Public Meeting Notice

Region 9 – Upper Colorado Regional Flood Planning Group
November 16, 2021
1:30 PM CST

Notice is hereby given of a regular meeting of the Region 9 – Upper Colorado Regional Flood Planning Group to be held November 16, 2021 at 1:30 PM at the McNease Convention Center – North Meeting Room, 501 Rio Concho Drive, San Angelo, Texas, for the purpose of considering the following agenda items. Masks and social distancing recommended for in-person meeting.

Phone participation is available for public and non-voting representatives by the conference call information below:

Call In: (325) 326–0870 *Passcode / ID: 212-704-869#*

The Meeting Agenda and the Agenda Packet are posted online at
https://www.cosatx.us/departments-services/water-utilities/region-9-upper-colorado-flood-planning-region

A recording of the meeting will be available to the public in accordance with the Open Meetings Act upon written request.

Members of the public may also submit Public Comment on agenda items by sending their written comments via email to allison.strube@cosatx.us or rfpg9.lance@gmail.com by noon November 15, 2021. The subject line must be in the following format: "Public Comment, [item number] – November 16, 2021." All emails must include your name and address. Please note all Public Comment emails relevant to posted agenda items received by the deadline will be published as part of the agenda packet prior to the meeting and are therefore public record.

Agenda:

1. Call to Order
2. Welcome
3. Public comments – limit 3 minutes per person
4. Approval of minutes from the previous meeting.
5. Texas Water Development Board Update
6. Sponsoring Agency Update from City of San Angelo
7. Consultant Presentation by HDR Engineering, Inc. for update on the following task items:
    a. Task 1 Planning Area Description
    b. Task 2A Existing Flood Risk Analysis
    c. Task 4B Identification and evaluation of Potential Flood Management Evaluations and Potentially Feasible Flood Management Strategies and Flood Mitigation Projects
8. Consultant Presentation by HDR Engineering, Inc. for guidance and direction by the group on Task 4A Flood Mitigation Needs Analysis
9. Consultant Presentation by HDR Engineering, Inc. for an update data collection and survey responses
10. Public comments – limit 3 minutes per person
11. Consider date and agenda items for next meeting
12. Adjourn

Additional information may be obtained from:
Allison Strube
allison.strube@cosatx.us

301 W. Beauregard Ave.,
San Angelo, TX 76903

Public Meeting Notice

Region 9 – Upper Colorado Regional Flood Planning Group
October 7, 2021
10:00 AM CST

Meeting held In person at McNease Convention Center – North Meeting Room, 501 Rio Concho Drive, San Angelo, Texas. Additionally, participation was available via conference call at (325) 326-0870.

Roll Call:

Voting Member	Interest Category	Present (x) /Absent ( ) / Alternate Present (*)
Kenneth Dierschke	*Agricultural interests*	X
Rick Bacon	*Counties*	X
Henryk Alexander Olstowski	*Electric generating utilities*	X
Shannon McMillan	*Environmental interests*	X
Vacant	*Flood districts*	n/a
Morse Haynes	*Industries*	X – Virtual Attendance (not counted towards quorum)
Lance Overstreet	*Municipalities*	X
David H. Loyd Jr.	*Public*	X (Departed 11:37)
Scott McWilliams	*River authorities*	X
Chuck Brown	Small business	X
Cole D. Walker	*Water districts*	X
Allison Strube	*Water utilities*	X

Non-voting Member	Agency	Present(x)/Absent( )/ Alternate Present (*)
John McEachern	Texas Parks and Wildlife Department	X-Virtual
Tim Frere	Texas Division of Emergency Management	
Larissa Place	TDA	
Ben Wilde	Texas State Soil and Water Conservation Board	X-Virtual
Jet Hays	General Land Office	X-Virtual
Morgan White	Texas Water Development Board (TWDB)	X-Virtual
Winona Henry	Texas Commission on Environmental Quality	
Anna Yakimovicz	Region 10 Liaison	X-Virtual

Others Present:
Curtis Beitel – HDR (Consultant): In-Person
Heather Keister – Freese & Nichols (Consultant)
Tressa Olsen – TWDB
Blake Barns

Quorum:
Quorum: **Yes**
Number of voting members or alternates representing voting members present: 10
Number required for quorum per current voting positions of 12: 7

Meeting agendas, packets, information and recordings are avialable at the link
https://www.cosatx.us/departments-services/water-utilities/region-9-upper-colorado-flood-planning-region

- **AGENDA ITEM NO. 1: Call to Order**
  Chair Strube called the meeting to order at 10:02 AM CST. A roll call of the planning group members was taken to record attendance, and a quorum was established prior to proceeding with the agenda.

- **AGENDA ITEM NO. 2: Welcome, Meeting Facilitation Information and Instructions**

- **AGENDA ITEM NO. 3: Public Comments**
  No Public Comments were made during this item.

- **AGENDA ITEM NO. 4: Approval of minutes from previous meeting.**
  Motion by Kenneth Dierschke and seconded by Commissioner Rick Bacon. Motion passed unanimously.

- **AGENDA ITEM NO. 5: TWDB Update**
  Morgan White with TWDB introduced Tressa Olsen as Region 9's new liaison for TWDB. Mrs. White also thanked Chair Strube for Panel participation at the Water For Texas Conference in Austin, Texas. Finally, Mrs. White provided information that TWDB approved funding for contract amendments to supplement/enhance the original tasks of the flood planning. Approximately $629,000 will be allocated to Region 9.

  There was a question by Mr. Beitel on the status of fathom data. Mrs. White stated TWDB was still on track to deliver that information in the month of October.

- **AGENDA ITEM NO. 6: Sponsor agency update from the City of San Angelo Provided by chair Allison Strube**
  Chair Strube discussed that there were no major updates. Also, the sponsoring agency will be including future financial updates in upcoming meeting to the RFPG for tracking expenditures.

- **AGENDA ITEM NO. 7: Consider nominating and electing a member-at-large to serve on the Executive Committee**
  It was discussed by the group and a nomination to select Shannon McMillian was made by Scott McWilliams. A motion to nominate Shannon McMillan was made by Chair Allison Strube second by Lance Overstreet. Motion passed unanimously.

- **AGENDA ITEM NO. 8: Discussion and potential action to authorize the Planning Group Sponsor to negotiate and execute an amendment to the Regional Flood Planning Grant contract with the TWDB, to incorporate additional funding for the first cycle of regional flood planning, including necessary revisions to the contract scope of work and budget (Allison Strube)**
  Motion by Commissioner Rick Bacon and seconded by Chuck Brown. Motion passed unanimously.

- **AGENDA ITEM NO. 9: Discussion and potential action to authorize the Planning Group Sponsor to negotiate and execute an amendment to the Regional Flood Planning Grant subcontract with the technical consultant, HDR Engineering, Inc., to incorporate additional funding for the first cycle of regional flood planning, including necessary revisions to the contract scope of work and budget. (Allison Strube)**
  There was a question by David Lloyd as to what types of expenditures could be used by the sponsor. Chair Strube responded with same type of expenditures that approved under the current contract. Motion by Commissioner Rick Bacon and seconded by David Lloyd. Motion passed unanimously.

- **AGENDA ITEM NO. 10: Consultant Presentation by HDR Engineering, Inc.: Update on data collection and survey responses (Curtis Beitel of HDR)**
  Mr. Beitel provided an update regarding persons and entities that the consultants have been communicated with and need to get other inputs. He also reviewed several areas within the region and statuses on those.

- **AGENDA ITEM NO. 11: Receive, Discuss, and Consider Action – Presentation by HDR Engineering, Inc. on Task 3B: Flood Mitigation and Floodplain Management Goals (Curtis Beitel of HDR)**
  Mr. Beitel made a presentation on management goals.

  Motion by Cole Walker and seconded by David Lloyd to accept the goals as presented with an updated definition in Goal 3 of high hazard to included non-functional and deficient measures for describing dams and to reduce Goal 5 to half the percentages that were presented on the slide. Motion passed unanimously.

- **AGENDA ITEM NO. 12: Receive, Discuss and Consider Action – Presentation by HDR Engineering, Inc. on Task 4: Flood Mitigation Needs Analysis, Identification and Evaluation of Potential Management Evaluation and Potentially Feasibly Flood Management Strategies and Flood Mitigation Projects (Curtis Beitel of HDR)**
  Motion by Scott McWilliams and seconded by Chuck Brown to accept as presented, but to modify the presentation to exclude “multiple projects” from the flow chart path. Motion passed unanimously.

  David Lloyd needed to leave and is not in attendance from this point forward. Quorum was still maintained.

- **AGENDA ITEM NO. 13: Public Comments – Limit 3 minutes per person**
  No Public Comments were made during this item.

- **AGENDA ITEM NO. 10: Consider Date and Agenda Items for Next Meeting**
  The date was tentatively planned for the next meeting as November 4th at 10:00am.

- **AGENDA ITEM NO. 10: Adjourn**

Motion by Commissioner Rick Bacon and seconded by Scott McWilliams. Motion passed unanimously. Meeting was adjourned at 11:56AM CST.

Approved by the Region 9 Upper Colorado RFPG at a meeting held on November 16, 2021.

_____
Lance Overstreet, SECRETARY

_____
Allison Strube, CHAIR

Invoice

Reference Invoice Number with Payment

HDR Engineering, Inc.
600 West 6th Street, Suite 200
Fort Worth, TX 76102
Phone: (817) 333-2800

HDR Invoice No.	1200387559
Invoice Date	November 5, 2021
Gross Invoice Amount Due	$35,447.93
Payment Terms	Net 30
Remit to	HDR, Inc. P.O. Box 74008202 Chicago, IL 60674-8202
Wire transfer to	Bank of America Account #: 355004076604 Transit #: 081000032

City of San Angelo
72 W. College Avenue
San Angelo, Texas 76903
ATTENTION: Allison Strube

Project Name: Region 9 - Upper Colorado Regional Flood Planning
TWDB Contract: 2101792424

Professional services in relation to the contract between City of San Angelo and Texas Water Development Board

Professional Services
Services from 09/26/2021 thru 10/23/2021

Task	Professional Services	Fee	Percent Complete	Fee Earned To Date	Previous Fee Invoiced	Current Fee Invoiced	Fee Remaining
1	Planning Area Description	$ 47,310.00	35.18%	$ 16,642.49	$ 7,954.09	$ 8,688.40	$ 30,667.51
2A	Existing Condition Flood Risk Analyses	$ 127,737.00	16.57%	$ 21,171.07	$ 7,506.64	$ 13,664.43	$ 106,565.93
2B	Future Condition Flood Risk Analyses	$ 61,503.00	0.00%	$ -	$ -	$ -	$ 61,503.00
3A	Evaluation & Recommendations on	$ 18,924.00	69.46%	$ 13,143.78	$ 9,296.82	$ 3,846.96	$ 5,780.22
3B	Flood Mitigation & Floodplain Management	$ 9,462.00	79.55%	$ 7,527.10	$ 5,683.76	$ 1,843.34	$ 1,934.90
4A	Flood Mitigation Needs Analysis	$ 28,386.00	0.00%	$ -	$ -	$ -	$ 28,386.00
4B	Identification & Evaluation of Potential	$ 141,930.00	3.39%	$ 4,808.70	$ 2,244.06	$ 2,564.64	$ 137,121.30
4C	Prepare and Submit Technical Memorandum	$ 18,924.00	0.00%	$ -	$ -	$ -	$ 18,924.00
5	Recommendation of Flood Management	$ 189,240.00	0.00%	$ -	$ -	$ -	$ 189,240.00
6A	Impacts of Regional Flood Plan	$ 37,848.00	0.00%	$ -	$ -	$ -	$ 37,848.00
6B	Contributions to & Impacts on Water	$ 9,462.00	0.00%	$ -	$ -	$ -	$ 9,462.00
7	Flood Response Information and Activities	$ 9,462.00	0.00%	$ -	$ -	$ -	$ 9,462.00
8	Administrative, Regulatory & Legislative Rec	$ 9,462.00	0.00%	$ -	$ -	$ -	$ 9,462.00
9	Flood Infrastructure Financing Analysis	$ 18,924.00	0.00%	$ -	$ -	$ -	$ 18,924.00
10	Adoption of Plan and Public Participation	$ 128,164.00	37.03%	$ 47,455.11	$ 42,614.95	$ 4,840.16	$ 80,708.89
Contract Fee		**$ 856,738.00**	**12.93%**	**$ 110,748.25**	**$ 75,300.32**	**$ 35,447.93**	**$ 745,989.75**

Gross Amount This Invoice:	$ 35,447.93
Less Retainage this Invoice (5%)	$ (1,772.40)
Net Amount Due This Invoice:	**$ 33,675.53**

Fee Amount	$ 856,738.00
Net Fee Invoiced to Date	$ 107,178.74
Retainage Held to Date	$ 3,569.51
Fee Remaining	$ 745,989.75

HDR Internal Reference Only	
Client Number	4921
Cost Center	10189
Project Number	10310495

Upper Colorado Regional Flood Plan

Task 1 Planning Area Description, Task 4C Technical Memorandum and Schedule Update

November 16, 2021

Task 1 – Planning Area Description

- Chapter 1 of the Regional Flood Plan will summarize:
  - Socioeconomic Characteristics
  - Flood Prone Areas and Major Flood Risks
  - Key Historical Flood Events
  - Political Subdivisions with Flood-Related Authority
  - Flood Risk Local Regulation and Development Codes
  - Agricultural and Natural Resources Impacted by Flooding
  - Existing Local and Regional Flood Plans
- Assessment of Existing Infrastructure
- Proposed or Ongoing Flood Mitigation Projects

Task 4C – Technical Memorandum
Summary of Contents and Status

Task Description	Task #	Deadline	Status
Existing political subdivisions within Region with flood-related authorities / responsibilities	4C.1.a	January 7	Draft complete
Previous flood studies considered to be relevant to development of the RFP	**4C.1.b**	January 7	Draft complete
Geodatabase and associated maps: 100-year and 500-year inundation boundaries	*4C.1.c*	*March 7*	*In Progress*
Geodatabase and associated maps: additional flood-prone areas identified by the RFPG	*4C.1.d*	*March 7*	*In Progress*
Geodatabase and associated maps: areas where existing hydrologic and hydraulic models needed to evaluate FMSs and FMPs are available	*4C.1.e*	*March 7*	*In Progress*
Available flood-related models considered of most value to the RFP	**4C.1.f**	January 7	**In Progress**
Flood mitigation and floodplain management goals adopted by the RFPG	**4C.1.g**	**January 7**	**Draft complete**
Documented process used to identify potentially feasible FMSs and FMPs	**4C.1.h**	**January 7**	**Draft complete**
Potential FMEs and potentially feasible FMSs and FMPs	**4C.1.i**	**January 7**	**In Progress**
FMSs and FMPs that were identified but determined to be infeasible, including the primary reason for it being infeasible	**4C.1.j**	**January 7**	**In Progress**

Task 4C – Technical Memorandum

GIS Geodatabase

Feature Class Name	Description
Entities	Entities with flood-related authority
Watersheds	Watersheds
ExFldInfraPol / ExFldInfraLn / ExFldInfraPt	Existing natural flood mitigation features and constructed flood infrastructure
ExFldProjs	Proposed or ongoing flood mitigation projects
ExFldHazard	*Existing conditions inundation boundary for the 1.0% and 0.2% events*
Fld_Map_Gaps	*Gaps in inundation boundary mapping*
ExFldExpPol / ExFldExpLn / ExFldExpPt / ExFldExpAll	*Existing conditions flood exposure layer identifying people and places at risk for the 1.0% and 0.2% events*
FutFldHazard	*Future conditions inundation boundary for the 1.0% and 0.2% events*
FutFldExpPol / FutFldExpLn / FutFldExpPt / FutFldExpAll	*Future conditions flood exposure layer identifying people and places at risk for the 1.0% and 0.2% events*
ExFpMP	Areas with existing floodplain management practices
Goals	Adopted flood mitigation and floodplain management goals with associated areas
Streams	Streams relevant to proposed FMEs, FMPs, and FMSs
FME / FMP / FMS	Proposed FMEs, FMPs, and FMSs with associated areas

Task 4C – Technical Memorandum

Schedule - Important Dates

- December 9 – RFPG Review
  - Technical Consultant to submit *Draft Technical Memorandum* for RFPG review
- December 16 – RFPG Meeting
  - **Target for RFPG to vote to approve submittal of *Technical Memorandum***
- January 7 – Deliverable
  - Deadline to submit *Technical Memorandum* to TWDB
- March 7 – Deliverable
  - Deadline to submit supplement to *Technical Memorandum*

Regional Flood Plan Schedule

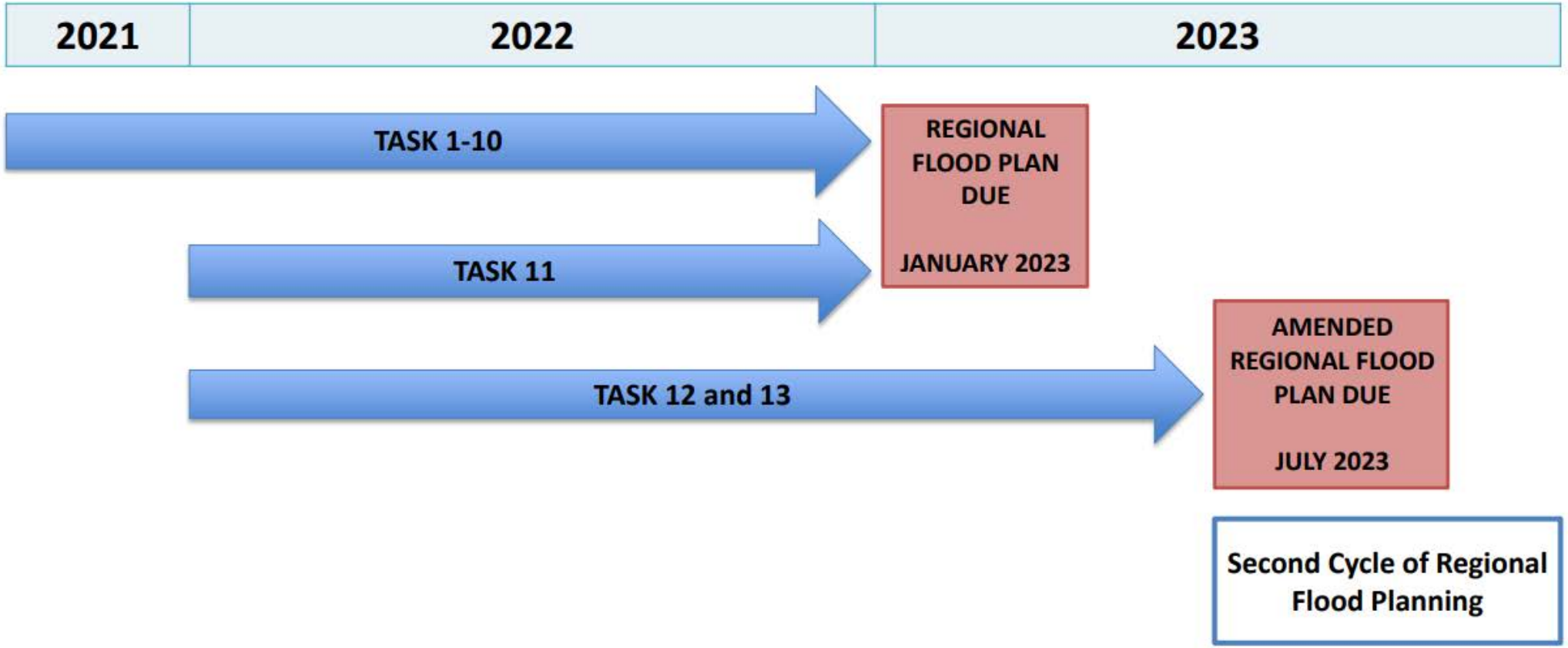
Monthly Schedule - 2022

Task 11 - Outreach

Tasks 12 & 13

RFPG Meeting	Milestone Goals
January	No meeting
February	**Task 2A/2B** Flood Risk Update; **Task 4A/4B** Update; **Task 7** Flood Response Activities; **Approve Tech Memo Supplement**
March	No meeting
April	**Task 5** (Draft) Project Recommendations; **Task 8** Administrative, Regulatory and Legislative Recommendations
May	No meeting
June	**Task 5** (Final) Project Recommendations; **Task 6** Impacts and Contributions of RFP; **Task 9** Flood Infrastructure Financing Analysis
July	**Task 10** Adoption of Draft Plan; Discuss/Vote on **Task 12**
August	***August 1 – deadline to submit draft Regional Flood Plan***
September	Public Meeting to receive comment on draft RFP (30 day notice)
October	Public comment period closes (30 days following public meeting)
January	***January 10, 2023 – Final Regional Flood Plan due to TWDB***

Regional Flood Plan Schedule
Additional Funding Timeline



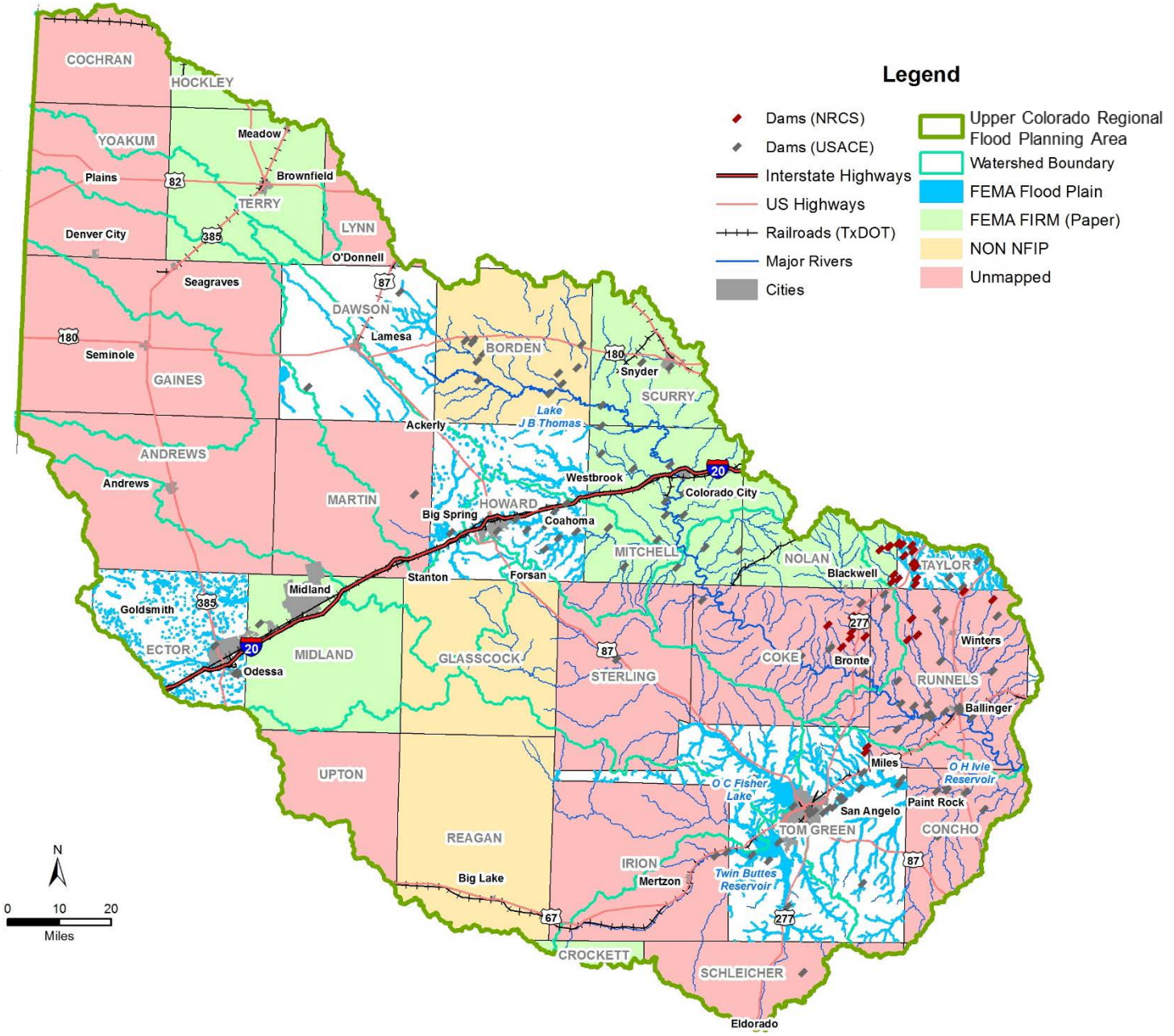
Upper Colorado Regional Flood Plan

Task 2A Existing Flood Risk Analysis and Task 2B Future Flood Risk Analysis

November 16, 2021

Task 2A
Existing Flood Risk

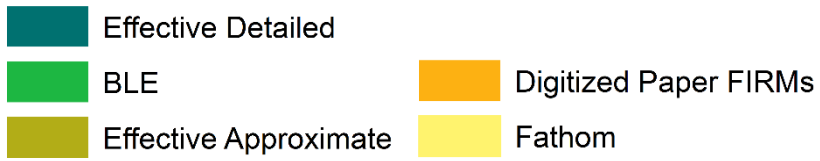
- Wide Range of FIRMS
  - 5 counties Digital FIRMs
  - 6 counties Paper FIRMs
  - 13 counties Unmapped
  - 3 counties Non-Participating
- 120 dams
  - 78 NRCS dams
  - 21 Small
  - 14 Intermediate
  - 7 Large

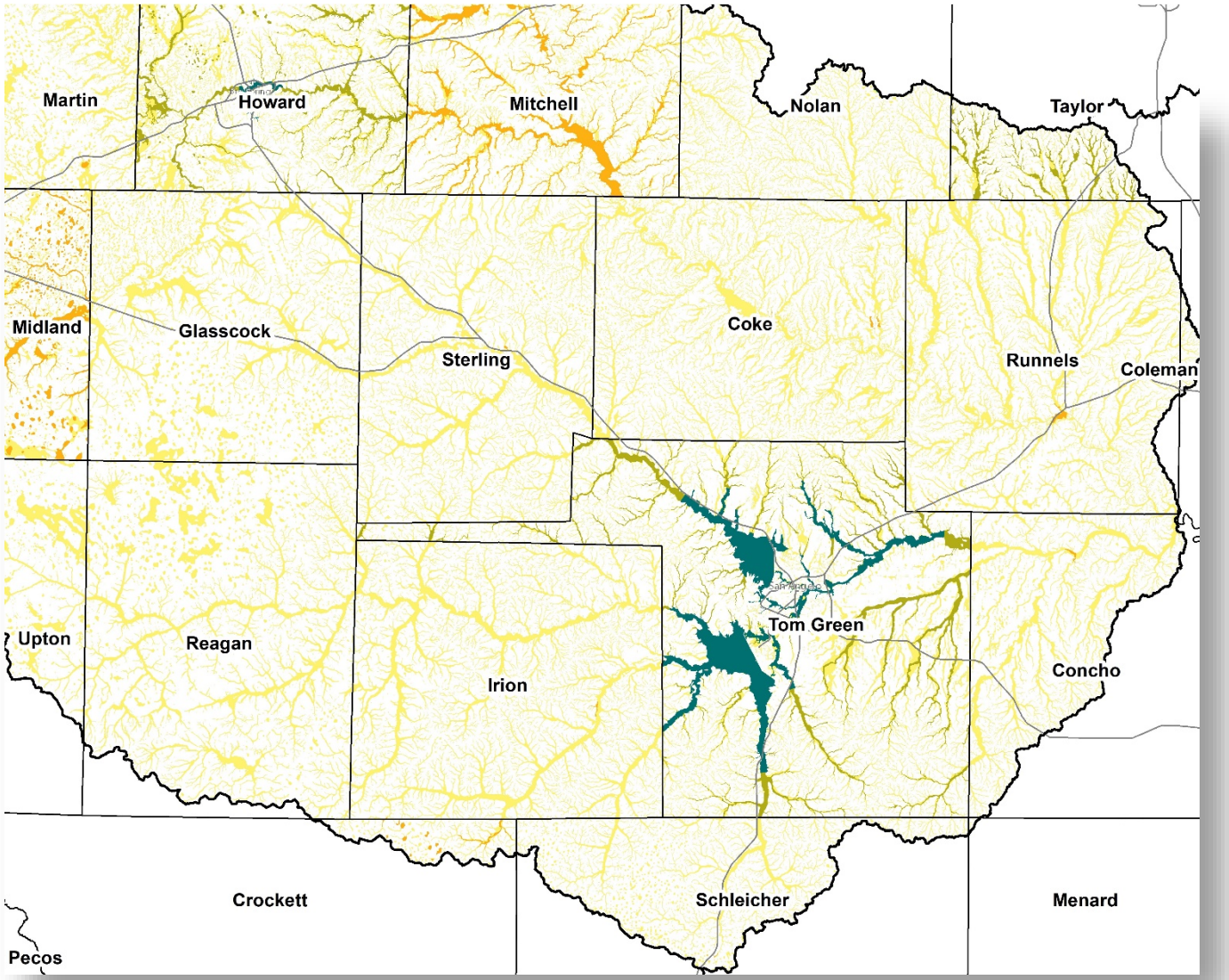


Task 2A – Existing Flood Risk Analyses - Floodplain Quilt

Lower Watershed

1. Best Available (New local studies)
   - USACE Deep Creek 205 study
2. National Flood Hazard Layer (NFHL) Pending
3. NFHL Effective (Detailed Study)
4. Base Level Elevation (BLE)
5. NFHL Effective (Approximate)
6. First American Flood Data Services Paper FIRM scans
7. Fathom Data (10/29/21)

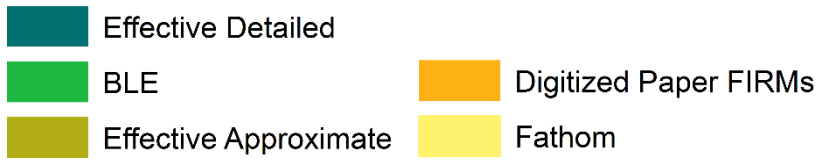


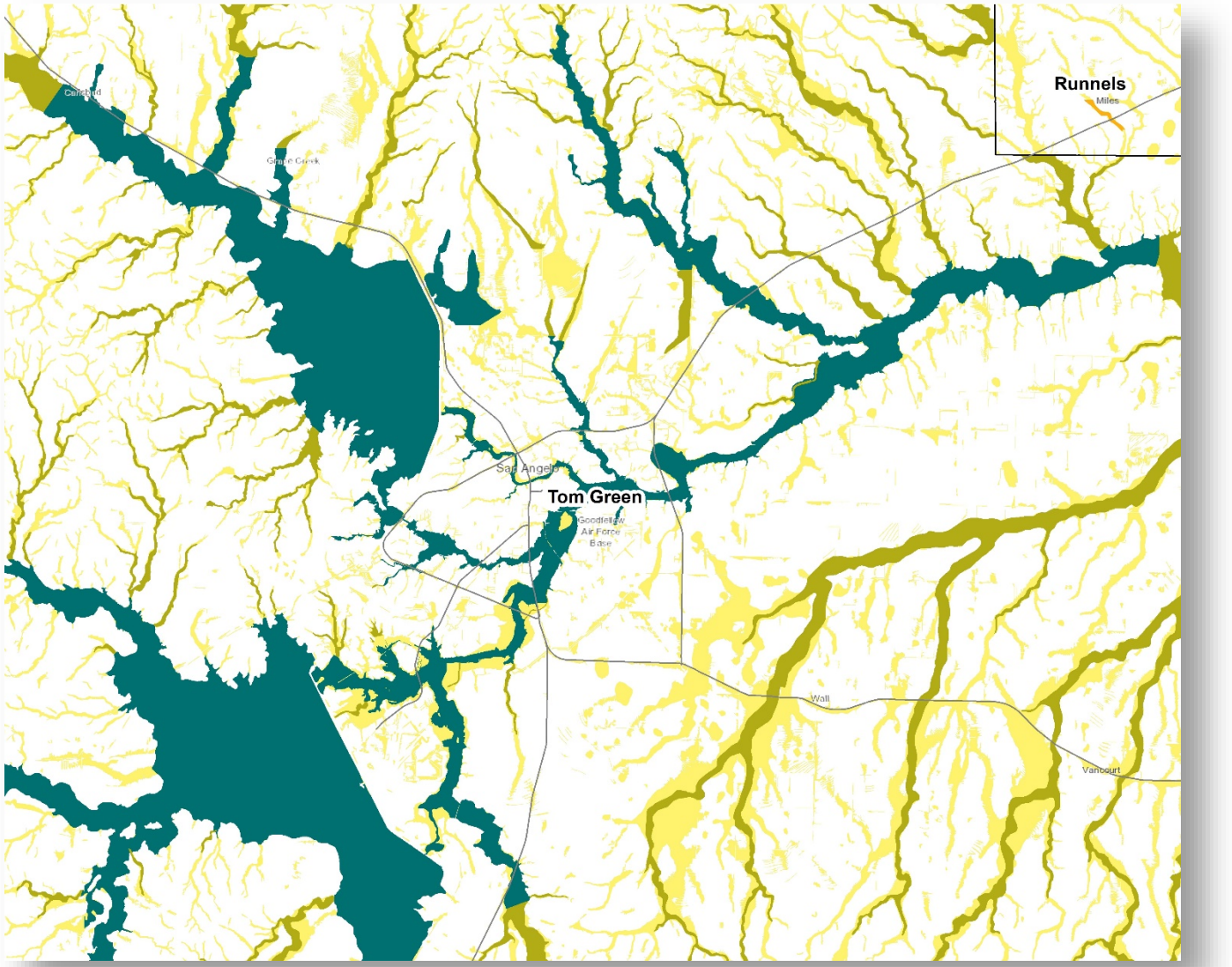


Task 2A - Existing Flood Risk Analyses - Floodplain Quilt

San Angelo

1. Best Available (New local studies)
   - USACE Deep Creek 205 study
2. National Flood Hazard Layer (NFHL) Pending
3. NFHL Effective (Detailed Study)
4. Base Level Elevation (BLE)
5. NFHL Effective (Approximate)
6. First American Flood Data Services Paper FIRM scans
7. Fathom Data (10/29/21)

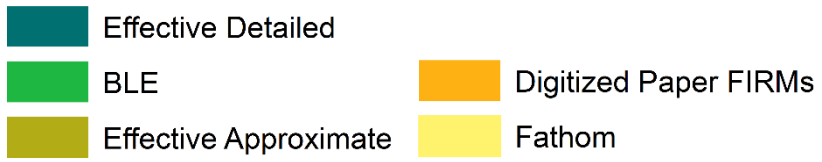


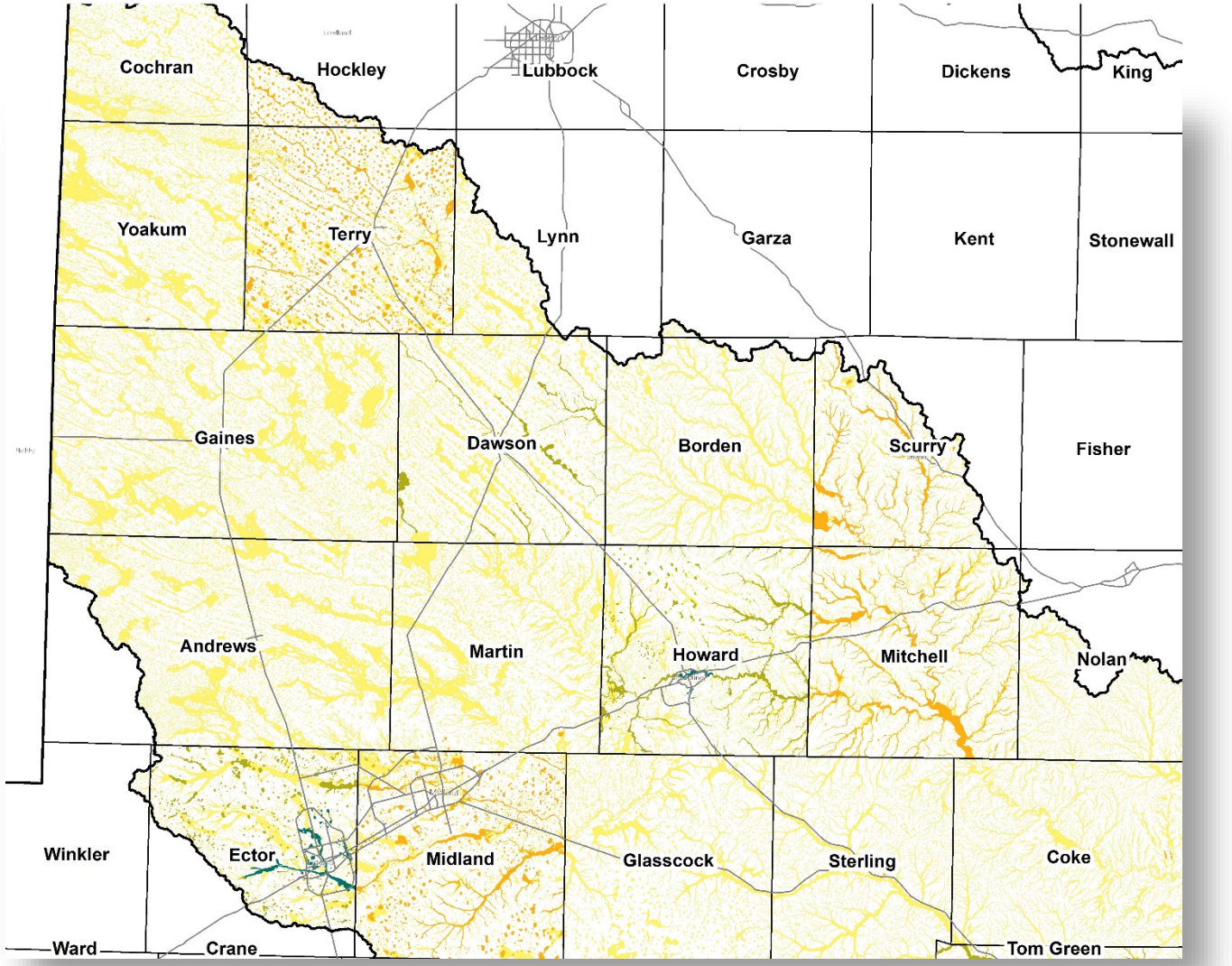


Task 2A - Existing Flood Risk Analyses - Floodplain Quilt

Upper Watershed

1. Best Available (New local studies)
   - USACE Deep Creek 205 study
2. National Flood Hazard Layer (NFHL) Pending
3. NFHL Effective (Detailed Study)
4. Base Level Elevation (BLE)
5. NFHL Effective (Approximate)
6. First American Flood Data Services Paper FIRM scans
7. Fathom Data (10/29/21)

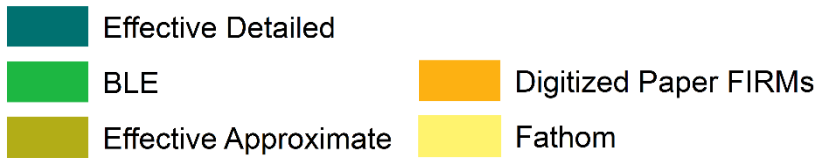


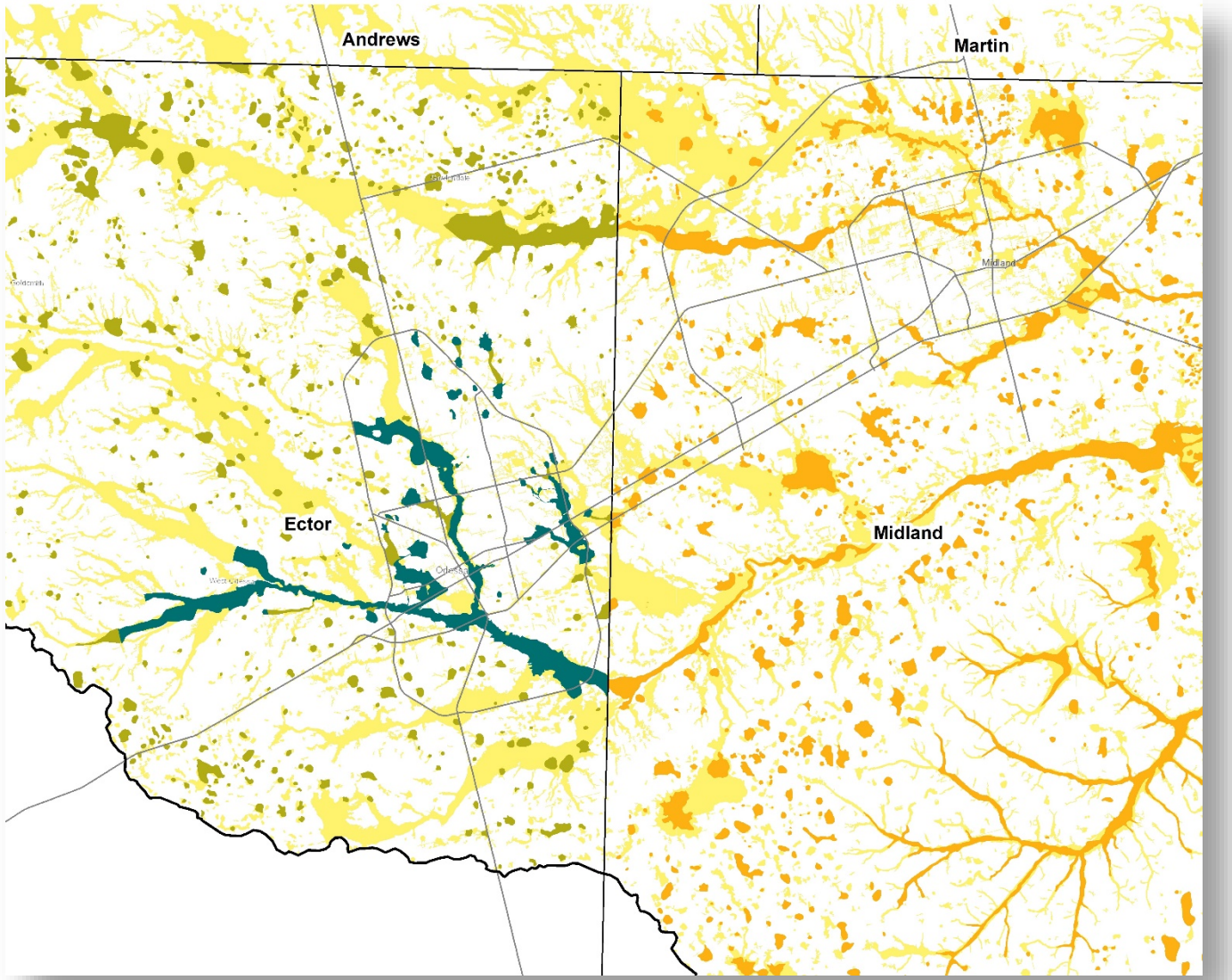


Task 2A - Existing Flood Risk Analyses - Floodplain Quilt

Midland & Odessa

1. Best Available (New local studies)
   - USACE Deep Creek 205 study
2. National Flood Hazard Layer (NFHL) Pending
3. NFHL Effective (Detailed Study)
4. Base Level Elevation (BLE)
5. NFHL Effective (Approximate)
6. First American Flood Data Services Paper FIRM scans
7. Fathom Data (10/29/21)

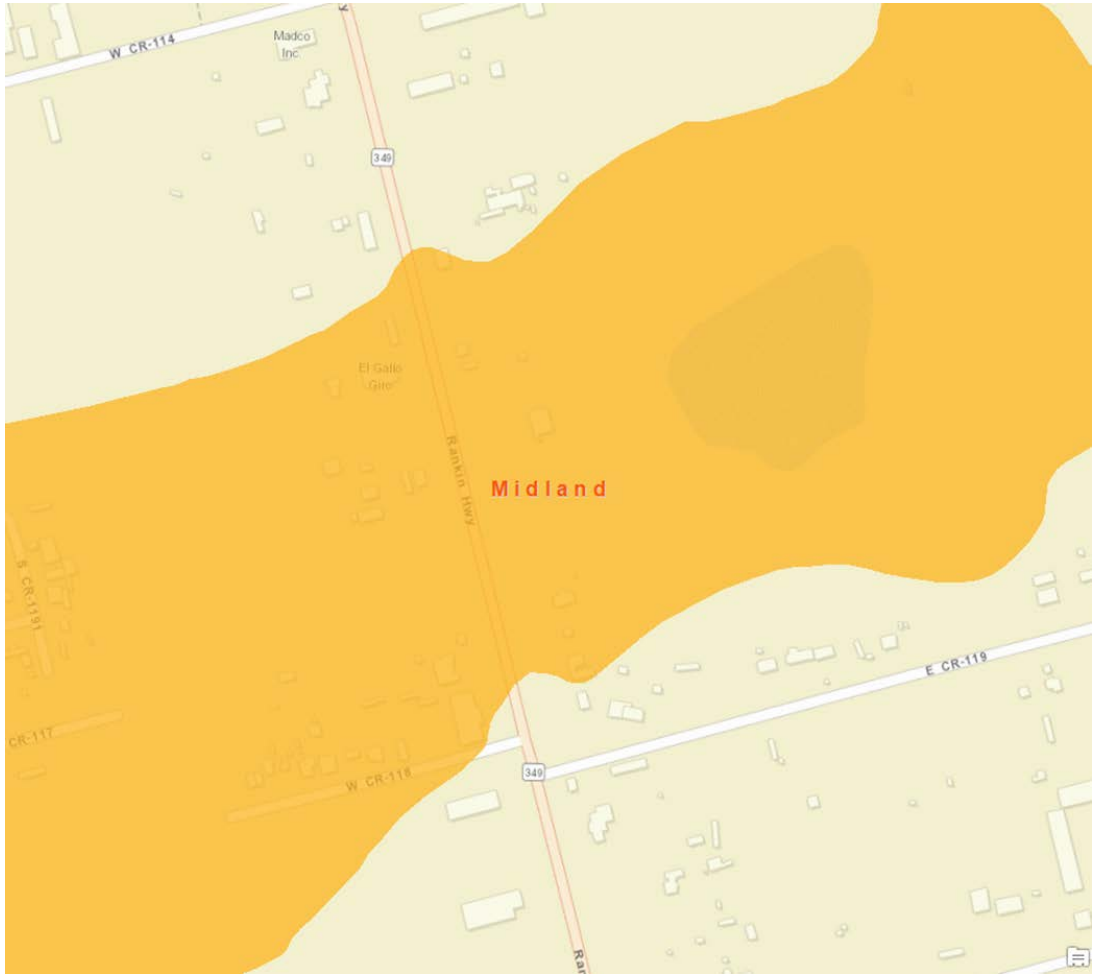




Task 2A - Existing Flood Risk Analyses - Floodplain Quilt

First American Paper FIRM Scans

- Initial TWDB Floodplain Quilt only includes the 100-year floodplain in Zone AE areas
  - Scans were developed to assist in NFIP flood insurance rating

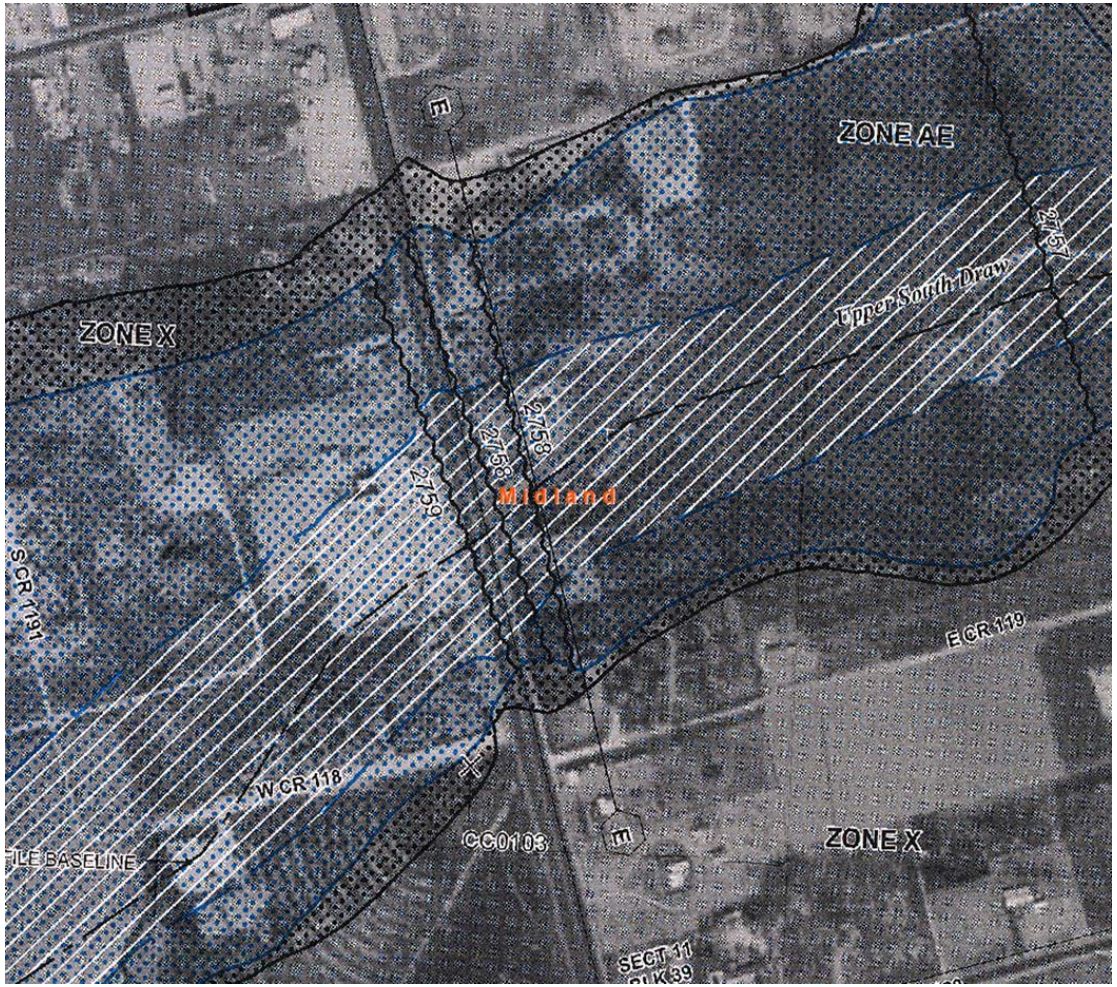


Effective Detailed
BLE
Effective Approximate
Digitized Paper FIRMs
Fathom

Task 2A - Existing Flood Risk Analyses - Floodplain Quilt

First American Paper FIRM Scans

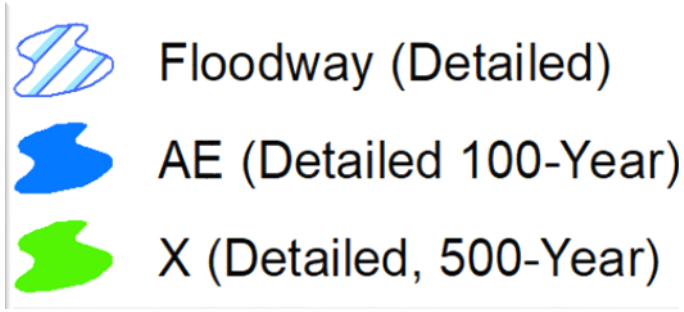
- FEMA's Effective FIRM actually has Zone AE with Floodway and 500-year mapping.
  - This occurs in several places in Midland County.
  - This example is on Upper South Draw

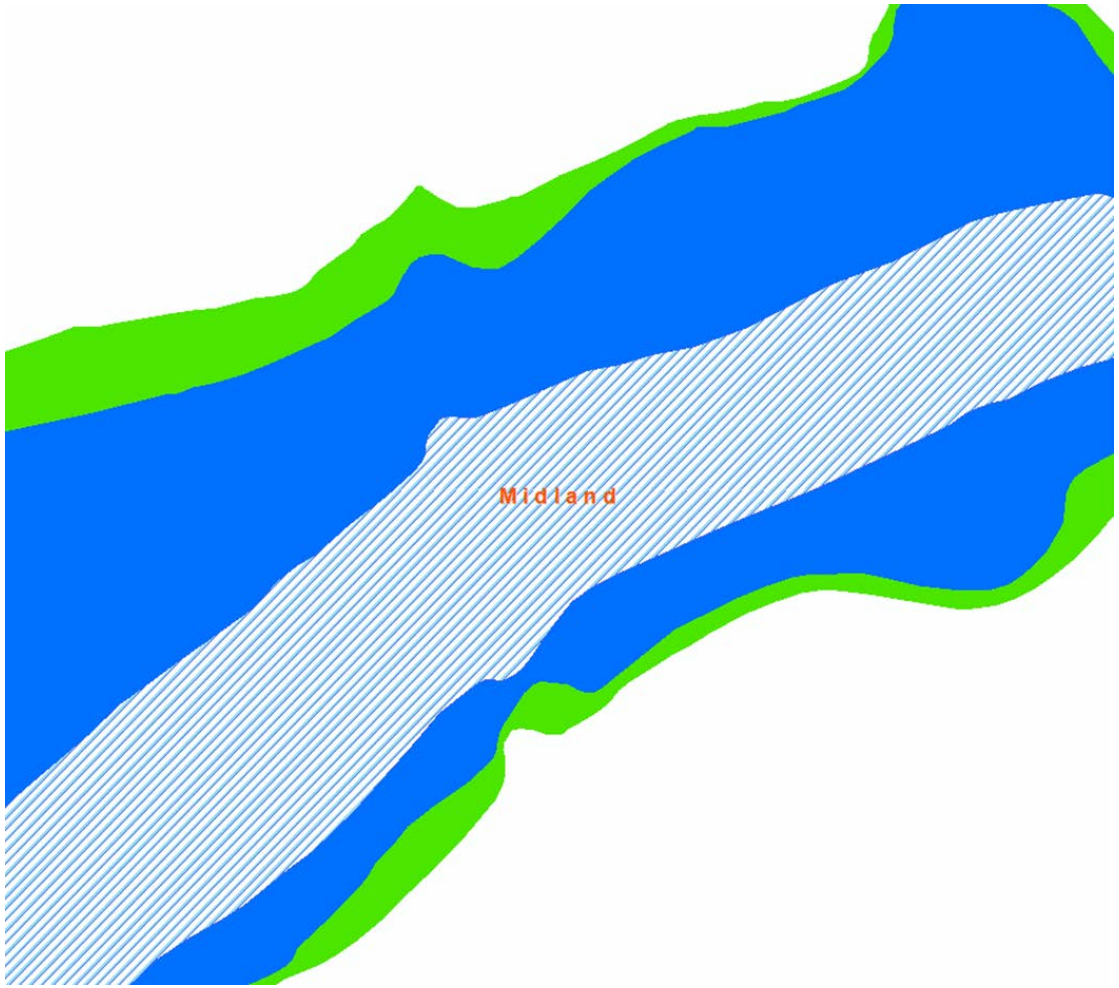


Task 2A - Existing Flood Risk Analyses - Floodplain Quilt

First American Paper FIRM Scans

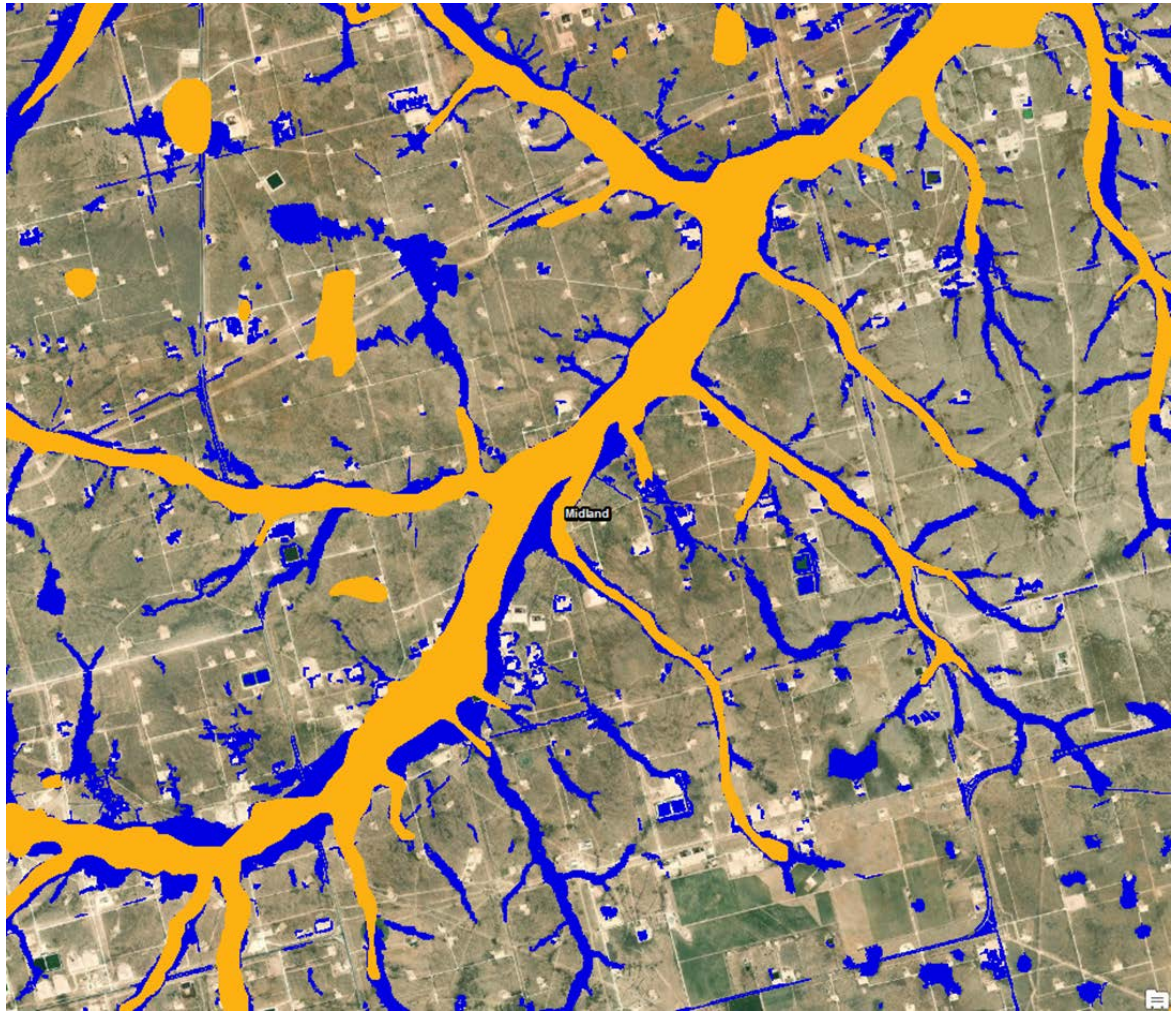
- To complete the flood risk data we:
  - Georeferenced the FIRM images
  - Scanned the 500-year floodplain
  - Scanned the Floodway





Task 2A – Existing Flood Risk Analyses

Paper FIRM Scans vs Fathom Fluvial



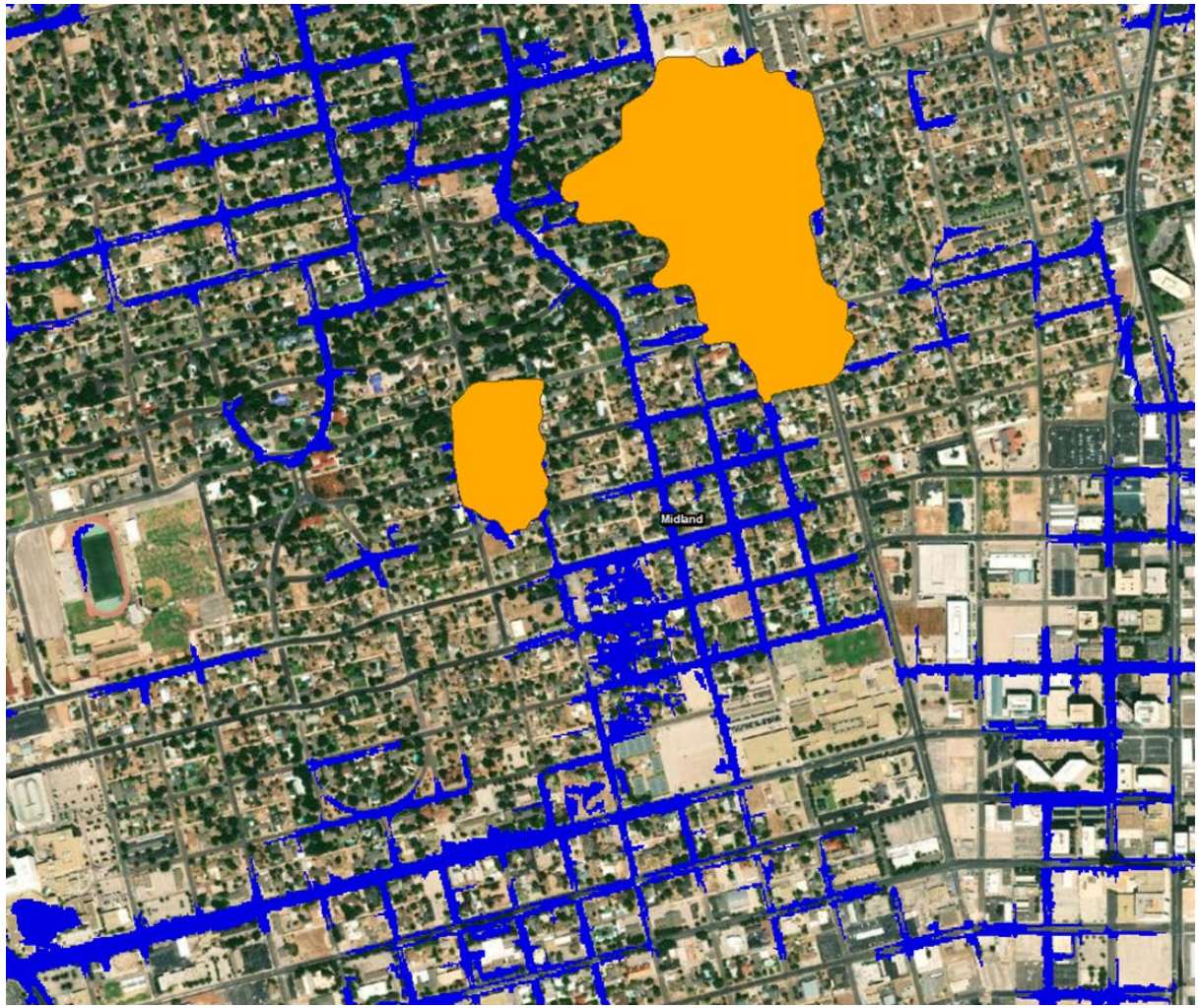
- 100-year floodplains are similar
- Fathom includes
  - Additional tributaries
  - Ponds

Digitized Paper FIRMs

FATHOM 100-Year

Task 2A – Existing Flood Risk Analyses

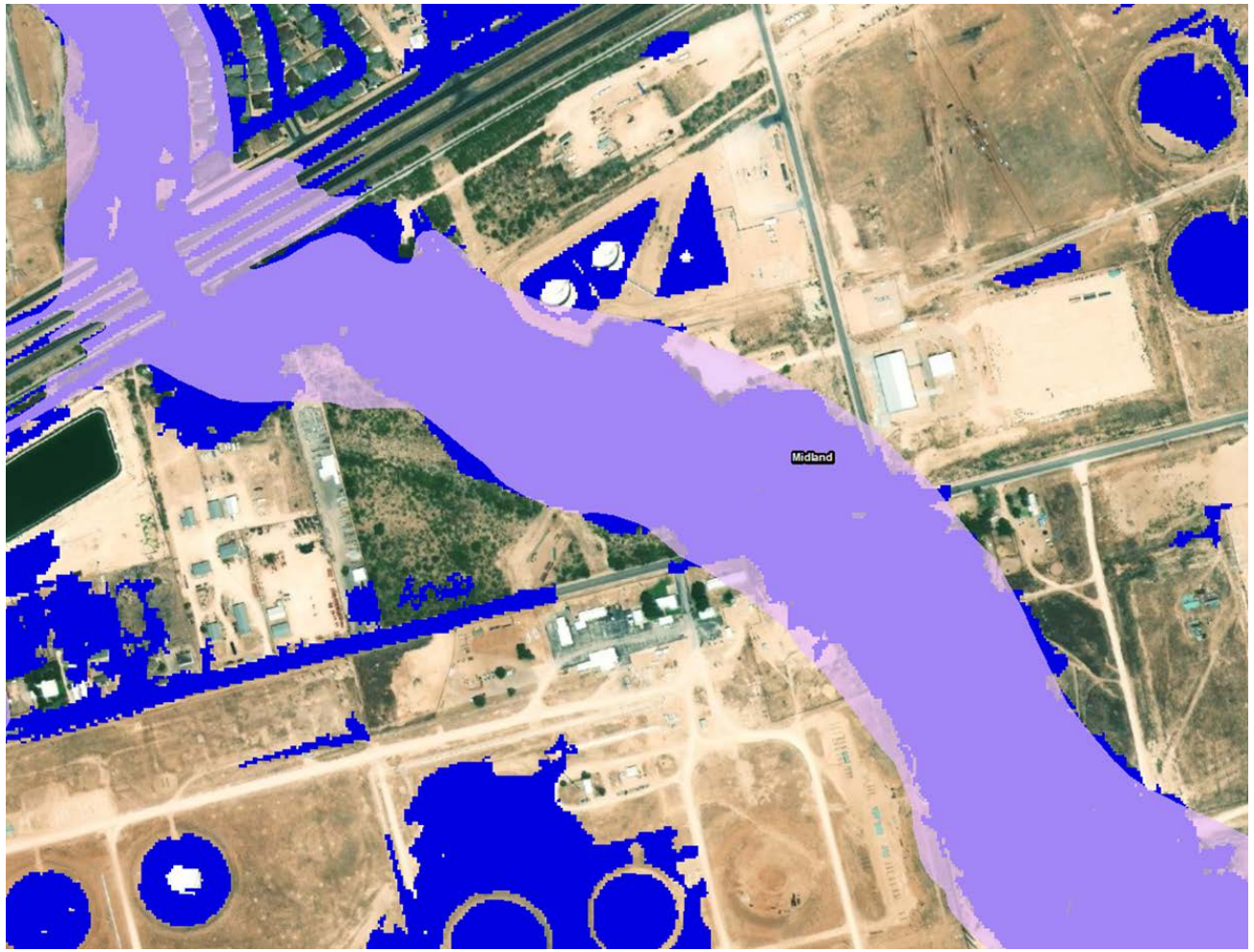
Paper FIRM Scans vs Fathom Pluvial



- 100-year floodplains are similar
- Fathom includes
  - Inundation in street right-of-way
  - Low areas

Task 2A – Existing Flood Risk Analyses

Paper FIRM Scans vs Fathom Fluvial

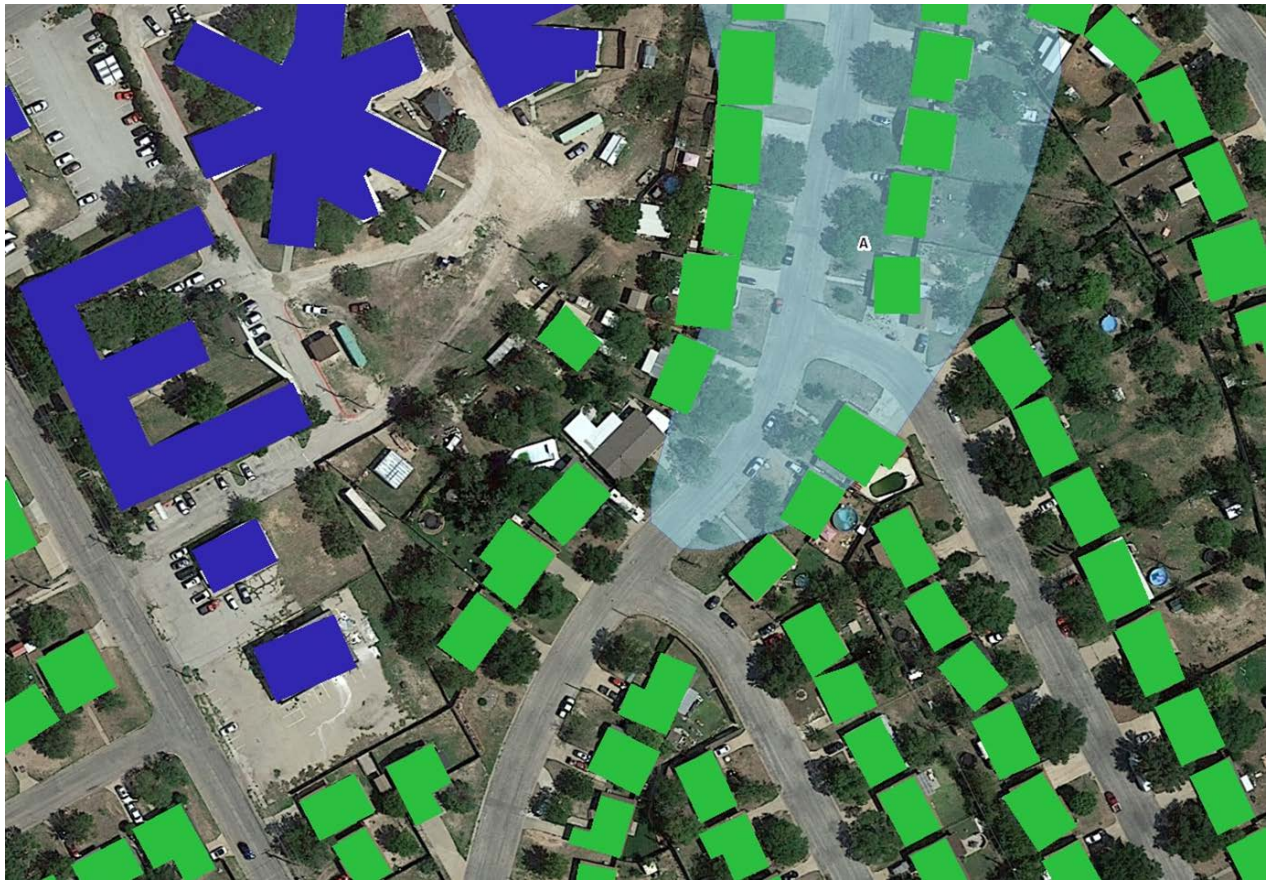


- 100-year floodplains are similar
- Fathom includes
  - Inundation in street right-of-way
  - Low areas

Task 2A – Existing Flood Risk Analyses

Exposure and Vulnerability

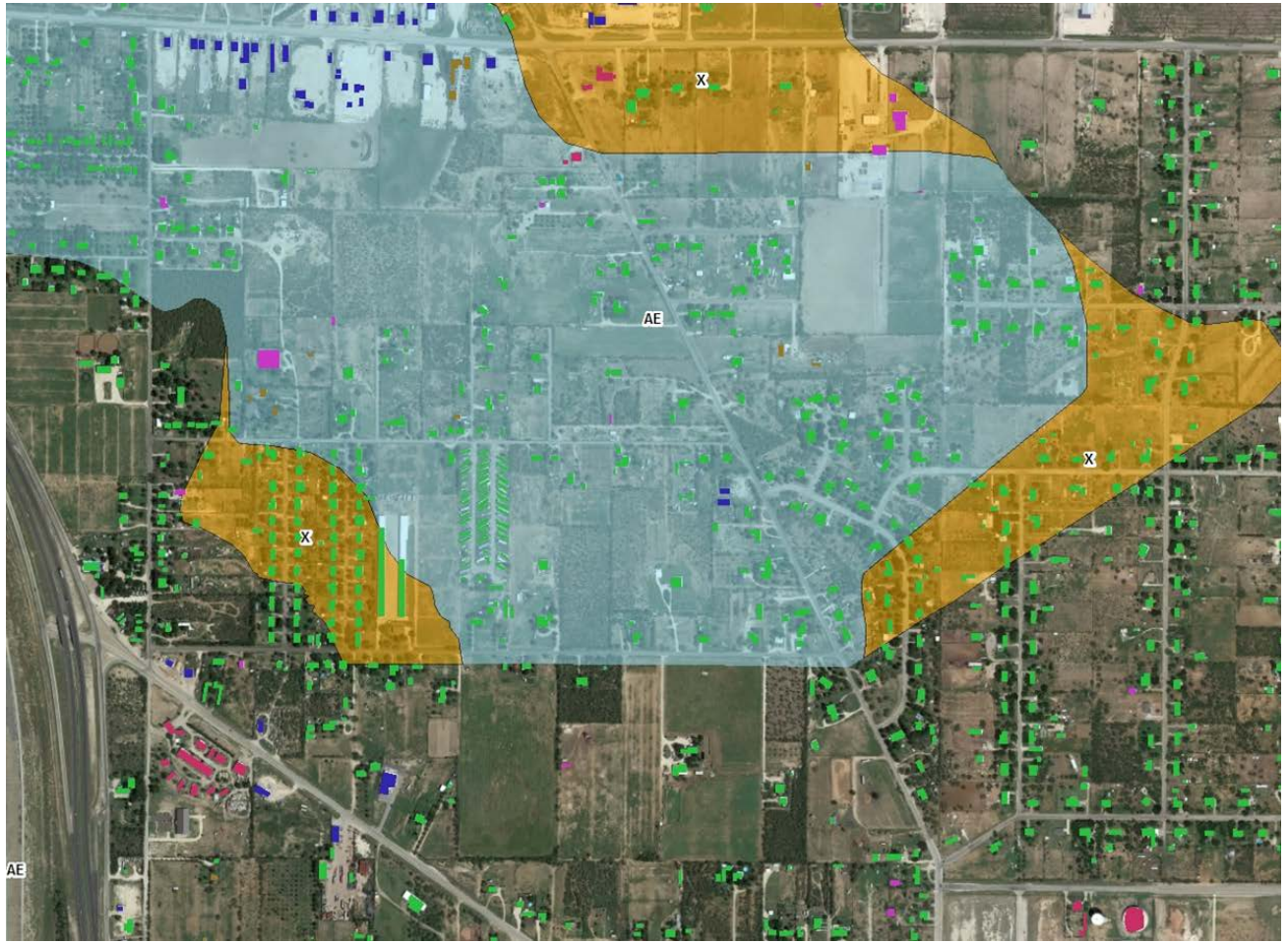
- TWDB provided structure database
  - Includes estimated day and night population for each structure
- Overlay TWDB's Floodplain Quilt and Structure Database
  - New 2020 6" Aerial Imagery
  - Verify structures
  - Identify new structures
- Intersect floodplain and structure database to count population at risk



Task 2A – Existing Flood Risk Analyses

Exposure and Vulnerability

- TWDB provided structure database
  - Includes estimated day and night population for each structure
- Overlay TWDB's Floodplain Quilt and Structure Database
  - New 2020 6" Aerial Imagery
  - Verify structures
  - Identify new structures
- Intersect floodplain and structure database to count population at risk



Task 2A – Existing Flood Risk Analyses
Exposure and Vulnerability

- Initial statistics from the structure database

Upper Colorado - Buildings in Existing 100-Year Flood Hazard Layer

Flood Hazard Type	Residential	Vacant or Unknown	Commerical	Agricultural	Industrial	Public	Total
NFHL - Detailed Study Areas	5,816	537	909	282	666	128	8,338
NFHL - Approximate Areas	1,520	245	302	326	201	58	2,652
Fathom Approximate Areas	4,062	856	718	413	33	298	6,380
							17,370

- We are still refining the initial 30-meter Fathom 100-year layer
- Number of structures will be updated once the 3-meter Fathom layer is received in October

Task 2B – Future Flood Risk Analyses
Proposed Approach

- Detailed Study areas (Zone AE with 100-year and 500-year)
  - 500-year Existing is close to the 100-year Future floodplain
- Approximate areas (Zone A or Fathom with only 100-year)
  - Most growth over next 30 years will occur around cities
  - To develop the 100-year Future floodplains downstream of a city
    - Measure the increased width between 100-year and 500-year
    - Buffer the 100-year floodplain by that width down to the next major confluence
- For both Detailed and Approximate Study, 500-year Future is a data gap
- Round 2 of State Flood Planning will likely include a more accurate estimate using regionwide Base Level Engineering

Upper Colorado Regional Flood Plan

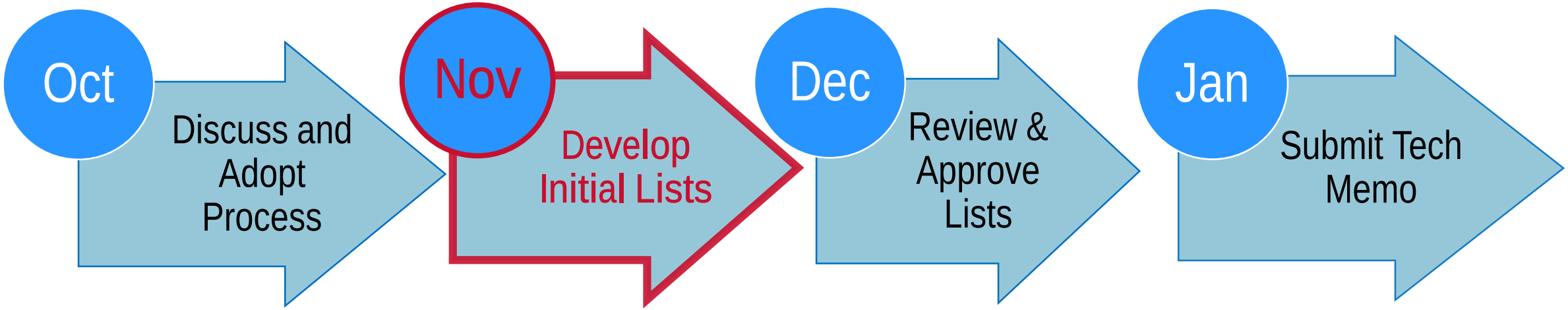
Task 4B Identification of Projects, Evaluations and Strategies

November 16, 2021

Identification and Assessment of Flood Mitigation Needs

- Overarching goal of regional flood plans must be "to protect against the loss of life and property"
- RFPGs must:
  - Use goals to guide the flood mitigation needs analysis and recommend evaluations, strategies and projects
  - It is expected that a wide range of project types will be recommended by the RFPGs to the TWDB
    - Adequate number to achieve the goals
    - As many Flood Mitigation Projects as possible

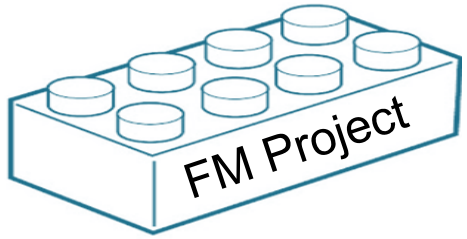
Task 4A/4B – Work Plan



4A	Flood Mitigation Needs Analysis	Summarize Greatest Flood Risk & Needs	Finalize Greatest Flood Risk & Needs	Summary of Greatest Flood Risk & Needs
4B	Enter Existing Studies and Projects	Develop Additional Evaluations and Projects	Draft Lists + Those Not Feasible	Approved Lists + Those Not Feasible

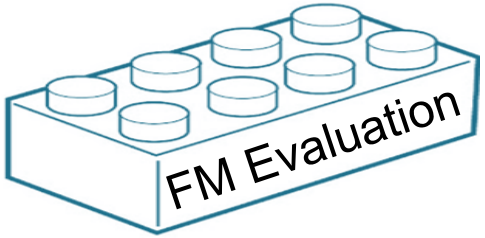
Task 4B – Identification of Projects, Evaluations, Strategies

3 components will make up the Regional Flood Plan



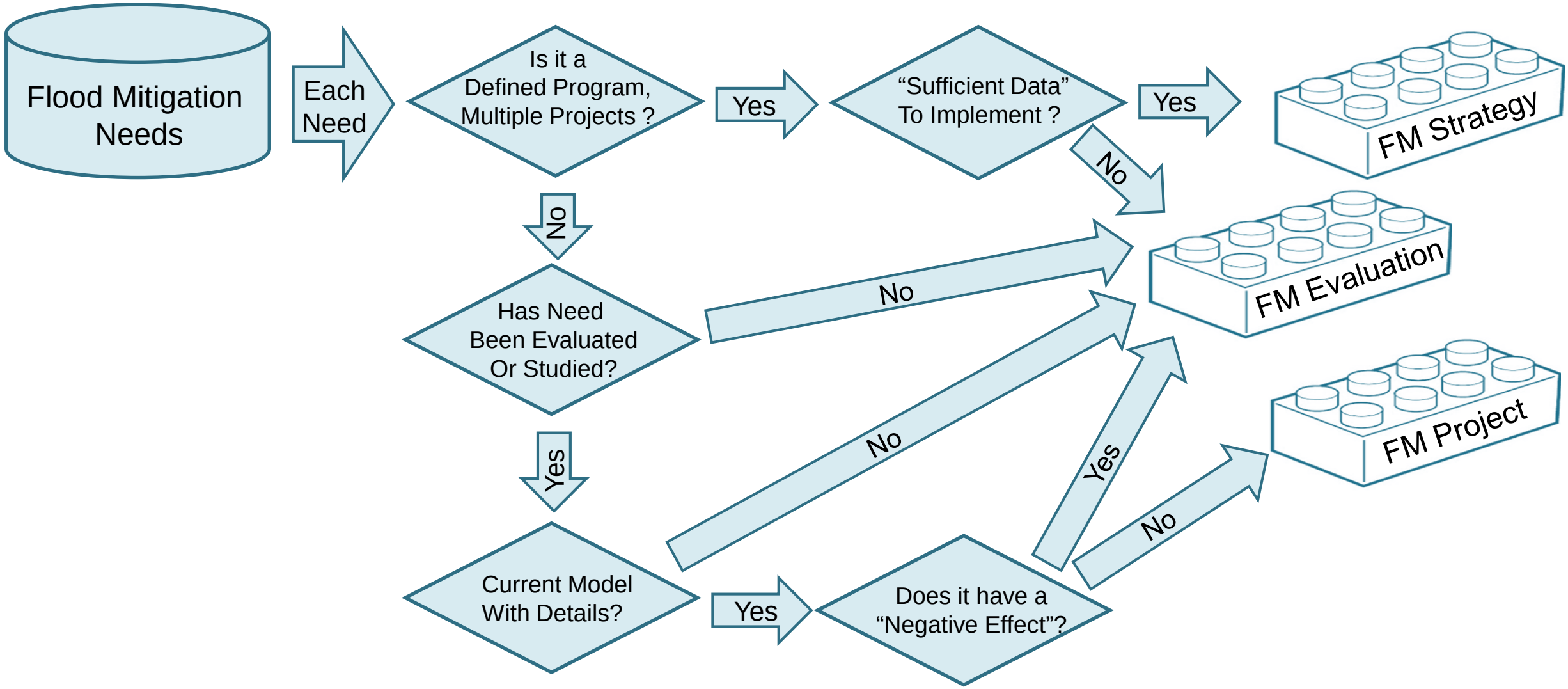
- **Flood Mitigation Project:**
  - Either structural or non-structural project
  - Has non-zero capital costs or other non-recurring cost
  - When implemented will reduce flood risk, mitigate flood hazards to life or property

- **Flood Management Strategy:**
  - Proposed plan to reduce flood risk or mitigate flood hazards to life or property
  - Does not have significant capital or recurring costs

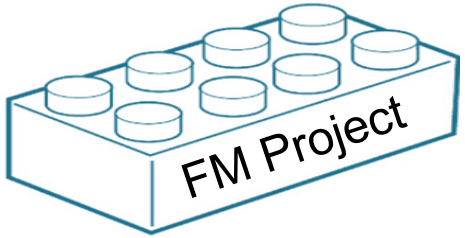


- **Flood Management Evaluation:**
  - Study of a specific, flood-prone area
  - Assess flood risk / determine FM Strategies or Projects
  - Can include up to 30% conceptual design of a FM Project

Task 4B – Identification of Projects, Evaluations, Strategies



Task 4B – Identification of Projects, Evaluations, Strategies



- **Flood Mitigation Project:**
  - Must have sufficient data to be included in Regional Flood Plan
    - Includes Benefit / Cost Ratio
  - If not, two options:

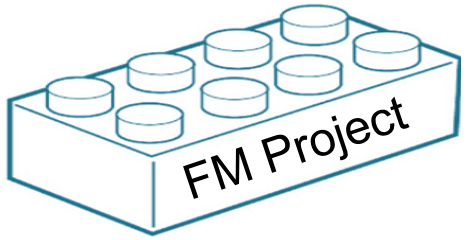
1. RFPG can recommend the project and leave some of the project details blank (blank fields will score as zero)
2. Perform a Floodplain Management Evaluation to develop the required data

Table 23: General project data required

General project data required	
Project ID:	FMP ID
Project Description:	Brief Project Description
Flood Region:	TWDB RFPG Region
Project Type:	Project Type based on Section 3.2 in this document
Project Watershed:	Project Watershed
Rural Project:	Project qualifies as a rural project per TWDB definition
Project Cost:	Total Estimated Project Cost
Benefit- Cost Ratio:	BCR value determined in Economic Analysis
Project Status:	Planning, Preliminary, Final, Bid-Ready
Population Served:	# Population within Project Service Area Boundary
Communities Served by Project:	Number of jurisdictions (Cities) within project service area
# Structures in 100-year (1% annual chance) Floodplain:	Pre-project 100-year structures count
# Structures with reduced 100-year (1% annual chance) Flood risk:	Post-project 100-year flood risk reduction
# Structures with removed from 100-year (1% annual chance) Floodplain:	Post-project 100-year structures count removed from floodplain extents
Cost/ Structure removed:	Project cost/# structures removed
GIS Shapefile for project:	GIS shapefile of project service area limits or location
Percentage Nature-based Solution (by cost)	Percentage cost of Nature Based solution
Water Supply Benefit	Yes/No; If Yes, provide Annual Yield in Acre-feet
Pre-Project Level-of-Service	Pre-Project LOS: 2-year through 100-year (50% ACE-1% ACE)
Post-Project Level-of-Service	Post-Project LOS: 2-year through 100-year (50% ACE-1% ACE)
Traffic Count for Low Water Crossings	Traffic Count (AADT) for low water crossing projects

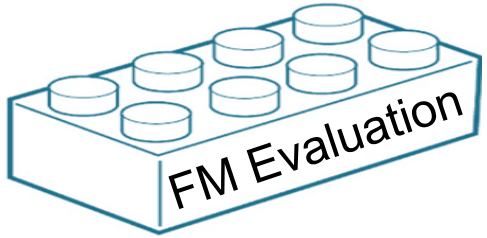
Task 4B – Identification of Projects, Evaluations, Strategies

- **Sources of Flood Mitigation Projects:**



1. Existing Flood Mitigation Reports and Drainage Master Plans
    a. Drainage Master Plans for San Angelo, Midland, Odessa
    b. USACE Section 205 for Deep Creek, FIF Monahans & South Draw Flood Planning
2. Existing Hazard Mitigation Action Plans
    a. Active HMAP = Tom Green, Scurry, Mitchell, Nolan, Taylor, Runnels
    b. Expired HMAP = Concho, Coke, Sterling, Reagan, Irion, Schleicher, Ector

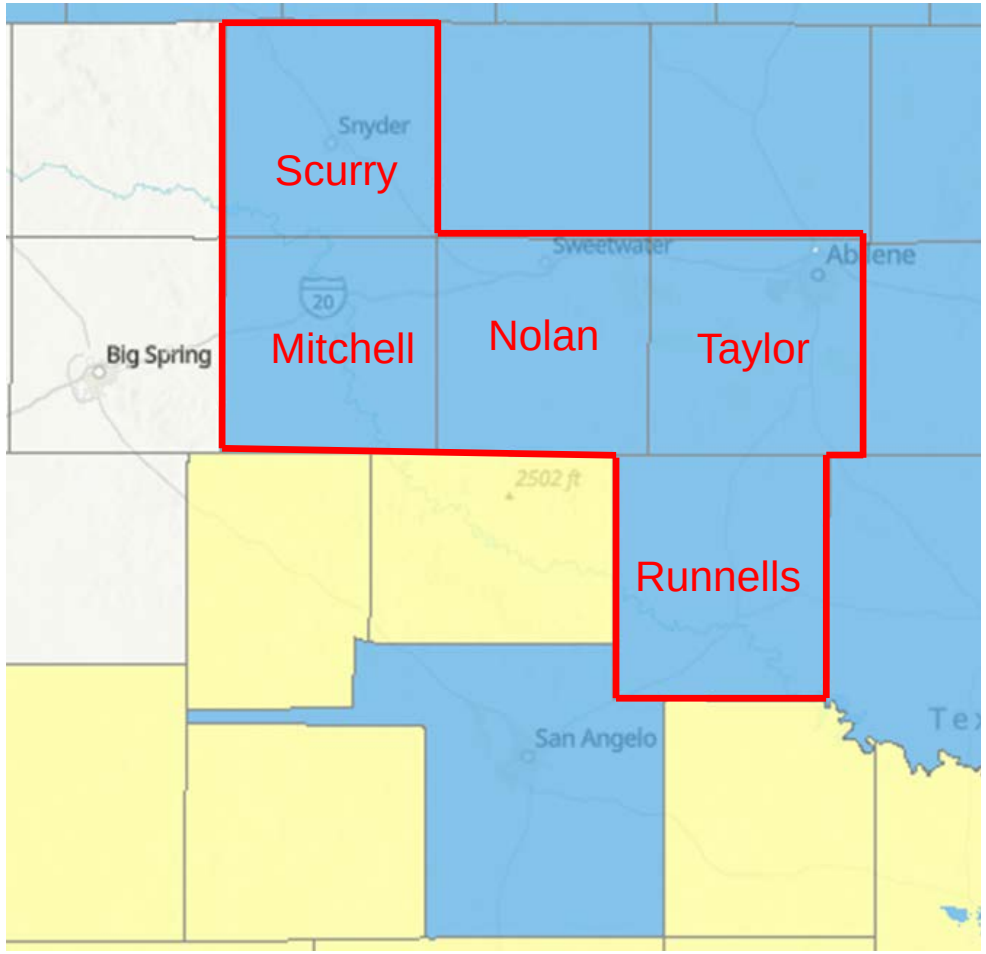
- **Sources of Flood Management Evaluations:**



1. Upcoming / Planned watershed studies
2. Studies developed to address highest Task 4A Need areas
3. Incomplete Flood Mitigation Projects (Task 12)

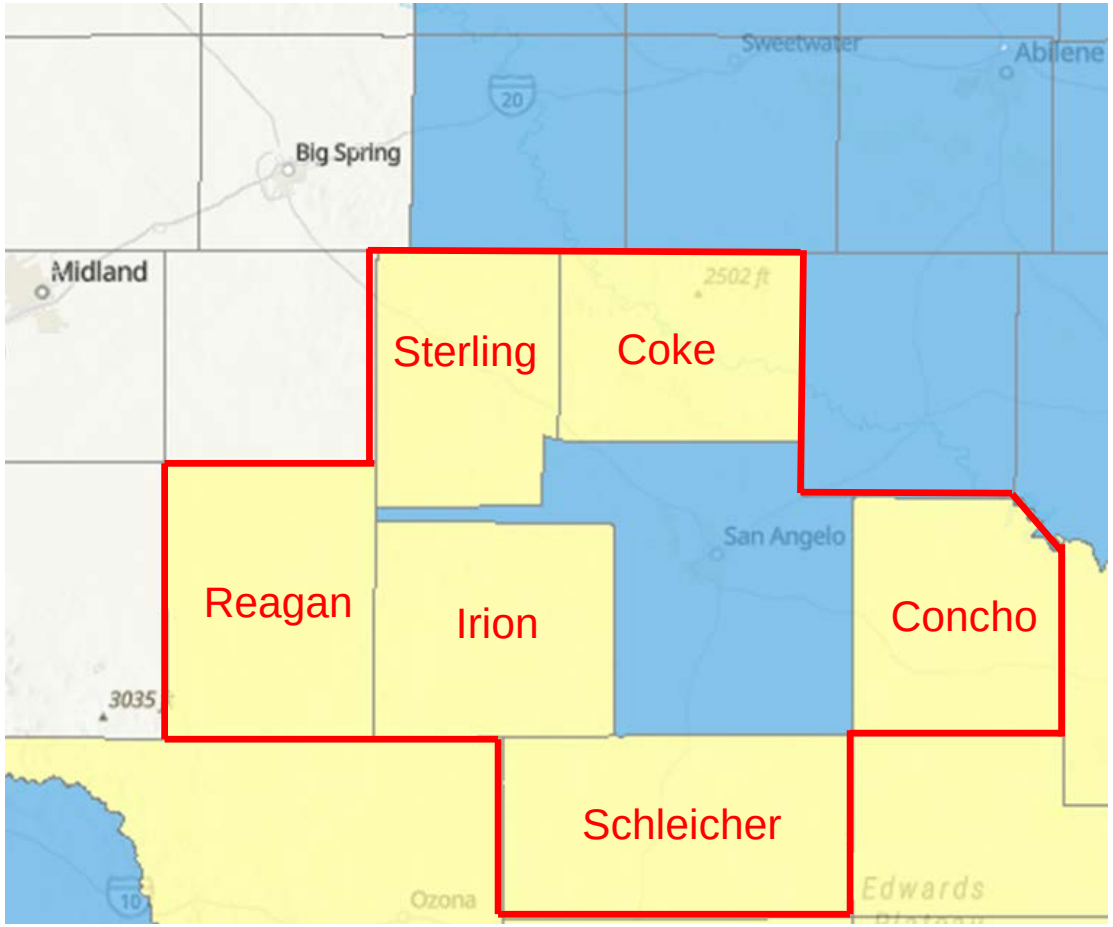
Task 4B – Identification of Projects, Evaluations, Strategies
West Central Texas COG Hazard Mitigation Plan

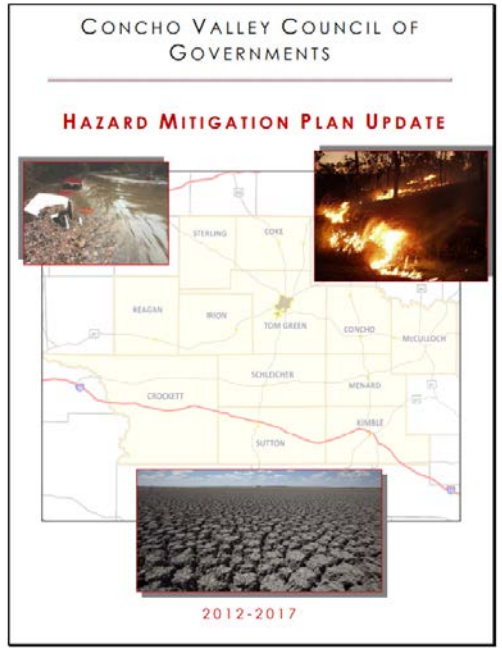
- Scurry County
  - Snyder
- Mitchell County
  - Colorado City, Loraine and Westbrook
- Nolan County
  - Blackwell
- Taylor County
- Runnells County
  - Ballinger, Miles and Winters



Task 4B – Identification of Projects, Evaluations, Strategies
Concho Valley COG Hazard Mitigation Plan

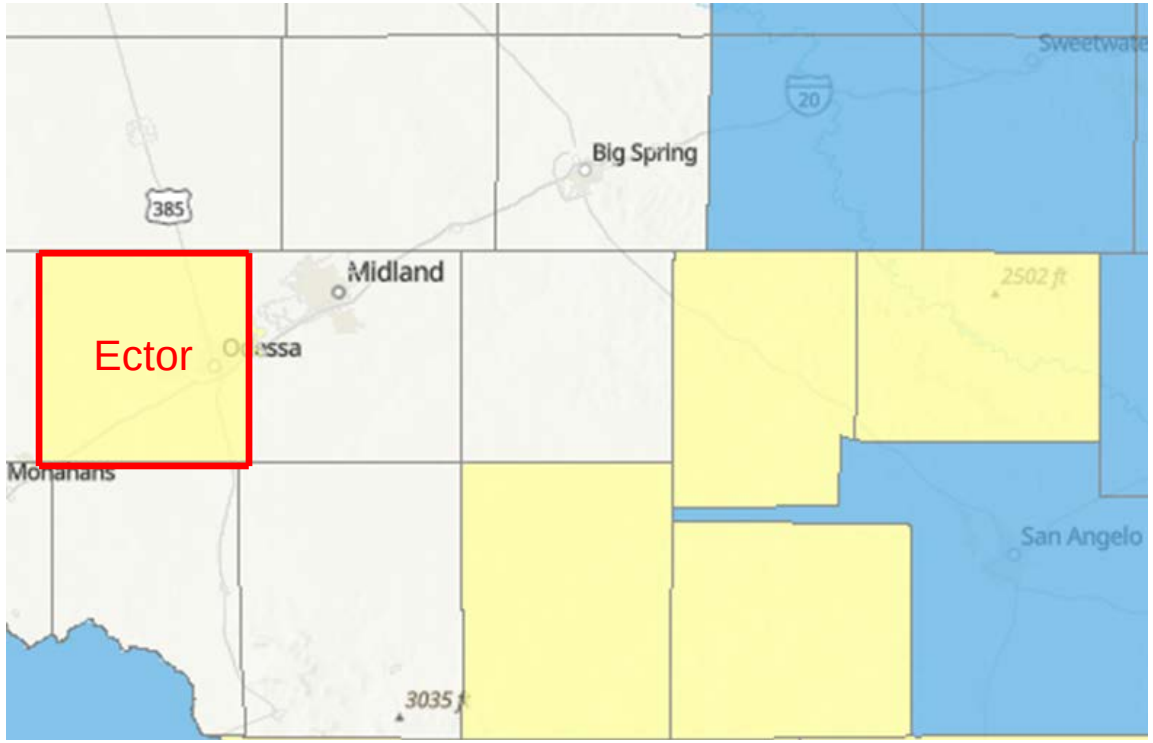
- Concho County
  - Eden and Paint Rock
- Coke County
  - Bronte and Robert Lee
- Sterling County
  - Sterling City
- Reagan County
  - Big Lake
- Irion County
  - Mertzon
- Schleicher County





Task 4B – Identification of Projects, Evaluations, Strategies
Ector County Hazard Mitigation Plan

- Ector County
  - Odessa and Goldsmith



ECTOR COUNTY

CITY OF ODESSA • CITY OF GOLDSMITH

Multi-jurisdictional

Hazard Mitigation Plan

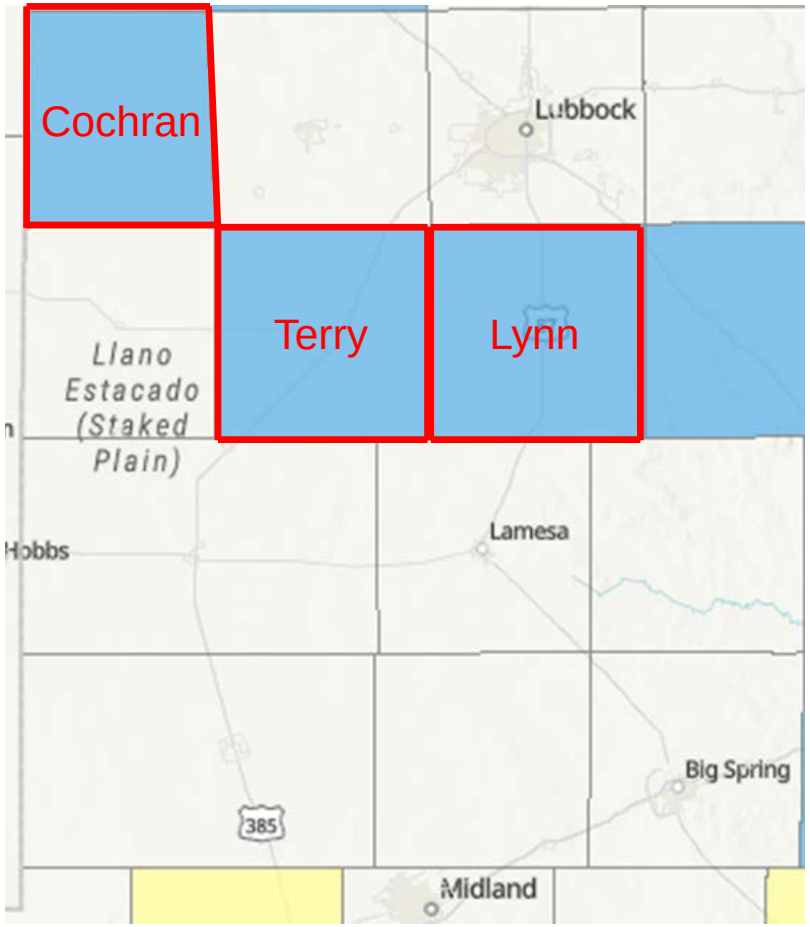
2011-2016

H2O PARTNERS

Task 4B – Identification of Projects, Evaluations, Strategies

Additional County Hazard Mitigation Plans

- Cochran County
- Terry County
- Lynn County
- Tom Green County
  - San Angelo



Task 4B – Identification of Projects, Evaluations, Strategies

Per TWDB Technical Guidance, an action is not feasible if it:

1. Provides no flood risk reduction
2. Does not have a local sponsor
3. Is misaligned with goal(s) and/or guidance principles
4. Has an inappropriate scale
5. Is a duplicate of another project
6. Lacks concurrence from impacted entities
7. Has an impractical benefit-cost ratio or other metric
8. Has public opposition
9. Lacks RFPG consensus

Upper Colorado Regional Flood Plan

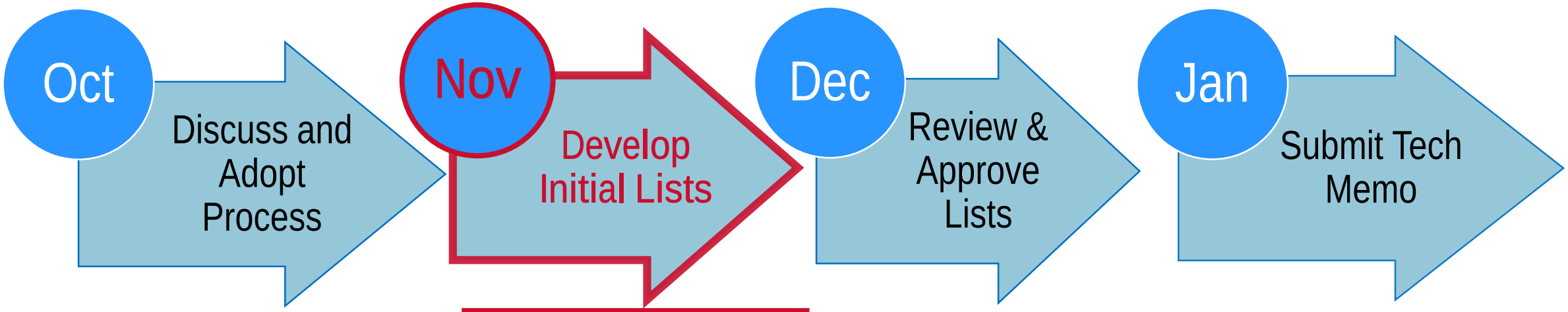
Task 4A Needs Analysis

November 16, 2021

Identification and Assessment of Flood Mitigation Needs

- Overarching goal of regional flood plans must be "to protect against the loss of life and property"
- RFPGs must:
  - Use goals to guide the flood mitigation needs analysis and recommend evaluations, strategies and projects
  - It is expected that a wide range of project types will be recommended by the RFPGs to the TWDB
    - Adequate number to achieve the goals
    - As many Flood Mitigation Projects as possible

Task 4A/4B – Work Plan



4A	Flood Mitigation Needs Analysis	Summarize Greatest Flood Risk & Needs	Finalize Greatest Flood Risk & Needs	Summary of Greatest Flood Risk & Needs
4B	Enter Existing Studies and Projects	Develop Additional Evaluations and Projects	Draft Lists + Those Not Feasible	Approved Lists + Those Not Feasible

Task 4A – Flood Risk Assessment

Unit of Analysis

- Hydrologic Unit Code (HUC)
  - United States Geological Survey's numbering system for stream gauging stations
- HUC-8 is the stream gauge name
- HUC-10 is the primary watesheds
- HUC-12 is the local subwatershed level that captures tributary systems

Task 4A – Flood Risk Assessment

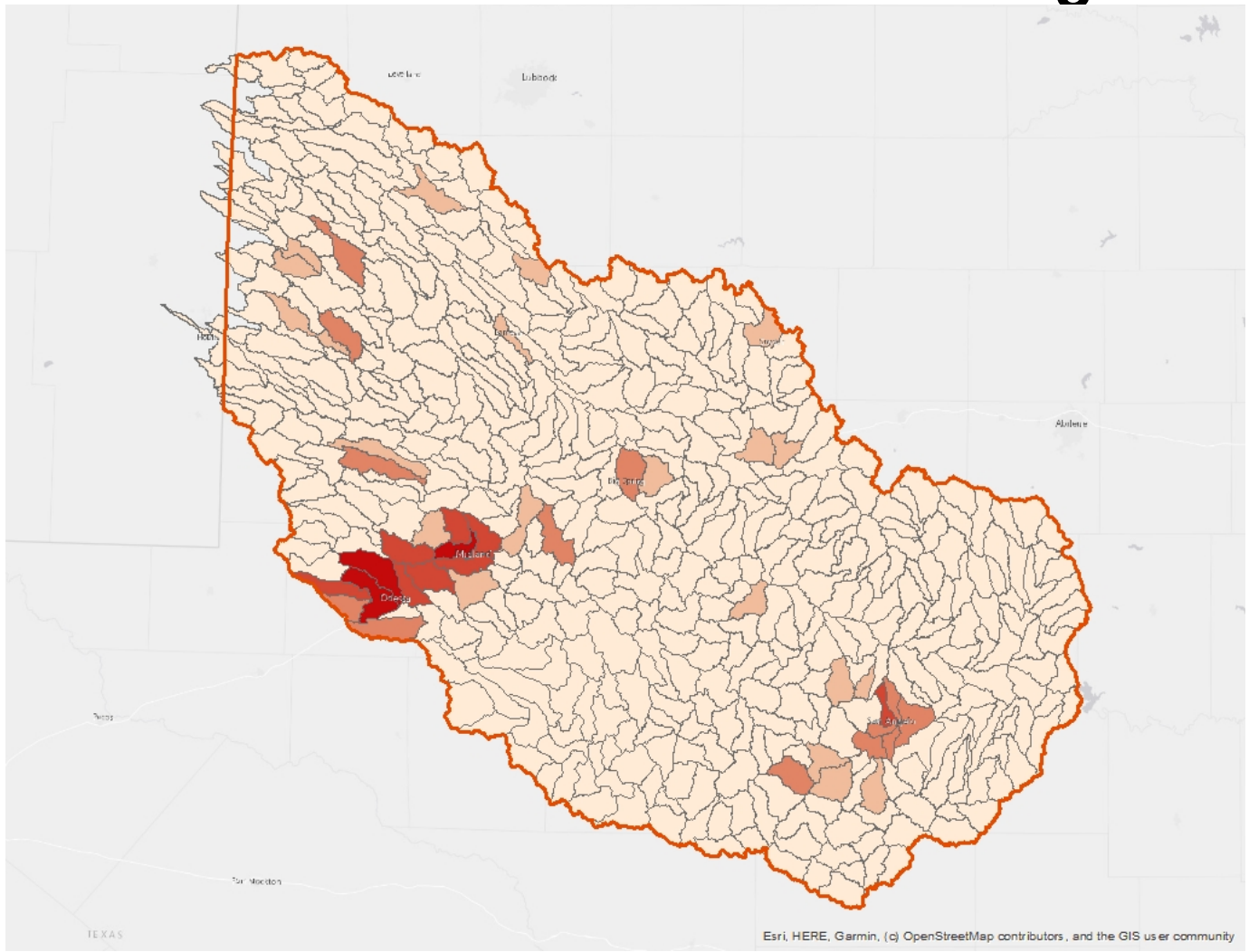
Process to Identify Areas of Greatest Need

Per TWDB Technical Guidance, considered:

1. Structures in the existing 100-year floodplain
2. Critical facilities in the existing 100-year floodplain
3. Agricultural / ranching in the existing 100-year floodplain
4. Miles of road in the existing 100-year floodplain
5. Identified low water crossings
6. Communities not participating in the NFIP
7. Percentage of inadequate 100-year floodplain mapping
8. Areas lacking Hazard Mitigation Action Plans
9. Floodprone areas marked on Region 9's Interactive Map
10. Number of Presidential Disaster Declarations involving flooding

Task 4A – Flood Risk Assessment

1 - Structures in the Existing 100-year Floodplain



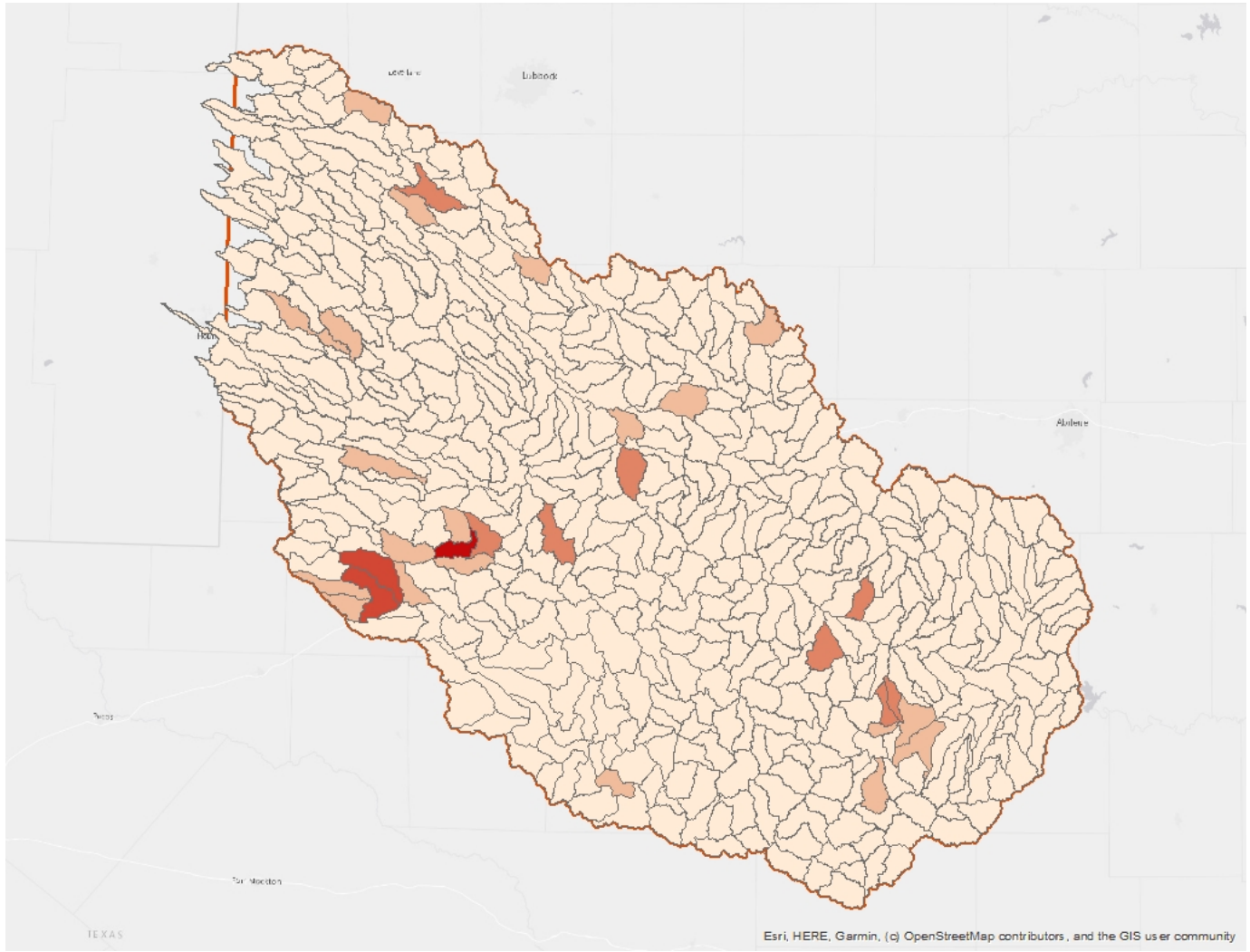
Scored from 1 to 5

1. 0 to 10 structures
2. 11 to 25 structures
3. 26 to 50 structures
4. 51 to 100 structures
5. More than 101 structures

- 0 - 150
- 151 - 595
- 596 - 1331
- 1332 - 2390
- 2391 - 7738

Task 4A – Flood Risk Assessment

2 – Critical Facilities in the Existing 100-year Floodplain

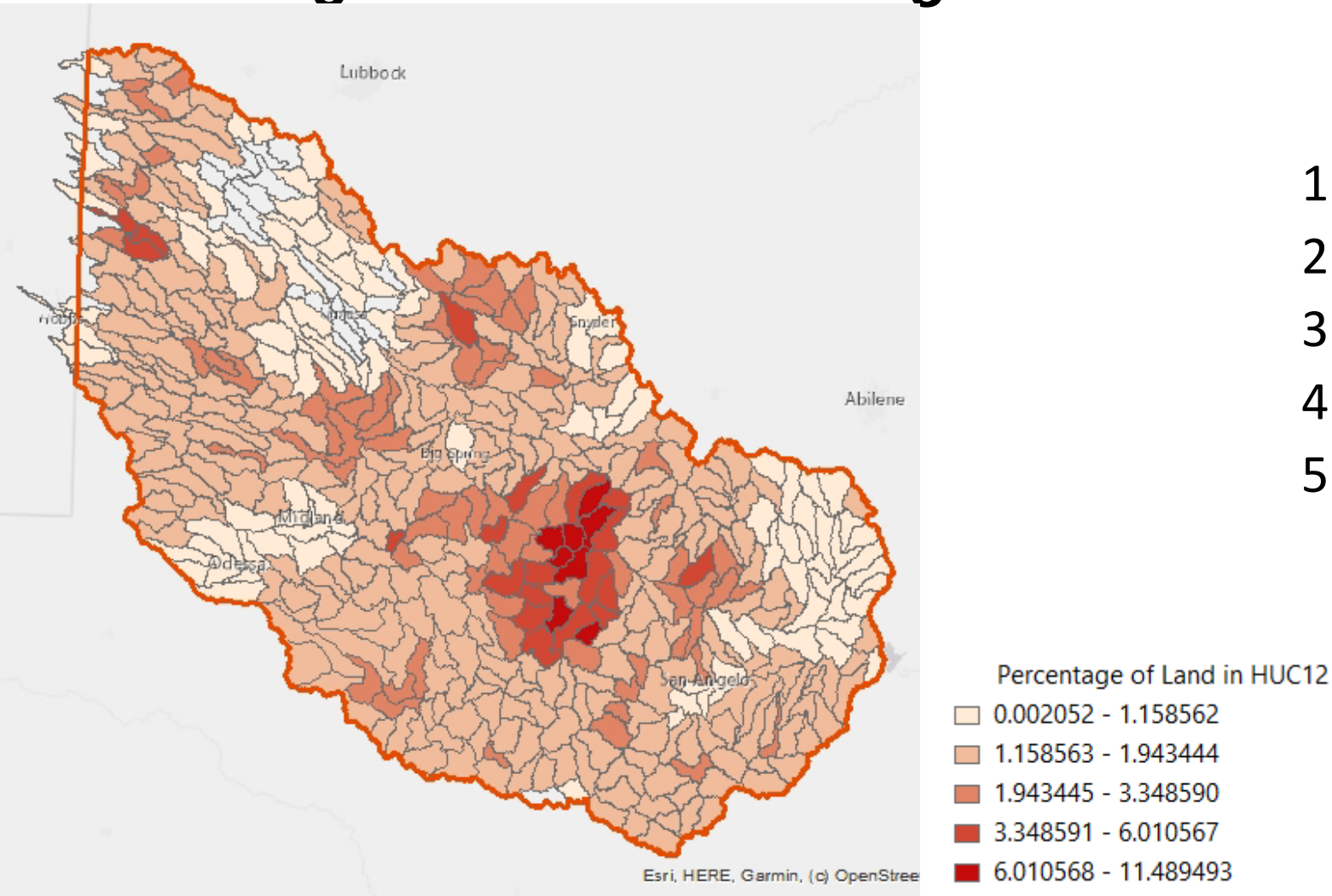


Scored from 1 to 5

1. 0 to 10 structures
2. 11 to 25 structures
3. 26 to 50 structures
4. 51 to 100 structures
5. More than 101 structures

Task 4A – Flood Risk Assessment

3 – Agriculture / Ranching in the Existing 100-year Floodplain

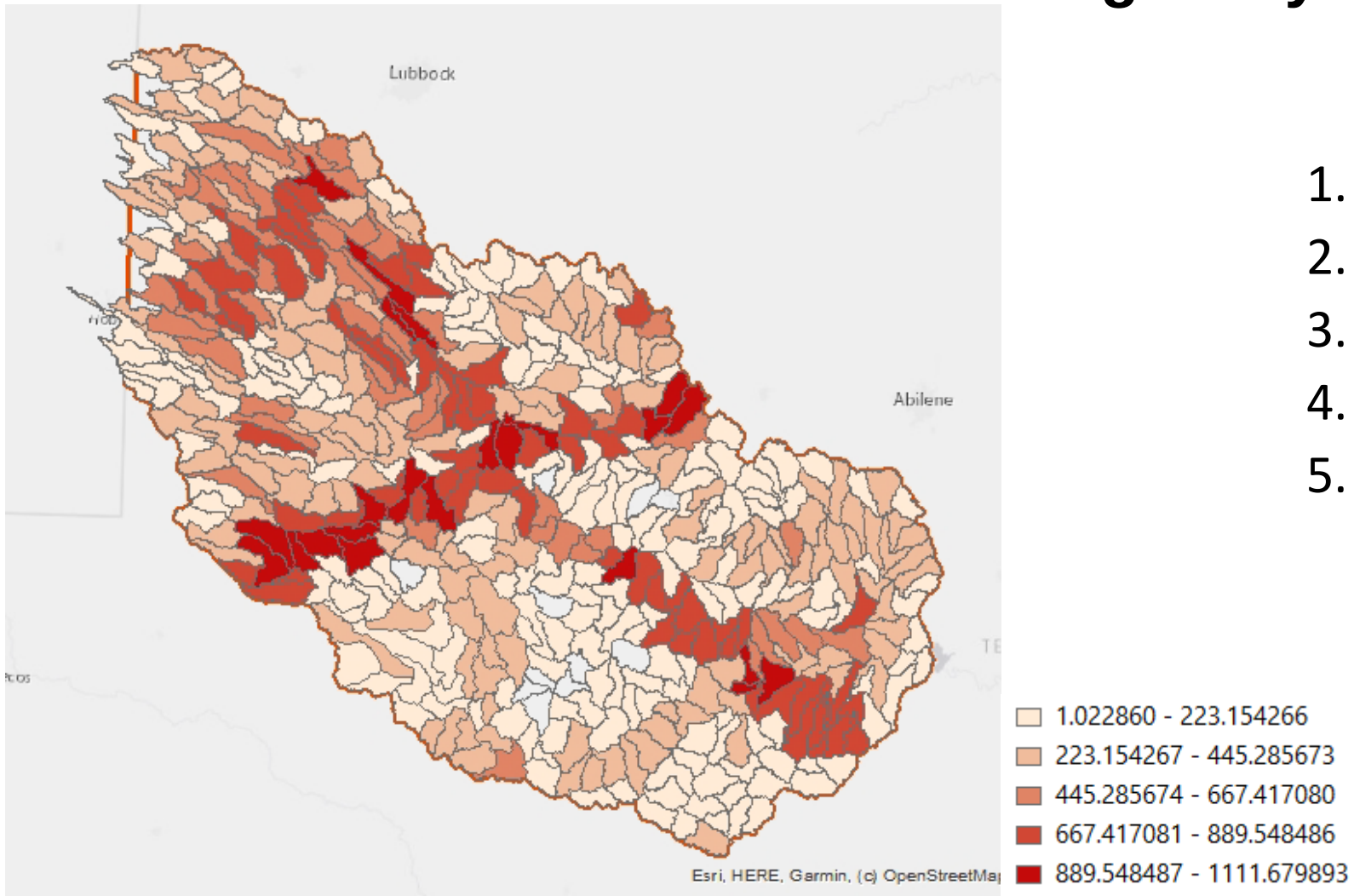


Scored from 1 to 5

1. 0 to 20 percent
2. 21 to 40 percent
3. 41 to 60 percent
4. 61 to 80 percent
5. 81 to 100 percent

Task 4A – Flood Risk Assessment

4 – Miles of Road in the Existing 100-year Floodplain

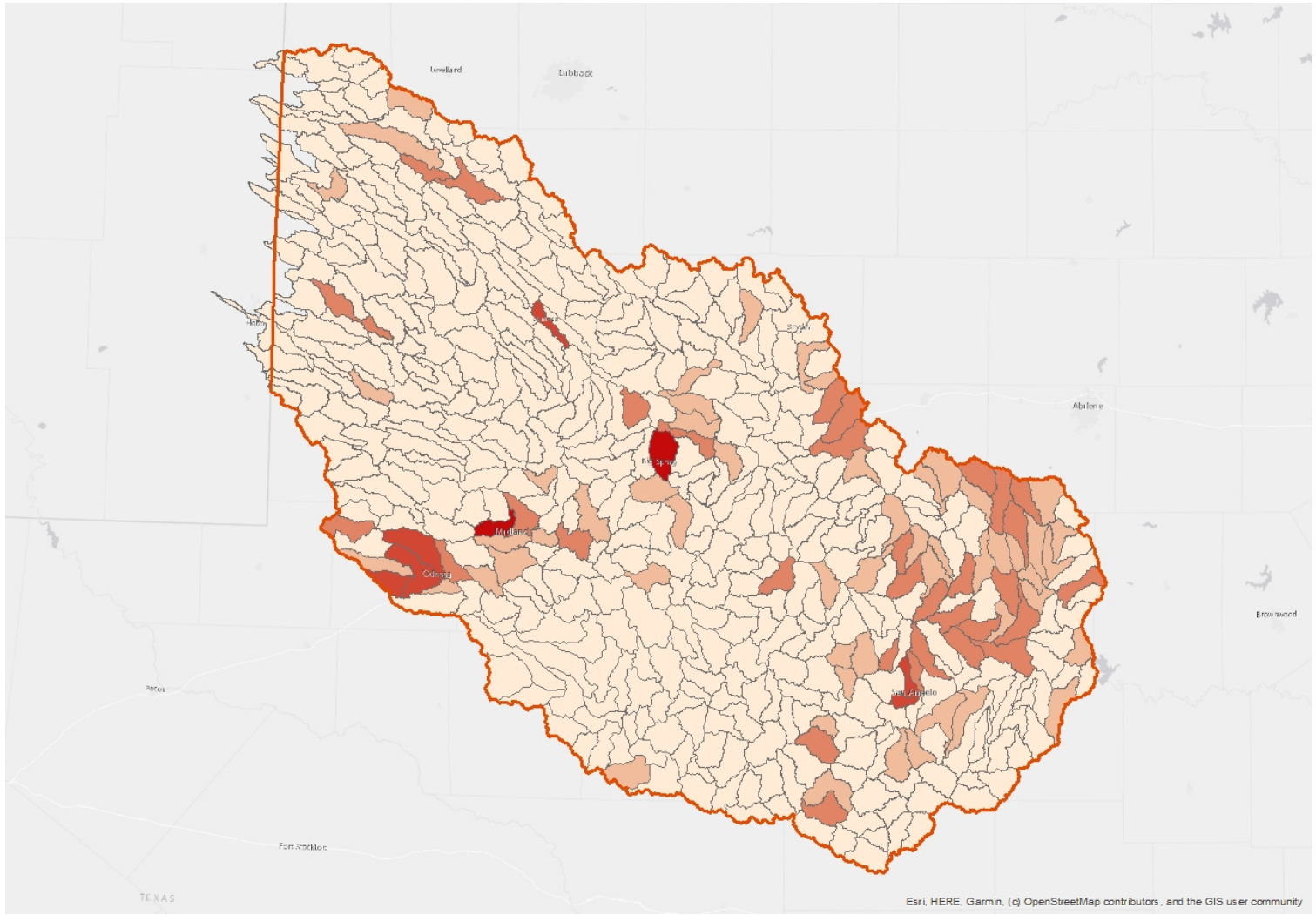


Scored from 1 to 5

1. 0 to 10 miles
2. 11 to 25 miles
3. 26 to 50 miles
4. 51 to 100 miles
5. More than 101 miles

Task 4A – Flood Risk Assessment

5 – Number of Identified Low Water Crossings

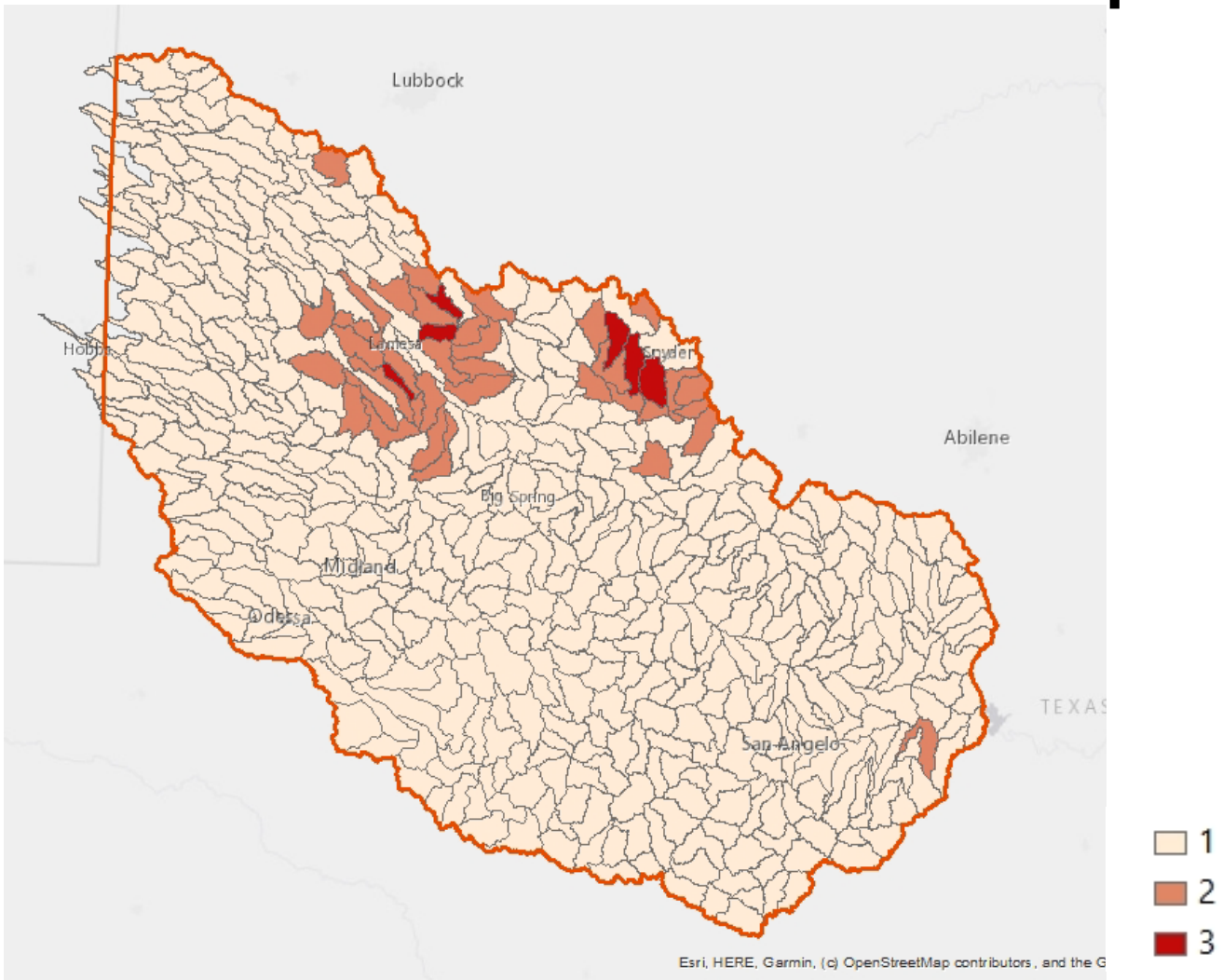


Scored from 1 to 5

1. 0 to 10 crossings
2. 11 to 25 crossings
3. 26 to 50 crossings
4. 51 to 100 crossings
5. More than crossings

Task 4A – Flood Risk Assessment

6 – Communities Not Participating in the NFIP

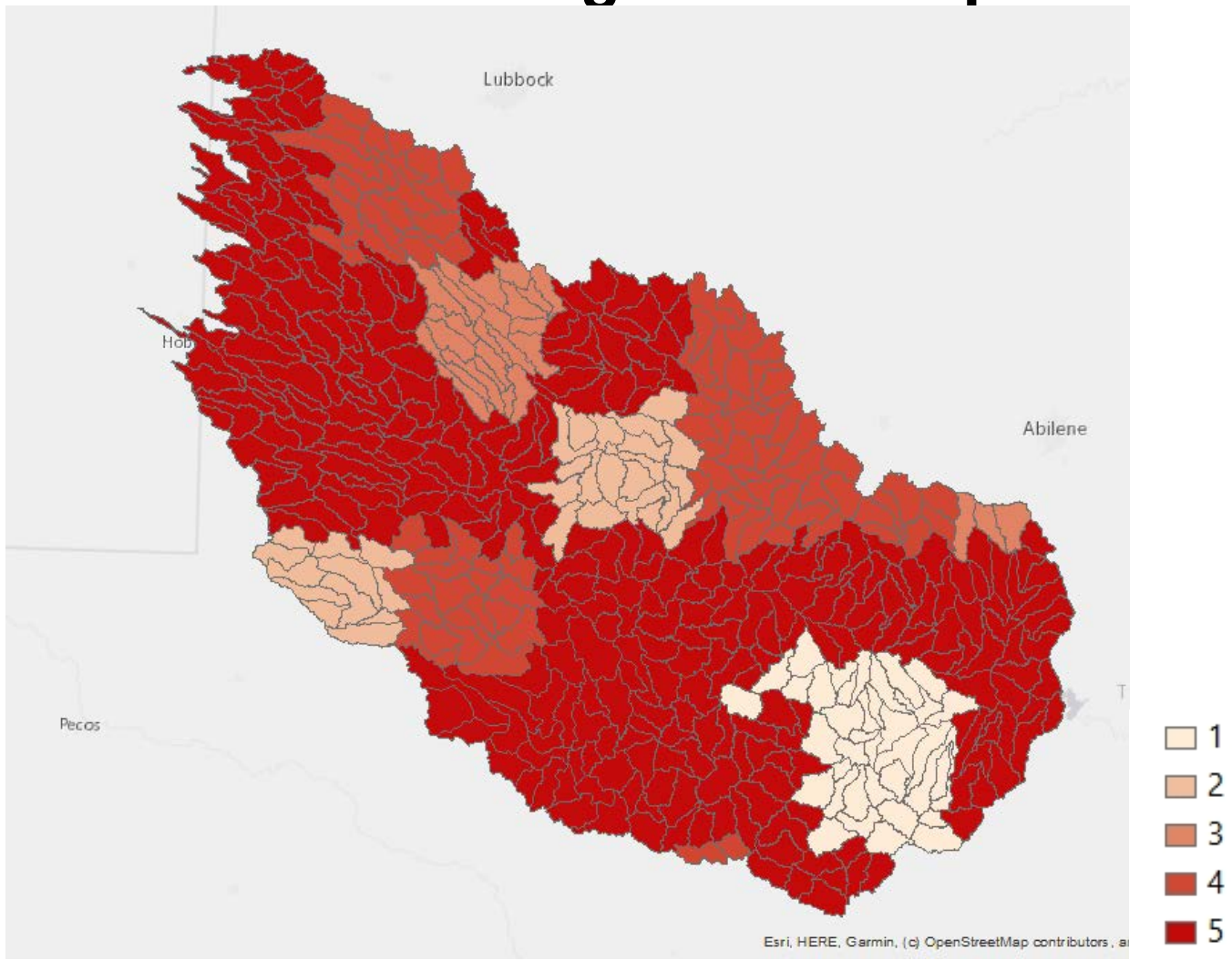


Scored from 1 to 5

1. 0 to 20 percent
2. 21 to 40 percent
3. 41 to 60 percent
4. 61 to 80 percent
5. 81 to 100 percent

Task 4A – Flood Risk Assessment

7 – Percentage of Inadequate 100-year Floodplain Mapping

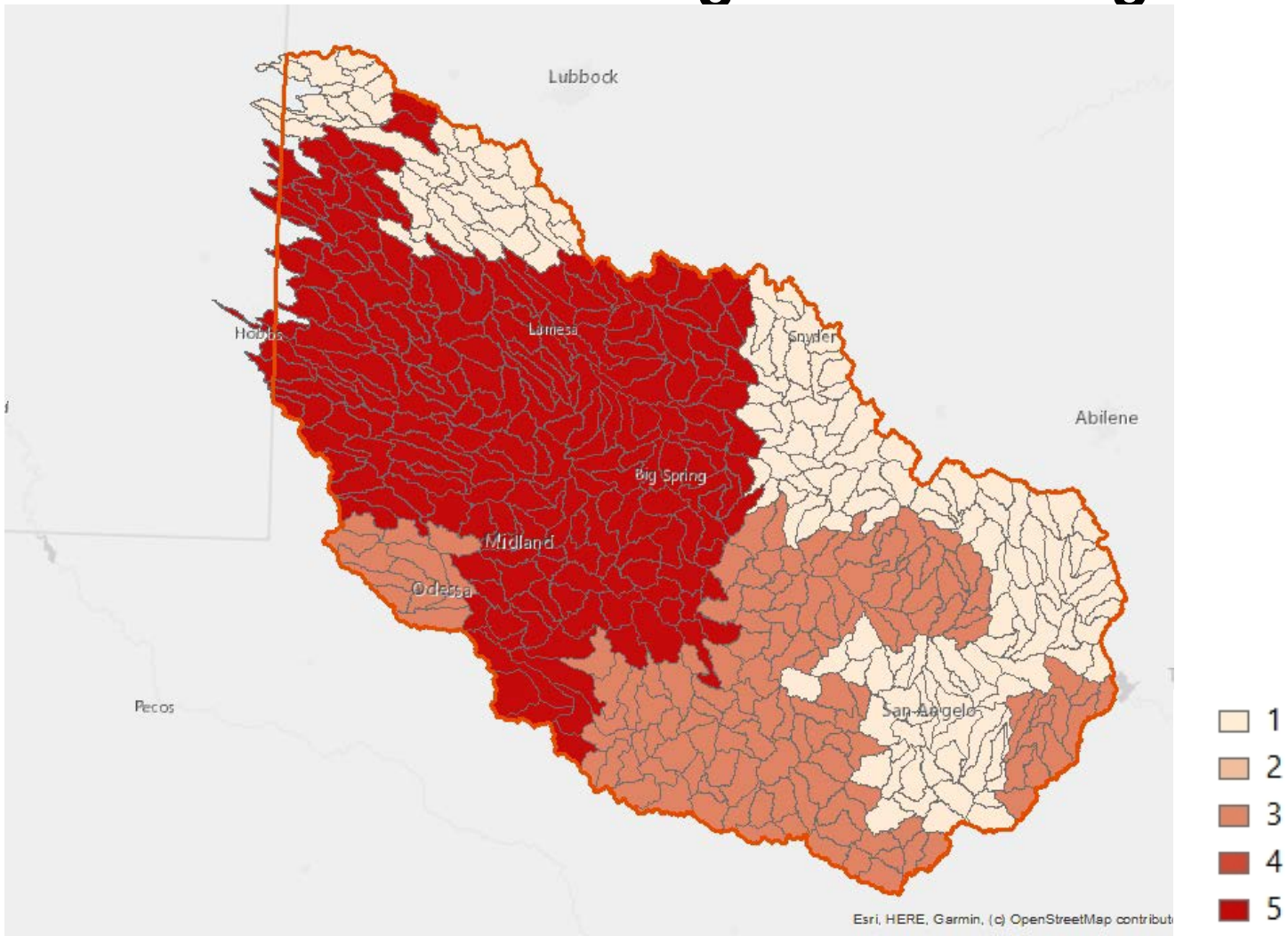


Scored from 1 to 5

1. 0 to 20 percent
2. 21 to 40 percent
3. 41 to 60 percent
4. 61 to 80 percent
5. 81 to 100 percent

Task 4A – Flood Risk Assessment

8 – Areas Lacking Hazard Mitigation Action Plans

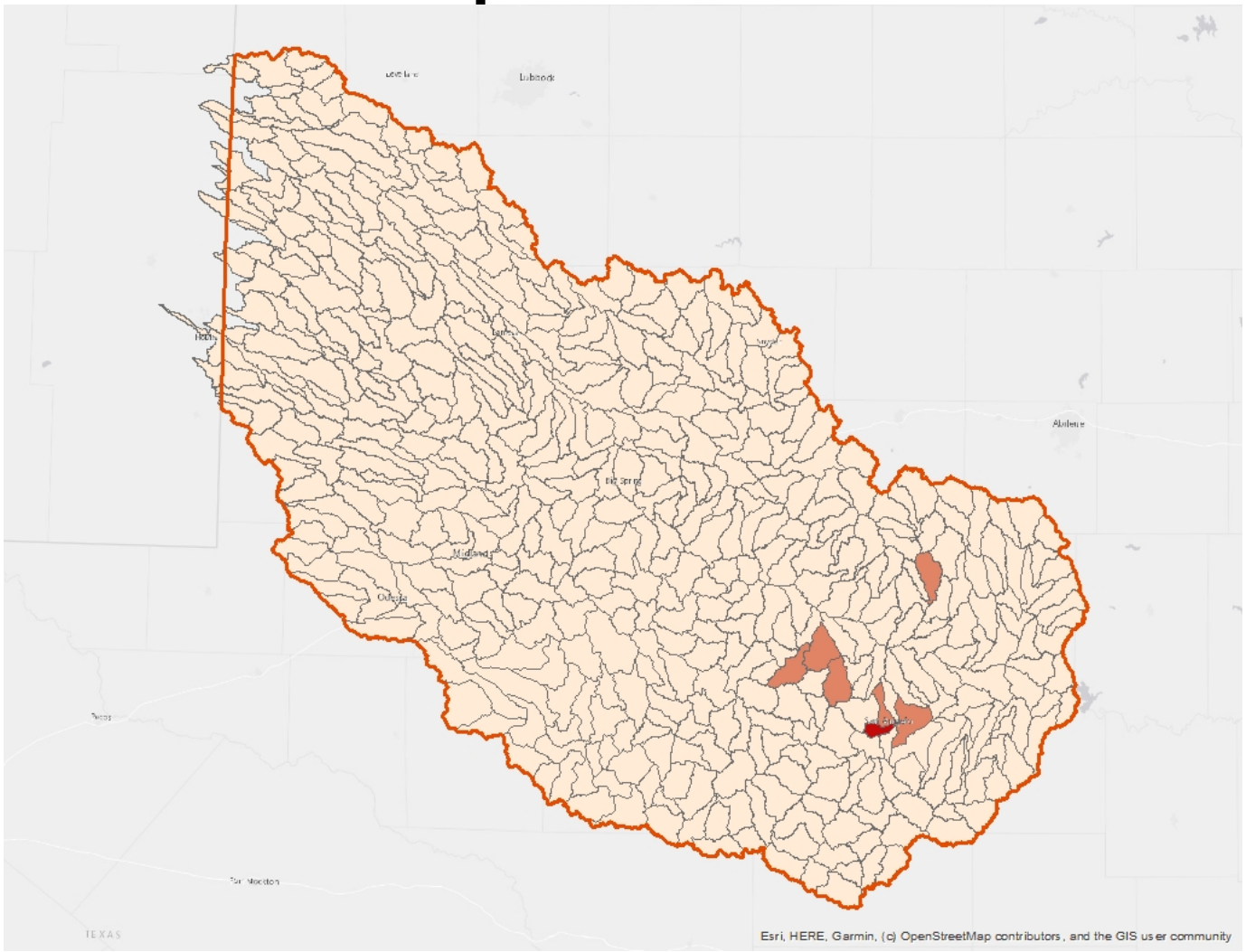


Scored from 1 to 5

1. 0 to 20 percent
2. 21 to 40 percent
3. 41 to 60 percent
4. 61 to 80 percent
5. 81 to 100 percent

Task 4A – Flood Risk Assessment

9 – Floodprone Areas Marked on Region 9's Interactive Map

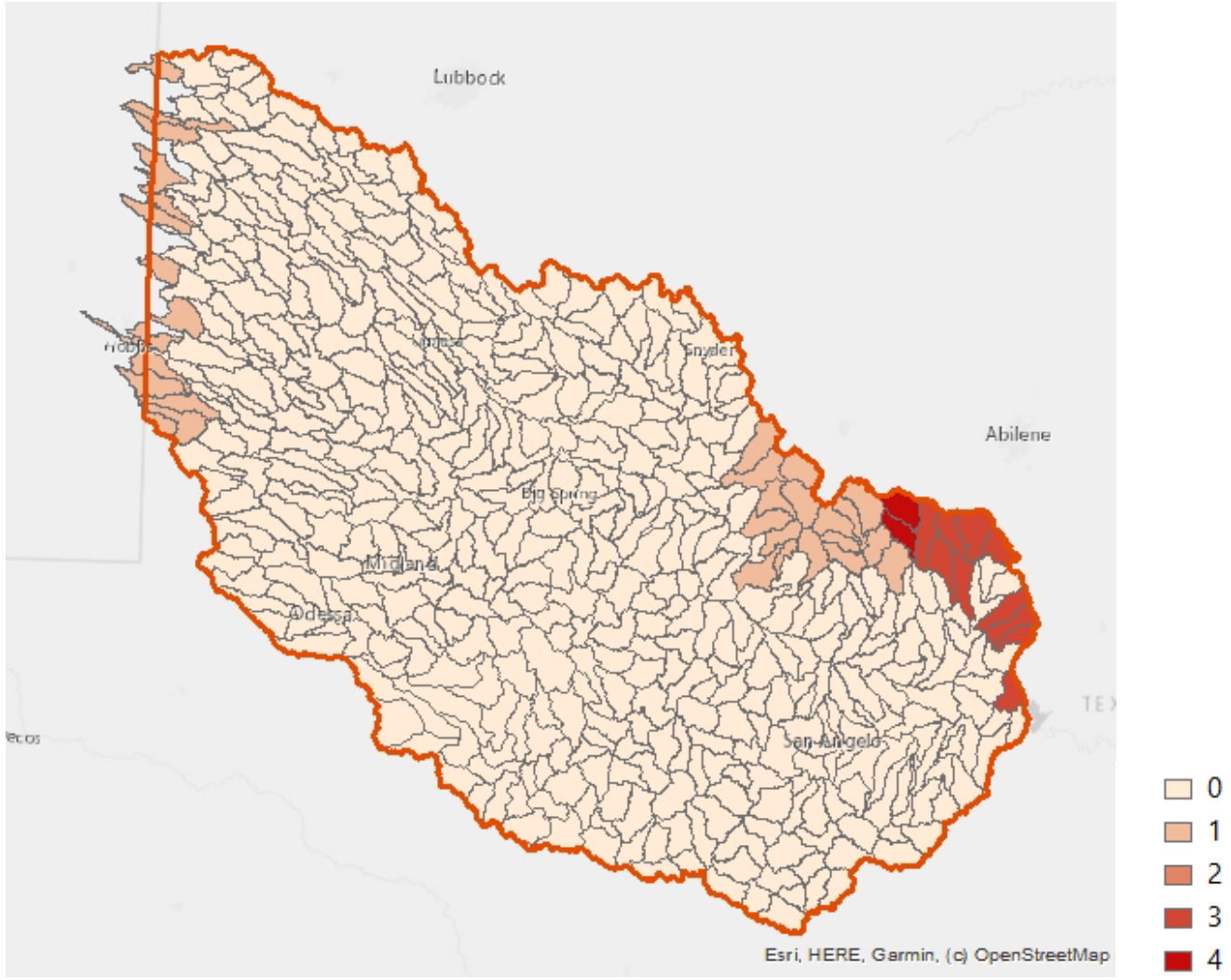


Scored from 1 to 5

0. No Floodprone Areas
1. 1 Floodprone Areas
2. 2 Floodprone Areas
3. 3 Floodprone Areas
4. 4 Floodprone Areas
5. 5 or more Floodprone Areas

Task 4A – Flood Risk Assessment

10 – Presidential Disaster Declarations Involving Flooding



Scored from 1 to 5

0. No Declarations
1. 1 Declarations
2. 2 Declarations
3. 3 Declarations
4. 4 Declarations
5. 5 or more Declarations

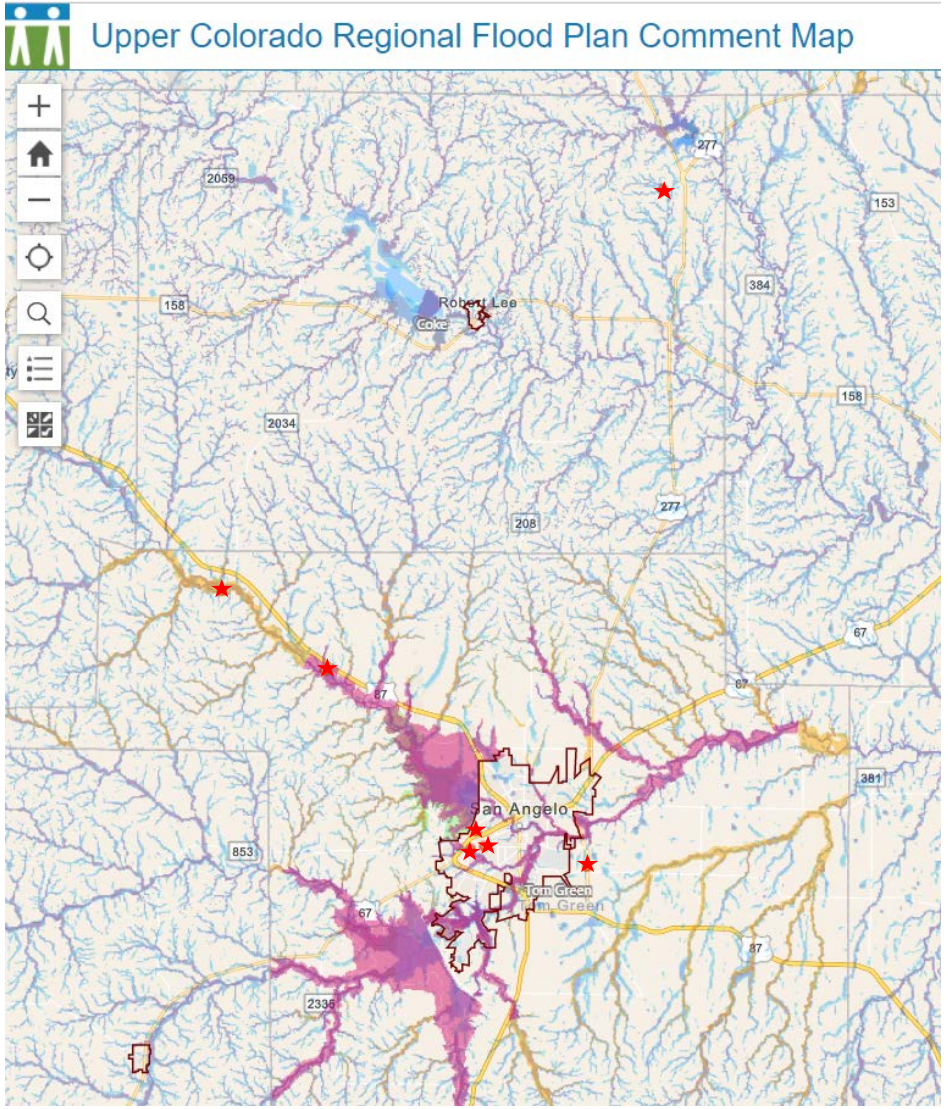
Upper Colorado Regional Flood Plan

Item 9 Update on Outreach Campaign and Data Collection

November 16, 2021

Task 10 - Stakeholder Outreach Status

- Constant Contact emails
  - 19% of recipients opened the email
- Interactive Map
  - Only 7 entries so far (at red stars)
- Survey forms
  - Filled out during visits to Snyder, Big Spring, Midland, Midland County and Andrews
- Local presentations?
- Need to extend outreach & data collection efforts to end of October

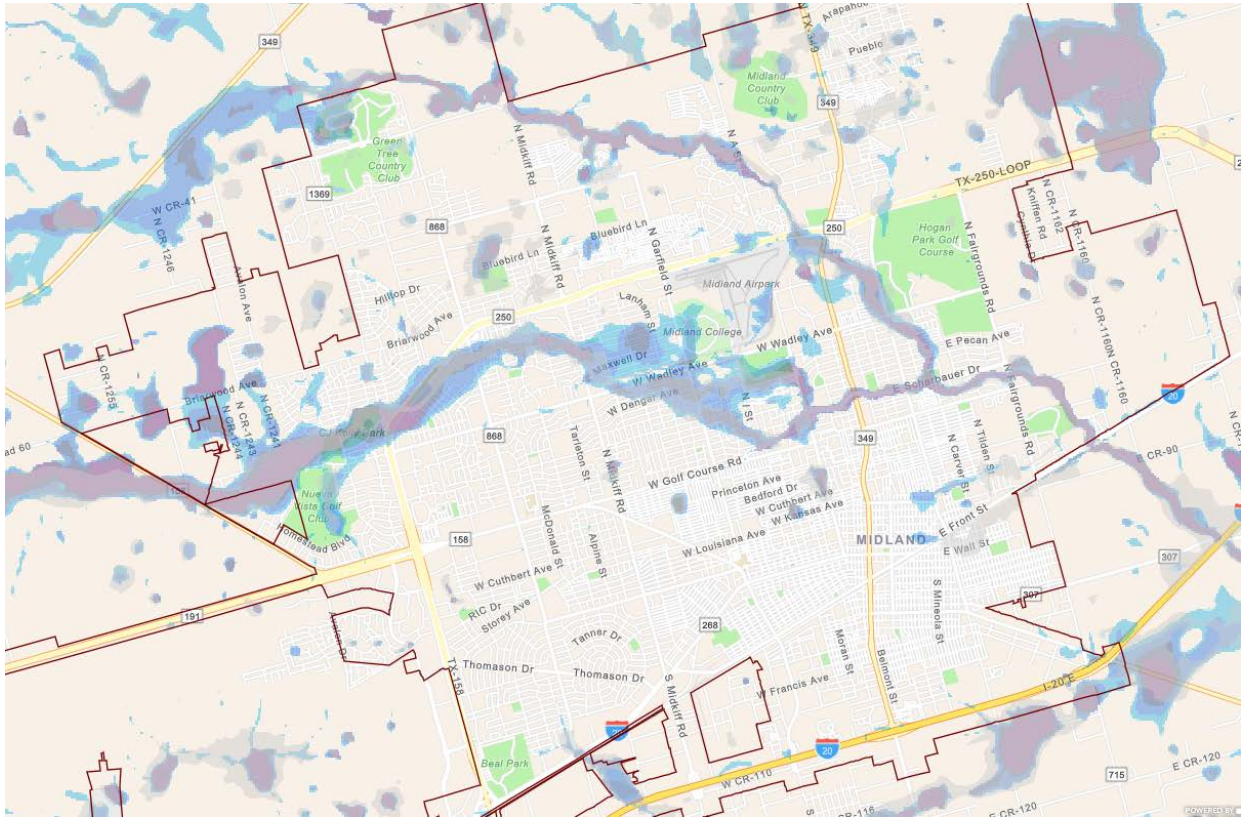


Task 10 - Stakeholder Information
City of Midland

- Starting to implement 18 CIP projects from Master Drainage Plan
  - Estimated cost = $194.5 million (some from 1996)

Recent Flood Mitigation Projects

1. South Midland Draw Improvement
2. Garfield Street & Drainage Improvement
3. Scarborough Watershed Study
   1. 5 CIP projects recommended
   2. 3 Playa lake upgrade improvements validated
4. City Airport 2D Infrastructure Study
5. Avalon Street & Drainage Improvements
   1. Extension of Avalon & West Side Playa study

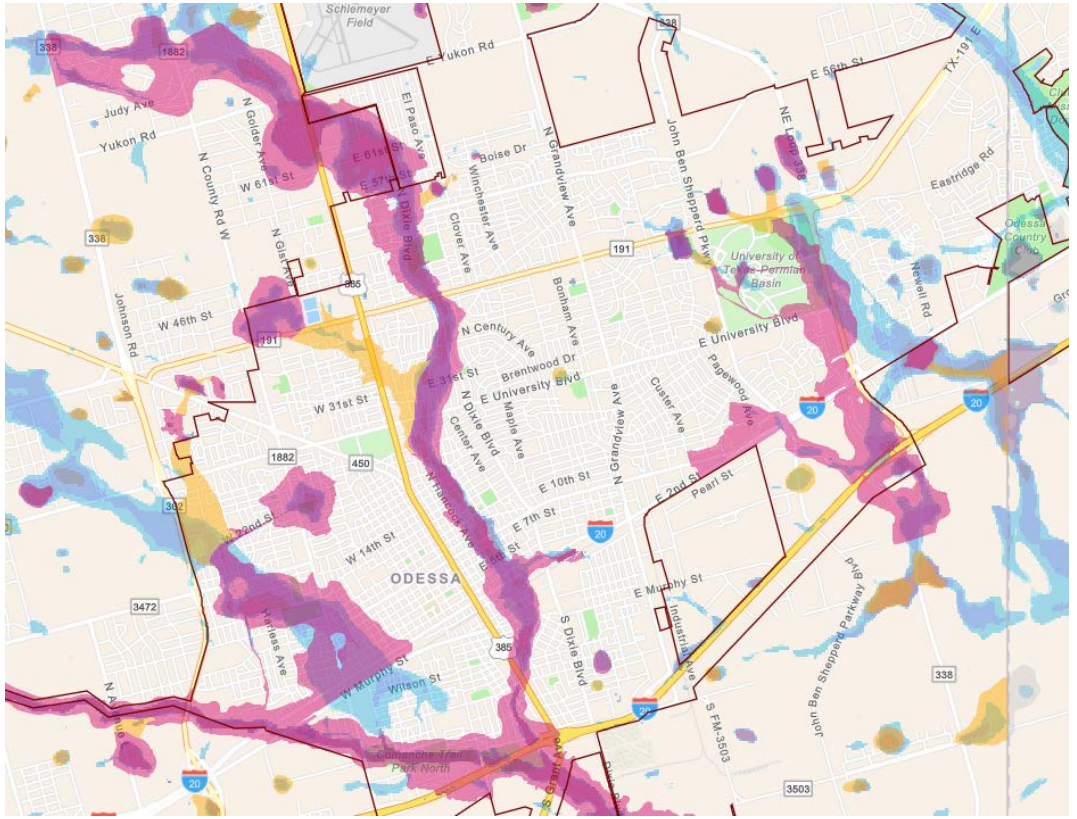


Task 10 - Stakeholder Information
City of Odessa

- Recent Storm Water Utility Fee

Potential Flood Mitigation Projects

- Master Drainage Plan approved by Council, release date unknown
- Playa flooding south I-20
- Interior City flooding project – Faudree Ponds *8 cascading ponds (NE Odessa)
- Future channel study connecting playas south of I-20 and local golf course
- Repetitive flood events between June 2016 and June 2021- Ridgewood Subdivision



Task 10 - Stakeholder Information

Midland County

- Met with on Thursday 9/9
- Collected recent subdivision ordinance and flood damage prevention ordinance

Current Flood Management Evaluation

- Starting on TWDB FIF project 40057 for Monahans and South Draw

Texas Water Development Board

Flood Infrastructure Fund Committed Projects

Clear Filters

Back to Map

County	Responsible Authority	Project Name	FIF Category	Project Identifier	Commitment Amount	Date of Commitment	Project Description
Midland	Midland County	Monahans and South Draw Flood Planning	Category 1	40057	$612,478	12/17/2020	Midland County is requesting financial assistance to conduct a regional flood planning study. The proposed project will: • Use existing NFIP hydrology (from 1996 and 1998) as a starting point. • Determine and map playa extents and base flood elevations within developing areas for future land use, making use of existing previous studies in two locations. • Develop hydrologic analyses of riverine portions of the detailed study area as well as a simplified hydrologic analysis of the watershed upstream of it. • Total hydrologic study will be 228 square miles of detailed study and 445 square miles of simplified hydrology. • Convert, update or develop HEC-RAS models of South and Monahans Draws and four unmapped flow paths, for future conditions. • Map future floodplains and floodways for the HEC-RAS models, a total of 55 miles of analysis. • Provide detailed 2D analysis of a portion of eastern Odessa and develop options for interconnecting and draining the most flood-prone playas in a future project. • Coordinate with TxDOT regarding cross-drainage structures and future drainage infrastructure needs within the detailed study area. The deliverables will be presented as GIS layers containing both hydrologic input, future inundation mapping, future flood elevations and future condition floodways.

Task 10 - Stakeholder Information
City of San Angelo

- Master Drainage Plan Update is nearing completion

Potential FME

- Northwest 2D Flood Risk Evaluation

Potential FMPs

- Cauley Lane Regional Detention
- North Fork Red Arroyo Regional Detention

Priority	Site	Description	Total Cost	TWDB FIF % Grant	Grant?	Local Cost
1	19	**Beauregard Ave - N Campus to N Concho River**	**$16,788,687**			**$16,788,687**
		Phase 1 - Design Plans & Specifications	$2,569,461	10% & 25%	TXDOT	$2,569,461
		Phase 2 - Construction	$14,219,226	10% & 25%	TXDOT	$14,219,226
2	27	**North Fork Red Arroyo at CHB**	**$102,762**			**$102,762**
		Phase 1 - Design Plans & Specifications	$24,150	10%	No	$24,150
		Phase 2 - Construction	$78,612	10%	No	$78,612
3	37	**Northwest 2D Flood Risk Evaluation**	**$250,000**			**$137,500**
		Phase 1 - 2D Model Development and Alternative Analysis	$250,000	45%	Yes	$137,500
4	30	**Christian Village CHB (S Lp 306 to SFRA)**	**$9,057,882**			**$9,057,882**
		Phase 1 - Design Plans & Specifications	$252,157	10% & 30%	No	$252,157
		Phase 2 - Construction	$8,805,725	10% & 30%	No	$8,805,725
5	36	**Cauley Lane Regional Detention**	**$8,505,650**			**$5,103,390**
		Phase 1 - Property Acquisition	$713,400	40%	Yes	$428,040
		Phase 2 - Design Plans & Specifications	$1,116,250	40%	Yes	$669,750
		Phase 3 - Construction	$6,676,000	40%	Yes	$4,005,600
6	38	**North Fork Red Arroyo Detention**	**$6,740,428**			**$6,740,428**
		Phase 1 - N2A Design Plans & Specifications	$574,950	10%	No	$574,950
		Phase 2 - N2A Construction	$2,386,138	10%	No	$2,386,138
		Phase 3 - N2B Property Acquisition	$570,000	10%	No	$570,000
		Phase 4 - N2B Design Plans & Specifications	$619,717	10%	No	$619,717
		Phase 5 - N2B Construction	$2,589,623	10%	No	$2,589,623

Task 10 - Stakeholder Information
City of San Angelo

- Master Drainage Plan Update is nearing completion

Potential FMPs

- East Angelo Draw Channel
- Glenmore Regional Detention
- Pecan at 3rd Street
- 24th and Poe

Priority	Site	Description	Total Cost	TWDB FIF % Grant	Grant?	Local Cost
7	16 17 18	**East Angelo Draw Channel**	**$14,866,477**			**$8,446,788**
		Phase 1 - Coke Property Acquisition	$713,400	40%	Yes	$428,040
		Phase 2 - Coke Design Plans & Specifications	$1,268,839	40%	Yes	$761,304
		Phase 3 - Coke Construction	$5,540,179	40%	Yes	$3,324,107
		Phase 4 - Preusser Property Acquisition	$196,800	40%	Yes	$118,080
		Phase 5 - Preusser Design Plans & Specifications	$452,116	40%	Yes	$271,270
		Phase 6 - Preusser Construction	$1,964,163	40%	Yes	$1,178,498
		Phase 7 - Bell Property Acquisition	$598,500	50%	Yes	$299,250
		Phase 8 - Bell Design Plans & Specifications	$761,595	50%	Yes	$380,797
		Phase 9 - Bell Construction	$3,370,886	50%	Yes	$1,685,443
8	4 and 5	**Glenmore Detention**	**$5,401,976**			**$2,160,790**
		Phase 1 - Property Acquisition	$342,000	60%	Yes	$136,800
		Phase 2 - Design Plans & Specifications	$804,730	60%	Yes	$321,892
		Phase 3 - Detention Pond Construction	$3,430,593	60%	Yes	$1,372,237
		Phase 4 - Storm Drain Design Plans & Specifications	$189,691	60%	Yes	$75,877
		Phase 5 - Storm Drain Construction	$634,961	60%	Yes	$253,985
9	15	**Pecan at 3rd Street**	**$1,948,609**			**$958,716**
		Phase 1 - Property Acquisition	$63,000	50.8%	Yes	$30,996
		Phase 2 - Design Plans & Specifications	$381,011	50.8%	Yes	$187,458
		Phase 3 - Construction	$1,504,598	50.8%	Yes	$740,262
10	6	**24th and Poe**	**$2,357,943**			**$707,383**
		Phase 1 - Design Plans & Specifications	$466,186	70%	Yes	$139,856
		Phase 2 - Construction	$1,891,756	70%	Yes	$567,527
			$66,020,414			**$50,204,327**