



Update from Consultant Team


Neches Regional Flood Planning Group

April 20, 2022

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Agenda

- Task 4A Flood Mitigation Needs Analysis
 - Normalization Update
- Task 4B Update
 - Identify and Evaluate FMEs, FMSs, and FMPs
- Task 5
 - Process for Recommending FMEs, FMSs, and FMPs



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Task 4A - Flood Mitigation Needs Analysis

Supported by Task 2A & 2B

Identify Greatest Known Flood Risk

↓ ↓

FMPs FMSs FMEs

↑

Identify Flood Risk Knowledge Gaps

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Task 4A - Flood Mitigation Needs Analysis Process

Number of buildings within the existing flood hazard area (Task 2A)	Number of Low Water Crossings	Agricultural areas within the existing flood hazard areas (Task 2A)	Number of critical facilities within the existing flood hazard areas (Task 2A)
Historic flood-related disaster declarations	HUC 12 Level	Inadequate Mapping/Modeling	
Historic FEMA flood claims	SVI	Current NFIP participation	

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Task 4A – Flood Mitigation Needs Analysis Process

- Unit of Analysis
 - HUC = Hydrologic Unit Code
 - HUC 12 will be used as unit of analysis (local sub-watershed level that captures tributary systems)
 - 261 HUC 12 sub-watersheds



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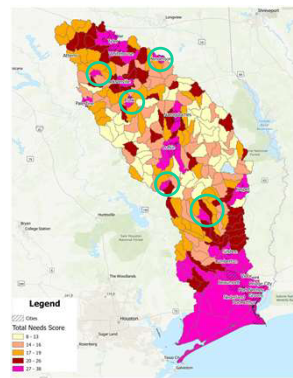
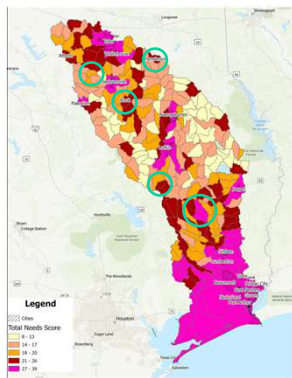
Task 4A – Scoring Analysis Update

- Scoring results normalized based on HUC drainage area.
- Intended to not create a bias for higher needs in the larger HUCs.

HUC 12	Notes	Area Rank	Previous Total Score	New Total Score	HUC 12	Notes	Area Rank	Previous Total Score	New Total Score
120200030405		127	30	38	120200030205		53	37	32
120200070205		185	29	38	120200050101		73	34	32
120200030405		204	34	38	120200040104		108	34	32
120200030404	Bottom 20% of values (By area)	210	33	36	120200050104		176	33	32
120200070204	Bottom 20% of values (By area)	245	28	36	120402020300	Top 20% of values (by area)	2	26	31
120200030401		136	27	35	120402020100	Top 20% of values (by area)	5	23	31
120402010300	Top 20% of values (by area)	1	29	34	120200060406		197	22	31
120402010200	Top 20% of values (by area)	4	30	34	120200010601		202	23	31
120200070201		68	27	34	120200060407	Bottom 20% of values (By area)	213	20	31
120200030403		87	24	34	120200030402	Bottom 20% of values (By area)	239	21	31
120402010500	Bottom 20% of values (By area)	230	28	34	120100051005	Bottom 20% of values (By area)	260	18	31
120402010100	Top 20% of values (by area)	3	28	33	120402020200	Top 20% of values (by area)	7	22	30
120200020302		105	33	33	120200070103		166	28	30
120200070303		116	25	33	120200070107	Bottom 20% of values (By area)	211	24	30
120200070105		170	24	33	120200040103		95	30	29
120200070106		203	30	33	120200020306		132	34	29
120402020400	Top 20% of values (by area)	6	27	32	120200010502	Bottom 20% of values (By area)	216	29	29
120200030407	Top 20% of values (by area)	12	27	32	120200070304	Bottom 20% of values (By area)	228	24	29
120200010105	Top 20% of values (by area)	14	38	32	120200030301	Top 20% of values (by area)	17	39	28

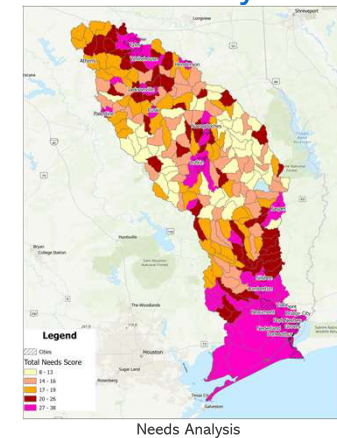
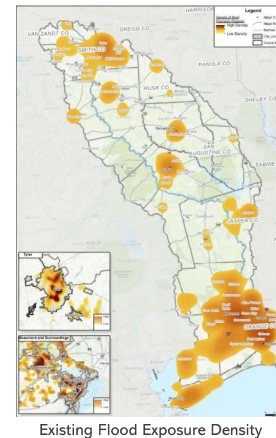
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Task 4A – Flood Mitigation Needs Analysis



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Task 4A – Flood Mitigation Needs Analysis



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Task 4A – RFPG Panel Weighting

How would you weigh the flood needs analysis criteria?

Strongly disagree | Strongly agree

- Buildings within Existing Flood Hazard Layer
- Low Water Crossings
- Agricultural Area within Existing Flood Hazard Layer
- Critical Facilities within the Existing Flood Hazard Layer
- NFIP Status
- Social Vulnerability Index (SVI)
- Inadequate Mapping (Task 2A Flood Map Gap Analysis)
- Historical FEMA Claims
- Historical Disaster Declarations

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Task 4A – Emergency Need

- RFP must include an indication of whether a particular flood control situation meets an emergency need.
- Needs to be defined by RFPG & will be used to evaluate FMEs, FMSs, FMPs.
- Considerations:
 - Areas with outdated mapping (Task 2A)
 - History of severe and/or repetitive flooding (Task 1)
 - Areas with critical infrastructure within the 100-year flood hazard area (Task 2A)
 - Areas with buildings within the 100-year flood hazard area with SVI > 0.75 (Task 2A)
 - Deficient Infrastructure (Task 1)
 - Evacuation routes within a flood hazard area (Task 2A)

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Task 4A & 4B Overview

Flood Mitigation Needs Analysis

4A

4B

FMEs FMSs FMPs

Identify areas where the greatest flood risk knowledge gaps exist

Identify areas of the greatest known flood risk

Identify and evaluate potential:
 FMEs – Flood Management Evaluation
 FMSs – Flood Management Strategy
 FMPs – Flood Mitigation Project

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Task 4B – Analysis Components

- Continued coordination with stakeholders in the region to obtain necessary information
- Fundamental that stakeholders provide data that can be used in evaluating and identifying FMEs, FMPs, and FMSs**
- For all Flood Mitigation Actions (FMEs, FMPs, and FMSs):
 - Compile Project Information including Flood Exposure Data
 - Develop planning-level Cost Estimates
 - Identify a willing Project Sponsor
- For FMPs (and some FMSs):
 - Perform Benefit-Cost Analysis
 - Provide No Negative Impact Certification

Flood Exposure Data (100-yr Flood)

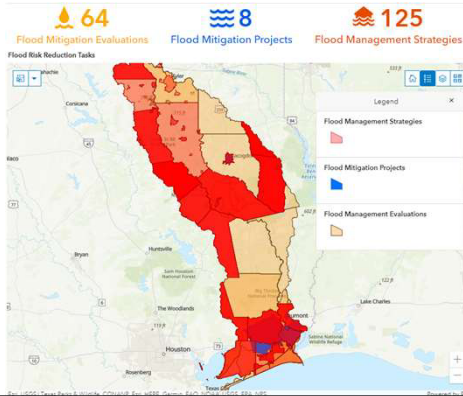
- Structures
- Population
- Critical Facilities
- Low Water Crossings
- Agricultural Areas
- Roads

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Task 4B – Identify FMEs, FMSs, FMPs

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- Identified FMEs, FMSs, FMPs based on review and evaluations of previous flood studies, master drainage plans, capital improvement projects, hazard mitigation action plans, FIF applications, CDBG-MIT applications, etc.
- Additional FMEs to be added based on Existing Condition Gap Analysis (Task 2A)



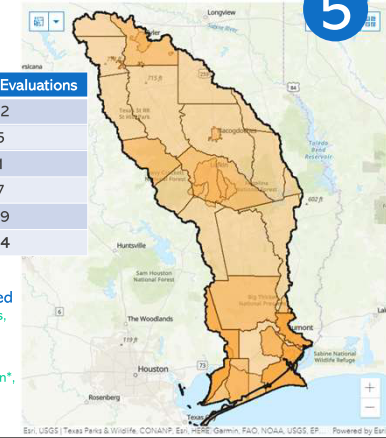
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Task 4B – Identified FMEs

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FME Type	FME Description	Number of Evaluations
Watershed Planning	Flood Mapping Updates	22
	Master Drainage Plan	5
	Regional Watershed Studies	1
Project Planning	Feasibility Assessments	7
	Project Design Development	29
Total		64

- Additional FME Recommendations
 - MDP for cities that do not currently have study identified
 - Lufkin, Palestine, Nederland, Jacksonville, Henderson, Athens, Lumberton, Whitehouse, Jasper, Silsbee, Rusk
 - MDP for counties that do not currently have a study identified
 - Anderson*, Angelina, Cherokee, Hardin, Henderson*, Houston*, Jasper, Nacogdoches, Orange*, Polk*, Rusk*, Sabine, San Augustine*, Shelby*, Smith*, Trinity*, Tyler*, Van Zandt*



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Task 4B – FMEs Cost Estimates

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- Estimates developed based on past projects, FEMA blue block unit prices, and existing project estimates

FME Type	FME Description	Cost Estimate Range (Preliminary)
Flood Mapping Updates	Promotes the development and/or refinement of detailed flood risk maps to address data gaps and inadequate mapping. Create FEMA mapping in previously unmapped areas and update existing FEMA maps as needed.	\$2,250/sq mi
Master Drainage Plan (City)	Supports the development and analysis of hydrologic and hydraulic models to evaluate flood risk within a given jurisdiction, evaluate potential alternatives to mitigate flood risk, and develop capital improvement plans.	• Pop. < 25,000: \$250,000
Master Drainage Plan (County)		• Pop. 25,000 – 100,000: \$500,000
Regional Watershed Studies	Supports the development and analysis of hydrologic and hydraulic models to define flood risk or identify flood prone areas OR Large-scale studies that are likely to benefit multiple jurisdictions.	\$1,500/sq mi
Feasibility Assessments	Evaluation of a proposed project to determine whether implementation would be feasible OR Initial engineering assessment including conceptual design, alternative analysis	TBD; likely use \$250,000 per project
Project Design Development		TBD; likely use \$25,000 per project

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Flood Management Evaluation Example

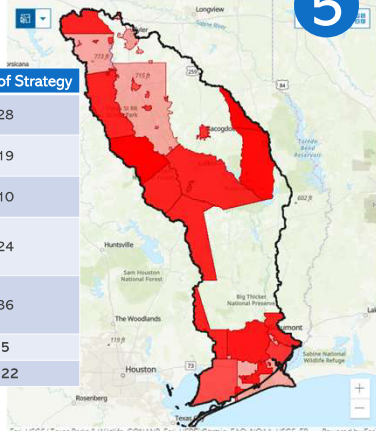
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Task 4B – Identified FMSs

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FMS Type	FMS Description	Number of Strategy
Education & Outreach	Public Education Programs	28
Flood Measurement & Warning	Warning Systems & Gages	19
Property Acquisition	Acquiring properties through buyouts	10
Guidance & Regulations	NFIP participation, building & development codes, inspection, utility fees, interagency partnerships, etc.	24
Infrastructure	Culvert, bridge, channel improvements, elevate roadways, detention, dam inspections,	36
Other	Debris removal, LiDAR updates	5
Total		122



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Task 4B – FMSs Cost Estimates

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- Estimates developed based on past project scopes and fees and costs from HMAPs

FMS Type	FMS Description	Cost Estimate Range (Preliminary)
Education & Outreach	Public Education Programs	\$50,000 - \$300,000
Flood Measurement & Warning	Warning Systems & Gages	\$100,000 to \$500,000
Property Acquisition	Acquiring properties through buyouts	\$500,000 - \$2,000,000
Guidance & Regulations	NFIP participation, building & development codes, inspection, utility fees, interagency partnerships, etc.	\$10,000 to \$50,000
Infrastructure	Culvert, bridge, channel improvements, elevate roadways, detention, dam inspections,	\$500,000 - \$30,000,000
Other	Debris removal, LiDAR updates	\$100,000 - \$250,000

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Flood Management Strategy Example

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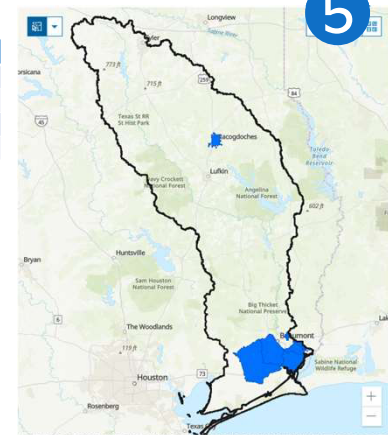
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Task 4B – Identified FMPs

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FMP Type	Number of Projects	Costs
Channel Improvements	5	\$4.2M - \$30.5M
Flood Walls & Levees	1	\$2.3B
Detention	3	\$47M
Total	9	TBD

General project data required	
Project ID:	FMP ID
Project Description:	Short 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, Not 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:	Post-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 extent
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 (20N-A60-1N-A60)
Post-Project Level-of-Service:	Post-Project LOS: 2-year through 100-year (20N-A60-1N-A60)
Traffic Count for Low Water Crossings:	Traffic Count (AADT) for low water crossing projects



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Task 4B – Public Meeting 5

- At least one meeting is required to receive feedback to gather general suggestions and recommendations for the public on the types of FMEs, FMSs, and FMPs that should be considered and potentially included.

Regional Flood Planning Update – March 2022

FloodPlanning <FloodPlanning@twdb.texas.gov>
 To: FloodPlanning
 Cc: Matt Nelson, Reem Zour, James Bronkowski, Morgan White, Anita Machiavelli, Megan Ingram, Ryke Moore, Richard Bagans, Tressa Oles, Ana Gonzalez, Cynthia Roush
 Thu 3/10/2022 9:58 AM

Follow up: Start by Tuesday, March 15, 2022. Due by Tuesday, March 15, 2022.
 You forwarded this message on 3/15/2022 3:52 PM.

Tech Memo Checklist for March 7 Deliverables.pdf
 503 KB

Looking Ahead: Public and TWDB Review of Draft Regional Flood Plan

The next major milestone in the regional flood planning process involves the submission of draft regional flood plans that must be approved by RFPGs and submitted to TWDB by August 1, 2022. As required by statute and rule, the draft regional flood plans are subject to public notice and meeting requirements to provide transparency and encourage public participation in the regional flood planning process. We recognize that there is a balance to be struck in determining when to make the draft regional flood plans available to the public for comment to satisfy these statutory and rule requirements as there are several dates to consider. TWDB anticipates making our informal comments on the technical memorandums available to the RFPGs in early May 2022, draft regional flood plans are due to TWDB by August 1, 2022, and final adopted regional flood plans must be submitted to TWDB by January 10, 2023.

RFPGs should strive to address any technical memorandum informal comments received from TWDB as necessary prior to adoption of the draft regional flood plans, but it is helpful to note that the draft plans do not need to incorporate comments or results of the public comment process. The required public meeting(s) may be held prior to RFPGs submitting draft plans to TWDB by the August 1, 2022 deadline but it is not required that the meeting(s) be held before. There is also no requirement that the meeting at which the RFPG approves the draft plan also be the first meeting at which they accept public comments. For example, an RFPG could approve the draft plan to submit to TWDB in July and then have the public comment meeting in August. As mentioned above, this timing should be balanced with the time needed to incorporate comments from both TWDB and the public on the draft regional flood plan into a final regional flood plan to be adopted by the RFPGs and submitted to TWDB by January 10, 2023.

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Task 4B & Task 5 Relationship 5

Task 4B
Data Gathering and Analysis

Task 5
Recommendations



Final Recommendations Will:

- Align with TWDB requirements and regional goals
- Address areas of greatest need (risk and/or knowledge gaps)
- Demonstrate potential for benefit
- Have sponsor support

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Task 5 – Process for Recommending FMEs 5

1. Review Goals	Remove FMEs that do not support a goal. Identify FMEs, as feasible, in areas of greatest need.
2. Contact Sponsors	Verify study has not been completed or funded. Verify sponsor interested in potential FMS. Request additional data to refine FME.
3. Analyze	Refine FME areas as needed. Develop Flood Exposure Data. Calculate cost for FME.
4. Evaluate	Identify FMEs that could result in the greatest benefits. Identify FMEs that have potential to develop FMPs for next cycle. Identify FMEs that could be developed into FMPs in Task 12.
5. Recommend	Present FME recommendations to RFPG. RFPG votes to approve recommendations.

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Task 5 – Process for Recommending FMPs 5

1. Review Goals	Remove FMPs that do not support a goal. Identify FMPs, as feasible, in Areas of Greatest Need.
2. Contact Sponsors	Verify project has not been completed or funded. Verify sponsor interested in potential FMP. Request additional data to meeting TWDB requirements.
3. Analyze	Refine FMP areas as needed. Develop Flood Exposure Data and calculate reduction in flood risk. Calculate/Update FMP costs and BCA. Review/Perform Impact Analysis.
4. Evaluate	Identify FMPs with the most complete information. Identify FMPs that could result in greatest benefits. Identify FMPs that need to be moved to FMEs for further development under Task 12.
5. Recommend	Present FMP recommendations to RFPG. RFPG vote to approve recommendations.

- Evaluate/Analyze**
- Work with sponsors to identify one FMP per entity to "pilot."
 - Determine how many FMPs can be evaluated under Initial Authorization
 - Present results to RFPG.
 - RFPG decides which FMPs to develop under Task 12 of Additional Scope of Work.

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