Update from Consultant Team

Neches Regional Flood Planning Group

September 21, 2022

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Agenda

- Summary of September 9th Draft Plan Public Comment Meeting
- Overview of Public Comments
- Task 12 Discussion
  - Overview of Task 12 effort
  - Review of Recommended FMEs
  - Discussion of potential recommendation of FMEs for further study
  - Vote on FMEs to Perform

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September 9th Draft Plan Public Comment Meeting

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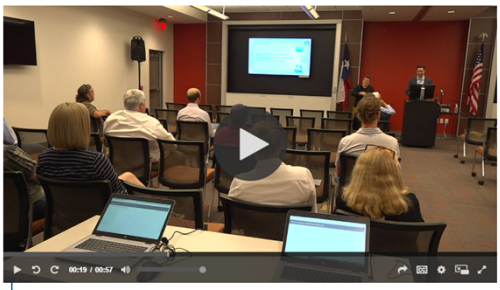
- 28 attendants for 2:00 PM presentation, additional 4 for 3:00 PM presentation
  - 6 RFPG members present
- 4 comments received from meeting
  - Entities represented include Big Thicket National Preserve, NPCA, and Lamar University

Neches Regional Flood Planning Group meets to discuss flooding in Southeast Texas



The goal is to study flooding in each river basin in the state. Study findings will be used when applying for government grants to improve resiliency.

Author: 12newsnow.com
Published: 7:06 PM CDT September 9, 2022
Updated: 7:06 PM CDT September 9, 2022

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Overview of Public Comments

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- 5 comments total received as of 9/16/2022
  - Nature-based solutions
  - Stricter Floodplain Management/Flood Protection Goals
  - Flood response and flood warning activities for disabled community
  - Comments from USACE

NEWS

Neches Flood Planning Group to hold public meeting, commenters welcome

Courtney Pedersen, Staff writer
Sep. 6, 2022 | Updated: Sep. 6, 2022 7:16 p.m.

The Neches Regional Flood Planning Group will be giving the public an opportunity to provide comment on the Draft Neches Regional Flood Plan at 2 p.m. Thursday at the Lamar University CICE Building, Room 113, 5091 Rolfe Christopher Dr. in Beaumont.
Neches Regional Flood Planning Group Website

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Perform FMEs Objective

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- To perform, within the RFPG's resources and the time available, a portion of currently recommended FMEs to identify additional FMPs for inclusion in the amended regional flood plan due July 14, 2023. Implementing these select FMEs includes the following:
  - Evaluate flood risks in areas with currently limited flood risk data
  - Evaluate flood risk reduction solutions, including feasibility studies
  - Preliminary engineering needed to identify, evaluate, and recommend additional potentially feasible FMPs
- The primary function of each recommended FMP must be flood risk reduction to life and property, and they must include quantifiable flood risk reduction benefits.
- Budget allocated - **$385,860**

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Perform FMEs Requirements

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- RFPGs Must
  - Vote to approve the list of FMEs to be performed using Task 12 funds
  - Evaluate and vote to recommend additional FMPs in the amended regional flood plan
  - Adhere to Task 4B and 5 requirements, as well as applicable requirements in the TWDB Flood Planning guidance documents
  - Revise and re-submit all data deliverables
    - GIS files, maps, project details worksheet, etc.
    - Update Regional Flood Plan chapters to reflect additional work performed
- The RFPG ultimately directs the work conducted under Task 12
  - The Technical Consultant team can help craft criteria to balance the desired outcomes of Task 12

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Review of FMEs

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FME Type	Description	Count	Cost
Flood Mapping Updates	Updates to floodplain mapping to include new hydrologic and hydraulic modeling for defining flood hazard areas.	22	$57,760,000
Master Drainage Plan	An assessment of a watershed or community to estimate flood risk and recommend flood management and flood mitigation projects.	37	$35,680,000
Project Planning	Evaluate identified potential flood mitigation projects to define costs, quantify flood reduction benefits, demonstrate no adverse impacts, and evaluate design alternatives. Evaluation may require the creation or updating of hydrologic and hydraulic models.	90	$24,632,500
Feasibility	Develop flood mitigation project alternatives for a discrete high flood risk area, estimate construction costs for alternatives, and determine flood reduction benefit for alternatives. Evaluation may require creation of H&H modeling.	7	$1,130,000
	TOTAL	**156**	**$119,202,500**

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FME and Needs Analysis Intersection

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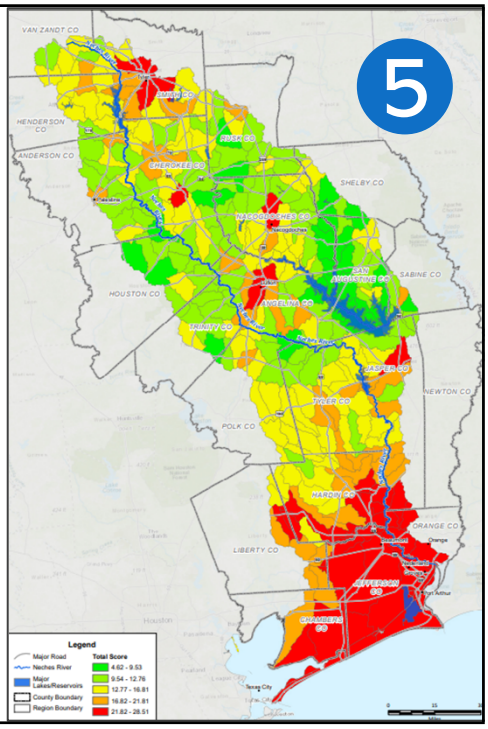
- Utilize Task 4A Needs Assessment as initial ranking
  - FMEs that intersect areas of high flood mitigation need
- Intersected 156 recommended FMEs with results of the Needs Analysis
- 50 FMEs identified within areas of high need
  - 10 City Master Drainage Plans
  - 38 Project Planning
  - 2 Feasibility



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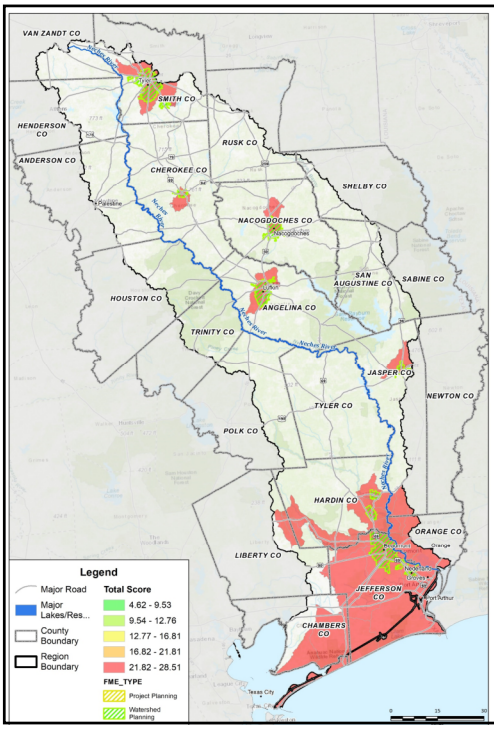

FME and Needs Analysis Intersection

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Watershed Planning

1. City of Nacogdoches Update Flood Control Study	$1,080,000
2. City of Tyler Master Drainage Plan	$2,200,000
3. City of Rusk Master Drainage Plan	$280,000
4. City of Whitehouse Master Drainage Plan	$150,000
5. City of Nederland Master Drainage Plan	$240,000
6. City of Jasper Master Drainage Plan	$440,000
7. City of Silsbee Master Drainage Plan	$320,000
8. City of Lumberton Master Drainage Plan	$380,000
9. City of Lufkin Master Drainage Plan	$1,000,000
10. City of Beaumont Master Drainage Plan	$600,000
11. Liberty County Culvert Replacement Project	$500,000

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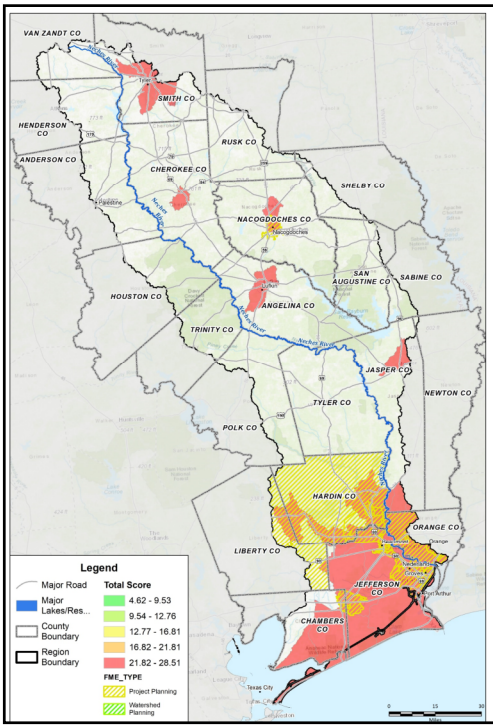

FME and Needs Analysis Intersection

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Project Planning

12. Feasibility Assessment for Increase in Size of Culverts and Railroad Trestles on Major Drainage Structures Throughout Orange County	$150,000
13. Feasibility Assessment of the Capacity of Drainage Ditches and Channels that Convey Stormwater from Neighborhoods Located Within Orange County	$100,000
14. City of Daisetta Drainage Projects	$150,000
15. Liberty County Recanalization Feasibility Study	$130,000
16. Orange County DD Harvey Repairs	$130,000
17. Orange County DD SW Detention/Retention Facilities	$130,000
18. JCDD7 Hurricane Flood Protection Levee Study	$777,000
19. Hardin County Municipal Storm Drain Project	$2,000,000
20. Houston Upgrade Pumping Equipment	$250,000
21. Upper Johns Gulley Upgrade Drainage Channel	$100,000
22. Main A Channel Improvements	$100,000
23. Rodair Lateral 5 Detention Pond Excavation	$100,000
24. Tevis Diversion	$100,000
25. Crane Bayou Channel Improvements	$100,000
26. South Park Diversion	$100,000
27. Blanchette Diversion	$100,000
28. Central - Upgrade Pumping Equipment and Structure	$100,000

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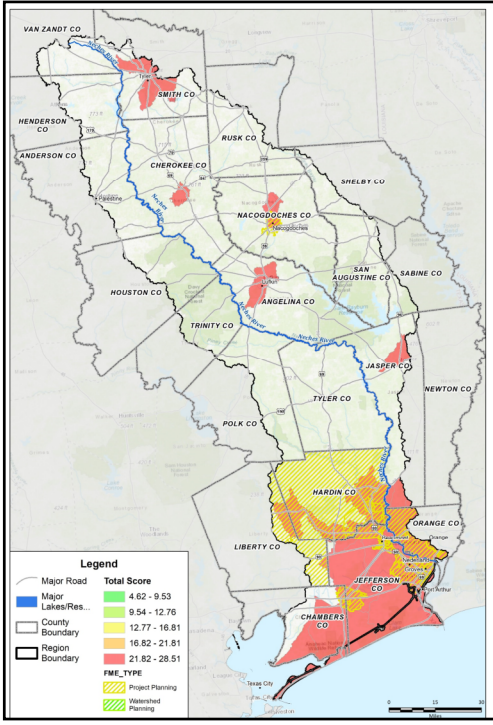

FME and Needs Analysis Intersection

Project Planning

29. Crane Bayou Additional Pumping	$100,000
30. Lakeview Additional Pumping	$100,000
31. Stadium Upgrade Pumping Equipment	$100,000
32. Delmar Upgrade Pumping Equipment	$100,000
33. DeQueen Additional Pumping Equipment	$100,000
34. Shreveport Additional Pumping Equipment	$100,000
35. Mayhaw Lateral Improvements	$2,200,000
36. Delaware Diversion	$500,000
37. City of Lumberton Adler Ditch Drainage Improvements	$100,000
38. City of Lumberton East Village Creek Parkway Drainage Improvements	$125,000
39. City of Lumberton Drainage Chance Cut Off Concrete Lining	$50,000
40. City of Lumberton Greens Branch Ditch Western Extension	$100,000
41. City of Nacogdoches Flood Mitigation Project	$100,000
42. City of Vidor Schoolhouse Ditch Alternative B	$100,000
43. Hardin County South Area Drainage System	$1,000,000
44. Hardin County SE Area Drainage System	$1,250,000
45. City of Vidor Schoolhouse Ditch Alternative C	$100,000
46. Hardin County Cooks Lake Road Bridge Elevation	$20,000
47. Hardin County Coon Marsh Gully Drainage Improvements	$300,000
48. Bridge City Drainage Outfall Improvement Project	$200,000
49. Star Lake Upgrade Pumping Equipment	$100,000
50. Beauxart Gardens Central Ditch Improvements	$50,000

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Factors to consider for FME Prioritization

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- Considerations for FME Selection Criteria
  - Level-of-effort (cost) to perform FME relative to available budget
  - Maximize flood risk reduction (Task 2)
    - Structures and population at risk
    - Critical facilities at risk
  - Focus on FMEs most likely to generate FMPs
  - Highest development potential
  - Leverage ongoing/previous studies expected to elevate FMEs and generate FMPs
  - Regional benefit (multiple sponsors)
  - Sponsor involvement
  - Regional goals

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RFPG FME Weighting Factors

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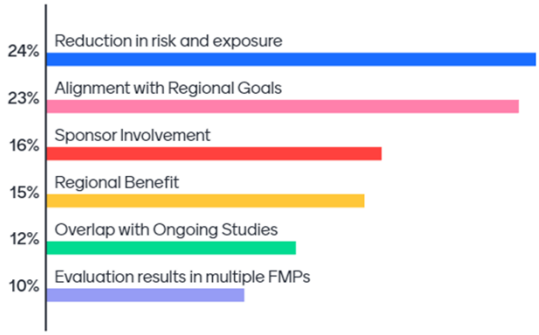
Which Factors are Most Important When Selecting an FME to perform?

Mentimeter



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Scoring Breakdown

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- Reduction in Risk and Exposure
  - Benefits to critical facilities and low water crossings
    - Critical facilities includes schools, shelters, medical facilities, emergency service facilitates, etc.
  - RFPG Goals
    - Reduce the number of critical facilities in the 100-year flood risk inundation extents by 15% (25%)
    - Give notice to 100% of affected units of local government and solicit funding applications for improvement or removal of 25% (80%) of Low Water Crossings identified in the latest Regional Flood Plan.

Is a Critical Facility Benefited?	Score		Weight
	Yes	No	
Points	10	0	12%

Is a LWC Benefited?	Score		Weight
	Yes	No	
Points	10	0	12%

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Scoring Breakdown

5

- Sponsor Involvement
  - Measure of how engaged a potential project sponsor has been in the Regional Flood Planning process
  - How likely is the sponsor to implement FMPs that are identified as part of the evaluated FMEs

Has sponsor been engaged in the RFP process?	Score		Weight
	Yes	No	16%
Points	10	0	

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Scoring Breakdown

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- Regional Benefit
  - Projects that consist of a large service area
    - Significant reduction in existing flood exposure
  - Projects that benefit multiple entities
  - Larger the benefit area, the large the impact the project may have on a community
    - Smaller projects with lower Level of Service do not score as high

What is the benefit area of the FME (sq. mi)?	Score				Weight
	Significant	Large	Moderate	Low	15%
Points	10	8	5	2	

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Scoring Breakdown

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- Overlap with Ongoing Studies
  - Measure of parallel similar work going on within the region by government entities
  - May indicate the potential for additional FMEs to be studied or FMPs to be incorporated
  - Can be leveraged to reduce cost of recommended FMEs

Does the FME area overlap with an ongoing GLO or FIF Study?	Score		Weight
	Yes	No	
Points	10	0	12%

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Scoring Breakdown

5

- Results in multiple FMPs
  - Measure of if a single FME can create multiple distinct FMPs to be executed
  - Mostly involve H&H studies that identify alternatives to addressing flood risk in a specific location

Can the FME result in multiple construction projects (FMPs)?	Score		Weight
	Yes	No	
Points	10	0	10%

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Scoring Breakdown

5

- Flood Mitigation Needs Score
  - Based off results from Task 4A
  - All selected FMEs spatially intersect areas of high flood mitigation need
    - Task 4A scores of selected FMEs compared with one another for scoring
  - Heavy concentration of high flood mitigation need areas near coast with other areas around urban centers
    - Ex: Lufkin, Tyler, Nacogdoches

Is the FME in an area of High Need according to the Task 4A analysis? (Percentile)	Score					Weight
	80th	60th	40th	20th	0-20th	10%
Points	10	7	5	3	0	

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Scoring Breakdown

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- Level of Effort/Cost to Complete Study
  - Cost to complete FME compared to overall Task 12 budget
  - FMEs with high cost are likely not feasible to complete with available funding or would use up majority of allocated budget

Level of effort to complete FME	Score			Weight
	Low	Medium	None/ Unknown	13%
Points	10	5	0	

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Prioritization of Results

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- Scoring methodology was implemented to rank FMEs within Neches FPR
- FMEs separated into three categories
  - Primary FMEs
    - Will be prioritized to be performed first with available Task 12 funding
  - Secondary FMEs
    - Lower ranked FMEs, but may be performed if budget and schedule allows after primary FMEs are performed
  - Non feasible FMEs
    - FME too large (cost/schedule) to completed with available Task 12 budget
    - Overlapping study that is likely to evaluate and determine FMP for inclusion in current RFP cycle
    - Unknown ability to implement project

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Primary FMEs

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Rank	Score	FME Name	Description	Sponsor	Cost
2	8.70	Hardin County SE Area Drainage System	H&H study to identify alternatives for developing a large drainage system to drain Lumberton directly into the Neches River, instead of Pine Island Bayou.	Hardin County	$1,250,000
4	8.35	City of Tyler Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Tyler	$2,200,000
6	7.85	Bridge City Drainage Outfall Improvement Project	Improve and extend three major drainage ditches and extend a neighborhood outfall to reduce structural flooding in residences within the area.	City of Bridge City	$200,000
8	7.55	Crane Bayou Channel Improvements	H&H study to identify alternatives for Crane Bayou Channel	Jefferson County Drainage District 7	$100,000
9	7.55	Main A Channel Improvements	H&H study to identify alternatives for Main A Channel	Jefferson County Drainage District 7	$100,000
17	7.15	City of Jasper Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Jasper	$440,000
24	6.35	Upper Johns Gulley Upgrade Drainage Channel	H&H study to identify alternatives for Upper Johns Gulley drainage improvements	Jefferson County Drainage District 7	$100,000

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Primary FMEs

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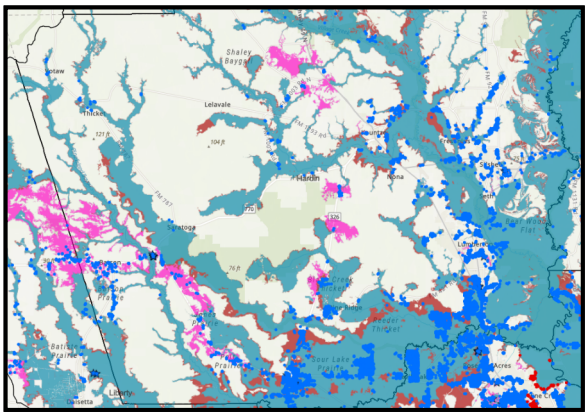
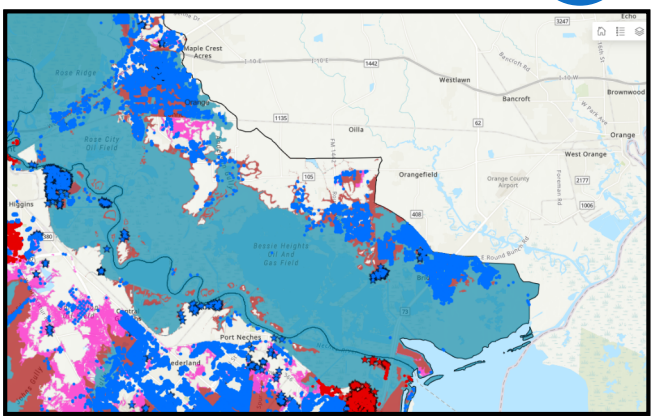


Hardin County SE Area Drainage System



Bridge City Drainage Outfall Improvement Project

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Secondary FMEs

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Rank	Score	FME Name	Description	Sponsor	Cost
32	5.60	Beauxart Gardens Central Ditch Improvements	Evaluate project to quantify benefits, evaluate impacts, and begin design. Project consists of widening those channels to increase the runoff capacity – upgrading/enlarging road crossings to reduce out of bank flooding.	Jefferson County Drainage District 7	$50,000
40	4.80	City of Vidor Schoolhouse Ditch Alternative B	H&H study to identify alternatives for Schoolhouse Ditch	City of Vidor	$100,000
41	3.65	City of Vidor Schoolhouse Ditch Alternative C	H&H study to identify alternatives for Schoolhouse Ditch	City of Vidor	$100,000
42	4.55	City of Nacogdoches Flood Mitigation Project	H&H study to mitigate the wide-spread flooding that occurs along LaNana and Banita Creeks in the City of Nacogdoches	City of Nacogdoches	$100,000
44	4.00	Liberty County Recanalization Feasibility Study	Evaluate project to quantify benefits, evaluate impacts, and begin design. Project consists of dechannelizing existing feeder creeks that flow from north to south and improve drainage for storm water runoff.	Liberty County	$130,000

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Secondary FMEs

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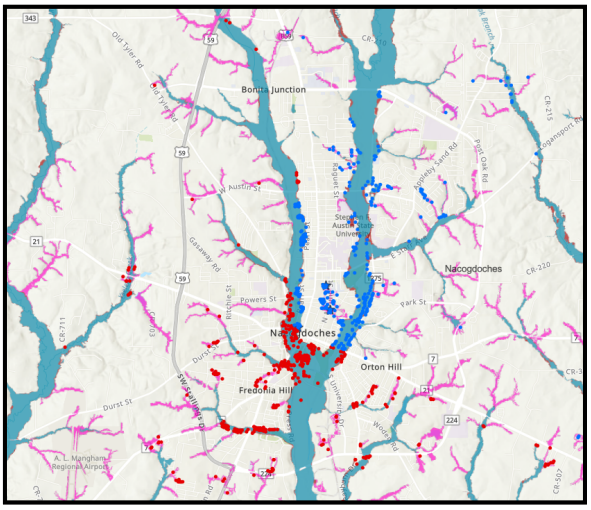
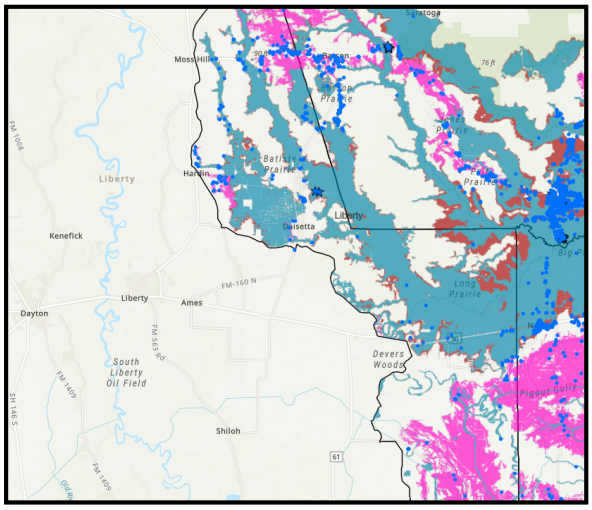


City of Nacogdoches Flood Mitigation Project



Liberty County Recanalization Feasibility Study

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FMEs Not Recommended

Rank	Score	FME Name	Description	Sponsor	Cost
1	8.70	Hardin County Municipal Storm Drain Project	Evaluate project to quantify benefits, evaluate impacts, and begin design.	Hardin County	$2,000,000
3	8.70	Hardin County South Area Drainage System	H&H study to identify alternatives for developing a drainage system to drain / retain flood waters around the communities of Pinewood, Countrywood, Bevil Oaks, and Rose Hill	Hardin County	$1,000,000
5	8.00	City of Lumberton Greens Branch Ditch Western Extension	H&H Study to identify alternatives for improving existing drainage of Greens Branch Ditch	City of Lumberton	$100,000
7	7.55	Crane Bayou Additional Pumping	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000
10	7.50	Orange County DD Harvey Repairs	Evaluate project to quantify benefits, evaluate impacts, and begin design. Project consists of repairing damage to drainage ditches, crossings, culverts, levees, and right-of-ways caused by Hurricane Harvey to restore pre-flood capacity.	Orange County Drainage District	$130,000
11	7.50	Orange County DD SW Detention/Retention Facilities	Evaluate project to quantify benefits, evaluate impacts, and begin design. Project consists of stormwater detention/retention facilities throughout OCDD.	Orange County Drainage District	$130,000
12	7.40	City of Beaumont Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Beaumont	$600,000
13	7.40	JCDD7 Hurricane Flood Protection Levee Study	Study to identify possible upgrades to levees to help reduce the risk of flooding and to help the District review and update levees in jurisdictional area.	Jefferson County Drainage District 7	$777,000
14	7.30	Tevis Diversion	H&H study to identify alternatives for a diversion to the Neches River.	Jefferson County Drainage District 6	$100,000
15	7.20	Hardin County Coon Marsh Gully Drainage Improvements	H&H Study to identify alternatives for improving existing drainage within Marsh Gully	Hardin County	$300,000
16	7.20	Feasibility Assessment of the Capacity of Drainage Ditches and Channels that Convey Stormwater from Neighborhoods Located Within Orange County	H&H Study to analyze most efficient alternatives for improving existing drainage ditches and channels linked to neighborhoods within Orange County.	Orange County Drainage District	$100,000
18	7.15	Feasibility Assessment for Increase in Size of Culverts and Railroad Trestles on Major Drainage Structures Throughout Orange County	H&H Study to analyze most efficient alternatives for dredging, widening, or otherwise improving culverts and railroad trestles within Orange County.	Orange County Drainage District	$150,000
19	6.85	South Park Diversion	H&H study to identify alternatives for a diversion to the Neches River.	Jefferson County Drainage District 6	$100,000

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FMEs Not Recommended

Rank	Score	FME Name	Description	Sponsor	Cost
20	6.80	Hardin County Cooks Lake Road Bridge Elevation	H&H study to improve drainage along Cooks Lake Bridge.	Hardin County	$20,000
21	6.75	Delaware Diversion	Divert storm runoff out of Beaumont from the Hillebrandt watershed to the Neches River.	Jefferson County Drainage District 6	$500,000
22	6.55	Blanchette Diversion	H&H study to identify alternatives for a diversion to the Neches River.	Jefferson County Drainage District 6	$100,000
23	6.50	Mayhaw Lateral Improvements	Rectify negative impacts to properties downstream of IH-10 caused by additional drainage crossings	Jefferson County Drainage District 6	$2,200,000
25	6.10	City of Lumberton East Village Creek Parkway Drainage Improvements	H&H Study to identify alternatives for improving existing drainage of East Village Creek Parkway	City of Lumberton	$125,000
26	6.10	Houston Upgrade Pumping Equipment	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$250,000
27	5.90	City of Lumberton Adler Ditch Drainage Improvements	H&H Study to identify alternatives for improving existing drainage of Adler Ditch	City of Lumberton	$100,000
28	5.90	Central - Upgrade Pumping Equipment and Structure	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000
29	5.90	Rodair Lateral 5 Detention Pond Excavation	H&H study to identify additional detention required to expand existing level of service	Jefferson County Drainage District 7	$100,000
30	5.70	City of Lumberton Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Lumberton	$380,000
31	5.60	City of Lumberton Drainage Chance Cut Off Concrete Lining	H&H Study to identify alternatives for improving existing drainage of Chance Cut Off	City of Lumberton	$50,000
33	5.60	Delmar Upgrade Pumping Equipment	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000
34	5.60	DeQueen Additional Pumping Equipment	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000

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FMEs Not Recommended

Rank	Score	FME Name	Description	Sponsor	Cost
35	5.60	Lakeview Additional Pumping	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000
36	5.60	Shreveport Additional Pumping Equipment	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000
37	5.60	Stadium Upgrade Pumping Equipment	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000
38	5.60	Star Lake Upgrade Pumping Equipment	H&H study to size pump upgrades and improve existing level of service.	Jefferson County Drainage District 7	$100,000
39	5.45	City of Silsbee Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Silsbee	$320,000
43	4.20	Liberty County Culvert Replacement Project	Evaluate project to quantify benefits, evaluate impacts, and begin design. Project consists of increasing culvert size in identified flood hazard problem areas within Liberty County.	Liberty County	$500,000
45	3.90	City of Lufkin Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Lufkin	$1,000,000
46	3.70	City of Nacogdoches Update Flood Control Study	Conduct Flood Control Study and implement actions such as channelization, detention, retention, etc to stop repetitive flood losses.	City of Nacogdoches	$1,080,000
47	3.65	City of Nederland Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Nederland	$240,000
48	3.35	City of Daisetta Drainage Projects	Evaluate project to quantify benefits, evaluate impacts, and begin design. Project consists of drainage improvements throughout the city to include widening culverts and ditches.	City of Daisetta	$150,000
49	2.45	City of Whitehouse Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Whitehouse	$150,000
50	1.05	City of Rusk Master Drainage Plan	Perform H&H modeling to identify and define flood risk, develop conceptual alternatives to reduce flood risk, develop OPCC for conceptual alternatives, and rank projects. Conceptual alternatives should evaluate feasibility of nature based solutions.	City of Rusk	$280,000

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Planning Schedule

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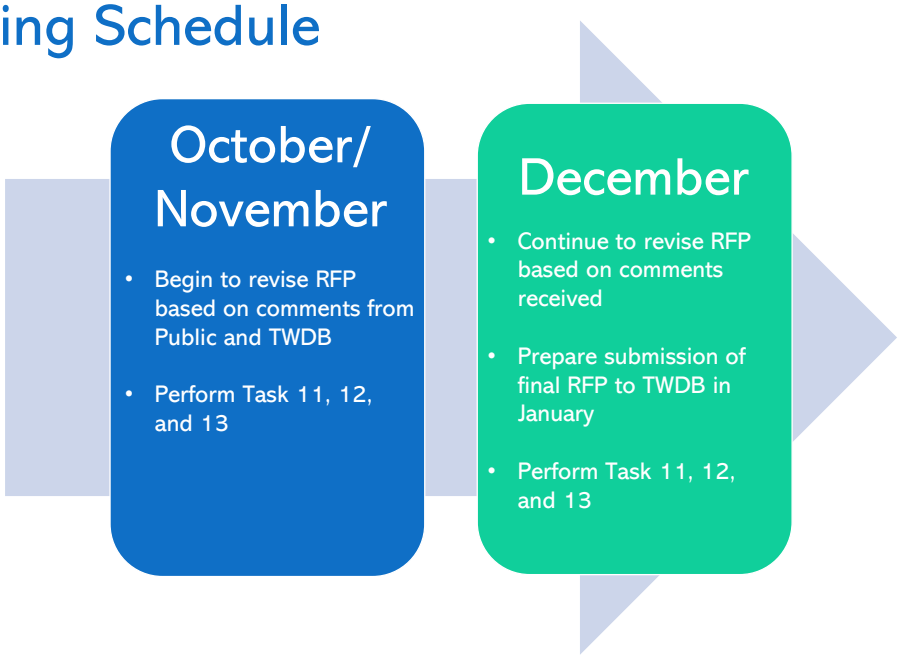

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