



# Lexington-Fayette Urban County Government Cooperating Technical Partners Mapping Activity Statement

## Mapping Activity Statement No. 1 – Digital Flood Insurance Rate Map Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated September 12, 2003 between the Lexington-Fayette Urban County Government (LFUCG) and the Federal Emergency Management Agency (FEMA). Mapping Activity Statement (MAS) No. 1 is as follows.

### SECTION 1—OBJECTIVE AND SCOPE

The objective of the Flood Map Project documented in this MAS is to develop an updated Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for Fayette County, Kentucky. The DFIRM and FIS report will be referenced to the North American Vertical Datum of 1988 (NAVD88) and produced in the FEMA Countywide Format.

In addition, this project will develop new and/or updated flood hazard data, as detailed in the most recent addendum as agreed upon in writing by FEMA and LFUCG. The addendum details the number of miles to be studied and the type of effort to be performed, according to the following five categories:

<b>Category 1</b>	Redelineation
<b>Category 2</b>	Incorporation of LOMC
<b>Category 3</b>	Approximate Study
<b>Category 4</b>	Detailed Study
<b>Category 5</b>	Limited Detail Study

This Flood Map Project will include the following mapping partners:

- Lexington-Fayette Urban County Government (LFUCG), the Cooperating Technical Partner (CTP) and/or their designated contractor (CTP contractor)
- The Federal Emergency Management Agency (FEMA)

The activities for this Flood Map Project, including required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in the table below. The sections of this MAS that follow the table below describe the specific activities, responsible Mapping Partner(s), FEMA standards that must be met, and resultant map components.

**Table-1-1. Mapping Activities Summary Table**

Activities	LFUCG/CTP Contractor	FEMA/ FEMA MCC
Activity 1 – Field Surveys and Reconnaissance	X	
Activity 2 – Basemap Acquisition and Preparation	X	
Activity 3 – Hydrologic Analyses	X	
Activity 4 – Independent QA/QC Review of Hydrologic Analyses		X
Activity 5 – Hydraulic Analyses	X	
Activity 6 – Independent QA/QC Review of Hydraulic Analyses		X
Activity 7A – Floodplain Mapping (Approximate. Limited Detailed, Detailed)	X	
Activity 7B – Floodplain Mapping (Re-delineation and LOMC areas)	X	
Activity 8 – Independent QA/QC Review of Floodplain Mapping		X
Activity 9 – DFIRM Production (Merging Effective and Revised Information)	X	
Activity 10 – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications		X
Activity 11 – Preliminary DFIRM and FIS Report Distribution	X	X
Activity 12 – Post-Preliminary Processing	X	X

## Activity 1 - Field Surveys and Reconnaissance

Responsible Mapping Partner: LFUCG and/or CTP Contractor

Scope: LFUCG and/or CTP Contractor will conduct a field reconnaissance of the detailed FIS areas to determine conditions along the floodplain(s), types and numbers of hydraulic and/or flood control structures, apparent maintenance or lack thereof of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses. Literature and information research will be performed for all study types.

In addition to the initial field reconnaissance, this task includes conducting field surveys, which includes obtaining channel and floodplain cross sections, identifying or establishing elevation reference marks (ERMs), and obtaining the physical dimensions of hydraulic and flood control structures. All survey data collected will be in NAVD88, to reflect the vertical datum of the basemap.

### Subtask 1.1 – Reconnaissance and Data Collection

A. Literature and Information Search: LFUCG and/or the CTP Contractor will conduct a search for pertinent data to locate published reports, digital data and other information relating to flooding in Fayette County. Search methods to be used include: direct contact and interviews with knowledgeable individuals and local agencies; requests in writing; and internet sources. The types of data to be obtained include previous FIS's, historical hydrologic data, historic flood data, maps, and hydraulic structure data. The list of sources to be contacted consists of the following:

- LFUCG Department of Public Works
- LFUCG Department of Public Safety (Division of Environmental and Emergency Management)
- LFUCG Department of Administrative Services (Division of Planning)
- LFUCG GIS Department
- Kentucky Division of Water (KDOW)
- Kentucky Department of Natural Resources (KDNR)
- Kentucky Transportation Cabinet (KTC)
- Federal Emergency Management Agency (FEMA)
- U.S. Army Corps of Engineers (COE)
- U.S. Natural Resources Conservation Service (NRCS)
- U.S. Geological Survey (USGS)
- U.S. Environmental Protection Agency (EPA)

B. Field Visit: LFUCG and/or the CTP Contractor will perform a reconnaissance to obtain data from LFUCG Departments and federal agencies with local offices, as applicable. Data to be obtained include flood studies, high water marks, existing and future land use and development plans, flooding problems, flood control plans, elevation reference marks, topographic data, photographic evidence of flooding, newspaper articles, structure plans and corporate boundary data. In addition, LFUCG and/or the CTP Contractor will conduct a visual survey of the approximate and detailed study (Categories 3 & 4) reaches and adjacent floodplain areas. Significant hydraulic structures and other features will be documented by photo or other suitable means. The list of agencies and others to be contacted consists of the following:

- LFUCG Department of Public Works
  - LFUCG Department of Public Safety (Division of Environmental and Emergency Management)
  - LFUCG Department of Administrative Services (Division of Planning)
  - LFUCG GIS Department
  - NRCS
  - KTC
  - Lexington Herald-Leader
- C. Study Notification: LFUCG and/or the CTP Contractor will contact local newspapers during the reconnaissance to publish the announcement advertising the study in accordance with FEMA guidelines or will coordinate the publishing of the study notification on LFUCG's website (www.lfucg.com).

#### Subtask 1.2 – Field Survey Data Collection

New cross sections and structures will be surveyed for the purposes of developing the new detailed studies (Category 4). Conventional and GPS-based ground survey techniques will be used to gather bridge surveys and cross sections within the detailed study reaches. New approximate study (Category 3) reaches will be visited to gather representative stream and overbank photographs. For new detailed studies, data collected will include field measurements of pier widths and structural opening dimensions, unless data is available from existing bridge/culvert plans. For new limited studies, field surveys will be performed to verify bridge/culvert openings, pier locations, etc.

- Bridges will be surveyed to adequately characterize their impacts to the hydraulics of the detailed study stream reaches (Category 4). Structural data that can be utilized from existing, effective models will be mined, field verified, and inserted into the new detailed studies. Survey data will consist of profiles along the upstream and downstream faces of the structure illustrating the top and bottom of the structure (high chord/low chord data), the abutment approach tie-ins, and the channel.
- The actual survey requirements could vary based on results of the field inspection for each stream. A Survey Reconnaissance Summary Report explaining the level of detail selected for the surveys will be submitted as part of the Technical Support Data Notebook (TSDN).

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, LFUCG and/or the CTP Contractor shall make the following products available to FEMA:

- A Survey Reconnaissance Report summarizing the level of detail to be collected during the stream surveys;
- Study notification (newspaper or website);
- Maps and drawings that provide the detailed survey results; and
- Survey notebook containing cross sections and structural data.

## Activity 2 - Base Map Acquisition and Preparation

Responsible Mapping Partner: LFUCG and or the CTP Contractor

Scope: This task consists of obtaining the digital base map for the project, and includes the following activities:

- Coordination with local mapping agencies and partners;
- Obtain digital files of the base map;
- Secure necessary permissions from LFUCG to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge;
- Import, organize, re-project data layers as appropriate;
- Obtain necessary certification from LFUCG that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production; and
- Populate the DFIRM database with the information required by FEMA.

Assumptions: The following conditions were assumed during the creation of this MAS:

- LFUCG will supply the digital basemap.
- LFUCG will allow FEMA's use and distribution of hardcopy and digital map products, free of charge.
- Digital basemap data will be of sufficient accuracy to meet FEMA's minimum standards and specifications. For data that does not meet exact FEMA criteria, discrepancies will be noted and the data will be used under the presumption that it is the best available accepted data source.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, LFUCG and/or the CTP Contractor shall make the following products available to FEMA:

- Written certification from LFUCG that the digital data meet the minimum standards and specifications; and
- Documentation that the digital base map can be used by FEMA.

## Activity 3 – Hydrologic Analyses

Responsible Mapping Partner: LFUCG and/or the CTP Contractor

Scope: Hydrologic analyses will be completed for the detailed and approximate flooding source(s) listed in the attached addendum of this MAS. The hydrologic computations used for the new detailed study reaches (Category 4) will be based on the XP-SWMM computer program package. Peak flood discharges will be calculated for the 10-, 50-, 100-, and 500-year annual chance storms at various locations on the study reaches noted in the addendum. Additionally, fully developed discharges for the 100-year storm will also be calculated within the hydrologic models. Ultimately, the 100-year fully developed floodplain will be mapped as the shaded 'Zone X' on the DFIRMs. The hydrologic methods used for the new approximate study (Category 3) reaches will be based on USGS or Kentucky Division of Water (KDOW) regression equations. Peak flood discharges will be calculated for the 100-year annual chance storm at various locations on the approximate study reaches. These flood discharges will be the basis for subsequent hydraulic analyses of the subject flooding sources.

Flood discharges will be calibrated and verified using stream gage data from the surrounding areas where possible. The results of the rainfall-runoff model and regional regression equations will be compared to applicable gage data by performing frequency analyses of historic gage data and area weighting the results based on the upstream drainage area at the gage. Frequency analyses will be performed on applicable gage data using the USGS PEAKFQ Flood Frequency Analysis or similar software identified on the FEMA approved models list, which applies guidelines contained in *Guidelines for Determining Flood Flow Frequencies, Bulletin 17B* of the U.S. Water Resources Council, March 1982. A brief report summarizing the hydrologic analysis results will be submitted to FEMA for review.

### Subtask 3.1 – Approximate Study Reaches (Category 3)

LFUCG and/or the CTP Contractor will determine 100-year flood discharges for the stream reaches studied in Fayette County. Fully developed discharges for the 100-year storm may also be developed. All hydrologic calculations will be performed using USGS regression equations as published in the USGS Water-Resources Investigation Report 97-219. The technique presented in this approach utilizes a generalized least-squares regression model to estimate peak stream flows for engaged sites using contributing-drainage area, basin development factor, and slope of the main channel.

Watershed boundaries will be derived using a Digital Elevation Model (DEM) from the LFUCG basemap and storm sewer infrastructure data, if not already available. LFUCG and/or the CTP Contractor will use the LFUCG basemap to extract basin limits and regression equation parameters such as contributing-drainage area and main channel slopes from the DEM data. All 100-year discharge calculations and input parameters will be tabulated and linked to a digital sub-watershed layer.

### Subtask 3.2 – Detailed Study Reaches (Category 4)

XP-SWMM will be used for hydrologic modeling of the detailed study watersheds' response to design rainfall events unless sufficient gage information is available to develop discharges. Sub-watershed boundaries will be utilized as available and further defined if non-existent. LFUCG and/or the CTP Contractor will use the LFUCG basemap to extract basin limits and hydrologic parameters such as curve numbers and sub-watershed times of travel. Discharges will be developed in accordance with the KDOW, LFUCG, and FEMA requirements.

Runoff loss will be calculated using the SCS curve number or Green-Ampt Loss Rate method. Required input includes a description of land cover and hydrologic soil condition. Digital land cover data will be provided by the LFUCG basemap. Digital soil data will be obtained from an available SSURGO (digital NRCS county soil survey) layer.

### Subtask 3.3 – Limited Detail Study Reaches (Category 5)

Hydrologic analyses for the limited detailed studies (Category 5) identified in the attached addendum of the MAS, will be performed to establish the 100-year flood discharges for selected reaches. Regional regression equations will be used to calculate these discharges. If a more accurate hydrologic model or gage data is pre-existing, flood discharges from these sources will be utilized. Discharge accuracy will be verified using traditional flood frequency analysis approaches and available gage data.

Hydrologic calculations will be performed using USGS regression equations as published in the USGS Water-Resources Investigation Report 97-219. The technique presented in this approach utilizes a generalized least-squares regression model to estimate peak stream flows for ungaged sites using contributing-drainage area, basin development factor, and slope of the main channel.

Watershed boundaries will be derived using a Digital Elevation Model (DEM) from the LFUCG basemap and storm sewer infrastructure data, if not already available. LFUCG and/or the CTP Contractor will use the LFUCG basemap to extract basin limits and regression equation parameters such as contributing-drainage area and main channel slopes from the DEM data. All 100-year discharge calculations and input parameters will be tabulated and linked to a digital sub-watershed layer. The location of limited detailed studies will be clearly noted on work maps.

### Assumptions

- Data to develop a digital land cover layer will be provided by LFUCG, or appropriate mapping partner.
- Digital soil data will be obtained from LFUCG, or an appropriate mapping partner.
- Historical rainfall and corresponding known high-water elevations of verifiable events are available for calibration.
- Reservoir rating tables will be available for flood control basins.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS, as well as the 'Limited Detailed Study Methods' guidance document published under the North Carolina Floodplain Mapping Program ([www.ncfloodmaps.com/pubdocs/limited\\_detailed.pdf](http://www.ncfloodmaps.com/pubdocs/limited_detailed.pdf)).

Deliverables: Upon completion of the hydrologic modeling, the results will be submitted to FEMA and/or FEMA MCC for independent review. The hydrologic results for the new studies will be included in the TSDN and submitted to FEMA at the completion of this project.

In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, LFUCG and/or the CTP Contractor shall make the following products available to FEMA:

- Digital copies of all hydrologic modeling (input and output) files for 10-, 50-, 100-(existing and fully developed), and 500-year annual chance storms;
- "Summary of Discharge" table(s) for each subject flooding source studied with detailed methods;
- Peak discharge summary for flooding sources studied with approximate methods;
- Appropriate application/certification form for hydrology; and
- All back-up data used in the analysis.

## Activity 4 - Independent QA/QC Review of Hydrologic Analyses

Responsible Mapping Partner: FEMA and/or FEMA MCC

Scope: FEMA and the FEMA MCC shall review the technical, scientific, and other information submitted by LFUCG and/or the CTP Contractor under Activity 3 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM. This work shall include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:
  - Use of acceptable models;
  - Use of appropriate methodology;
  - Correctly applied modeling methodology, including QC of input parameters;
  - Comparison with gage data and/or regression equations, if appropriate; and
  - Comparison with discharges for tributary or receiving streams.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- FEMA will maintain an archive of all data submitted for hydrologic modeling review. LFUCG will retain all supporting data for 3 years from the date LFUCG submits its final expenditure report to FEMA.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, FEMA shall make the following products available:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

## Activity 5 – Hydraulic Analyses

Responsible Mapping Partner: LFUCG and/or the CTP Contractor

Scope: Hydraulic analyses will be completed for reaches indicated in the attached addendum as approximate studies (Category 3), detailed studies (Category 4), and limited detailed studies (Category 5)

### Subtask 5.1 – Approximate Study Reaches (Category 3)

The modeling for the approximate study reaches will include the 100-year annual chance event based on peak discharges computed under Task 3.1. Flood depth data for approximate stream reaches will be developed using FEMA approved modeling software.

Hydraulic parameters for the model will be estimated from data collected during the field reconnaissance and published sources. A single Manning's "n" value (roughness coefficient) will be estimated at each cross section to be used for calculation of water depth. Cross section data will be extracted from the DEM data using an automated process and inserted into the XP-SWMM model at the downstream end of each reach, at major channel junctions and at intervals of between one and five miles along uninterrupted stream reaches. Structure data will not be collected or modeled.

### Subtask 5.2 – Detailed Study Reaches (Category 4)

The modeling for the detailed study reaches will include the 10-, 50-, 100-, and 500-year annual chance events based on peak discharges computed under Task 3.2. Upon prior agreement with FEMA Region IV, 100-year, fully-developed conditions will also be included in the modeling. The hydraulic method used for detailed study reaches will be performed using FEMA approved modeling software. Cross section and field data collected under Activity 1 will be used to prepare the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and floodways (1.0' surcharge) for the subject flooding sources.

### Subtask 5.3 – Limited Detail Study Reaches (Category 5)

Hydraulic analyses will be completed for reaches indicated in the attached addendum as limited detailed studies (Category 5). Hydraulic parameters for the model will be estimated from data collected during the field reconnaissance and published sources. Hydraulic structures will be coded into the model utilizing existing bridge/culvert plans, field measurements, or structural sizing curves based upon drainage area and KDOT/Public Works drainage structure regulations. Manning's "n" values will be estimated at each cross section to be used for calculation of water depth. Cross section data will be extracted from existing DEM data using an automated process and inserted into the hydraulic model at the downstream end of studied reaches, at major channel junctions and at intervals of approximately one mile or less along uninterrupted stream reaches. Ineffective flow areas will be inserted as needed. Floodway encroachments will be defined assuming a 1.0' surcharge of the 100-year floodplain.

Assumptions:

- Elevation model input data provided by the LFUCG basemap is sufficient to create a DEM to delineate resulting floodplains.
- New hydraulic models will be developed with cross section locations that may or may not match stations listed in the current effective FIS models for Section 5.1.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS as well as the 'Limited Detailed Study Methods' guidance document published under the North Carolina Floodplain Mapping Program ([www.ncfloodmaps.com/pubdocs/limited\\_detailed.pdf](http://www.ncfloodmaps.com/pubdocs/limited_detailed.pdf)).

Deliverables: Upon completion of detailed hydraulic modeling for Fayette County, the results will be submitted to FEMA for independent review. The results for the approximate studies will be included in the TSDN and submitted to FEMA at the completion of this project.

In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, LFUCG and/or the CTP Contractor shall make the following products available to FEMA:

- Digital profiles of the 10-, 50-, 100-(existing and fully developed), and 500-year annual chance water-surface elevations representing existing conditions;
- Floodway Data Table(s) for each subject flooding source;
- Digital copies of all hydraulic modeling (input and output) files;
- All back-up data used in the analysis; and
- All input and output data, intermediate data processing products, GIS data layers, and final products in the format of the DFIRM database structure.

## Activity 6 - Independent QA/QC Review of Hydraulic Analyses

Responsible Mapping Partner: FEMA and/or the FEMA MCC

Scope: FEMA and/or the FEMA MCC shall review the technical, scientific, and other information submitted by LFUCG and/or the CTP Contractor under Activity 5 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM. This work shall include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:
  - Use of acceptable model(s);
  - Verification of survey data incorporation;
  - Boundary conditions;
  - Cross-section geometry;
  - Manning's "n" values and expansion/contraction coefficients;
  - Bridge and culvert modeling;
  - Flood discharges;
  - Regulatory floodway computation methods; and
  - Tie-in to upstream and downstream effective Flood Profiles.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- FEMA will maintain an archive of all data submitted for hydraulic modeling review. LFUCG will retain all supporting data for 3 years from the date LFUCG submits its final expenditure report to FEMA.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, FEMA shall make the following products available:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

## **Activity 7A - Floodplain Mapping (Approximate, Limited Detailed, and Detailed)**

Responsible Mapping Partner: LFUCG and/or the CTP Contractor

Scope: Digital floodplain and floodway boundaries will be delineated for the flooding sources listed in the attached addendum of this MAS. The mapping will incorporate new and revised hydraulic modeling and newly acquired topographic information. The floodplain boundaries for the 100-year existing and fully developed conditions recurrence intervals and floodway encroachments with a 1.0' surcharge will be delineated on a digital work map based on topographic data supplied by the LFUCG basemap which will be the basis of the revised FIRM. The 100-year fully developed floodplain will be mapped as shaded 'Zone X' in place of the 500-year floodplain.

### Subtask 7A.1 – Delineate Floodplains and Floodways

LFUCG and/or the CTP Contractor will use contours and spot elevations from the LFUCG basemap to delineate the 100-year existing conditions floodplain and floodway, in addition to the 100-year fully developed floodplain for detailed study areas (Category 4). 100-year floodplains under existing conditions will be produced for approximate study areas (Category 3). Manual adjustments will be made where appropriate to remove computer-generated anomalies.

100-year floodplains will be produced for limited detailed studies (Category 5) along with published base flood elevations. Floodway encroachments will be calculated within these studies and published in a floodway data table and shown on the mapping. These study types can be upgraded to fully detailed studies should the need arise. Limited detailed studies include the mapping of only the 100-year floodplain, not the floodway boundary. In addition, base flood elevations are published on the maps, which provide another regulatory tool not found in approximate studies. Flood profiles will not be published for these studies.

### Subtask 7A.2 – Prepare Work Maps

LFUCG and/or the CTP Contractor will prepare work maps using the LFUCG basemap. These maps will depict the 100-year existing conditions and fully developed floodplains and floodway boundaries, and shall include cross sections, BFEs, and zone designation labels. Paper work maps will be prepared for the panels identified in the attached addendum in accordance with the appropriate DFIRM panel layout.

Assumptions: The following conditions were assumed during the creation of this MAS:

- The panels in the proposed panel scheme that contain revised flood hazard data are identified in the addendum. These panels will serve as the work map areas for deliverables under this task.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of floodplain mapping for the modeled stream reaches identified in the addendum, the results will be submitted to FEMA for independent review. The mapping for the remaining flooding sources will be submitted for Quality Assurance/Quality Control (QA/QC) review at the completion of this task.

In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, LFUCG and/or the CTP Contractor shall make the following products available to FEMA:

- Digital work maps with the 100-year existing conditions and fully developed floodplain and floodway boundaries delineated for the detailed, limited detail, and approximate study reaches (Categories 4, 5, and 3) as identified. The 500-year floodplain will also be shown for detailed study reaches. These maps shall include cross sections, BFEs, and zone designation labels where appropriate.
- Back-up or supplemental information used in the mapping required for the QA/QC review.

## **Activity 7B – Floodplain Mapping (Re-Delineation and LOMC areas)**

Responsible Mapping Partner: LFUCG and/or the CTP Contractor

Scope: The effective FIRMs will be converted to digital format that conforms to FEMA's DFIRM specifications for the flooding sources specified in the attached addendum. The LFUCG basemap will be used for the conversion. This activity covers the re-delineation of the number of panels and linear stream miles indicated in the addendum. LOMCs issued since the current effective FIRM for each affected community will also be incorporated.

### Subtask 7B.1 – Re-Delineate Floodplains

LFUCG and/or the CTP Contractor will use the existing FEMA cross sections as shown on the FIRMs to produce new floodplains that reflect the vertical datum shift from NGVD29 to NAVD88 (Category 1). These cross sections will be used to generate new water surface elevation models that can be intersected with the ground terrain model to produce new floodplains. Manual adjustments and edits will be made where necessary.

### Subtask 7B.2 – Incorporate LOMCs and Manual Adjustments

Following the redelineation (Category 1) process, LFUCG and/or the CTP Contractor will review and incorporate each LOMC that supersedes effective information (Category 2) issued since the current effective FIRM. Prior to the production and release of the preliminary maps, FEMA will be provided the opportunity to submit new LOMCs that were approved during the map development process.

Additionally, manual adjustments and edits will be made to the limits of the flood hazard layers to tie in flood profiles from the effective FIS where necessary and possible.

### Subtask 7B.3 – DFIRM Attribute Coding and Metadata

LFUCG and/or the CTP Contractor will modify the flood hazard data attributes as appropriate to meet FEMA's DFIRM database specification. Additionally, metadata files that meet DFIRM specifications will be prepared for flood hazard data layers.

Assumptions: The following conditions were assumed during the creation of this MAS:

- FEMA will provide copies of all LOMCs issued since the current effective FIRM, if not readily available with LFUCG;
- All FEMA FIRM panels will be converted to the DFIRM specification under this task.
- Any changes in the floodplain that have not yet been filed for a LOMR, will be incorporated as a part of the redelineation effort.
- No attempt will be made to match remapped floodplain top widths with top widths in effective FIS models or data tables.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

## Activity 8 - Independent QA/QC Review of Floodplain Mapping

Responsible Mapping Partner: FEMA.

Scope: FEMA shall review the floodplain mapping submitted by LFUCG and/or the CTP Contractor under Activity 7 to ensure that the results of the analyses performed are accurately represented. This work shall include, at a minimum, the activities listed below.

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain boundaries for agreement with the flood elevations shown in the Floodway Data Table and the contour lines and other topographic information shown on the work maps.
- Review the floodplain widths at cross sections as shown on the work maps to ensure they match the Floodway Data Table for new detailed, limited detail and approximate studies only.
- Review the floodplain boundaries as shown on the work maps to ensure they match the Flood Profiles.
- Review the flood insurance risk zones as shown on the work maps to ensure they are labeled properly.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, FEMA shall make the following products available:

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreements with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated work map with all questions and/or concerns indicated, if necessary.

## Activity 9 – DFIRM Production (Merging Effective and Revised Information)

Responsible Mapping Partner: LFUCG and/or the CTP Contractor

Scope: Upon completion of the Floodplain Mapping Activity (Activity 8) for the revised flooding sources for effective areas, the digital floodplain data will be merged into a single, updated Digital FIRM. This work will include tie-in of flood profiles, floodplain boundaries and floodways with contiguous communities that were not studied as part of this project. In addition, the DFIRM will be revised as appropriate to meet the current FEMA graphic specifications.

### Subtask 9.1 – Combine Flood Hazard Information

LFUCG and/or the CTP Contractor will combine the new digital flood hazard layers with the re-delineated flood hazard layers to create a single, countywide DFIRM product that meets FEMA's specifications. Flood hazard data from the surrounding communities (supplied by FEMA) will be used for edge matching where applicable.

### Subtask 9.2 – Prepare DFIRM Graphic Specification

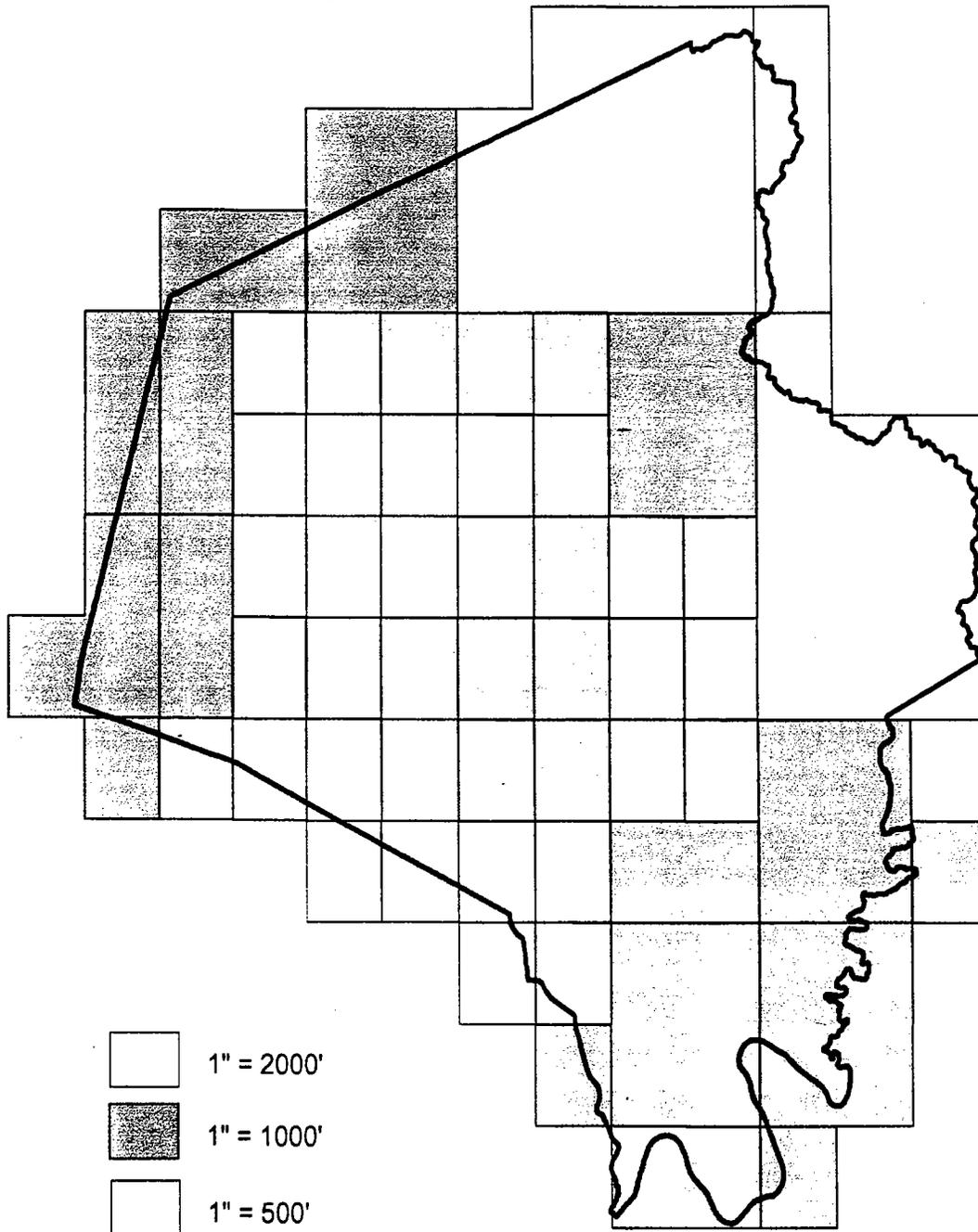
LFUCG and/or the CTP Contractor will apply the graphic specification to the newly created countywide DFIRM. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, and notes to user). Figure 1-1 below illustrates the proposed DFIRM panel layout to be used during this activity.

### Subtask 9.3 – Prepare County-Wide FIS Report

LFUCG and/or the CTP Contractor will develop a revised county-wide report for the activities performed in this project. This report will include the project narrative, appropriate floodway data tables, and flood profiles for each study stream in Fayette County. All elevations reported will be referenced to the North American Vertical Datum of 1988.

Assumptions: The following conditions were assumed during the creation of this MAS:

- FEMA will provide digital information for the surrounding communities for effective areas to be used during the edge-matching process;
- As responsible partners, LFUCG, FEMA, the CTP contractor will coordinate on and review the proposed tiling scheme.
- Upon FEMA approval of the tiling scheme presented in Figure 1-1, 57 panels of various scales will be prepared to DFIRM specifications during this task.



**Figure 1-1. Proposed DFIRM Panel Layout**

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, LFUCG and/or the CTP Contractor shall make the following products available to FEMA:

- DFIRM mapping files that meet FEMA's DFIRM specifications. These files will be provided on CD-ROM.
- Metadata files that meet FEMA's DFIRM specifications. These files will be provided on CD-ROM.
- Paper plots of the DFIRM panels will be provided.
- A summary report that includes a description and the results of automated or manual quality assurance steps taken during the preparation of the DFIRMs will be provided.
- A county-wide FIS report publishing the findings of the DFIRM study in accordance with the *Guidelines and Specifications for Flood Hazard Mapping Partners*.

## Activity 10 – Independent QA/QC Review of DFIRM Product

Responsible Mapping Partner: FEMA.

Scope: Upon completion of the floodplain mapping activities (Activity 7) and DFIRM production activities (Activity 9), FEMA and/or FEMA MCC shall review the DFIRM to ensure it meets current FEMA graphic specifications. In addition, FEMA and/or the FEMA MCC shall review the DFIRM spatial database to determine if it meets current FEMA database specifications. FEMA shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, cross sections, studied streams, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- All map collar information is complete, correct, and follows the requirements specified in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- Metadata files describing the DFIRM data include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- The FIS report is prepared in the FEMA Countywide Format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, FEMA shall make the following products available:

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

## Activity 11 - Preliminary DFIRM and FIS Report Distribution

Responsible Mapping Partners: LFUCG, FEMA, and the CTP contractor.

Scope: This activity consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report for community official and general public review and comment. The activities to be performed are summarized below.

*Preliminary Transmittal Letter Preparation.* Unless otherwise directed by FEMA, LFUCG and the CTP Contractor shall prepare letters to transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

*Final QA/QC Review of Preliminary DFIRM and FIS Report:* FEMA shall perform a final QA/QC review of the Preliminary DFIRM and FIS report, including all data tables, Flood Profiles, and other components of the FIS report. The QA/QC review procedures shall be consistent with the *Guidelines and Specifications for Flood Hazard Mapping Partners*.

*Discrepancy Resolution:* LFUCG, the CTP Contractor, and FEMA shall work together as appropriate to resolve discrepancies identified during the final QA/QC review.

*Distribution of Preliminary DFIRM and FIS Report:* LFUCG and the CTP Contractor shall distribute the Preliminary copies of the DFIRM and FIS report to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

*News Release Preparation:* Unless otherwise directed by FEMA, LFUCG shall prepare news release notifications of BFE changes for all affected communities if appropriate and perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. LFUCG shall file the notifications for later submittal to FEMA for review.

*Preliminary Summary of Map Actions (SOMA) Preparation:* LFUCG and the CTP Contractor shall prepare Preliminary SOMAs for all affected communities if appropriate. The SOMA shall list pertinent information regarding LOMCs that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, and revalidated).

Standards: All work under this activity shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners* and the requirements documented in Section 1 and Appendix A of the *FEMA Document Control Procedures Manual*. LFUCG and/or the CTP Contractor shall make the products listed below available to FEMA.

- Preliminary transmittal letters shall be prepared. These letters and additional letters requested by FEMA shall be prepared in accordance with the current version of the *FEMA Document Control Procedures Manual*.
- Preliminary copies of the DFIRM and FIS report, including updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of each affected community; all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- Flood Insurance Study Reports for all limited detailed study streams.

- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- Revised DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- Revised DFIRM database files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- Revised metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.
- A Summary Report that describes and provides the results of automated or manual QA/QC review steps taken during the preparation of the DFIRM shall be provided.

## Activity 12 - Post-Preliminary Processing

Responsible Mapping Partners: LEUCG, the CTP Contractor and FEMA.

Scope: This activity consists of finalizing the DFIRM and FIS report after the preliminary copies of the DFIRM and FIS report have been issued to community officials and the public for review and comment. The activities to be performed are summarized below.

*Initiation of Statutory 90-Day Appeal Period:* When required, upon completion of a 30-day community comment period and/or final coordination meeting with the affected communities, FEMA shall arrange for and verify that the following activities are completed in accordance with the current version of the *FEMA Guidelines and Specifications for Flood Hazard Mapping Partners and Document Control Procedures Manual*:

- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- News release notifications of BFE changes are published in prominent newspapers with local circulation.
- The appropriate notices (Proposed Rules) are published in the *Federal Register*.

*Resolution of Appeals and Protests:* LFUCG shall support FEMA in reviewing and resolving appeals and protests received during the 90-day appeal period. For each appeal and protest, the following activities shall be conducted as appropriate:

- Initial processing and acknowledgment of submittal;
- Technical review of submittal;
- Preparation of letter(s) requesting additional supporting data;
- Performance of revised analyses; and
- Preparation of a draft resolution letter and revised DFIRM and FIS report materials for FEMA review.

LFUCG shall mail all associated correspondence upon authorization and coordination with FEMA. When necessary, dual signatures (LFUCG and FEMA) may be required for correspondence.

*Preparation of Special Correspondence:* LFUCG shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as "special correspondence"), including drafting responses for FEMA review when appropriate and finalizing responses when requested by FEMA. LFUCG and the CTP Contractor also shall mail the final correspondence (and enclosures if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA. When necessary, dual signatures (LFUCG and FEMA) may be required for correspondence.

*Revision of FIRM and FIS Report:* If necessary, LFUCG and FEMA shall work together to revise the DFIRM and FIS report at the direction of the FEMA Regional Project Officer and distribute Revised Preliminary copies of the DFIRM and FIS report to the CEO and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

*Final SOMA Preparation:* LFUCG shall prepare Final SOMAs for the affected communities as appropriate.

## SECTION 2—Technical and Administrative Support Data Submittal

The Mapping Partners for this Flood Map Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this Mapping Activity Statement shall be submitted in the TSDN format in accordance with Appendix M of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated April 2003, available at FEMA's website at [www.fema.gov/fhm/g\\_s\\_main.shtm](http://www.fema.gov/fhm/g_s_main.shtm). Table 2-1 indicates the sections of the TSDN that apply to each mapping activity.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions. (For additional information on SPRs, refer to Appendix M, Subsection M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*.)

Additionally, the LFUCG and/or the CTP Contractor shall collect and maintain a set of products for all activities and shall compile a comprehensive TSDN for the entire project.

**Table 2-1. Mapping Activities and Applicable TSDN Sections**

TSDN Section	Mapping Activities											
	1	2	3	4	5	6	7	8	9	10	11	12
<b>General Documentation</b>												
Special Problem Reports	X	X	X	X	X	X	X	X	X	X	X	X
Telephone Conversation Reports	X	X	X	X	X	X	X	X	X	X	X	X
Meeting Minutes/Reports	X	X	X	X	X	X	X	X	X	X	X	X
General Correspondence	X	X	X	X	X	X	X	X	X	X	X	X
<b>Engineering Analyses</b>												
Hydrologic Analyses	X		X	X	X	X	X	X				
Hydraulic Analyses	X		X	X	X	X	X	X				
Key to Cross-Section Labeling	X		X	X	X	X	X	X				
Key to Transect Labeling	X		X	X	X	X	X	X				
<b>Draft FIS Report</b>			X	X	X	X						
<b>Mapping Information</b>		X					X	X	X	X	X	X
<b>Miscellaneous Reference Information</b>	X	X	X	X	X	X	X	X	X	X	X	X

### **SECTION 3—PERIOD OF PERFORMANCE**

See the attached addendum for the Period of Performance for the mapping activities outlined in this MAS. The mapping activities may be terminated at the option of FEMA or LFUCG in accordance with the provisions of the Partnership Agreement dated September 12, 2003.

### **SECTION 4—FUNDING/COST-SHARING**

### **SECTION 5—STANDARDS**

The standards relevant to this Mapping Activity Statement are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* to be referenced for each mapping activity is summarized in Table 5-2.

Table 5-1. Applicable Standards for Project Activities

Applicable Standards	Activities											
	1	2	3	4	5	6	7A, 7B	8	9	10	11	12
<i>Guidelines and Specifications for Flood Hazard Mapping Partners</i> , February 2002	X	X	X	X	X	X	X	X	X	X	X	X
American Congress on Surveying and Mapping (ACSM) procedures	X											
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-58), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	X											
EM 1000-1-1000, <i>Photogrammetric Mapping</i> , March 31, 1993	X											
EM 1110-2-1003, <i>Hydrographic Surveys</i> , October 31, 1994	X											
Numerical Models Accepted by FEMA for NFIP Usage, January 11, 2002			X	X	X	X						
<i>Content Standards for Digital Geospatial Metadata</i> (Federal Geographic Data Committee, 1998)		X					X	X	X	X	X	X
<i>Document Control Procedures Manual</i> , December 2000									X	X	X	X
' <i>Limited Detailed Study Methods</i> ' guidance document published under the North Carolina Floodplain Mapping Program			X	X	X	X	X	X				

Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
1	Field Surveys and Reconnaissance	Volume 1, Sections 1.2, 1.3, 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.5, A.6, A.7, and A.8 Appendices B, C, and M
2	Base Map Acquisition and Preparation	Volume 1, Section 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsection 1.4.3) Appendices A and B
3	Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix C, Sections C.1 and C.7 Appendices E, F, G, H, and M 'Limited Detailed Study Methods' guidance document published under the North Carolina Floodplain Mapping Program
4	Independent QA/QC Review of Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix C, Section C.2 Appendices E, F, G, H, and M 'Limited Detailed Study Methods' guidance document published under the North Carolina Floodplain Mapping Program
5	Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix C, Sections C.3 and C.7 Appendices B, E, F, G, H, and M 'Limited Detailed Study Methods' guidance document published under the North Carolina Floodplain Mapping Program

**Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications (Cont'd)**

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
6	Independent QA/QC Review of Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Section C.5 Appendices B, E, F, G, H, and M 'Limited Detailed Study Methods' guidance document published under the North Carolina Floodplain Mapping Program
7A, 7B	Floodplain Mapping	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M 'Limited Detailed Study Methods' guidance document published under the North Carolina Floodplain Mapping Program
8	Independent QA/QC Review of Floodplain Mapping (Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.1. and 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices D, K, L, and M
9	DFIRM Production (Merging Revised and Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2 and 1.4.3) Appendices K, L, and M

**Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications (Cont'd)**

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
10	Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications	Volume 1, Section 1.4 (specifically Subsections 1.4.3.) Appendices K, L, and M
11	Preliminary DFIRM and FIS Report Distribution	Volume 1, Section 1.4 (specifically Subsections 1.4.2 and 1.4.3) and Section 5 (Specifically Subsection 1.5.1) Appendices J, K, L, and M
12	Post-Preliminary Processing	Volume 1, Section 1.5 Appendices J, K, L, and M

## SECTION 6—SCHEDULE

The activities documented in this MAS shall be completed in accordance with the project schedule included in the attached addendum. The "Deliverables" identified in each Activity will be due to FEMA on the dates indicated in the schedule portion of the attached addendum. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

## SECTION 7—CERTIFICATIONS

The following certifications apply to this MAS:

### **Activity 1 (Field Surveys and Reconnaissance)**

A Registered Professional Engineer or Licensed Land Surveyor will certify topographic data, in accordance with 44 CFR 65.5(c). Certification of topographic data by the American Society for Photogrammetry and Remote Sensing is also acceptable.

### **Activity 2 (Base Map Acquisition and Preparation)**

- A community official or responsible party will provide written certification that the digital data meet FEMA minimum standards and specifications.
- The responsible Mapping Partner will provide documentation that the digital base map can be used by FEMA.

### **Activity 3 (Hydrologic Analyses), Activity 5 (Hydraulic Analyses), and Activity 8 (Floodplain Mapping)**

- A Registered Professional Engineer or Licensed Land Surveyor will certify hydrologic and hydraulic analyses and data in accordance with 44 CFR 65.6(f).
- A Registered Professional Engineer or Licensed Land Surveyor will certify topographic information in accordance with 44 CFR 65.5(c).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10(e).

### **Activity 7 (Floodplain Mapping), Activity 8 (Independent QA/QC Review of Floodplain Mapping), and Activity 9 (DFIRM Production {Merging Effective and Revised Information})**

The DFIRM metadata files will include a description of the horizontal and vertical accuracy of the DFIRM base map and floodplain information.

## **SECTION 8—TECHNICAL ASSISTANCE AND RESOURCES**

Mapping Partners may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from FEMA and/or their designated contractor.

General technical and programmatic information, such as FEMA 265 and the Quick-2 computer program, can be downloaded from the FEMA Web site ([www.fema.gov/fhm](http://www.fema.gov/fhm)). FEMA and/or their designated contractor may provide specific technical and programmatic support; such assistance should be requested through the FEMA Regional Project Officer specified in Section 11 of this MAS.

Mapping Partners also may consult with the FEMA Regional 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 subcontractors, and GIS-based engineering and modeling training.

## **SECTION 9—CONTRACTORS**

Lexington-Fayette Urban County Government (LFUCG) intends to use the services of various engineering-consulting firms as contractors for this Flood Map Project. LFUCG shall ensure that the procurement for all contractors used for this Flood Map Project complies with the requirements of 44 CFR 13.36.

Part 13 may be downloaded in PDF or text format from the U.S. Government Printing Office Web site at [http://www.access.gpo.gov/nara/cfr/waisidx\\_02/44cfr13\\_02.html](http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfr13_02.html).

## **SECTION 10—REPORTING**

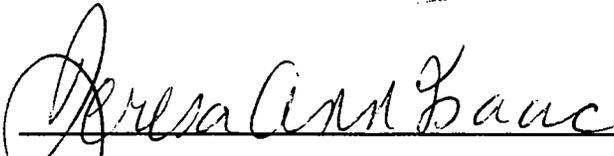
**Financial Reporting:** Because funding has been provided to LFUCG by FEMA, financial reporting requirements for LFUCG will be in accordance with Cooperative Agreement Articles V and VI.

**Status Reporting:** Status reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. At a minimum these reports will include a summary of the work that was completed during the quarter and a comparison for the % work completed to the % of funds expended. The Project Officer, as needed, may request additional information on status.

## **SECTION 11—POINTS OF CONTACT**

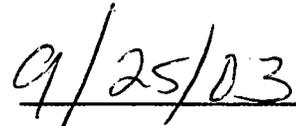
The points of contact for this Flood Map Project are Laura Algeo, the FEMA Regional Project Officer; Jimmy Emmons, the Project Manager for LFUCG; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, any additional assistance from FEMA should be requested through the FEMA Regional Project Officer.

Each party has caused this MAS to be executed by its duly authorized representative.



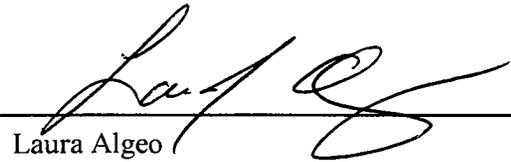
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Teresa Ann Isaac  
Mayor  
Lexington-Fayette Urban County Government (LFUCG)



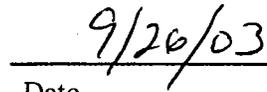
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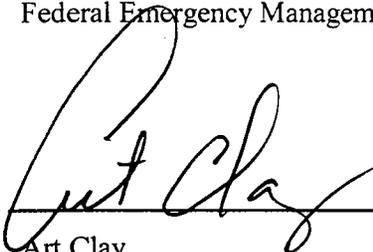
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Laura Algeo  
Regional Project Officer  
Federal Emergency Management Agency, Region 4



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Date



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Art Clay  
Branch Manager, Water Resources  
Kentucky Division of Water



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Date



# Lexington-Fayette Urban County Government COOPERATING TECHNICAL PARTNERS ADDENDUM 2003

## Addendum 2003 - Map Modernization Project Prioritization for Fiscal Year 2003

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated September 12, 2003 and Mapping Activity Statement No. 1 between the Lexington-Fayette Urban County Government (LFUCG) and the Federal Emergency Management Agency (FEMA), Addendum 2003 is as follows.

### SECTION 1—Priority Flood Study Summary

Preliminary research indicates that there are 300.02 miles of streams in Fayette County that have been identified for remapping or study under this project. The miles of priority stream and category of floodplain study areas summarized as follows:

- Category 1: Redelineation of Existing Effective Maps - Stream miles: 294.95
- Category 2: Incorporation of LOMCs and LOMRs: # of LOMCs: Approximately 100
- Category 3: New Approximate Studies – Stream miles: 0
- Category 4: New Detailed Studies – Stream miles: 5.07
- Category 5: Limited Detail Study – Stream miles: 0

### SECTION 2— 2003 Priority Stream Project Information

The parties hereby recognize and agree that FEMA and LFUCG funding of the Mapping Activities Statement No. 1 will support the following prioritized projects. Based on FEMA's commitment of

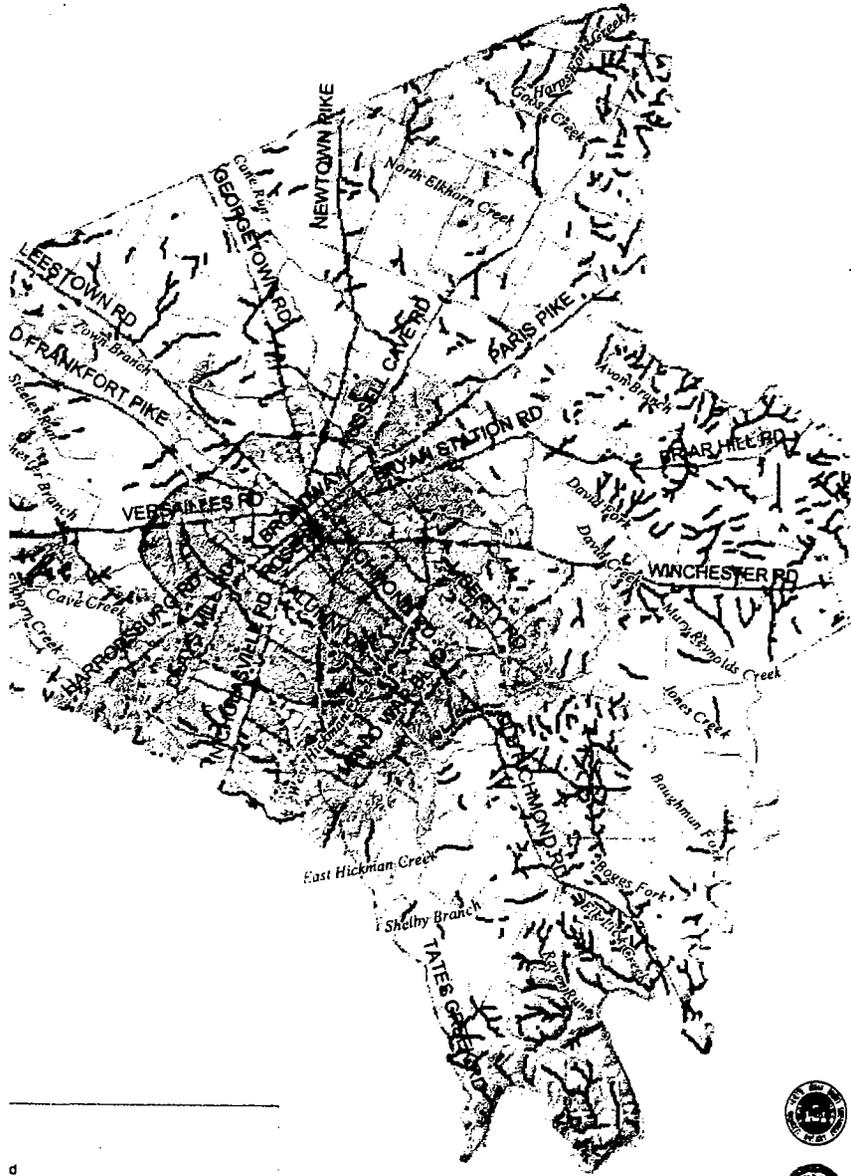
→ Fiscal Year 2003 for funding the LFUCG Mapping Activity Statement, the following stream flooding sources have been selected.

Upon FEMA approval of tiling scheme, approximately 57 panels (various scales) will be prepared to DFIRM specifications throughout the duration of these activities.

**Table 2-1. FY03 Fayette County Prioritized Project List**

<b>Study Category</b>	<b>Mileage</b>	<b>Total Cost</b>	<b>Running Total</b>
<b>Categories 1 and 2 - Redelineation Reaches/LOMCS</b>	<b>294.95</b>		
1 Armstrong Mill Road Tributary	0.62		
1 Athens Marker Tributary	1.22		
1 Avon Branch	5.66		
1 Baughman Fork	5.83		
1 Bethel Road Tributary	2.36		
1 Big Elm Tributary	1.16		
1 Boggs Fork	5.22		
1 Boone Creek	15.07		
1 Bowman Mill Tributary	0.32		
1 Bracktown Branch	2.90		
1 Bryan Station Creek/I-75 Tributary	2.72		
1 Cadentown Branch	1.27		
1 Cane Run	8.03		
1 Cave Creek	3.21		
1 Cave Hill Tributary	0.81		
1 Clemens Run	1.31		
1 Colonial Drive Tributary	0.57		
1 David Creek	2.22		
1 David Fork	5.14		
1 Delong Road Tributary	1.61		
1 Dogwood Tributary	0.34		
1 Drive-In Tributary	1.00		
1 East Hickman Creek	5.34		
1 East I-75 Tributary	1.29		
1 Eastland Park Tributary	1.64		
1 Elk Lick Creek	0.41		
1 Goose Creek	4.51		
1 Harps Fork Creek	0.15		
1 Higbee Mill Road Tributary	1.64		
1 Hume Road Tributary	1.49		
1 IBM Tributary	0.76		
1 Indian Hills Tributary	0.47		
1 Jones Creek	4.25		
1 Lansdowne Drive Tributary	1.23		
1 Manchester Branch	2.39		
1 Marble Creek	0.05		
1 Mary Reynolds Creek	1.57		
1 North Elkhorn Creek	22.38		
1 Parkers Mill Tributary	0.94		
1 Pleasant Ridge Church Tributary	0.86		
1 Quarry Tributary	0.51		
1 Radio Tower Tributary	1.61		

**County, Kentucky  
Region IV**



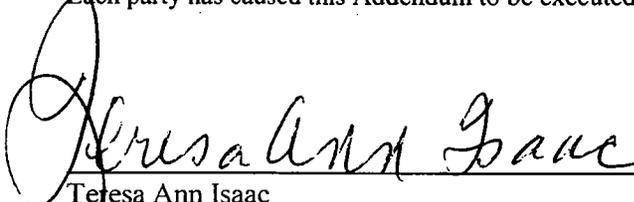
ified will be  
e required, the  
rs in a timely

BLE (S)	Days from NTP
IP r	120
IP r	60
IP r	150
MCC	180
IP r	240
MCC	270
IP r	300
ctor	240
MCC	330
TP or .	360
MCC	390
TP EMA CC	450
TP EMA CC	630

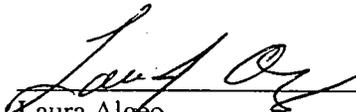
**Figure 1. Stream Locations**

**SECTION 4 — Funding / Leverage**

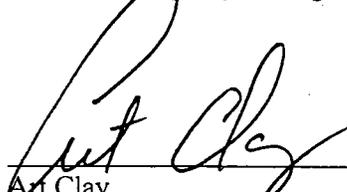
Each party has caused this Addendum to be executed by its duly authorized representative.

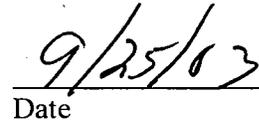
  
\_\_\_\_\_  
Teresa Ann Isaac  
Mayor  
Lexington-Fayette Urban County Government (LFUCG)

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Laura Algeo  
Regional Project Officer  
Federal Emergency Management Agency, Region 4

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Art Clay  
Branch Manager, Water Resources  
Kentucky Division of Water

  
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