

Data Services (FAFDS), Cursory Floodplain Data, and NFHL approximate sources. Most of the basin is based on approximate data. BLE modeling and mapping is projected to be completed for all watersheds in the Nueces River Basin by the end of Fiscal Year 2023 per TWDB's BLE status viewer.

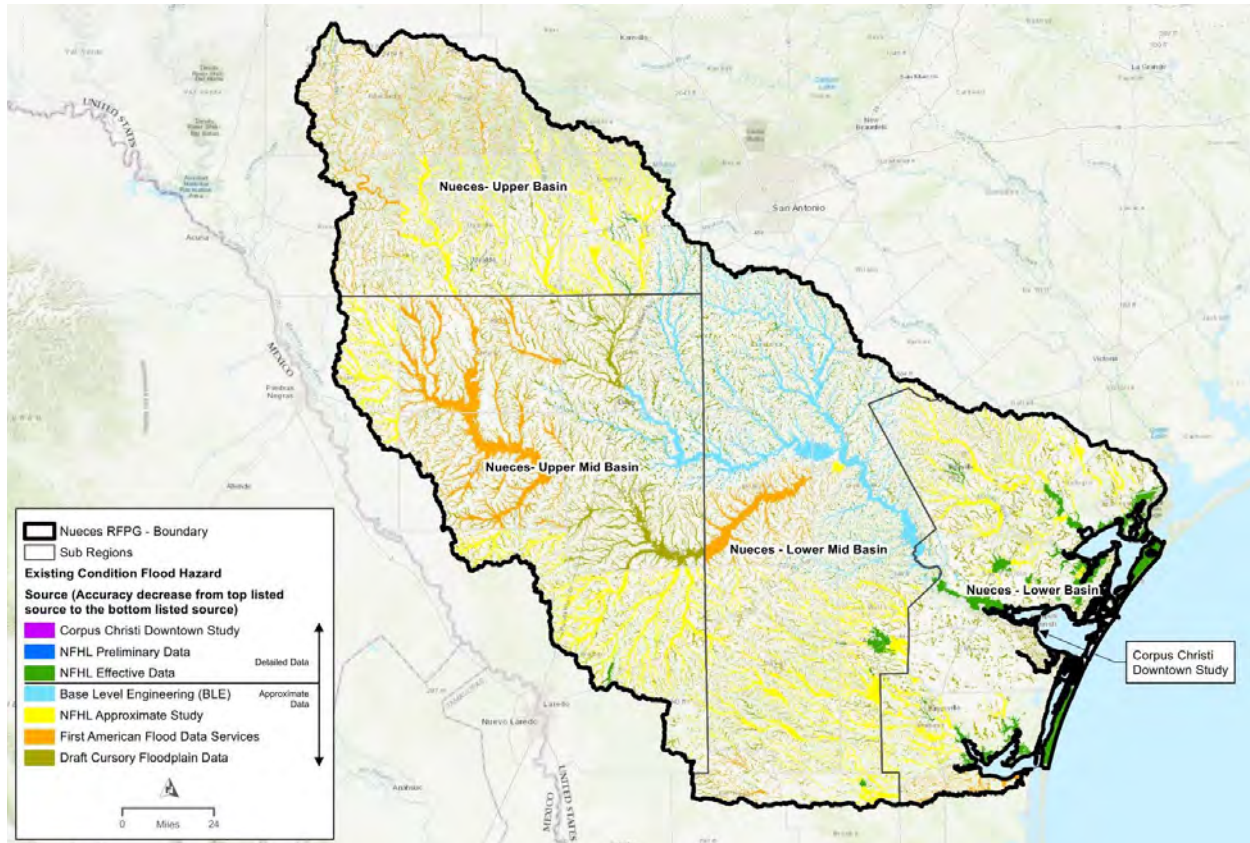


Figure 2-3. Source of Flood Modeling and Mapping Data (Map 5A)

List of Detailed Models

The list of detailed models with brief descriptions are provided below:

NFHL Pending – This data is comprised of the most recent detailed and approximate studies and are pending release as an Effective FIRM.

NFHL Preliminary – This data maps the 1% and 0.2% annual chance storm events and has been issued for public review and awareness of proposed change. Preliminary models available for Nueces County.

NFHL Effective Models (Detailed Study Areas only) – This data has flood hazard information that includes detailed studies (Flood Zones AE, AO, AH, and VE) and is the current effective FIRM. This data includes Letter of Map Revision (LOMR) information that was effective when obtained.

Corpus Christi Downtown Detailed Study Model – Two-dimensional (2D) hydraulic model of the seclusion area performed by HDR in 2016 for the salt flats levee system in downtown Corpus Christi.

Cotulla LOMR Model – Provides a detailed Hydrologic Engineering Center-River Analysis System (HEC-RAS) model used for a 2022 LOMR for the City of Cotulla.

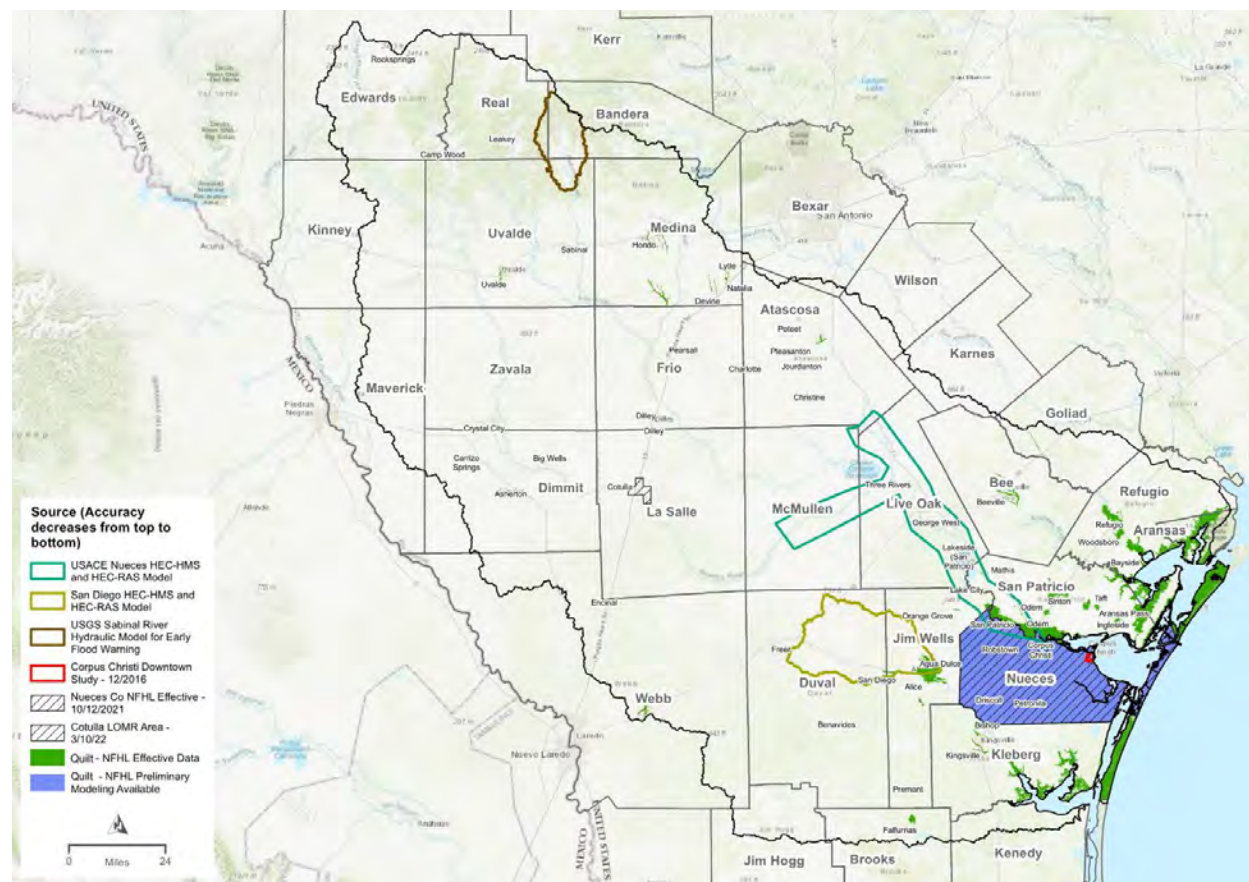


Figure 2-4. Detailed Hydrologic and Hydraulic Model Availability (Map 22)

List of Approximate Models

Base Level Engineering (BLE) – BLE is an efficient modeling and mapping approach that is considered an approximate study and meant to compliment the current effective Flood Insurance Rate Map (FIRM) where applicable. BLE results were provided in the TWDB floodplain quilt as shown in Figure 2-3. Recently, 2021 BLE model results were received for the Laguna Madre area with all watersheds in the Nueces River Basin scheduled for completion by the end of Fiscal Year 2023 per TWDB's BLE status viewer.

NFHL Effective Data (Approximate Study Areas only) – This data has flood hazard information that includes approximate studies (i.e. Flood Zone A) on the effective FIRM map.

FAFDS – This data contains digitized flood hazard information from previously published FIRMs and FISs and is not available on the NFHL. Available for portions of McMullen, Dimmit, Zavala, and Frio counties.

Draft Cursory Floodplain Data – Draft Cursory Floodplain Data was provided in July of 2021 for the 1% annual chance flood event. The Draft Cursory Floodplain Data was based on a 30-meter digital elevation model (DEM). This data was used for areas with no other floodplain information.

Cursory Floodplain Data – The Cursory Floodplain Data was provided in December of 2021 and provides 1% and 0.2% annual chance flood inundation boundaries. This model is based on Atlas 14 rainfall data and available laser altimeter datasets (Lidar) to produce a 3-meter ground surface grid for final mapping. Due to large processing requirements and timing of the draft 2023 RFP schedule, the Cursory Floodplain Data was not incorporated into the Region 13 – Final 2023 Nueces Regional Flood Plan (Final 2023 NRFP). Cursory Floodplain Data is intended for use for areas with no available flood mapping data until the BLE data becomes available.

Other Available Detailed Hydrologic and Hydraulic Models in the Nueces not used for Mapping

U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center-Hydrologic Modeling System (HEC-HMS) 4.2 model – This hydrologic model encompasses the entire Nueces River Basin and is part of the Corps Water Management System (CWMS) and is used to develop a real-time simulation (HEC-RTS [Hydrologic Engineering Center-Real Time Simulation]) for watershed stakeholders. The model includes 102 sub-basins, 84 stream routings, 84 junctions, 36 calibration gages and two reservoirs (Choke Canyon and Lake Corpus Christi). Calibration/validation events include July 2002 and June/July 2007 and October 2018. This model, the extent of which is shown in Figure 2-5, is currently under development.



2-8 | July 14, 2023

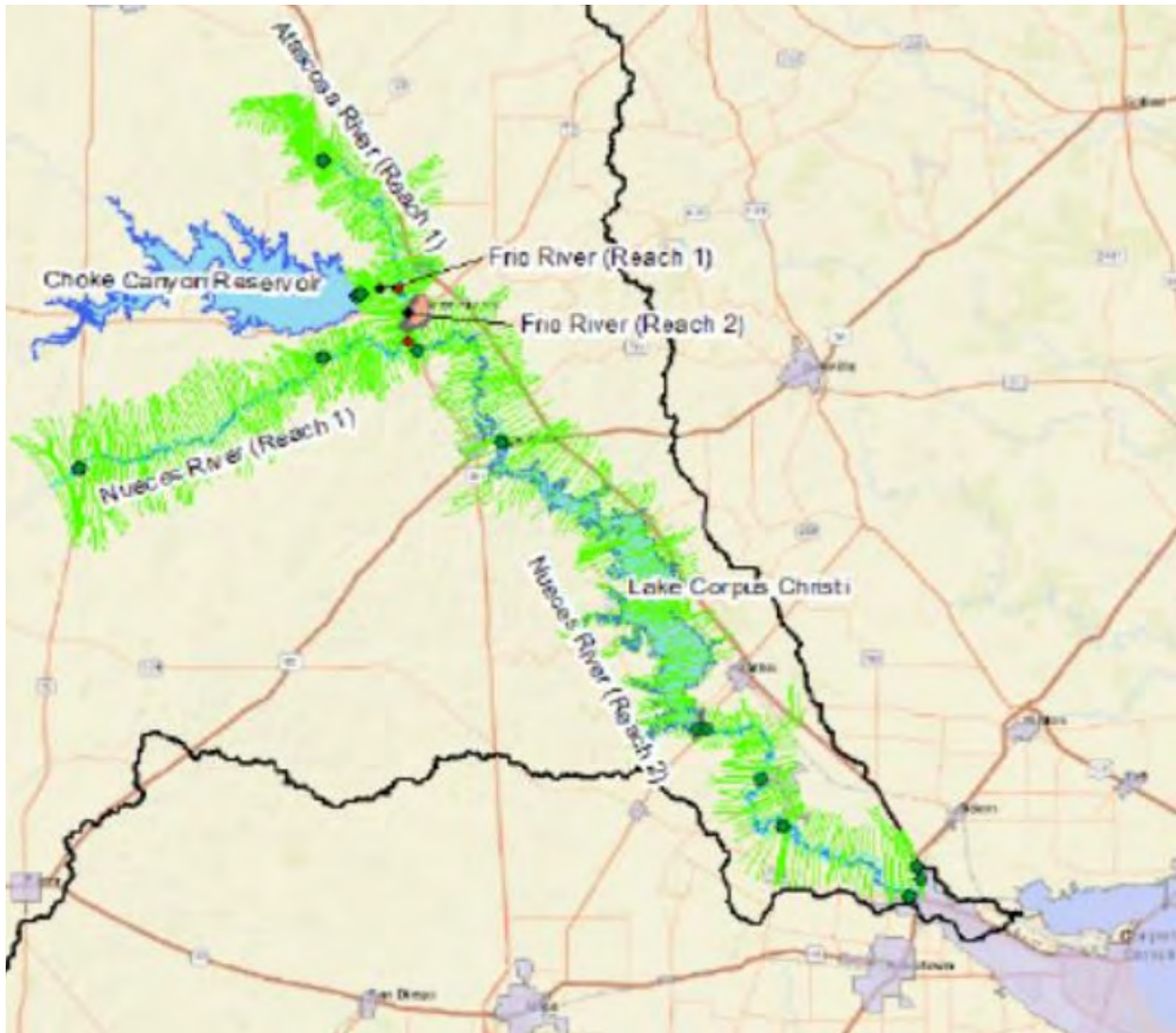


Figure 2-6. USACE Nueces HEC-RAS Model Extents (Source: USACE, 2021)

USACE San Diego HEC-HMS and HEC-RAS models – These models include the main stem of San Diego Creek, in Duval and Jim Wells Counties near Alice, San Diego, and Freer. San Diego Creek, Amargosa Creek, Chiltipin Creek, Muerto Creek, Res de Enmedio, Rosita Creek, San Fernando Creek, Toro Creek, and Lake Alice are modeled. This model was not used to map the 1% or 0.2% annual chance flood inundation boundaries. This model, the extent of which is shown in Figure 2-4 and Figure 2-7, is currently under development.

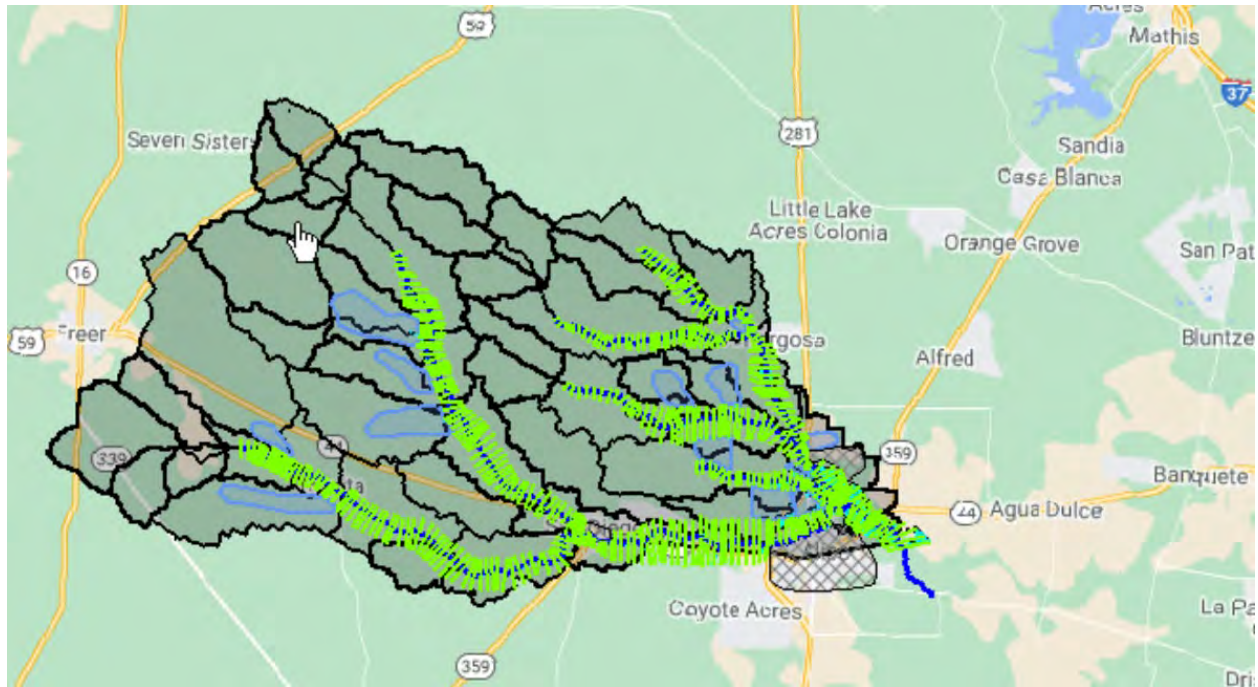


Figure 2-7. USACE San Diego Model Extents (Source USACE, 2021)

USGS Sabinal Flood Warning Model – This model is being developed for the purposes of flood warning and was not used to map the 1% and 0.2% flood inundation boundary. This model, the extent of which is shown in Figure 2-4 and Figure 2-8, is currently under development.

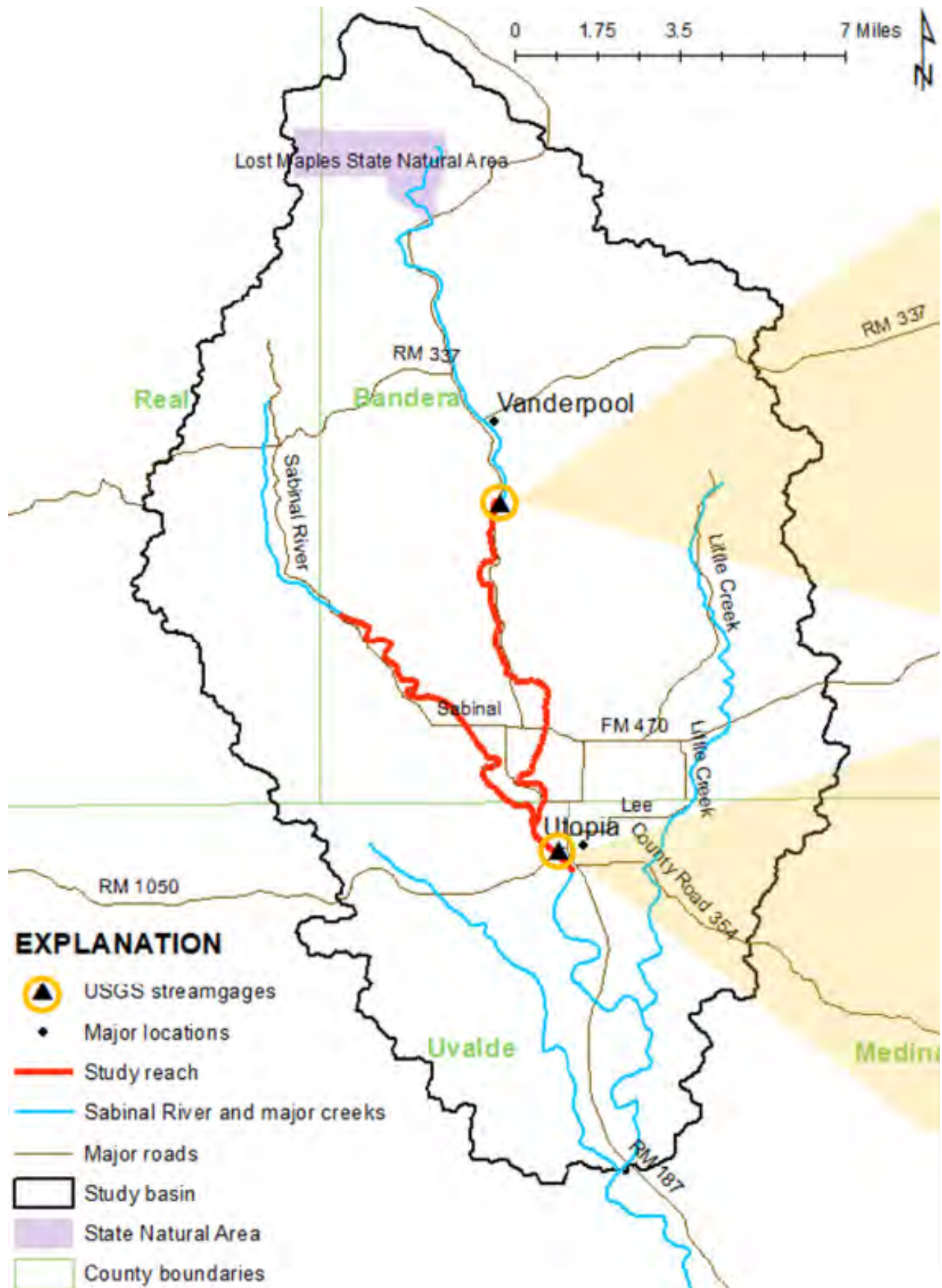


Figure 2-8. Sabinal Model Extents (Source USGS)

2.1.1.3 Best Available Data

The quality of available modeling and mapping data was assessed based on its date and level of detail in development. More detailed floodplain coverages supersede less detailed floodplain coverages for the same location. The best available information was used in the plan to define the extents of the 1% and 0.2% annual chance flood event boundaries. The following list shows the various flood inundation data sets used in order of highest to lowest accuracy.

Detailed Data Sets

1. Inundation boundaries produced by governmental entities through detailed modeling
 - a. Corpus Christi Downtown Study
 - b. Cotulla LOMR (added in the Amended Plan)
2. NFHL Effective and Preliminary Data

Approximate Data Sets

3. BLE
4. NFHL Approximate Study Areas
5. FAFDS
6. Cursory Floodplain Data
7. Draft Cursory Floodplain Data
8. Additional Known Flood Prone Areas

More recent and accurate Cursory Floodplain Data has been received but not implemented into the inundation boundaries at this time due to their large data processing requirements and the timing of this initial plan. The new Cursory Floodplain Data has 30-meter modeling and 3-meter mapping accuracy and uses Atlas 14 rainfall data. Complete BLE coverage of the basin is anticipated by the end of 2023, which will provide higher accuracy floodplain coverage than other available approximate data sets.

2.1.1.4 Flood Hazard Maps

Areal Extent of 1% and 0.2% Annual Likelihood of Inundation

The 1% and 0.2% annual chance flood inundation boundaries were defined for all waterways with contributing drainage areas larger than 1 square mile for the entire basin. This complete coverage was due in part to the availability of Draft Cursory Floodplain Data flood inundation boundaries for the entire basin. The most accurate inundation boundaries were applied when multiple inundation data sets were available.

A large portion of the regional flood planning area contains approximately 1% annual chance flood inundation boundaries but no 0.2% annual chance flood inundation boundaries (i.e., NFHL approximate study areas or lower accuracy data). Thus, for these areas, the 0.2% annual chance flood inundation boundary had to be estimated for