LOWER RIO GRANDE REGIONAL FLOOD PLANNING GROUP MEETING

Agenda Item – Task 4C Technical Memorandum Update

March 9, 2022

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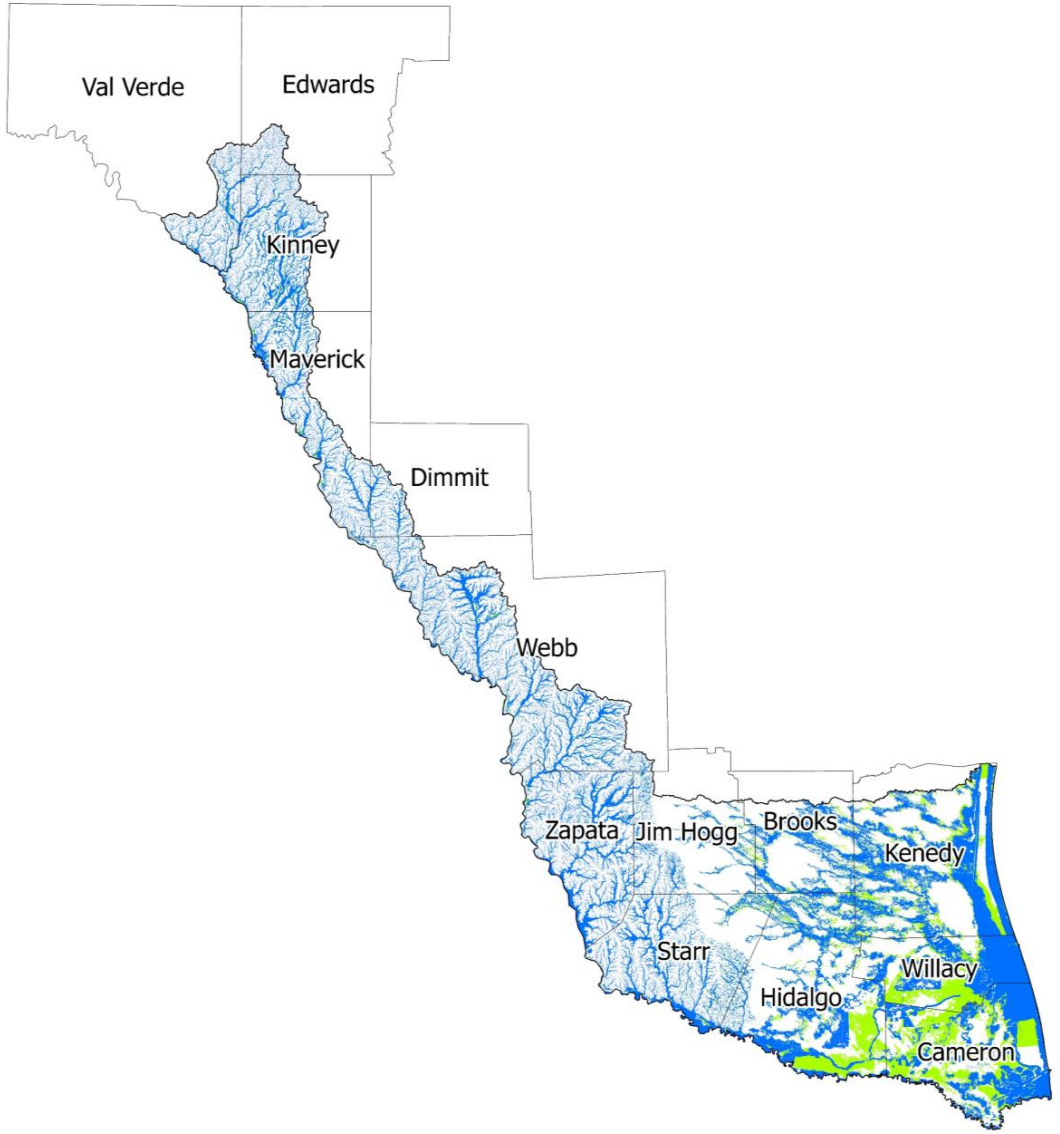
AGENDA

Discussion and Update on:

- ❑ Task 4C.1.c-e checklist
- ❑ Public Webmap
- ❑ Future Conditions Update
- ❑ Exposure and Vulnerability Assessment Draft Results

TASK 2 FLOOD RISK ANALYSES

1% & 0.2% Floodplain Maps



- **Technical Memorandum**
  - Due March 7, 2022
  - Show gaps in inundation boundary mapping
  - Exposure Analysis
  - Vulnerability Analysis
- **Public Input / Public Meeting**
  - 1% & 0.2% Floodplain Maps
  - Web maps with links on Region 15 webpage

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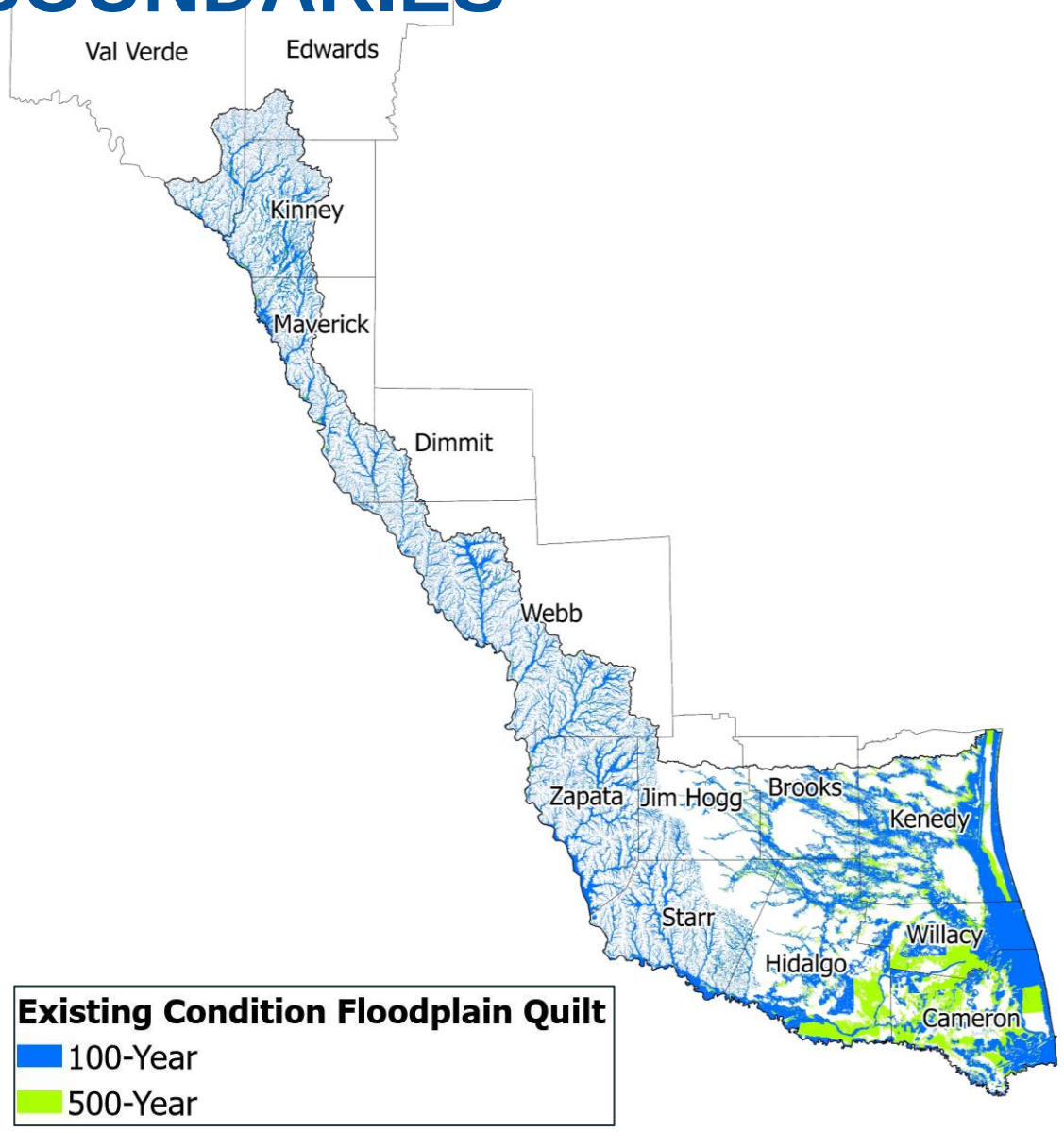
EXISTING FLOOD BOUNDARIES

DATA SOURCES

- FEMA Zone AE
- FATHOM



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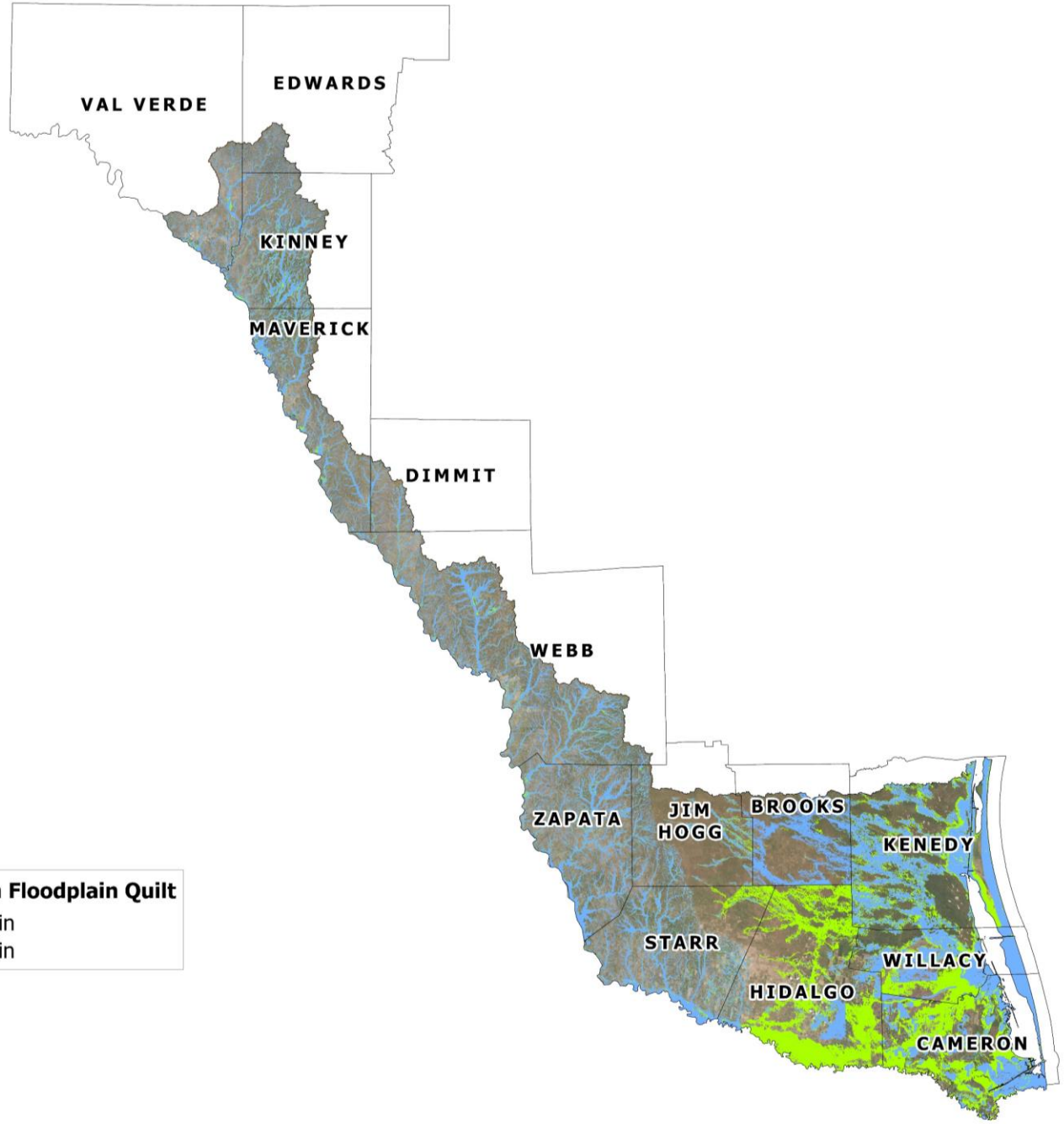
EXISTING CONDITIONS FLOOD HAZARD

Map 4

FATHOM data is approximate flood boundary not based on detailed engineering analysis



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RECOMMENDATIONS – 100-YEAR

*The **current effective 500-year floodplain** is an appropriate approximation for the **future 100-year floodplain***

Consider the opportunity for inclusion of existing data and studies that have analyzed future flood risk when amending the plan as part of the additional funding allocation.

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FUTURE 500-YEAR DETERMINATION

Considerations

- Increased rainfall may increase floodplain extents
- Varying floodplain widths dependent on stream size and topography
- Limited mapping outside the 500-year floodplain
- Limited available “future” modeling and results
- Recommendation

  Existing 0.2% + buffer becomes Future 0.2%

Also applies to Future 100-year determination

- Obtain a general understanding of future flood risk
- Not a regulatory product

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APPLYING THE BUFFER - TRIBUTARIES

Three Potential Options

	Advantages	Disadvantages
Option 1: No tributary buffer	Tributary buffers may differ and removes assumptions	May not necessarily reflect future conditions for the tributaries
Option 2: Same buffer for main stems and tributaries	Uses available information	Floodplain buffer could be different from the main stems since detailed hydraulic modeling is not available.
Option 3: Differing buffer for tributaries	Most accurate option	Large data gaps – no data on the tributary buffer

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FUTURE FLOOD BOUNDARIES

What are other regions doing?

Region	Future 1% Floodplain	Future 0.2% Floodplain
Lower Brazos	Existing 0.2%	Existing 0.2% + (Delta or Buffer)
Trinity	Existing 0.2%	Existing 0.2% + (Delta or Buffer)
Neches	Existing 0.2%	Existing 0.2% + (Delta or Buffer)
Sabine	Existing 0.2%	Existing 0.2% + (Delta or Buffer)
Guadalupe	Existing 0.2%	Existing 0.2% + (Delta or Buffer)
San Jacinto	Existing 0.2%	Existing 0.2% + (Delta or Buffer)

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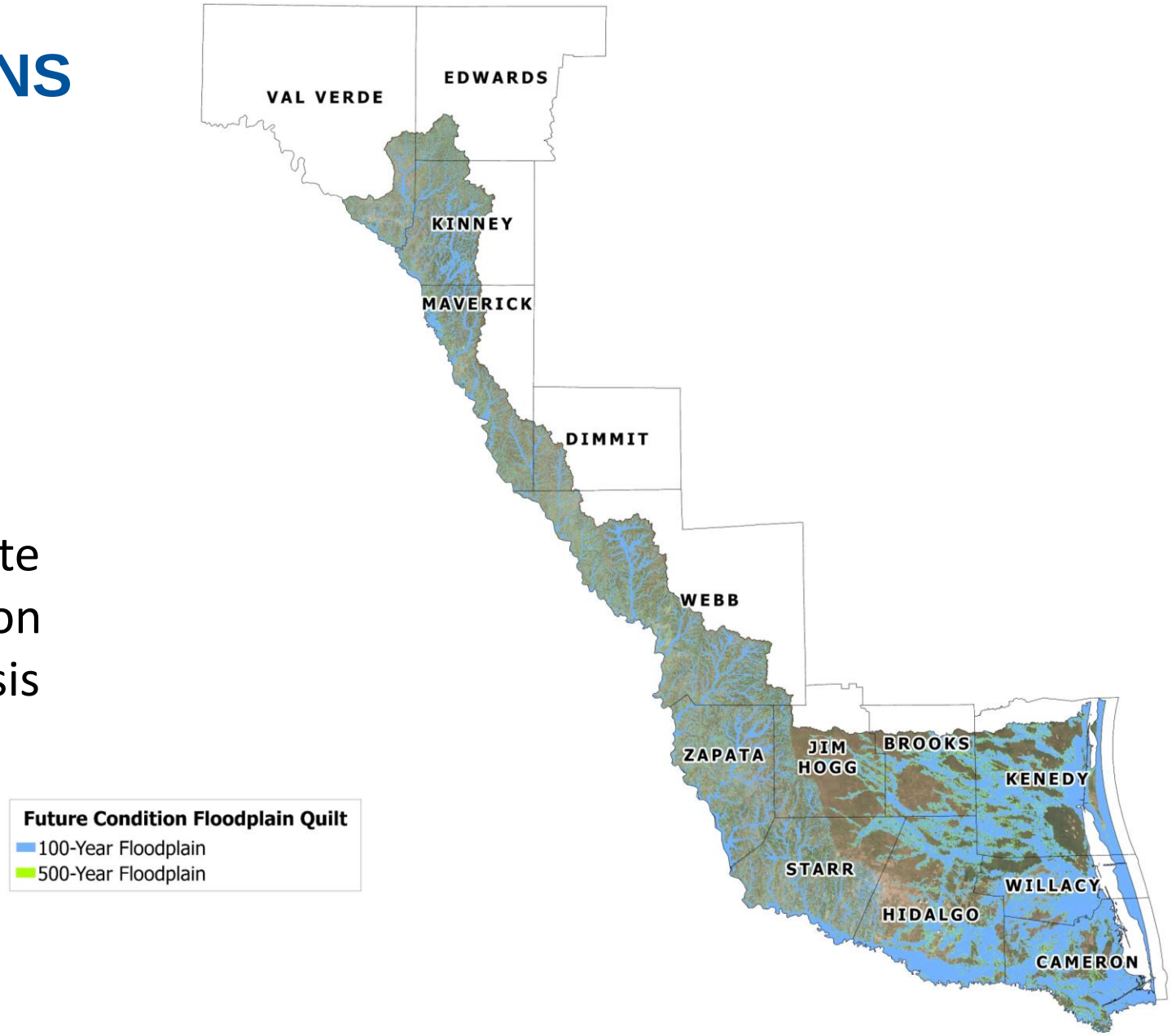
FUTURE CONDITIONS FLOOD HAZARD

Map 8

FATHOM data is approximate flood boundary not based on detailed engineering analysis



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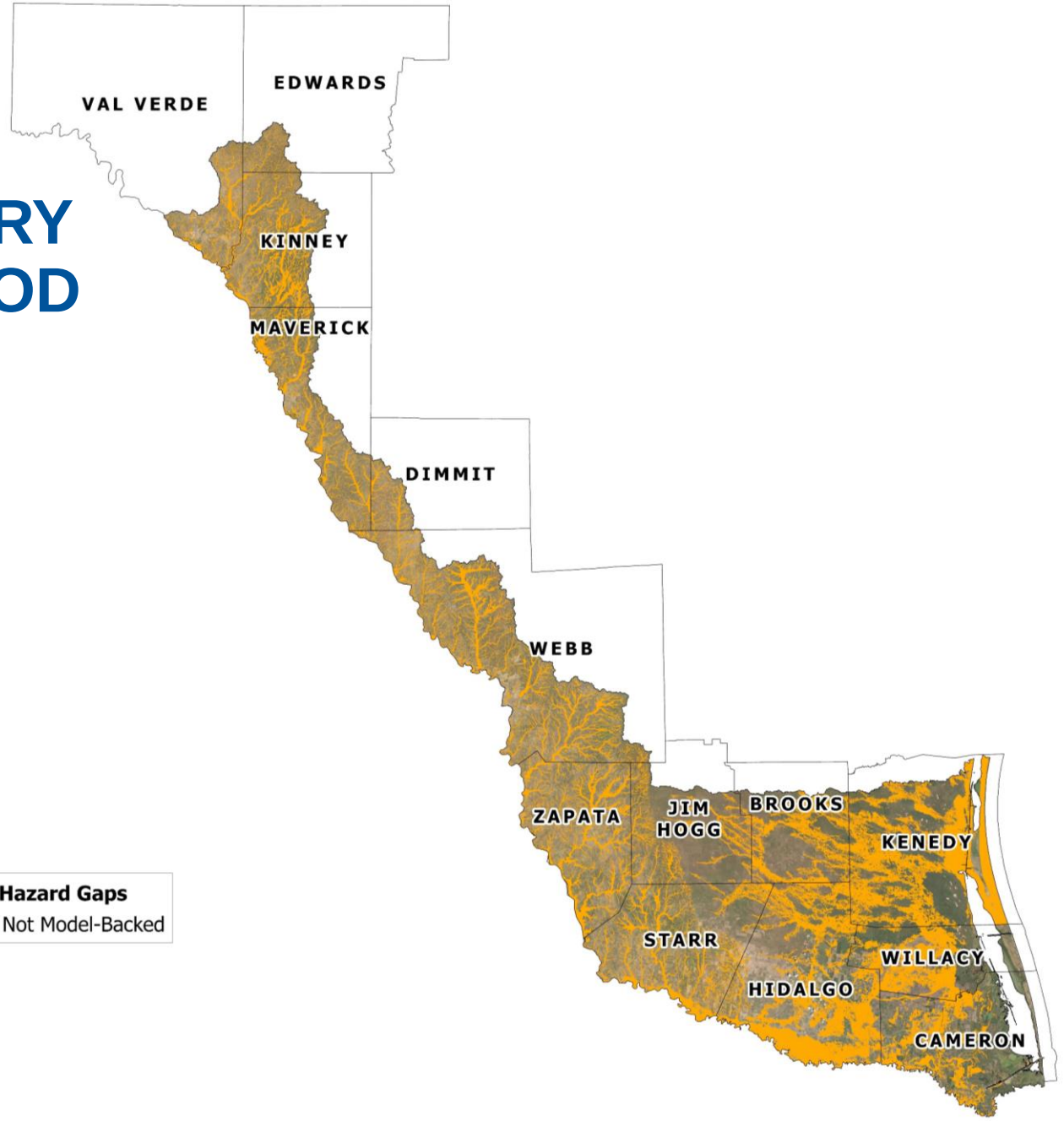
EXISTING CONDITIONS FLOOD HAZARD- GAPS IN INUNDATION BOUNDARY MAPPING & KNOWN FLOOD PRONE AREAS

Map 5

This identifies needed FMEs
(Task 4A)



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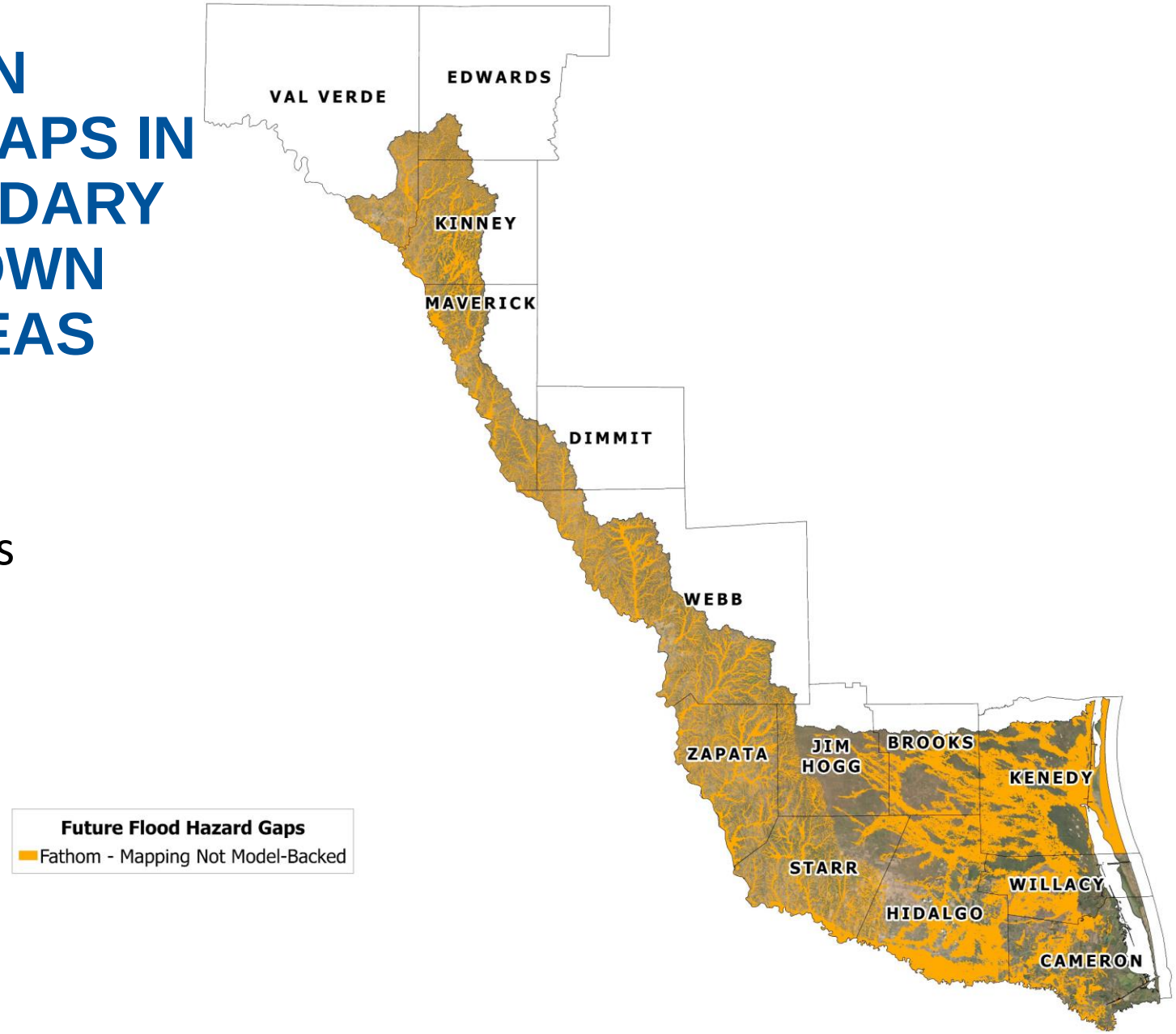
FUTURE CONDITION FLOOD HAZARD- GAPS IN INUNDATION BOUNDARY MAPPING AND KNOWN FLOOD PRONE AREAS

Map 9

This identifies needed FMEs
(Task 4A)



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FLOOD EXPOSURE ANALYSIS

- Exposure analysis to identify who and what might be harmed within the region for the 0.2% and 1% storm events
  - Existing development
  - Future development
  - Flood mitigation projects in construction
  - Critical infrastructure
  - Low water crossings at risk of flooding
- Utilize a GIS intersect to determine structures in the future flood quilt

RECOMMENDATION - FLOOD EXPOSURE

- Utilize previously developed flood exposure dataset
- Include *existing* structures in the future conditions hazard areas
- Identify critical infrastructure

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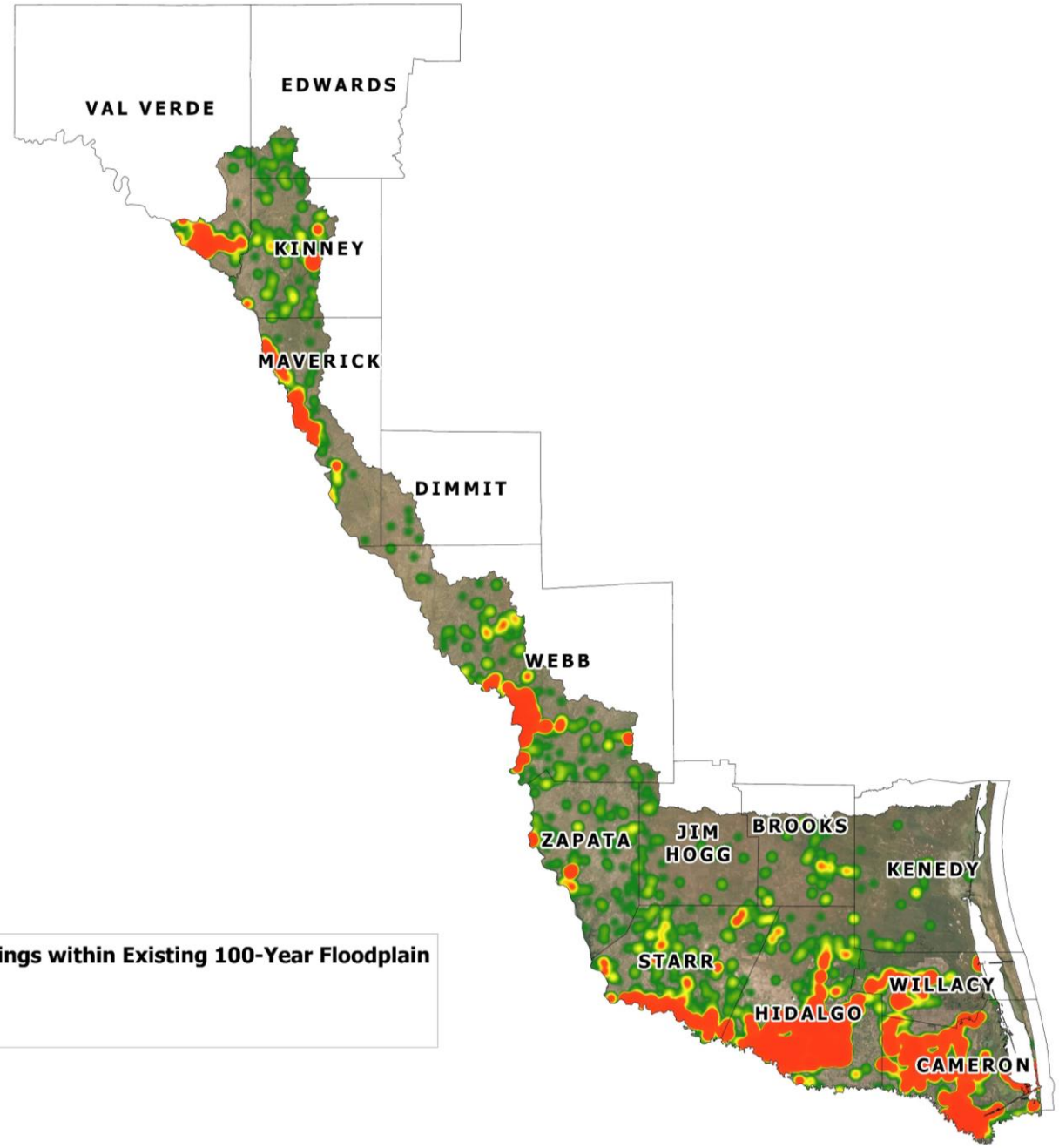
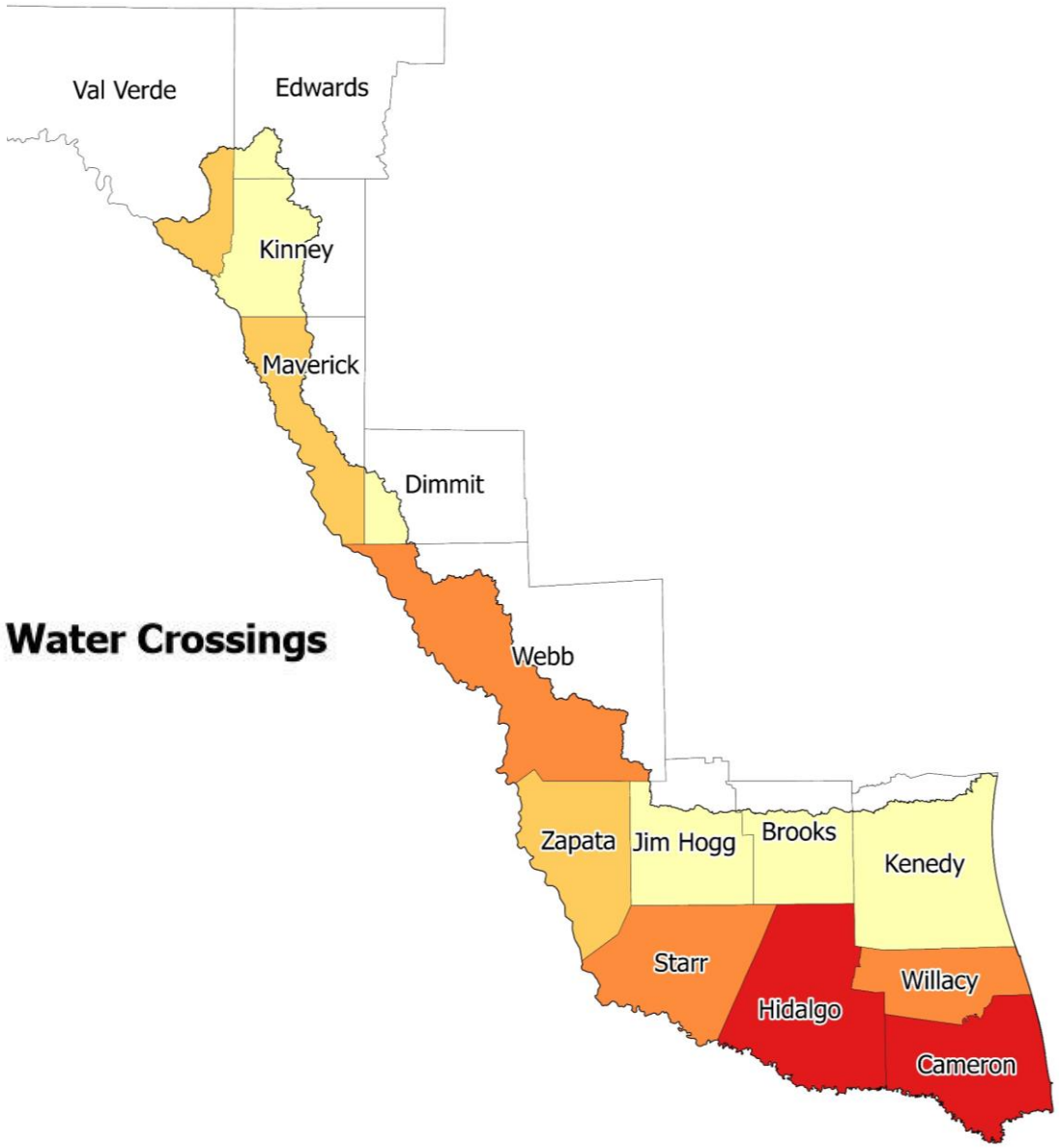
EXISTING CONDITIONS FLOOD EXPOSURE

Map 6

County	Number of Structures in Floodplain
Brooks	1,541
Cameron	43,804
Dimmit	807
Edwards	150
Hidalgo	88,471
Jim Hogg	1,625
Kenedy	2,014
Kinney	1,896
Maverick	6,239
Starr	13,957
Val Verde	3,565
Webb	24,486
Willacy	6,055
Zapata	4,504
TOTAL	**199,114**



EXISTING FLOOD EXPOSURE



Total Count of Exposed Buildings, Critical Facilities, and Low Water Crossings

- 156 - 3500
- 3501 - 8500
- 8501 - 25000
- 25001 - 140626

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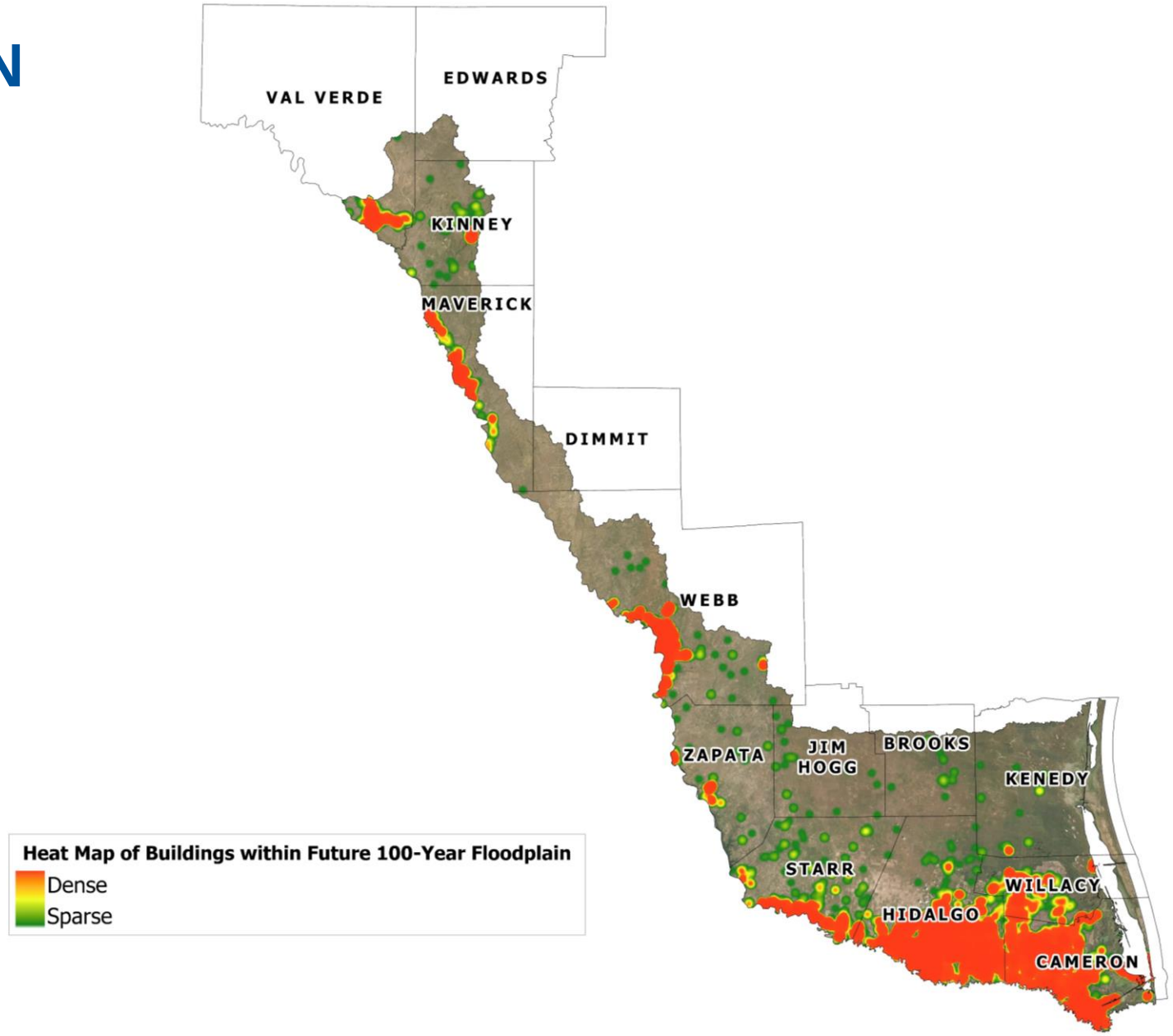
FUTURE CONDITION FLOOD EXPOSURE

Map 11

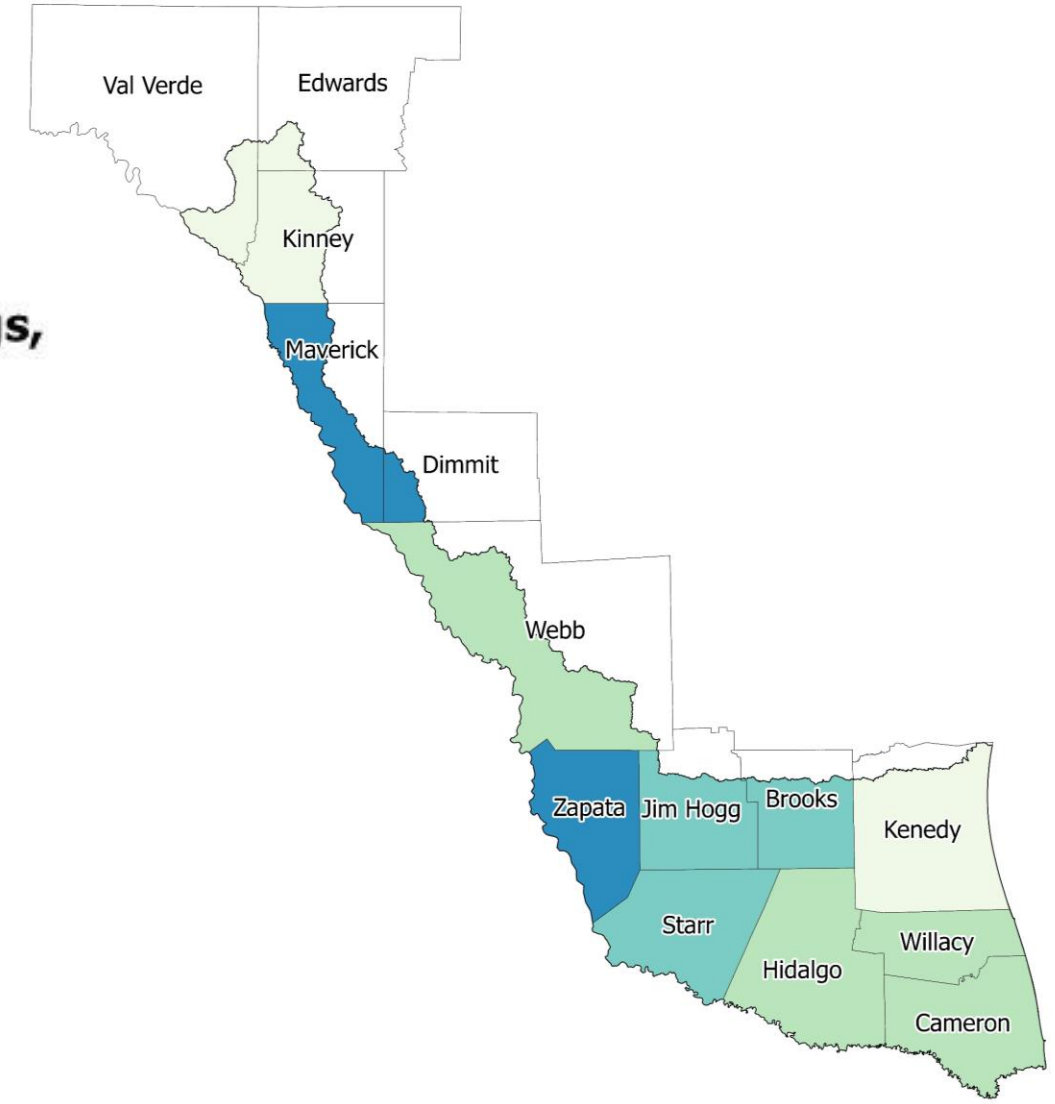
County	Number of Structures in Floodplain
Brooks	2,820
Cameron	93,880
Dimmit	1,382
Edwards	262
Hidalgo	155,860
Jim Hogg	3,032
Kenedy	3,770
Kinney	3,205
Maverick	10,004
Starr	22,013
Val Verde	5,210
Webb	37,981
Willacy	9,903
Zapata	8,126
TOTAL	**357,448**



VULNERABILITY AND CRITICAL INFRASTRUCTURE

County Averages of Exposed Buildings, Critical Facilities, and Low Water Crossings

- 0.47 - 0.77
- 0.77 - 0.87
- 0.87 - 0.90
- 0.90 - 1.00



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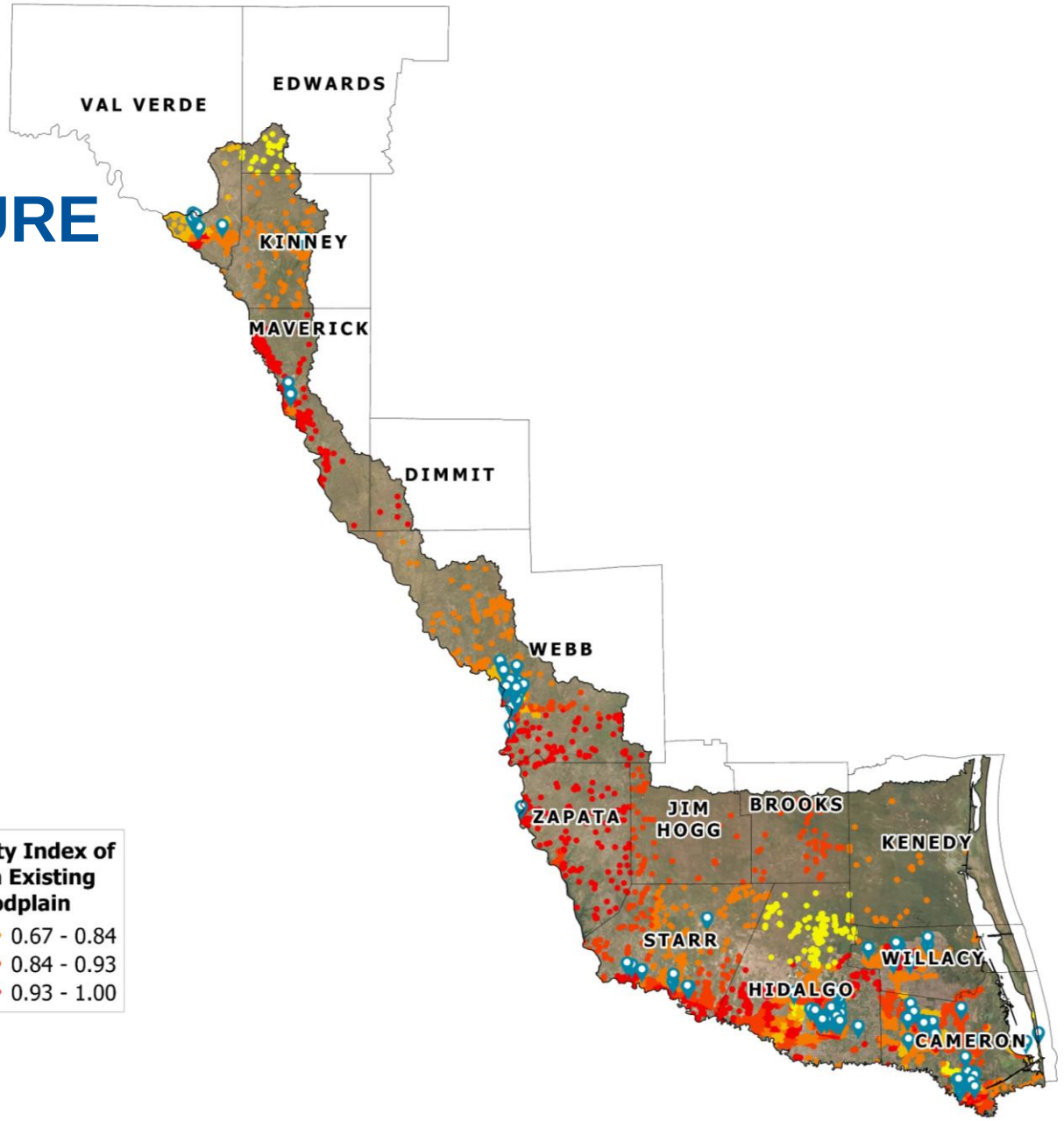
EXISTING CONDITIONS VULNERABILITY AND CRITICAL INFRASTRUCTURE

Map 7

County	Average SVI of features in floodplain or flood prone areas
Brooks	0.903
Cameron	0.808
Dimmit	0.982
Edwards	0.488
Hidalgo	0.836
Jim Hogg	0.899
Kenedy	0.753
Kinney	0.748
Maverick	0.935
Starr	0.888
Val Verde	0.766
Webb	0.817
Willacy	0.869
Zapata	0.975
TOTAL	**0.833**



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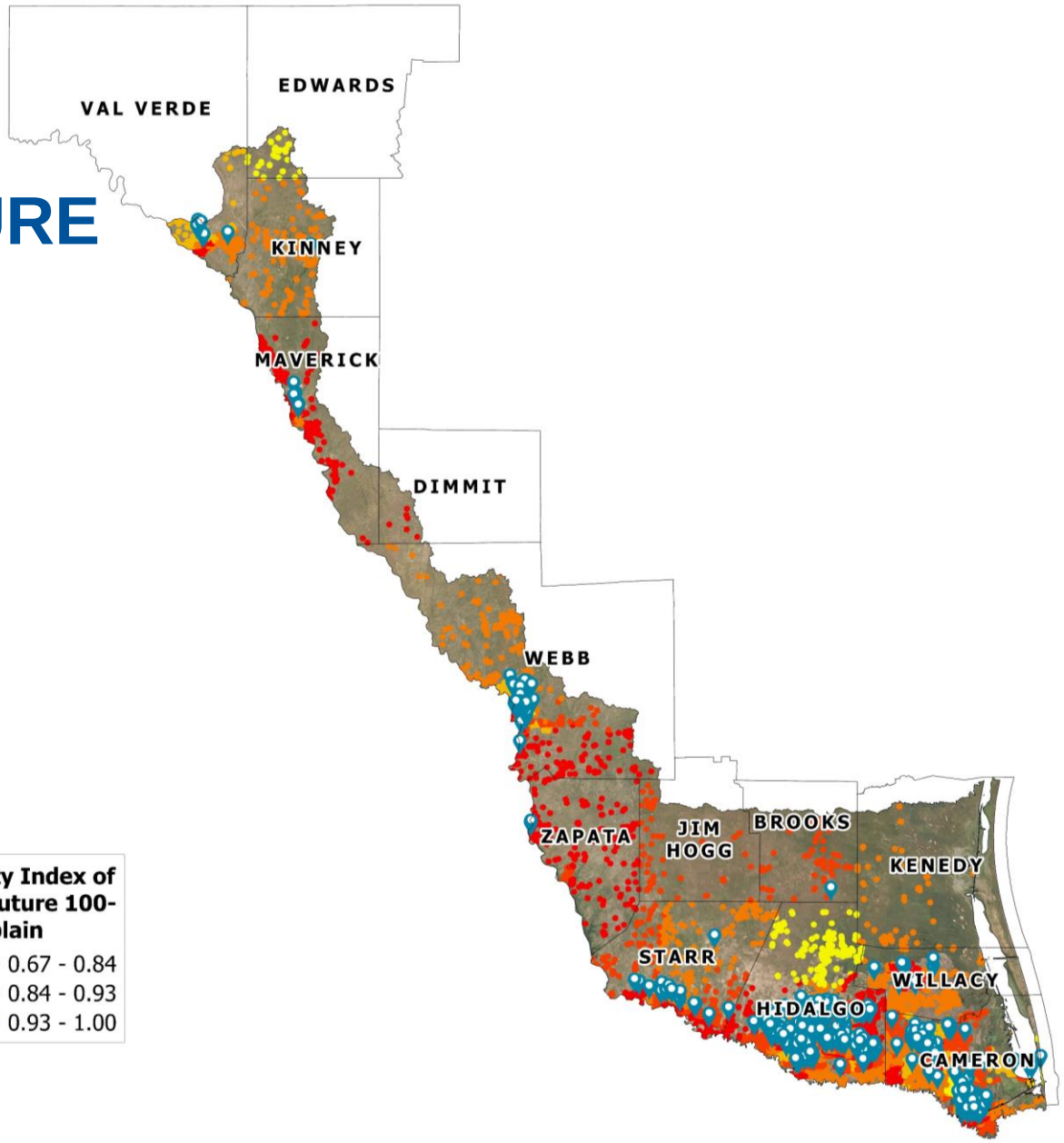
FUTURE CONDITION VULNERABILITY AND CRITICAL INFRASTRUCTURE

Map 12

County	Average SVI of features in floodplain or flood prone areas
Brooks	0.9056
Cameron	0.8099
Dimmit	0.9824
Edwards	0.4704
Hidalgo	0.8265
Jim Hogg	0.8985
Kenedy	0.7528
Kinney	0.7483
Maverick	0.9388
Starr	0.8717
Val Verde	0.7509
Webb	0.8032
Willacy	0.8559
Zapata	0.9755
TOTAL	**0.8279**



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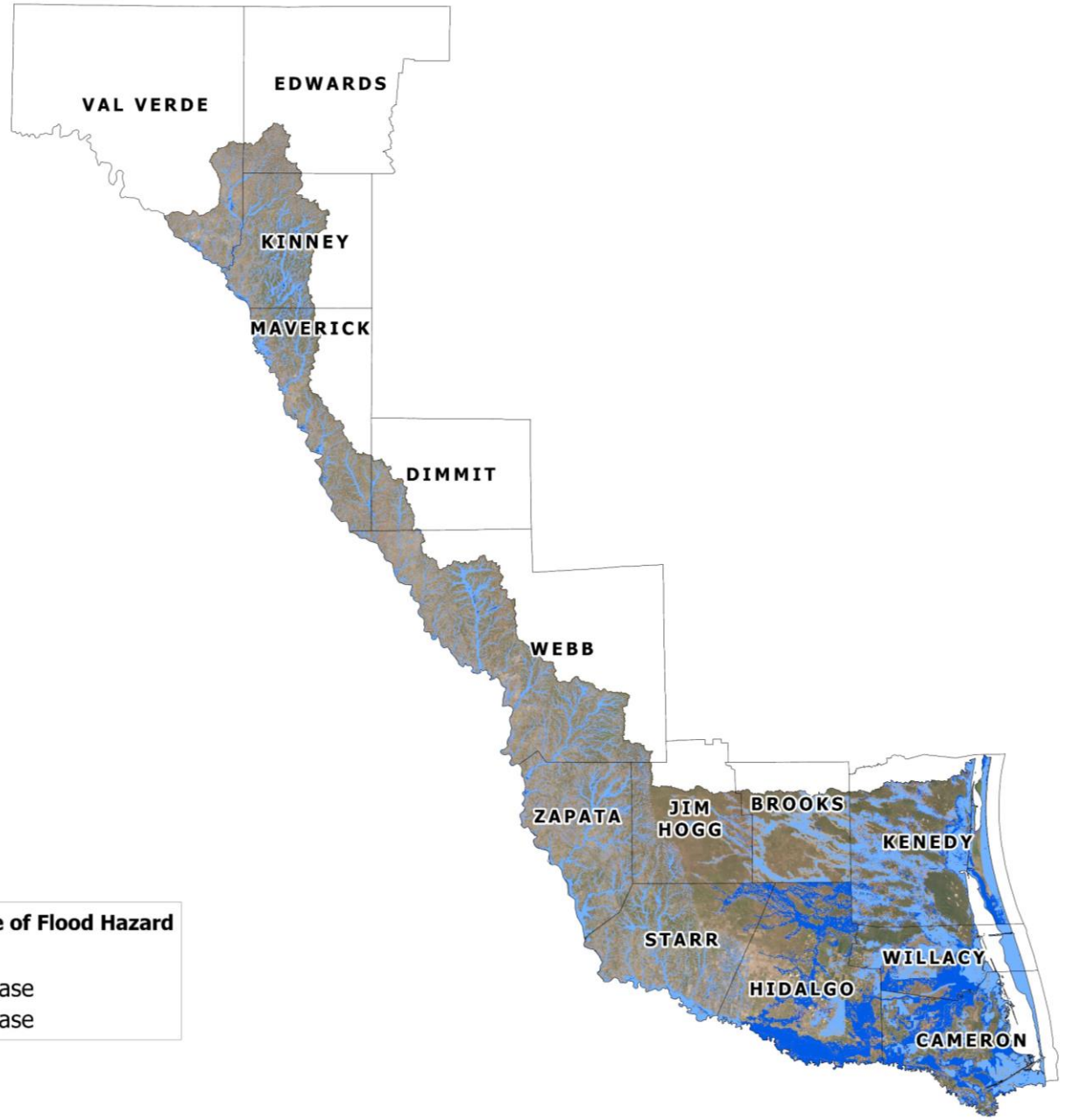
EXTENT OF INCREASE OF FLOOD HAZARD COMPARED TO EXISTING CONDITION

Map 10

FATHOM data is approximate flood boundary not based on detailed engineering analysis



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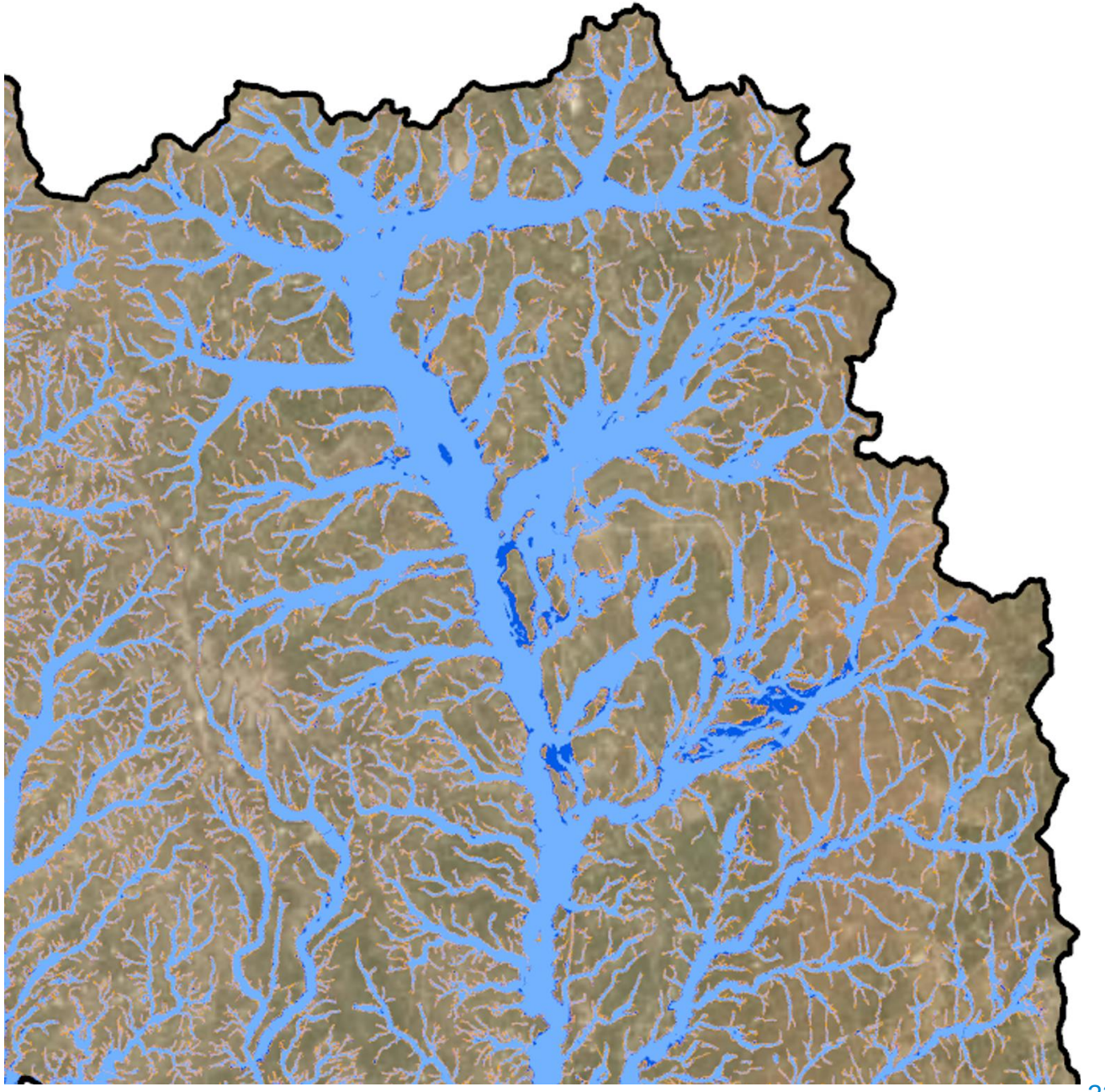

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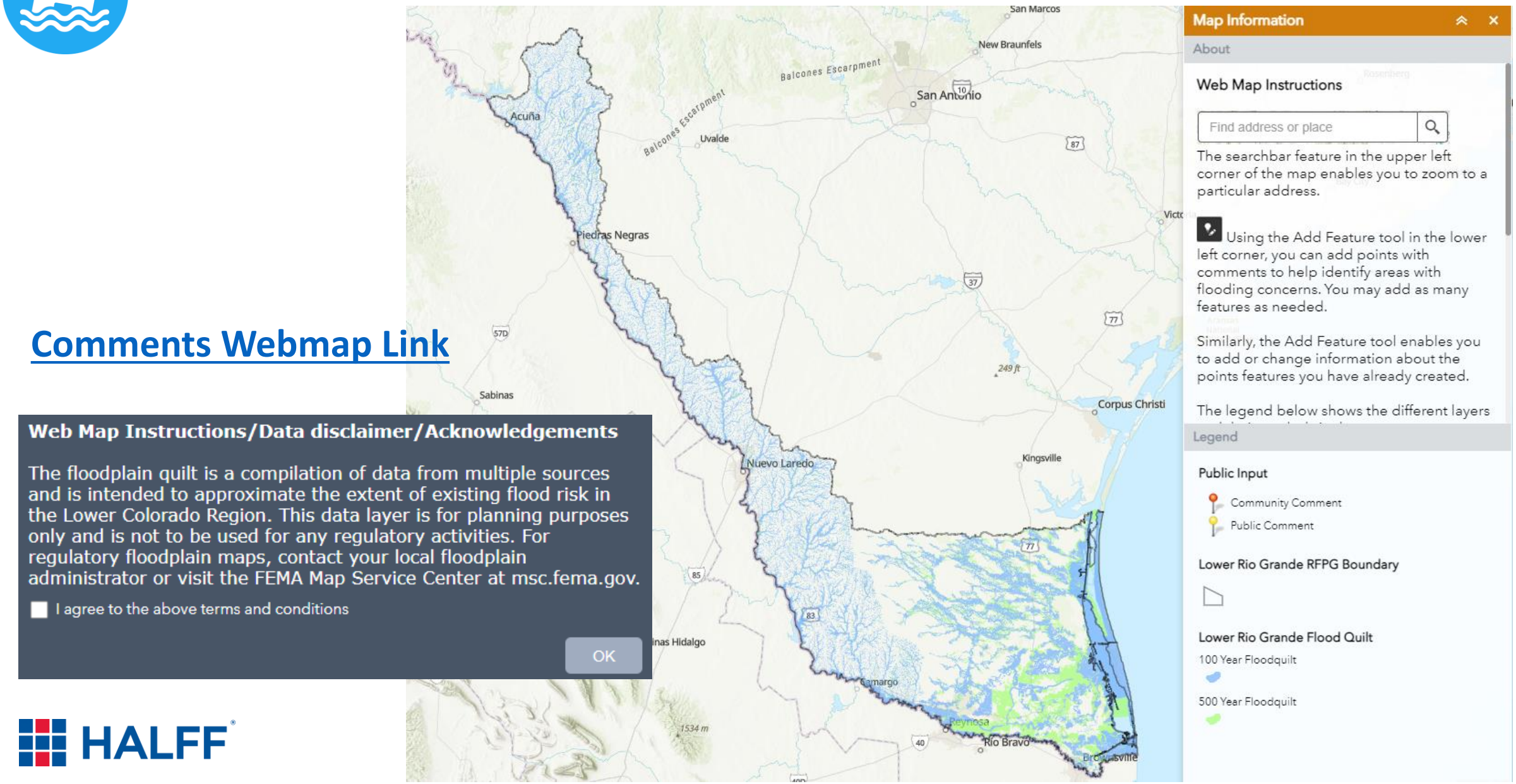
PUBLIC WEBMAP FOR COMMENTS

Comments Webmap Link



COMMENTS WELCOMED.

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