



**Ottawa County, Michigan; and the
Michigan Department of Environmental Quality
Cooperating Technical Partners
Mapping Activity Statement**



Statement 2004-01 –Digital Flood Insurance Rate Map (DFIRM) Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Memorandum of Agreement dated **February 11, 2004**, between Ottawa County, Michigan; the Michigan Department of Environmental Quality (MDEQ) and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement 2004-01 is as follows:

- 1. Statement Objective and Scope:** The objective of this Mapping Activity for Ottawa County is to provide updated floodplain elevations for incorporation into the Ottawa County Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) reports for Ottawa County, Michigan. The FIS and DFIRM will be produced in a community-based DFIRM format. Additionally, this project will include developing new and/or updated flood hazard data, as summarized in the following table:

Name of Flooding Source	Reach Limits Upstream / Downstream	Reach Length (miles)	Detailed Riverine	
			Hydrology	Hydraulics
Buttermilk Creek	I-196 / Confluence with Rush Creek	Approx. 2.8	X	X
Buttermilk Creek	Quincy Street / I-196	Approx. 0.5	x	x
Unnamed Tributary to Buttermilk Creek (Phase III Flood Control Dam)	Quincy Street / Confluence with Butternut Creek	Approx. 0.4	X	X
Unnamed Tributary to Buttermilk Creek	I-196 / Confluence with Butternut Creek	Approx. 0.6	X	X
Alward Drain (Tributary to North Branch Rush Creek)	North ½ of Section 29 / North Branch Rush Creek	Approx. 0.2	X	X
DeWeerd Drain (Tributary to Rush Creek)	Barry Street/ Confluence with Rush Creek	Approx. 2.0	X	X
DeWeerd Drain (Phase II Flood Control Structure)	Upstream of I-196 / Barry Street	Approx. 1.6	X	X
Trout Drain (Tributary to DeWeerd Drain)	Downstream of 22 nd Avenue / confluence with DeWeerd Drain	Approx. 1.1	X	X
Rush Creek	Confluence of Northwest Branch Rush at 40 th Avenue / Kenowa Avenue	Approx. 5.2	X	X
Northwest Branch Rush Creek	Rush Creek Phase I Flood Control Structure / Confluence with Rush Creek at 40 th Avenue	Approx. 1.0	X	X
Bliss Creek Intercounty Drain (East Branch Rush Creek) Includes Bypass Channel in Section 25	Downstream of Jackson Street / Confluence with Rush Creek	Approx. 3.6	X	X
Meadowbrook Drain	Northeast corner of Section 26 / Confluence with Bliss Drain	Approx. 1.1	X	X
Knight Intercounty Drain	Kenowa Avenue / Confluence with Bliss Creek Intercounty Drain	Approx. 0.5	X	X
Huizenga Intercounty Drain	Kenowa Avenue / Confluence with Rush Creek	Approx. 1.1	X	X

Name of Flooding Source	Reach Limits Upstream / Downstream	Reach Length (miles)	Detailed Riverine	
			Hydrology	Hydraulics
County Drain No. 8 and North Holland Drain	Quincy Street / Confluence with County Drain No. 40 and County Drain 15 & 17	Approx. 2.1	X	X
Bareman Drain	Upstream of Quincy Street / Confluence with County Drain No. 15 & 17	Approx. 1.8	X	X
County Drain No. 15 & 17 and Vans Bypass	Upstream of 126 th Avenue / Confluence with County Drain No. 40	Approx. 1.1	X	X
County Drain No. 40	Confluence with County Drain No. 15 & 17 and County Drain No. 8 / Windmill Creek	Approx. 1.6	X	X
Windmill Creek	Confluence with County Drain No. 40 and County Drain No. 28 / Confluence with Macatawa River	Approx. 0.2	X	X
County Drain No. 28	Downstream of James Street / Confluence with Windmill Creek	Approx. 0.6	X	X

This project will be completed by the Mapping Partners, which includes Ottawa County and their engineering consultant, Spicer Group, Inc.; the MDEQ; and FEMA and their contractors. The activities, and who will complete them, are summarized in the table below.

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

Activity	CTP	FEMA	SC
Activity 1 – Field Surveys and Reconnaissance	Ottawa County		
Activity 2 – Topographic Data Development		X	
Activity 3 – Independent QA/QC of Topographic Data		X	
Activity 4 – Hydrology	Ottawa County		
Activity 5 – Independent QA/QC of Hydrology	MDEQ		
Activity 6 – Hydraulics	Ottawa County		
Activity 7 – Independent QA/QC of Floodplain Mapping	Ottawa County	X	
Activity 8 – Independent QA/QC of Floodplain Mapping		X	
Activity 9 – Base Map Acquisition and Preparation		X	
Activity 12A – Apply DFIRM Graphic Specifications		X	
Activity 12B – Independent QA/QC of DFIRM Graphics		X	
Activity 13 – Issue Preliminary FIS and FIRM		X	
Activity 14 – Issue Final FIS and FIRM		X	

FEMA has developed tools to assist in the development of the flood hazard data studies and the Digital Flood Insurance Rate Maps (DFIRMs) if the CTP wishes to use them. FEMA will, through the NSP, provide all CTPs access to and training in these tools. The tools available at this time include WISE software and the DFIRM production tools. The use of these tools will improve the Map Modernization and efficiency of all mapping partners.

If the CTP chooses not to use these production tools, then the CTP will be required to submit intermediate project data at major milestones in each Mapping Project in accordance with data capture

standards. Submitting data in these standards will aid in more efficient quality control reviews, data storage, archiving, and for future study updates.

The Data Capture Standard submittals will be required at the following study milestones:

- Project Scoping (as specified)
- Terrain Data Processing Completed
- Field Survey Completed
- Hydrology Completed (draft and final)
- Hydraulics Completed (draft and final)
- Coastal Analysis Completed (draft and final)
- DFIRM Mapping (draft and preliminary)

Activity 1 - Field Surveys and Reconnaissance
Responsible Mapping Partner: Ottawa County and their engineering consultant, Spicer Group, Inc., will complete the field surveys and reconnaissance.

Scope: To supplement any field reconnaissance conducted during the scoping phase of this Flood Map Project, Ottawa County shall compile previous field reconnaissance information of the study areas. Ottawa County will conduct a detailed field reconnaissance of the floodplain for the riverine reach limits requiring detailed riverine hydrology and hydraulics and field reconnaissance of existing information to verify conditions along the floodplain(s) for the study reaches identified as "verify" hydrology and hydraulics. The types and numbers of hydraulic and/or flood-control structures, apparent maintenance status of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses will be gathered. In addition to the initial field reconnaissance, this activity includes conducting field surveys, including obtaining channel and floodplain cross sections, identifying or establishing temporary bench marks (ERMs), and obtaining the physical dimensions of hydraulic and flood-control structures. Ottawa County is responsible for coordinating with other team members collecting topographic data under Activity 2.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the Technical Support Data Notebook (TSDN) format described in Section 2, Ottawa County shall make the following products available to FEMA:

- A report summarizing the findings of the field reconnaissance;
- Maps and drawings that provide the detailed survey results; and
- Survey notebook containing cross sections and structural data.

Activity 2 - Topographic Data Development

Responsible Entity: Ottawa County has previously provided FEMA's contractor with digital elevation data countywide. FEMA's contractor is using this digital elevation data for use in development of DFIRM products.

Scope: To supplement the field surveys conducted under Activity 1, the County will utilize the digital elevation data previously acquired. If FEMA's contractor performs any additional compilation or assemblage of the topographic data, it will be shared back to the County.

Contour interval and/or accuracy for the topographic data will be selected based on the existing FEMA guidelines and specifications.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2 the County has made the following products available to FEMA.

Hardcopy topographic maps;

Certification that the topographic data meets FEMA guidelines and specifications;

Mass points and breaklines data;

Digital workmap with contours;

- National Geodetic Survey (NGS) data sheets for Network Control Points (NCPs) used to control remote sensing and ground surveys;
- Metadata compliant with Federal Geographic Data Committee standards.

FEMA's contractor shall also make available the following products to Ottawa County and their consultant, if the data is altered from the original County submittal.

- Hardcopy topographic maps;
- Mass points and breaklines data on CD-ROM;
- Digital workmap with contours;

Activity 4 - Hydrology

Responsible Entity: Ottawa County and their engineering consultant, Spicer Group, Inc., shall be responsible for completing the hydrologic modeling.

Scope: Hydrologic analyses will be completed for the flooding source(s) listed in Section 1 of this Mapping Activity Statement. The hydrologic method used for this analysis will be the US Army Corps of Engineer's HEC-HMS model or analysis of USGS stream gage data. Previously completed hydrologic information will be used, where determined appropriate, as a resource for hydrologic parameters. Peak flood discharges will be calculated for the 10%, 2%, 1% and 0.2% annual chance storm events. Where dams or in-line or off-line detention exist, the US Army Corps of Engineers HEC-HMS or HEC-RAS model will be used to perform level pool and reach routing to determine the peak flood discharges. These flood discharges will be the basis for subsequent hydraulic analyses of the subject flooding source(s). In addition, Ottawa County will be responsible for addressing all concerns or questions regarding this Activity raised during the QA/QC review outlined in Activity 5.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of hydrologic modeling for the identified study reaches, Ottawa County will submit the results to the MDEQ for an independent QA/QC review as described in Activity 5.

In accordance with the TSDN format described in Section 2, Ottawa County shall make the following products available to FEMA.

- Digital copies of all hydrologic modeling and USGS gage analyses (input and output) files for 10%, 2%, 1% and 0.2% annual chance storm events.
- "Summary of Discharges" table(s) presenting discharge data for each flooding source.
- Draft text for Section 3.1, Hydrologic Analyses, of FIS report.

Appropriate SC application/certification form for hydrology.
All backup data used in the analysis, including work maps.

Activity 5 - Independent QA/QC Review of Hydrologic Analyses

Responsible Entity: The MDEQ will be responsible for the independent QA/QC review of the hydrologic analysis.

Scope: The MDEQ shall review the technical, scientific, and other information submitted by Ottawa County under Activity 4 of this Mapping Activity Statement to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to revise the FIRM. This work will include, at a minimum, the following activities:

- Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on:
 - Use of acceptable models;
 - Use of appropriate methodology(ies);
 - Correctly applied methodology(ies)/model(s), including QC of input parameters;
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review. All supporting data should be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the MDEQ shall make the following products available to FEMA.

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that arise as a result of the QA/QC review.

Activity 6 – Hydraulic Analyses

Responsible Entity: Ottawa County and their engineering consultant, Spicer Group, Inc., will be responsible for completing the hydraulic analyses.

Scope: Ottawa County will perform hydraulic analyses for approximately 29.1 miles for the flooding sources listed in Section 1 of this Mapping Activity Statement. All 29.1 miles will be based on new hydrology and hydraulics. The modeling will include the 10%, 2%, 1% and 0.2% annual chance storm events based on peak discharges computed under Activity 4. The hydraulic methods used for this analysis will include the most recent version of the U.S. Army Corps of Engineer's HEC-RAS Hydraulic Model for Steady-State modeling of water surface profiles. Ottawa County will use cross-section and field data collected under Activity 1 along with topographic data developed under Activity 2 to perform the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and regulatory floodways for the subject flooding sources. Ottawa County shall use CHECK-RAS to check the reasonableness of hydraulic analyses. To facilitate the independent QA/QC review under Activity 7, Ottawa County shall provide an explanation for each unresolved message from the CHECK-RAS program, as appropriate. In addition, Ottawa County will address all concerns or questions regarding this Activity raised during the independent QA/QC review under Activity 7.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of hydraulic modeling for the identified study reaches, Ottawa County will submit the results to the MDEQ for an independent QA/QC review as described in Activity 7.

In accordance with the TSDN format described in Section 2, Ottawa County shall make the following products available to FEMA:

- Digital profiles of the 10%, 2%, 1% and 0.2% annual chance water-surface elevations representing existing conditions using FEMA's RASPLOTT program or similar software;
- Floodway Data Table(s) for each subject flooding source. The Floodway Data Table(s) must be compatible with the DFIRM database;
- Digital copies of all hydraulic modeling (Input and output) files;
- Table with range of Manning's "n" values
- An explanation for each unresolved message from the CHECK-RAS program, as appropriate;
- All backup data used in the analyses;
- Draft text for inclusion in Section 3.2, Hydraulic Analyses, of FIS report; and

Activity 7 - Independent QA/QC Review of Hydraulic Analyses

Responsible Entity: The MDEQ will be responsible for the independent QA/QC review of the hydraulic analyses.

Scope: The MDEQ shall review the technical, scientific, and other information submitted by Ottawa County under Activity 6 of this Mapping Activity Statement to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to revise the FIRM. This independent QA/QC review of the hydraulic analyses will include, at a minimum, the following activities:

Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on:

- Use of acceptable models;
 - Starting water-surface elevations;
 - Cross section geometry;
 - Manning's "n" values and expansion/contraction coefficients;
 - Bridge and culvert modeling;
 - Discharges;
 - Regulatory floodway computation methods; and
 - Tie-in to upstream and downstream non-revised profiles.
- Use CHECK-RAS programs to flag potential problems and focus review efforts.
 - Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
 - Maintain an archive of all data submitted for hydraulic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the MDEQ shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review and
- Recommendations to resolve any problems that arise as a result of the independent QA/QC review.

Activity 8 – Floodplain Mapping (Detailed Riverine)

Responsible Entity: Ottawa County and their engineering consultant, Spicer Group, Inc., will be responsible for the detailed riverine floodplain mapping.

Scope: Ottawa County and their engineering consultant, Spicer Group, Inc., shall delineate digital floodplain and regulatory floodway boundaries for the flooding sources listed in Section 1 of this Mapping Activity Statement on a digital work map. The mapping will incorporate all revised hydraulic modeling and newly acquired topographic information. Ottawa County and their engineering consultant, Spicer Group, Inc., will delineate the floodplain boundaries for the 1% and 0.2% recurrence intervals and the regulatory floodway on a digital work map based on topographic data developed under Activity 2 of this Mapping Activity Statement, which will be the basis of the revised FIRM. In addition, Ottawa County and their engineering consultant, Spicer Group, Inc., will address all concerns or questions regarding this Activity raised during the independent QA/QC review outlined in Activity 9.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of floodplain mapping digital work maps for the identified study reaches, Ottawa County and their engineering consultant, Spicer Group, Inc., will submit the results to FEMA for an independent QA/QC review under Activity 9.

In accordance with the TSDN format described in Section 2, Ottawa County and their engineering consultant, Spicer Group, Inc., 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;

Metadata files describing the data

Any backup or supplemental information used in the preliminary mapping required for the independent QA/QC review outlined in Activity 9.

Activity 9 - Independent QA/QC Review of Floodplain Mapping

Responsible Entity: FEMA's contractor is responsible for the independent QA/QC floodplain mapping review.

Scope: FEMA's contractor shall review the floodplain work maps submitted by FEMA's contractor under Activity 8 of this Mapping Activity Statement to ensure that the results of the hydraulic analyses are accurately represented on the work maps. This work will include, at a minimum, the following activities:

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.

Floodplain widths at cross section must match floodway data table. Floodplain boundaries as shown on work maps match profiles.

Ensure zone designations are indicated properly.

Ensure DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's DFIRM Specifications and conform to those specifications for content and attribution.

Ensure metadata files describing the DFIRM data include the required information and follow the examples shown in FEMA's DFIRM Specifications.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA's QA/QC contractor shall make the following products available:

- A Summary Report that describes the findings of the independent QA/QC review noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results; and
- An annotated work map with all questions and/or concerns indicated if necessary.

Activity 10 - Base Map Acquisition and Preparation

Responsible Entity: FEMA's contractor previously acquired and prepared the countywide base map for Ottawa County.

Scope: This activity consisted of obtaining the digital base map data layers, in state plane-south coordinates, which included: road centerlines and road names, stream names, and community boundaries for the project. FEMA's contractor previously completed the following:

- Obtained digital files (raster or vector) of the base map;
- Secured necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge;
- Obtained certification that the digital data met the minimum standards and specifications that FEMA requires for DFIRM production; and
- Populated the DFIRM database for base map features and applicable data.

Standards: All work conducted under this Activity conformed to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA's contractor made the following products available to FEMA.

Written certification from the County that the digital data meet the minimum FEMA standards and specifications; and

Documentation that FEMA can use the digital base map and republish it as part of the DFIRM product.

Activity 12A – Application of DFIRM Graphic Specifications

Responsible Entity: FEMA's contractor is responsible for the DFIRM Graphic Specification application.

Scope: Upon completion of merging of effective and revised floodplain mapping into a single, updated DFIRM for the identified flooding sources (Activity 12) FEMA's contractor shall apply the final FEMA DFIRM graphic specifications to the DFIRM mapping files. This work will include adding all required annotation, line patterns, area shading, and map collar information (e.g., map borders, title blocks, legends, and notes to user).

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA's contractor shall make the following products available to FEMA.

- DFIRM mapping files in one of the GIS file and database formats specified in FEMA's DFIRM Specifications, provided on CD-ROM;
- DFIRM database files in one of the database formats specified in FEMA's DFIRM Specifications, provided on CD-ROM;
- Metadata files describing the DFIRM data including the required information based on the examples shown in FEMA's DFIRM Specifications;
- Complete set of plots of the DFIRM panels showing all the details at the scale(s) agreed upon in the "Scope of Project;" and
- An internal QA/QC report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRM.

Activity 12B - Independent QA/QC Review of DFIRM Graphics

Responsible Entity: FEMA's contractor is responsible for the DFIRM graphics review.

Scope: FEMA's contractor shall review the DFIRM panels submitted by FEMA's contractor under Activity 12A of this Mapping Activity Statement to ensure that the DFIRM panels conform to FEMA's DFIRM graphic standards. This work will include, at a minimum, the following:

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in FEMA's DFIRM Specifications. This includes all flood hazard zones, BFEs, cross sections, coastal transects, studied streams, mapped political entities, and all roads within and adjacent to the 1% annual chance flood hazard areas.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the examples shown in FEMA's DFIRM Specifications.
- All map collar information is complete, correct, and follows the examples shown in FEMA's DFIRM Specifications.
- DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's DFIRM Specifications and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's DFIRM Specifications and conform to those specifications for content and attribution.
- Metadata files describing the DFIRM data include the required information and follow the examples shown in FEMA's DFIRM Specifications.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA's QA/QC contractor shall make the following products available.

A Summary Report that describes the findings of the independent QA/QC review, noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results; and

Annotated DFIRM panels with all questions and/or concerns indicated, if necessary.

Activity 13 – Preparation and Issuance of Preliminary FIS and DFIRM

Responsible Entity: FEMA's contractor will be responsible for preparation and issuance of the preliminary FIS and DFIRM.

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

FIS Report Preparation: Unless instructed otherwise by FEMA, FEMA's contractor will prepare the revised FIS report in the format of the existing FIS report, revising the report only to reflect current conditions and include updated data tables and flood profiles. At a minimum, the FIS report will include the following: text; cover; vicinity map; data tables; photographs (if available); flood profiles; floodway schematic; and, when necessary, transect schematic and transect location map.

Quality Assurance/Quality Control: Final QA/QC review of the FIS report, including all data tables, profiles, and other components of the FIS, as appropriate, and the news release will be conducted. The QA/QC procedures will be consistent with FEMA standards outlined below for this activity.

Discrepancy Resolution: FEMA will be responsible for working with FEMA's contractor, FEMA's QA/QC contractor, Ottawa County, and MDEQ who are responsible for performing many of the activities of this project to resolve discrepancies identified during QA/QC.

- *Distribution of Preliminary DFIRM and FIS Report:* FEMA will distribute the preliminary copies of the FIS report and DFIRM to the affected communities, State agencies, and others as identified by FEMA.

News Release and Federal Register Notice Preparation: FEMA will prepare the news release notifications of BFE changes. The news release will summarize newly proposed BFEs, modifications to existing BFEs, and any changes to the community's floodplain management ordinances to be NFIP compliant. Upon completion of a 30-day community comment period and/or final meeting with the community, and upon initiation of the 90-day appeal period, the FEMA will arrange for and verify that the news release is published in the prominent newspaper(s) with local circulation within each affected community identified by the community and FEMA. FEMA also will arrange for and verify that a similar notice is published in the *Federal Register*.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA shall make the following products available:

The **necessary number of sets** of printed preliminary DFIRMs and FIS reports, including all updated data tables and flood profiles for mailing to the CEO of each community, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA;

Preliminary transmittal letter(s);

DFIRM mapping files in one of the database formats specified in FEMA's DFIRM Specifications;

DFIRM database files in one of the database formats specified in FEMA's DFIRM Specifications;

Metadata files describing the DFIRM data, including the required information as presented in the examples shown in FEMA's DFIRM Specifications;

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 preliminary copies of the DFIRM and FIS report;

Documentation showing that the news release(s) was published correctly in accordance with FEMA requirements and that a similar notice was published correctly in the *Federal Register* in accordance with FEMA requirements

Activity 14 - Post-Preliminary Processing

Responsible Entity: FEMA, MDEQ and Ottawa County

Scope: This Activity consists of finalizing the DFIRM and FIS report after the preliminary FIS and DFIRM have been issued for public review and comment. The activities to be performed include:

Participating in Public Meetings: When FEMA holds public meetings to present and discuss the results of this Flood Map Project, FEMA's contractor, Ottawa County and MDEQ and any

necessary project contractors will attend the meetings and assist FEMA in the presentation as required.

Resolving Appeals and Protests: Appeals and protests received during the 90-day appeal period will be reviewed and resolved prior to finalizing the FIRMs and FIS report. FEMA's contractor and Ottawa County will provide support to FEMA in resolving appeals and protests. Activities may include, but not limited to, attending community meetings and assisting FEMA in addressing any issues that may arise in resolving appeals and protests from affected communities. For a typical appeal and protest, the following activities will be conducted: initial processing of the appeal/protest, performing a technical review of the appeal/protest, preparing letters to request additional data, performing revised analyses, and preparing a proposed resolution for FEMA's review. FEMA will mail all associated correspondence.

Special Correspondence: Comments received within the 90-day appeal period (referred to as "special correspondence") will be reviewed, and responses will be drafted, authorized and mailed by FEMA.

- *Revise DFIRMs and FIS Report:* If necessary, FEMA will work with those parties responsible for preparing the DFIRM under Activities 8, 8A, 8B, 11, and 12 to prepare revised preliminary copies of the DFIRMs and FIS report, including all data tables and flood profiles. FEMA will mail all revised preliminary copies of DFIRMs and associated correspondence.

Letter of Final Determination: FEMA and their contractor will establish an effective date for the DFIRM and FIS report, prepare a Letter of Final Determination (LFD) for FEMA review and signature, prepare a final notice for publication in the *Federal Register*, mail the LFD with appropriate enclosures, and coordinate publication of the final notice in the *Federal Register*.

GPO Processing: FEMA and their contractor will prepare final copies of the DFIRM and FIS report, and provide them to FEMA. This will include preparing camera-ready film negatives of the DFIRM and paper copies of the FIS report, including flood profiles; preparing appropriate paperwork to be included with DFIRM and FIS report materials, including the transmittal letter to the community CEO, the print processing worksheet, the Printing Requisition Form, and the Community Map Action Form; and delivering the final materials and paperwork to FEMA in the format prescribed by FEMA.

Archiving Data: FEMA and their contractor will package the backup data and correspondence for this Flood Map Project and transmit it to the Engineering Study Data Package Facility.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA's contractor shall make the following products available to FEMA as required:

Draft LFD and associated backup data and information for FEMA review;

Draft Special Correspondence and backup data and information for FEMA review;

Appeal and Protest resolution letters, and all backup data and information for FEMA review;

The necessary number of sets of DFIRM negatives and paper FIS reports, including all updated data tables and flood profiles for distribution as stated in Activity 13;

Paperwork required for printing of DFIRM panels and FIS report;

- Complete DFIRM spatial database; and
- Completed and organized Engineering Study Data Packages.

2. Technical and Administrative Support Data Submittal: The Project Team members for this project that have responsibilities for activities included in this Mapping Activity Statement 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.

TSDN—Applicable Sections

Section of TSDN	1	2	3	4	5	6	7	8	9	10	12A 12B	13	14
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

If any issues arise 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) as soon as possible after the issue is identified and submitted to FEMA. The SPR should describe the issue and propose possible resolutions.

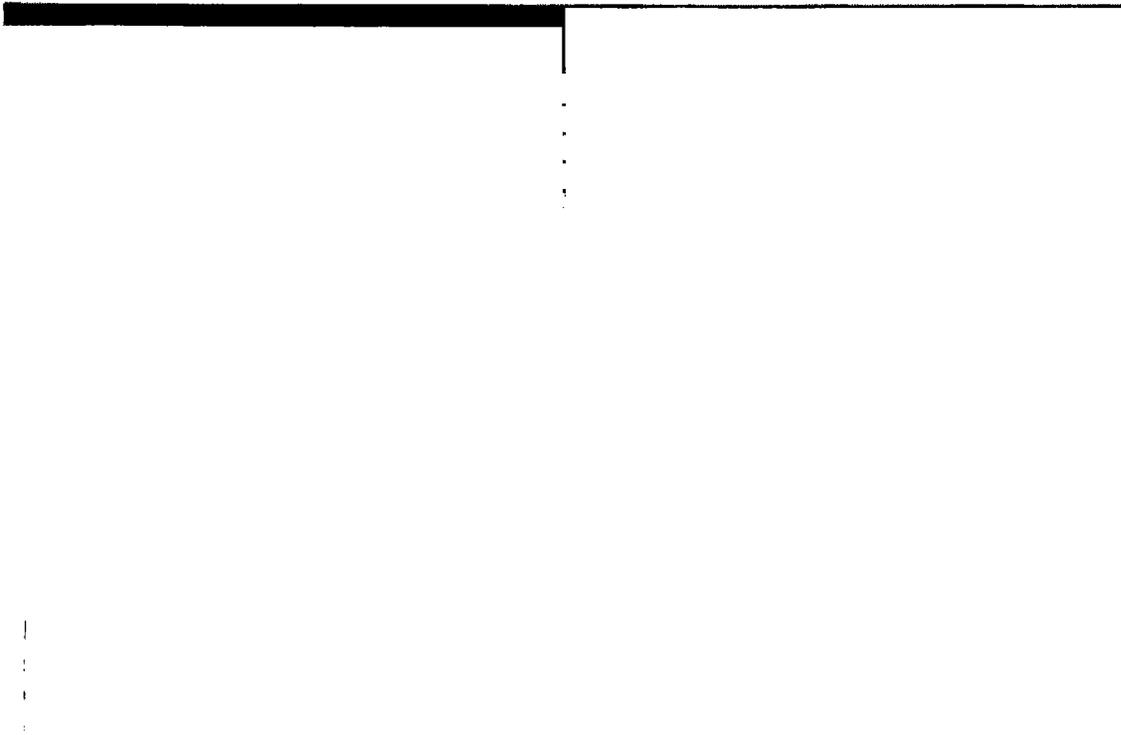
Additionally, FEMA'S CONTRACTOR will be responsible for collecting and maintaining a set of products for all Activities and shall compile a comprehensive TSDN for the entire project.

3. Period of Performance:

The mapping activities outlined in this MAS will begin on September 30, 2004 and will be completed no later than September 29, 2005 (See Schedule below for detailed deadlines by activity). The Mapping Activities may be terminated at the option of FEMA, MDEQ, or the Ottawa County in accordance with the provisions of the February 11, 2004, CTP Partnership Agreement.

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

4. Funding/Cost-Sharing:



5. Standards: Table 5-1 indicates the standards and documentation relevant to this Mapping Activity Statement. Table 5-2 shows the applicable sections of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* for each activity.

Table 5-1 Applicable Standards per Activity

Applicable Standards	1	2	3	4	5	6	7	8	9	10	12A, 12B	13	14
Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
American Congress on Surveying and Mapping (ACSM) procedures	✓	✓	✓										
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-58), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	✓	✓	✓										
EM 1000-1-1000, "Photogrammetric Mapping," March 31, 1993	✓	✓	✓										
EM 1110-2-1003, "Hydrographic Surveys," October 31, 1994	✓	✓	✓										
Numerical Models Accepted by FEMA for NFIP Usage, January 11, 2002				✓	✓	✓	✓						
Content Standards for Digital Geospatial Metadata (Federal Geographic Data Committee, 1998)		✓	✓					✓		✓	✓	✓	✓
Document Control Procedures Manual dated October 1993.												✓	✓

Table 5-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners

Activity Number	Task Description	Applicable Volume, Section/Subsection, and Appendix of Guidelines and Specifications
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	Topographic Data Development	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.2 and A.3 Appendix M
3	Independent QA/QC of Topographic Data	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.1) Appendix A, Sections A.2, A.3, A.7 (specifically Subsection A.7.5), and A.8 (specifically Subsection A.8.6) Appendix M
4	Hydrology	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
5	Independent QA/QC Review of Hydrology	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix C, Section C.2 Appendices E, F, G, H, and M
6	Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Sections C.3 and C.7 Appendices B, E, F, G, H, and M
7	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

Table 5-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners (Cont.)

Task Number	Task Description	Applicable Volume, Section/Subsection and Appendix of Guidelines and Specifications
8	Floodplain Mapping (Detailed Riverine or Coastal Analysis)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C. 4 and C.6 Appendices K, L, and M
9	Independent QA/QC Review of Floodplain Mapping	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
10	Base Map Acquisition and Preparation	Volume 1, Sections 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsection 1.4.3) Appendices A and B
12A	Application of DFIRM Graphic Specifications	Volume 1, Section 1.4 (specifically Subsection 1.4.3) Appendices K and L
12B	Independent QA/QC Review of DFIRM Graphics	Volume 1, Section 1.4 (specifically Subsection 1.4.3) Appendices K, L, and M
13	Preparation and Issuance of Preliminary FIS and DFIRM	Volume 1, Sections 1.4 (specifically Subsections 1.4.2 and 1.4.3) and 1.5 (specifically Subsection 1.5.1) Appendices J, K, L, and M
14	Post-Preliminary Processing	Volume 1, Section 1.5 Appendices J, K, L, and M

6. Schedule and Milestones:

The following dates are based on a start date of September 30, 2004 and availability of the digital topographic data by May 13, 2005.

ACTIVITY	RESPONSIBLE ENTITY	DUE DATE
Activity 1 – Field Surveys and Reconnaissance	Ottawa County	April 2005
Activity 2 – Topographic Data Development	Ottawa County	May 2005
Activity 3 – Independent QA/QC of Topographic Data	FEMA	June 2005
Activity 4 – Hydrology	Ottawa County	June 2005
Activity 5 – Independent QA/QC of Hydrology	MDEQ	July 2005
Activity 6 – Hydraulics	Ottawa County	August 2005
Activity 7 – Independent QA/QC of Hydraulics	MDEQ	September 2005
Activity 8 – Floodplain Mapping (Detailed Riverine or Coastal Analysis)	Ottawa County	November 2005
Activity 9 – Independent QA/QC of Floodplain Mapping	FEMA	
Activity 10 – Base Map Acquisition and Preparation	FEMA	
Activity 12A – Apply DFIRM Graphic Specifications	FEMA	
Activity 12B – Independent QA/QC of DFIRM Graphics	FEMA	
Activity 13 – Issue Preliminary FIS and FIRM	FEMA	
Activity 14 – Post-Preliminary Processing	FEMA	

7. Certification: The following certifications apply to this Mapping Activity Statement (as appropriate):

Activity 1 (Field Surveys and Reconnaissance) and Activity 2 (Topographic Data Development)

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

Activity 10 (Base Map Acquisition and Preparation)

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

Activity 8 (Floodplain Mapping)

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

Activity 4 (Hydrology), Activity 6 (Hydraulics), and Activity 8 (Floodplain Mapping)

- 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).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10(e).

8. Technical Assistance and Resources: Ottawa County's engineering consultant, Spicer Group, Inc., may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from FEMA'S contractor. The FEMA contractor 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 (<http://www.fema.gov/fhm/>). Specific technical and programmatic support may be provided through FEMA's contractor; such assistance should be requested through the FEMA Project Officer specified in Section 11 of this Mapping Activity Statement.

9. Contractors: The Ottawa County's contractor is Spicer Group, Inc. The Project Manager will be Shawn Middleton, P.E., or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. Mr. Middleton can be reached at 989-928-8027 (cell) or 989-224-2355 (phone), by mail at 1400 Zeeb Drive, St. Johns, Michigan 48879 or by email at shawnm@spicergroup.com. The ECDC will ensure that procurement of subcontractors as part of this Mapping Activity Statement complies with the requirements of 44 CFR 13.36.

10. Reporting:

FINANCIAL REPORTING:

Because funding has been provided to Kent County, MI by FEMA, financial reporting requirements for Kent County, MI will be in accordance with Cooperative Agreement Articles V and VI. Kent County, MI shall provide financial reports to the FEMA Regional Project Officer and Assistance Officer in accordance with the terms of the Cooperative Agreement referenced in the Articles of Agreement.

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 as outlined in the Cooperative Technical Partner (CTP)/Map Modernization Project Quarterly Report located in Appendix B of this Mapping Activity Statement. The Project Officer, as needed, may request additional information on status. Kent County, MI may meet with the NSP and/or FEMA more frequently (up to bi-weekly if needed) to review the progress of the project in addition to the quarterly financial and status submittals. These meetings will alternate between FEMA's Regional Office, the Kent County, MI office and conference calls as necessary.

Where specific actions are funded by FEMA, the reporting requirements will be in accordance with the FEMA Cooperative Agreement. Kent County, MI shall work with the FEMA Project Officer to establish an acceptable protocol for entry of project information into the Monitoring of Contracted Studies (MICS) database at the beginning of each project. Kent County, MI will update MICS quarterly. If this report proves to be sufficient, the Assistance Officer may waive the written quarterly reports thereafter (reference 44 CFR Part 13.40, *Monitoring and Reporting Program Performance*). However, this shall not affect the financial reporting requirements (reference 44 CFR Part 13.41, *Financial Reporting*). The PO shall ensure that Kent County, MI key staff have been provided access and passwords to MICS. The PO will also provide project-naming conventions for MICS. Once access is provided, MICS (including a

tutorial) may be found at: <https://mics.fema.gov>. As the Mapping Information Portal (MIP) project management modules become available and ultimately replace MICs, the MIP tracking tools will be used for this reporting.

11. Points of Contact: The FEMA Regional Project Officer is Ken Hinterlong and the CTP Project Manager is [REDACTED] or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, the assistance of FEMA's contractor should be requested through the FEMA Project Officer, Ken Hinterlong.

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


Al Vanderberg
Ottawa County Administrator

8-23-04
Date

Richard C. Sorrell, P.E. Chief, Hydrologic Studies Unit
Geological and Land Management Division, MDEQ

Date


Terry Reuss Fell, Branch Chief,
Hazard Identification and Risk Assessment Branch
Federal Emergency Management Agency Region V

8-18-04
Date