Missouri State Emergency Management Agency
Federal Emergency Management Agency
Cooperating Technical Community
Mapping Activity Statement

Agreement 9 - Digital FIRM Preparation

In accordance with the Cooperating Technical Community (CTC) Memorandum of Agreement dated *June 17, 1999,* between the *Missouri State Emergency Management Agency (SEMA)* and the Federal Emergency Management Agency (FEMA), Agreement 9 is as follows:

1. **Objective and Scope:** The objective of this Mapping Activity is the conversion of effective Flood Insurance Rate Maps (FIRMs) and Flood Boundary Floodway Maps (FBFMs) to a digital format that conforms with FEMA's Digital Flood Insurance Rate Map (DFIRM) specifications. This Mapping Activity covers the digitization of *1* FIRM, 1 FBFM, and 11 FHBM panels for the community(s) of *Macon County and the City of Macon.* Revisions to the FIRM and/or FHBM made through FEMA Letters of Map Change (LOMCs) issued since the *January 19, 1978* will also be incorporated.

2. **Period of Performance:**
   {For Locally Funded Agreements} This Mapping Activity will begin on *August 1, 2000,* and end no later than *June 30, 2001.* This Mapping Activity may be terminated at the option of FEMA or *SEMA* in accordance with the provisions of the *June 17, 1999* CTC Memorandum of Agreement.

3. **Funding/Cost-Sharing:** *This project will be funded with DR-1253 unmet needs funds. The local match will be met with State General Revenue funds.*

4. **Standards:** The following documents are relevant to the creation of DFIRMs and this Mapping Activity:
   - *Guidelines and Specifications for Study Contractors* (FEMA 37) available via the internet at http://www.fema.gov/mit/tsd/EN_reg.htm.
   - *Guidelines and Specifications for Flood Map Production Coordination Contractors* (Draft February 17, 1999).
   - *Base Map Standards for DFIRMs* (FEMA). This document provides minimum base map standards for DFIRMs. These include the following requirements for DFIRM base map data:
     - cover the community(s) or county(s) completely;
     - be distributable by FEMA to the public;
     - meet the minimum accuracy requirements outlined in the document; and
     - include all required features.

- *Digital Flood Insurance Rate Map (DFIRM) Specifications.* (FEMA is in the process of developing specifications for its new DFIRM product. Once those specifications are complete, they will apply to this Mapping Activity.) This document will provide information about graphic specifications for hardcopy DFIRM products as well as minimum standards for the DFIRM database that accompanies the mapping files, file formats, transfer media, etc. The "Basic DFIRM" tables and items in the DFIRM database apply; optional tables and items are not required.
- *Standards for Digital Orthophotos* (U.S. Geological Survey, National Mapping Program, December 1996).
- *Content Standards for Digital Geospatial Metadata* (Federal Geographic Data Committee, 1998).

5. **Products:** *SEMA* shall make the following products available:
   - Quarterly status reports which include the percentage of work completed for this Mapping Activity, major accomplishments made during the quarter, any major problems encountered, and the resolution of any major problems encountered.
   - DFIRM mapping files in one of the GIS file formats specified in FEMA's *Digital Flood Insurance Rate Map (DFIRM) Specifications.* These files should be provided on CD-ROM.
   - DFIRM database files in one of the database formats specified in FEMA's *Digital Flood Insurance Rate Map (DFIRM) Specifications.* These files should also be provided on CD-ROM.
   - Metadata files describing the DFIRM data should be provided. These files will include the required information and follow the examples shown in FEMA's *Digital Flood Insurance Rate Map (DFIRM) Specifications.*
   - A complete set of plots of the DFIRM panels showing all detail at the scale(s) approved under the first milestone will be provided. Acceptable DFIRM scales are 1"=500', 1"=1000', and 1"=2000'.
   - A Quality Assurance/Quality Control (QA/QC) report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRMs will be provided.

6. **Schedule and Milestones:**

   Milestone 1: Upon completion, products for the first milestone will be provided to the FEMA Project Officer. These include:
   - A description of the proposed DFIRM base map including digital base map information checklist (available in FEMA 37);
   - A diagram showing the proposed DFIRM panel layout for the new panels that includes the community and/or county boundary(s) and scale of all panels;
   - A copy of the current FIRM index; and
   - QA/QC report.

Milestone 2: Upon completion, products for the second milestone will be provided to the FEMA Project Officer. These include:

- A set of digital files containing DFIRM data for one FIRM panel will be provided. The digital files will include the base map data as well as all FIRM information converted to DFIRM format.
- The mapping files will be accompanied by the appropriate DFIRM database tables described in FEMA's *Digital Flood Insurance Rate Map (DFIRM) Specifications*.
- Metadata files describing the DFIRM data will be provided.
- A plot of the DFIRM panel showing all detail at the scale approved under the first milestone will also be provided.
- QA/QC report.

Milestone 3 (Final Products): Upon completion, final products will be provided to the FEMA Project Officer. These include:

- A set of digital files containing all DFIRM data for the entire community(s) and/or county(s) defined in Section 1 of this Mapping Activity. The digital files will include the base map data as well as all FIRM information converted to DFIRM format.
- The mapping files will be accompanied by the appropriate DFIRM database tables described in FEMA's *Digital Flood Insurance Rate Map (DFIRM) Specifications*.
- Metadata files describing the DFIRM data will be provided.
- A complete set of plots of the DFIRM panels showing all detail at the scale(s) approved under the first milestone will also be provided.
- QA/QC report.

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

8. **Technical Assistance and Resources:** *SEMA* may obtain copies of FEMA-issued Letters of Map Change (LOMC), archived engineering back-up data, and data collected as part of the Five-Year Mapping Needs Assessment from FEMA's Mapping Coordination Contractor (MCC). The MCC may be contacted at 1 877 FEMA-MAP. General technical and programmatic information can be downloaded from FEMA's Flood Hazard Mapping web site (www.fema.gov/mit/tsd/). Specific technical and programmatic support may be provided through FEMA's MCC; such assistance should be requested through the FEMA Project Officer specified in Section 12 of this Mapping Activity Statement and may include:
   - Preparation of a DFIRM panel layout and panel grid in electronic format;
   - Example DFIRM mapping and database files;
   - Technical assistance in the form of training and technical guidance; and
   - DFIRM production tools, software, cell libraries, automated QA/QC tools, etc., that FEMA has developed for its own use.

9. **Subcontractors:** *Michael Baker Jr., Inc. will be the subcontractor for this activity.* Procurement of subcontractors using Federal funds provided as part of this Mapping Activity will comply with the requirements of 44 CFR 13.36.

10. **QA/QC Procedures:** DFIRM data prepared for this Mapping Activity will be independently reviewed to ensure that the following QA/QC requirements are met. This independent review will be conducted by *SEMA*. The procedures used may include a mixture of manual and automated QA/QC procedures:
    - Complete data capture of all required DFIRM features will be assured.
    - Data capture without distortion (other than that resulting from the addition of horizontal control and/or edgematching) will be assured.
    - Topological fidelity of the DFIRM files will be assured. This includes assurance that the files contain no overshoots or dangles, gaps, node errors, label errors, or pseudo nodes and assurance that all area features are closed.
    - FEMA's horizontal and vertical accuracy requirements for DFIRMs will be met.
    - All internal edgematching between panels will be resolved. If this Mapping Activity covers more than one community, edgematching between contiguous communities will also be resolved. This includes both "graphical" mismatches as well as mismatches in engineering data portrayed on the DFIRM (e.g., floodplain widths, base flood elevations, etc.).
    - Complete data capture of all required DFIRM database features will be assured. In addition, logical data encoding checks should be performed to assure consistency within the DFIRM database. For example, feature attributes will fall within the specified range and domain for that feature type.
    - Hardcopy DFIRM will be legible and plotted at the scale(s) agreed upon after the first milestone of this Mapping Activity.

11. **Reporting:**
    {For Locally Funded Agreements} Specify reporting requirements, if any.

12. **Points of Contact:** The FEMA Project Officer is *Robert Franke* and the CTC's Project Manager is *George Riedel, SEMA*, or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities.

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

Buck Katt, Deputy Director, SEMA	9/12/00 date
Robert C Bessen FEMA authorized representative	9/12/00 date
_____	_____