

Region 2 Lower Red-Sulphur-Cypress Regional Flood Planning Group

October 7, 2021

2:00 pm

at

Ark-Tex Council of Governments,
4808 Elizabeth St, Texarkana, TX 75503

(See map included)

or

Via teleconference/webinar

Use the following information to register for the meeting:

<https://us06web.zoom.us/meeting/register/tZAKfuChqzkvGNXbsoyhjghl6wRuFBgl1L9r>

After registering, you will receive a confirmation email containing information about joining the meeting.

If you experience issues while registering or do not have access to a computer, please contact Paul Prange no less than two (2) workdays prior to the meeting at 903.255.3519 or pprange@atcog.org.

Agenda:

1. Call to Order
2. Welcome
3. Confirmation of attendees / determination of quorum
*each remote location from which a member participates "shall have two-way audio and video communication with each other location during the entire meeting." 216F 217 The Act requires that, while speaking, each participant's face must be clearly visible and the voice audible to each other participant and to the members of the public in attendance at the location where the quorum or presiding member is present and any other location of the meeting that is open to the public. *2020 Texas AG Open Meetings Act Handbook VI.F.2 (p28)*
4. Public comments – limit 3 minutes per person

Action Items

5. Consider approval of minutes for the meeting held Thursday, September 2, 2021.
6. Discuss and Consider approval of administrative billings, certifying the current billing is correct and necessary for the administrative operations of the Region 2 RFPG and Planning Group Sponsor.
7. Discuss and Consider approval of the Technical Consultant invoices.
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.
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, Halff Associates, Inc., to incorporate additional funding for the first cycle of regional flood planning, including necessary revisions to the contract scope of work and budget.

Presentations

10. Texas Water Development Board Update

Technical Consultant Update

**Additional Action Items Required*

11. Task 1 – Planning Area Description
 - a. Summary of findings
12. Task 2 – Flood Risk Analyses
 - b. Status update
13. Task 3A and 3B – Recommended Floodplain Management Practices and Goals
 - c. *RFPG Vote on Recommended Standards
 - d. *RFPG Vote on Flood Mitigation and Floodplain Management Goals
14. Task 4A and 4B – Assessment and Identification of Mitigation Needs
 - e. *RFPG Vote on Process for Identification and Evaluation of FMEs, FMPs, FMSs
15. Additional funding discussion
16. Schedule Update

Other Business

17. Update from Planning Group Sponsor
18. Consider date and agenda items for next meeting
19. Adjourn

If you wish to provide written comments prior to or after the meeting, please email your comments to pprange@atcog.org and include “Region 2 RFPG Meeting” in the subject line of the email – OR – you may mail your comments to Region 2 RFPG, c/o ATCOG – Paul Prange, 4808 Elizabeth St, Texarkana, TX 75503.

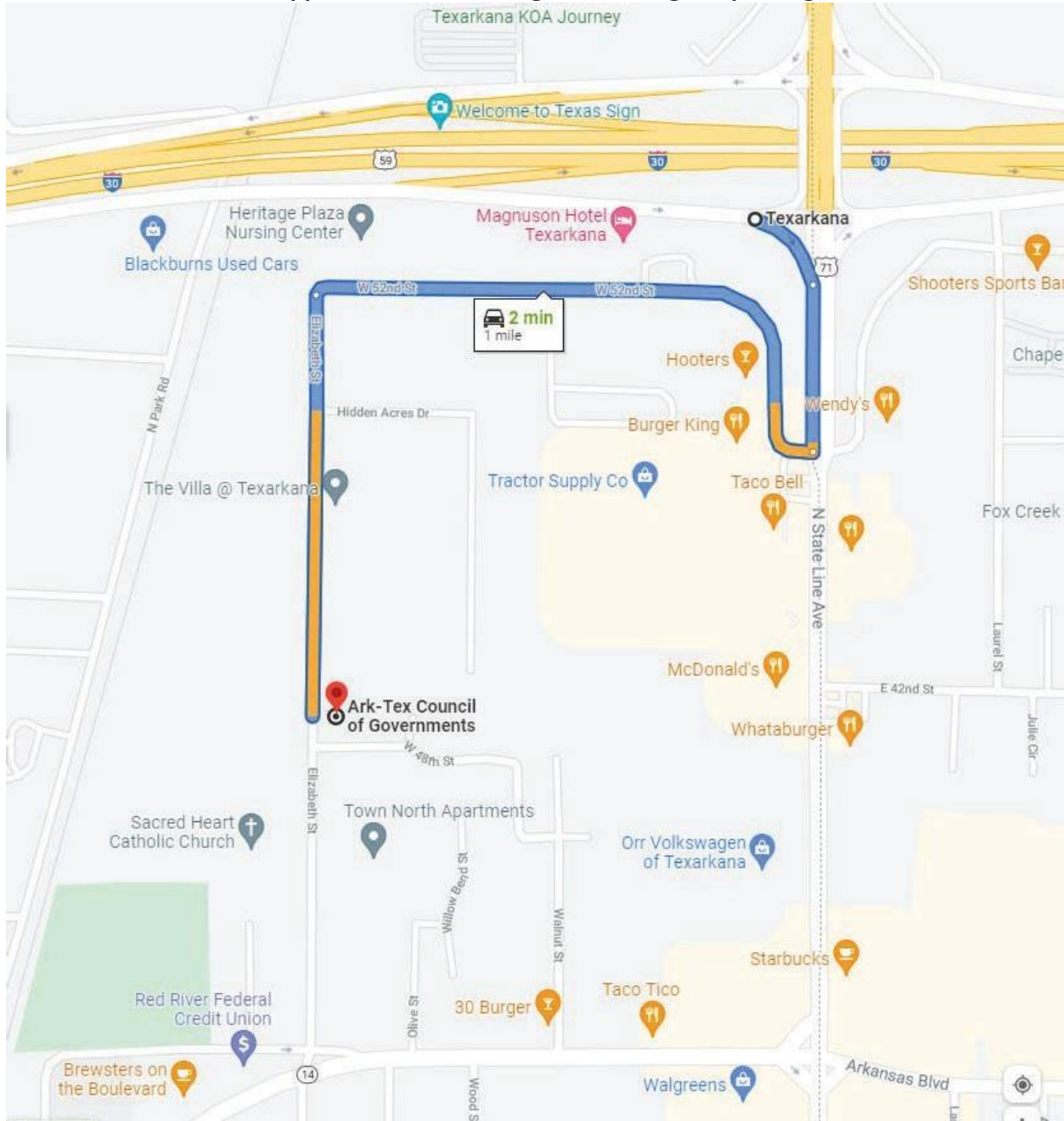
If you wish to provide oral public comments at the meeting, please submit a request via email to pprange@atcog.org, include “Region 2 RFPG Meeting Public Comment Request” at least 2 hours prior to the meeting, and follow the registration instructions at top of page 1 of the Agenda.

Additional information may be obtained from: www.texasfloodregion2.org, or by contacting Paul Prange at pprange@atcog.org, 903-832-8636, -or- Region 2 RFPG, c/o ATCOG, 4808 Elizabeth St, Texarkana, TX 75503

All meeting agendas and notices will be posted on our website at www.texasfloodregion2.org. If you wish to be notified electronically of RFPG activities, please submit a request to pprange@atcog.org, include “Request for notification of Region 2 RFPG activities”. This request will be honored via email only unless reasonable accommodations are needed.

Ark-Tex Council of Governments, 4808 Elizabeth St, Texarkana, TX 75503

From I-30 and State Line Rd. – Travel south to first traffic light. Turn right on W. 52nd St. and follow for approx. 1 mile. Building is on the right – parking in front.



Meeting Minutes
Region 2 Lower Red-Sulphur-Cypress Flood Planning Group Meeting
September 2, 2021
2:00 p.m.

Paris, TX City Hall – City Council Chambers and Via Zoom Webinar/Teleconference

Roll Call:

<u>Voting Member</u>	<u>Interest Category</u>	<u>Present (x) / Absent () / Alternate Present (*)</u>
Preston Ingram (William)	Agricultural interests	X
Andy Endsley	Counties	X
W. Greg Carter	Electric generating utilities	X
Laura-Ashley Overdyke	Environmental interests	X
Clark Crandall	Industries	
Dustin Henslee	Municipalities	X
Kirby Hollingsworth	Public	
R. Reeves Hayter	River authorities	X
Kelly Mitchell	Small business	X
Joseph W. Weir III	Water districts	X
Susan Whitfield	Water utilities	X

<u>Non-voting Member</u>	<u>Agency</u>	<u>Present(x)/Absent() / Alternate Present (*)</u>
James (Clay) Shipes	Texas Parks and Wildlife Department	X
Brian Hurtuk	Texas Division of Emergency Management	X
Darrell Dean	Texas Department of Agriculture	
Tony Resendez	Texas State Soil and Water Conservation Board	
Trey Bahm	General Land Office	X
Anita Machiavello (Morgan White - Alternate)	Texas Water Development Board (TWDB)	X
Michelle Havelka	Texas Commission on Environmental Quality	
Darlene Prochaska	USACE, Fort Worth District	X
Travis Wilsey	USACE, Tulsa District	X
Randy Whiteman	RFPG 1 Liaison	X
Richard Brontoli	Red River Valley Association	
Jason Dupree	TxDOT – Atlanta District	X
Dan Perry	TxDOT – Paris District	X

Quorum:

Quorum: **Yes**

Number of voting members or alternates representing voting members present: **9**

Number required for quorum per current voting membership of **11: 6**

Other Meeting Attendees: **

Chris Brown - ATCOG

Paul Prange – ATCOG

Marla Matthews - ATCOG

Matt Nelson – TWDB

James Bronikowski – TWDB

Clay Barnett – Sherman/Denison MPO

Ben Pylant – Halff Associates Team

Walt Sears - NETMWD

Joshua McClure – Halff Associates Team

David Rivera – Halff Associates Team

Wylie Gorup - Halff Associates Team

Parker Moore – Halff Associates Team

Tyler Ogle – Halff Associates Team

Vance Liles – Halff Associates Team

Caroline Short – Halff Associates Team

Ben Hawkins – Halff Associates Team

Troy Hudson – Fannin County

Rory Halpen – TDEM

Kevin Enoch – TDEM

L. D. Williamson – Red River County Judge

Paula Portugal – Mayor, City of Paris, TX

**Meeting attendee names were gathered from those who entered information for joining the Zoom meeting.

All meeting materials are available for the public at:

<http://www.twdb.texas.gov/flood/planning/regions/schedule.asp>.

AGENDA ITEM NO. 1: Call to Order

Reeves Hayter called the meeting to order at 2:04p.m.

AGENDA ITEM NO. 2: Welcome

Reeves Hayter welcomed members and attendees to the meeting and recognized Mayor, Paula Portugal, by thanking her for providing the venue and refreshments for the Region 2 Lower Red-Sulphur-Cypress Flood Planning Group meeting.

AGENDA ITEM NO. 3: Confirmation of attendees / determination of a quorum

Reeves Hayter asked ATCOG staff member, Paul Prange, to conduct a roll call of attendees. Each present voting and non-voting member of the Region 2 Lower Red-Sulphur-Cypress RFPG introduced themselves, establishing that a quorum had been met. Nine voting members were present and four non-voting members were absent.

AGENDA ITEM NO. 4: Public comments – limit 3 minutes per person

Reeves Hayter opened the floor for public comments. No public comments were given.

ACTION ITEMS**AGENDA ITEM NO. 5: Consider approval of minutes for the meeting held Thursday, August 5, 2021:**

Reeves Hayter opened the floor for discussion and approval of the minutes from the previous meeting. A motion was made by Greg Carter and was seconded by Joseph Weir to approve the minutes as presented. The motion carried unanimously.

PRESENTATIONS**AGENDA ITEM NO. 6: Texas Water Development Board Update:**

Reeves Hayter handed the item over to Morgan White from the TWDB, attending the meeting for Anita Machiavello. Ms. White stated that the legislature appropriated an additional 10 million dollars in funding that may become available after September 1, 2021 for the regional flood planning groups. The TWDB is currently working on the formula-based funding allocations for each of the 15 flood planning groups. The TWDB provided a survey to all flood planning regions asking how the additional funds could be utilized. The survey responses have been submitted to TWDB and will be reviewed by the Board of Directors for approval in late September 2021. Once the funding becomes available, the TWDB will initiate a contract amendment with the RFPG 2 sponsor, ATCOG. Ms. White also announced that the TWDB has allowed an extension for planning group sponsors and chairs to submit certain portions of the technical memorandum, specifically relating to the GIS deliverables; a TWDB conference call was held in late August for planning group sponsors to share ideas about RFPG meeting formats (in-person/remote/hybrid) and that the next conference call is scheduled for September 15, 2021. Reeves Hayter then called upon region 1 technical consultant, Wylie Gorup, and asked what type of response rate was received from their survey. Ms. Gorup stated that all stakeholders were contacted by the consulting team and approximately 60 survey responses have been received. Greg Carter asked what percentage of survey responses were received and Ms. Gorup responded that she would have to calculate the percentage and present this information at the next region 1 planning group meeting.

AGENDA ITEM NO. 7: Region 1 Canadian – Upper Red Regional Flood Planning Group Updates:

Reeves Hayter turned the floor over to Randy Whiteman, Region 1 liaison, for an update. Mr. Whiteman announced that the RFPG1 is conducting similar activities as RFPG2 at this time, including developing a survey and collecting the results for analysis. Mr. Hayter then turned the floor over to Wylie Gorup, technical consultant for the RFPG1, for a technical update. Ms. Gorup stated that data gathering is underway and that an initial flood risk evaluation and exposure analysis has been completed. Ms. Gorup also announced that due to a lack of available flood data in region 1, the technical consultants are relying heavily on the Fathom data to fill in any gaps and that the next RFPG1 Board meeting is scheduled for September 13, 2021.

WORKSHOP

AGENDA ITEM NO. 8: Halff Associates led workshop:

Reeves Hayter turned the floor over to Joshua McClure from Halff Associates to conduct the workshop. Mr. McClure introduced fellow team members Parker Moore, David Rivera and Ben Pylant and then announced that today's presentation will be focusing on Chapter's 1- 4 and the associated Tasks.

- a. Task 1 – Planning Area Description**
 - i. Outreach Update**
 - ii. Survey Results**

- b. Task 2A – Existing Condition Flood Risk Analyses**
 - i. Fathom Update**

- c. Task 2B – Future Condition Flood Risk Analyses**
 - i. Update**

- d. Task 3A and 3B – Recommended Floodplain Management Practices and Goals**
 - i. Deliberation of potential flood mitigation and flood management Standards and Goals in preparation of adopting (voting) in October meeting.**

- e. Task 4A and 4B – Assessment and Identification of Mitigation Needs**
 - i. Draft Process for identifying evaluations, strategies, and projects**

- f. Schedule**

Joshua McClure, Project Manager with Halff Associates began the workshop by stating that Halff Associates sent out a web survey on July 19th and closed it on August 27th. The survey was provided to 409 stakeholders representing approximately 150 entities, all of which have been directly contacted by the Halff Associates Team to make sure the survey was received and to encourage participation. Mr. McClure stated that as of August 23rd, 31 entities have responded, including 5 FMEs, FMSs, and FMPs

from 2 entities. Mr. McClure then stated the response rate is approximately 25% and that targeted efforts would be made to reach out to stakeholders who did not respond to the survey, to ensure that their needs would be reflected in the regional flood plan to fund specific projects. Mr. McClure also provided a map of the entities who are participating in the survey, along with a table containing the data submitted by the stakeholders to conclude his summary of Task 1.

Joshua McClure then presented information about existing conditions and flood risk analysis in Task 2A, including Flood Event Types and Data Sources. Mr. McClure stated that the Floodplain Quilt is missing data in several counties and that the Fathom Data is currently being updated for the TWDB to help fill the data gaps. The Fathom Data includes fluvial and pluvial flooding sources on a statewide scale. Mr. McClure then presented several comparisons between Fathom and FEMA Data on various waterbodies located within the region. Brief discussion took place among the flood planning group and Mr. McClure which led into the next topic of discussion, the Floodplain Quilt Prioritization, including: 1. Local Detailed Study, 2. FEMA Zone AE, 3. FEMA Zone A, and 4. Fathom Fluvial (Fathom Pluvial Data will be added to all floodplain types).

Joshua McClure then presented information relating to Task 2B – Future Conditions Flood Risk Assessment (Future Mapping). Mr. McClure stated that mapping for future conditions (30 years ahead) would utilize the 500-Year Floodplain Data as a baseline due to growth/future development and potential climate change. Future Floodplain Quilt Prioritization will assume that the Future floodplain is equivalent to the Existing 500-Year floodplain, including: 1. Local Detailed Study with Future Conditions, 2. FEMA 500-Year (where detailed studies are available), 3. Fathom 500-Year Fluvial Data (where no detailed studies are available (Fathom 500-Year Pluvial Data will be added to all floodplain types to represent future conditions in uplands)). Discussion took place among the flood planning group.

Joshua McClure turned the floor over to David Rivera, to discuss Tasks 3 and 4. Task 3 – Floodplain Management Standards and Flood Protection Goals. Mr. Rivera announced that he was prepared to recommend a series of standards that will be beneficial for the intent of preventing the creation of additional flood risks in the future and he provided a brief overview distinguishing between “recommending” or “adopting” standards for the region. (Recommend – No pre-requisite. All FME, FMS and FMP can be considered in the Regional Flood Plan); (Adopt – Jurisdictions must meet the adopted standards BEFORE FME, FMS or FMP can be considered for inclusion in the Regional Flood Plan). Mr. Rivera then produced a map illustrating the cities and counties located within Region 2 that currently have Floodplain Management Regulations in place. Floodplain Management Standards are applicable to: Residential Properties, Commercial Properties, Critical Facilities, Roadways, Culverts/Bridges, Storm Drainage Systems, Detention Facilities and Mapping Coverage for development occurring in FEMA Zone A and unmapped areas to establish BFE. Mr. Rivera explained the difference between “Recommended Standards and Minimum Recommended Standards” and discussion took place between the planning group members. Reeves Hayter stated that small, rural communities would be happy to have any new roadways constructed, even if the roadways were designed utilizing the 2 -year flood standard instead of the 50-year flood standard. Greg Carter stated that some roadways are constructed and designed to act as a conveyance of water during flood events. Joshua McClure announced that the roadways will often flood during heavy or extended rainfall events and that several survey responses mentioned this fact. Chris Brown stated that the City of Nash, TX recently experienced

flooding in a neighborhood that was likely due to poor roadway design or inadequate storm drain capacity. Additional discussion ensued among the flood planning group related to the potential costs associated with recommending specific roadway design standards. David Rivera Stated that the recommendations are all part of an educational process during the first cycle of regional flood planning and that Region 2 does not necessarily have to recommend any standards for roadways, but instead may want to focus on bridges and culverts.

David Rivera then conducted a presentation focusing on the Goals for the regional flood plan. The short term (10-Year) and long term (30-Year) Goals focused on: Lowering Risk to Life and Property, Infrastructure Protection, Land Preservation, Funding Mechanisms, Adopting Minimum Standards, and Increase NFIP Participation. The survey conducted at the previous RFIG2 Board meeting indicated the following prioritization of the Goals: Education and Outreach, Flood Warning and Readiness, Flood Studies and Analysis, Flood Prevention, Non-Structural Flood Infrastructure Projects, and Structural Flood Infrastructure Projects. Discussion took place among the flood planning group regarding the Goals Summary.

Finally, David Rivera conducted a presentation on Chapter 4 (Flood Mitigation Needs and Potentially Feasible Solutions) & Task 4 (Assessment and Identification of Flood Mitigation Needs) and discussed potential FMEs, FMSs, and FMPs. Mr. Rivera then discussed Task 4A: Process for Identifying Areas of Greatest Need (Screening Analysis) which identified two groups of areas. Type 1 – Greatest Flood Risk Knowledge Gaps (FME) and Type 2 – Greatest Known Flood Risk and Flood Mitigation Needs (FMS & FMP). Mr. Rivera Stated that during the first flood planning cycle, it is anticipated that more Flood Management Evaluations will be performed, with Flood Mitigation Projects and Flood Management Strategies being implemented in future planning cycles. Task 4B: Process for Identifying FME, FMS, and FMP will take time to develop as data is collected to select certain projects for funding. Joshua McClure then provided an overview of the next three meeting dates and agenda topics for consideration by the regional flood planning group.

OTHER BUSINESS

AGENDA ITEM NO. 9: Update from Planning Group Sponsor

Reeves Hayter turned the floor over to Chris Brown for updates. Mr. Brown announced that Governor Abbott has rescinded the restrictions placed on the Open Meetings Act requirements which were in place during the COVID-19 pandemic, beginning on September 1, 2021. Future RFIG 2 meetings must be conducted in a physical location open to the public, however board members may still attend remotely to constitute a quorum since our region covers more than three counties. Mr. Brown then announced that the RFIG2 Board members could review all invoices submitted for reimbursement by Halff Associates and vote to approve them at subsequent board meetings, prior to reimbursement by the planning group sponsor.

AGENDA ITEM NO. 10: Consider date and agenda items for next meeting

Reeves Hayter opened the floor for discussion. The Region 2 RFG board members agreed to conduct the next meeting on Thursday, October 7, 2021 at 2:00p.m. at a location to be determined, and via webinar/teleconference. Mr. Hayter encouraged all voting members to make an effort to physically attend the October meeting due to the importance of voting on various floodplain management recommendations.

AGENDA ITEM NO. 11: Adjourn

Reeves Hayter opened the floor to adjourn the meeting.

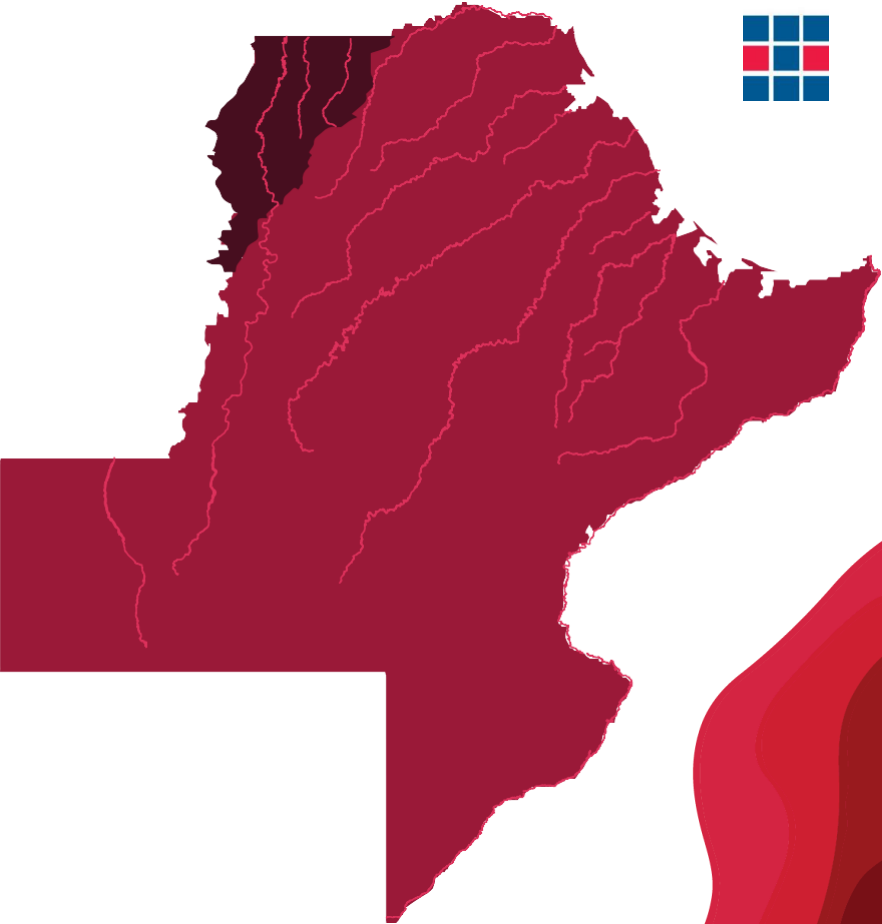
A motion was made by Greg Carter and Seconded by Joseph Weir.

The vote to adjourn was passed by unanimous consent.

The meeting was adjourned at 4:40p.m. by Reeves Hayter.

Approved by the Region 2 Lower Red-Sulphur-Cypress RFG at a meeting held on 10/7/2021.

Reeves Hayter, CHAIR



Regional Flood Planning Group 2 Meeting Lower Red-Sulphur-Cypress

October 7, 2021



HALFF



**FREESE
AND
NICHOLS**



*engineers
& surveyors*



H2O PARTNERS



Outline/Agenda

- Task/Chapter 1- Planning Area Description
- Task/Chapter 2A- Existing Condition Flood Risk Analyses
- Task/Chapter 2B - Future Condition Flood Risk Analyses
- Task/Chapter 3- Flood Mitigation and Floodplain Management Goals
- Task/Chapter 4 – Flood Mitigation Needs Analysis
- Schedule

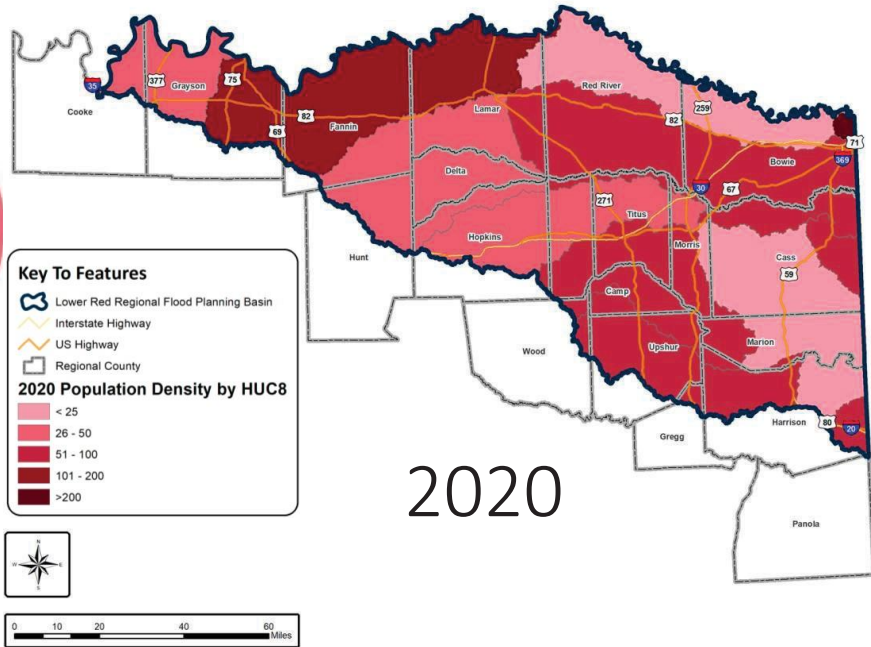
Ch. 1 Introduction & Overview

Planning Area Description

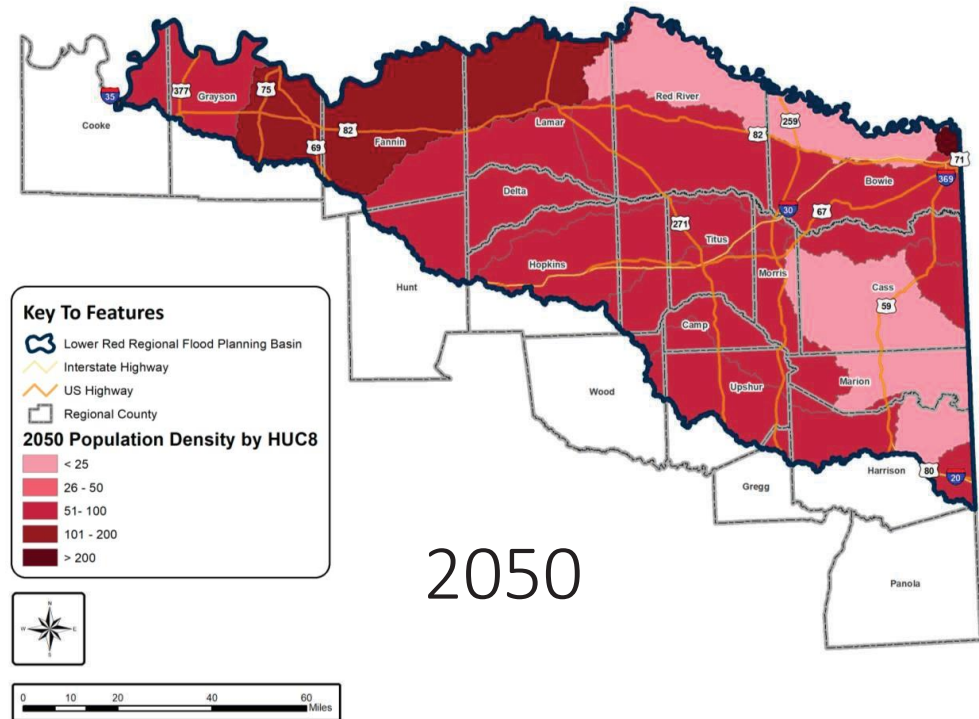


Results Overview

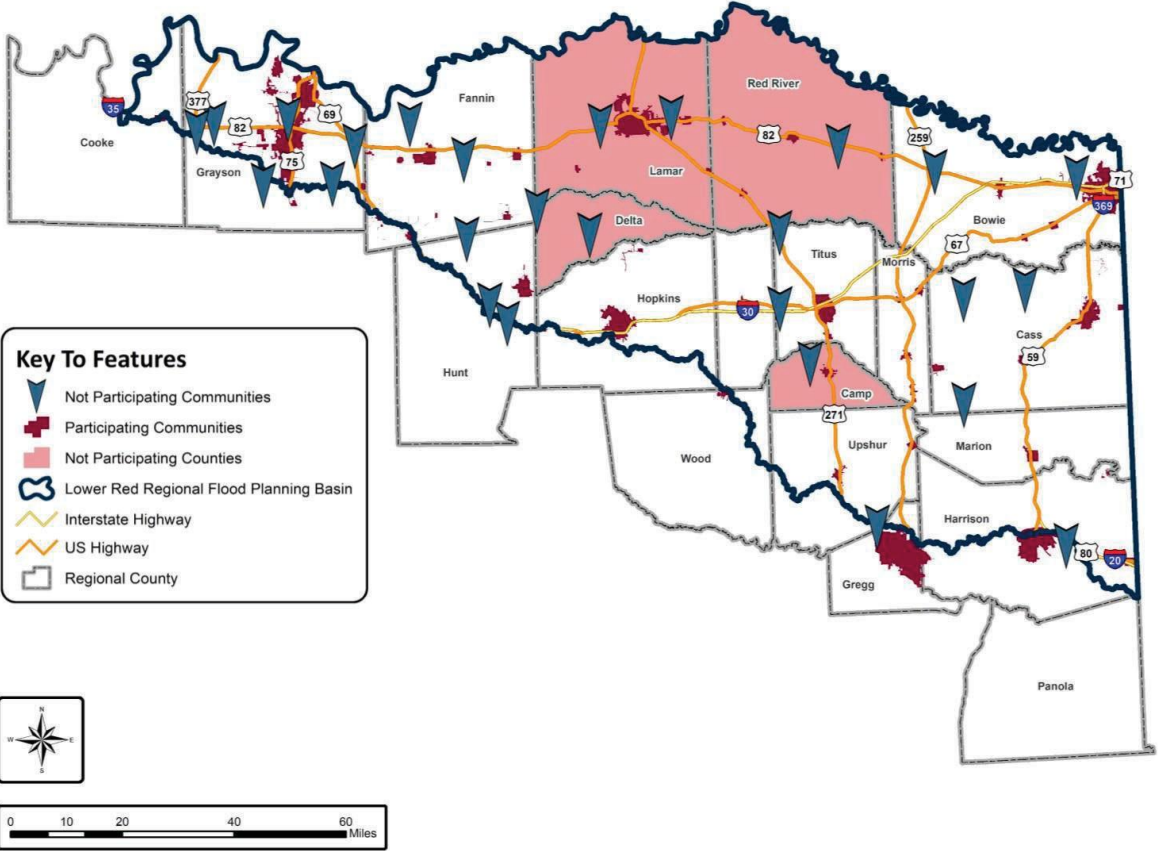
Population – Current and Projected



Total Population
 2020: 531,083
 2050: 659,637
 24% Increase



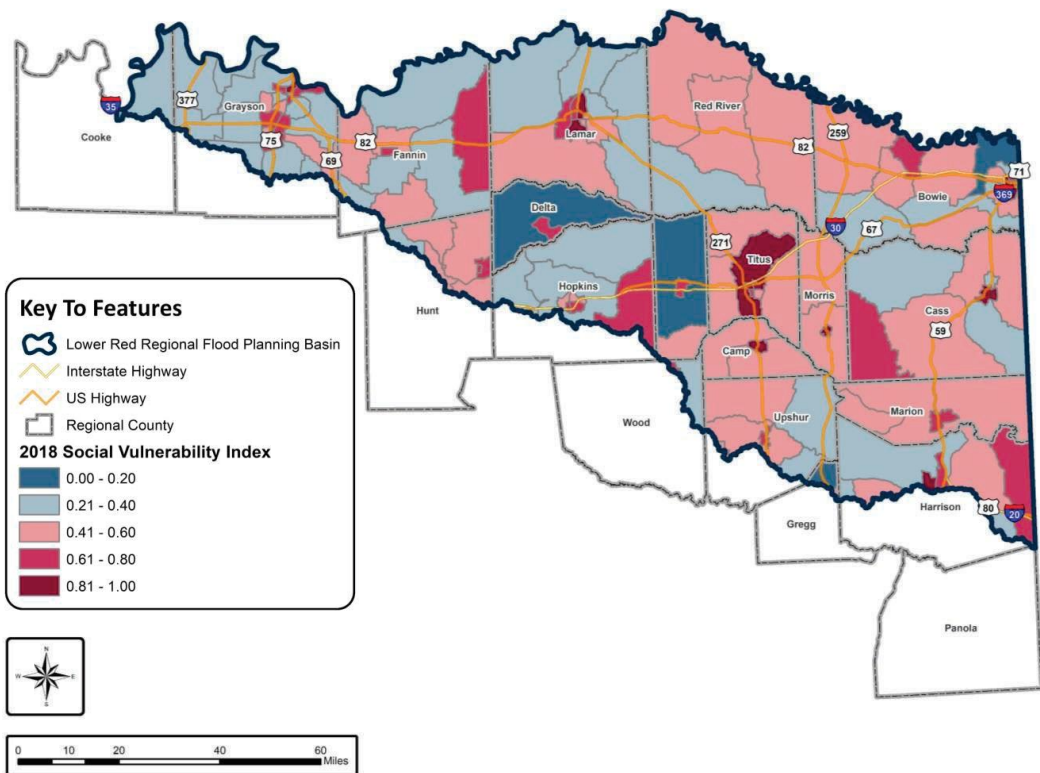
NFIP Participation



70%
of Cities Participate in NFIP

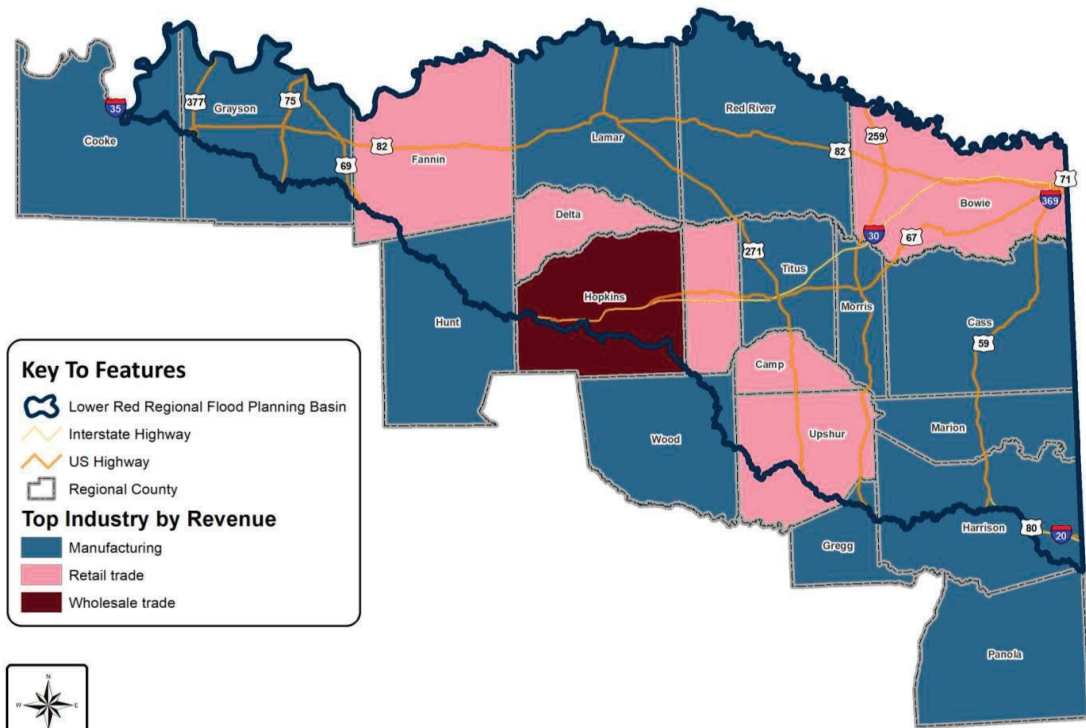
80%
of Counties Participate in NFIP

Social Vulnerability Index



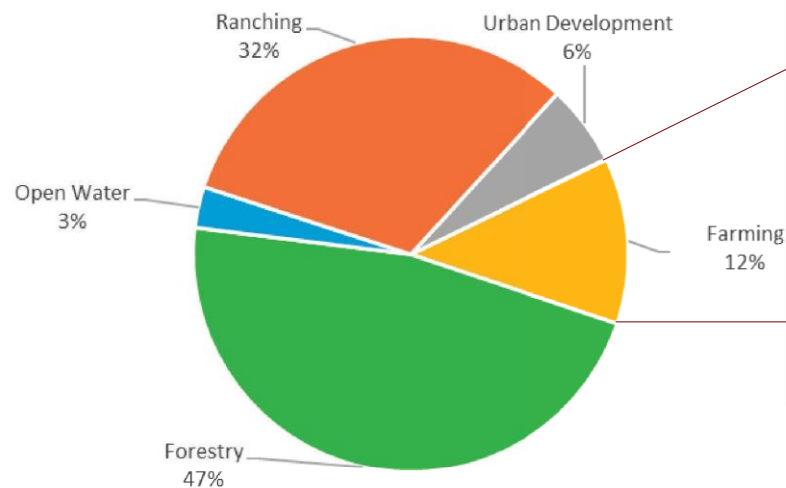
The communities that are at a greater risk of incurring loss due to having the highest SVI (0.81-1.00) fall within, **Grayson, Lamar, Titus, Camp, Morris, Harrison, Cass and Bowie County.**

Largest Industry per County by Revenue

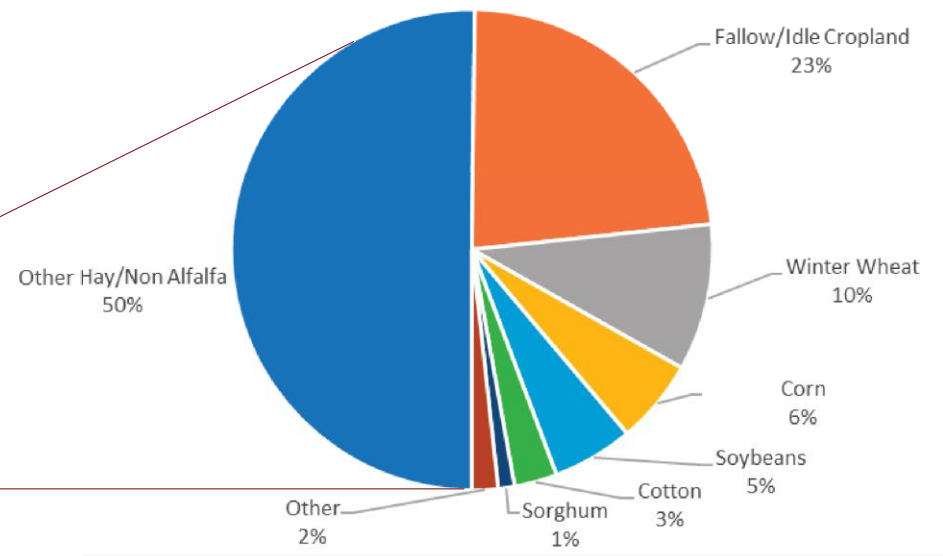


For the largest industry by total revenue per county, **Manufacturing** holds **65%**, **Retail Trade** holds **30%**, and **Wholesale Trade** holds **5%** of counties within the basin.

USDA National Agricultural Statistics Service (NASS) CropScape Land Cover For Lower Red Sulphur Cypress Region



Land Cover for Region



CropScape Breakdown of Farming Land in Region

Figure 1:

Survey Response Map

LOWER RED - SULPHUR - CYPRESS
REGIONAL FLOOD
PLANNING REGION

As of September 21, 2021



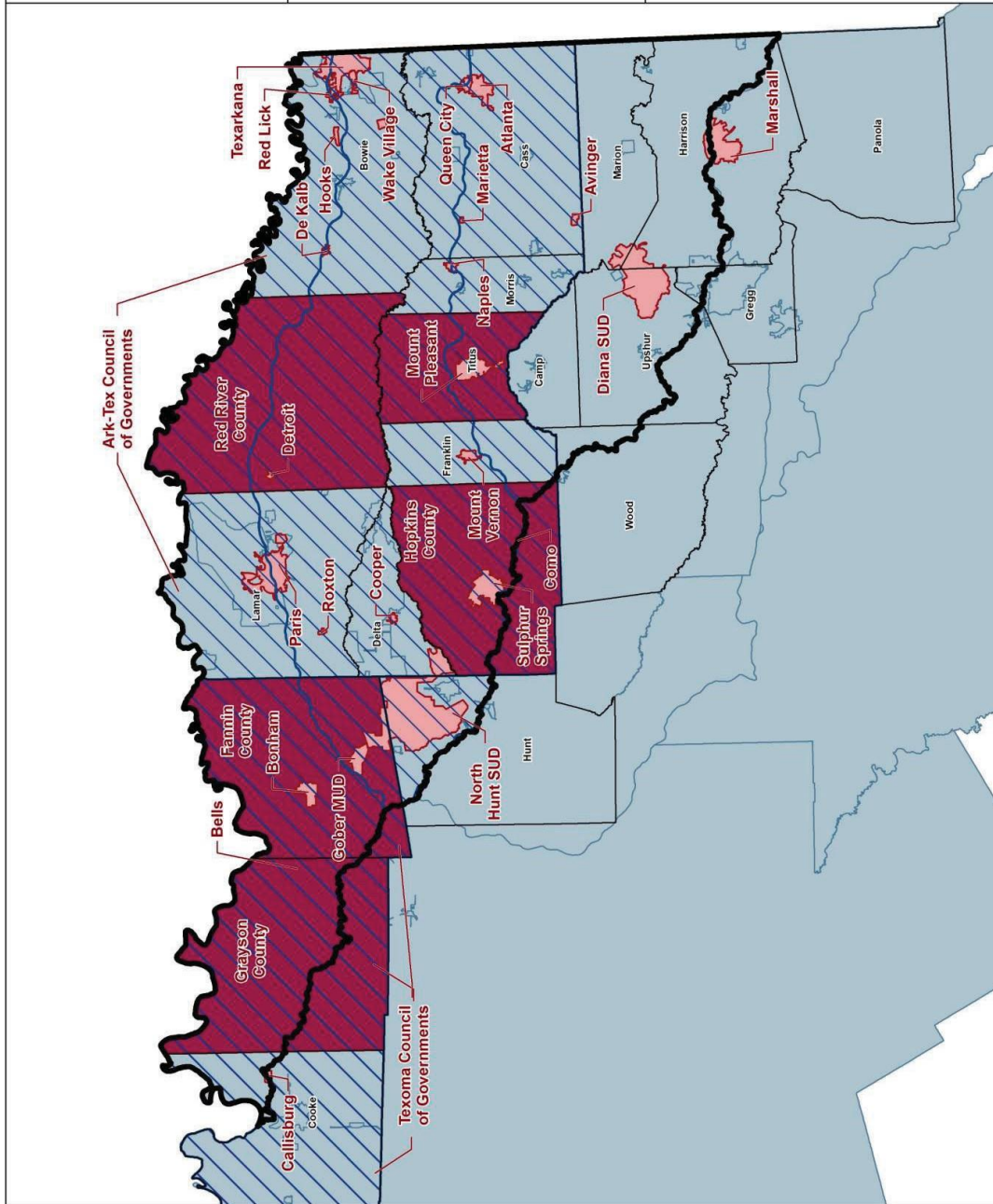
FLOOD PLANNING REGION LOCATOR
STATE OF TEXAS



Map Symbolology

- Municipality/MUD/SUD Response
- County Response
- Council of Government Response
- No Response
- County

**34 ENTITIES RESPONDED
AS OF 9/21/2021
412 PEOPLE CONTACTED
REPRESENTING 145 AGENCIES**



Summary of Flood Plan and Regulations Provided via Survey

Type of Regulation	Count
Drainage Criteria Manual/Design Manual	6
Land use regulations	10
Ordinances (Floodplain, Drainage, Stormwater, etc.)	10
Unified Development Code (UDC) and/or Zoning Ordinance with map	4

Types of Resilience Measures based on Survey

Resilience Measure	Count
Acquisition of flood prone properties	4
Flood readiness education and training	7
Flood response planning	4
Higher Standards for floodplain management	6
Land use regulations that limit future flood risk	7
Participation in the National Flood Insurance Program (NFIP)	10

Proposed Projects by Type

Type of Projects	Count
Local storm drainage systems, tunnels	5
Flood awareness outreach and/or education	2
Flood readiness, resilience	2
Regional dams, reservoirs, detention, retention basins	6
Roadway and crossing improvements, bridges, culverts	7
Property elevations	1
Flood warning system, stream/rain gauges	1
Property buyouts/acquisition and/or relocations	2
Channel, canal conveyance improvements	3
Floodplain management ordinances	2

In the survey, only 2 respondents recorded that some of their ongoing and proposed infrastructure or flood mitigation projects are at or above a 30% level of design.

Ch. 2 Flood Risk Analysis

Part A & B

CHAPTER 2

Flood Risk Assessment

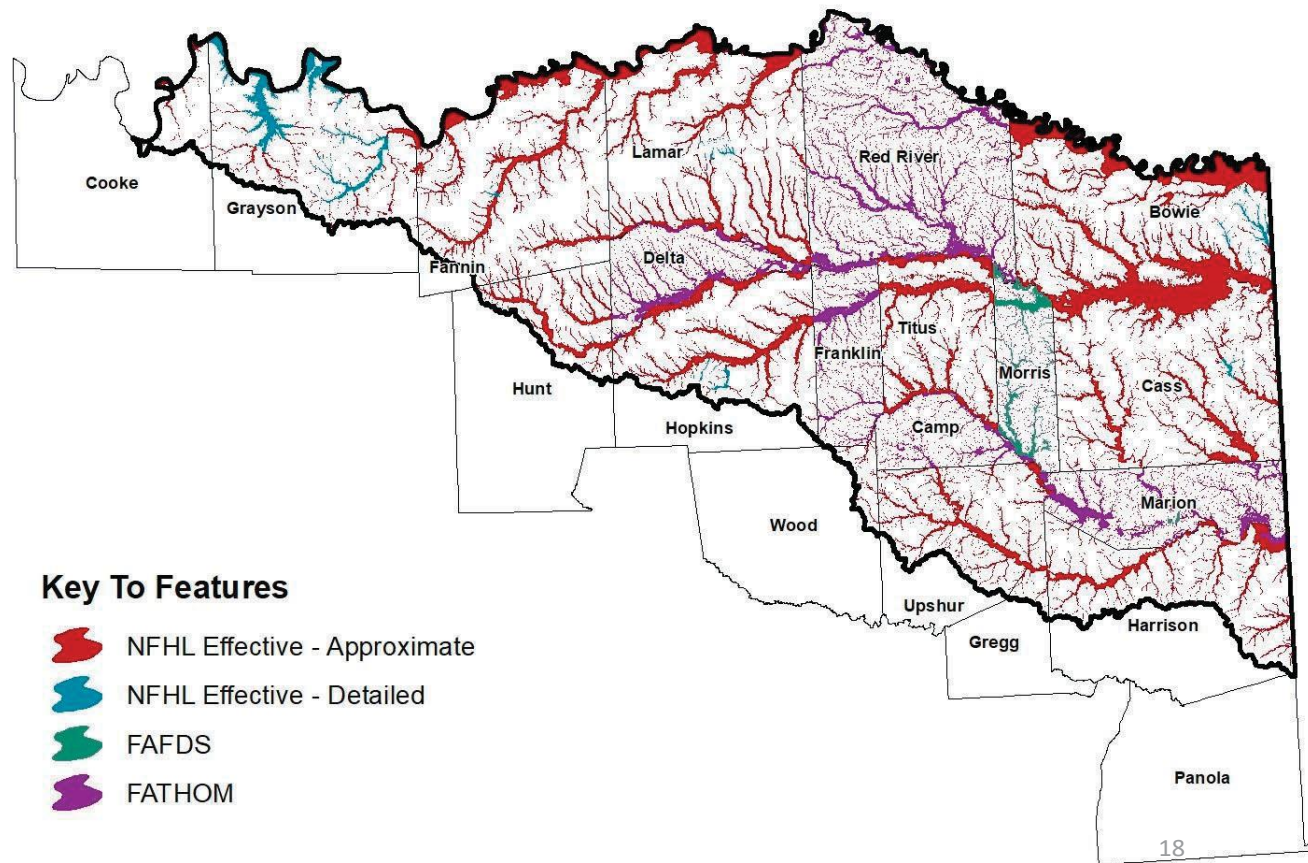


Fathom Data – Schedule Impacts

- Waiting on TWSB Fathom Data, which should be available in October
- TWDB is having them make significant corrections
 - Will use better topographic data
 - **Not be available until October**
 - **Partial Memo still due Jan 7, 2022**
 - Will not include portions that require overlay with final floodplain quilt
 - **Remaining Memo Portions due March 7, 2022**

Task 2 – Schedule Impacts

Waiting on TWDB
Fathom data,
which should be
available in
October



Ch. 3 Introduction & Overview

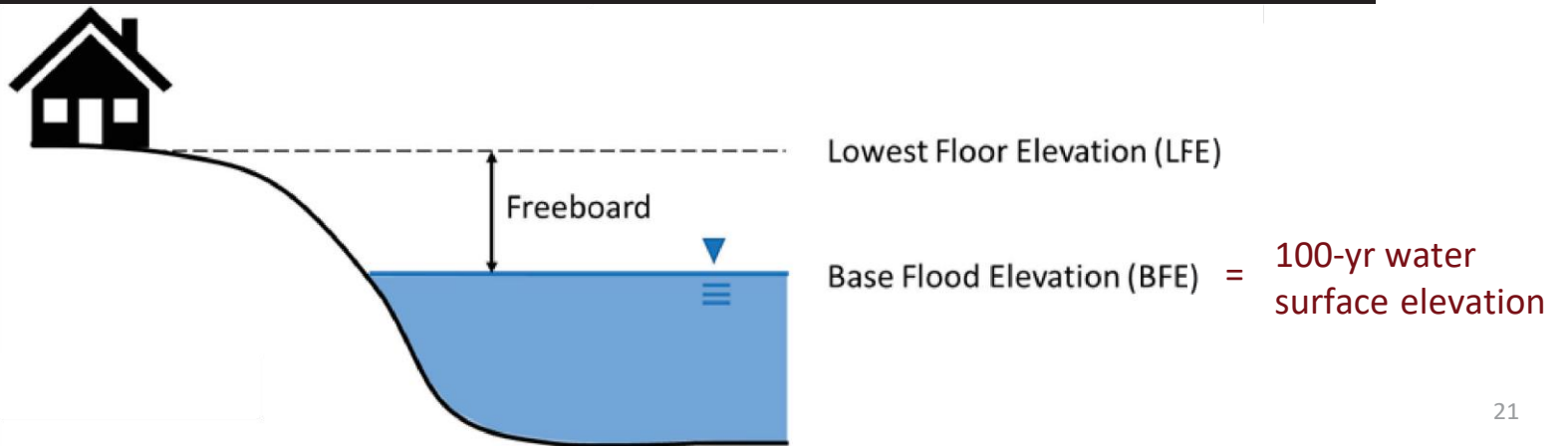
Floodplain Management Practices & Flood Protection Goals



Ch. 3 Floodplain Management Practices & Flood Protection Goals

Recommended Floodplain Management Standards

Type/Condition	Infrastructure	Recommended Standard
New Construction Pre-Existing (Retrofit)	Residential Properties	Finished floor elevation (FFE) 1-ft above BFE (BFE = Base Flood Elevation, 100-yr flood)
	Commercial Properties	
	Critical Facilities	FFE above 500-yr or 2-ft above 100-yr whichever comes first



Recommended Floodplain Management Standards

Type/Condition	Infrastructure	Recommended Standard
New Construction Pre-Existing (Retrofit)	Roadways	2-yr capture Depth not to exceed curb in 10-yr storm
	Culverts/Bridges	Minor Roadways: Pass the 25-yr Major Roadways: Pass the 100-yr
	Storm Drainage Systems	25-yr flow underground 100-yr within right of way
	Detention Facilities	Multi-stage Detention - detain to existing conditions peak discharge for 2-, 25- and 100-year Storms
	Mapping Coverage	Developers building in a Zone A or unmapped areas must provide a hydrologic and hydraulic study establishing BFE

Consider approval of recommending or adopting (requiring) specific floodplain management standards.

Goals Survey Categories



Goals for Lower Red Sulphur Cypress

The purpose of this survey is to allow users to give feedback on goals pertinent to their community. Results will dictate what goals the Technical Consultants will focus on, or eliminate.

1. Education and Outreach

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Increase the number of public stakeholder participants in the regional flood planning data collection (survey) process by X percent per each cycle.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase the number of entities participating in the regional flood planning process by X percent per each cycle.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase the number of public outreach and education activities to improve awareness of flood hazards and benefits of flood planning in the FPR by X occurrences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

Education and Outreach

Flood Warning and Readiness

Flood Studies and Analysis

Flood Prevention

Non-Structural Flood Infrastructure

Structural Flood Infrastructure

Goals Summary



Goal Category	Goal	Short Term Goal (2033)	Long Term Goal (2053)
Education and Outreach	For each planning cycle, hold public outreach and education activities (in multiple locations within the region) to improve awareness of flood hazards and benefits of flood planning.	3	3
Flood Warning and Readiness	Support the development of a community coordinated warning and emergency response program (including flood gauges) that can detect the flood threat and provide timely warning of impending flood danger.	Identify potential areas where flood warning systems would be beneficial	Implement a minimum of 1 flood warning system
Flood Studies and Analysis	Increase the coverage of flood hazard data by completing studies to reduce areas identified as having current gaps in flood mapping by X percent.	25%	90%

Goals Summary



Goal Category	Goal	Short Term Goal (2033)	Long Term Goal (2053)
Flood Prevention	Reduce the percentage of communities that do not have floodplain standards that meet or exceed the NFIP minimum standards by X.	25%	100%
	Support the development of minimum stormwater infrastructure design standards applicable across the FPR.	Creation of an integrated stormwater management manual to serve as a guide/foundation for local governments	Help local governments to adopt and implement the stormwater management manual
Non-Structural Flood Infrastructure	Reduce the number of NFIP repetitive-loss properties by X percent.	10%	50%
Structural Flood Infrastructure	Improve the level of service of vulnerable roadway segments and low water crossing located within the existing and future 1% annual chance floodplain by X percent.	25%	90%
	Repair, rehabilitate, or replace X percent of aged stormwater infrastructure that is at high risk of failure and where failure would increase flood risks.	10%	50%

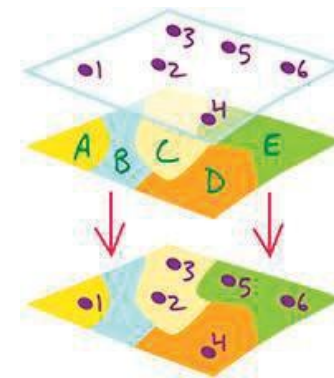
Consider approval of floodplain management goals.



Ch. 4 Flood Mitigation Needs & Potentially Feasible Solutions

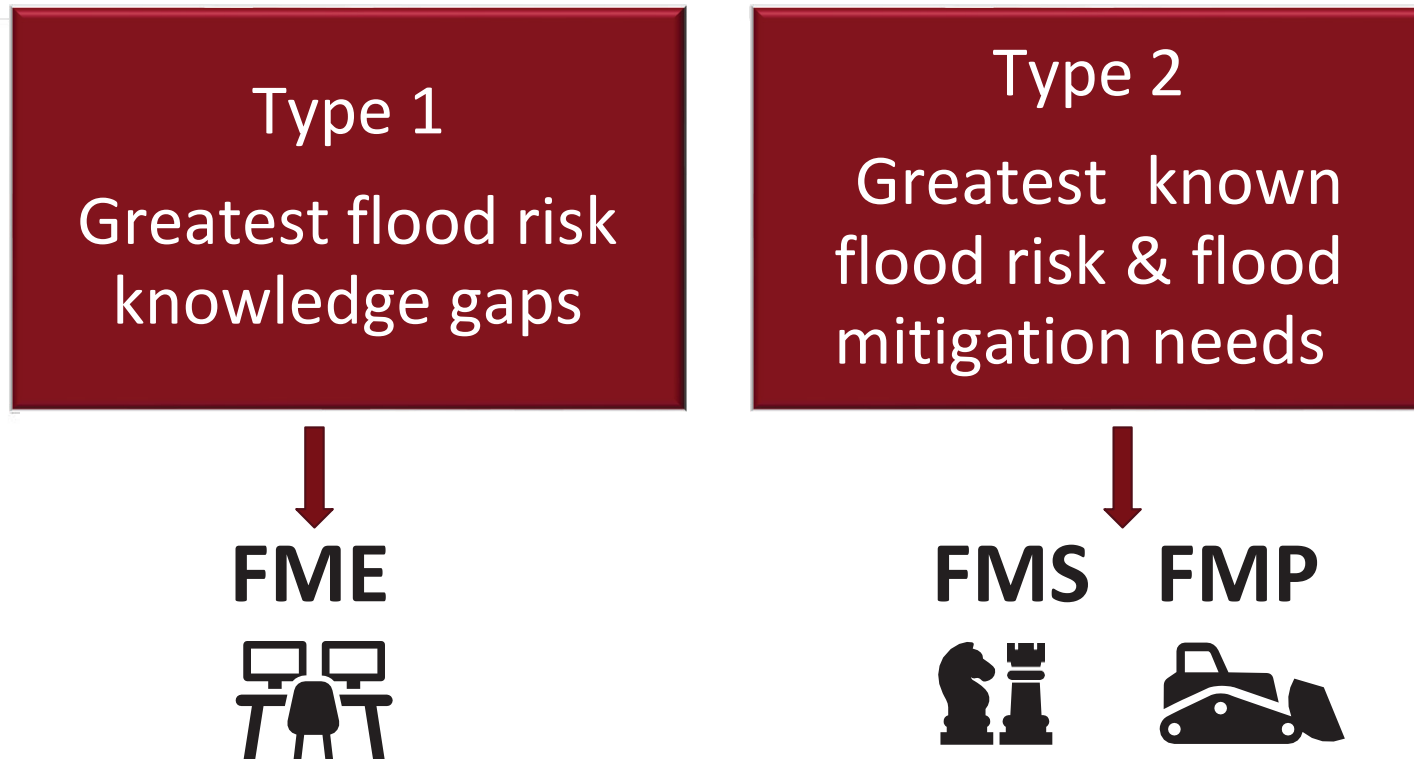
Overview & Approach

Task 4A: Process for Identifying Areas of Greatest Need (Screening Analysis)



1	A
2	C
3	C
4	D
5	E
6	E

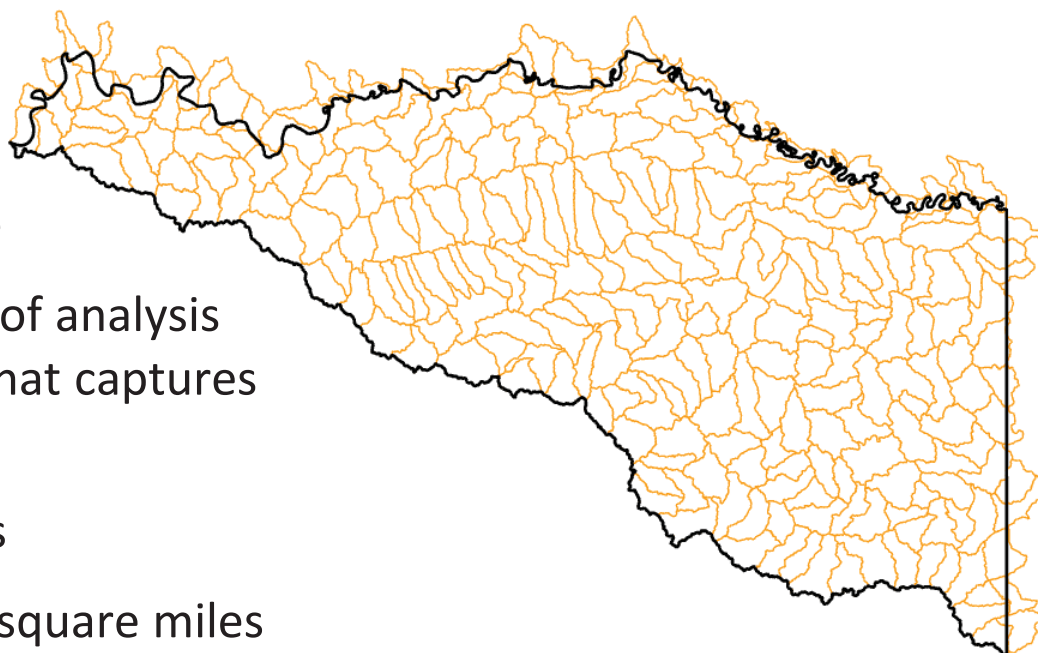
Task 4A: Process for Identifying Areas of Greatest Need (Screening Analysis)



Task 4A

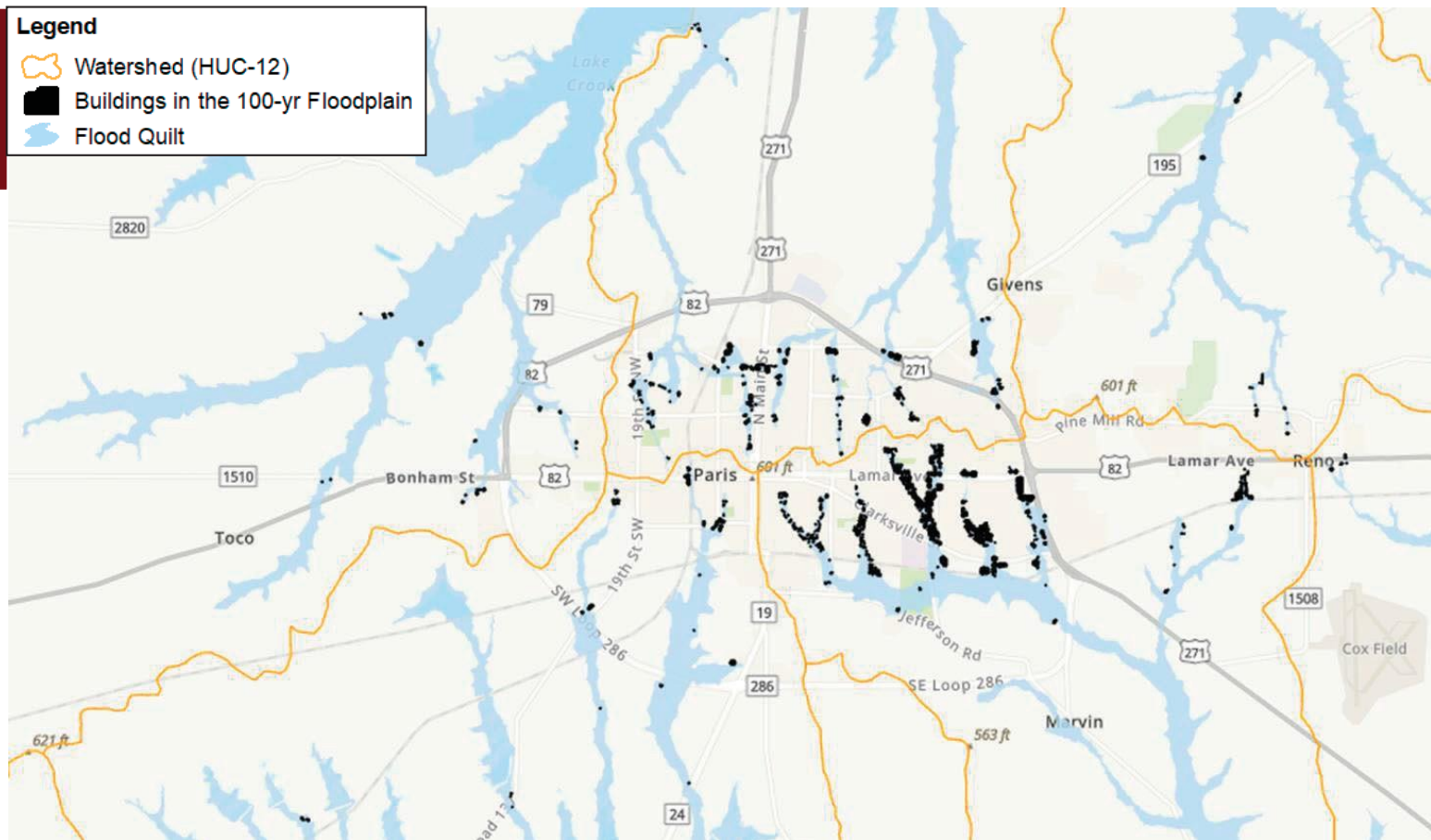
Unit of Analysis

- HUC = Hydrologic Unit Code
- **HUC 12** will be used as unit of analysis (local sub-watershed level that captures tributary systems)
- **254** HUC 12 sub-watersheds
- HUC 12 average area = ~40 square miles



Task 4A Example - Paris, Texas

Most prone to flooding that threatens life & property



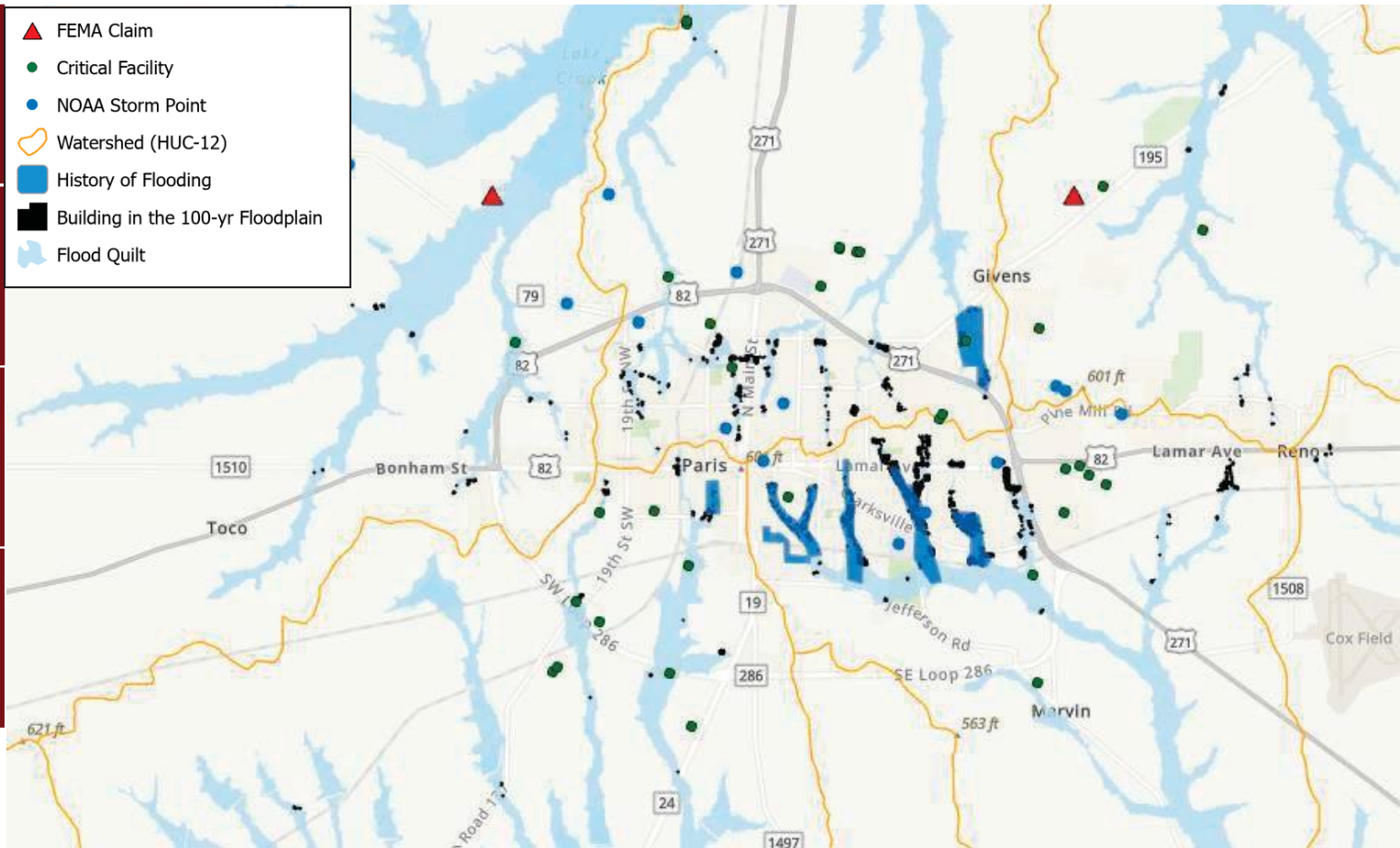
Task 4A Example - Paris, Texas

Most prone to flooding that threatens life & property

Historic flooding events

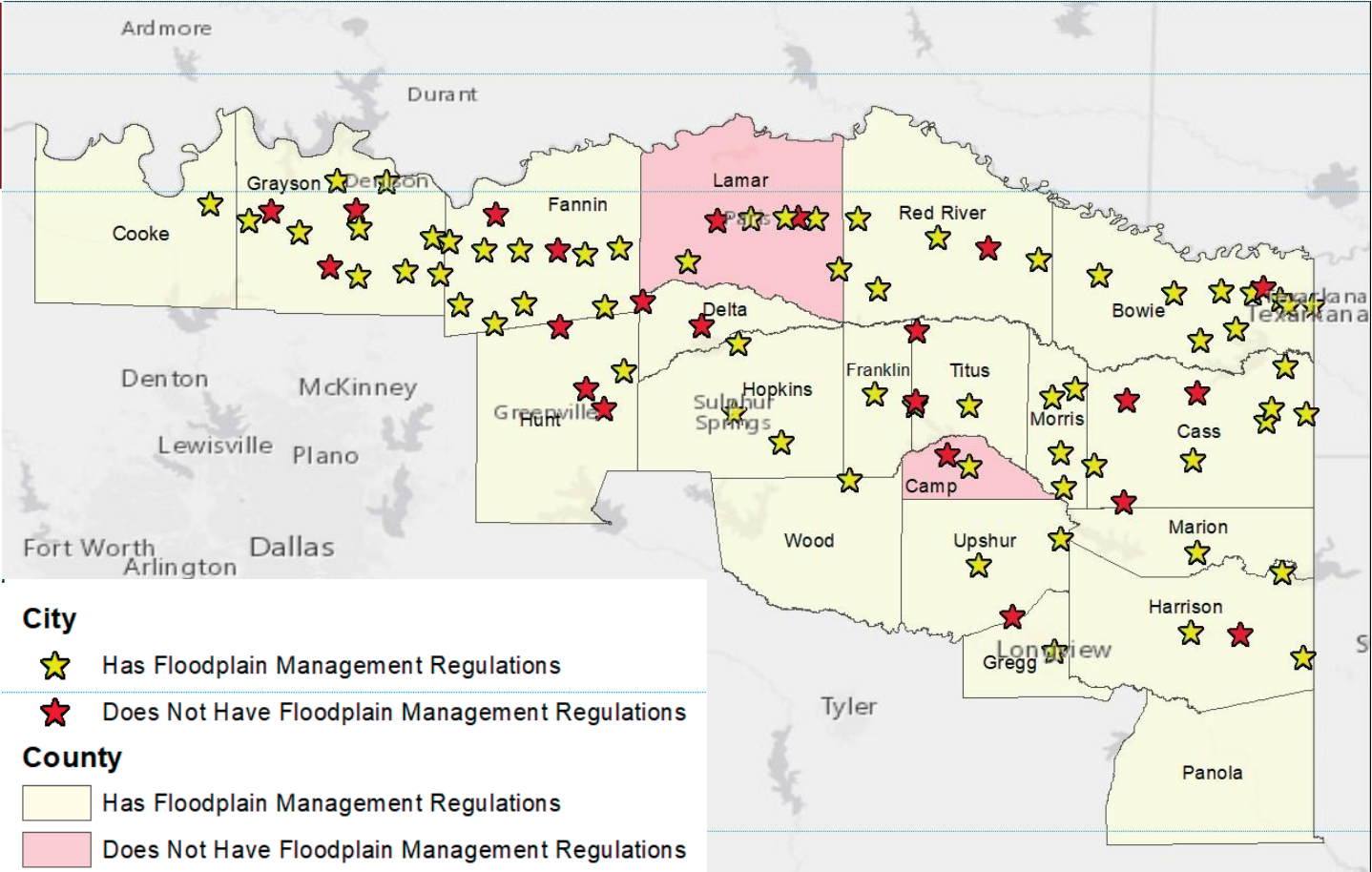
Emergency need

Prone to flooding with inadequate inundation maps



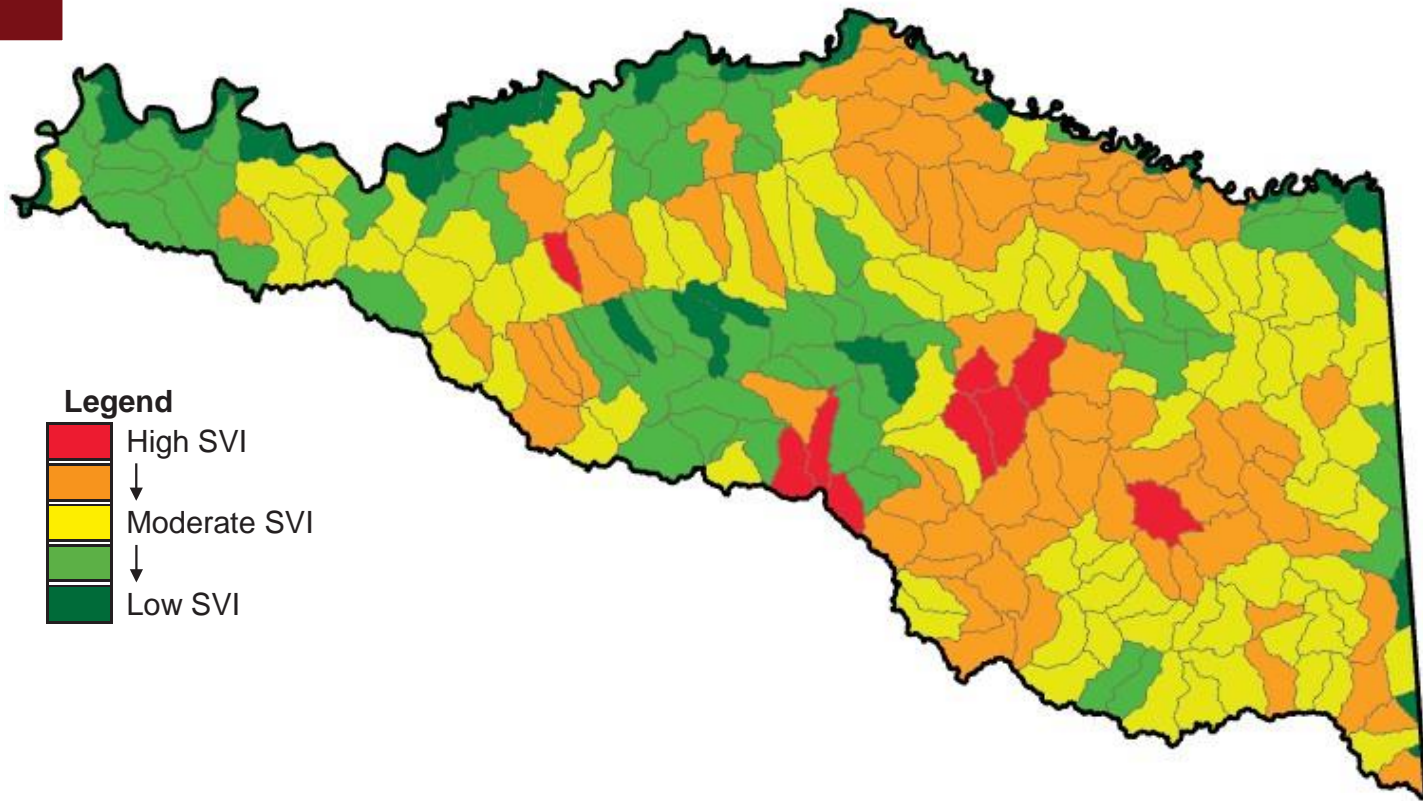
Task 4A - Existing Floodplain Management Regulations

Locations, extent, & performance of policies & infrastructure



Other relevant factors

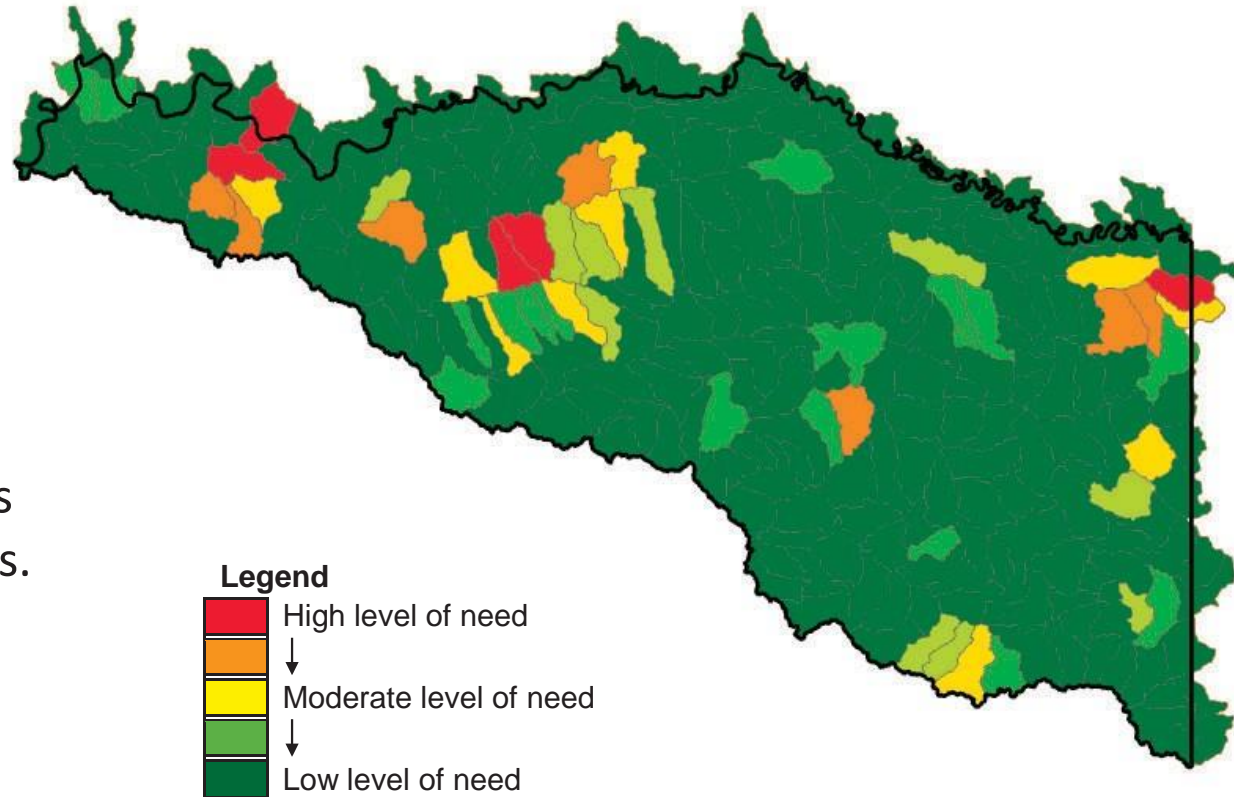
Task 4A – Social Vulnerability Index



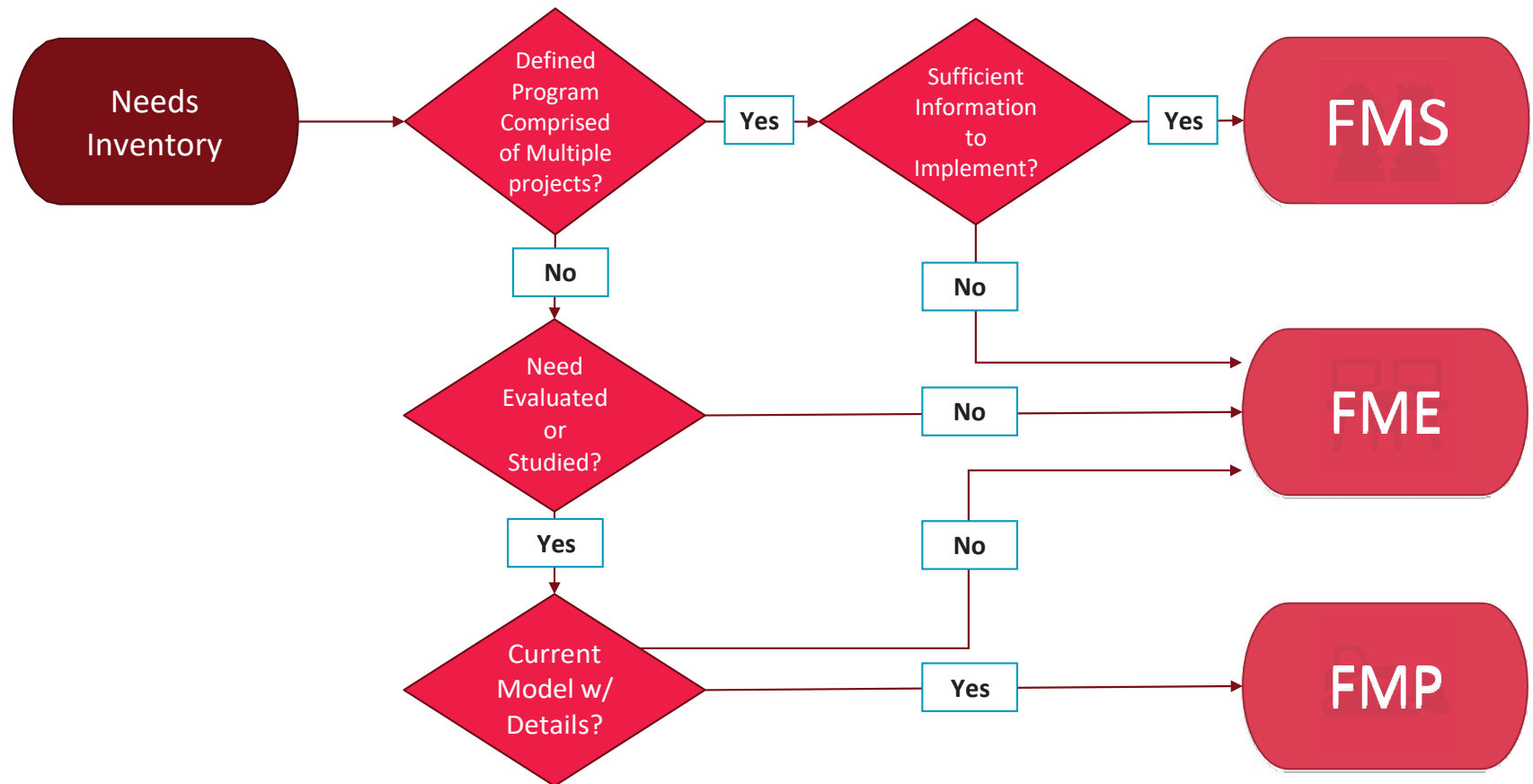
SVI to be used as a criticality factor

Task 4A Results

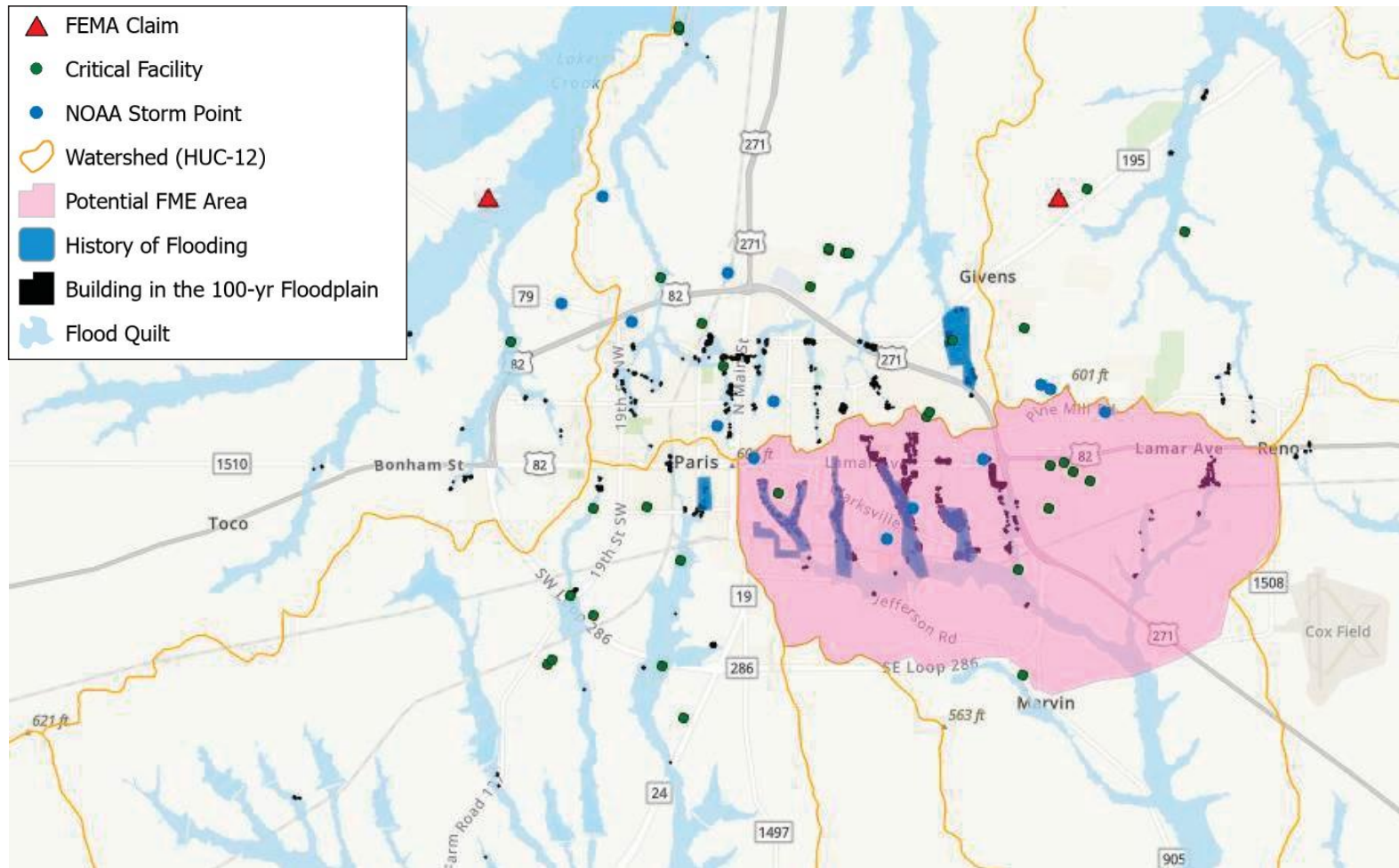
- Hot spots are generated based on layering the data from previous tasks.
- This is a GIS process using a ranking/scoring system to determine the “worst” spots or where to focus our efforts.
- Divided into HUC-12 boundaries as potential project boundaries.



Task 4B - Process for Identifying FME, FMS, FMP



Example for Potential FME - Paris, Texas

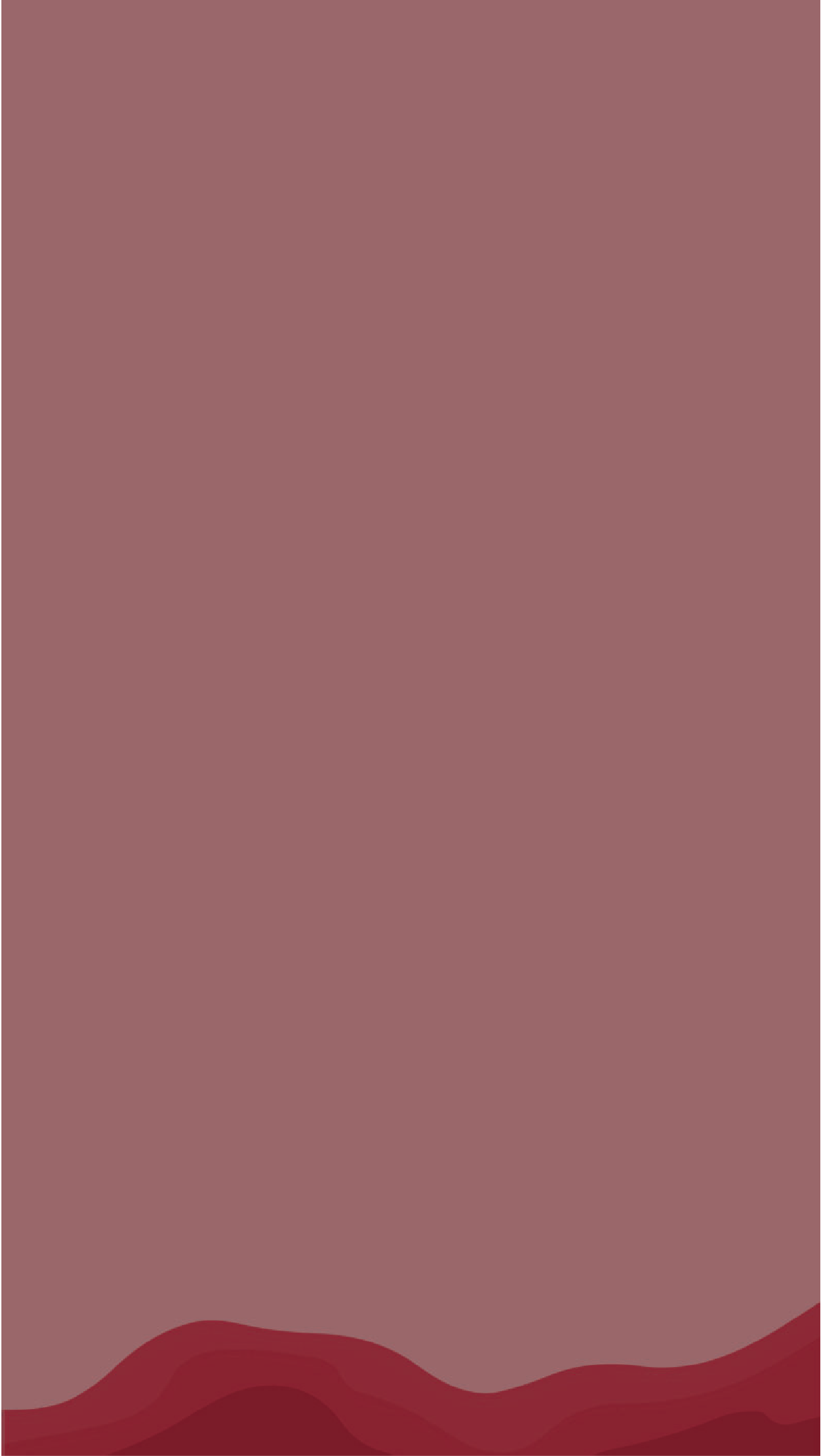


Consider approval of process to identify potential FMEs and potentially feasible FMSs and FMPs



Additional Flood Planning Funding

- 2021 Legislature approved an additional \$10M in funding for the State Flood Plan (40% increase)
- TWDB should have authorized how to spend the additional funds on 9/23/2021
- Additional \$576,600 for Region 2, which brings the total to \$1,487,000
- Additional scope to focus on performing FMEs to determine flood risks and develop FMPs for inclusion in the final plan
- Initial Flood Plan is still due in January 2023, but additional analysis will be included in an addendum due in August 2023



LOOK-AHEAD

November

- Tech memo presentation and discussion
- Tech memo review by RFPG Board
- Halff to develop Task 2 data and maps

December

- Partial Tech Memo formal approval
- Halff to develop Task 2 data and maps

January

- Submit partial Tech Memo to TWDB
- Present completed Tech Memo contents
- Prepare revised Tech Memo

February

- Final Tech Memo formal approval
- Task 5 - Recommendation of FMS/E/Ps

March

- Submit final Tech Memo to TWDB



OPEN DISCUSSION

Floodplain Management Practices & Flood Protection Goals

MEMORANDUM



Innovative approaches
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www.freese.com

TO: Lower Red-Sulphur-Cypress Regional Flood Planning Group (RFPG)
FROM: David Rivera – Freese and Nichols, Inc.
SUBJECT: Recommended Floodplain Management Practices (Standards) and Goals
DATE: 9/22/2021
PROJECT: Lower Red-Sulphur-Cypress 2023 Regional Flood Plan

Tasks 3A and 3B of the *Scope of Work* for the development of the Regional Flood Plan (RFP) requires the RFPG and its technical consultants (TC) to “make recommendations regarding forward-looking floodplain management recommendations, and economic development practices and strategies, that should be implemented by entities within the FPR” and to “identify specific and achievable flood mitigation and floodplain management goals along with target years by which to meet those goals for the flood planning region.”

The proposed floodplain management recommendations and goals presented in this memorandum as **Table 1** and **Table 2** have been developed considering input from the RFPG provided at the regular RFPG meetings, as well as input from other regional stakeholders provided through the data collection survey. The standards presented in **Table 1** are general recommendations for consideration by entities in the region, they **do not** represent RFPG adopted minimum standards that are required to be adopted by local entities prior to RFPG including any Flood Management Evaluation, Flood Management Strategy, or Flood Mitigation Project that are sponsored by or that will otherwise be implemented by that entity in the RFP.

The TC proposes to put the floodplain management recommendations and goals to a vote to become part of the Lower Red-Sulphur-Cypress RFP at the next RFPG meeting to be held on October 7, 2021. The RFPG will vote to establish such recommendations and goals by a simple majority of voting members present.

The floodplain management recommendations and goals are provided to the RFPG in advance in order to solicit final feedback prior to the October RFPG meeting. Please provide any feedback to Reeves Hayter, RFPG Sponsor Chair, by sending an email to rhayter@srbatx.org. Be aware that a reply all to the email containing this attachment may trigger a quorum in violation of the Texas Open Meetings Act.

Table 1: Recommended Floodplain Management Practices (Standards)

Standard – Properties

Type/Condition	Property	Recommended Standard
New Construction Pre-Existing (Retrofit)	Residential Properties	Finished floor elevation (FFE) 1-ft above BFE (BFE = Base Flood Elevation, 100-yr flood)
	Commercial Properties	
	Critical Facilities	FFE above 500-yr or 2-ft above 100-yr whichever comes first

Standard – Storm Infrastructure:

Type/Condition	Infrastructure	Recommended Standard
New Construction Pre-Existing (Retrofit)	Roadways	2-yr capture Depth not to exceed curb in 10-yr storm
	Culverts/Bridges	Minor Roadways: Pass the 25-yr Major Roadways: Pass the 100-yr
	Storm Drainage Systems	25-yr flow underground 100-yr within right of way
	Detention Facilities	Multi-stage Detention - detain to existing conditions peak discharge for 2-, 25- and 100-year storms.
	Mapping Coverage	Developers building in a Zone A or unmapped areas must provide a hydrologic and hydraulic study establishing BFE.



Table 2: Regional Flood Plan Flood Mitigation and Floodplain Management Goals

Category 1 – Education and Outreach

Goal Number	Goal	Short Term Goal (2033)	Long Term Goal (2053)
1	For each planning cycle, hold public outreach and education activities (in multiple locations within the region) to improve awareness of flood hazards and benefits of flood planning.	3	3

Category 2 – Flood Warning and Readiness

Goal Number	Goal	Short Term Goal (2033)	Long Term Goal (2053)
2	Support the development of a community coordinated warning and emergency response program (including flood gauges) that can detect the flood threat and provide timely warning of impending flood danger.	Identify potential areas where flood warning systems would be beneficial.	Implement a minimum of 1 flood warning system.

Category 3 – Flood Studies and Analysis

Goal Number	Goal	Short Term Goal (2033)	Long Term Goal (2053)
3	Increase the coverage of flood hazard data by completing studies to reduce areas identified as having current gaps in flood mapping by X percent.	25%	90%

Category 4 – Flood Prevention

Goal Number	Goal	Short Term Goal (2033)	Long Term Goal (2053)
4	Reduce the percentage of communities that do not have floodplain standards that meet or exceed the NFIP minimum standards by X.	25%	100%
5	Support the development of minimum stormwater infrastructure design standards applicable across the FPR.	Creation of an integrated stormwater management manual to serve as a guide/foundation for local governments.	Help local governments to adopt and implement the stormwater management manual.



Category 5 – Non-Structural Flood Infrastructure

Goal Number	Goal	Short Term Goal (2033)	Long Term Goal (2053)
6	Reduce the number of NFIP repetitive-loss properties by X percent.	10%	50%

Category 6 – Structure Flood Infrastructure

Goal Number	Goal	Short Term Goal (2033)	Long Term Goal (2053)
7	Improve the level of service of vulnerable roadway segments and low water crossing located within the existing and future 1% annual chance floodplain by X percent.	25%	90%
8	Repair, rehabilitate, or replace X percent of aged stormwater infrastructure that is at high risk of failure and where failure would increase flood risks.	10%	50%

TO: Region 2 Lower Red-Sulphur-Cypress Regional Flood Planning Group

CC: Josh McClure, PhD, PE, CFM – Halff Associates, Inc.

FROM: David Rivera, PhD, PE, CFM – Freese and Nichols, Inc.

SUBJECT: Process for Identification and Evaluation of Potential FMEs and Potentially Feasible FMPs and FMSs (Tasks 4A and 4B)

DATE: 9/22/2021

PROJECT: Lower Red-Sulphur-Cypress Regional Flood Plan (FNI Proj. No. HAF21355)

Introduction

Halff Associates, Inc. (Halff) along with Freese and Nichols, Inc. (FNI) has been retained as the Technical Consultant (TC) to the Lower Red-Sulphur-Cypress Regional Flood Planning Group (RFPG) to develop the first ever Regional Flood Plan (RFP) for the basin, as part of the state flood planning process administered by the Texas Water Development Board (TWDB). A major component of the process is to identify, evaluate, and recommend Flood Management Evaluations (FMEs), Flood Mitigation Projects (FMPs), and Flood Management Strategies (FMSs) to be included in the RFP and the cumulative State Flood Plan (SFP).

The *Scope of Work (SOW)* developed by TWDB includes a requirement to “receive public comment on a proposed process to be used by the RFPG to identify and select FMEs, FMSs, and FMPs for the 2023 Regional Flood Plan.” This Technical Memorandum (TM) has been furnished to provide background information about the overall flood planning process and the associated technical requirements and to document the TC’s proposed process for this task. It is intended to comply with the *SOW* and the relevant provisions of *Title 31 of the Texas Administrative Code (TAC) Chapters 361 and 362 (Rules)* which serve as the statute and rules that govern regional flood planning, and to be consistent with the *Exhibit C Technical Guidelines for Regional Flood Planning (Technical Guidelines)* prepared by the TWDB. This memo summarizes the methodology that we recommend the RFPG adopt for use in the following phases of the flood plan.

Definitions

According to the *Technical Guidelines*, definitions of key terms include:

A **Flood Management Evaluation (FME)** is a proposed flood study of a specific, flood-prone area that is needed in order to assess flood risk and/or determine whether there are potentially feasible FMSs or FMPs.

A **Flood Mitigation Project (FMP)** is a proposed project, either structural or non-structural, that has non-zero capital costs or other non-recurring cost and when implemented will reduce flood risk and mitigate flood hazards to life or property.

A **Flood Management Strategy (FMS)** is a proposed plan to reduce flood risk or mitigate flood hazards to life or property. At a minimum, RFPGs should include as FMSs any proposed action that they would like to identify, evaluate, and recommend that does not qualify as either an FME or FMP.

Background

Identification and evaluation of FMEs, FMPs, and FMSs occur under *Task 4B* of the *SOW*, with recommendations being developed as part of *SOW Task 5*. Each of these recommendations must tie back to the floodplain management goals adopted by the RFPG and must contribute to the assessment and mitigation of flood risk across the basin.

FMEs, FMSs, and FMPs are broadly categorized as “flood risk reduction projects” (henceforth, “actions”) in the *Technical Guidelines*. The *Technical Guidelines* also list several potential action types for each subcategory, summarized in **Table 1** below:

Table 1: Flood Risk Reduction Action Types

Flood Risk Reduction Action Category	Action Types
Flood Management Evaluation (FME)	<ul style="list-style-type: none"> a. Watershed Planning <ul style="list-style-type: none"> i. H&H Modeling ii. Flood Mapping Updates iii. Regional Watershed Studies b. Engineering Project Planning <ul style="list-style-type: none"> i. Feasibility Assessments c. Preliminary Engineering (alternative analysis and up to 30% design) d. Studies on Flood Preparedness
Flood Mitigation Project (FMP)	<p>Structural</p> <ul style="list-style-type: none"> a. Low Water Crossings or Bridge Improvements b. Infrastructure (channels, ditches, ponds, stormwater pipes, etc.) c. Regional Detention d. Regional Channel Improvements e. Storm Drain Improvements f. Reservoirs g. Dam Improvements, Maintenance, and Repair h. Flood Walls/Levees i. Coastal Protections j. Nature Based Projects – living levees, increasing storage, increasing channel roughness, increasing losses, de-synchronizing peak flows, dune management, river restoration, riparian restoration, run-off pathway management, wetland restoration, low impact development, green infrastructure k. Comprehensive Regional Project – includes a combination of projects intended to work together <p>Non-Structural</p> <ul style="list-style-type: none"> a. Property or Easement Acquisition b. Elevation of Individual Structures c. Flood Readiness and Resilience d. Flood Early Warning Systems, including stream gauges and monitoring stations e. Floodproofing f. Regulatory Requirements for Reduction of Flood Risk
Flood Management Strategy (FMS)	None specified; at a minimum, RFPGs should include as FMSs any proposed action that the group would like to identify, evaluate, and recommend that does not qualify as either a FME or FMP.

Particularly during this first round of flood planning, several areas are likely to be identified for potential FMEs due to a lack of sufficiently complete or current flood study data to accurately evaluate and quantify flood risk. Not every conceivable FME can or will be recommended for inclusion in the plan. The RFPG and the TC must decide which potential FMEs will be recommended in the RFP so that limited state and stakeholder resources can be directed efficiently and accordingly to implement those studies.

Similarly, regional stakeholders will likely propose several projects and strategies for managing flood risk that could be candidates for inclusion in the plan and eligible for state funding. Each FMP and FMS identified by the TC will be screened to determine if the FMP or FMS is potentially feasible. At a minimum, FMPs and FMSs must be developed in an adequate level of detail to furnish the required technical information and adhere to the minimum criteria set forth in the *SOW*, the *Rules*, and the *Technical Guidelines*.

For FMPs, these minimum criteria include having appropriate hydrologic and hydraulic (H&H) models required to evaluate that the project adheres to TWDB Mapping and Modeling Guidelines and a requirement that the FMP causes No Negative Impact on a neighboring area. These requirements must also be met for FMSs, as applicable. These standards are described in more detail in *Section 3.5* and *Section 3.6* of the *Technical Guidelines*.

Process for Identification of Potential FMEs and Potentially Feasible FMPs and FMSs

Identification

Identification of potential FMEs and potentially feasible FMPs and FMSs begins with the development of the Flood Mitigation Needs Analysis (*Task 4A*). Generally, this task is meant to guide action, evaluation and recommendation by highlighting:

- The areas with the greatest gaps in flood risk knowledge that should be considered for potential FMEs.
- The areas of greatest known flood risk and flood mitigation needs that should be considered for implementation of potentially feasible FMSs and FMPs.

FNI has developed a process for identifying areas of greatest need based on application of the requirements outlined in the *Rules* and *SOW*. The process is summarized in **Table 2**, below.

Table 2: Guidance for Assessment and Identification of Flood Mitigation Needs

Guidance	Factors to Consider
1. Most prone to flooding that threatens life and property	<ul style="list-style-type: none"> • Area overlapped by inundation mapping and/or included in any historical flooding record • Building footprints / polygons within flood hazard layer • Critical facilities with evacuation routes impacted by flooding • Fully developed flood models (where available) • Low water crossings • Agricultural areas at risk of flooding

Guidance	Factors to Consider
2. Locations, extent and performance of current floodplain management and land use policies and infrastructure	<ul style="list-style-type: none"> • Communities not participating in NFIP and/or without NFIP equivalent or higher standards • Disadvantaged / Underserved communities • City / County design manuals • Community Rating System (CRS) score • Land use policies • Floodplain ordinance(s)
3. Inadequate inundation mapping	<ul style="list-style-type: none"> • No mapping • Presence of Fathom / BLE / FEMA Zone A flood risk data • Detailed FEMA models older than 10 years
4. Lack of H&H models	<ul style="list-style-type: none"> • Communities with zero models • Communities with limited models
5. Emergency need	<ul style="list-style-type: none"> • Damaged or failing infrastructure • Other emergency conditions
6. Existing models, analysis and flood risk mitigation plans	<ul style="list-style-type: none"> • Exclude flood mitigation plans already in implementation • Leverage existing models, analyses, and flood risk mitigation plans • Benefit-Cost Ratio > 1
7. Already identified and evaluated flood mitigation projects	<ul style="list-style-type: none"> • Exclude flood mitigation projects already in implementation • Leverage existing flood mitigation projects • Benefit-Cost Ratio > 1
8. Historic flooding events	<ul style="list-style-type: none"> • Disaster declarations • Flood insurance claim information • Other significant local events
9. Already implemented flood mitigation projects	<ul style="list-style-type: none"> • Exclude areas where flood mitigation projects have already been implemented unless significant residual risk remains
10. Additional other factors deemed relevant by RFPG	<ul style="list-style-type: none"> • Alignment with RFPG goals • Alignment with TWDB guidance principles

After identification of the areas of greatest flood mitigation need, the TC will review the available data to develop a list of potential flood risk reduction actions for addressing the needs in these areas. The data will include information compiled under previous tasks in the *SOW*, including:

- Data collection regarding existing flood infrastructure, flood projects currently in progress, and known flood mitigation needs (*Task 1*);
- Quantification of existing and future flood risk exposure and vulnerability (*Tasks 2A and 2B*);
- Goals and strategies adopted and/or recommended by the RFPG for addressing existing flood hazards and mitigating future flood risk (*Tasks 3A and 3B*); and,
- Stakeholder-provided input throughout the flood planning process.

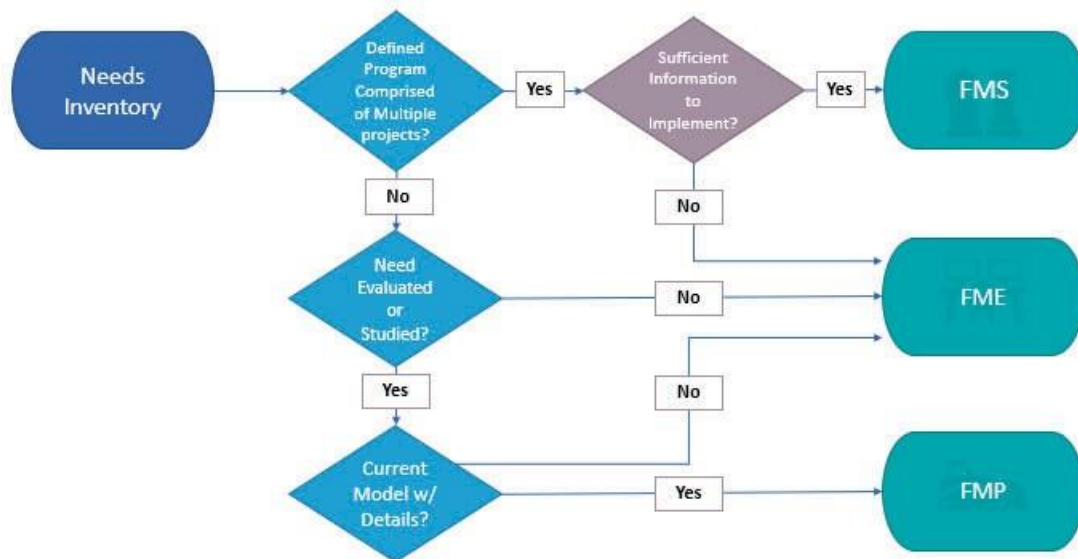
The TC anticipates several potential actions will be identified, primarily FMEs, to address gaps in available flood risk data associated with the first planning cycle. The *Rules* and *SOW* require FMSs and FMPs to be developed in a sufficient level of detail to be included in the RFP and recommended for state funding. The

TC does not anticipate that this first planning cycle will have sufficient data, time, or budget to develop new FMSs and FMPs. For the most part, the list of potentially feasible FMSs and FMPs likely will be compiled based on contributions from the RFPG and other regional stakeholders from sources such as previous flood studies, drainage master plans, and capital improvement programs. However, the TWDB is currently in the process of allocating additional flood planning funding and developing an addendum to the RFP scope of work that may allow TC to develop FMEs into FMPs. This additional source of funding could potentially provide opportunities to increase the number of actions that would qualify as FMPs in the plan’s first cycle.

Evaluation

Once potential flood risk reduction actions are identified, the TC will perform a screening process to sort actions into their appropriate categorization. The screening process is shown below in **Figure 1**.

Figure 1: Potential Flood Risk Reduction Action Screening Process



In addition to falling into the general buckets of action types outlined in **Table 1**, FMPs and FMSs will be screened to determine if they have been developed in enough detail and include current technical data to meet the TWDB’s requirements for these action types as outlined in the *Technical Guidelines*. For instance, one requirement is to prove the project has No Negative Impacts on neighboring areas. Table 21 in Section 3.6 of the *Technical Guidelines* specifies the impacts analysis should include discharge, velocity, valley storage, and downstream conveyance considerations. This detailed analysis is only achievable if hydrologic and hydraulic models are available. Furthermore, a Benefit-Cost Analysis (BCA) is also required to demonstrate that a recommended FMP has a Benefit-Cost Ratio (BCR) greater than one (see Section 3.8 of the *Technical Guidelines*). As part of the FMP evaluation, it is likely that the BCA will need to be revised to reflect updated cost estimates. Therefore, sufficient data must be available to perform the necessary BCA calculations. Actions that were initially considered for FMSs and FMPs that do not meet these requirements may be recommended for future study as part of an FME.

Selection

The TC will seek to identify and recommend a comprehensive list of potential flood risk reduction actions for inclusion in the RFP. In practice, this means that as many FMPs and FMSs as possible will be

recommended which have information available to meet the detailed requirements specified in the *Technical Guidelines*. FMSs will also be recommended for other strategies the RFPG wishes to pursue that do not fit cleanly into the FME or FMP categorizations. One example of a potential FMS is a program of separate FMPs that is part of an overall strategy to reduce flood risk within a particular area, such as a community-wide buyout program to be implemented over several years. Generally, FMEs will be recommended for any remaining areas with potential flood risk and exposure of people and property based on results of *Task 4A*.

All recommended actions must meet the technical requirements of the *Technical Guidelines*, including demonstrating No Negative Impacts and identifying at least one local sponsor. However, some potential actions that meet these baseline requirements may not be appropriate for recommendation. While this is not a comprehensive list, some potential reasons a project may not be recommended include:

- Action does not achieve flood risk reduction
- Action does not align with the flood mitigation goal(s) adopted by the region and/or the guidance principles set forth by the state
- Action does not demonstrate benefits at a scale appropriate for inclusion in a regional plan
- Action duplicates the benefits of another action(s) included in the plan
- Action cannot obtain a Memorandum of Understanding (MOU) or other form of concurrence from impacted entities
- Action does not demonstrate a sensible benefit-cost ratio or other metric
- Public input regarding the action demonstrates a need for further evaluation or consensus building with regional stakeholders
- Action does not receive a simple majority vote from a quorum of the RFPG members for inclusion in the RFP.

Schedule

The process to identify and evaluate FMEs, FMPs, and FMSs must be approved by the RFPG and included in the Technical Memorandum (TM) furnished under *Task 4C.1.h* of the SOW. This deliverable deadline has been set for January 7, 2022 by the TWDB. However, the TWDB has extended the deadline to submit certain portions of the TM deliverables to March 7, 2022 (SOW items 4C.1.c-e). Furthermore, the list of potential FMEs, FMPs, and FMSs that shall be provided by the January 7, 2022 deadline are considered an initial submittal and can be enriched, changed, and enhanced during the latter part of plan development.

After the delivery of the TM, the TWDB will review and provide Notice to Proceed (NTP) on *Task 5*, after which the TC may begin the process of recommending FMEs and FMPs for inclusion in the RFP. The TWDB has not provided an anticipated date for issuance of NTP. As such, the schedule provided in **Table 3** below is the TC's proposed timeline of activities to meet the TM deadline and anticipated schedule of activities after NTP on *Task 5*.

Table 3: Proposed Timeline of Activities

Flood Planning Process Activity	Anticipated Date
TC delivers <i>Process for Identification and Evaluation of Potential FMEs and Potentially Feasible FMPs and FMSs</i> TM to RFPG for review	September 22, 2021
RFPG considers approval of Process at October meeting	October 7, 2021
TC presents identified potential FMEs and potentially feasible FMPs and FMSs to RFPG	November 2021
TC refines list of identified potential FMEs and potentially feasible FMPs and FMSs and deliver TM to RFPG for review	November 2021 – December 2021
RFPG considers approval to submit TM	December 2021
TC delivers TM to TWDB (<i>SOW items 4C.1.a-b, 4C.1.f-j</i>)	January 7, 2022
TWDB review TM; TC continue process to evaluate FMEs, FMPs, and FMSs	January 2022 – TBD
TC delivers TM update to TWDB (<i>SOW items 4C.1.c-e</i>)	March 7, 2022
TWDB issues NTP on Task 5; TC to begin process of recommending FMEs, FMPs, and FMS for inclusion in RFP	TBD (after NTP by TWDB)

When reviewing and considering whether to approve drafts of the TM, the RFPG members should do so with the understanding that the TWDB has established the TM as a “draft, mid-point, work-in-progress deliverable...to demonstrate that [the RFPG] are making appropriate progress towards the development of their regional flood plan and in meeting contract requirements.” On August 17, 2021, the TWDB emailed the TC and further clarified that:

“If RFPGs need to make changes to content that was included in deliverables submitted under the technical memorandum after the submission deadline, RFPGs do not need to resubmit any previously submitted deliverables. The content of the draft and final versions of each regional flood plan will supersede all content included in any previous deliverables.”

As such, the TM does not need to include the final list of potential flood risk reduction actions. Actions can be updated, added, or removed as additional flood risk information or other details are evaluated by the TC and through future engagement with stakeholders. Furthermore, the TWDB is currently planning to authorize additional funds that may contribute to developing additional flood risk reduction actions that may be incorporated in the RFP during the first planning cycle. This authorization is forthcoming and the process for incorporating the outputs of that supplementary effort will be developed at a future date.