



**Oakland County, MI
Cooperating Technical Partners
Mapping Activity Statement**

Statement 01 –Digital Flood Insurance Rate Map (DFIRM) Production

In accordance with the Cooperating Technical Partners (CTP) Memorandum of Agreement dated September 17, 2002 between Oakland County, MI and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement 01 is as follows:

1. Statement Objective:

1.1 Objective

The objective of this Mapping Activity for Oakland County, MI is two-fold:

- 1) To gather the results of all existing engineering or hydraulic and hydrologic (H&H) studies and restudies that have been conducted by various agencies such as FEMA, Michigan Department of Environmental Quality (MDEQ), Oakland County, and local Cities, Villages, and Townships (CVTs) in Oakland County, MI. Such results will be mapped on a GIS-based database to show the areas that have been studied or restudied. This effort will help identify the state of engineering studies for Oakland County, MI in order to understand the implications of a county-wide redelineation of floodplain with existing engineering data.
- 2) To develop or update Digital Flood Insurance Rate Map(s) (DFIRM) and Flood Insurance Study (FIS) report(s) in two selected geographic townships based on existing engineering studies. The FIS and DFIRM will be produced in township-wide DFIRM format. This redelineation will serve as a pilot to demonstrate the level of effort required to redelineate the entire county and to seek the best possible method to do so. Additionally, this effort will help the communities in the two townships better manage floodplains. Furthermore, this redelineation may potentially reduce the flood insurance cost for Oakland County residents in these two townships.

For the purposes of administering the completion of this project, the Oakland County, MI GIS Utility will be the Mapping Partner and will act as project managers.

2.0 Mapping Activities: Activity 1 – Floodplain Mapping (Detailed Riverine or Coastal Analysis)

The following sections describe the specific mapping activities associated with this mapping project. The activity description identifies the responsible Mapping Partners, the Standards that must be met, and resultant map component.

2.1 Responsible Entity: Oakland County, MI

2.2 Scope and Task Descriptions:

In order to meet the objectives discussed above, this mapping activity is divided into two phases. The first phase identifies the state of existing engineering/H&H studies for the County and the delineation of this inventory on a GIS database for future reference. The second phase involves the digital delineation of floodplain and regulatory floodway boundaries for flooding sources in two selected townships in Oakland County, MI. Detailed description of all the tasks and the resources for each task are identified below.

2.2.1 Phase 1, Inventory of Engineering Studies:

Three tasks have been programmed in this phase to identify and collect engineering and H&H studies from various stakeholders, and create an inventory GIS database to show the location of these studies and other attributes as provided by FEMA. A total of 80 person-hours have been programmed for the project management of the first phase of the project.

Task 2.2.1.1: Project Coordination and Outreach: This task will involve coordinating the collection of engineering/H&H studies from various sources such as:

- Oakland County departments
- Cities, villages, and townships (CVTs)
- State of Michigan departments
- FEMA

Various stakeholders will be informed about this project through meetings and mailings and will be provided an opportunity to submit existing studies to be incorporated into the redelineation process or provide information on such studies. Much of this task falls under the project management domain and hence the time for this task will be drawn from the 80 person-hours that have been programmed for the first phase for project management, project coordination, and collection of engineering data, as discussed above.

Deliverable: Memo on studies submitted.

Task 2.2.1.2: Clean-up of Hydrography Dataset and Preparation of Inventory Database. This task will involve the clean-up of the existing Oakland County hydrography dataset and preparation of this dataset for use in the creation of the inventory database. The inventory database design will be provided by FEMA. A total of 100 person-hours have been programmed for this task.

Deliverable: Cleaned hydrography data for Oakland County, MI

Task 2.2.1.3: Creation of Countywide DFIRM Mapping Files:

This task will involve the creation of the DFIRM mapping files or the inventory of all existing engineering/H&H studies for the extent of Oakland County based on all data received as a result of Task 2.2.1.1. A total of 160 person-hours have been programmed for this task that will be completed by a GIS Data Technician.

Deliverable: For the entire county, DFIRM mapping files, in the GIS file and database formats specified in FEMA's DFIRM Specifications.

2.2.2 Phase 2, Floodplain Delineation for Selected Communities

This phase is the mapping phase which will involve delineation of floodplains for two geographic townships. The delineation of floodplains for these townships will incorporate all existing engineering studies and existing Oakland County topographic information. These townships will be selected based the engineering/H&H studies for these townships, the potential for floods, and their participation in the National Flood Insurance Program.

Task 2.2.2.1: Floodplain Delineation and Preliminary DFIRM Production:

For the selected townships, Oakland County will delineate the floodplain boundaries for the 1% (100 year flood) and 0.2% (500 year flood) recurrence intervals and the regulatory floodway on a digital work map based on existing Oakland County topography or topographic data, which will be the basis of the revised FIRM. Oakland County will provide an explanation for selecting an existing topographic map if one is used for the floodplain boundary delineation. Oakland County will also incorporate the results of all effective Letters of Map Change (provided by FEMA) as appropriate. In addition, Oakland County will address all concerns or questions regarding this Activity raised during the independent QA/QC review to be conducted by the FEMA MCC (Mapping Coordination Contractor), PBS&J.

The DFIRM panels will be prepared at a scale of 1 inch = 500 ft (or 1: 6000) and will follow the USGS quad paneling scheme, with each panel covering 1/16 of a standard USGS quad. For two townships, it is estimated that there will be approximately 27 DFIRM panels at the above scale. All delineation (digitization and data creation) will be done using ESRI software and in an acceptable data format. Attribution and map production will be done in ESRI's ArcGIS environment using automation routines created and provided by PBS&J. The average time for completion of each panel is 55 person-hours. Hence a total of 1485 person-hours have been programmed for this task. This task will be completed by a GIS Utility Data Technician. A total of 60 person-hours have been programmed for project management of this phase. Also a total of 40 person-hours have been allocated for contractual work which includes creation of data models, internal Oakland County QA procedures and programming.

Deliverable: In accordance with the Technical and Support Data Submittal (TSDN) format described in Section 3 of this Mapping Activity Statement, Oakland County, MI shall make the following products available to FEMA:

- Digital work maps with the 1% and 0.2% annual chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, Base Flood Elevations (BFEs), zone designation labels, and all applicable base map features for the two selected townships.
- Explanation for the selection of an existing topographic map;

- Metadata files describing the DFIRM data, including the required information shown in the examples shown in FEMA's DFIRM Specifications;
- Complete set of plots of the DFIRM panels showing all detailed flood hazard information at a suitable scale for the selected communities;
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the DFIRM; and
- Any backup or supplemental information used in the mapping required for the independent QA/QC review.

2.2.3 Training

In order to complete this project, Oakland County GIS Utility personnel responsible for the various tasks above will need appropriate training. Training will be provided by a FEMA MCC at Oakland County facilities. FEMA will assign the appropriate MCC and will bear the cost of their travel and time for the trainings. Two trainings will be scheduled.

Task 2.2.3.1: Training 1

The first training will be after the commencement of the project and will be 2 days in duration. The objective of the first training will be to familiarize Oakland County personnel with the entire delineation process from creating the inventory database to the delineation of floodplains and the creation of preliminary DFIRMs. For this training, existing data from engineering/H&H studies and topography data pertaining to Oakland County, MI shall be used.

Task 2.2.3.2: Training 2

The second training, also 2 days in duration, will be scheduled when approximately 10% of the delineation is completed. The objective of the second training is to resolve and clarify any outstanding issues that may arise as the work progresses. For each training, the participants from Oakland County will include the GIS Project Manager, GIS Data Manager, and GIS Data Technician.

Deliverable: Training materials from the MCC to Oakland County, MI

Standards: All work conducted under this Activity shall conform to the standards specified in Section 6 of this Mapping Activity Statement.

Products: Upon completion of floodplain mapping for the two selected townships, Oakland County, MI will submit the results to FEMA'S MCC for an independent QA/QC review.

3.0 Technical and Administrative Support Data Submittal: Oakland County, MI shall comply with the following data submittal requirements:

- All supporting documentation for the activities in this Mapping Activity Statement shall be submitted in accordance with Appendix M, Section M.2.1 of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, prepared by FEMA, dated February 2002. The following table indicates the sections of the TSDN that apply to each activity.

3.1 TSDN—Applicable Sections

Section of TSDN	Activities
	1
General Documentation	
Special Problem Reports	✓
Telephone Conversation Reports	✓
Meeting Minutes/Reports	✓
General Correspondence	✓
Engineering Analyses	
Hydrologic and Hydraulic Analyses	
Key to Cross-section Labeling and Key to Transect Labeling	✓
Draft FIS Report	
Mapping Information	✓
Miscellaneous Reference Materials	✓

Note: If any issue arises that could affect the completion of an activity within the proposed scope or budget, the party responsible for that activity must complete a Special Problem Report (SPR) immediately and submit it to FEMA. The SPR must describe the issue and propose possible resolutions.

Additionally, Oakland County, MI will be responsible for collecting and maintaining a set of products for all Activities and shall compile a comprehensive TSDN for the entire project.

4. Period of Performance:

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

5. Project Cost - Funding/Cost-Sharing:

6. **Standards:** Table 6-1 indicates the standards and documentation relevant to this Mapping Activity Statement. Table 6-2 shows the applicable sections of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* for each activity.

Table 6-1 Applicable Standards per Activity

Applicable Standards	Activities
	1
Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002	✓
Content Standards for Digital Geospatial Metadata (Federal Geographic Data Committee, 1998)	✓

Table 6-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners

Task Number	Task Description	Applicable Volume, Section/Subsection, and Appendix of Guidelines and Specifications
1	Floodplain Mapping (Redelineation Using Effective	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.3)

	Profiles and Updated Topographic Data)	
		Appendices K, L, and M

7. Schedule and Milestones:

Activity/Responsible Entity	Phase	Task #/Task Description	Start Date	End Date
Activity 1. Floodplain Mapping (Detailed Riverine or Coastal Analysis) – Oakland County	1	2.2.1.1: Project Coordination and Outreach	October, 2002	December 2002
		2.2.1.2: Clean-up of Oakland County Hydrology Dataset	November 2002	December 2002
		2.2.1.3: Creation of Countywide DFIRM Mapping Files	January 2003	February 2003
	2	2.2.2.1: Floodplain Delineation and Preliminary DFIRM Production	March 2003	July 2003
		2.2.3.1- Training 1	December 2002	
	2.2.3.2 – Training 2	March 2003		
Activity 2 – Independent QA/QC of Floodplain Mapping – PBS&J		To be completed outside the scope of this project	August 2003	December 2003

8. Certification: The following certifications apply to this Mapping Activity Statement :

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

- 9. Technical Assistance and Resources:** Oakland County, MI will receive copies of FEMA-issued LOMCs (Letter of Map Changes), archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from the 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 website (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 MCC Project Officer.

Oakland County, MI may also 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 sub-contractors, and GIS-based engineering and modeling training.

10. **Contractors:** Oakland County, MI will ensure that procurement of subcontractors as part of this Mapping Activity Statement complies with the requirements of 44 CFR 13.36.

11. **Financial Reporting:** Financial reporting requirements will be in accordance with Cooperative Agreement Articles V & VI.

12. **Points of Contact:** The FEMA Regional Project Officer is Eric Berman, and the CTP Project Manager is Sudha Maheshwari or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, the assistance of FEMA's MCC should be requested through the FEMA MCC Project Officer, Bill Blanton. The MCC point of contact is FEMA Region 5 Program Manager, Mike Depue.

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



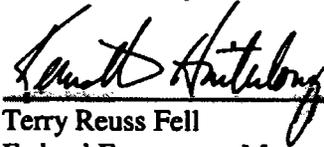
Oakland County Board Chairman
Oakland County, MI

9-17-02
Date



Oppmann, GIS Utility Supervisor
Oakland County, MI

9/17/02
Date



Terry Reuss Fell
Federal Emergency Management Agency

9/24/02
Date

Bill Blanton
Federal Emergency Management Agency

Date