



**City of Corsicana, Navarro County, Texas
Cooperating Technical Partner
Mapping Activity Statement**

Agreement No. 1 - Hydrologic and Hydraulic Analyses and Floodplain Mapping

In accordance with the Cooperating Technical Partner (CTP) Memorandum of Agreement dated August 3, 2001, between The City of Corsicana, Navarro County, Texas and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement No. 1 is as follows:

Objective and Scope: The objective of this Mapping Activity is to develop detailed hydrologic and hydraulic analyses and floodplain and floodway mapping in the City of Corsicana. Hydrologic analyses will be completed for approximately 19.7 square miles of drainage area, and hydraulic analyses and floodplain mapping will be completed for approximately 15 linear miles of flooding, including the following flooding sources: Post Oak Creek, South Fork of Post Oak Creek, Tributary PO-5, Tributary PO-6, Mesquite Branch, and Town Branch.

GIS-based hydrologic and hydraulic modeling and mapping techniques will be applied to develop GIS data sets in support of the automation or semi-automation of modeling and floodplain mapping.

A detail scope of work for this Mapping Activity is provided in Attachment "A"

Period of Performance: This Mapping Activity will begin on October 1, 2001 and will be completed no later than April 30, 2002. This Mapping Activity may be terminated at the option of FEMA or The City of Corsicana in accordance with the provisions of the August 3, 2001, CTP Memorandum of Agreement.

The period of performance will be in accordance with Agreement Article II.

Funding/Cost-Sharing: The City of Corsicana "in-kind" contribution to Mapping Activity Statement No. 1 includes hydrologic and hydraulic technical data prepared for the development of the City of Corsicana Flood Protection Planning Study, dated May 2001. Technical data prepared for this study include: Aerial topographic mapping (digital 2-ft. contour interval), HEC-HMS hydrologic modeling for existing and future fully urbanized watershed conditions for the 10-, 50-, 100-, and 500-year flood frequencies, HEC-RAS hydraulic models, and digital topography with hydraulic cross sections and future fully urbanized 100-year flood plain delineations. In addition, the City of Corsicana will provide additional survey work including GPS benchmark monumentation throughout the City.

FEMA funding will be utilized to map existing condition flood plains and floodways utilizing the City's existing condition hydrology and future condition (future fully urbanized watershed conditions with existing channel and bridges/culverts) hydraulic models. New floodway limits will be established by superimposing the current regulatory floodway on the new hydraulic cross section layout. Floodway encroachments will then be adjusted to satisfy FEMA floodway criteria.

September 10, 2001

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(Template Version 2.0, 12/7/00)

A summary of funding/cost sharing is provided in Attachment "B"

Standards: The following standards and documents are relevant to this Mapping Activity: Detailed hydrologic and hydraulic analyses and floodplain mapping will follow the standards set forth in FEMA 37, *Guidelines and Specifications for Study Contractors* (January 1995), and Title 44 of the Code of Federal Regulations (CFR), Part 65. Computer models used for hydrologic and/or hydraulic analyses will meet the requirements of 44 CFR 65.6(a)(6).

Topographic mapping used to delineate floodplains and floodways will be of adequate scale and topographic definition to provide reasonable accuracy. Planimetric features will be compatible with the base map (with respect to horizontal accuracy) selected by FEMA for Digital FIRM production. Topographic mapping taken from aerial photogrammetry or surveys will comply with the requirements of Appendix 4 of FEMA 37. The selection of the topographic mapping source to be used will be coordinated with the FEMA Regional Project Officer prior to analysis and mapping.

Any levee or dike systems to be shown on the community's FIRM as providing protection from the 1% annual chance flood will comply with the requirements of 44 CFR 65.10. Chapter 7 of FEMA 37 provides guidelines for evaluating levee and dike systems.

Flood elevations and floodplain and floodway boundaries will reasonably tie in to non-revised information in accordance with 44 CFR 65.6(a)(2).

The floodway will be established in accordance with 44 CFR 65.7, as well as any applicable state and/or community requirements.

Products: The City of Corsicana will make available items outlined in Chapter 11 of FEMA 37 in the Technical Support Data Notebook (TSDN) format. These include:

Digital 1% and 0.2% annual chance floodplain and floodway boundaries;

Digital profiles of the 10%, 2%, 1%, and 0.2% annual chance water-surface elevations, representing existing conditions;

Floodway data tables;

Digital copies of all hydrologic and hydraulic modeling (Input and output files); and all back-up data used in the analyses or mapping.

In addition, the City will provide photogrammetric mapping compiled from aerial photography flown January 17, 1999. Digital topographic (2-foot contour interval) mapping, based on Texas State Plane Coordinate System and NAD 83, includes roads, road names, and buildings.

For GIS-based modeling and mapping, the City of Corsicana will deliver all digital input and output data, intermediate data processing products, GIS data layers, and final products in the format of the Digital Flood Insurance Rate Map (DFIRM) database structure.

Schedule and Milestones:

Milestone 1 (Scoping Phase): Products for the first milestone to be provided to the FEMA Project Officer include:

Annotated copies of effective FIRMs depicting limits of proposed study.

Documentation of the proposed source of topographic data, scale, contour interval, source/methodology, date of survey/data collection, vertical and horizontal datums, and comparison of planimetric features with the DFIRM base map selected by FEMA for DFIRM production.

A written summary of the initial data research, proposed analysis methodologies, and a work plan.

Documentation of digital data sets to be used (such as elevation, basin, and land use data). Full user documentation, technical description of methodologies and algorithms, and a copy of the source codes and custom-developed software applications for GIS-based modeling will also be provided.

Copies of topographic maps depicting proposed cross section locations.

Milestone 2 (Hydrology Phase): Products for the second milestone to be provided to the FEMA Project Officer include draft hydrologic analyses in accordance with the TSDN format.

Milestone 3 (Hydraulics Phase): Products for the third milestone to be provided to the FEMA Project Officer include the hydraulic models and sample floodplain mapping in accordance with TSDN format.

Milestone 4 (Final Products): Final products to be provided to the FEMA Project Officer include:

The completed TSDN and accompanying data containing the information outlined in Section 5 of this Mapping Activity Statement.

A QA/QC report documenting the results of the independent review of all computational and data processing procedures.

Final products will be made available in accordance with the Period of Performance described in Section 2 of this Mapping Activity Statement.

Certification: The following certifications apply to this Mapping Activity (as appropriate): Hydrologic and/or hydraulic analyses and data will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.6(f). Topographic information will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.5(c).

Technical Assistance and Resources: The City of Corsicana will obtain copies of FEMA-issued Letters of Map Change (LOMCs), archived engineering back-up data, and data collected as part of the Mapping Needs Assessment Process from FEMA's Mapping Coordination Contractor (MCC). The MCC may be contacted at 1-877 FEMA MAP (1-877-336-2627). General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 forms, can be downloaded from FEMA's Flood Hazard Mapping Web site (www.fema.gov/mit/tsd/). Specific technical and programmatic support will be provided through FEMA's MCC; such assistance should be requested through the FEMA MCC Project Officer specified in Section 12 of this Mapping Activity Statement.

The City of Corsicana may also consult with the FEMA Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or sub-contractors, and GIS-based engineering and modeling training.

Contractors: The Services of Halff Associates, Inc. will be utilized to complete this Mapping Activity Statement. Procurement of subcontractors using Federal funds provided as part of this Mapping Activity will comply with the requirements of 44 CFR 13.36.

Quality Assurance/Quality Control (QA/QC) Procedures: The City of Corsicana will undertake internal QC reviews to ensure that the products described under Section 5 of this Mapping Activity Statement conform with the standards outlined under Section 4 of this Mapping Activity Statement. Additionally, an independent review for compliance with these standards will be undertaken by PBS&J.

For GIS-based, automated modeling, QA/QC activities should ensure automated calculations are reasonable and in compliance with standard flood modeling and mapping approaches. The City of Corsicana will document internal QA/QC procedures to ensure all calculations and data processing were reviewed.

Reporting: Reporting requirements will be in accordance with Agreement Articles V & VI.

Points of Contact: The FEMA Regional Project Officer is Jack Quarles, PE, and the CTP Project Manager is Connie Standridge, PE, City Engineer or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. If it is necessary, the assistance of FEMA's MCC should be requested through the FEMA Regional Project Officer, Jack Quarles, PE.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representative.

Connie Standridge, PE
Connie Standridge, PE, City Engineer
City of Corsicana, Texas

9/13/01
Date

Jack Quarles
Jack Quarles
Regional Project Officer
Federal Emergency Management Agency

9-13-01
Date