



Montana Department of Natural Resources and Conservation Cooperating Technical Partners Mapping Activity Statement

Mapping Activity Statement No. 3 –Digital Flood Insurance Rate Map Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Memorandum of Agreement dated July 31, 2002, between the Montana Department of Natural Resources and Conservation, Water Resources Division (hereinafter referred to as Montana DNRC), and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement No. 3 is as follows.

1. Objective and Scope

The objective of the Flood Map Project documented in this Mapping Activity Statement for the Montana DNRC is to develop new and/or updated flood hazard data for a 5-mile-long reach of Baxter Creek west of the City of Bozeman in the unincorporated areas of Gallatin County and to develop Digital Flood Insurance Rate Map (DFIRM) panels and Flood Insurance Study (FIS) report materials for the affected portions of Gallatin County. The DFIRM panels and FIS report materials will be produced in the FEMA Community-Based or Countywide Format, depending on the availability of funding to produce digital mapping for the remainder of Gallatin County.

This Flood Map Project will be completed by the Montana DNRC and Michael Baker Jr., Inc., the FEMA Flood Map Production Coordination Contractor (MCC) for Region VIII.

The activities for this Flood Map Project, including required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in the table below. In the table below, the Montana DNRC is identified as “CTP.” All activities that are to be accomplished by the Montana DNRC or contractors to the Montana DNRC are included in the “CTP” column. This Flood Map Project is not being completed as part of a separate FEMA-contracted flood study; therefore, FEMA has not assigned any mapping activities to a FEMA Study Contractor (SC).

The sections of this Mapping Activity Statement that follow the table describe the specific mapping activities associated with this Flood Map Project. Each activity description identifies the responsible Mapping Partner(s), the FEMA standards that must be met, and resultant map component.

ACTIVITY	CTP	MCC	SC
Activity 1 – Field Surveys and Reconnaissance	X		
Activity 2 – Topographic Data Development	X		
Activity 3 – Independent QA/QC Review of Topographic Data		X	
Activity 4 – Hydrologic Analyses	X		
Activity 5 – Independent QA/QC Review of Hydrologic Analyses		X	
Activity 6 – Hydraulic Analyses	X		
Activity 7 – Independent QA/QC Review of Hydraulic Analyses		X	
Activity 8 – Floodplain Mapping (Detailed Riverine Analysis)	X		
Activity 9 – Independent QA/QC Review of Floodplain Mapping		X	
Activity 10 – Base Map Acquisition and Preparation	X		
Activity 11 – DFIRM Production (Non-Revised Areas)		X	
Activity 12 – DFIRM Production (Merging Effective and Revised Information)		X	
Activity 12A – Application of DFIRM Graphic and Database Specifications		X	
Activity 13 – Preliminary DFIRM and FIS Report Distribution		X	
Activity 14 – Post-Preliminary Processing	X	X	

Activity 1 - Field Surveys and Reconnaissance

Responsible Mapping Partner: Montana DNRC

Scope: To supplement any field reconnaissance conducted during the Scoping Phase of this Flood Map Project, the Montana DNRC shall conduct a detailed field reconnaissance of the specified study area to determine conditions along the floodplain(s), 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.

In addition to the initial field reconnaissance, Activity 1 includes conducting field surveys, including obtaining channel and floodplain cross sections, identifying or establishing temporary bench marks, and obtaining the physical dimensions of hydraulic and flood-control structures.

Standards: All work under Activity 1 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the Technical Support Data Notebook (TSDN) format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the Montana DNRC 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.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at www.fema.gov/mit/tsd/frm_gsam.pdf.

Activity 2 - Topographic Data Development

Responsible Mapping Partner: Montana DNRC

Scope: To supplement the field surveys conducted under Activity 1, the Montana DNRC shall obtain additional topographic data for overbank areas of Baxter Creel to delineate floodplain boundaries. The Montana DNRC shall develop new topographic mapping at a scale of 1:1,200, with a contour interval of 2 feet for the entire study area. The Montana DNRC shall use the North American Datum of 1983 (NAD83) and the North American Vertical Datum of 1988 (NAVD88) for the topographic mapping and all other mapping developed for this Flood Map Project.

Upon completion of topographic mapping, the Montana DNRC shall submit the mapping to the MCC for an independent QA/QC review under Activity 3. The Montana DNRC shall address all concerns or questions raised during the independent QA/QC review performed under Activity 3.

Standards: All work under Activity 2 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

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

- Hardcopy topographic mapping;
- Completed Form No. 5 of *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2), which is available from the FEMA Web site at www.fema.gov/mit/tsd/dl_mt-2.htm;
- Report summarizing methodology and results;
- Digital work map with contours; and
- Metadata compliant with Federal Geographic Data Committee standards.

Activity 3 - Independent QA/QC Review of Topographic Data

Responsible Mapping Partner: MCC

Scope: The MCC shall review the topographic data and mapping generated by the Montana DNRC under Activity 2 to ensure that they are consistent with FEMA standards as well as standard engineering practice and are sufficient to prepare the DFIRM.

Standards: All work under Activity 3 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC 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 4 – Hydrologic Analyses

Responsible Mapping Partner: Montana DNRC

Scope: The Montana DNRC shall perform hydrologic analyses for Baxter Creek. The Montana DNRC will perform log-Pearson Type III analyses in accordance with U.S. Water Resources Council Guidelines. Peak flood discharges will be calculated for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events. These flood discharges will be the basis for subsequent hydraulic analyses of Baxter Creek. In addition, the Montana DNRC shall address all concerns or questions regarding Activity 4 that are raised during the independent QA/QC review performed by the MCC under Activity 5.

Standards: All work under Activity 4 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: Upon completion of the hydrologic modeling for Baxter Creek, the Montana DNRC shall submit the results of the hydrologic analysis to the MCC for an independent QA/QC review under Activity 5. In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the Montana DNRC shall make the following products available to FEMA:

- Digital copies of all hydrologic modeling (input and output) files for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events;
- Digital and hardcopy versions of Summary of Discharges Table presenting discharge data for Baxter Creek;

- Digital and hardcopy versions of draft text for Section 3.1, Hydrologic Analyses, of FIS report; and
- Digital and hardcopy versions of all backup data used in the analysis, including work maps.

Activity 5 - Independent QA/QC Review of Hydrologic Analyses

Responsible Mapping Partner: MCC

Scope: The MCC shall review the technical, scientific, and other data submitted by the Montana DNRC under Activity 4 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to prepare the DFIRM. This work shall include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on the following:
 - Use of acceptable models;
 - Use of appropriate methodology(ies);
 - Correctly applied methodology(ies)/model(s), including QC of input parameters;
 - Comparison with gage data and/or regression equations, if appropriate; and
 - 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. All supporting data should be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.

Standards: All work under Activity 5 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC 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 Mapping Partner: Montana DNRC

Scope: The Montana DNRC shall perform a hydraulic analysis for approximately 5 miles of Baxter Creek. The hydraulic model, which will be developed using the U.S. Army Corps of Engineers HEC-RAS computer program, shall include the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events based on peak discharges computed under Activity 4. The Montana DNRC shall use cross-section and field data collected under Activity 1 to perform the hydraulic analyses. The Montana DNRC shall use the hydraulic analysis to establish flood elevations and a regulatory floodway for Baxter Creek.

The Montana DNRC shall use the FEMA CHECK-RAS checking program to check the reasonableness of the hydraulic analysis. To facilitate the independent QA/QC review under Activity 7, the Montana DNRC shall provide an explanation for each unresolved message from the CHECK-RAS program, as appropriate. In addition, the Montana DNRC shall address all concerns or questions regarding Activity 6 that are raised during the independent QA/QC review under Activity 7.

Standards: All work under Activity 6 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: Upon completion of the hydraulic modeling for Baxter Creek, the Montana DNRC shall submit the results to the MCC for an independent QA/QC review as described in Activity 7. In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the Montana DNRC shall make the following products available to FEMA:

- Digital profiles of the 10-, 2-, 1- and 0.2-percent-annual-chance water-surface elevations representing existing conditions using FEMA’s RASPLOTT program or similar software;
- Digital and hardcopy versions of Floodway Data Table that is compatible with the DFIRM database;
- Digital and hardcopy versions of all hydraulic modeling (input and output) files;
- Digital and hardcopy versions of table with range of Manning’s “n” values;
- An explanation for each unresolved message from the CHECK-RAS program, as appropriate;
- Digital and hardcopy versions of all backup data used in the analyses;
- Digital and hardcopy versions of draft text for inclusion in Section 3.2, Hydraulic Analyses, of the FIS report; and
- All input and output data, intermediate data processing products, Geographic Information System (GIS) data layers, and final products.

Activity 7 - Independent QA/QC Review of Hydraulic Analyses

Responsible Mapping Partner: MCC

Scope: The MCC shall review the technical, scientific, and other data submitted by the Montana DNRC under Activity 6 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to prepare the DFIRM. This independent QA/QC review of the hydraulic analyses shall include, at a minimum, the activities listed below.

- Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review shall focus on the following:
 - 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 Flood Profiles.
- Use the CHECK-RAS program 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 under Activity 7 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MCC 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 Analysis)

Responsible Mapping Partner: Montana DNRC

Scope: The Montana DNRC shall delineate digital floodplain and regulatory floodway boundaries for Baxter Creek. The mapping shall incorporate all revised hydraulic modeling and newly acquired topographic data. The Montana DNRC shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries on a digital work map based on the topographic data developed under Activity 2. In addition, the Montana DNRC shall incorporate the results of all effective Letters of Map Change within the revised area as appropriate. Also, the Montana DNRC shall address all concerns or questions regarding Activity 8 that are raised during the independent QA/QC review outlined in Activity 9.

Standards: All work under Activity 8 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: Upon completion of floodplain mapping, the Montana DNRC shall submit the results to the MCC for an independent QA/QC review under Activity 9. In accordance with the TSDN format described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the Montana DNRC shall make the following products available to FEMA:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, Base Flood Elevations (BFEs), flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review 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 outlined in Activity 9.

Activity 9 - Independent QA/QC Review of Floodplain Mapping

Responsible Mapping Partner: MCC

Scope: The MCC shall review the floodplain work maps submitted by the Montana DNRC under Activity 8 to ensure that the results of the hydraulic analyses are accurately represented on the work maps. This work shall 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.
- Review the floodplain widths at cross sections as shown on the work maps for agreement with the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps for agreement with the Flood Profiles.
- Review the work maps to ensure flood insurance risk zones are labeled properly.
- Review the DFIRM mapping files for compliance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- Review the metadata files to ensure they include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work under Activity 9 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

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

- 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 Mapping Partner: Montana DNRC

Scope: Activity 10 consists of obtaining the digital base map for the project. The Montana DNRC shall provide the digital base map. The required activities are as follows:

- 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 meet the minimum standards and specifications that FEMA requires for DFIRM production; and
- Populate the DFIRM database for base map features and applicable data.

Standards: All work under Activity 10 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

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

- Written certification that the digital data meet the minimum FEMA standards and specifications; and
- Documentation that FEMA can use the digital base map.

Activity 11 – DFIRM Production (Non-Revised Areas)

Responsible Mapping Partner: MCC

Scope: For all flooding sources except the reach of Baxter Creek that is being studied by the Montana DNRC, the MCC shall convert the effective FIRM and Flood Boundary and Floodway Map (FBFM) panels to digital format in conformance with FEMA DFIRM specifications. The MCC shall use the base map acquired under Activity 10 for the conversion. The MCC also shall incorporate Letters of Map Change issued by FEMA since the date of the current effective FIRM for areas outside the area being studied by the Montana DNRC.

The digital flood theme for Baxter Creek shall not be digitized under Activity 11. Rather, the MCC shall leave this as a “hole” in the digital flood theme that will be filled in as part of Activity 12 using digital flood data developed by the Montana DNRC under Activity 8.

Standards: All work conducted under Activity 11 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

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

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM, including a check that the road and floodplain relationship is maintained for all non-revised areas.

Activity 12 – DFIRM Production (Merging Effective and Revised Information)

Responsible Mapping Partner: MCC

Scope: Upon completion of Activities 8 and 11, the MCC shall merge the digital floodplain data to produce a single updated DFIRM. This work will include tie-in of flood hazard information for areas that were not studied as part of this Flood Map Project. Also, the MCC shall ensure the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries are tied in. The MCC shall coordinate with the Montana DNRC and FEMA, as necessary, to resolve any potential tie-in issues.

Standards: All work conducted under Activity 11 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

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

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;

- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.

Activity 12A – Application of DFIRM Graphic and Database Specifications

Responsible Mapping Partner: MCC

Scope: The MCC shall apply the final FEMA DFIRM graphic and database specifications, as appropriate, to the DFIRM files produced by the Montana DNRC. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user).

Standards: All work under Activity 12A shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

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

- DFIRM panels showing 1- and 0.2-percent-annual-chance floodplain boundary delineations, cross sections, BFEs, flood insurance risk zone designation labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- DFIRM database files, as appropriate, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all effective and revised flood hazard information at a suitable scale;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.

Activity 13 – Preliminary DFIRM and FIS Report Distribution

Responsible Mapping Partner: MCC

Scope: Activity 13 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 by the MCC are summarized below.

FIS Report Preparation: The MCC shall prepare an FIS report in the FEMA community-based or countywide format as directed by FEMA.

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

Discrepancy Resolution: The MCC shall work with the Montana DNRC and FEMA, as appropriate, to resolve discrepancies identified during the final QA/QC review.

Distribution of Preliminary DFIRM and FIS Report: The MCC shall distribute the Preliminary copies of the DFIRM and FIS report to community officials, State agencies, and others as deemed appropriate by FEMA.

News Release Preparation: The MCC shall prepare news release notifications of BFE changes and perform a QA/QC review for accuracy and compliance with FEMA format requirements as documented in the current version of the *FEMA Document Control Procedures Manual*. The MCC shall file the notifications for later submittal to FEMA for review.

Preliminary Summary of Map Actions (SOMA) Preparation: The MCC shall prepare a Preliminary SOMA for the unincorporated areas of Gallatin County as appropriate. The SOMA shall list pertinent information regarding Letters of Map Change that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

Standards: All work under Activity 13 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: The MCC shall make the following products available when requested by FEMA:

- Preliminary transmittal letters shall be prepared. These letters and any additional letters requested by FEMA shall be prepared in accordance with the current version of the *FEMA Document Control Procedures Manual*.
- Preliminary copies of the DFIRM and FIS report, including all updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of Gallatin County, the Montana DNRC, the FEMA Regional Office, and others as directed by FEMA.
- Preliminary SOMA, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM;
- DFIRM database files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM;

- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM shall be provided.

Activity 14 - Post-Preliminary Processing

Responsible Partners: Montana DNRC and MCC

Scope: Activity 14 consists of finalizing the DFIRM and FIS report after the Preliminary copies of the DFIRM and FIS report have been issued for public review and comment. The activities to be performed are summarized below.

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

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

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

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

The MCC shall mail all associated correspondence upon authorization by FEMA.

Preparation of Special Correspondence: The Montana DNRC and the MCC shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as “special correspondence”), including drafting responses for FEMA review when appropriate and

finalizing responses when requested by FEMA. The MCC also shall mail the final correspondence (and enclosures if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA.

Revision of DFIRM and FIS Report: If necessary, the MCC shall work together with the Montana DNRC to revise the DFIRM and FIS report at the direction of FEMA and distribute Revised Preliminary copies of the DFIRM and FIS report.

Final SOMA Preparation: The MCC shall prepare a Final SOMA, as appropriate.

Processing of Letter of Final Determination: The MCC shall work with FEMA, the Montana DNRC, and Gallatin County to establish the effective date for the DFIRM and FIS report, and shall prepare a Letter of Final Determination (LFD) for Gallatin County for FEMA review in accordance with the FEMA *Document Control Procedures Manual*. The MCC also shall mail the final signed LFD and enclosures and distribute appropriate copies of the signed LFD and enclosures upon receipt of authorization from FEMA.

Processing of Final DFIRM and FIS Report for Printing: The MCC shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to the FEMA Map Service Center for printing by the U.S. Government Printing Office. The MCC also shall prepare the appropriate paperwork to accompany the DFIRM and FIS report, including the transmittal letter to the community CEO, the Print Processing Worksheet, the Printing Requisition Forms, and the Community Map Actions Form.

Revalidation Letter Processing. The MCC shall prepare and distribute a letter to the community CEO and floodplain administrator to notify the community about Letters of Map Change for which determinations will remain in effect after the DFIRM and FIS report become effective.

Archiving Data: The MCC shall ensure the engineering backup data and related correspondence are packaged and stored properly in the library archives until they are transmitted to the FEMA Engineering Study Data Package Facility.

Standards: All work under Activity 14 shall be performed in accordance with the standards specified in Section 5 of this Mapping Activity Statement.

Products: In accordance with the requirements provided in the current version of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* and *Document Control Procedures Manual*, the Montana DNRC and/or the MCC shall make the following products available to FEMA:

- Documentation that the news releases were published in accordance with FEMA requirements;
- Documentation that the appropriate *Federal Register* notices (Proposed and Final Rules) were published in accordance with FEMA requirements;
- Draft and final LFDs (and all associated backup data and information) for FEMA review and signature;

- Draft and final Special Correspondence (and all associated backup data and information) for FEMA review and signature as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated backup data and information) for FEMA review and signature as appropriate;
- DFIRM negatives and final FIS report materials, including all updated data tables and Flood Profiles;
- Paperwork for the final DFIRM and FIS report materials;
- Draft and final Letter of Map Change Revalidation Letter as appropriate; and
- Complete, organized Engineering Study Data Package.

2. Reporting:

All Project Team members shall comply with the reporting requirements summarized in Volume 3 of *Guidelines and Specifications for Flood Hazard Mapping Partners*. In addition, the following reporting requirements shall be met:

- If any issues arise that could affect the completion of a task within the proposed scope or budget, the Mapping Partner that is 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. (For additional information on SPRs, refer to Appendix M, Section M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*. Appendix M is available for viewing or download on the FEMA Web site at http://www.fema.gov/mit/tsd/frm_gsam.pdf.)
- The Montana DNRC shall be responsible for collecting and maintaining a set of deliverables for all tasks and shall compile a comprehensive TSDN for the entire project.
- All supporting documentation for the mapping activities outlined in this Mapping Activity Statement shall be submitted in the TSDN format in accordance with Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*. Additional information on the applicability of the TSDN requirements to the various mapping activities included in this Flood Map Project is provided in Table 2-1.

Table 2-1. Mapping Activities and Applicable TSDN Sections

TSDN Section	Mapping Activities													
	1	2	3	4, 4A	5, 5A	6	7	8, 8A, 8B	9	10	11, 11A	12, 12A	13	14
General Documentation														
Special Problem Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Telephone Conversation Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Meeting Minutes/Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General Correspondence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Engineering Analyses														
Hydrologic Analyses	✓			✓	✓	✓	✓	✓	✓					
Hydraulic Analyses	✓			✓	✓	✓	✓	✓	✓					
Key to Cross-Section Labeling	✓			✓	✓	✓	✓	✓	✓					
Key to Transect Labeling	✓			✓	✓	✓	✓	✓	✓					
Draft FIS Report				✓	✓	✓	✓							
Mapping Information		✓						✓	✓	✓	✓	✓	✓	✓
Miscellaneous Reference Information	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

3. Period of Performance:

The mapping activities outlined in this Mapping Activity Statement will begin on September 15, 2002, and will be completed no later than September 30, 2004. The mapping activities may be terminated at the option of FEMA or the Montana DNRC in accordance with the provisions of the Partnership Agreement dated July 31, 2002.

4. Funding/Cost-Sharing:

5. Standards:

The standards relevant to this Mapping Activity Statement are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* (February 2002) to be referenced for each mapping activity documented in this Mapping Activity Statement are summarized in Table 5-2. These Guidelines are available for viewing or download from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/mit/tsd/dl_cgs.htm.

6. Schedule:

The mapping activities for this Mapping Activity Statement shall be completed in accordance with the schedule below. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

ACTIVITY	RESPONSIBLE PARTNER	DATE DUE
Activity 1 – Field Surveys and Reconnaissance	CTP	11-15-02
Activity 2 – Topographic Data Development	CTP	12-15-02
Activity 3 – Independent QA/QC Review of Topographic Data	MCC	01-15-03
Activity 4 – Hydrologic Analyses	CTP	03-15-03
Activity 5 – Independent QA/QC Review of Hydrologic Analyses	MCC	04-15-03
Activity 6 – Hydraulic Analyses	CTP	06-15-03
Activity 7 – Independent QA/QC Review of Hydraulic Analyses	MCC	07-15-03
Activity 8 – Floodplain Mapping (Detailed Riverine Analysis)	CTP	08-15-03
Activity 9 – Independent QA/QC Review of Floodplain Mapping	MCC	09-15-03
Activity 10 – Base Map Acquisition and Preparation	CTP	05-15-03
Activity 11 – DFIRM Production (Non-Revised Areas)	MCC	09-15-03
Activity 12 – DFIRM Production (Merging Effective and Revised Information)	MCC	11-15-03
Activity 12A – Application of DFIRM Graphic and Database Specifications	MCC	11-15-03
Activity 13 – Preliminary DFIRM and FIS Report Distribution	MCC	12-01-03
Activity 14 – Post-Preliminary Processing	CTP and MCC	11-15-04

Table 5-1. Applicable Standards for Mapping Activities

Applicable Standards	Activities													
	1	2	3	4	5	6	7	8	9	10	11	12, 12A	13	14
<i>Guidelines and Specifications for Flood Hazard Mapping Partners</i> , 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, <i>Photogrammetric Mapping</i> , March 31, 1993	✓	✓	✓											
EM 1110-2-1003, <i>Hydrographic Surveys</i> , October 31, 1994	✓		✓											
Numerical Models Accepted by FEMA for NFIP Usage, January 11, 2002				✓	✓	✓	✓							
<i>Content Standards for Digital Geospatial Metadata</i> (Federal Geographic Data Committee, 1998)		✓	✓					✓	✓	✓	✓	✓	✓	✓
<i>Document Control Procedures Manual</i> , December 2000													✓	✓

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

Activity Number	Activity	Applicable Volume, Section/Subsection, and Appendix
1	Field Surveys and Reconnaissance	Volume 1, Sections 1.2, 1.3, 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.5, A.6, A.7, and A.8 Appendices B, C, and M
2	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 Review 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	Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix C, Sections C.1 and C.7 Appendices E, F, G, H, and M
5	Independent QA/QC Review of Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix C, Section C.2 Appendices E, F, G, H, and M
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

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

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
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
8	Floodplain Mapping (Detailed Riverine 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

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

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
11	DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.2) ----- Appendices K, L, and M
12	DFIRM Production (Merging Effective and Revised Information)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) ----- Appendices K and L
12A	Application of DFIRM Graphic and Database Specifications	Volume 1, Section 1.4 (specifically Subsection 1.4.3) ----- Appendices K and L
13	Preliminary DFIRM and FIS Report Distribution	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

7. Certification:

The following certifications apply to this Mapping Activity Statement:

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

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

Activity 4 (Hydrologic Analyses), Activity 6 (Hydraulic Analyses), and Activity 8 (Floodplain Mapping)

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

Activity 8 (Floodplain Mapping – Detailed Riverine Analysis), Activity 11 (DFIRM Production – Non-Revised Areas), Activity 12 (DFIRM Production – Merging Effective and Revised Information), and Activity 12A (Application of DFIRM Database and Graphic Specifications)

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

Activity 10 (Base Map Acquisition and Preparation)

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

8. Technical Assistance and Resources:

The Montana DNRC may obtain copies of FEMA-issued Letters of Map Change, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from the MCC. The MCC may be contacted by telephone at 703-960-8800 or by facsimile transmission at 703-960-9125.

General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 application/certification forms, can be downloaded from the FEMA Flood Hazard Mapping Web site (www.fema.gov./mit/tsd/).

Specific technical and programmatic support may be provided through the MCC. Such assistance should be requested through the MCC Project Officer at FEMA Headquarters specified in Section 11 of this Mapping Activity Statement.

The Montana DNRC also may consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or subcontractors, and GIS-based engineering and modeling training.

9. Contractors:

The Montana DNRC does not intend to use the services of a contractor for this Flood Map Project. If the Montana DNRC decides to use contractors at a later date, the Montana DNRC shall ensure that the procurement for any contractors complies with the requirements of 44 CFR 13.36. Part 13 may be downloaded in PDF or text format from the U.S. Government Printing Office Web site at http://www.access.gpo.gov/nara/cfr/waisidx_01/44cfr13_01.html.

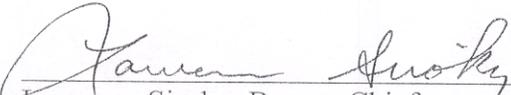
10. Financial Reporting:

Financial reporting requirements will be in accordance with Cooperative Agreement Articles V & VI.

11. Points of Contact:

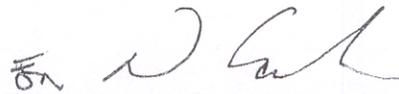
The points of contact for this Flood Map Project are John Liou, P.E., C.F.M., the FEMA Regional Project Officer; Karl Christians, the Project Manager for the Montana DNRC; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. The assistance of the MCC should be requested through Mike Grimm, the MCC Project Officer at FEMA Headquarters.

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



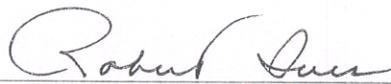
Laurence Siroky, Bureau Chief
Montana Department of Natural Resources and
Conservation, Water Resources Division

8/26/02
Date



John Liou, P.E., C.F.M.
Regional Project Officer
Federal Emergency Management Agency

9-4-02
Date



Mike Grimm
MCC Project Officer
Federal Insurance and Mitigation Administration

8/04/02
Date