

Update from Consultant Team

Neches Regional Flood Planning Group

November 19, 2026

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Agenda

- Task 4C – Performance of FMEs
- Task 5A – Recommendation of FMEs, FMSs, and FMPs

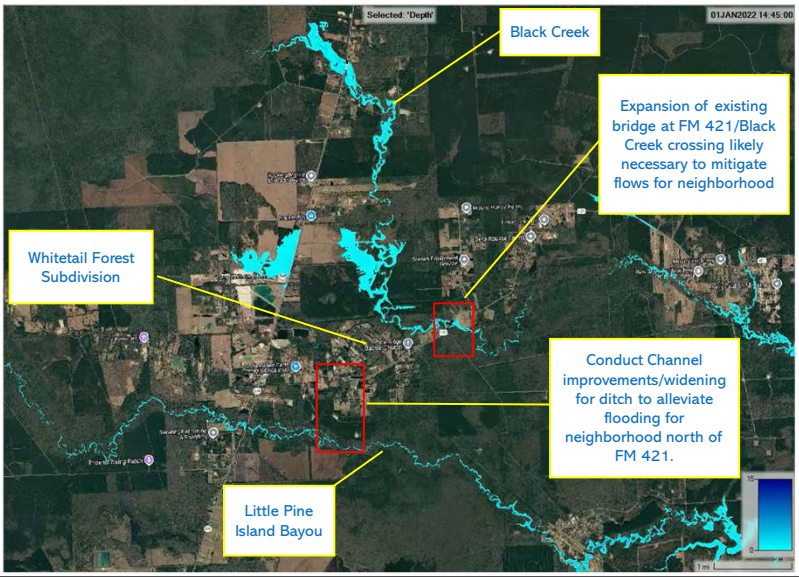


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Task 4C – Performance of Flood Management Evaluations

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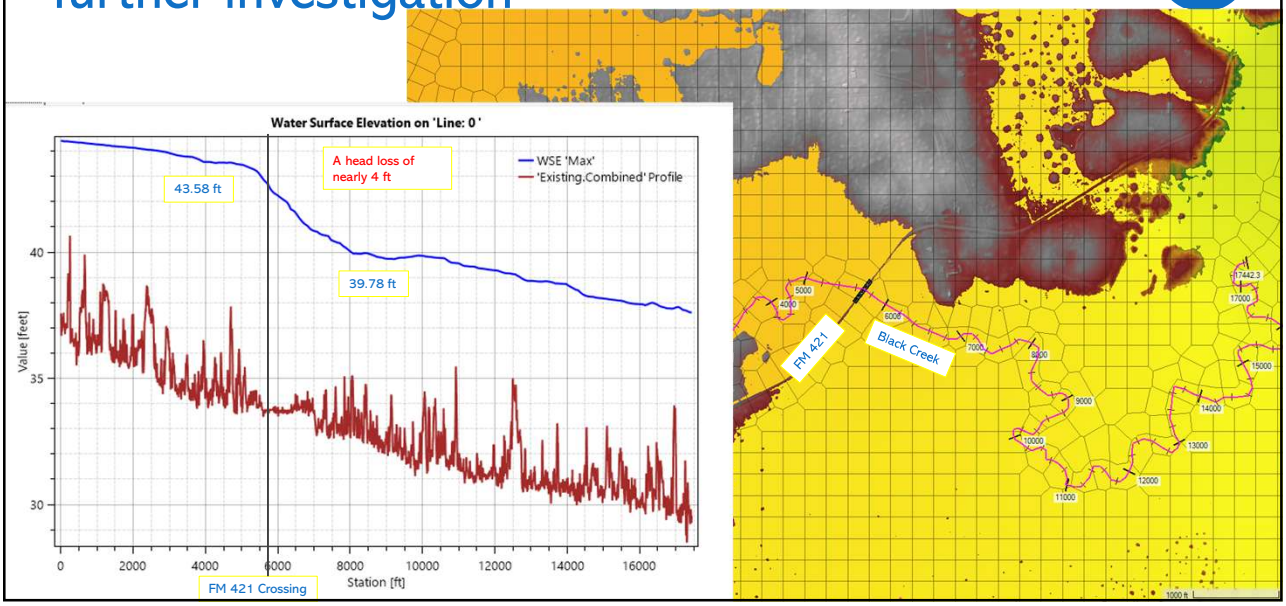
Black Creek Improvements for Pine Ridge



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Black Creek Improvements for Pine Ridge – further investigation

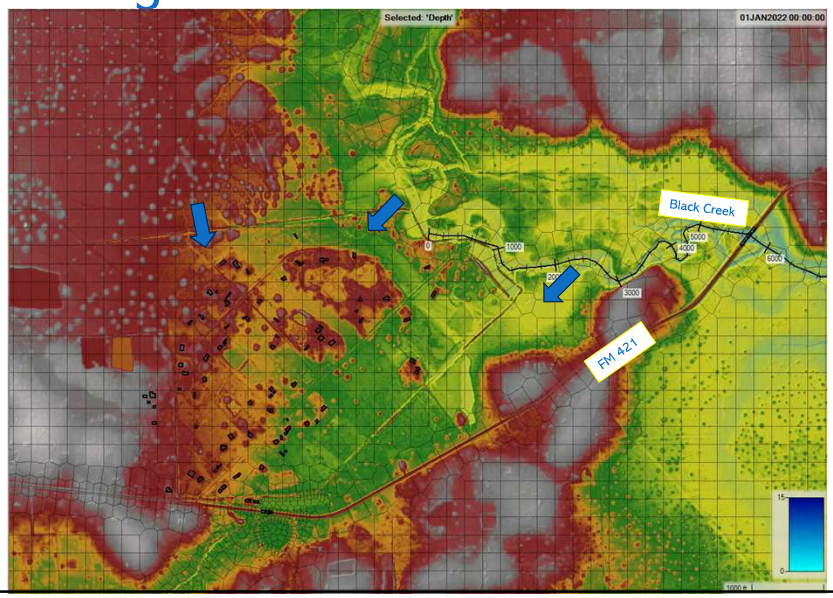
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Black Creek Improvements for Pine Ridge – further investigation

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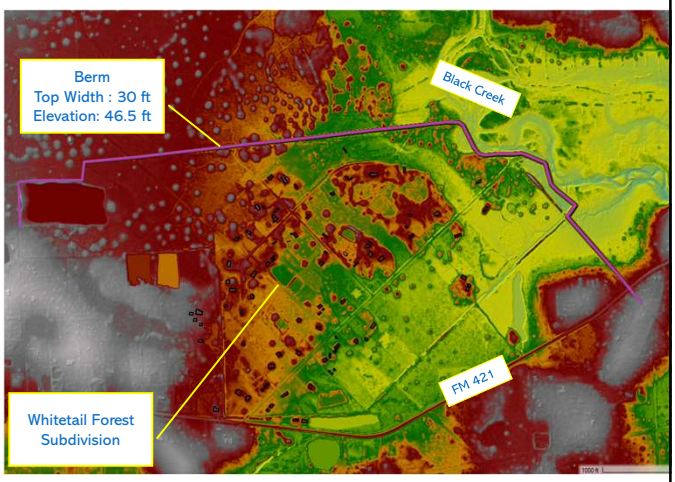


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Black Creek Improvements for Pine Ridge – further investigation

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- Overflow Counter: Placement of berm to restrict flow from entering Whitetail Forest neighborhood
  - Berm has 3:1 side slopes and an elevation of 46.5 ft to keep 100-YR flows from overtopping.

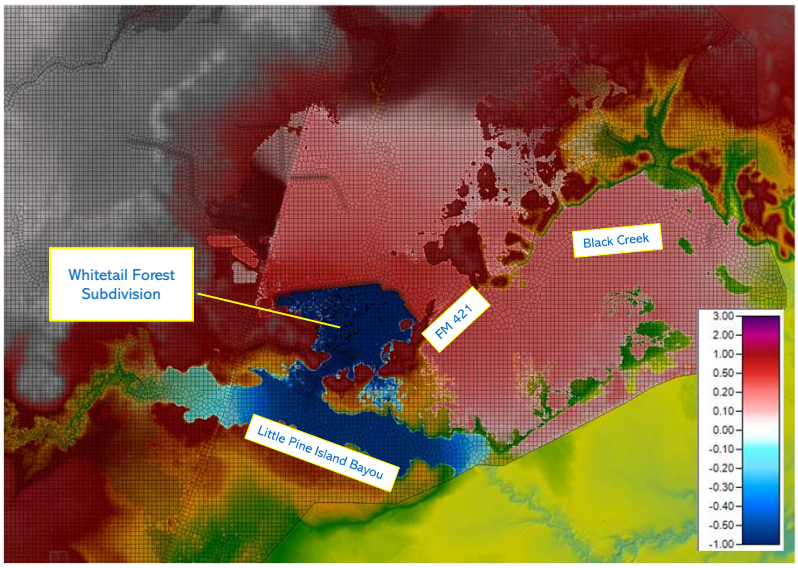


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Black Creek Improvements for Pine Ridge – further investigation

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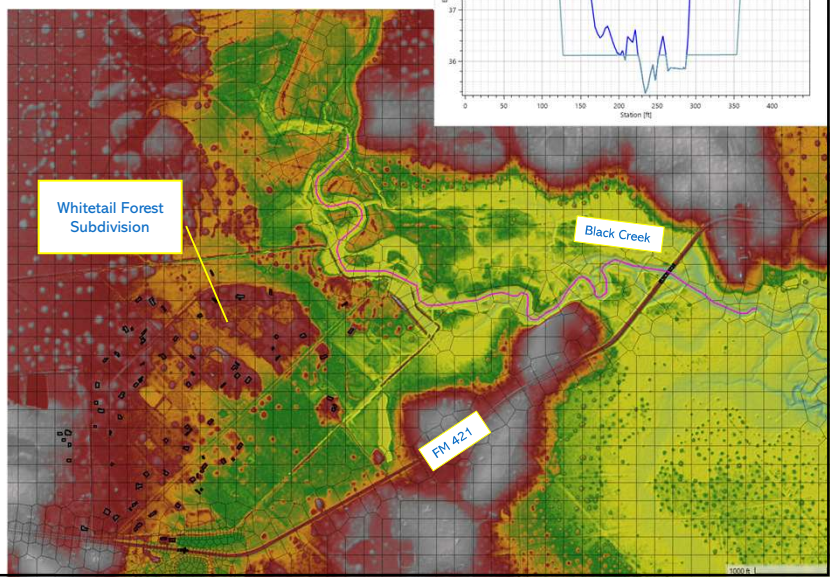
- Berm eliminates structural flooding in Whitetail Forest
  - Widespread adverse impact up to 0.5' in surrounding area
  - Pumps would be required – costly alternative



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Black Creek Improvements for Pine Ridge – further investigation

- Head Loss Counter: Channel widening along Black Creek
  - 225 ft Width
  - 4:1 Side Slopes
  - ~0.3 ft of benefit for Whitetail Forest properties in 100YR
- Project will need to account for impacts via placement of detention

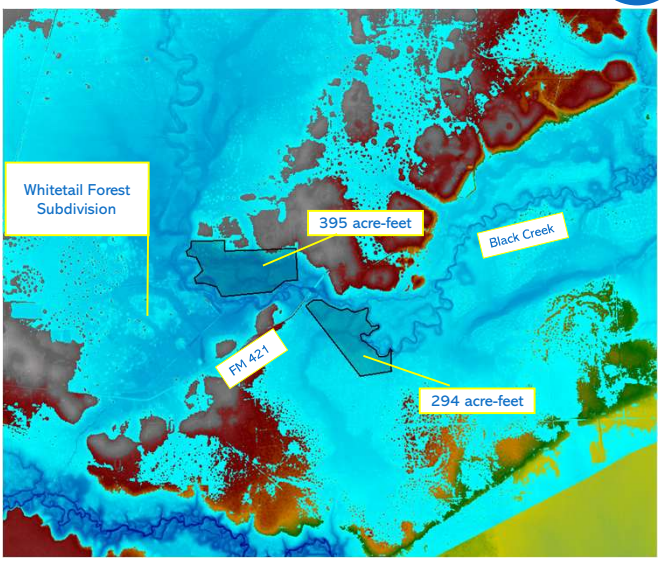


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Pine Ridge - Detention Ponds

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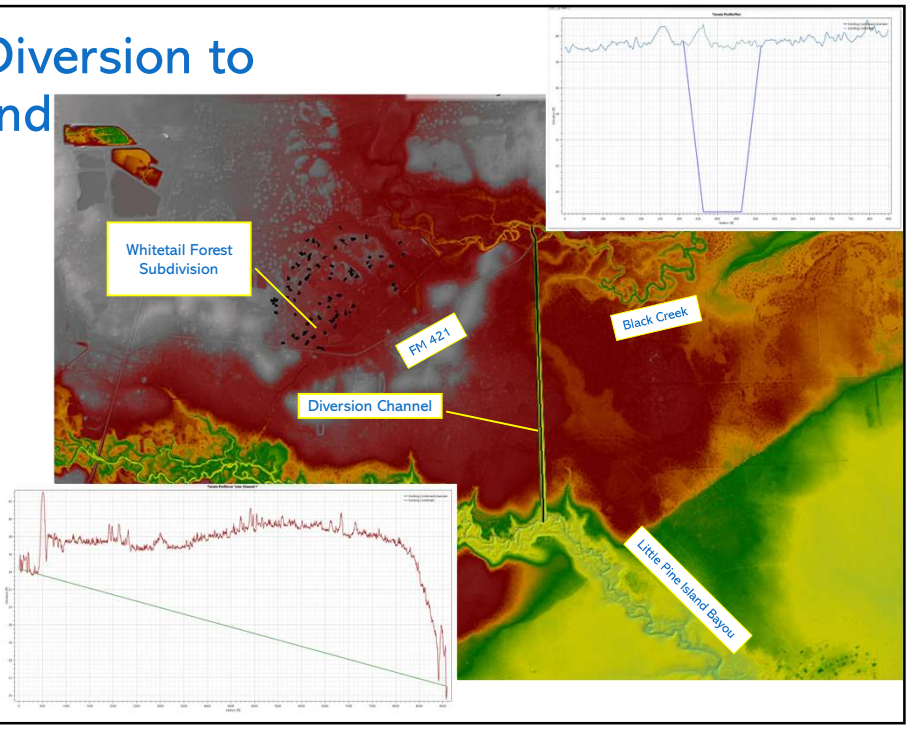
- Two detention ponds briefly evaluated
  - Mitigate increased flows from improvements to Black Creek
  - Provide additional benefit on their own
- Both ponds located in floodplain
  - Ponds overtop, found to be ineffective in mitigating impact or providing benefit



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Pine Ridge – Diversion to Little Pine Island

- Diversion from Black Creek to Little Pine Island Bayou downstream FM 421
  - 4'-15' depth
  - 132'-220' top width
  - 100' bottom width
  - 4:1 side slopes

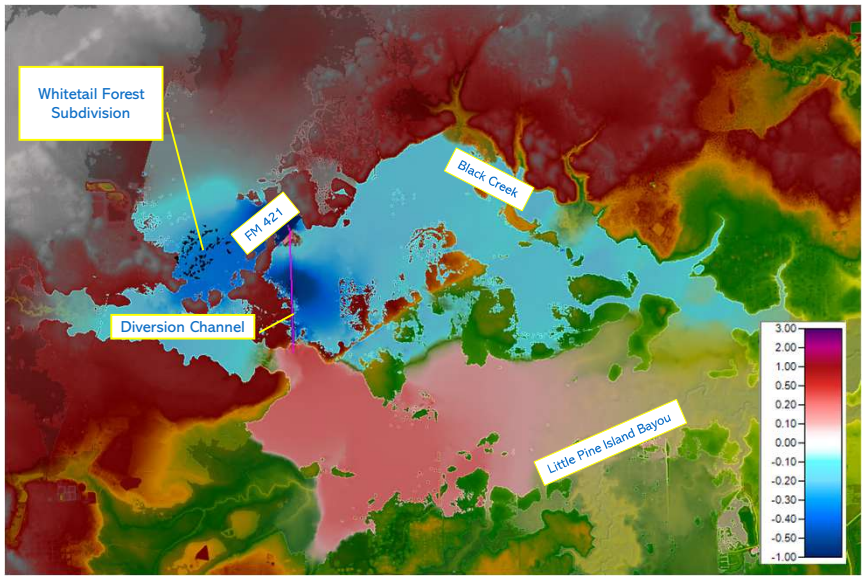


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Pine Ridge - Diversion to Little Pine Island

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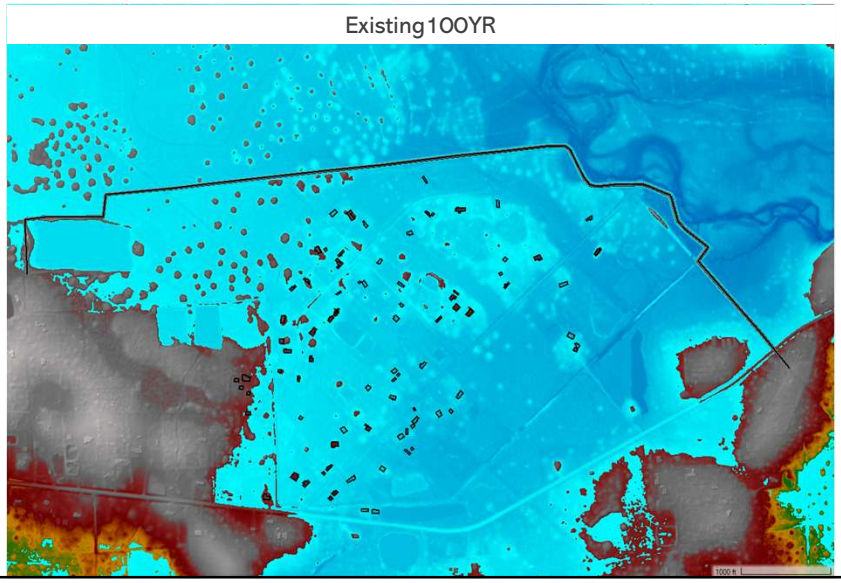
- 0.3' benefit in Whitetail Forest Subdivision (100-YR)
- 0.3' adverse impact to Little Pine Island Bayou (100-YR)
- Diversion channel crosses 5 pipeline corridors
  - Crossings would act as restrictors, reducing conveyance capacity
  - Siphons likely required



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Black Creek Improvements for Pine Ridge – further investigation

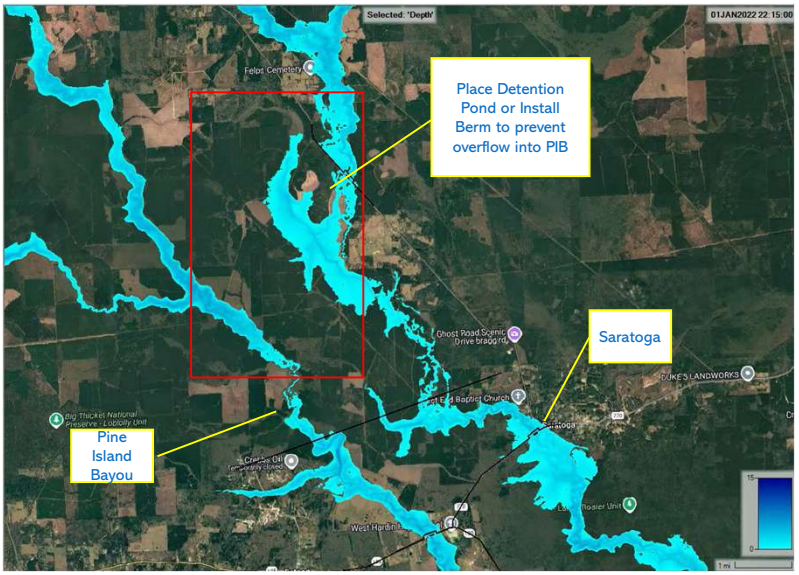
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Further Alternatives – Saratoga Detention/Berm

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Further Alternatives – Saratoga Detention/Berm

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- Previous analysis of Proposed Pond done in 2021
  - Preliminary Pond Design was estimated to be 774 ac-ft
    - 0.96 in benefit for Pinewood Estates residents
    - 0.48 in benefit for Saratoga residents
  - Pond projected to have to increase to capacity of 7,774 ac-ft to provide 1 ft benefit along stream

Table 3 – Alternative 1 (Proposed) Summary Results

Location	HEC-RAS Station	100-Year Peak Flows (cfs)			100-Year Water Surface Elevation (ft)		
		Existing	Alt. 1: Proposed	Delta	Existing	Alt. 1: Proposed	Delta
Proposed Pond	188644	11123	11090	-33	77.94	77.93	-0.01
Saratoga	166706	10927	10762	-165	69.94	69.9	-0.04
Pinewood Estates	28657	13986	13665	-321	25.89	25.8	-0.09

Table 4 – Alternative 2 (Hypothetical) Summary Results

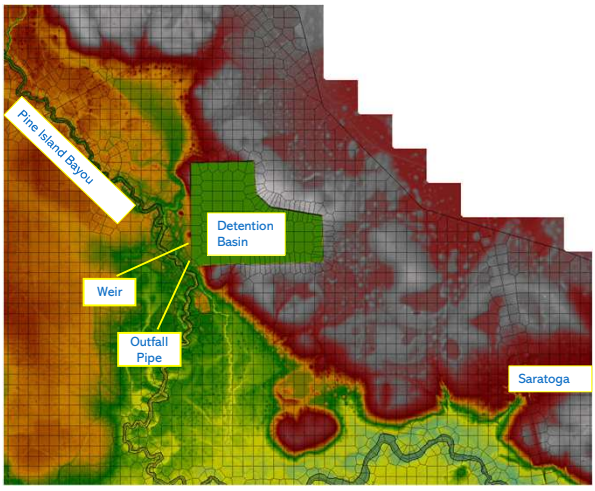
Location	HEC-RAS Station	100-Year Peak Flows (cfs)			100-Year Water Surface Elevation (ft)		
		Existing	Alt. 2: Hypothetical	Delta	Existing	Alt. 2: Hypothetical	Delta
Proposed Pond	188644	11123	8498	-2625	77.94	77.5	-0.44
Saratoga	166706	10927	8231	-2696	69.94	69.33	-0.61
Pinewood Estates	28657	13986	10307	-3679	25.89	24.75	-1.14

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Saratoga Detention

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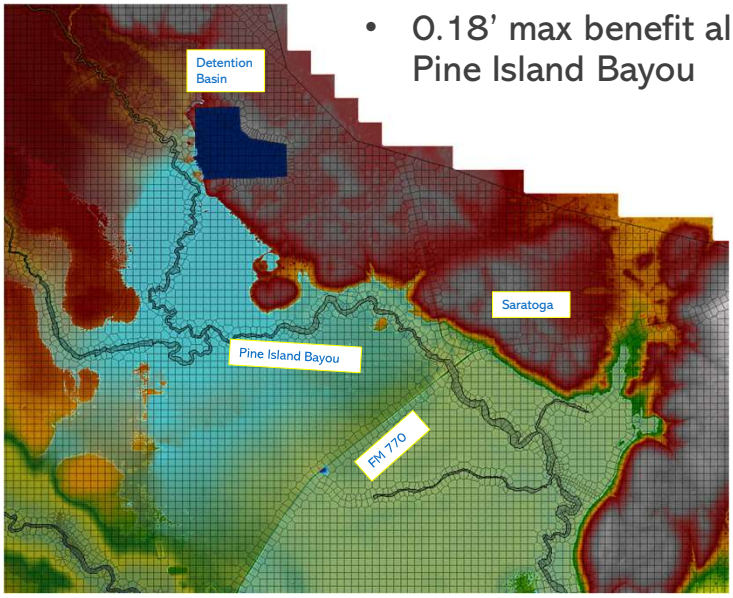
- 716 acre-feet storage volume
  - 576 acre-feet with 1' freeboard
- 40' maintenance berm, 3:1 side slopes, 5' depth
- Added control structure
  - Side weir – 2.5' deep, 100' wide
  - Outfall pipe – 60" RCP



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Saratoga Detention

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- 0.18' max benefit along Pine Island Bayou

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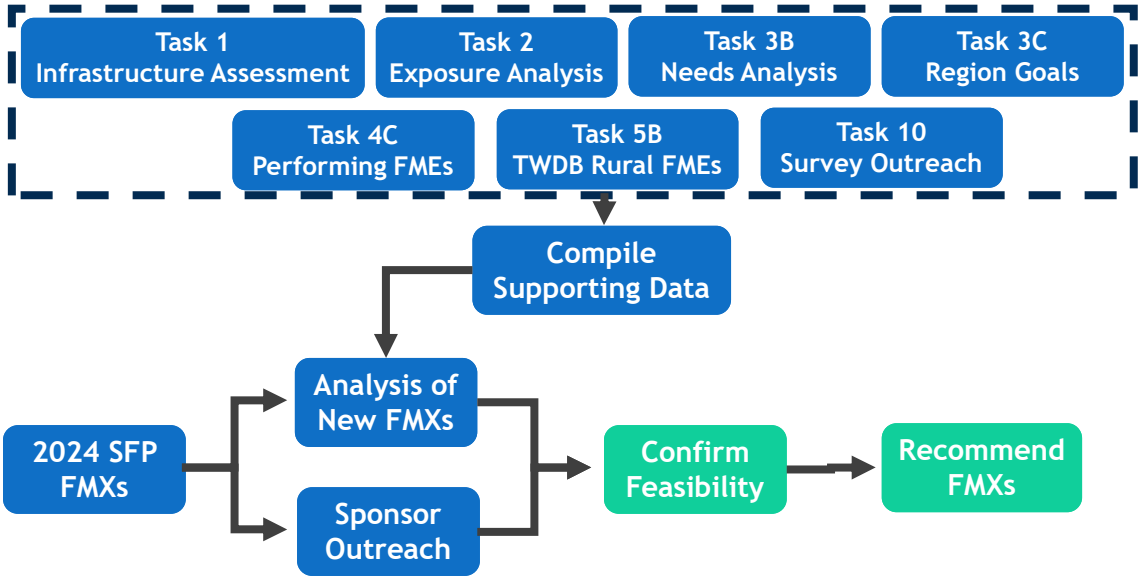
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Task 5A – Recommendation of FMEs, FMSs, and FMPs

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FMX Recommendation Process the 2028 RFP

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Task 5 - Recommendation of FMEs, FMSs, and FMPs (Cycle 1 Updates)

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*FME and FMS Costs updated to 2025 costs due to most being sourced from 2021/2022.

Flood Mitigation Action	Number of Cycle 1 Recommended Actions	Total Flood Mitigation Action Cost	Total Flood Mitigation Action Cost (Adjusted, Recommended + Non-Recommended)
FME	165	$94,263,824	$114,921,710*
FMS	157	$194,596,318	$231,354,028*
FMP	53	$6,631,098,681	$6,766,110,834

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Flood Management Evaluations

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- 300 FMEs identified
- Cost estimates range from $20,540 to $5,808,000
- Estimates developed based on past project scopes and fees, FEMA blue book unity prices, existing project estimates

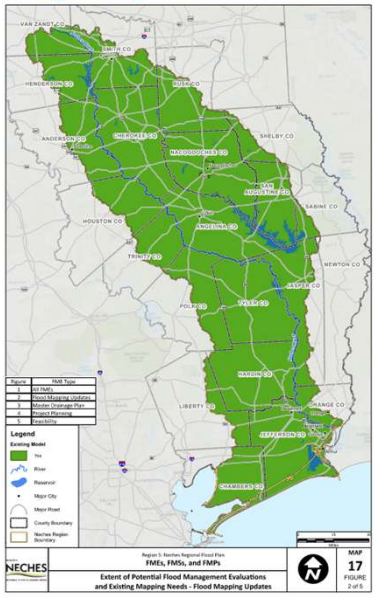
FME Type	FME Description	Number of Evaluations	Total Cost
Watershed Planning	Flood Mapping Updates	22	$41,961,650
	Master Drainage Plan	48	$38,850,300
Project Planning	Feasibility Assessments	8	$1,341,670
	Project Design Development	215	$72,700,090
Preparedness	Land Restoration and Infrastructure Elevation	2	$650,000
Other	GIS development, dam evaluations, data collection systems	5	$13,220,000
	Total	**300**	**$168,723,710**

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Task 4B FMEs – Flood Mapping Updates

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- 22 FMEs identified
- Cost estimates range from $83,000 to $5,800,000
  - Total Cost $41,961,650
- Supporting Materials Discussion

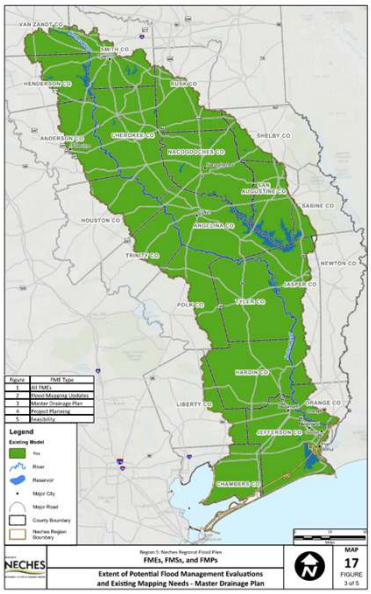


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Task 4B FMEs – County Master Drainage Plans

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- 21 FMEs identified
- Cost estimates range from $92,000 to $2,600,000
  - Total Cost $23,547,420
- Supporting Materials Discussion

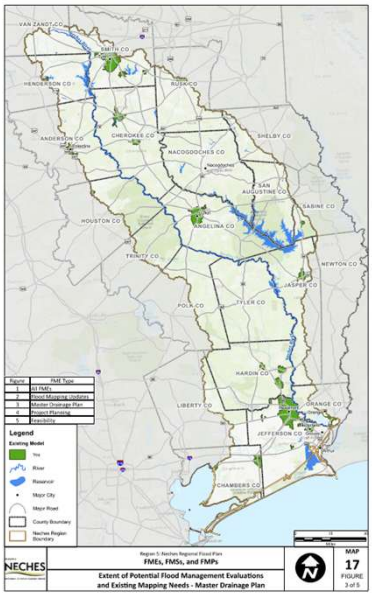


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Task 4B FMEs – City Master Drainage Plans

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- 25 FMEs identified
- Cost estimates range from $38,000 to $2,600,000
  - Total Cost $13,646,080
- Supporting Materials Discussion

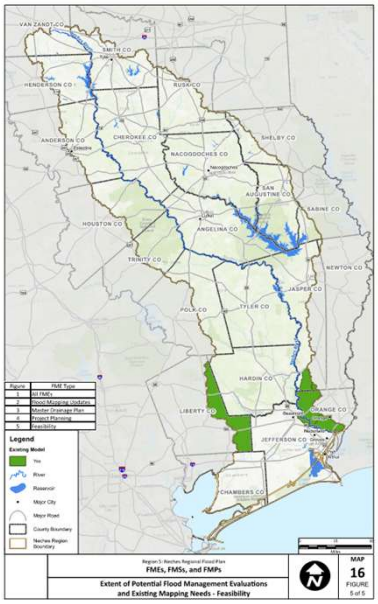


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Task 4B FMEs – Feasibility Assessments

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- 8 FMEs identified
- Cost estimates range from $32,000 to $400,000
  - Total Cost $1,341,670
- Supporting Materials Discussion

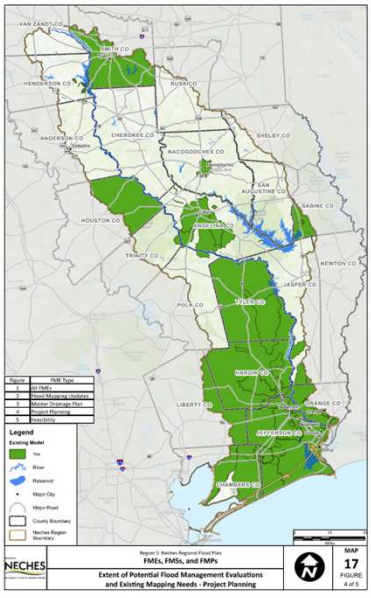


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Task 4B FMEs – Project Planning

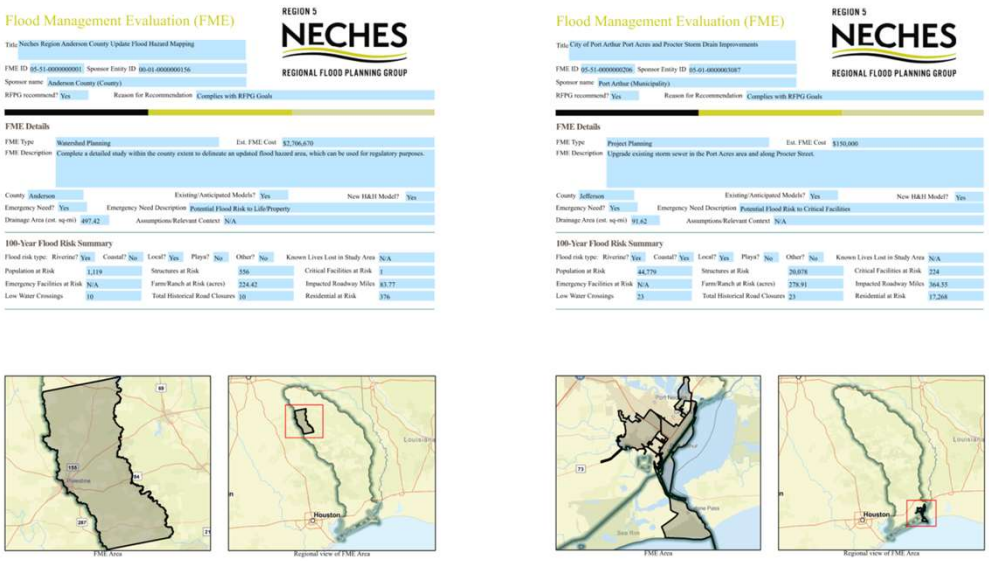
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- 215 FMEs identified
- Cost estimates range from $20,000 to $2,662,000
  - Total Cost $72,700,090
- Supporting Materials Discussion



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Review FME One Page Summaries



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Flood Management Strategies

- 202 FMSs identified
- Cost estimates range from $3,630 to $22,000,000
- Estimates developed based on past project scopes and fees and costs from HMAPs and other outreach

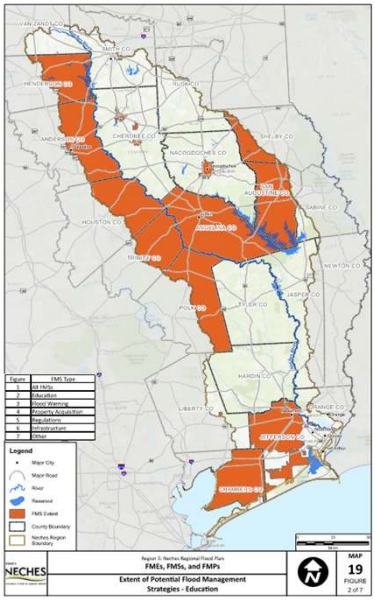
FMS Type	Description	Number of Strategies	Total Cost
Education and Outreach	Public education programs	27	$803,130
Flood Measurement and Warning	Warning systems and gages	29	$13,624,476
Property Acquisition and Structural Elevation	Acquiring properties and creating regulation to raise future structures	54	$233,516,660
Regulatory and Guidance	NFIP participation, CRS, stormwater utility fee development	34	$2,658,292
Infrastructure Projects	Gates at low water crossings, Amarillo capital improvements list	54	$132,676,500
Other	Maintenance	4	$489,970
	Total	**202**	**$383,769,028**

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Task 4B FMSs - Education

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- 27 FMSs identified
- Cost estimates range from $3,000 to $60,000
  - Total Cost $803,100
- Supporting Materials Discussion

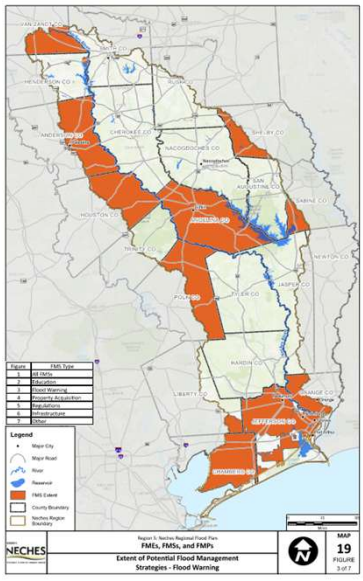


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Task 4B FMSs – Flood Warning

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- 29 FMSs identified
- Cost estimates range from $6,000 to $4,000,000
  - Total Cost $13,624,500
- Supporting Materials Discussion

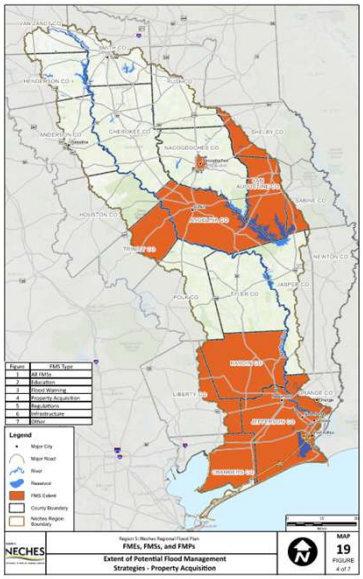


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Task 4B FMSs – Property Acquisition

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- 54 FMSs identified
- Cost estimates range from $100,000 to $22,000,000
  - Total Cost $233,517,000
- Supporting Materials Discussion

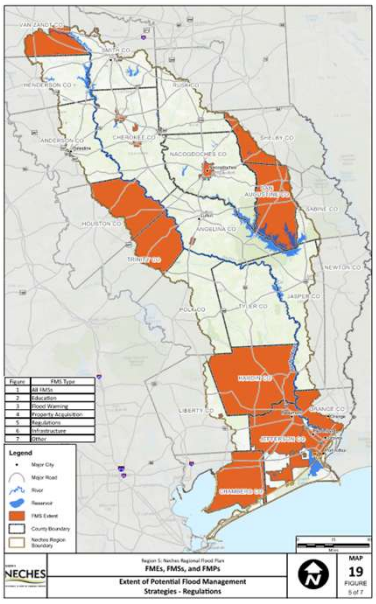


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Task 4B FMSs - Regulations

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- 34 FMSs identified
- Cost estimates range from $6,000 to $1,000,000
  - Total Cost: $2,658,000
- Supporting Materials Discussion

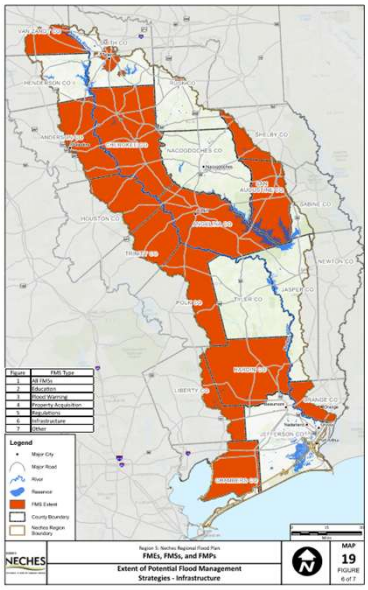


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Task 4B FMSs - Infrastructure

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- 54 FMSs identified
- Cost estimates range from $480,000 to $12,000,000
  - Total Cost: $132,676,500
- Supporting Materials Discussion

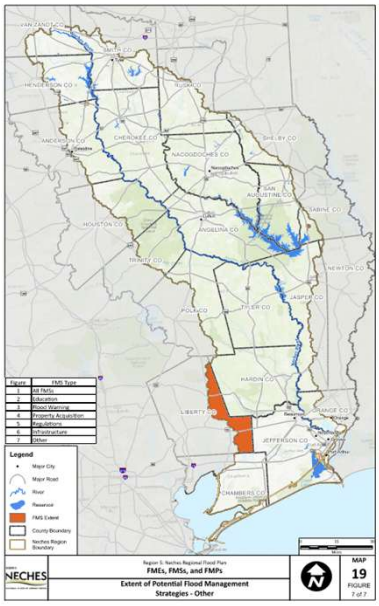


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Task 4B FMSs - Other

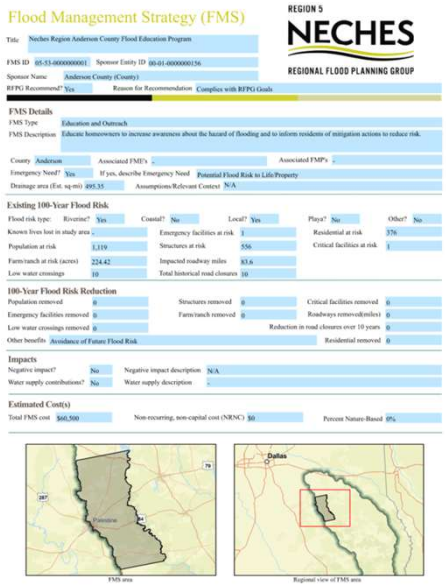
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- 4 FMSs identified
- Cost estimates range from $60,000 to $200,000
  - Total Cost: $490,000
- Supporting Materials Discussion



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Review FMS One Page Summaries


Flood Management Strategy (FMS)

REGION 5 NECHES REGIONAL FLOOD PLANNING GROUP

Title: Neches Region Anderson County Flood Education Program

FMS ID: 05-53-0000000001 Sponsor Entity ID: 00-01-0000000156

Sponsor Name: Anderson County (County)

RFPG Recommend? Yes Reason for Recommendation: Complies with RFPG Goals

FMS Details

FMS Type: Education and Outreach

FMS Description: Educate homeowners to increase awareness about the hazard of flooding and to inform residents of mitigation actions to reduce risk.

County: Anderson Associated FME's: - Associated FMP's: -

Emergency Need? Yes If yes, describe Emergency Need: Potential Flood Risk to Life/Property

Drainage area (Est. sq-mi): 895.35 Assumptions/Relevant Context: N/A

Existing 100-Year Flood Risk

Flood risk type: Riverine? Yes Coastal? No Local? Yes Playa? No Other? No

Known lives lost in study area: - Emergency facilities at risk: 1 Residential at risk: 376

Population at risk: 1,119 Structures at risk: 556 Critical facilities at risk: 1

Farm/ranch at risk (acres): 224.42 Impacted roadway miles: 83.6

Low water crossings: 10 Total historical road closures: 10

100-Year Flood Risk Reduction

Population removed: 0 Structures removed: 0 Critical facilities removed: 0

Emergency facilities removed: 0 Farm/ranch removed: 0 Roadways removed(miles): 0

Low water crossings removed: 0 Reduction in road closures over 10 years: 0

Other benefits: Avoidance of Future Flood Risk Residential removed: 0

Impacts

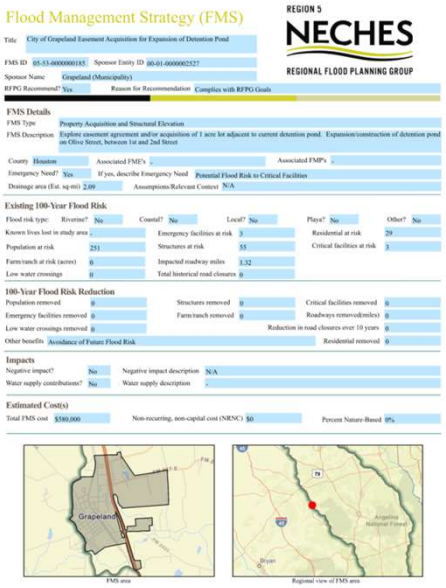
Negative impact? No Negative impact description: N/A

Water supply contributions? No Water supply description: -

Estimated Cost(s)

Total FMS cost: $60,500 Non-recurring, non-capital cost (NRNC): $0 Percent Nature-Based: 0%

FMS area Regional view of FMS area


Flood Management Strategy (FMS)

REGION 5 NECHES REGIONAL FLOOD PLANNING GROUP

Title: City of Grapeland Easement Acquisition for Expansion of Detention Pond

FMS ID: 05-53-0000000185 Sponsor Entity ID: 00-01-0000002527

Sponsor Name: Grapeland (Municipality)

RFPG Recommend? Yes Reason for Recommendation: Complies with RFPG Goals

FMS Details

FMS Type: Property Acquisition and Structural Elevation

FMS Description: Explore easement agreement and/or acquisition of 1 acre lot adjacent to current detention pond. Expansion/construction of detention pond on Olive Street, between 1st and 2nd Street

County: Houston Associated FME's: - Associated FMP's: -

Emergency Need? Yes If yes, describe Emergency Need: Potential Flood Risk to Critical Facilities

Drainage area (Est. sq-mi): 2.09 Assumptions/Relevant Context: N/A

Existing 100-Year Flood Risk

Flood risk type: Riverine? No Coastal? No Local? No Playa? No Other? No

Known lives lost in study area: - Emergency facilities at risk: 3 Residential at risk: 29

Population at risk: 251 Structures at risk: 55 Critical facilities at risk: 3

Farm/ranch at risk (acres): 0 Impacted roadway miles: 1.32

Low water crossings: 0 Total historical road closures: 0

100-Year Flood Risk Reduction

Population removed: 0 Structures removed: 0 Critical facilities removed: 0

Emergency facilities removed: 0 Farm/ranch removed: 0 Roadways removed(miles): 0

Low water crossings removed: 0 Reduction in road closures over 10 years: 0

Other benefits: Avoidance of Future Flood Risk Residential removed: 0

Impacts

Negative impact? No Negative impact description: N/A

Water supply contributions? No Water supply description: -

Estimated Cost(s)

Total FMS cost: $580,000 Non-recurring, non-capital cost (NRNC): $0 Percent Nature-Based: 0%

FMS area Regional view of FMS area

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Summary of Cycle 1 FMX Updates

- FMEs
  - 41 Cycle 1 FMEs now marked as "Not Recommended"
    - Examined under another study like FIF or Task 4C
    - Modeling received to promote to FMP
    - FME completed and construction underway
    - FMEs getting deferred to either Region 4 (Sabine) or Region 3 (Trinity)
- FMSs
  - 22 Cycle 1 FMSs now marked as "Not Recommended"
    - FMSs getting deferred to either Region 4 (Sabine) or Region 3 (Trinity)
- FMPs
  - 1 Cycle 1 FMP now marked as "Not Recommended"
    - Orange County Coastal Storm Risk Management Project to be represented in the Sabine RFP
  - 5 Cycle 1 FMPs now with adjusted costs
    - Hillebrandt Bayou FMPs from DD6 Regional Watershed Study
    - Bessie Heights Drainage Ditch Extension Project

Flood Mitigation Action	Number of Cycle 1 Recommended Actions	Number of Cycle 1 Recommended Actions (Adjusted)
FME	165	124
FMS	157	135
FMP	53	52

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Task 5 – Recommendation of FMEs, FMSs, and FMPs (Cycle 2 Updates)

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- New FMEs and FMSs identified from Stakeholder Outreach
- New FMPs sourced from Texas General Land Office River Basin Flood Study (Eastern Region)
  - Additional FMPs to be included as Task 4C nears completion

Flood Mitigation Action	Number of Cycle 1 Recommended Actions (Adjusted)	New Actions Identified To Date	Total Count To Date
FME	150	126	276
FMS	157	45	202
FMP	52	11	63

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Planning Schedule

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November

- Technical Consultant to work on:
  - Task 4C – Performance of FMEs
  - Task 5A – Recommendation of FMEs, FMSs, and FMPs
  - Task 9 – Flood Infrastructure Financing Analysis

December

- Technical Consultant to work on:
  - Task 4C – Performance of FMEs
  - Task 5A – Recommendation of FMEs, FMSs, and FMPs
  - Task 9 – Flood Infrastructure Financing Analysis
- RFPG to vote to re-recommend Cycle 1 FMPs

January

- Technical Consultant to work on:
  - Task 5A – Recommendation of FMEs, FMSs, and FMPs
  - Task 6 – Impacts and contribution of the RFP
- RFPG to vote to recommend Task 4C FMPs

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