



**City of Jackson, Cape Girardeau County, Missouri
Cooperating Technical Partner
Mapping Activity Statement**

Agreement # 1 - Hydrologic and Hydraulic Analyses and Floodplain Mapping

In accordance with the Cooperating Technical Partner (CTP) Memorandum of Agreement dated January 23, 2001, between City of Jackson, Cape Girardeau County, Missouri and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement # 1 is as follows:

- 1. Objective and Scope:** The objective of this Mapping Activity is to develop detailed hydrologic and hydraulic analyses and floodplain and floodway mapping in the Hubble Creek Watershed. Hydrologic analyses will be completed for approximately 50 square miles of drainage area, and hydraulic analyses and floodplain mapping will be completed for approximately 14 linear miles of flooding, including the following flooding sources: Hubble Creek, Rocky Branch, West Fork Rocky Branch, Goose Creek, Neal Creek, Williams Creek.

Period of Performance: The period of performance will be in accordance with Agreement Article II of the Cooperative Agreement.

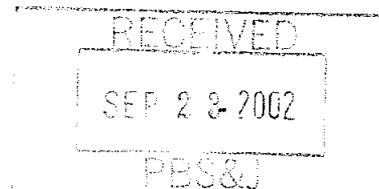
- 2. Funding/Cost-Sharing:** Federal funds for this activity will be provided by FEMA through a Cooperative Agreement.
- 3. Standards:** The standards and documents are relevant to this Mapping Activity are contained in the attached Statement of Work.
- 4. Products:** The City of Jackson, Missouri will make available the items outlined in the attached Statement of Work.
- 5. Schedule and Milestones:**

Products identified in the attached Statement of Work will be delivered as identified in the scheduling worksheet.

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

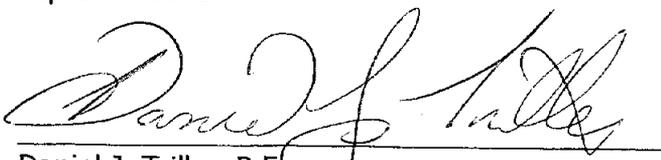
- 6. Certification:** The following certifications apply to this Mapping Activity (as appropriate):
 - Hydrologic and/or hydraulic analyses and data will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.6(f).
 - Topographic information will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.5(c).
 - If fill is to be considered in the mapping to raise land areas to or above the 1% annual chance flood elevation, certification of the fill will be provided in accordance with 44 CFR 65.5(a)(6) by the community's NFIP permit official, a registered Professional Engineer, or a Licensed Land Surveyor.
 - Any levee systems to be accredited as discussed in Section 4 of this Mapping Activity Statement will be certified in accordance with 44 CFR 65.10(e).

Original - August 31, 2001; Revised - July 17, 2002
Agreement # 1 - Hydrologic and Hydraulic Analyses and Floodplain Mapping

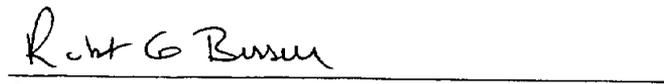


7. **Technical Assistance and Resources:** The City of Jackson, Missouri may obtain copies of FEMA-issued Letters of Map Change (LOMCs), archived engineering back-up data, and data collected as part of the Mapping Needs Assessment Process from FEMA's Mapping Coordination Contractor (MCC). The MCC may be contacted at 1-877 FEMA MAP (1-877-336-2627). General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 forms, can be downloaded from FEMA's Flood Hazard Mapping Web site (www.fema.gov/mit/tsd/). Specific technical and programmatic support may be provided through FEMA's MCC; such assistance should be requested through the FEMA MCC Project Officer specified in Section 12 of this Mapping Activity Statement.
8. **Contractors:** The City of Jackson will use Koehler Engineering and Surveying. Procurement of subcontractors using Federal funds provided as part of this Mapping Activity will comply with the requirements of 44 CFR 13.36.
9. **Quality Assurance/Quality Control (QA/QC) Procedures:** The Quality Assurance/Quality procedures for this activity are identified in the attached Statement of Work.
10. **Reporting:** Reporting requirements will be in accordance with Agreement Articles V & VI of the Cooperative Agreement.
11. **Points of Contact:** The FEMA Regional Project Officer is Bob Franke, (816) 283-7073, and the CTP Project Manager is Daniel J. Triller, P.E., City Engineer, (573) 243-2300 or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. If it is necessary, the assistance of FEMA's MCC should be requested through the FEMA MCC Project Officer, Bill Blanton, (202) 646-3151.
12. **Revision:** The attached Statement of Work was revised on July 16, 2002 to change the responsible entity for Hubble Creek from the USACE-St. Louis District to the City of Jackson.

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


 Daniel J. Triller, P.E.
 City of Jackson, Missouri

9-18-02
 Date


 Robert G. Bissell, Director, Mitigation Division
 Federal Emergency Management Agency

9/19/02
 Date

STATEMENT OF WORK

CITY OF JACKSON, MISSOURI

{Insert Case Number}

June 5, 2001

Revised July 16, 2002

Statement of Work

Introduction

The purpose of this mapping project is to develop updated Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) for the City of Jackson, Missouri. The FIS and FIRMs will be produced in community-based digital FIRM (DFIRM) format.

Additionally, this project will include developing new and/or updated flood data, as summarized in the following table:

Flooding Source	Reach Limits	Hydrology	Hydraulics	Floodplain Mapping	Redelin-eation of SFHAs Using Effective Profiles	Refine/ Establish Zone As
Hubble Creek	Confluence with Rocky Branch to 2000' upstream of I-55	X	X	X		
Rocky Branch / West Fork; Rocky Branch	Confluence with Hubble Creek to 3000' NE of Farmington Rd / Confluence to Hwy 72	X	X	X		
Goose Creek	Confluence with Hubble Creek to I-55	X	X	X		
Neal Creek	Confluence with Goose Creek to the east limits of the Savannah Ridge sub-division	X	X	X		
Williams Creek	800' N of Cd Rd 318 to I-55	X	X	X		

Statement of Work

The City of Jackson, Missouri, and their subcontractors, the USACE St. Louis District, and PBS&J as the Mapping Coordination Contractor will complete this project. The tasks, and who will complete them are described in the Scope of Work below.

Revision History

This Statement of Work was revised on July 16, 2002 to change the responsible partner for Hubble Creek from the USACE-St. Louis District to the City of Jackson. This revision affects Tasks 1, 2, 4, 6 and 8. The activities for Williams, Goose and Neil Creeks and Rocky Branch are funded by a cooperative agreement (EMK-2001-CA-0026) awarded in 2001. The activities for Hubble Creek are funded by a cooperative agreement awarded in 2002 (EMK-2002-CA-2546).

Task 15 and the Applicable Standards per Activity section was updated to reference the Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002.

Scope of Work

The following sections describe the specific tasks associated with this mapping project. Each task description identifies the responsible entity, the applicable standards, and resultant deliverables.

Statement of Work

Tasks	Community	Community Consultant	FPMCC
Task 1 – Field Surveys and Reconnaissance		X	
Task 2 – Topographic Data Development		X	
Task 3 – Independent QA/QC of Topographic Data	X		
Task 4 –Hydrology		X	
Task 5–Independent QA/QC of Hydrology	X		
Task 6 – Hydraulics		X	
Task 7 – Independent QA/QC of Hydraulics	X		
Task 8 – Floodplain Mapping (Revised Areas)		X	
Task 9 – Independent QA/QC of Floodplain Mapping	X		
Task 10 – Base Map Acquisition		X	
Task 11 – DFIRM Production (Non-Revised Areas)	X, if needed		
Task 12 – Merge Effective and Revised Information			X
Task 13 – Issue Preliminary FIS and FIRM			X
Task 14 – Post-Preliminary Processing			X
Task 15 – Reporting			X

Statement of Work

Task 1 - Field Surveys and Reconnaissance

Responsible Entity: The City of Jackson (Koehler Engineering & Land Surveying, Inc.) for Williams, Goose and Neil Creeks and Rocky Branch, and the ~~USACE St. Louis District for Hubble Creek.~~

Scope: To supplement any field reconnaissance conducted during the scoping phase of this project, the City of Jackson and the ~~USACE St. Louis District~~ shall conduct a detailed field reconnaissance of the specific study area 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.

In addition to the initial field reconnaissance, this task includes conducting field surveys, including obtaining channel and floodplain cross-sections, identifying or establishing elevation reference marks (ERMs), and obtaining the physical dimensions of hydraulic and flood control structures. The City of Jackson is responsible for coordinating with other team members collecting topographic data under Task 2.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead:

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

Statement of Work

Task 2 - Topographic Data Development

Responsible Entity: The City of Jackson

Scope: To supplement the field surveys conducted under Task 1, additional topographic data of the overbank areas of flooding sources will be obtained to delineate floodplain boundaries. Specifically, new topographic data will be generated for Hubble Creek, Rocky Branch, Goose Creek, Williams Creek and Neal Creek using aerial photography. The City of Jackson is responsible for coordinating with other team members conducting field surveys under Task 1.

This task also consists of developing topographic maps and/or Digital Elevation Models (DEMs) for the subject flooding sources using the data collected in Task 1 and 2. In addition, the City of Jackson will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 3).

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of topographic data collection and processing for Hubble Creek, Rocky Branch, Goose Creek, Williams Creek and Neal Creek, this data will be submitted to the City of Jackson for independent review under Task 3. Data for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

- Hardcopy topographic maps.
- Completed Form No. 5 of *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2).
- Report summarizing methodology and results.
- Triangular Irregular Network (TIN) data on CD-ROM.
- Checkpoint analyses to assess the accuracy of TIN data including Root Mean Square Error (RMSE) calculations to support vertical accuracy.
- Identification of remote sensing data voids and methods used to supplement data voids.
- NGS data sheets for Network Control Points (NCP) used to control remote sensing and ground surveys.

Statement of Work

Task 3 - Independent QA/QC of Topographic Data

Responsible Entity: The City of Jackson

Scope: The City of Jackson shall review the mapping data generated by the City of Jackson's consultant under Task 2 of this Statement of Work to ensure that this information is consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

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

Statement of Work

Task 4 - Hydrology

Responsible Entity: The City of Jackson (Koehler Engineering & Land Surveying, Inc.) for Williams, Goose and Neil Creeks and Rocky Branch, and the ~~USACE St. Louis District for Hubble Creek.~~

Scope: Hydrologic analyses will be completed for approximately 27.2 square miles of drainage area for the flooding source(s) listed in the Introduction of this Statement of Work. The hydrologic methods used for this analysis will be HEC-HMS. Peak flood discharges will be calculated for the 10%, 5%, 1%, and 0.2% annual chance storms. These flood discharges will be the basis for subsequent hydraulic analyses of the subject flooding sources. In addition, the City of Jackson and the ~~USACE St. Louis District~~ will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 5).

If GIS-based modeling is used, automated data processing and modeling algorithms will be documented and provided to FEMA to ensure they are consistent with the standards outlined above. Digital data sets (such as elevation, basin, or land use data) will be documented and provided to FEMA for approval prior to performing the analyses to ensure they meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analysis, then full user documentation, technical algorithm documentation, and the software will be provided to FEMA for review prior to performing the scope of work.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of hydrologic modeling for Hubble Creek, Rocky Branch, Goose Creek, Williams Creek and Neal Creek, the results will be submitted to the City of Jackson for independent review under Task 5. The results for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

- Digital copies of all hydrologic modeling (input and output) files for 10%, 5%, 1%, and 0.2% annual chance storms.
- "Summary of Discharge" table(s) for each subject flooding source.
- Appropriate Study Contractor application/certification form for hydrology.
- All back-up data used in the analysis.
- For GIS-based modeling, deliverables include all input and output data, intermediate data processing products, and GIS data layers.

Statement of Work

Task 5 - Independent QA/QC of Hydrology

Responsible Entity: The City of Jackson

Scope: The City of Jackson shall review the technical, scientific, and other information submitted by the City of Jackson (Koehler Engineering & Land Surveying, Inc.) ~~and the USACE St. Louis District~~ under Task 4 of this Statement of Work to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM. This work will include, at a minimum, the following:

- Review submittal for technical and regulatory adequacy, 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) for area of study or restudy.
 - Correctly applied methodology(ies)/model(s), including Quality Control of input parameters.
 - Comparison with gage data and/or regression equations, if appropriate.
 - Comparison with discharges for contiguous reaches or flooding sources.
- 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.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

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

Statement of Work

Task 6 - Hydraulics

Responsible Entity: The City of Jackson (Koehler Engineering & Land Surveying, Inc.) for Williams, Goose and Neil Creeks and Rocky Branch, and ~~the USACE St. Louis District for Hubble Creek.~~

Scope: Hydraulic analyses will be completed for approximately 19.6 miles of the flooding sources listed in the Introduction of this Statement of Work. The modeling will include the 10%, 2%, 1% and 0.2% annual chance events based on peak discharges computed under Task 4. The hydraulic methods used for this analysis will include HEC-RAS. Cross Section and field data collected under Task 1 will be used to prepare the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and floodways for the subject flooding sources. In addition, the City of Jackson ~~and the USACE St. Louis District~~ will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 7).

Automated data processing and modeling algorithms for GIS-based modeling will be documented and provided to FEMA to ensure they are consistent with the standards outlined above. Digital data sets will be documented and provided to FEMA for approval prior to performing the analyses to ensure they meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analysis, then full user documentation, technical algorithm documentation, and the software will be provided to FEMA for review prior to performing the scope of work.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of hydraulic modeling for Hubble Creek, Rocky Branch, Goose Creek, Williams Creek and Neal Creek, the results will be submitted to the City of Jackson for independent review under Task 7. The results for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

- Digital profiles of the 10%, 2%, 1% and 0.2% 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.
- For GIS-based modeling, deliverables include all input and output data, intermediate data processing products, GIS data layers, and final products in the format of the DFIRM database structure.

Statement of Work

Task 7 - Independent QA/QC of Hydraulics

Responsible Entity: The City of Jackson

Scope: The City of Jackson shall review the technical, scientific, and other information submitted by the City of Jackson (Koehler Engineering & Land Surveying, Inc.) and the USACE-St. Louis District under Task 6 of this Statement of Work to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM. This work will include, at a minimum, the following:

- Review submittal for technical and regulatory adequacy, 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.
 - Floodway methods.
 - Tie-in to upstream and downstream non-revised profiles.
- When the HEC-2 or HEC-RAS model is used, the reviewer will utilize the CHECK-2 or 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.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

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

Statement of Work

Task 8 - Floodplain Mapping (Revised Areas)

Responsible Entity: The city of Jackson (Koehler Engineering & Land Surveying, Inc.) for Williams, Goose and Neil Creeks and Rocky Branch, and the ~~USACE St. Louis District~~ for Hubble Creek.

Scope: Digital floodplain and floodway boundaries will be delineated for the flooding sources listed in the Introduction of this Statement of Work. The mapping will incorporate all revised hydraulic modeling and newly acquired topographic information. The floodplain boundaries for the 1% and 0.2% recurrence intervals and a floodway will be delineated on a digital work map based on topographic data developed under Task 2 of this SOW, which will be the basis of the revised FIRM. In addition, the City of Jackson and the ~~USACE St. Louis District~~ will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 9).

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of floodplain mapping for Hubble Creek, Rocky Branch, Goose Creek, Williams Creek and Neal Creek, the results will be submitted to the City of Jackson for independent review under Task 9. The mapping for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

- Digital work maps with the 1% and 0.2% annual chance floodplain and floodway boundaries delineated. These maps should also include cross sections, BFEs, and zone designation labels.
-
- Any back-up or supplemental information used in the mapping required for the QA/QC review (Task 9).

Statement of Work

Task 9 - Independent QA/QC of Floodplain Mapping

Responsible Entity: The City of Jackson

Scope: The City of Jackson shall review the floodplain work maps submitted by the City of Jackson (Koehler Engineering & Land Surveying, Inc.) and the ~~USACE St. Louis District~~ under Task 8 of this Statement of Work 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:

- Cross sections were properly located and oriented on the work map and agree with the Floodway Data Table.
- The Base Flood Elevations (BFEs) shown on the work map are properly located and agree with the results of the hydraulic modeling.
- The floodway widths agree with the widths shown in the Floodway Data Table(s) and the results of the hydraulic modeling.
- The floodplain boundaries agree with the flood elevations shown in the Floodway Data Table(s) and the contour lines and other topographic information shown on the work maps.
-
- Zone designations are indicated properly.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results.
- Recommendations to resolve any problems that arise as a result of the QA/QC review.
- An annotated work map with all questions and/or concerns indicated will be provided, if necessary.

Statement of Work

Task 10 - Base Map Acquisition

Responsible Entity: The City of Jackson

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

- Obtain digital files (raster or vector) of the base map.
- Secure 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.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.
- Populate the DFIRM database with the information required by FEMA.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

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

Statement of Work

Task 11 - DFIRM Production (Non-Revised Areas)

Responsible Entity: The City of Jackson

Scope: For all flooding sources except those specified in the Introduction to the Statement of Work (that will have updated flood data developed under Tasks 1 – 9), the effective FIRMs and Flood Boundary Floodway Maps (FBHMs) will be converted to digital format that conforms with FEMA's Digital FIRM (DFIRM) specifications. The base map acquired under Task 10 will be used for the conversion. The scope of this task covers the digitization of two FIRM panels if needed. Letters of Map Change (LOMCs) issued since the current effective FIRM for each affected community will also be incorporated.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the City of Jackson shall make the following products available to the FEMA Lead.

- 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) agreed upon in the "Scope of Project" will be provided.
- 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.

Statement of Work

Task 12 - Merge Effective and Revised Information

Responsible Entity: The Mapping Coordination Contractor (PBS&J)

Scope: Upon completion of the Floodplain Mapping Task (Task 8) for the revised flooding sources and the Digital FIRM Production (Task 11) for non-revised flooding sources, the digital floodplain data will be merged into a single, updated Digital FIRM. This work will include tying in flood profiles, floodplain boundaries and floodways with contiguous communities that were not studied as part of this project. The Mapping Coordination Contractor (PBS&J) will be responsible for coordinating with those conducting Tasks 8 and 11, as necessary, to resolve any potential tie-in issues.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, The Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- 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) agreed upon in the "Scope of Project" will be provided.
- 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.

Statement of Work

Task 13 - Issue Preliminary FIS and FIRM

Responsible Entity: The Mapping Coordination Contractor (PBS&J)

Scope: This task consists of the final preparation, review and distribution of the preliminary FIRM and associated FIS report for community and public review and comment. The activities to be performed include:

- *FIS Report Preparation:* Unless instructed otherwise by FEMA, the revised FIS report will be prepared in the format of the existing FIS report. It will be revised to reflect current conditions, and include updated data tables and flood profiles. At a minimum, it will include the following: text; cover; vicinity map; tables; photographs (if available); profiles; floodway schematic; and, when necessary, transect schematic and transect location map.
- *Quality Assurance/Quality Control:* A final QA/QC review of the preliminary FIRMs and FIS report, including all data tables, flood profiles, and other components of the FIS, as appropriate, and the news release will be conducted. The QA/QC procedures will be consistent with the *Guidelines and Specifications for Flood Map Production Coordination Contractors (Final Draft)* referenced in the "Standards" subsection below.
- *Discrepancy Resolution:* The party conducting this task will be responsible for working with the party(ies) performing the other tasks of this project to resolve discrepancies identified during QA/QC.
- *Distribution of Preliminary FIRM and FIS:* The Preliminary FIS and FIRMs will be distributed to the affected communities, State agencies, and others as appropriate.
- *News Release Preparation:* News release notifications of BFE changes will be prepared and submitted for QA/QC review (discussed below) prior to being published. 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 Mapping Coordination Contractor (PBS&J) will arrange for and verify that the news release is published in prominent newspapers with local circulation within each affected community.

Statement of Work

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- Four sets of printed preliminary DFIRMs and revised FIS reports, including all updated data tables and flood profiles mailed to the CEO of each community, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by the FEMA Lead.
- Preliminary transmittal letter.
- Revised DFIRM mapping 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.
- Revised 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.
- Revised 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 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 preliminary DFIRMs will be provided.
- Document that the news release(s) was published in accordance with FEMA requirements.

Statement of Work

Task 14 - Post-Preliminary Processing

Responsible Entity: The Mapping Coordination Contractor (PBS&J)

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

- *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. For each appeal and protest, the following activities will be conducted: initial processing of the submission, technical review of the appeal/protest, preparation of additional data requests, performing revised analyses, and preparing a proposed resolution for FEMA's review. The Mapping Coordination Contractor (PBS&J) will mail all associated correspondence upon authorization by FEMA.
- *Special Correspondence:* Comments not received within the 90-day appeal period (referred to as "special correspondence") will be reviewed, and responses will be drafted for FEMA's review. The Mapping Coordination Contractor (PBS&J) will also mail the final correspondence upon authorization by FEMA.
- *Revise FIRMs and FIS Report:* If necessary, the party responsible for this task will work with those parties responsible for preparing the DFIRM under Tasks 8, 11, and 12 to prepare a Revised Preliminary FIRMs and FIS report, including all data tables and flood profiles.
- *Letter of Final Determination:* The party responsible for this task will work with FEMA to establish an effective date for the FIRMs and FIS report, and will prepare a draft Letter of Final Determination (LFD) for FEMA's review.
- *GPO Processing:* Final copies of the FIRMs and FIS report will be prepared and provided to FEMA. This will include camera-ready film negatives of the FIRMs and paper copies of the FIS reports and profiles. In addition, the appropriate paperwork will be prepared and included with the FIRMs and FIS report, including the Transmittal Letter to the Community CEO, the Print Processing Worksheet, the Printing Requisition Form, and the Community Map Action Form.
- *Archiving Data:* The engineering back-up data and correspondence will be packaged and transmitted to the Engineering Study Data Package facility.

Statement of Work

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- Draft LFD and associated back-up data and information for FEMA review.
- Draft Special Correspondence and back-up data and information for FEMA review.
- Appeal and Protest resolution letters, and all back-up data and information for FEMA review.
- Sets of DFIRM negatives and printed FIS reports, including all updated data tables and flood profiles, as needed.
- Complete, organized Engineering Study Data Packages.

Statement of Work

Task 15 - Reporting

The Project Team members for this project that have responsibilities for tasks included in this Statement of Work shall comply with the following reporting requirements:

- All supporting documentation for the tasks in this Statement of Work shall be submitted in accordance with the Guide for Preparing Technical Support Data Notebook, prepared by FEMA, dated May 1989, Revised January 1990 Guidelines and Specifications for Flood Hazard Mapping Partners, Appendix M. The following table indicates which sections of the guidance document apply to which Task.

TSDN—Applicable Sections

Section of TSDN Guidance Document	Tasks													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
General Documentation														
Special Problem Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Contract (Telephone Conversation) Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Meeting Minutes/Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General Correspondence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Engineering Analyses														
Hydrologic Analyses	✓	✓		✓	✓									
Hydraulic Analyses	✓	✓				✓	✓							
Key to Cross-section Labeling	✓	✓				✓	✓	✓	✓					

Statement of Work

TSDN—Applicable Sections

Section of TSDN Guidance Document	Tasks													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Key to Transect Labeling	✓	✓				✓	✓	✓	✓					
Draft FIS Report Text				✓		✓							✓	✓
Mapping Information		✓						✓	✓	✓	✓	✓	✓	✓
Miscellaneous Reference Materials	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- If any issues arise that could affect the completion of a Task within the proposed scope or budget, the party responsible for that Task must complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submit it to the FEMA Lead. The SPR should describe the issue and propose possible resolutions.

• Additionally, the Mapping Coordination Contractor (PBS&J) will be responsible for collecting and maintaining a set of deliverables for all tasks and shall compile a comprehensive TSDN for the entire project.

Statement of Work

Applicable Standards

The following table indicates the relevant standards and documentation that apply to each task described under the Scope of Work.

Statement of Work

Applicable Standards per Activity

Applicable Standards	Activities													
	1	2	3	4	5	6	7	8	9	10	11	12	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.													✓	✓

Statement of Work

Project Coordination

Throughout the project, all members of the Project Team will coordinate, as necessary, to ensure the products meet the technical and format specifications required and contain accurate, up-to-date information. Coordination activities will include:

- Meetings and teleconferences with FEMA and other project team members will be scheduled on a as needed basis.
- Telephone conversations with FEMA and other project team members on an ad hoc basis, as required.
- E-mail and letters, as required.

Post-Submission Requirements

Each member of the Project Team is responsible for assisting in the resolution of issues and questions raised prior to the FIRMs being issued as effective.