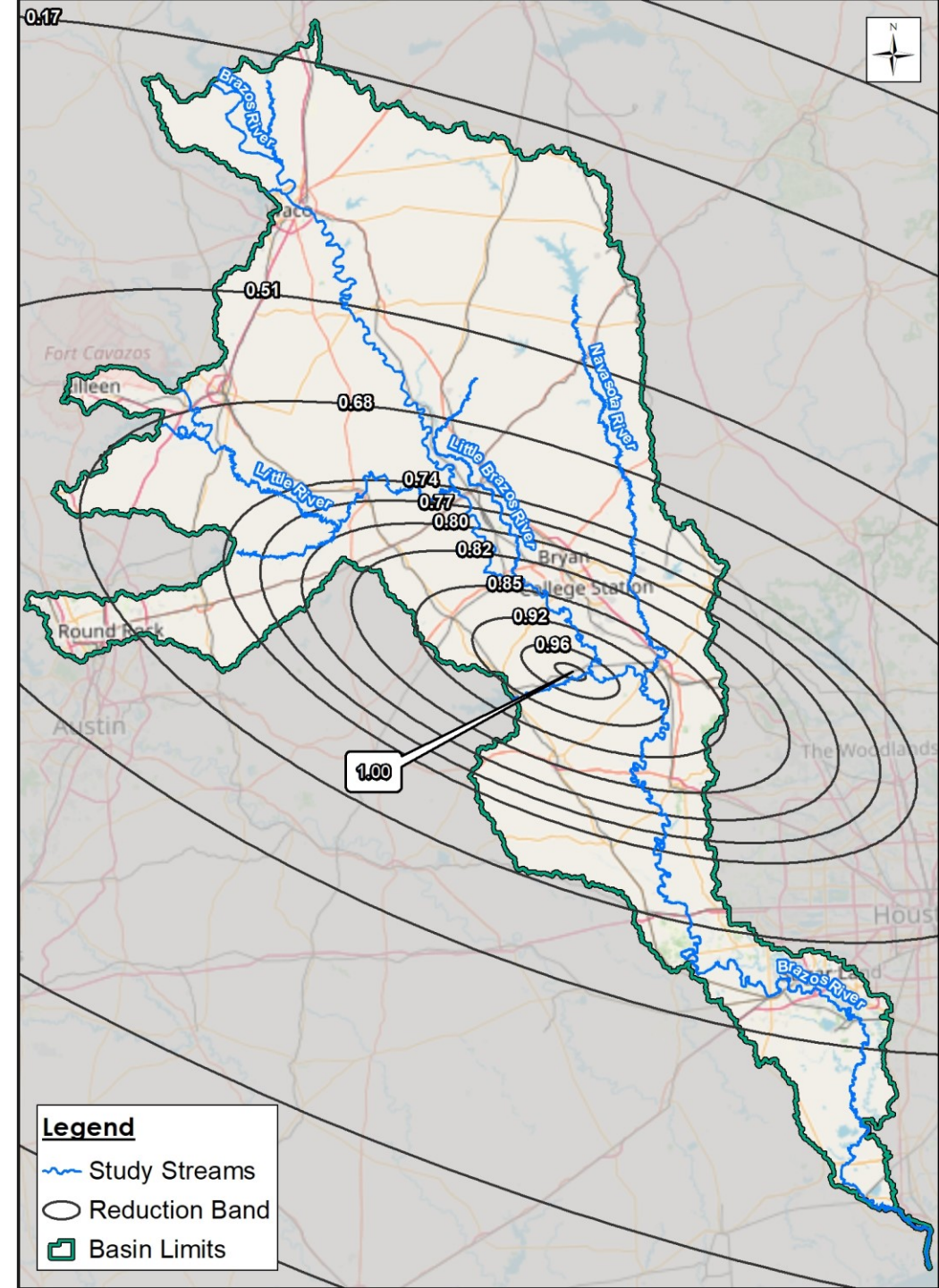
EXISTING CONDITIONS

- Developed detailed model for the Navasota and Brazos Rivers upstream of Hempstead:
 - Brazos River from Bryan / College Station through Waller County
 - Navasota River from Lake Limestone to confluence with the Brazos River
- Calibrated model to multiple gages and historic storms



EXISTING CONDITIONS

- Used storm centering to develop calibrated design storms focused on measured data through Waller County:
 - Calculated design storm flows based on USGS historical gage data
 - Moved storm center around to find the position and rotation that generated flows close to target values
 - Used resulting hydrology to analyze existing flood risk along the Brazos River in Waller County



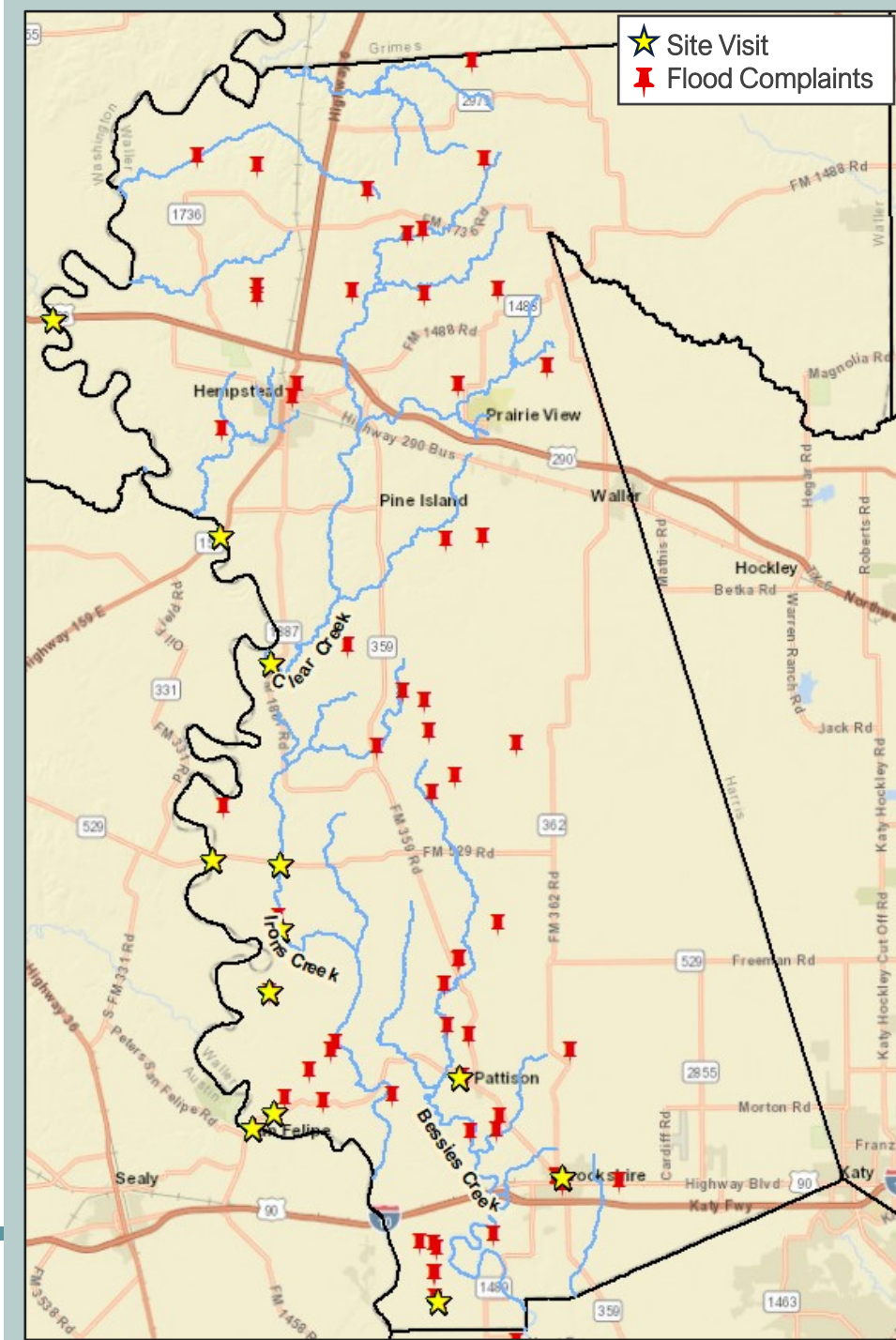


Proposed Projects

PROPOSED PROJECTS

Identification

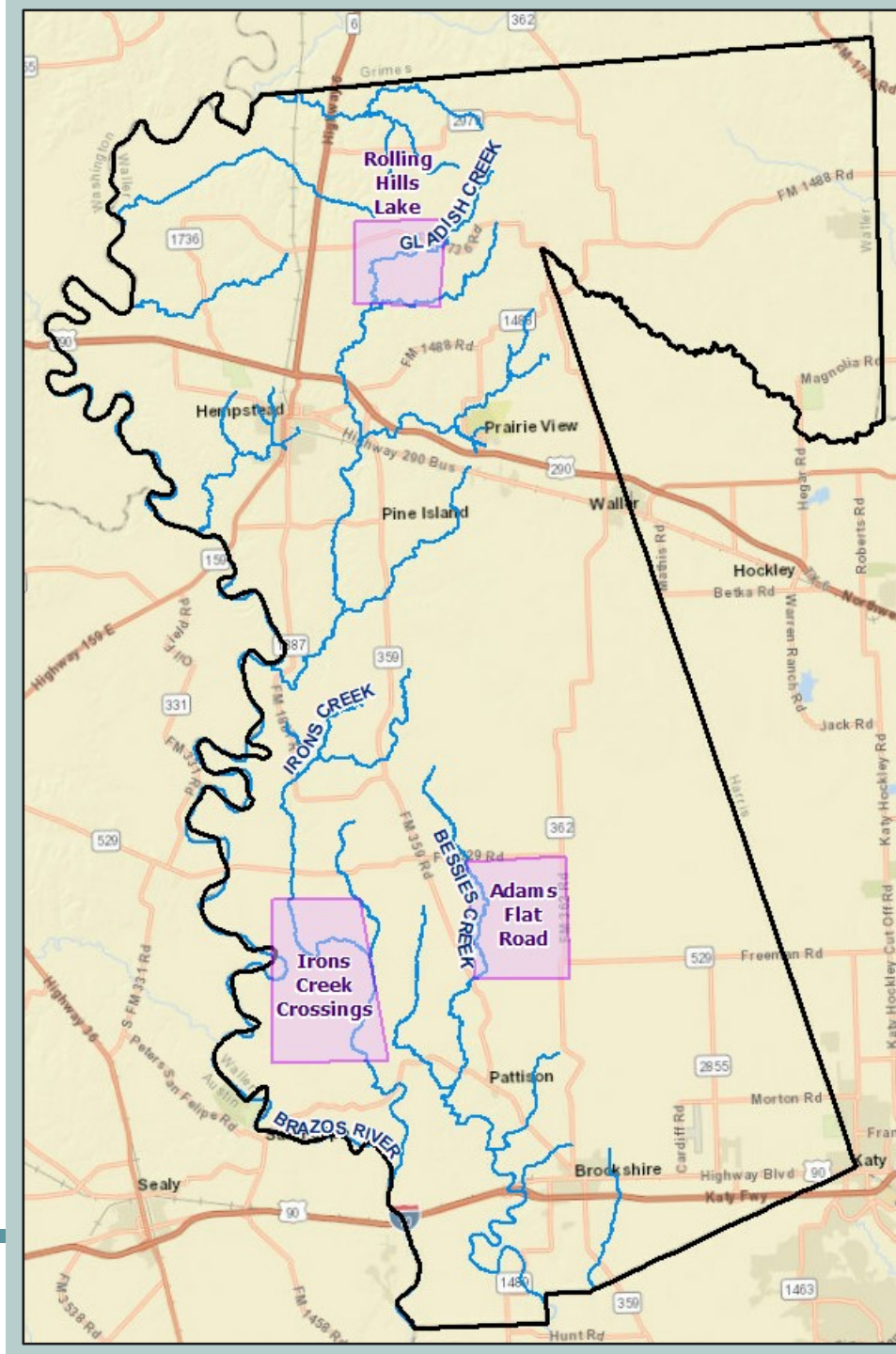
- Utilized multiple sources of information to identify areas with severe flood risk:
 - Historical Flood Complaints
 - Site Visit with County
 - Modeling Results
- Identified what types of projects could be implemented to address flooding in each area



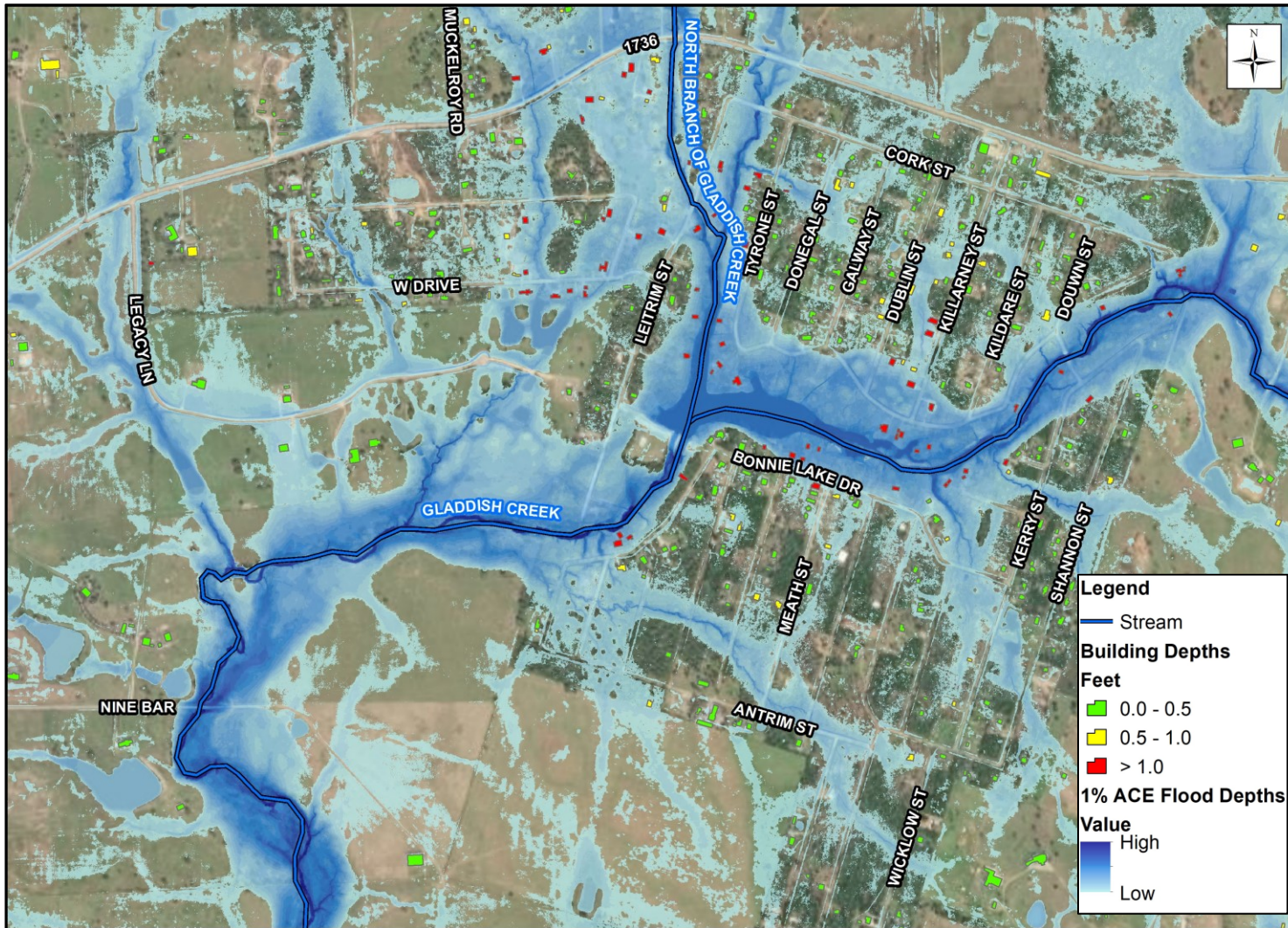
PROPOSED PROJECTS

Selection

- Filtered out locations if:
 - Other flood control projects in area
 - Controlled by Brazos River flooding
 - Multiple sources of flooding
 - Lack of validation from County or claims
- Determined 3 locations for additional modeling and project development



PROPOSED PROJECTS



Rolling Hills Lake

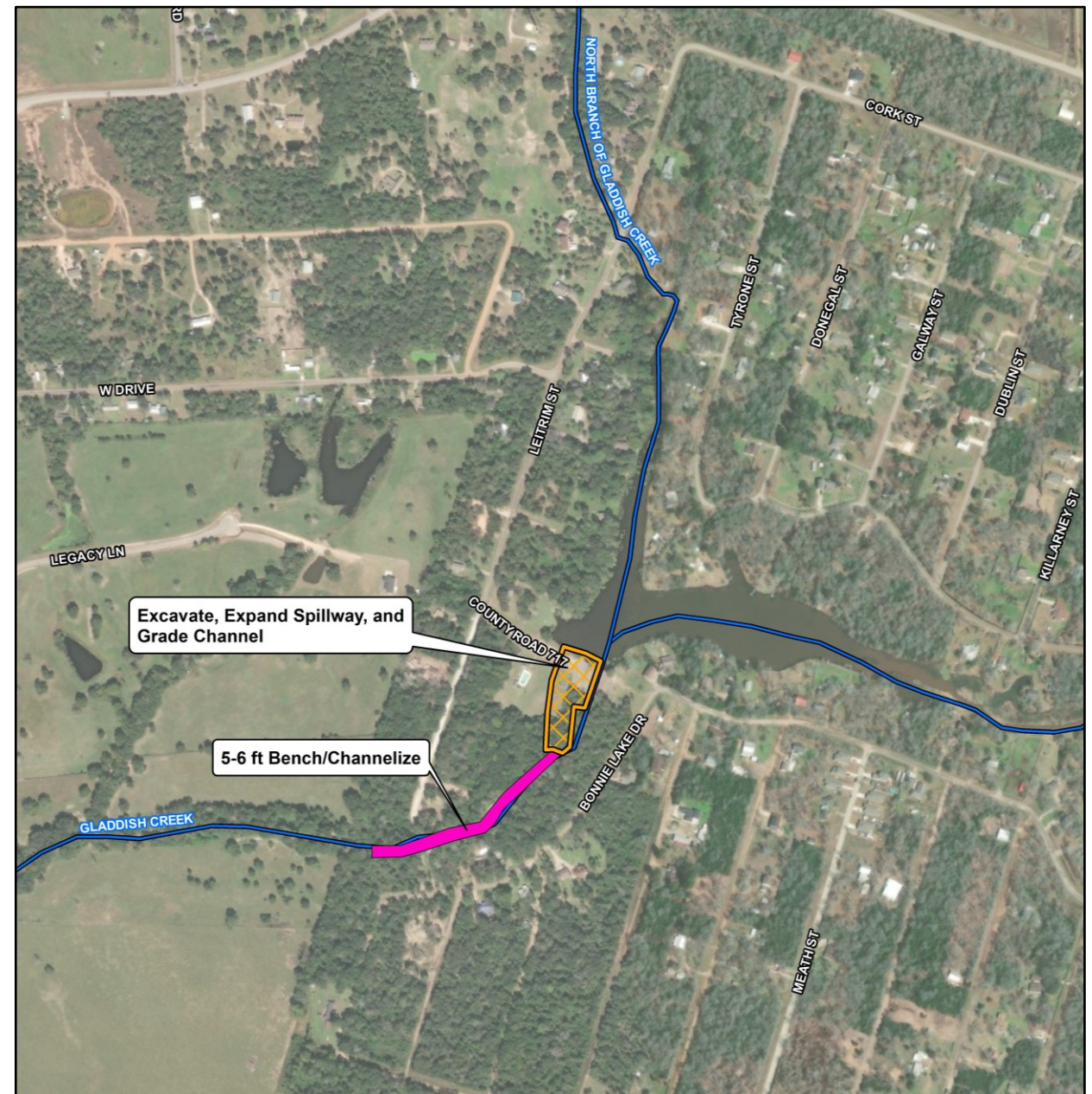
- Identified as an area with a **high density of at-risk structures** and **historical flood claims**
- Flooding caused by **overflow of lake** into surrounding neighborhood
- Wanted to **avoid permanently lowering lake** levels while providing flood relief to residents

PROPOSED PROJECTS

Rolling Hills Lake

Weir improvement project identified for problem area:

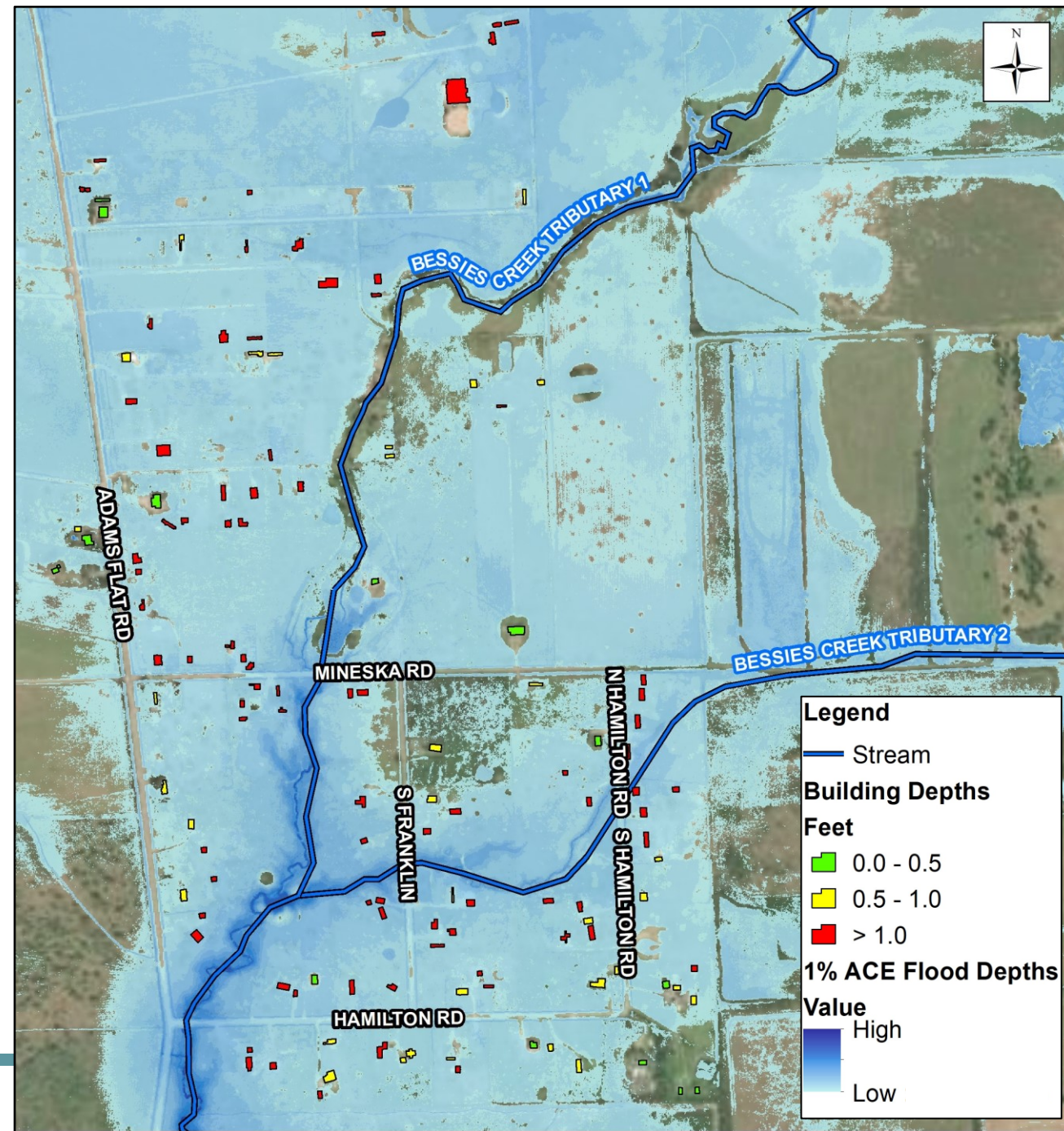
- Increases lake discharges during storm events
- Channel benching to mitigate flow increases



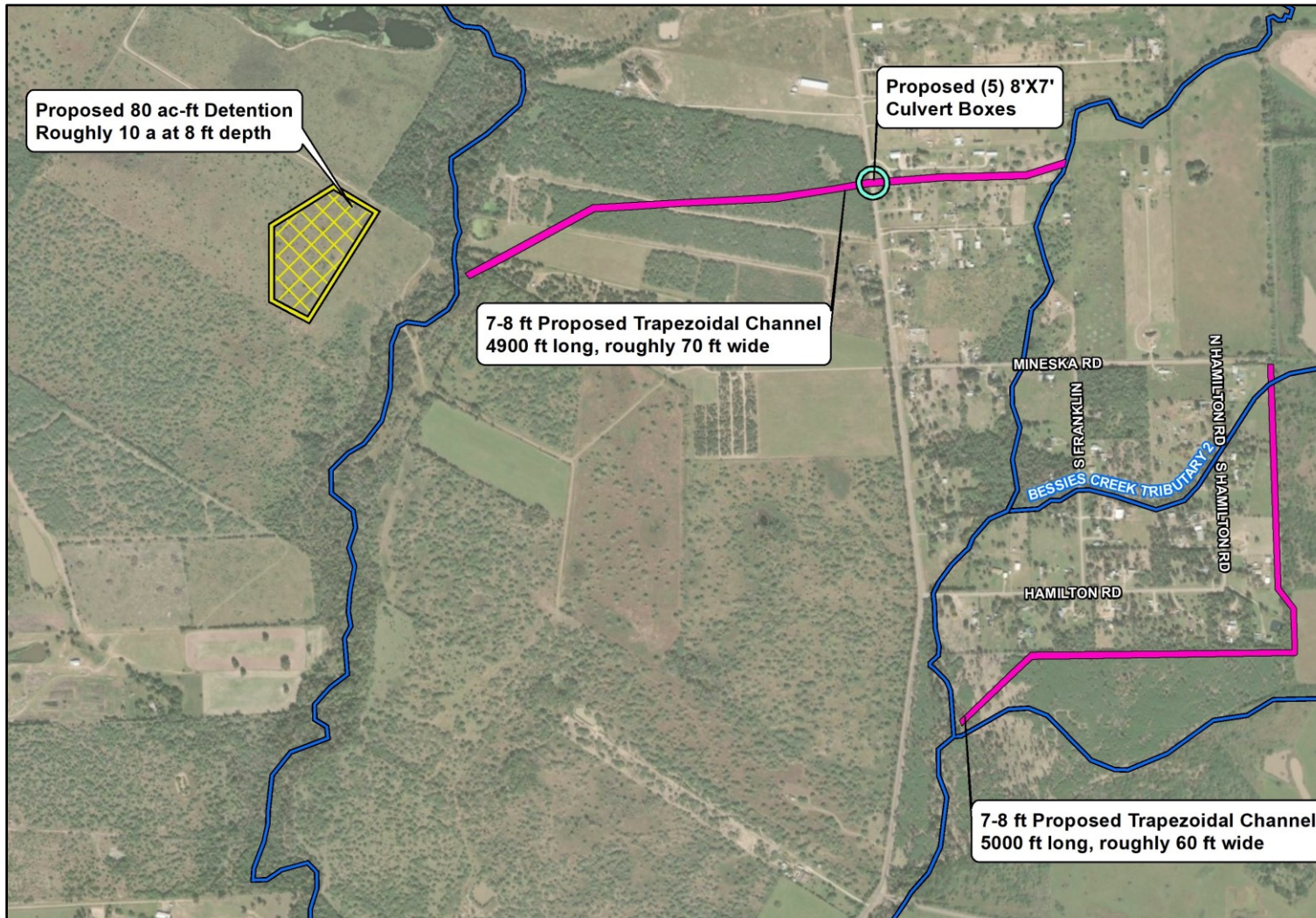
PROPOSED PROJECTS

Adams Flat Road

- Identified as an area with a **high density of at-risk structures** and **historical flood claims**
- Flooding caused by **overflow from Bessie's Creek Tributaries** into surrounding neighborhood
- Shallow, **widespread flooding**



PROPOSED PROJECTS



Adams Flat Road

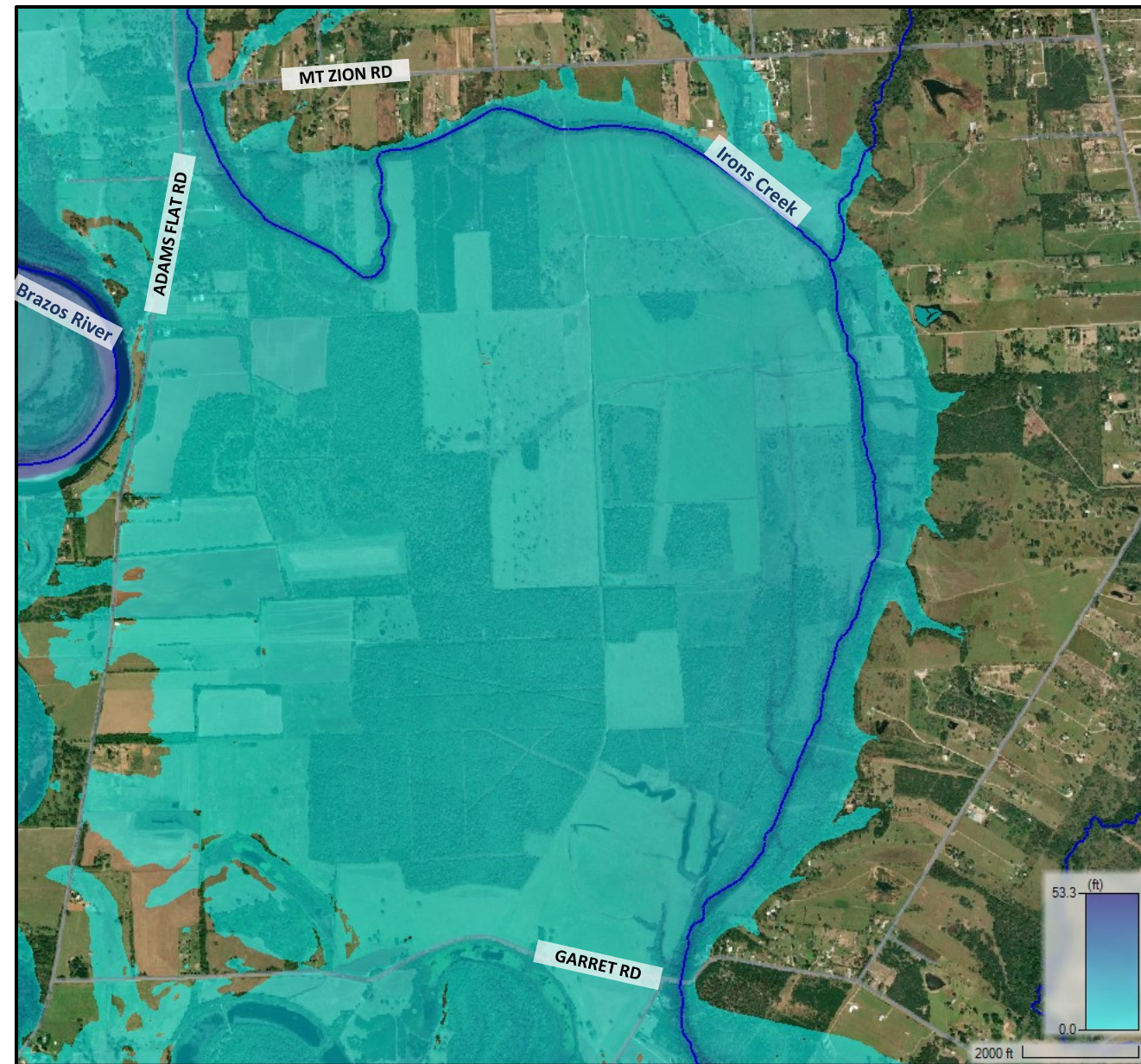
Two diversion channel projects identified for problem area:

- **West Diversion Channel** would redirect flow from neighborhood area to Bessie's Creek mainstem
- **East Diversion Channel** would reroute flows around neighborhood instead of through

PROPOSED PROJECTS

Irons Creek Crossings

- Identified as an area with a **high density of at-risk structures** and **historical flood claims**
- Flooding caused by **overflow from Bessie's Creek Tributaries** into surrounding neighborhood
- Shallow, **widespread flooding**

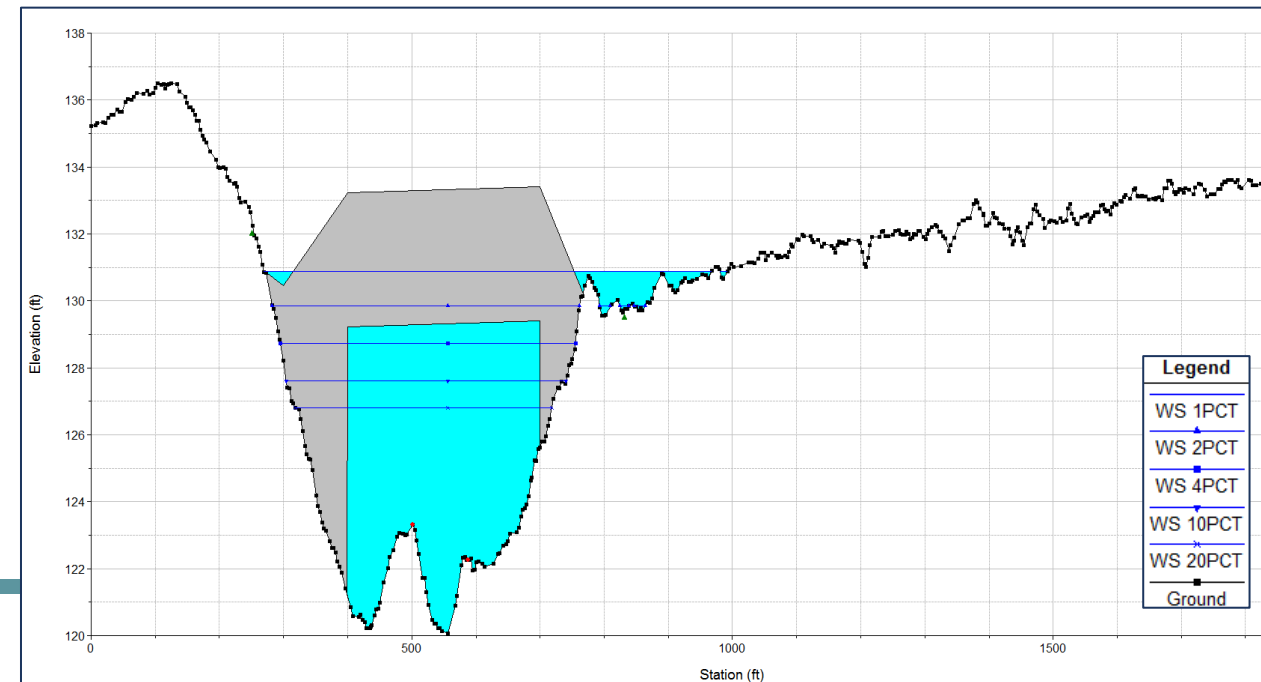
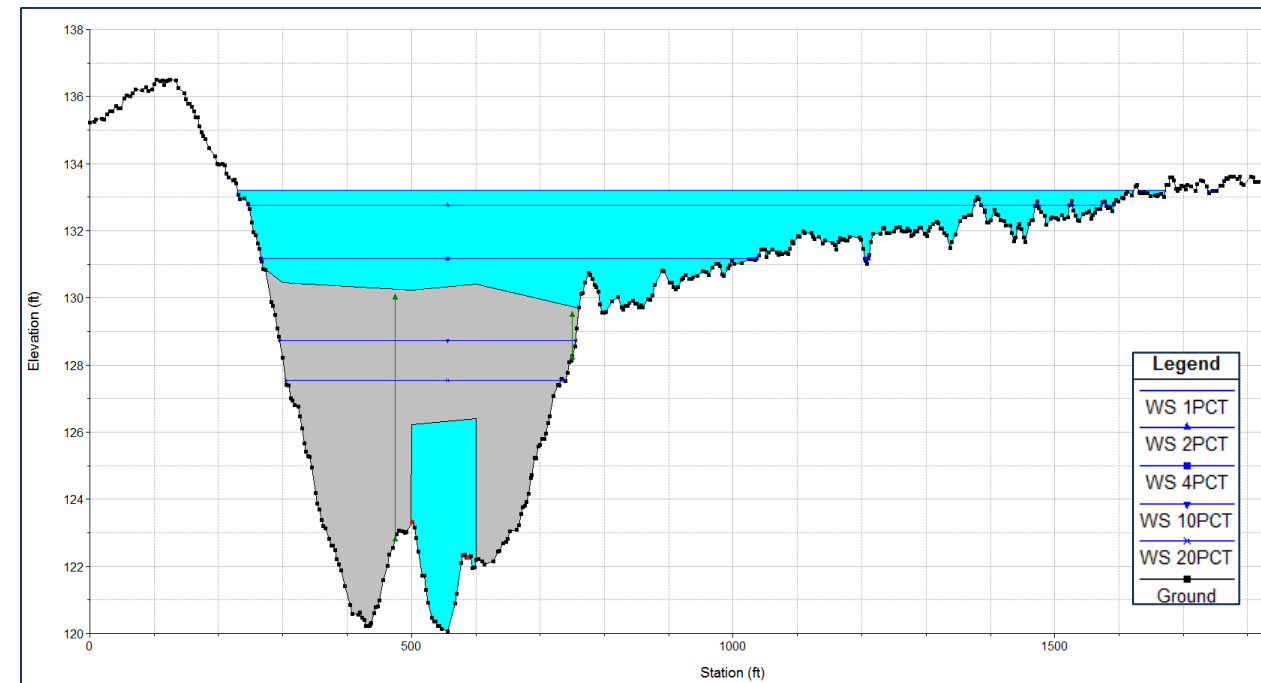


PROPOSED PROJECTS

Irons Creek Crossings

Bridge improvement project identified for project area.

- Raise and lengthen bridge at Mt Zion Rd
 - Works with County project to improve Diemer Road at washout
- Crossing at Garret Rd already provides high level of service for Irons Creek flows



PROPOSED PROJECTS

Project	Brief Description	Summary of Benefits (100-Year)	Estimated Costs	BCR
West Diversion Channel	Construction of channel to reroute flows around Adams Flat Rd neighborhood.	67 structures with flood reduction	\$9,500,000	1.2
East Diversion Channel	Construction of channel to reroute flows around Adams Flat Rd neighborhood.	62 structures with flood reduction	\$3,200,000	2.1
Weir Improvements	Weir widening to increase discharge rates for Rolling Hills Lake.	15 structures with flood reduction	\$9,700,000	0.5
Irons Creek Crossing	Improvements to crossing at Mt Zion Rd and Irons Creek.	2.9 ft reduction in depths across roadway	\$1,500,000	0.0*

*The project will provide mobility benefits. However, there are limited monetary benefits associated with increases in mobility.

NON-STRUCTURAL MITIGATION

Buyout Costs

- Estimated buyout for residential structures in 10-year floodplain is \$2.5 M
- Estimated buyout for commercial structures in 10-year floodplain is \$56 M

Criteria Updates

- Recommendations for engineering methodology, detention discharges, and pumped detention



CRITERIA UPDATES

Ensure new development is flood resilient and does not impact existing properties.



VOLUNTARY BUYOUTS

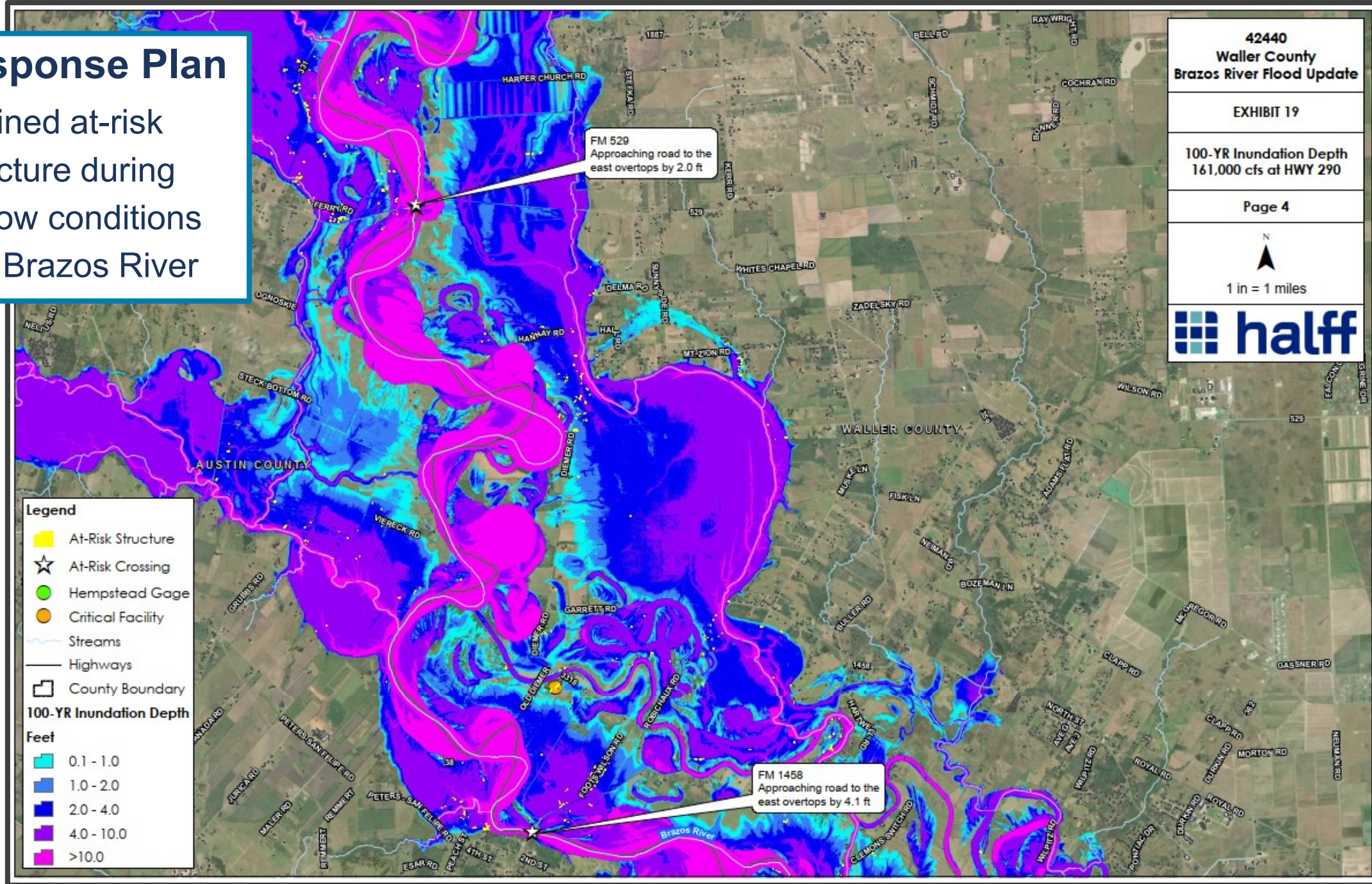
Remove residents from risk that is difficult to mitigate using structural solutions.



Flood Response Plan

Flood Response Plan

Determined at-risk infrastructure during different flow conditions within the Brazos River



■ | NEXT STEPS

- Engagement with Regional Flood Planning
- Pursue funding opportunities
- Updates to regulatory floodplain
 - TWDB to initiate in October 2023



QUESTIONS?

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