



FEMA



# NYSDEC COOPERATING TECHNICAL PARTNERS MAPPING ACTIVITY STATEMENT

## Mapping Activity Statement No. {Insert Mapping Activity Statement Number} Digital Flood Insurance Rate Map Production and Development of Updated Flood Data for Schoharie County, New York

In accordance with the Cooperating Technical Partners (CTP) Agreement dated April 6 of 2000 between the New York State Department of Environmental Conservation (NYSDEC) and the Federal Emergency Management Agency (FEMA), this Mapping Activity Statement (MAS) No. {Insert MAS No.} is as follows.

### SECTION 1—OBJECTIVE AND SCOPE

The objective of the Flood Map Project documented in this MAS is to develop a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for **Schoharie County**. The DFIRM and FIS report will be produced in the FEMA countywide format.

Existing Geographic Information System (GIS) data and study needs for the community will be researched, obtained, organized, and provided in accordance with the Scoping Activity and data coordination procedures set forth in FEMA’s Geospatial Data Coordination Policy and Geospatial Data Coordination Implementation Guide. Scoping will be necessary to determine the final scope of work for this project.

In addition, the Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in Table 1.1, Flooding Sources to be Studied.

Maintain an archive of all data submitted for hydrologic modeling review. (All supporting data must be retained for three years from the date a funding recipient submits its final expenditure report to FEMA, and once the study is effective all associated data should be submitted to the FEMA library).

**Table 1.1 Flooding Source(s) to be Studied**

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Study
			Hydrology	Hydraulics	
Cobleskill Creek	Downstream Town of Richmondville corporate boundary to the downstream Village of Richmondville corporate boundary.	3.85 miles	X	X	
Cobleskill Creek	Downstream Village of Richmondville corporate boundary upstream limits of the effective approximate study	2.15 miles			X

West Creek	From the confluence with Cobleskill Creek to the 1.13 miles upstream of Bush Street near the Hamlet of Janesville in the Town of Seward.	9.1 miles			X
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The following will complete this Flood Map Project:

- New York State Department of Environmental Conservation (NYSDEC);
- Bergmann Associates, P.C. (BERGMANN), the State’s Study Contractor (SSC); and
- Michael Baker Jr. Inc, National Service Provider (NSP) for FEMA.

The Mapping Partner shall notify FEMA and/or its contractor by e-mail of all meetings with community officials at least one week prior to the meeting (with as much notice as possible). FEMA and/or its contractor may or may not attend the community meetings.

The activities for this Flood Map Project, including any required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in Table 1.2, Flood Mapping Project Activities. The sections of this MAS that follow the table below describe the specific mapping activities, responsible Mapping Partner(s), FEMA standards that must be met, and resultant map components.

**Table 1.2 Flood Mapping Project Activities**

Activities	CTP or IDIQ	FEMA (or its Contractor)
Scoping	NYSDEC	
Outreach	NYSDEC	FEMA
Field Survey	BERGMANN	
Independent QA/QC Review of Field Survey	NYSDEC	
Topographic Data Development	BERGMANN	
Independent QA/QC Review of Topographic Data	NYSDEC	
Base Map Acquisition and Preparation	NYSDEC	
Hydrologic Analyses	BERGMANN	
Independent QA/QC Review of Hydrologic Analyses	NYSDEC	
Hydraulic Analyses	BERGMANN	
Independent QA/QC Review of Hydraulic Analyses	NYSDEC	

Activities	CTP or IDIQ	FEMA (or its Contractor)
Floodplain Mapping (Detailed Riverine or Coastal Analysis, Redelineation Using Effective Flood Profiles and Updated Topographic Data <sup>1</sup> , Refinement or Creation of Zone A, Redelineation (digitization) of Non-Revised Areas <sup>1</sup> , Merge Revised and Non-Revised Information)	BERGMANN	
Independent QA/QC Review of Floodplain Mapping	NYSDEC	
Develop DFIRM Database (including Graphic Specifications)	BERGMANN	
Independent QA/QC Review of DFIRM Database and Graphics	NYSDEC	
Produce Preliminary Map Products	BERGMANN	
Post-Preliminary Processing	BERGMANN /NYSDEC	FEMA
<sup>1</sup> These sub-tasks can be performed and reported in the Management Information Portal (MIP) Work Flow as part of Floodplain Mapping activity or Redelineation activity.		

FEMA has developed tools to assist in the development of the flood hazard data studies and DFIRMs if the CTP wishes to use them. FEMA will 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 Flood Map Modernization and efficiency of all mapping partners.

QA/QC review activities may be performed by the CTPs or FEMA’s contractor at the discretion of FEMA. If the CTP will be utilizing its staff to do the QA/QC review, this should be identified during scoping. The CTP will need to submit its QA/QC plan with checklist to the Regional Project Officer for approval. Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality.

FEMA will be providing download/upload capability for intermediate data submittals through the MIP. Data submittals uploaded via the MIP will include the same data required prior to the existence of the MIP, with the addition of Metadata profiles required for search and retrieve capabilities. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data. The NFIP Metadata Profiles follow the Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata, but define some specific domains and business rules to make the metadata more useful to FEMA and its mapping partners.

## Scoping

Responsible Mapping Partner: NYSDEC

Scope: This task involves collecting data from a variety of sources including community surveys, other Federal and State agencies, National Flood Insurance Program (NFIP) State Coordinators, Community Assistance Visits (CAVs), and FEMA archives. NYSDEC will evaluate the effective FIS report and Flood Insurance Rate Maps (FIRMs) to see if it needs to be updated. Lists of mapping needs will be obtained from the WISE Scoping Tool, MNUSS database, community surveys, and CAVs, if available.

Data collection will include obtaining the best readily available base map materials (corporate limits, roads, orthophotos, etc) along with stream centerline files. The acquired data will be imported into the Scoping Tool and used during the Scoping Task. In the Scoping Tool, all streams should have unique names, the limits of the effective FEMA studies should be identified, Letter of Map Change (LOMC) areas should be identified, and community requests should be identified. This task also includes populating the streamlines with existing pipeline and scoped studies currently underway.

Identify all stream/coastal reaches where levees are shown as providing protection against the 1-percent-annual-chance flood. NYSDEC should work with the FEMA Regional Office to request the information specified in Title 44 Code of Federal Regulations (CFR) 65.10, mapping of areas protected by levee systems, from the community or other party seeking continued recognition of the levee.

In order for a levee to be shown as providing protection on a new FIRM, the requirements of 44 CFR 65.10 must be provided to FEMA regardless if the flooding source is proposed to be restudied or not. All levee systems impacting existing and proposed SFHAs shall be identified during this task and relevant information on the levee's ownership. The effective FIRM and FIS, FEMA's Flood Levee Inventory System (FLIS) and effective LOMRs should all be used to identify certification status for all identified levees. For all levees proposed to be shown on the new FIRM as providing protection from the 1-percent-annual-chance flood (i.e., those known to have adequate freeboard, available as-built plans, adequate maintenance, and operation plans, etc.) that do not have certification documentation available, the levee owner and/or community(s) protected shall be contacted by NYSDEC via letter requesting certification in accordance with 44 CFR 65.10. During this step, the time frame for providing the requested data shall be established in coordination with the FEMA Regional Office. If certification, plans, etc. are not provided within the established timeframe, then the need for new flood hazard analysis/mapping shall be documented. Mapping will be done in accordance with Appendix H of the *Guidelines and Specifications for Flood Hazard Mapping Partners*. At the end of this task, the FLIS must be updated for all levees identified by NYSDEC. The FLIS can be found at <http://flis.pbsjdfirm.com> and information should be provided via the FLIS according to Procedure Memorandum 30 and 34. A summary report must be generated from the database to provide the results of this activity.

In cooperation with the FEMA Region, a Project Management Team (PMT) will be established consisting of the NYSDEC, FEMA's regional engineer, Schoharie County, and other appropriate officials. The PMT will be responsible for coordinating the activities of this project and completing all tasks identified in this MAS. The FEMA Region will be provided with documentation identifying the established PMT as well as identifying the PMT on the Scoping Report. The MIP shall be updated with Scoping status as appropriate.

Preliminary Research Activities can be separated into two categories—researching effective information and researching available data for the Flood Map Project. The following tasks shall be completed to research effective information: inventory the FEMA archives for effective FIRM panels, Flood Boundary Floodway Map (FBFM) panels, FIS reports, and other flood hazard data or existing study data;

summarize the information in the WISE Scoping Tool and/or MNUSS database; summarize contiguous community agreement checks; review CAV and Community Assistance Contact files; and develop a “scoping map” and an overview of the results of the research.

For researching of available data for the Flood Map Project, NYSDEC should follow the FEMA Geospatial Data Coordination Policy and Implementation Guide.

NYSDEC will coordinate, setup, and hold the Scoping Meeting. This includes identifying a time, place, and participants. The purpose of this meeting is to present the current information to the local officials (State, county, and municipal) and coordinate on prioritization and identification of study areas. NYSDEC shall be responsible for compiling the necessary information for the meeting. These items may include: the FIS and FIRM for affected communities; United States Geological Survey quads for the study area; best available community base map(s); effective FIRM summary; Available Data Inventory; Scoping Map; Scoping Meeting Agenda/Minutes form; Aerial photos/topographic mapping, if available; existing drainage studies or other H&H data; Community Master Plan(s)/Drainage Master Plan(s); Zoning Maps; Street Maps; As-built plans; and Floodplain Ordinance(s).

The project management team shall review the initial mapping needs list, review the research findings, and make selections of proposed methods for obtaining/producing flood data. Any additions or changes to the needs list shall be discussed with all members. All needs shall also be prioritized. In general, highest priority shall be given to the following areas: areas of dense existing or anticipated development including areas where new road crossings have been constructed over stream(s); areas affected by flood-control structures and/or channelization; areas where natural physical changes in the floodplain have been significant (due to subsidence or extreme erosion, for example); areas that were studied by approximate methods and unmapped areas especially those with development pressure; areas where the community has experienced flooding outside mapped floodplains with severe damage to buildings and/or infrastructure; areas where mapped flood hazards do not match those shown on contiguous FIRMs (unless those FIRMs are not considered to be accurate); and areas where flood data (Base Flood Elevations (BFEs), floodplains, and regulatory floodways) are likely to be changed the most by a restudy.

Based on the discussion of mapping needs, NYSDEC and the FEMA Project Officer will finalize the areas to be included in the project (based on recommendations provided by the Project Management Team). Areas to be studied by detailed, limited detail, and approximate methods shall be identified. The following issues will be discussed and refined: Review and Refinement of Flood Hazard Identification Methodologies, Review of Proposed Paneling Scheme, Review and Refinement of Base and Topographic Map Source, and Finalization of Map Production and Database Options.

The NYSDEC will be acting as the Consultation Coordination Officer for this flood study as identified in 44 CFR Part 66. At this point, the CTP will prepare and setup the Community Case File and Flood Elevation Docket for the maintenance of all communication and coordination throughout the project as outlined in 44CFR Parts 66 and 67.

Standards: All Scoping work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables:

- The Final Scoping with all of the components as laid out in the attached “Partner Flood Map Modernization Program Scoping Report” template in Appendix A, or an approved alternate, will

be delivered in accordance with the schedule outlined in Section 6 - Schedule to the Regional Project Officer for approval.

- QA/QC Plan for the review of the mapping project outlined in this MAS. This will include the checklists developed for that review in accordance with the schedule included in Section 6 - Schedule.
- MNUSS and the WISE Scoping Tool (optional) population. (The MIP Scoping Tool is strongly recommended to be used during the scoping process, populated with data, and uploaded to the MIP. See Procedure Memorandum 35)
- National Digital Orthophoto Program and National Digital Elevation Program Tracking System Documentation. Where non-Federal orthoimagery or topographic data sets are discovered during scoping or when the planned scope for the project includes production of new orthoimagery or topographic data, information about the data sets must be entered into the appropriate tracking system consistent with the FEMA Geospatial Data Coordination Policy.

## OUTREACH

*(NOTE: The performance of outreach takes place throughout the life of the flood study project. Therefore, we recommend tracking the outreach budget, in the MIP Workflow, equally between Produce Preliminary Map Products and Post Preliminary Processing. An alternate tracking method is acceptable with approval from the project management team.)*

The outreach activities for a Flood Map Project can best be understood as a process that begins during the Project Scoping phase and continues through the map production and post-preliminary phases. A regulatory overview of required activities is followed by a description of tools that can be used in working with stakeholders to keep them informed and to solicit their input.

The overarching goal for conducting outreach is to create a climate of understanding and ownership of the mapping process at the State and local levels. Well-planned outreach activities can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misunderstanding, or misinformation. These outreach activities also can assist FEMA and other members of the Project Management Team in responding to congressional inquiries.

The NYSDEC will work with the Regional Office during the initiation of this activity to determine an Outreach Plan for implementation throughout the mapping project. The Regional Office will have access to many outreach tools that have been developed for this process that can be utilized or customized. Volume 1 of the *Guidelines and Specifications for Flood Hazard Mapping Partners* provides specific outreach goals that can be considered.

All communication with local governments will be done in accordance with 44 CFR Part 66.

Deliverables:

- Upon determination of an Outreach and Coordination Approach, the NYSDEC shall deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 - Schedule:
  - A report detailing outreach and coordination activities
  - Backup or supplemental information used in writing this report

## **Field Survey**

Responsible Mapping Partner: BERGMANN

Scope: To supplement any field reconnaissance conducted during the Project Scoping phase of this project, BERGMANN 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.

For Limited-Detail Studies, BERGMANN shall use As-Built Drawings of the structures (if available); otherwise conduct full survey of the structures.

In addition to the initial field reconnaissance, BERGMANN shall conduct 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. BERGMANN also shall coordinate with other Mapping Partners that are involved in the Topographic Data Development process.

Standards: All Field Survey work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC/BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded Appendix N compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record. The MIP should also be populated with appropriate leverage information regarding who paid for the data and the amount of data used by the Flood Map Project.

- A report summarizing the findings of the field reconnaissance;

- Maps and drawings that provide the detailed survey results;
- Survey notebook containing cross sections and structural data;
- Documentation of the Datum, (Refer to Procedure Memorandum 41);
- Digital versions of draft text for inclusion in the FIS report;
- Format Survey Database or Data Delivery consistent with the Data Capture Standards– Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, 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 as outlined in the approved QA/QC Plan.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Topographic Data Development**

Responsible Mapping Partner: NYSDEC/BERGMANN

Scope: To supplement the field surveys conducted under this MAS, NYSDEC/BERGMANN shall obtain additional topographic data of the overbank areas of the flooding sources studied to delineate floodplain boundaries and extend surveyed channel cross sections. NYSDEC/BERGMANN shall gather information on what topographic data is available for the given community and what accuracy and currency it meets. NYSDEC/BERGMANN shall use this topographic data that is better than that of the original study. In coordination with the partner who performed scoping, insure that the FEMA Geospatial Data Coordination Policy and Implementation Guide is followed. {If necessary, describe additional steps that may need to be taken to use the available data. }

<Optional Paragraph, as appropriate> Because there is no new topographic data available that can be used and it is demonstrated that there is a need during the Scoping phase, with approval from the Regional Project Officer, NYSDEC/BERGMANN shall generate new topographic data for the county using LIDAR. NYSDEC/BERGMANN also shall coordinate with other team members conducting field surveys. Contour interval and/or accuracy for the topographic data shall be selected based on the current FEMA requirements as documented in *Guidelines and Specifications for Flood Hazard Mapping Partners*. No FEMA funds shall be expended on new topographic data unless prior approval is given by the Regional Project Officer after analyzing the request submitted at the end of the scoping period.

<Optional paragraph if automated H&H is used>For this activity, BERGMANN also shall develop topographic maps and/or Digital Elevation Models for the subject flooding sources using the data collected under this Topographic Data Development process and via field surveys. In addition, BERGMANN shall address all concerns or questions regarding the topographic data development that are raised by NYSDEC during the independent QA/QC review. NYSDEC/BERGMANN should confirm with the appropriate FEMA Regional Engineer the automated H&H software proposed to be used.

Standards: All Topographic Data Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC/BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP so that NYSDEC can access it for an independent QA/QC review in

accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded Appendix N compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. The MIP should also be populated with appropriate leverage information regarding who paid for the topographic data and the amount of data used by the Flood Map Project. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- Digital topographic maps;
- Report summarizing methodology and results;
- Mass points and breaklines data;
- Digital work maps with contours;
- Checkpoint analyses to assess the accuracy of data, including Root Mean Square Error calculations to support vertical accuracy;
- Identification of remote-sensing data voids and methods used to supplement data voids;
- National Geodetic Survey data sheets for Network Control Points used to control remote-sensing and ground surveys;
- Terrain Database or Data Delivery consistent with the Data Capture Standards–Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*; 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 as outlined in the approved QA/QC Plan.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cggs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cggs.shtm).

## **Independent QA/QC Review of Topographic Data**

Responsible Mapping Partner: NYSDEC

Scope: NYSDEC shall review the mapping data generated by NYSDEC/BERGMANN under Topographic Data Development to ensure that these data are consistent with FEMA standards and standard engineering practice, and are sufficient to prepare the DFIRM. If NYSDEC utilizes a contractor to perform the QA/QC, the contractor must be a different contractor than who performed the original analyses. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer.

Standards: All Topographic Data Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded Appendix N compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Base Map Acquisition**

Responsible Mapping Partner: NYSDEC

Scope: Base Map Acquisition consists of obtaining the digital base map, {specify which one}, for the project and as necessary, preparing the base map for use. NYSDEC shall provide the digital base map. The required activities are as follows:

- Obtain digital files (raster or vector) of the base map. In coordination with the partner who performed scoping, insure that the FEMA Geospatial Data Coordination Policy and Implementation Guide is followed.
- 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.

Standards: All Base Map Acquisition work shall be performed in accordance with the standards specified in Section 5 - Standards. The Data Capture Standards must be met for this deliverable to be acceptable.

Deliverables: In accordance with the *Guidelines and Specifications for Flood Hazard Mapping Partners*, (Volume 1, Appendix K and Appendix L), NYSDEC shall make the following products available to FEMA by uploading the digital data to the MIP so that NYSDEC can access it for an independent QA/QC review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data.

Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. The MIP should also be populated with appropriate leverage information regarding who paid for the base map and the amount of data used by the Flood Map Project.

- Written certification that the digital data meet the minimum standards and specifications;
- Digital versions of draft text for inclusion in the FIS report;
- Documentation that FEMA can use the digital base map; and
- Documentation of the Datum, if appropriate.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

### **Independent QA/QC Review of Base Map**

Responsible Mapping Partner: NYSDEC

Scope: NYSDEC shall review the base map acquired by NYSDEC to ensure it includes data consistent with FEMA standards and sufficient to include on the DFIRM.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the *Guidelines and Specifications for Flood Hazard Mapping Partners* (Volume 1, Appendix K, and Appendix L), NYSDEC shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- A Summary Report that describes the findings of the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- If data changed during review, then updated deliverables from previous tasks will be submitted at this time.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## Hydrologic Analyses

Responsible Mapping Partner: BERGMANN

Scope: BERGMANN shall perform hydrologic analyses for approximately {Insert number of square miles} square miles of drainage area for the flooding source(s) listed earlier in Table 1.1. BERGMANN shall calculate peak flood discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events using the {Insert name of program} computer program. These flood discharges will be the basis for subsequent Hydraulic Analyses performed under this MAS. In addition, BERGMANN shall address all concerns or questions regarding the hydrologic analyses that are raised during the independent QA/QC review performed by NYSDEC during the QA/QC review.

<Optional paragraph for GIS-based modeling> If GIS-based modeling is used, BERGMANN shall document automated data processing and modeling algorithms, and provide the data to FEMA to ensure these are consistent with the standards outlined above. Digital datasets (such as elevation, basin, or land use data) are to be documented and provided to FEMA for approval before performing the hydrologic analyses to ensure the datasets meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analysis, then BERGMANN shall provide full user documentation, technical algorithm documentation, and the software to FEMA for review before performing the hydrologic analyses.

Standards: All Hydrologic Analyses work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP so that NYSDEC can access it for an independent QA/QC review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record. The MIP should also be populated with appropriate leverage information regarding who paid for the hydrologic data and the amount of data used by the Flood Map Project.

- Digital copies of all hydrologic modeling (input and output) files for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events;

- Digital Summary of Discharges Tables presenting discharge data (including Limited Detail and Approximate studies) for the flooding sources for which hydrologic analyses were performed;
- Digital versions of draft text for inclusion in the FIS report;
- Digital versions of all backup data used in the analysis including work maps;
- Format Hydrology Database or Data Delivery consistent with the Data Capture Standards– Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*; 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 as outlined in the approved QA/QC Plan.
- <Optional for GIS-based modeling> For GIS-based modeling, deliverables shall include all input and output data, intermediate data processing products, and GIS data layers.
- <Optional for Limited Detail modeling> For Limited Detail Study modeling, define the deliverables to be included.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Independent QA/QC Review of Hydrologic Analyses**

Responsible Mapping Partner: NYSDEC

Scope: NYSDEC shall review the technical, scientific, and other information submitted by BERGMANN specific to the hydrologic analyses to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice, and are sufficient to prepare the DFIRM. If NYSDEC utilizes a contractor to perform the QA/QC, the contractor must be a different contractor than who performed the original analyses. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to 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 the data readily available to FEMA; and
- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

**Standards:** All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

**Deliverables:** In accordance with Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded Appendix compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- A Summary Report that describes the findings of the independent QA/QC review and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## Hydraulic Analyses

**Responsible Mapping Partner:** BERGMANN

**Scope:** BERGMANN shall perform hydraulic analyses for approximately {Insert number of miles} miles of the flooding sources listed earlier in Table 1.1. The modeling will include the 10-, 2-, 1-, and 0.2-percent-annual-chance events based on peak discharges computed under Hydrologic Analyses. The hydraulic methods used for this analysis will include HEC-RAS.

BERGMANN shall use the cross-section and field data collected during Field Survey and the topographic data collected during the Topographic Data Collection, when appropriate, to perform the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and regulatory floodways for the subject flooding sources.

BERGMANN shall use the FEMA CHECK-2 or CHECK-RAS checking program to verify the reasonableness of the hydraulic analyses. To facilitate the independent QA/QC review, BERGMANN shall provide explanations for unresolved messages from the CHECK-2 or CHECK-RAS program, as appropriate. In addition, BERGMANN shall address all concerns or questions regarding the hydraulic analyses that are raised by NYSDEC during the independent QA/QC review.

<Optional paragraph for GIS-based modeling> BERGMANN shall document automated data processing and modeling algorithms for GIS-based modeling and provide the data to FEMA for review to ensure these are consistent with the standards outlined above. Digital datasets are to be documented and provided to FEMA for approval before performing the hydraulic analyses to ensure the datasets meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analyses, then BERGMANN shall provide full user documentation, technical algorithm documentation, and software to FEMA for review before performing the hydraulic analyses

Limited Detail study shall be conducted as per attached Appendix – A, provided by NYSDEC.

<Optional Paragraph for Levees> Any flooding sources associated with a levee that are mapped as providing protection on effective FIRMs, but will not meet certification requirements for the new FIRMs, will require revised hydraulic analysis. This revised analysis should be done in accordance with Appendix H of the *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All Hydraulic Analyses work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP so that NYSDEC can access it for an independent QA/QC review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded Appendix N compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record. The MIP should also be populated with appropriate leverage information regarding who paid for the hydraulic data and the amount of data used by the Flood Map Project.

<Include deliverables specific to Limited Detail Study if proposed>

- Digital profiles of the 10-, 2-, 1- and 0.2-percent-annual-chance water-surface elevations representing existing conditions using the FEMA RASLOT program or similar software;
- Digital Floodway Data Tables for each flooding source that is compatible with the DFIRM database;
- Digital hydraulic modeling (input and output) files;
- Digital tables with range of Manning’s “n” values;
- Explanations for unresolved messages from the CHECK-2 or CHECK-RAS program, as appropriate;
- Digital versions of all backup data used in the analyses;
- Digital versions of the Advisory Base Flood Elevations (BFE) lines for Limited Detail study;
- Digital versions of draft text for inclusion in the FIS report;
- Format Hydraulic Database or Data Delivery consistent with the Data Capture Standards– Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*; 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 as outlined in the approved QA/QC Plan.

- <Optional for GIS-based modeling> 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;
- For Limited Detail Study modeling, as defined in Appendix –A, the deliverables to be included.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Independent QA/QC Review of Hydraulic Analyses**

Responsible Mapping Partner: NYSDEC

Scope: NYSDEC shall review the technical, scientific, and other information submitted by BERGMANN under Hydraulic Analysis to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice, and are sufficient to revise the FIRM. If NYSDEC utilizes a contractor to perform the QA/QC, the contractor must be a different contractor than who performed the original analyses. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:
  - Use of acceptable model(s);
  - Starting water-surface elevations;
  - Cross-section geometry;
  - Manning’s “n” values and expansion/contraction coefficients;
  - Bridge and culvert modeling;
  - Flood discharges;
  - Regulatory floodway computation methods; and
  - Tie-in to upstream and downstream non-revised Flood Profiles.
- Use the CHECK-2 or CHECK-RAS program, as appropriate, to flag potential problems and focus review efforts.
- Maintain records of all contacts, reviews, recommendations, and actions and make the data readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review. (All supporting data must be retained for three years from the date a funding recipient submits its final expenditure report to FEMA, and once the study is effective all associated data should be submitted to the FEMA library); and

- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

**Standards:** All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

**Deliverables:** In accordance with Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- A Summary Report that describes the findings of the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- If the data changed during the Hydrologic and/or Hydraulic Analyses QA/QC process, then the updated and verified deliverables from these activities will be resubmitted at this time.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Floodplain Mapping**

**Responsible Mapping Partner:** BERGMANN

**Scope for Detailed Riverine or Coastal Analysis:** BERGMANN shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries (if required) for the flooding sources for which detailed hydrologic, hydraulic, and/or coastal analyses were performed. BERGMANN shall incorporate all new or revised hydrologic, hydraulic, and/or coastal modeling and shall use the topographic data acquired under Topographic Data Development to delineate the floodplain and regulatory floodway boundaries on a digital work map.

**Scope of Redelineation of Detailed Floodplain Boundaries Using Updated Topographic Data:**

*(NOTE: This specific task can be tracked in the MIP Workflow separately in the Data Development Task: Perform Redelineation, if preferred – indicate in subsequent reporting where this task will be tracking in the MIP Workflow)*

BERGMANN shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries, regulatory floodway boundaries, and coastal high hazard zones (if required) for the flooding sources listed earlier in Table 1.1. BERGMANN shall use the topographic data acquired under Topographic Data Development to delineate the floodplain and regulatory floodway boundaries, as appropriate, on a digital work map. If

the new topographic data do not reflect the same hydraulic characteristics as in the effective study, BERGMANN shall evaluate the topographic data to determine if changes are significant enough to invalidate the floodplain boundary and regulatory floodway boundary redelineations. If so, BERGMANN shall contact the FEMA Regional Project Officer, identified in Section 12 – Points of Contact, with a recommendation.

Coastal redelineation involves the following steps: redelineate the landward extent of the coastal flooding based on existing Stillwater elevations and the new topography. All gutters (elevation change lines between open water and the landward extent of the coastal flooding) need to be digitized (these lines are not directly related to the topography so should be digitized directly). If converting between NGVD and NAVD and the difference is close to 1.0 foot, the elevation can be changed on the map and the gutters will stay at the same location. If the difference between NGVD and NAVD is between 0.1 and 0.9 foot, or greater than 1.1 feet, contact FEMA and the Regional Management Center (RMC) for guidance on how to move the gutters.

If the PFD VE Zone has not been mapped this must also be done during redelineation. PFD involves using the best available topographic data and mapping the heel or landward side of the PFD. The VE zone shall then be extended landward to that line.

**Scope for Limited Detail Study:** BERGMANN shall delineate the 1-percent-annual-chance floodplain boundaries for the flooding sources for which limited detailed analyses were performed according to the attached Appendix – A provided by NYSDEC. BERGMANN shall incorporate all new or revised modeling and shall use the topographic data acquired under Topographic Data Development to delineate the floodplain boundaries on a digital work map. Also, BERGMANN shall address all concerns or questions that are identified by the NYSDEC or the NSP during the independent QA/QC review.

**Scope for Refinement or Creation of Zone A:** BERGMANN shall delineate the 1-percent-annual-chance floodplain boundaries for the flooding sources listed earlier in Table 1.1 or in the subsequent Scoping Report. BERGMANN shall use existing topographic data or the topographic data acquired under Topographic Data Development to delineate the floodplain boundaries on a digital work map. BERGMANN may expand on the approaches for analyzing Zone A areas outlined in *Guidelines and Specifications for Flood Hazard Mapping Partners* and in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas* (April 1995), and/or develop new approaches. Such approaches must be coordinated with and approved by the FEMA Regional Project Officer identified in Section 12 – Points of Contact, before analysis and mapping begin.

**Scope for Non-revised Areas:**

*(NOTE: This specific task can be tracked in the MIP Workflow separately in the Data Development Task: Perform Redelineation, if preferred – indicate in subsequent reporting where this task will be tracking in the MIP Workflow)*

For all flooding sources except those segments for which updated flood data will be developed, BERGMANN shall convert the information shown on the effective FIRM and FBFM panels for all incorporated and unincorporated areas of Dutchess County to digital format in conformance with FEMA DFIRM specifications. BERGMANN shall use the acquired base map for the conversion. BERGMANN shall digitize {Insert number of panels} FIRM panels and {Insert number of panels} FBFM panels. BERGMANN shall not digitize the flood theme for those segments of flooding sources for which updated flood data will be developed. It is estimated that {Insert number of panels} county-wide DFIRM panels will be produced by BERGMANN.

**Scope for Merging Revised and Non-Revised Information:** Upon completion of the floodplain mapping activities for the revised and non-revised areas, BERGMANN shall merge the digital floodplain

data into a single, updated DFIRM. This work is to include tie-in of flood hazard information for areas that were not studied as part of the Flood Map Project documented in this MAS. BERGMANN also shall tie in the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries with contiguous communities that were not studied as part of the Flood Map Project documented in this MAS. BERGMANN shall coordinate with FEMA and any additional Mapping Partners responsible for other components of Floodplain Mapping, as necessary, to resolve any potential tie-in issues.

BERGMANN shall incorporate the results of all effective LOMCs for all affected communities on the DFIRM. Also, BERGMANN shall address all concerns or questions regarding Floodplain Mapping that are raised by NYSDEC during the independent QA/QC review.

Standards: All Floodplain Mapping work shall be performed in accordance with the standards specified in Section 5 - Standards. Mapping quality standards must be consistent with Procedure Memorandum No. 38, dated September 2, 2005. {Insert responsible Mapping Partner} may expand on the approaches for analyzing Zone A areas outlined in *Guidelines and Specifications for Flood Hazard Mapping Partners* and in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas* (April 1995), and/or develop new approaches. Such approaches must be coordinated with and approved by the FEMA Regional Project Officer before analysis and mapping begin.

Deliverables: In accordance with Appendix L of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, and upon completion of floodplain mapping for {Insert flooding sources; specify a subset of all flooding sources being remapped and/or panels including digitization of non-revised areas}, NYSDEC/BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP so that NYSDEC can access it for the independent QA/QC review in accordance with the schedule outlined in Section 6 – Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the Appendix L compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal. The mapping for the remaining flooding sources including any non-revised digital panels and all merged revised and non-revised floodplain mapping data is to be submitted for a final QA/QC review at the completion of this activity.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record. The MIP should also be populated with appropriate leverage information regarding who paid for the data and the amount of data used by the Flood Map Project.

- Digital work map showing the Coastal High Hazard Area (V zone) delineated along {Indicate Atlantic Ocean, Gulf of Mexico, Great Lakes, Pacific Ocean, or other} shorelines, transect locations, 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway 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*;

- 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 as outlined in the approved QA/QC Plan;
- Any backup or supplemental information including supporting calculations and assumptions used in the mapping required for the independent QA/QC review of Hydrologic, Coastal and /or Hydraulic Analyses and Floodplain Mapping;
- An explanation for the use of existing topography for the studied reaches, if appropriate.
- Written summary of the analysis methodologies;
- Digital versions of input and output for any computer programs that were used;
- Digital versions of draft text for inclusion in the FIS report;
- Format Mapping Database or Data Delivery consistent with the Data Capture Standards– Appendix N of the *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- If automated GIS-based models are applied, all input data, output data, intermediate data processing products, and GIS data layers shall be submitted.
- For Limited Detail Study modeling, Complete set of digital plot files of DFIRM panels showing all contracted limited detailed flood hazard information according to the attached Appendix – A provided by NYSDEC.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Independent QA/QC Review of Floodplain Mapping**

Responsible Mapping Partner: NYSDEC

Scope: NYSDEC shall review the floodplain mapping submitted by BERGMANN under Floodplain Mapping to ensure that the results of the analyses performed are accurately represented, the redelineation of existing data on new, updated topography is appropriate, and to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRMs and FBFMs for the unrevised areas that are mapped.. If NYSDEC utilizes a contractor to perform the QA/QC, the contractor must be a different contractor than who performed the original floodplain mapping. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

- For the coastal flood hazard analyses, review the setup and runup height elevations shown on the work map to ensure the data agree with those shown on the data table(s), and Stillwater elevations are shown where coastal and riverine flooding studied in detail join.
- 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, 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 to ensure the data matches the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps to ensure the data matches the Flood Profiles.
- For non-revised floodplain areas, the 1- and 0.2-percent-annual-chance floodplain boundaries agree with the floodplain boundaries shown on the FIRM, the contour lines, other topographic information, and planimetric information shown on the DFIRM base.
- Road and floodplain relationships are maintained for all unrevised areas.
- Review the flood insurance risk zones as shown on the work maps to ensure the data are labeled properly.
- Review the DFIRM mapping files to ensure the data were prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- Review the metadata files to ensure the data includes all required information shown in the NFIP Metadata Profiles Specifications.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with Appendix L of *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC shall make the following products available to FEMA by uploading the digital data to MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the Appendix L compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review;
- An annotated work map with all questions and/or concerns indicated, if necessary; and
- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## DFIRM Map and Database

Responsible Mapping Partner: BERGMANN

Scope: BERGMANN shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Floodplain Mapping and/or Redelineation. 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). BERGMANN will be preparing the database for this project in the {Insert Standard or Enhanced} format. The Enhanced database is the preferred product as it is prepared to incorporate a full GIS database product for this study. The database shall be produced in accordance with Appendix L of the *Guides and Specifications for Flood Hazard Mapping Partners*. BERGMANN shall coordinate with those Mapping Partners responsible for Floodplain Mapping and/or Redelineation, as necessary, to resolve any problems that are identified during development of the DFIRM Database and graphics.

Standards: All DFIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with Appendix K and L of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the Appendix K and L compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record. The MIP should also be populated with appropriate leverage information regarding who paid for the data and the amount of data used by the Flood Map Project.

- DFIRM mapping files prepared in accordance with the requirements 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 as outlined in approved QA/QC Plan.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## Independent QA/QC Review of DFIRM Map and Database

Responsible Mapping Partner: NYSDEC

Scope: Upon completion of the floodplain mapping and redelineation activities, NYSDEC shall review the DFIRM spatial database to determine if it meets current FEMA database specifications. In addition, NYSDEC shall review the DFIRM to ensure it meets current FEMA graphic specifications. NYSDEC shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. If NYSDEC utilizes a contractor to perform the QA/QC, the contractor must be a different contractor than who performed the original analyses. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, cross sections, studied streams, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- All map collar information is complete, correct, and follows the requirements specified in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- DFIRM mapping files are in a GIS file and database format as specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners*, and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners*, and conform to those specifications for content and attribution.

Standards: All DFIRM Database Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with Appendix K and L of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the Appendix K and L compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 – Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;

- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.
- If the data changed during the QA/QC process, then the updated deliverables from Floodplain Mapping and Redelineation will be resubmitted at this time.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Produce Preliminary Map Products**

Responsible Mapping Partners: BERGMANN

Scope: Preliminary Map Products consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report for community officials and the general public review and comment. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. The activities to be performed are summarized below.

*Preliminary Transmittal Letter Preparation:* The BERGMANN shall prepare letters and transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA. This letter may be prepared for FEMA only or for signature by FEMA and NYSDEC.

*Distribution of Preliminary DFIRM and FIS Report:* The BERGMANN shall distribute the Preliminary copies of the DFIRM and FIS report to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

*News Release Preparation:* The BERGMANN shall prepare news release notifications of BFE changes for all affected communities, if appropriate, and perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. The BERGMANN shall file the notifications for later submittal to FEMA for review.

*Preliminary Summary of Map Actions (SOMA) Preparation:* The BERGMANN shall prepare Preliminary SOMAs for all affected communities, if appropriate. The SOMA shall list pertinent information regarding LOMCs that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

Standards: All Preliminary Map Products work shall be performed in accordance with the standards specified in Section 5 - Standards. Mapping quality standards must be consistent with Procedure Memorandum No. 38, dated September 2, 2005. The Data Capture Standards must be met for this deliverable to be acceptable.

Deliverables: In accordance with Appendix L of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the Appendix L compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping*

*Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete. The MIP should also be populated with appropriate leverage information regarding who paid for the data and the amount of data used by the Flood Map Project.

- Preliminary transmittal letters shall be prepared and transmitted. 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* and in conjunction with Guidance provided by the Region and/or its contractor.
- The FIS report is prepared in the FEMA Countywide Format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- 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 each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- If appropriate, revised DFIRM mapping and database files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided by uploading the digital data to the MIP.
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the final preparation of the preliminary DFIRM shall be provided as outlined in the approved QA/QC Plan.
- BERGMANN will submit a summary of outreach activities and any changes made in the outreach approach based on the actual implementation.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Independent QA/QC of Preliminary Map Products**

Responsible Mapping Partners: NYSDEC/FEMA

Scope: *Final QA/QC Review of Preliminary DFIRM and FIS Report:* The NYSDEC 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* and the QA/QC report submitted for approval at the end of scoping.

Discrepancy Resolution: The NYSDEC shall work to resolve discrepancies identified during the final QA/QC review.

Deliverables: In accordance with Appendix L of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, NYSDEC shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must

accompany the Appendix L compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.
- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **Post-Preliminary Processing**

Responsible Mapping Partners: NYSDEC/BERGMANN and FEMA

Scope: Post-Preliminary Processing includes coordination with FEMA and the Community to schedule a Community Meeting(s) for review of the Preliminary DFIRM, if required. This activity consists of finalizing the DFIRM and FIS report after the Preliminary copies of the DFIRM and FIS report have been issued to community officials and the public for review and comment. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. The activities to be performed are summarized below.

*Community Coordination Meeting:* If a community coordination meeting is required it is recommended that it be held within 60 days of the issuance of the Preliminary DFIRM and, NYSDEC/BERGMANN shall arrange for and verify that the following activities are completed:

- Establish invitee list,
- Schedule meeting date and place,
- Complete and Distribute Meeting Notice/Letter,
- Record Meeting Minutes, and
- Identify any/all communities with BFE changes for required appeal period.

*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 affected communities, FEMA and/or BERGMANN shall arrange for and verify that the following activities are completed in accordance with the current version of the *FEMA Guidelines and Specifications for Flood Hazard Mapping Partners* and *Document Control Procedures Manual*:

- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- News release notifications of BFE changes are published in prominent newspapers with local circulation in accordance with 44 CFR.
- The BERGMANN shall prepare the appropriate notices (Proposed Rules) that are to be published in the *Federal Register*. The NYSDEC/BERGMANN shall then deliver those notices to FEMA for publication.
- When NYSDEC/BERGMANN holds public meetings to present and discuss the results of this Flood Map Project, FEMA may attend the meetings and assist where possible, if requested.

*Resolution of Appeals and Protests:* NYSDEC/BERGMANN shall review and resolve 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 for co-signature with FEMA and NYSDEC/BERGMANN and revised DFIRM and FIS report materials for FEMA review.

NYSDEC/BERGMANN shall mail all associated correspondence upon authorization by FEMA.

*Preparation of Special Correspondence:* BERGMANN 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 for co-signature. NYSDEC/BERGMANN 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 FIRM and FIS Report:* If necessary, BERGMANN shall work together with FEMA to revise the DFIRM and FIS report and shall distribute revised Preliminary copies of the DFIRM and FIS report to the CEO and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

*Final SOMA Preparation:* BERGMANN shall prepare Final SOMAs for the affected communities with assistance from FEMA, as appropriate.

*Processing of Letter of Final Determination:* The BERGMANN shall work with FEMA to establish the effective date for the DFIRM and FIS report, and shall prepare Letters of Final Determination (LFDs) for each affected community for FEMA review in coordination with the Region and its contractor, and in

accordance with the FEMA *Document Control Procedures Manual*. FEMA or its designated contractor shall mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs.

*Processing of Final DFIRM and FIS Report for Printing:* BERGMANN shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to {Insert name of FEMA, NSP or MSC} for printing by the United States Government Printing Office. BERGMANN shall also prepare the appropriate paperwork to accompany the DFIRM and FIS report (including Print Processing Worksheet, Printing Requisition Forms, and Community Map Actions Form) and transmittal letters to the community CEOs.

*Revalidation Letter Processing:* BERGMANN shall prepare and distribute letters for FEMA signature to the community CEOs and floodplain administrators to notify the affected communities about LOMCs for which determinations will remain in effect after the DFIRM and FIS report become effective.

*Archiving Data:* BERGMANN shall ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until transmitted to the FEMA Engineering Study Data Package Facility. In addition, the BERGMANN will maintain copies of all data for a period of no less than three years.

Standards: All Post Preliminary DFIRM work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with Appendix L of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, BERGMANN shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the Appendix L compliant digital data. Additionally, the Technical Support Data Notebook format described in Appendix M of the *Guidelines and Specifications for Flood Hazard Mapping Partners* must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. The MIP shall be updated for status reporting not less than prescribed {Insert interval of reporting requirements} periods and when the activity is complete.

- 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 Special Correspondence (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final LFDs (and all associated enclosures, backup data, and other related information) for FEMA review and signature;
- DFIRM negatives and final FIS report materials including all updated data tables and Flood Profiles;

- Paperwork for the final DFIRM and FIS report materials;
- Transmittal letters for the printed DFIRM and FIS report;
- LOMC Revalidation Letters, if appropriate;
- Completed, organized, and archived technical and administrative support data; and
- Completed, organized, and archived case files and flood elevation dockets.

The *Guidelines and Specifications for Flood Hazard Mapping Partners* may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm).

## **SECTION 2—TECHNICAL AND ADMINISTRATIVE SUPPORT DATA SUBMITTAL**

The Project Team members for this Flood Map Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this MAS shall be submitted in the TSDN format in accordance with Appendix M of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated April 2003. Appendix M may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/pdf/fhm/frm\\_gsam.pdf](http://www.fema.gov/pdf/fhm/frm_gsam.pdf). Table 2-1 indicates the sections of the TSDN that apply to each mapping activity.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions. (For additional information on SPRs, refer to Appendix M, Subsection M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*.)

<Include only those activities that apply to this Flood Map Project in Table 2-1.>

**Table 2-1. Mapping Activities and Applicable TSDN Sections**

TSDN Section	Mapping Activities													
	Scoping	Field Survey	Topo Data	QA/QC of Topo	Base Map	Hydrology/Coastal	QA/QC of Hydrology/Coastal	Hydraulic Analysis	QA/QC of Hydraulics	Flood-plain Mapping (and Re-delineation)	QA/QC of FP Mapping	DFIRM Database	Preliminary Map Products	Post-Preliminary
<b>General Documentation</b>														
Special Problem Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Telephone Conversation Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Meeting Minutes/ Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General Correspondence	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Engineering Analyses</b>														
Hydrologic Analyses		X			X	X	X	X	X	X	X			
Hydraulic Analyses		X			X	X	X	X	X	X	X			
Key to Cross-Section Labeling		X			X	X	X	X	X	X	X			
Key to Transect Labeling		X			X	X	X	X	X	X	X			
<b>Draft FIS Report</b>					X	X	X	X	X					
<b>Mapping Information</b>	X		X	X	X					X	X	X	X	X
<b>Miscellaneous Reference Information</b>	X	X	X	X	X	X	X	X	X	X	X	X	X	X

### SECTION 3—PERIOD OF PERFORMANCE (for CTPs)

The mapping activities outlined in this MAS will begin on 9/1/2008, and will be completed no later than 12/31/2010. The mapping activities may be terminated at the option of FEMA or NYSDEC in accordance with the provisions of the Partnership Agreement dated {Insert Partnership Agreement date}. If these mapping activities are terminated, all products produced to date and the remaining funds from uncompleted activities, provided by FEMA for this MAS, will be returned to FEMA.

### SECTION 4—FUNDING/LEVERAGE (FOR CTP, OFA and/or COMMUNITY)

FEMA is providing funding, in the amount of {Insert amount of funding provided by FEMA through a Cooperative Agreement}, to NYSDEC for the completion of this Flood Map Project. NYSDEC shall provide any additional resources required to complete the assigned activities for this Flood Map Project. During the scoping process, additional needs may be identified. Activities associated with any additional needs would be performed based on availability of additional funds. The leverage listed below includes in-kind services and blue book values for acquired information (i.e. base map data, hydrologic and hydraulic analyses, etc.). These values should also be reported in the MIP by the appropriate task owner. The current Blue Book is dated November 2006. More detailed leverage information will be determined during the detailed scoping process and reported back to FEMA at that time.

Funding for Project/Partner Name	FEMA Contribution	Partner Contribution	% Leverage	Total Project Cost
TOTAL FUNDING AMOUNTS	\$	\$	%	\$

### SECTION 5—STANDARDS

The standards relevant to this MAS are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* to be referenced for each mapping activity are summarized in Table 5-2 for convenience. However, all mapping partners working on a Flood Map Project are responsible for complying with all appropriate requirements in FEMA’s *Guidelines and Specifications for Flood Hazard Mapping Partners* and related Procedure Memoranda published by FEMA as of the date of this agreement.

These guidelines may be downloaded from the FEMA Flood Hazard Mapping website at [http://www.fema.gov/plan/prevent/fhm/dl\\_cgs.shtm](http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm). The Geospatial Data Coordination Policy and the Geospatial Data Coordination Implementation Guide are located at <https://hazards.fema.gov> under “Tools & Links.”

**Table 5-1. Applicable Standards for Project Activities**

Applicable Standards	Activities														
	Scoping	Field Survey	Topo Data	QA/QC Topo Data	Base Map	Hydrology/Coastal	QA/QC Hydrology/Coastal	Hydraulic Analysis	QA/QC of Hydraulic Analysis	Floodplain Mapping (inc. Redelineation)	QA/Qc Flood-plain Mapping	DFIRM Dbase	QA/QC DFIRM Database	Preliminary Map Products	Post-Preliminary Processing
<i>Guidelines and Specifications for Flood Hazard Mapping Partners</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FEMA’s Geospatial Data Coordination Policy	X		X		X										
FEMA’s Geospatial Data Coordination Implementation Guide	X		X		X										
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-558), “Guidelines for Establishing GPS-Derived Ellipsoid Heights,” November 1997	X	X	X	X											
Engineer Manual 1110-2-1003, <i>Hydrographic Surveys</i> (USACE), January 1, 2002	X	X													
“Numerical Models Accepted by FEMA for NFIP Usage,” Updated April 2003	X					X	X	X	X						
NFIP Metadata Profile Specifications	X		X	X						X	X	X	X	X	X
<i>Document Control Procedures Manual</i>	X													X	X
<i>44 Code of Federal Regulations Parts 65, 66 and 67</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Scoping	Volume 1, Section 1.3, Appendix I, Scoping Report document; 44 Code of Federal Regulations Part 66 and 67
Field Survey	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1)
	Appendix A
	Appendix F, Section F.3
	Appendices B, C, M, and N
Topographic Data Development	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1)
	Appendix A
	Appendices M and N
Independent QA/QC Review of Topographic Data	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.1)
	Appendix A
	Appendices M and N
Base Map Acquisition and Preparation	Volume 1, Sections 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsections 1.4.3.1 and 1.4.3.2) Appendix A, Section A.1 (specifically Subsection A.1.1); Appendices K, L, and M
Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4)
	Appendix A, Section A.4
	Appendix C, Sections C.1 and C.7
	Appendices E, F, G, H, M and N

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Independent QA/QC Review of Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 Appendix C, Section C.2 Appendices E, F, G, H, M and N
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, M and N
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, M and N
Coastal Hazard Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.2.2) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Section C.5 Appendices B, D, and M
Independent QA/QC Review of Coastal Hazard Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 Appendices B, D, H and M

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Floodplain Mapping	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2, 1.4.2.3, and 1.4.3.2) Appendix C, Sections C. 4 and C.6 (specifically Subsection C.6.1.3) Appendix D, Sections D.2 (specifically Subsection D.2.7) and D.3 (specifically Subsection D.3.7) Appendices E, F, G, H, K, L, and M
Perform Redelineation	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2, 1.4.2.3, and 1.4.3.2) Appendix C, Section C.6 (specifically Subsection C.6.1.3) Appendices K, L, and M
Independent QA/QC Floodplain Mapping (including Redelineation/Digitization)	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendix D, Sections D.2 (specifically Subsection D.2.7) and D.3 (specifically Subsection D.3.7) Appendices E, F, G, H, K, L, and M
DFIRM Map and Database	Volume 1, Section 1.4 Appendices K, L, and M
Independent QA/QC Review of DFIRM Map and Database	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3, 1.4.3.3, 1.4.3.9, and 1.4.3.10) Appendices K, L, and M
Production of Preliminary Map Products	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
Post-Preliminary Processing	Volume 1, Section 1.5 (specifically Subsection 1.5.2) Appendices J, K, L, and M

## SECTION 6—SCHEDULE

The activities documented in this MAS shall be completed in accordance with the project 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. Please also identify to whom the products associated with each task are to be submitted to (i.e. the MIP, FEMA Regional Office, etc.).<Include only those activities that apply to this Flood Map Project in the table below. Place table on separate page if all activities are to be included.>

**Table 6.1 Mapping Activities Schedule**

Activities	RESPONSIBLE PARTNER(S)	START DATE	END DATE
Scoping	NYSDEC		
Field Surveys	BERGMANN	8/11/2008	12/15/2008
Topographic Data Development	NYSDEC/ BERGMANN	8/29/2008	12/15/2008
Independent QA/QC Review of Topographic Data	NYSDEC	9/17/2008	1/15/2009
Base Map Acquisition	NYSDEC	8/11/2008	8/21/2008
Independent QA/QC Review of Base Map	NYSDEC	8/21/2008	8/28/2008
Hydrologic Analyses	BERGMANN	8/11/2008	12/15/2008
Independent QA/QC Review of Hydrologic Analyses	NYSDEC	9/12/2008	12/31/2008
Hydraulic Analyses	BERGMANN	9/5/2008	1/30/2009
Independent QA/QC Review of Hydraulic Analyses	NYSDEC	11/1/2008	2/15/2009
Floodplain Mapping: <ul style="list-style-type: none"> <li>• Detailed Riverine</li> <li>• Refinement or Creation of Zone A</li> </ul>	BERGMANN	8/11/2008	2/27/2009
Independent QA/QC Review of Floodplain Mapping	NYSDEC	11/15/2008	3/15/2009
DFIRM Database (including Graphic Specifications)	BERGMANN	8/11/2008	5/1/2009
Independent QA/QC Review of DFIRM Database	NYSDEC	11/15/2008	5/1/2009

<b>Activities</b>	<b>RESPONSIBLE PARTNER(S)</b>	<b>START DATE</b>	<b>END DATE</b>
Produce Preliminary Map Products (including 1/3 Outreach)	BERGMANN	11/15/2008	5/1/2009
Post-Preliminary Processing (including 1/3 Outreach)	BERGMANN	1/1/2009	7/31/2010

## **SECTION 7—CERTIFICATIONS**

### **Field Surveys and Topographic Data Development**

A Registered Professional Engineer or Licensed Land Surveyor shall provide an accuracy statement for field surveys and/or topographic data used and shall certify these data meet the accuracy statement provided. Data accuracy should be stated used the Federal Geographic Data Committee National Standards for Spatial Data Accuracy, but the American Society for Photogrammetry and Remote Sensing accuracy reporting standards are acceptable.

### **Base Map Acquisition and Preparation**

- A community official or responsible party shall provide written certification that the digital data meet FEMA minimum standards and specifications.
- The responsible Mapping Partner shall provide documentation that the digital base map can be used by FEMA. Please note that uploading base map data to the MIP does not constitute agreement that the digital base map can be used by FEMA. Documentation that the digital base map can be used by FEMA is still be required.
- Certifications must be made at the time the intermediate data is submitted. For example, if hydrologic data is submitted, certification will be required at the time it is submitted.

### **Hydrologic Analyses, Hydraulic Analyses, and Floodplain Mapping**

- A Registered Professional Engineer shall certify hydrologic and hydraulic analyses and data in accordance with 44 CFR 65.6(f).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10(e).

## **SECTION 8—TECHNICAL ASSISTANCE AND RESOURCES**

Project Team members may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from FEMA and/or your Regional Project Officer.

General technical and programmatic information, such as FEMA 265 and the Quick-2 computer program, can be downloaded from the FEMA website at <http://www.fema.gov/plan/prevent/fhm/index.shtm>. Specific technical and programmatic support may be provided through FEMA and/or its contractor; such assistance should be requested through the FEMA Project Officer specified in Section 12 – Points of Contact.

Project Team members 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.

## **SECTION 9—CONTRACTORS (CTP)**

NYSDEC intends to use the services of BERGMANN as a contractor for this Flood Map Project. NYSDEC shall ensure that the procurement for all contractors used for this Flood Map Project complies with the requirements of 44 CFR 13.36.

## **SECTION 10—REPORTING (CTP)**

### FINANCIAL REPORTING:

Because funding has been provided to NYSDEC by FEMA, financial reporting requirements for NYSDEC will be in accordance with Cooperative Agreement Articles V and VI.

{Insert FEMA SC name(s)} shall provide financial reports to the FEMA Regional Project Officer and Assistance Officer in accordance with the terms of the signed Cooperative Agreement for this MAS.

### 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 CTP/Map Modernization Project Quarterly Report located in Appendix B of this MAS. The Project Officer, as needed, may request additional information on status.

NYSDEC may meet with FEMA and/or its contractor up to bi-weekly, or more frequently 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 NYSDEC office, and conference calls, as necessary.

### EARNED VALUE REPORTING:

The MIP was developed in part to track the Earned Value of mapping projects. This information is automatically calculated by the MIP, using the Actual cost and schedule of work performed, or “actuals” and comparing them to the expected cost and schedule of work performed, or “baseline”.

Once the FEMA Regional office has issued a task order {Insert name of FEMA or NSP}, will complete the “Obligate Project Funds” screen in the MIP. This step establishes the baseline for the project in the MIP, using the cost and schedule information for each task as outlined in this document and agreed to at the completion of the scoping process.

The MIP study workflow allows BERGMANN to report on the status of these projects at a task level. The cost and schedule information, updated by the NYSDEC for each contracted task, is compared to the

baseline established for those tasks. This information is rolled up to a project level and monitored by the FEMA Region to assess progress and Earned Value.

Earned Value reporting involves the reporting of cost, schedule and performance (physical percent complete) in the MIP by the NYSDEC.

Once the baseline has been established in the MIP, the NYSDEC shall input the performance and actual cost to date for each contracted task for each project. This must be completed {Insert interval of reporting requirements}. When a task is completed, the NYSDEC shall enter 100% complete, enter the actual completion cost, and the actual completion date of each task appearing on their workbench.

## **Section 11—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 shall include:

<Add/delete/modify coordination activities, as necessary>

- Meetings, teleconferences, and video conferences with FEMA and other Project Team members {specify frequency or dates for meetings};
- Telephone conversations with FEMA and other Project Team members on a scheduled basis {specify schedule for calls} and an ad hoc basis, as required;
- Updates to the MIP and other FEMA status information systems in accordance with requirements in Volumes 1 and 3 of *Guidelines and Specifications for Flood Hazard Mapping Partners*; and
- E-mail, facsimile transmissions, and letters, as required.

## **SECTION 12—POINTS OF CONTACT (CTP)**

The points of contact for this Flood Map Project are Mr. Paul Weberg, the FEMA Regional Project Officer; Mr. William Nechamen, the Project Manager for NYSDEC; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, any additional FEMA assistance should be requested through the FEMA Regional Project Officer.

Each party has caused this MAS to be executed by its duly authorized representative.

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Mr. William Nechamen  
Project Manager  
NYSDEC

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Date

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Mr. Paul Weberg  
Regional Project Officer  
Federal Emergency Management Agency, Region 2

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Date

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Mr. Kenneth Avery  
Project Manager  
BERGMANN ASSOCIATES

---

Date

---

{Insert name of NSP representative  
{National Service Provider}

---

Date

Optional attachments to include:

**Table 1.1 Flooding Source(s) to be Studied in Schoharie County**

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Study	Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics			
Cobleskill Creek	Downstream Town of Richmondville corporate boundary to the downstream Village of Richmondville corporate boundary.	3.85 miles	X	X			
Cobleskill Creek	Downstream Village of Richmondville corporate boundary upstream limits of the effective approximate study	2.15 miles			X		
West Creek	From the confluence with Cobleskill Creek to the point 1.13 miles upstream of Bush Street near the Hamlet of Janesville in the Town of Seward.	9.1 miles			X		

# Appendix - A

## INFORMATION FOR FLOOD INSURANCE STUDY USERS

### **Explanation of Limited Detail (LD) and Approximate Studies:**

**Limited Detail (LD) “Enhanced A-Zones”:** - This category is assigned to areas where “unnumbered” A-zones are shown on the effective maps, and communities have requested new/upgraded studies, but the level of projected development does not warrant a detailed study, or where budget limitations do not allow for a detailed study. It is also applied to lakes that do not have level gauge data, and will be included in a hydraulic model. The level of effort includes collection of an orthophoto, LIDAR and limited survey of structures, nomination of flow rates, and the development of HEC-RAS hydraulic models.

The term “limited survey” refers to the survey of man-made hydraulic obstructions, such as dams, bridges and culverts, and to the survey of the outlet channels of lakes with natural outlet controls. The purpose of collecting “limited survey” is to enhance the accuracy of the hydraulic model thus allowing the development and publication of “Advisory Base Flood Elevations (BFEs) at selected cross sections.” Engineering drawing plans and Department of Transportation (DOT) hydraulic studies may be substituted for limited survey, where appropriate and available.

**Approximate (A) “A-Zones”:** - This category is assigned where “unnumbered” A-zones are shown on the effective maps, but the anticipated level of development does not warrant the collection of field survey; or where communities have requested an approximate study where there was currently no study at all. The desktop analysis approach to be applied to approximate studies is defined in Appendix C, Section 4.3 of the Guidelines and Specifications for Flood Hazard Mapping Partners. The level of effort includes orthophoto collection, LIDAR and stream breakline collection, use of engineering drawing plans and DOT studies (where appropriate and available), nomination of flow rates, and the development of HEC-RAS hydraulic models.

#### **Methodology:**

The water surface elevations of the selected recurrence interval floods were computed using the US Army Corps of Engineers (USACE) HEC-RAS river modeling computer program, for each flooding source,. The HEC-RAS model for each flooding source is developed from cross section geometry generated using manual and semi-automated methods derived from Geographic Information Systems (GIS) techniques and data.

Cross section elevations for Limited Detail (LD) studies were extracted from a Digital Elevation Model (DEM). The DEM was generated by combining over-bank elevation data from an aerial Light Detection and Ranging (LIDAR) survey with data from traditional field survey of the structures (hydraulic obstructions) on the stream and its immediate over-bank

areas to produce a GIS grid. All bridges, culverts, dams, and other hydraulic obstructions were field surveyed to provide data on elevation, orientation, and structural geometry. Detailed structural geometry for bridges and culverts was also derived from NYSDOT as-built drawings where they were available. This method does not include field surveys that determine specifics on channel and floodplain characteristics. The water surface elevations calculated using HEC-RAS were mapped to the DEM using GIS software to generate the flood extents.

Floodway and flood profiles were not developed for streams studied using limited detailed methods; however, the 1% annual chance advisory base flood elevations for selected modeled cross section are given in this FIS report. Because the base flood elevations are advisory, the published values need not be used to enforce floodplain management ordinances as outlined in 44 CFR 60.3(c)(10), but should be used as base flood elevation data according to 44CFR60.3(b)(4). Development in Special Flood Hazard Areas that are designated as Zone A but which have advisory flood elevations should comply with the elevation standards, but may not have to develop an analysis of increases in water surface elevations, unless required by the local community.

The “Limited detailed Flood Hazard Data Table” will be included in the FIS report for each stream studied by limited detailed methods to present the Advisory BFEs for selected numbered cross sections. The tables format will be similar the Flood Hazard Data Tables proposed for FIRM panels with the columns identifying the selected cross section number, identifying the stream stationing, depicting the flood discharge, and the final column depicting the 1% annual chance advisory base flood elevations rounded to nearest tenth of the foot. While these specifications require additional effort, and therefore result in increased costs; the added benefit to FIS report users makes the effort worthwhile.

The limited detailed studies will replace some areas previously studied by approximate method thereby adding more detailed information to the new New York State FIRM panels.

These FIRM panels will show the Special Flood Hazard Areas (SFHAs), Advisory base flood elevations (Advisory BFEs) lines for selected numbered cross sections. This Numbered Cross Section Lines will be depicted on map as a solid line with two circle at the ends with number. Also a table provided in the FIS Report will list 1% annual chance advisory base flood elevations for these selected numbered cross sections. Floodways and flood profiles will not be created for flooding sources studied by limited detailed methods. All of the streams studied by limited detailed methods are listed in **Table – 2.2** of this FIS.

For **Approximate studies** the desktop analysis approach, as defined in Appendix C, Section 4.3 of the Guidelines and Specifications for Flood Hazard Mapping Partners, was applied. There was no field survey collected. The final maps will show only the extent of the SFHA. No floodway will be established and no BFEs (neither advisory nor official) will be developed. All of the Approximate studies (A-Zones) in Cayuga County are listed in **Table – 2.2** of this FIS.