DRAFT Technical Memorandum

TO:	Lower Brazos Regional Flood Planning Group	DATE:	December 12, 2025
FROM	Halff Associates, Inc.	PROJECT:	Halff AVO 54860
SUBJECT:	Task 4B Technical Memorandum		

Technical Memorandum Overview

As part of the 2028 Regional Flood Planning cycle, the Texas Water Development Board (TWDB) requires an interim submittal to evaluate the Regional Flood Planning Groups' (RFPG) progress in the development of their regional flood plans. This interim submittal is known as the Technical Memorandum (Task 4B) and includes a summary of the approaches, methods, decisions, findings, and results for Tasks 1 through 4A. Each of these tasks are described briefly below with the supporting data and results being provided in the attachments.

Information presented in this memorandum is considered preliminary and is subject to change as the Lower Brazos RFPG continues to incorporate new data and findings throughout the flood planning process, for the second planning cycle.

The Technical Memorandum is due to the TWDB on January 7, 2026.

Technical Memorandum Addendum Deliverables

Table 1 summarizes the information requested by the TWDB for the Technical Memorandum submittal from the Lower Brazos RFPG.

Table 1: Technical Memorandum Attachments

Attachment	TWDB Task	Description
1 (Geodatabase)	Task 1 Task 2A Task 2B Task 3A Task 3B Task 3C Task 4A	A geodatabase including the following (substantially complete) feature classes: • Entities • ExFldInfraPol • ExFldInfraLn • ExFldInfraPt • ExFldProjs • Watersheds • ExFldHazard • ExFldExpPol • ExFldExpLn • ExFldExpPt • ExFldExpAll • FutFldHazard • Ex_Map_Gaps • Fut_Map_Gaps • FutFldExpPol • FutFldExpLn • FutFldExpPt • FutFldExpAll • ExFldMng • Goals • Streams And limited fields feature classes: • FME • FMP • FMS • ModelCoverage
2 (Maps)	Task 2A Task 2B Task 4A	TWDB required maps, including the following: • Map 4: Existing Condition Flood Hazard • Map 5: Existing Condition Flood Hazard – Gaps in Inundation Boundary Mapping and Identify known Flood Prone Areas • Map 6: Existing Condition Flood Exposure • Map 7: Existing Condition Vulnerability and Critical Infrastructure • Map 8: Future Condition Flood Hazard • Map 9: Extent of Increase of Flood Hazard Compared to Existing Condition

		• Map 10: Future Condition Flood Hazard – Gaps in Inundation Boundary Mapping and Identify known Flood Prone Areas • Map 11: Future Condition Flood Exposure • Map 12: Future Condition Vulnerability and Critical Infrastructure • Map 14: Model Coverage • Map 15: Greatest Gaps in Flood Risk Information • Map 16: Greatest Flood Risk
3 (Tables)	Task 1 Task 3A Task 4A	List • Entities with Flood Related Authority • Infeasible & No Longer Relevant FMXs Completed TWDB required Exhibit C Tables • Table 11: Goals Limited Fields TWDB required Exhibit C Tables • Table 12: Identified Flood Management Evaluations • Table 13: Identified Potentially Feasible Flood Mitigation Projects • Table 14: Identified Potentially Feasible Flood Management Strategies
4 (Task 2 Memorandums)	Task 2A Task 2B	Memorandums provided to the Texas Water Development Board in support of the methodology used for development of the existing and future flood quilts.
5 (Task 3 Memorandums)	Task 3A	Memorandum provided to the Regional Flood Planning Group in support of the methodology used for development of the floodplain management standards and practices.
6 (Meeting Minutes)	Task 4B	RFPG December Meeting Minutes including written documentation that the RPG approved submittal of Technical Memorandum to the TWDB at a RFPG meeting subject to notice requirements in accordance with 31 TAC §361.21(h).
7 (Memo Checklist)	Tasks 1 – 4A	Technical Memorandum Administrative Completeness Checklist

Task 1: Planning Area Description

In Region 8, TWDB identified 605 political subdivisions with varying levels of flood-related authority. Broadly, "authority" includes any public entity involved in planning, regulating, building, or maintaining flood and drainage infrastructure; narrowly, it refers only to those able to enact and enforce floodplain regulations, such as municipalities, counties, and river authorities. **Table 2** summarizes entity types in the region, and the full list appears in **Attachment 3**.

Table 2: Summary of Entity Types

Entity Types	Number of Entities	NFIP Participants
Municipality	193	163
County	43	41
River Authority	5	0
Flood Districts	5	0
Water Supply, Improvement, Utility Districts, MUDs, FWSDs, MWDs, SUDs, COGs, WCIDs, Drainage Districts, Ports, Navigation Districts	359	12

Source: TWDB Data Hub and NFIP Community Status Book

Geospatial files for political subdivisions that have flood-related authority can be found in **Attachment 1**. The geodatabase feature classes named 'Entities' and 'ExFldMng' show the locations of current political subdivisions responsible for flood-related matters.

Task 2: Existing and Future Conditions Flood Risk Analyses

The overarching goal of Task 2 is to quantify flood risk and flood exposure across the region. The primary effort under this task is the development of a flood risk layer ("Floodplain Quilt"), based on various data sources, which delineates the flood extents for both pluvial and fluvial flood events for the 10-percent, 1-percent, and 0.2-percent ACE.

On January 27, 2025, the TWDB provided the RFPGs with a draft Floodplain Quilt to establish a starting point for identifying flood risk within the region for Task 2. The Draft Floodplain Quilt consists of flood risk boundaries compiled from several sources including:

- FEMA Data: Pending, Preliminary, Detailed, and Approximate layers
- Estimated Base Flood Elevation Viewer Data (Base Level Engineering or BLE)
- First American Flood Data Services (FAFDS)

On March 14, 2025, the TWDB provided the RFPGs with Existing Conditions Cursory Floodplain data to estimate flood risk in locations where other information is unavailable for Task 2.

The Lower Brazos RFPG also performed its own outreach effort to solicit and gather models from communities throughout the region. This included flood inundation raster's produced by the General Land Office's (GLO) River Basin Study that covered much of the southern portion of the region.

Future Conditions Cursory Floodplain data became available on April 17, 2025. In order to support updates to other modeling data sources to create detailed future conditions flood hazard data, the Final Report and various input datasets to the Cursory Floodplain modeling effort were provided May 1, 2025, and July 11, 2025.

The Lower Brazos RFPG's technical consultant team reviewed all available data to determine the accuracy and coverage provided by the various models and flood risk datasets. Based on this review, a data prioritization methodology was developed to determine which sources of information should take precedence in areas of overlapping data. The prioritization approach ultimately used is shown below.

Task 2A – Flood Hazard Layer Data Prioritization:

1. Detailed FEMA Data (Zone AE & VE)
2. Community Models / Maps
3. Pluvial Cursory Floodplain Data for urban areas with populations greater than 5,000
4. Base Level Engineering (BLE) 2D
5. Maximum of BLE 1D and Cursory Floodplain Data

Attachment 4 includes a technical memorandum that provides a more detailed explanation of the basis of this prioritization for the existing conditions flood quilt.

Based on the data prioritization, a flood hazard layer was developed to characterize flood risk throughout the Lower Brazos region. The Lower Brazos RFPG reviewed the draft flood risk layer and approved it on September 18, 2025. The resulting layer is not regulatory in nature but is instead intended to represent a comprehensive look at the best available flood risk information available across the region. Public comment was accepted through the Lower Brazos Regional Flood Planning website (lowerbrazosflood.org/Resources#3180) where the draft flood risk layer was posted.

The Lower Brazos RFPG developed an approach, with accompanying justification, for creating the Task 2B Future Conditions Flood Hazard Layer and initiated a request for its approval to the TWDB on May 28, 2025. The approach was approved on July 15, 2025, and is provided in **Attachment 4**.

In addition to utilizing Future Conditions Cursory Floodplain (scenario 4) polygon data, the following techniques were used to create future conditions flood hazard data from other sources:

- 1D BLE water surface elevation data was increased using the spatially varied depth difference between Scenario 3 and Scenario 5 of the Cursory flood depth rasters.

- 2D BLE and GLO models were recomputed using modified precipitation or flow hydrograph boundary conditions. Updates considered increases to impervious cover, rainfall, and sea level rise consistent with Cursory Floodplain scenario 3 (significant climate forcing). Based on fluvial change factors not showing increases in the Lower Brazos River watershed, Brazos River and other major riverine inflow hydrograph boundary conditions were left unchanged from existing conditions within these models.

During the analysis, it was discovered that 2D BLE data used depth-area reductions in the Lower Brazos HUC8, which the study team determined to be underrepresenting flood risk significantly. As a result, the team decided to limit the data sources in this area to GLO and Cursory data.

As is the case with the existing conditions flood hazard layer, the future layer is not a regulatory product. Instead, it can be used as a planning tool to identify areas of the region potentially subject to future increases in flood risk. The Future Conditions Flood Hazard layer was reviewed by the Lower Brazos RFPG and approved during the December 18, 2025, RFPG meeting.

A preliminary exposure analysis was performed to determine the number of at-risk structures (buildings, roadways, critical facilities, etc.), population estimates, the length of impacted roadways and area of agricultural land contained within the previously developed existing conditions flood hazard boundary. The same exposure analysis was performed using the future conditions flood hazard data, with the only difference being the addition of anticipated future residential buildings. These features were added to the buildings dataset based on population growth and various spatial weighting factors, including proximity to existing development and major thoroughfares. The Existing Floodplain Management Practices layer was used to identify areas that regulate to higher standards, where flood frequencies for anticipated future residential buildings were considered "unknown," assuming that any development would be subject to freeboard requirements. In areas not regulating to higher standards, the flood frequency for all buildings was determined based on the highest frequency the building intersects in the future conditions flood hazard layer, which is the same methodology used for the existing conditions exposure analysis. **Table 3** provides overall Lower Brazos Region 8 flood exposure results.

Following the exposure analysis, a preliminary vulnerability analysis was performed for existing and future conditions using the Social Vulnerability Index (SVI) dataset. The vulnerability analysis assesses a community's resilience, with values closer to 1 denoting greater vulnerability.

A geodatabase and associated maps including the existing and future conditions flood hazard layer, exposure, and vulnerability results are provided in **Attachment 1** and **Attachment 2** as digital data.

Table 3: Lower Brazos (Region 8) Summar of Existing and Potential Future Flood Exposure Analysis Results

Potential Flood Risk Event	Number of At-Risk Structures	Number of At-Risk Critical Facilities	Number of Road Crossings at Risk*	Impacted Agricultural Area (sq. mi.)
Existing 1% Annual Chance (100-year)	177,290	1,866	1,077	1,184
Future 1% Annual Chance (100-year)	231,632	2,731	1,083	1,295

**representative of low water crossings*

Task 3A: Evaluation and Recommendations on Floodplain Management Practices

The Lower Brazos Regional Flood Planning Group (RFPG) solicited local entity and public input in developing floodplain management practices and flood protection goals for the Lower Brazos Planning Region. As a result, floodplain management standards were developed to both reduce existing flood risk and minimize the creation of future flood risk by encouraging the implementation of consistent floodplain management policies throughout the region. These floodplain management standards were approved by the Lower Brazos RFPG during the Lower Brazos RFPG meeting on August 21, 2025.

Floodplain management standards fall into two main categories, adoption and recommendation. Recommended standards are general guidelines for consideration by the floodplain regulating entities in the region. Adopted standards are specific minimum standards that should be adopted by the entities within the region. Adopted standards must be implemented by entities prior to the Lower Brazos RFPG including any flood management evaluations, flood management strategies, or flood mitigation projects for the entity in the Regional Flood Plan. Based on feedback from the Lower Brazos RFPG during the monthly meeting on May 15, 2025, all floodplain management standards developed for the Lower Brazos Flood Planning Region are only recommended. These standards are intended to be used as general guidelines by the entities within the region.

The recommended standards for consideration are divided into two distinct categories:

1. Standards for region-wide recommendation, and
2. Standards recommended for smaller "zones" within the Lower Brazos Planning Region delineated along county boundaries.

These categories allow for a broad application of standards and a tailored formulation for capturing flood risk variability, natural hydrography, topography, climatological effects, and demographics throughout the region. The different categories of standards are described further in subsequent sections, along with definitions of each standard. **Table 4** provides a summary of the *recommended* floodplain management standards for the Lower Brazos Region.

A separate memorandum documenting the evaluation and recommendations on floodplain management practices was developed and presented to the Lower Brazos RFPG for review and approval. This memorandum is included as **Attachment 5**. Along with the memorandum, the TWDB-required feature class for Existing Floodplain Management Practices ('ExFldMng') was completed conforming to Exhibit D Table 22 and is included in a geodatabase included with **Attachment 1**.

Table 4: Summary of Lower Brazos Recommended Floodplain Management Standards

Recommended Floodplain Management Standard	Region Wide	Zone 1 "Coastal"	Zone 2 "Upper Coastal"	Zone 3 "Brazos Valley"	Zone 4 "Middle Brazos"
National Flood Insurance Program Participation	X				
Compensatory Storage Requirement in 1% Floodplain	X				
No Adverse Impacts for the 1% Storm Event	X				
Improved Flood Response	X				
Improved Flood Risk Awareness/Education	X				
Use of Best Available Rainfall Data	X				
No Adverse Impacts for the 1% and 10% Storm Event		X	X	X	
Formation of a Voluntary Buyout Program		X			
Long-term Operation and Maintenance Planning of Drainage Infrastructure		X			
Drainage Corridor Preservation			X	X	
Compensatory Storage Requirement in 0.2% Floodplain				X	X
Requirements for Culvert and Bridge Crossings				X	X
Roadway Requirements within the Floodplain				X	X
Culvert and Bridge Hydrologic and Hydraulic Analysis Requirement				X	X

Task 3B: Flood Mitigation Needs Analysis

The objective of the Flood Mitigation Needs Analysis is to identify the areas of greatest known flood risk and areas where the greatest flood risk knowledge gaps exist. This will support the identification of FMEs, FMSs, and FMPs to reduce those known flood risks. The geospatial assessment used HUC 12 watersheds as the base units for scoring, with 559 identified in the Lower Brazos region.

The areas with existing hydrologic and hydraulic models available to perform FMEs and evaluate FMSs and FMPs are identified in Map 14 as Extent of Model Coverage included in Attachment 2. There are models available in various locations across the region, with the broadest extent of detailed model coverage being in Austin, Waller, Fort Bend, and Brazoria counties. While there is substantial model coverage in the North Bosque River watershed used to identify FMPs, most of the coverage is a non-detailed model used to analyze hydrology for the City of Clifton. Therefore, further refinement of much of the model area would be needed to leverage this model for identifying FMEs, FMSs, or FMPs.

To identify locations with the most significant gaps in flood risk knowledge, the following factors were evaluated:

- Quality of hydrologic and hydraulic models and resulting flood hazard mapping
- Projected population growth to 2040

First, HUC12s were assigned a modeling and mapping score based on the best quality model data available covering a majority of developed areas within the watershed. If a HUC12 watershed includes at least 1 square mile of area of a municipality with a population greater than 5,000, the HUC12 was considered urban. Detailed modeling for both pluvial and fluvial flood types is needed to achieve a modeling and mapping score of 0 for urban watersheds. For non-urban watersheds, only detailed fluvial modeling is needed to achieve a modeling and mapping score of 0. Assigned scores are shown in **Table 5** below.

Table 5: Flood Risk Knownledge Gaps Modeling & Mapping Scoring Criteria

Scoring	0	1	2	3
Available Modeling / Mapping Data	Detailed (pluvial AND fluvial)	Detailed (pluvial OR fluvial)	2D BLE or ROG	1D BLE/Cursory Floodplain Data

Detailed modeling was identified using the Model Coverage layer located in Map 14 in **Attachment 2**. Descriptions and model creation dates were reviewed to determine which hydraulic models were likely to reference Atlas 14 rainfall data and include bridges and culverts, which the Lower Brazos RFPG would consider as reflecting a higher level of detail

than 2D BLE modeling. All identified hydraulic models utilized either Infoworks ICM or HEC-RAS. Infoworks ICM models were assumed to be detailed pluvial models since the Lower Brazos RFPG generally defines a detailed pluvial model as one that includes sub-surface drainage infrastructure, and ICM is commonly used for this application. However, due to very limited coverage of detailed pluvial modeling, no HUC12 watersheds classified as urban achieved a score of 0. On the other hand, non-urban areas with detailed fluvial model coverage achieved a score of 0.

Watersheds with high projected population growth will likely be subject to changes in hydrologic and hydraulic characteristics. In these cases, updated modeling is especially necessary to understand existing flood risk and avoid impacts associated with rapid development. To account for this need, once modeling and mapping scores were established, they were multiplied by a population growth factor to calculate the Flood Risk Knowledge Gap score. All HUC12 watersheds with a projected 2040 population of less than 5,000 or a decrease in population were assigned a base multiplier of 1. The remaining watersheds expecting population growth to exceed 5,000 by year 2040 were assigned multipliers according to their percentile group. Growth factors were calculated in accordance with **Table 6** below:

Table 6: Flood Risk Knowledge Gaps – Population Growth Criteria

Multiplier	1	1.25	1.5	1.75	2
Population Growth (2040)	0 to 20 pct	20 to 40 pct	40 to 60 pct	60 to 80 pct	80 to 100 pct

As shown in Map 15 (included in **Attachment 2**), areas with the highest flood risk knowledge gaps include the following:

- Interstate 35
- Bryan-College Station area
- Areas near the cities of Hearne and Cameron
- Areas southwest of Dallas-Fort Worth metroplex

These areas have flood risk knowledge gap scores of 3.5 or higher, indicating that they would benefit from updated modeling and mapping based on both projected population growth and lack of detailed modeling. HUC12s were assigned "medium" if values fell between 2 and 3.5, and "low" if values were 2 or below. Values of 2 or lower indicate that detailed modeling is available in the area.

Aligned with TWDB's Technical Guidelines in Exhibit C, **Table 7** summarizes these guidelines and the criteria used to evaluate flood mitigation needs and to determine the flood risk scores.

Table 7: Flood Risk Scoring Factors Considered

Categories	Factors Considered
Most Prone to Flooding that Threatens Life and Property	Buildings Low Water Crossings Agricultural Areas Critical Facilities Inundated Roadway Mileage
Emergency Need	Damaged or Failing Infrastructure
Historical Flood Events	Disaster Declarations FEMA Claims Flood Related Fatalities
Other Factors	Social Vulnerability Index (SVI)

A comprehensive data collection and stakeholder outreach effort was conducted across Region 8 to identify flood-prone areas, including those located outside established flood hazard boundaries. These areas were identified through input from regional stakeholders and supplemented with public datasets, hydrologic feature data, historical flood events, and local knowledge.

Key public datasets used in this effort included:

- **National Hydrography Dataset (NHD):** Lake areas susceptible to flooding.
- **U.S. Army Corps of Engineers (USACE):** Leveed areas with flood risk.
- **NOAA Storm Events Database:** Records of past storm-related flooding.

This data informed a geospatial assessment in which scoring metrics were applied to various locations based on factors listed in **Table 7**. The assessment utilized 10 distinct data categories, each scored using percentile-based ranges to ensure consistent evaluation across the region. Detailed scoring criteria for each category are presented in **Table 8**.

Table 8: Flood Risk Scoring Criteria

Score (Points)						
Category	**0**	**1**	**2**	**3**	**4**	**5**
Number of Buildings in Flood-Prone Areas	0	1 - 20	21 - 45	46 - 116	117 - 349	350+
Number of Low Water Crossings	0	1.0	2.0	-	2.1 - 4.0	5+
Agricultural Areas in Flood Prone Areas (Acres)	0	1 - 112.3	112.4 - 301.3	301.4 - 821.7	821.8 - 2299.2	2299.3+
Number of Critical Facilities in Flood-Prone Areas	0	1 – 1.9	2 – 3.9	4 – 4.9	5 – 65.9	66+
Damaged or Failing Infrastructure	0	1	-	-	2 - 3	4+
Number of Disaster Declarations	0	1 - 9	10 - 11	12	13	14+
Number of FEMA Claims	0	1	2	3 - 6	7 - 17	18+
Flood Related Fatalities	0	1	2	3 - 4	5	6+
Social Vulnerability Index	0	0.1 – 4.2	4.3 – 6.3	6.4 – 9.7	9.8 – 17.1	17.2+

As shown in Map 16 included in **Attachment 2**, the scoring range of Low-High corelates to the percentile of the total score the category falls in. HUC-12 areas identified as having the greatest flood risk are spread across the Lower Brazos River watershed, with clusters of particularly high-risk zones concentrated in specific locations. Areas in Fort Bend County and Brazoria County are driven by high flood claims, flood related fatalities, and buildings in flood prone areas. In the middle section of the region, watersheds in Williamson County and McLennan County score higher due to damaged or failing infrastructure and low water crossings.

Task 3C: Flood Mitigation and Floodplain Management Goals

Part of the requirements set forth by the Texas Water Development Board include Task 3C – Flood Mitigation and Floodplain Management Goals. This task includes setting specific and achievable goals along with target years, with benchmarks for short-term (10 years) and long-term (30 years) goals. During the first planning cycle, the region adopted ten Flood Mitigation and Floodplain Management goals, with various short-term and long-term goal benchmarks. For the second planning cycle, the Lower Brazos RFPG elected to continue with the same series of goals, including minor modifications to text and benchmark items. The RFPG also elected to add a goal to reduce the impacts of flood risk on agricultural areas. As required, each of the goals falls under one of the themes provided by the TWDB in its guidance document, "Exhibit C".

A full description of the goals, including target years, residual risk, and how the goals will be measured are included in TWDB Table 11 in **Attachment 3** and in digital format in **Attachment 1**.

Task 4A: Identification, and Evaluation of Potential Flood Management Evaluations and Potentially Feasible Flood Mitigation Projects and Flood Management Strategies

For Task 4A, the Lower Brazos RFPG solicited communities to submit their flood mitigation needs (FMXs), including flood management evaluations (FMEs), flood mitigation projects (FMPs), and flood management strategies (FMSs) starting in April 2025. An FMX Request Form was developed and distributed to regional stakeholders (cities, counties, and other entities) to simplify the process of submitting flood mitigation needs. From this outreach effort, the Lower Brazos RFPG received requests for 98 FMXs. These 98 identified FMXs are in addition to the 717 FMXs previously identified in the 2023 Lower Brazos Regional Flood Plan.

However, not all FMXs identified in the region satisfy Lower Brazos RFPG and TWDB guidelines for inclusion in the 2028 Lower Brazos Regional Flood Plan. Many items collected during the first planning cycle represent outdated or unsupported needs. These items are unlikely to ever be carried forward for funding or implementation by a community. The Lower Brazos RFPG developed a process to filter out these items that are "No Longer Relevant" or "Infeasible". This process was applied to the 98 FMXs received as part of the outreach performed for the 2028 Lower Brazos Regional Flood Plan, as well as to the existing

list of 717 FMX items gathered in the 2023 Lower Brazos Regional Flood Plan. **Figure 1** shows the process used for this filtration. Fifty FMXs were identified as 'Infeasible' due to their small service area and an additional 37 FMXs were identified as 'No Longer Relevant' due to their source date and lack of sponsorship approval.

The items determined to be "Potentially Feasible" were then further evaluated to determine which FMX category they align with. Flood Mitigation Projects (FMPs) in particular require a significant amount of supporting data and analyses to meet TWDB and Lower Brazos RFPG criteria. The process for categorizing FMXs is shown in **Figure 2**. Both processes were reviewed in advance by the Lower Brazos RFPG and approved on July 17, 2025.

The 98 FMXs received during outreach efforts for the 2028 Lower Brazos Regional Flood Plan were preliminarily processed through both matrices using available data. However, ongoing coordination with communities may provide additional information leading to the reclassification of these items.

Limited field tables summarizing the FMEs, FMPs, and FMSs for the Lower Brazos region can be found in **Attachment 3** (TWDB Tables 12, 13, and 14) along with a list of FMXs identified but found to be infeasible or no longer relevant. **Attachment 1** provides this data in a digital format. **Table 9** provides a summary of the potentially feasible FMXs identified.

Table 9: Summary of FMXs for Region 8

FMX Type	From 2023 RFP	Additional with 2028 RFP	Total
FME	430	21	451
FMP	57	75	132
FMS	143	2	145
Infeasible	50	0	50
No Longer Relevant	37	0	37
Total	**717**	**98**	**815**

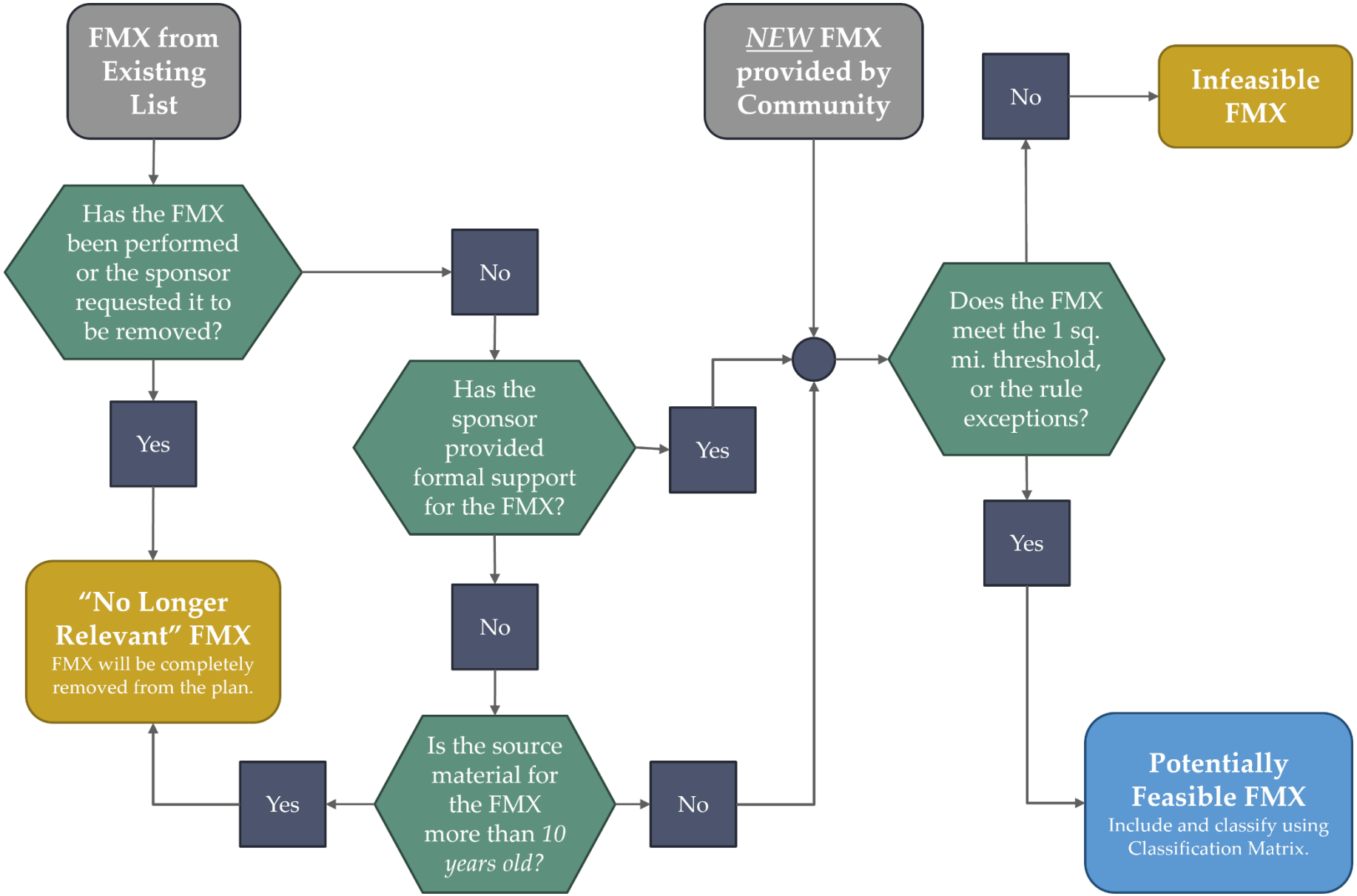

Figure 1: FMX Feasibility Process Flow Chart

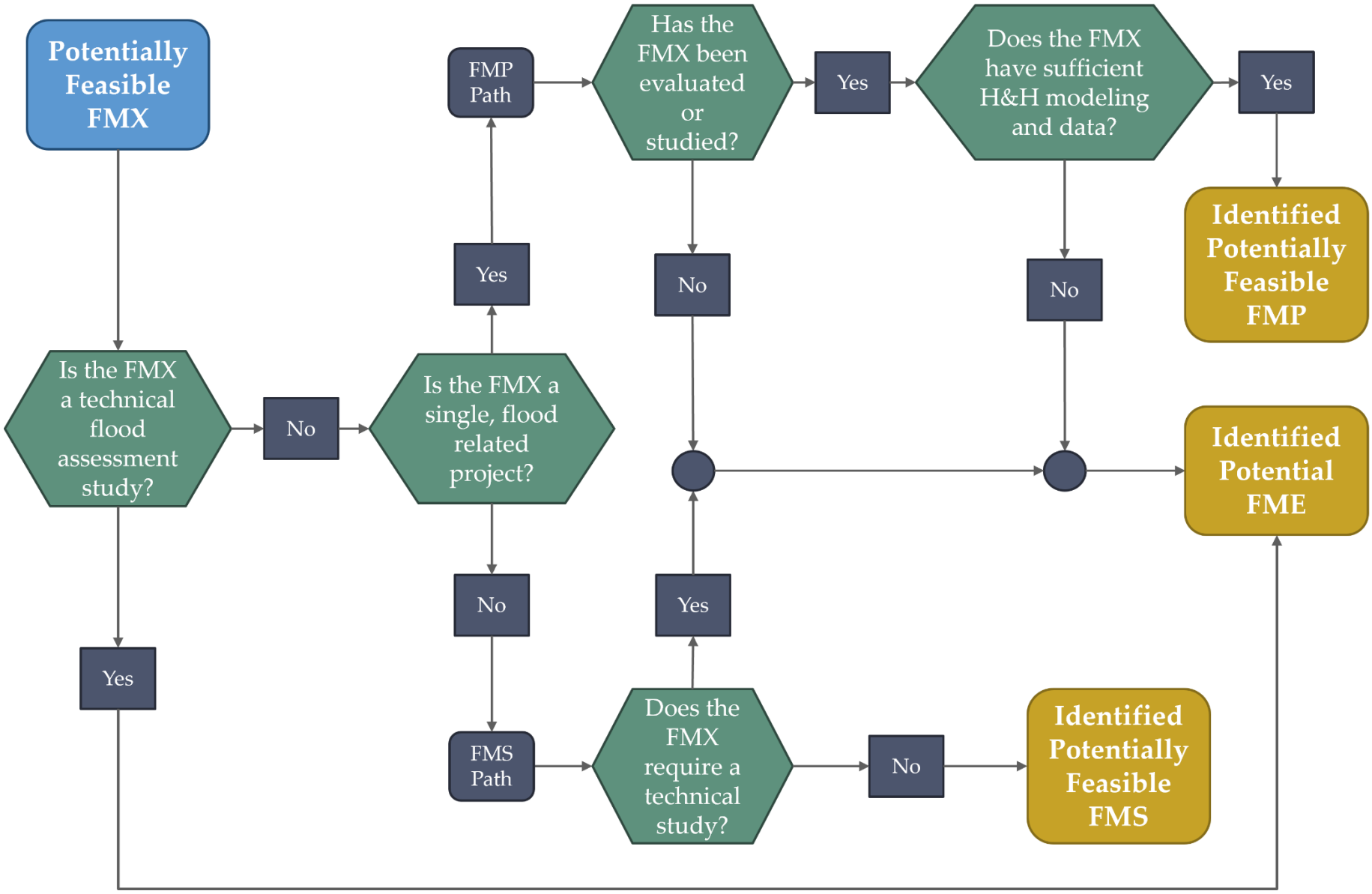

Figure 2: FMX Classification Process Flow Chart

Task 4B: Preparation and Submission of Technical Memorandum

Several datasets were collected and used to inform the analyses performed for Tasks 1 – 4A; this information was included in the preparation of this Technical Memorandum for Task 4B. Flood related studies and hydrologic and hydraulic modeling within the region provide valuable insight on flood risk and community priorities. Several models and studies were also provided to the Lower Brazos RFPG through public outreach efforts. Additional publicly available items were collected by the technical consultant to be used in support of the 2028 Lower Brazos Regional Flood Plan development.

Task 2A – Existing Conditions Flood Risk Analysis is heavily dependent on the availability of flood risk datasets to identify what infrastructure in the region may be prone to flooding. This task subsequently impacts many other evaluations throughout the flood planning process, including Tasks 3B and 4A included in this memorandum. Some of the studies and associated models most impactful to the development of the 2028 Lower Brazos Regional Flood Plan are summarized in **Table 10**.

Table 10: Available Models and Studies Considered Relevant to the Development of the 2028 Lower Brazos RFP

Study Name	Use in Regional Flood Plan	Associated Model ID
Lower Brazos Flood Protection Planning Study, 2019	Information and hydrology developed within this study formed the foundation for several succeeding models used in the development of the Regional Flood Plan.	NA
Hydrologic and Hydraulic Analysis of the Brazos River, 2021	Results from this study characterize flood risk for the Brazos River throughout portions of Fort Bend and Brazoria counties. Results of the associated watershed studies and models provide supporting data for many FMPs included in the Regional Flood Plan.	08-27-0000000001, 08-27-0000000002, 08-27-0000000003, 08-27-0000000004, 08-27-0000000005, 08-27-0000000006, 08-27-0000000007, 08-27-0000000008, 08-27-0000000009, 08-27-0000000010, 08-27-0000000014, 08-27-0000000015, 08-27-0000000033, 08-27-0000000034
Brazos River Flood Update Study, 2024	Results from this study characterize flood risk for the Brazos River throughout portions of Waller, Austin, and Brazos counties.	08-27-0000000014, 08-27-0000000015
Central Region GLO River Basin Studies, 2025	Results from these studies characterize flood risk for much of the lower portion of the region.	08-27-0000000101, 08-27-0000000102, 08-27-0000000103, 08-27-0000000104, 08-27-0000000105, 08-27-0000000106, 08-27-0000000107, 08-27-0000000108, 08-27-0000000109

In addition to the studies and models described in the table, many local master drainage plans and flood infrastructure fund studies were provided by sponsors in support of their FMPs. Studies were also performed by the Lower Brazos RFPG during the first planning cycle that produced updated flood risk information for several rural communities and identified potential flood risk mitigation projects. Another impactful study that is currently underway is the *Brazos River Watershed Hydrology Assessment (WHA)*, performed by the Interagency Flood Risk Management (InFRM) group consisting of the Federal Emergency Management Agency, US Army Corps of Engineers, US Geological Survey, and the National Weather Service. This assessment is using historical data and statistical analyses to perform detailed modeling of hydrology for large rivers throughout the region. All of the models utilized in the development of the 2028 Lower Brazos Regional Flood Plan to date are summarized in the Model Coverage feature class provided as digital data in **Attachment 1**.

The Technical Memorandum was developed in adherence with the requirements specified in the Scope of Work, Exhibit C, and Exhibit D developed by the TWDB for the 2028 Regional Flood Planning Cycle. The TWDB provided an Administrative Checklist detailing the submittal requirements for the Technical Memorandum on November 3, 2025. This checklist was completed and provided as **Attachment 7**. The required items are referenced in **Table 1** of this document and throughout the text of relevant sections. **Attachment 1** contains all geodatabase deliverables, **Attachment 2** contains all Map deliverables, **Attachment 3** contains all TWDB table and list deliverables, and **Attachments 4** and **5** contain supplemental documentation developed in support of the Lower Brazos RFPG's performance of Tasks 1 – 4A. All information and supporting data provided as part of this Technical Memorandum will continue to be updated and enhanced throughout the development of the 2028 Lower Brazos Regional Flood Plan as more information is collected and analyzed.

The Lower Brazos RFPG voted to approve this Technical Memorandum with non-substantive changes on December 18, 2025. Documentation of this action is provided in **Attachment 6** in the form of Lower Brazos RFPG meeting minutes. This Technical Memorandum will be submitted to the TWDB in accordance with Section 1 Article 1 of the contract, no later than January 7, 2026.

Attachment 1

TWDB geodatabase including the required feature classes.

Attachment 2

TWDB required maps.

Attachment 3

TWDB required Exhibit C Tables and lists.

Attachment 4

Task 2A and Task 2B approach memorandums.

Attachment 5

Task 3A approach memorandum.

Attachment 6

December 18, 2025 RFPG Meeting Minutes

Attachment 7

Technical Memorandum Administrative Completeness Checklist