Guidance for Flood Risk Analysis and Mapping

Discovery

This Document is Superseded.
For Reference Only.

May 2017

FEMA

Requirements for the Federal Emergency Management Agency (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) program are specified separately by statute, regulation, or FEMA policy (primarily the Standards for Flood Risk Analysis and Mapping). This document provides guidance to support the requirements and recommends approaches for effective and efficient implementation. Alternate approaches that comply with all requirements are acceptable.

For more information, please visit the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage. Copies of the Standards for Flood Risk Analysis and Mapping policy, related guidance, technical references, and other information about the guidelines and standards development process are all available here. You can also search directly by document title on the FEMA library webpage.

Table of Revisions

Affected Section or Subsection	Date	Description
First Publication	May 2014	Initial version of new transformed guidance. The content was derived from the Guidelines and Specifications for Flood Hazard Mapping Partners, Procedure Memoranda, and/or Operating Guidance documents. It has been reorganized and is being published separately from the standards.
Second Publication	May 2016	This guidance document has been revised and updated to address requirements resulting from Section 216 of the Biggert-Waters Flood Insurance Reform Act of 2012, as amended by the Homeowner Flood Insurance Affordability Act of 2014, and updates to reflect recommended enhanced stakeholder engagement practices in place as a result of the increased investment in community engagement and risk communication.
2.0, 9.0, 10.0, 11.0 and 12.2	May 2017	Minor updates to reflect the Mapping Information Platform (MIP) redesign.

Table of Contents

1.0 Introduction

This document describes the activities involved in the "Discovery" of flood hazards and associated flood risk and mitigation activities in regionally prioritized areas. Discovery activities include data and information collection; engagement and coordination with local community stakeholders, regional entities, State agencies, Tribal nations (when appropriate), and potentially with other Federal agencies (OFAs), non-profit entities, and other individuals, communities, and organizations; one or more Discovery Meetings; and post-meeting activities and requisite followup.

The Discovery process occurs after the Federal Emergency Management Agency (FEMA) planning and budgeting cycle, when watersheds of interest have been identified and selected for further examination in coordination with Federal-, State-, and local-level stakeholders. This guidance does not describe the activities that occur as part of the planning and budgeting cycle, as these are part of national planning activities that may be revised each fiscal year.

The primary audiences for this guidance document are staff from the 10 FEMA Regional Offices, FEMA Headquarters (HQ), and the Project Teams formed to carry out Discovery. The Project Teams can include the State National Flood Insurance Program (NFIP) Coordinator(s) and State Hazard Mitigation Officers (SHMOs) for the watershed area; management and staff from Cooperating Technical Partners (CTPs) and their contractors; Risk Mapping, Assessment, and Planning (Risk MAP) program providers that support the FEMA Regional and HQ Offices; other Federal agencies (OFAs), such as the U.S. Army Corps of Engineers (USACE), U.S. Geological Survey (USGS), and National Oceanic and Atmospheric Administration (NOAA); and others, such as regional planning agencies and water management districts.

These Project Teams are led by Regional Office Risk Analysis Branch staff members who serve as the FEMA Project Officers. Other FEMA Regional staff from the RA, Floodplain Management and Insurance (FMI), and Hazard Mitigation Assistance (HMA) Branches, as well as the FEMA Contracting Officer, also may participate on the Project Teams.

The successful execution of the Discovery process is essential to the development of judicious flood risk projects. It provides for the exchange of information between FEMA and the communities and other stakeholders involved; includes one or more Discovery Meetings with stakeholders to discuss conditions in the watershed; and provides informed recommendations for a Flood Risk Project scope to be used by FEMA staff in future planning and budgeting efforts. In addition, should a flood risk project move forward, the Discovery Phase represents the beginning of the partnership between FEMA and the communities (including Tribal entities, when appropriate) within the watershed. The relationships that are formed and the groundwork that is laid during Discovery are important to the ultimate success of the project.

This document provides guidance for conducting Discovery Phase activities; describes required elements and the additional elements that may be desirable depending on State,

Regional, or community preferences or requirements; and summarizes the interim and final outputs of the Discovery process, which include a Discovery Map, a Discovery Report, and recommendations for a flood risk project scope.

This guidance document also provides a basic overview of what should be included on the Discovery Map and in the Discovery Report. The data, analysis, reporting, and other points noted in this document are presented as a foundation or starting point of information that might be included in the Discovery documents.

When developing Discovery materials, the Project Team is encouraged to consider any number of subjects that could or may impact the evaluation of watershed mapping or flood hazard mitigation needs. Possible data include political boundaries, socioeconomic needs, media, other scientific datasets, watershed infrastructure, and any other topic deemed relevant to explaining the circumstances, realities, and priorities of the watershed.

1.1 Discovery Process Steps and Objectives

The steps in the Discovery process are outlined in Figure 1. As the figure shows, Discovery is the second phase in the Risk MAP lifecycle.

The primary objectives of the Discovery process are:

- Engage watershed stakeholders.
- Understand the needs of the communities in a watershed.
- Introduce or enhance flood risk discussions.
- Balance local needs with FEMA resources and inform the scope for a possible flood risk project.

Discovery activities include developing a community/watershed stakeholder engagement plan, gathering data and information, developing a Discovery Map and Discovery Report, and engaging watershed stakeholders at the Discovery Meeting(s). Discovery activities may also include engaging with communities regarding expected changes to flood hazard information, defining the scope of the flood risk project, and outlining the expected next steps with project stakeholders (e.g., products and services to be provided, timeline, outcomes, roles/responsibilities, data sources).

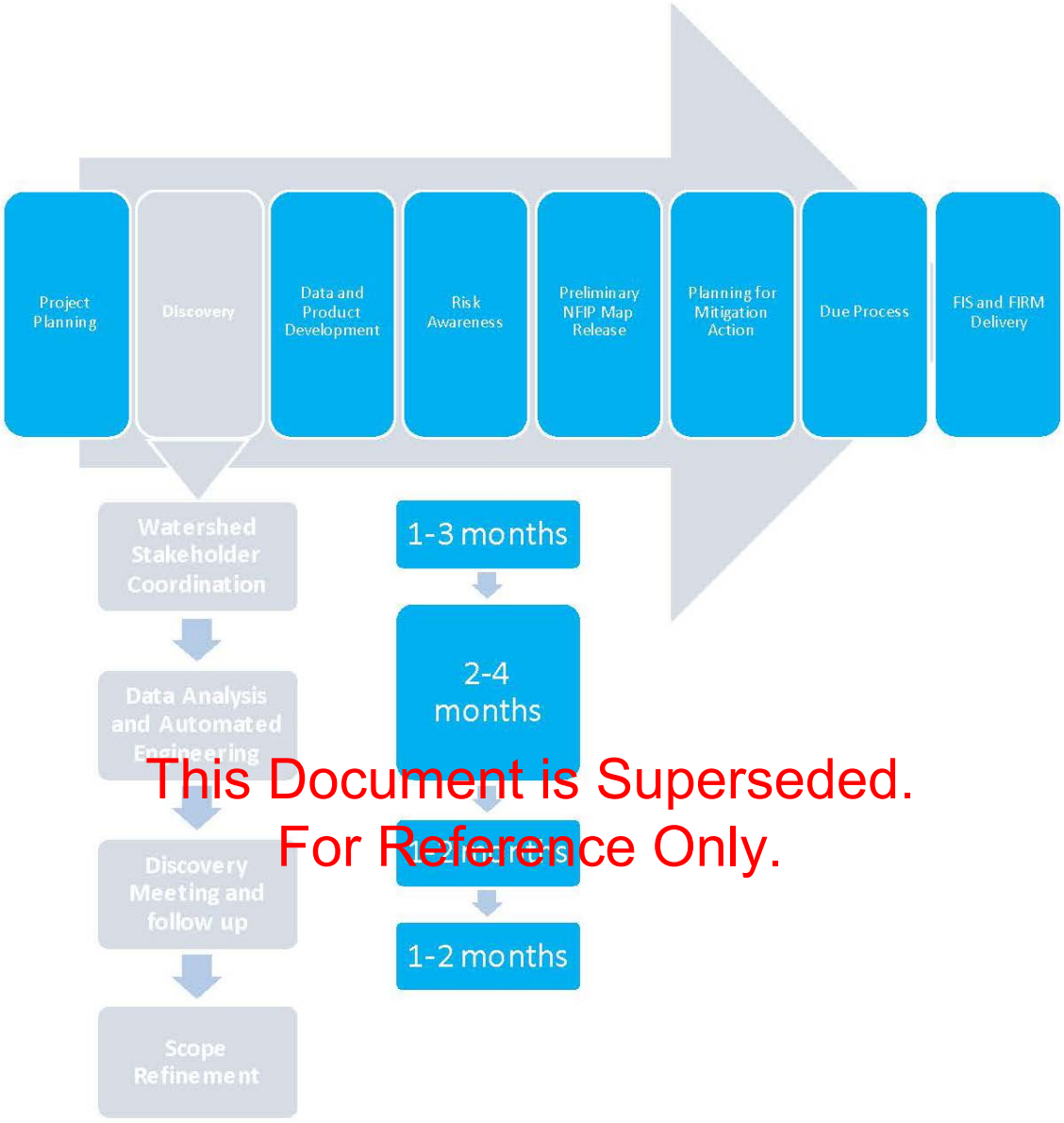

Figure 1. Discovery Process Steps

Additional information on stakeholder engagement during the Discovery Phase is provided in FEMA Guidance Document No. 22, Guidance for Stakeholder Engagement: Discovery Phase. Guidance Document No. 22 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

1.2 Impacts of Recent NFIP Reform Legislation

Through enactment of the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) and the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA), the U.S. Congress has placed a

number of new mapping-related requirements on FEMA. For a complete breakdown of the new regulatory requirements, visit the Flood Insurance Reform portion of the FEMA website. Several of the new legislative requirements BW-12 and HFIAA are addressed in this guidance document.

As part of the reform legislation, the U.S. Congress also required the establishment of a new Technical Mapping Advisory Council (TMAC) to advise FEMA on certain aspects of the national flood mapping program. Additional information is accessible on the TMAC page of the FEMA website.

FEMA continues to work with TMAC on fully implementing the NFIP reform legislation and the recommendations from TMAC. As new FEMA standards for the Discovery Phase are established, FEMA will update and re-issue this guidance document.

2.0 Initiating a Discovery Project

When a community is initially considered for a flood risk project involving a new or revised flood hazard analysis, FEMA must establish and maintain a community case file in compliance with the NFIP regulations cited at Title 44, Chapter 1, Section 66.3 of the Code of Federal Regulation (44 CFR 66.3). Therefore, at the start of a Discovery project, a project should be created in the Mapping Information Platform (MIP) with a Discovery Purchase and task. A project number will automatically be created with associated budgets, and start and end dates. See the Data Capture Guidance (General and Workflow Details), and MIP User Care for more detailed information. FEMA forms a Project Team as soon as the Discovery process is initiated. The Project Team includes a FEMA Risk Analysis Branch staff member who will serve as the FEMA Project Officer; representatives of CTPs or representatives of Risk MAP provider(s) supporting FEMA or State mapping partners; the State NFIP Coordinator and SHMO; representatives of OFAs; and others, such as regional planning agencies and water management districts. For some projects, a Project Management Team consisting of the FEMA Project Officer, the FEMA Regional Contracting Officer, the State NFIP Coordinator, and project managers or senior-level staff from CTPs and/or Risk MAP providers will be formed to provide overall direction.

The FEMA Coordinated Needs Management Strategy (CNMS) is the repository for current, needed, and requested areas of mapping updates. Results from both flood hazard validation and needs assessment processes are stored within the national CNMS database. The Project Team uses the CNMS database for updated engineering reference information, validation status, and map issues throughout all pertinent phases of a flood risk project. Furthermore, the Regional Office staff reports New, Validated or Updated Engineering (NVUE) status to FEMA Headquarters at least quarterly.

When reviewing or cataloging flooding sources, if the status date within S_Studies_Ln exceeds 5 years from the date of today, FEMA Headquarters staff or designee(s) shall change the validation status to ‘Unknown’ and shall require reassessment. For the status of a studied flooding source to be changed from “UNVERIFIED” to “VALID” within the CNMS database, the flooding source must be reanalyzed.

Frequent and accurate updates to the CNMS database are critical, as all Regional decisions to prioritize, assess, and perform engineering analyses along various flooding sources must be supported by the data contained in the CNMS database. As noted above, each flooding source must be evaluated in the CNMS database at least once within a 5-year period. For that reason, each fiscal year, each Regional Office has a plan to evaluate all CNMS flooding sources within a 5-year period.

A CNMS database that is compliant with the CNMS Technical Reference is updated and submitted at the completion of the Discovery process or at initiation of the flood risk project based on the information and data collected. The CNMS Technical Reference and other Technical References are accessible through the "Technical References" section of the online FEMA Library.

3.0 Timing and Geographical Extent of Discovery

Completion of the Discovery process is required for all new and updated flood risk projects and information generated during the Discovery process informs the decision as to whether a flood risk project is appropriate. In addition, the Discovery process provides community stakeholders an opportunity to partner and collaborate with FEMA, CTPs, state mapping and mitigation agencies, and Risk MAP providers on questions about flood risk determinations, mitigation, and the benefits of a potential flood risk project. The Discovery process is completed before a flood risk project is initiated. Flood risk projects will not be appropriate in all watersheds in which the Discovery process occurs.

A flood risk project includes any combination of the following activities: flood hazard mapping such as the production of new Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) reports; Flood Risk Assessments such as Hazus analysis; and/or mitigation planning technical assistance such as training, outreach, and assistance in understanding risk assessment and mitigation strategies.

Except for coastal and limited-area levee accreditation status change projects, the Discovery process is applied on a watershed basis in accordance with the watershed approach.

The area covered by the Discovery process will most commonly consist of an entire USGS Hydrologic Unit Code 8 (HUC-8) level watershed, regardless of political or other Regional, State, county, municipal, or other borders; however, other watershed sizes may be selected, as outlined in Risk MAP Standard ID (SID) 17. Information on HUC watersheds may be found at www.water.usgs.gov/GIS/huc.html. The Discovery process at a watershed level means that all stakeholders within the watershed are involved and engaged. The guidance presented herein is to be applied at an appropriate geographic extent for coastal and levee projects, which are not performed on a watershed basis. See Subsection 5.1, "Coastal and Levee Considerations," for other requirements associated with coastal and levee projects. The FEMA Project Officer, in coordination with other members of the Project Management Team when appropriate, will determine how to handle watersheds that cross State or Regional boundaries.

4.0 Scalability

The Discovery process is intended to be flexible and scalable to the watershed under review. For example, in watersheds with urban areas, Discovery may be completed differently than in rural watersheds. The watershed stakeholders involved will vary based on State, Region, and community type. In addition to floodplain administrators, SHMOs, and other traditional Risk MAP stakeholders, watershed stakeholders may include representatives of community groups; partner organizations such as nongovernmental organizations (NGOs), associations, colleges, and universities; local special interest groups; businesses; and others. The data and information collected, which will reflect the types of data and information that are appropriate to the watershed, also will vary by project area.

The implementation of the Discovery process is likewise flexible to accommodate the varied political and physical landscapes across the nation and within the project area. The objectives and outcomes of the Discovery process are provided in this document, and flexibility is granted in the implementation as long as the intent of the objectives and outcomes are met.

5.0 Discovery Process Overview

The Discovery process allows FEMA and watershed stakeholders to obtain a more comprehensive and holistic understanding of the flood risk and flood mitigation capabilities and opportunities of communities within a watershed. Data gathered during the Discovery process includes information that currently influences flood risk decision making, historical flooding information, existing flood hazard data and information, and mitigation activities.

Among other data and information, the Project Team should obtain and review State, local, and Tribal Hazard Mitigation Plans to document existing flood risk; mitigation capabilities; hazard risk assessments; and mitigation strategies that are planned, underway, or completed within the watershed. Data and information collected also should include information about projects, programs, and data that may support flood risk communications, outreach, and flood mitigation actions.

Based on the particular needs of a watershed, the Project Team should hold one or more Discovery Meetings after an analysis of the collected information and data is completed. This analysis will be summarized in a draft Discovery Report.

During the Discovery Meeting(s), the Project Team works with watershed stakeholders to pursue a common understanding of changes to the environment, areas of risk and mitigation interest, local priorities for further study, and a common path forward. This information helps determine whether a flood risk project is appropriate. If a flood risk project is found to be appropriate and flood hazard mapping will be included, the data and information collected during the Discovery process is used to evaluate the potential effects of the project.

To set expectations about the outcomes of the flood risk project, the Project Team members discuss the results of their evaluation with the watershed stakeholders. This conversation is of critical importance to establishing the trust and transparency required for a successful flood risk project. The Project Team also coordinates recommendations for a project scope with the watershed stakeholders. A Project Charter, if used, describes a potential project scope, summarizes the expected results, defines the roles and responsibilities of all parties involved, identifies mitigation opportunities including mitigation planning technical assistance to be provided, and describes other assistance (e.g., stakeholder engagement, outreach, communications) that are needed.

The project scope and Project Charter are discussed in more detail in Section 13.

5.1 Coastal and Levee Considerations

The Discovery process for coastal study areas and for levee projects may be conducted differently than the Discovery process for watershed projects. Coastal projects and levee projects may have longer timelines than watershed-based flood risk projects, separate prioritization protocols, widely varying stakeholder audiences, as well as other differences. For example, levee projects require the formation of a Local Levee Partnership Team that includes a diverse group of stakeholders.

Project Team members involved in flood risk projects involving coastal analyses or levees should refer to separate guidance related to coastal projects and levee projects provided on the FEMA website. Additional resources related to coastal analyses and mapping are available on the FEMA coastal flood webpage. Additional resources related to levee analysis and mapping are available from the FEMA online library.

5.2 Tribal Considerations

Because of the special relationship that federally recognized Tribal Nations have with the Federal Government, when Tribal lands are included in a watershed under evaluation, special considerations will apply. Consultation and engagement with Tribal Nations must be coordinated with the FEMA Regional Office Tribal Liaison to ensure that an effort is made, during the Discovery process, to determine if the Tribal Nation has the land-use authority necessary; desire; State or Federal status; or any other issue that may cause the Tribal Nation to not participate in the NFIP or otherwise decline to participate in a Discovery effort.

The Project Team must consult the Regional Office Tribal Liaison as to whether or not Tribal Nations should be included in the watershed-wide Discovery efforts and in general Discovery Meetings or if there should be separate Discovery efforts and meeting(s) with the appropriate Tribal entities. This will depend on established working relationships between the Regional Offices and the Tribes within that Region.

Due to the complexity and varied nature of Federal/Tribal Agreements concerning the ownership of property on Tribal lands, extra effort must be made to acquire Tribal land boundaries during Discovery. Tribal and surrounding territorial boundaries may be difficult to

determine and Regional Offices must use the best information that is available, with the understanding that some Tribal lands will inadvertently be shown in unincorporated areas of counties or vice versa. Counties and Tribal Nations must be given an opportunity to make any corrections necessary to their territorial boundaries.

Only the FEMA Regional Office Tribal Liaison or other approved Regional Office staff members are to work directly with federally recognized Tribes and Tribal entities. Therefore, if a Tribal entity contacts a Project Team member about participation in the NFIP or participation in the ongoing project, that Project Team member is to notify the FEMA Project Officer for the project and the Regional Office Tribal Liaison immediately.

6.0 Watershed Stakeholder Coordination

Stakeholder outreach, engagement, and coordination must occur throughout the Discovery process to build positive working relationships and to collect pertinent flood risk and mitigation data and other community information to help inform and ensure a productive Discovery Meeting. This engagement may take the form of face-to-face meetings, conference calls, web meetings, or other means of two-way communication.

The Project Team should consult the FEMA Community Information System (CIS) to obtain community contact information. However, the Project Team will need to verify and update the data found in CIS as required to ensure the information is accurate and up to date.

Additional detailed information on stakeholder engagement during the Discovery Phase is provided in Guidance Document No. 22, Guidance for Stakeholder Engagement: Discovery Phase. Guidance Document No. 22 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

6.1 Watershed Stakeholders

The types of stakeholders engaged in a flood risk project will vary for different watersheds and Regions. Community floodplain administrators and Chief Executive Officers, who have traditionally been engaged for FEMA flood hazard mapping projects, will continue to be included in flood risk project engagement efforts. However, the Project Team should engage a much wider array of community, county, and regional stakeholders — public, private, and non-profit—for Discovery. These include, but are not limited to the following:

- State or regional groups with a vested interest in water resources (e.g., levee boards, Regional partners, conservation districts, watershed/river basin commissions)
- Geographic Information System (GIS) managers and specialists
- Community and regional planners
- Local and State water authorities

- Levee and dam owners
- Community and county land use departments
- Community and State emergency management officials, such as county offices of emergency management, fire districts, fire departments, and fire chiefs
- County and local building officials
- County and local engineering departments
- State, county, and local highway and transportation departments
- Members of Tribal Communities, as defined by the Regional Office Tribal Liaison through consultation and coordination with Tribal Officials
- Representatives of any appropriate NGOs (e.g., professional associations, environmental groups, recreational groups)
- Representatives of the National Partnership Network if the organization has a local office
- Economic development and chamber of commerce representatives
- Other key stakeholders as appropriate (e.g., developers, real estate professionals, insurance agents, lenders, infrastructure specialists)

Additional information on the National Partnership Network referenced above is provided in FEMA Guidance Document No. 22, Guidance for Stakeholder Engagement: Discovery Phase. Guidance Document No. 22 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

The Project Team should contact at least one representative from every community and area of influence within the watershed. The community officials contacted should represent a holistic view of flood risk management and flood risk mitigation in the community. Additional information on the stakeholders to be engaged also is provided in Guidance Document No. 22, Guidance for Stakeholder Engagement: Discovery Phase. Guidance

6.2 Other Federal Agency, State, and Local Coordination

Unnecessary duplication of Federal, State, or local mapping efforts must be avoided. Therefore, coordination with Federal, State, and local-level partners, including those listed below, should occur on a State or regional level and inform the Discovery process.

- Federal Highway Administration (FHWA)

- USACE
- U.S. Bureau of Land Management (BLM)
- U.S. Environmental Protection Agency (EPA)
- USGS
- Natural Resources Conservation Service (NRCS)
- NOAA, including the National Weather Service and the Office for Coastal Management
- State dam safety officials
- State transportation departments
- State or regional authorities and entities
- Non-municipal local authorities and boards

In addition, the Project Team may consider whether it would be valuable to involve large State government or Federal Government landholders, such as the U.S. Forest Service (SFS), National Park Service, and branches of the military with significant landholdings (such as a large base) in the project coordination. While flood hazards for these State or Federal lands may not be mapped, they are integral to the watershed and often cover large areas of a watershed. These entities are FEMA partners; therefore, the coordination is continuous and ongoing. In this cooperative spirit, Project Team members may be called on to support FEMA with providing technical and programmatic assistance and prepare responses to inquiries received from interested project stakeholders.

7.0 Data Collection

The types of data and information obtained during the Discovery process should demonstrate a holistic picture of flooding issues, flood risk, and flood mitigation capabilities within a watershed. The data and information gathered should also provide an understanding of the geography, demographics, and willingness to address risks, infrastructure presence, underlying building codes, and other critical elements that will provide a full understanding of the watershed. This data and information must be both sufficient and firmly understood by the Project Team before possible elements of a flood risk project - including flood hazard mapping, community engagement and outreach, mitigation planning technical assistance, and flood risk assessments – should be suggested. The Project Team should also seek and obtain data during Discovery that will be needed to perform subsequent analysis and mapping during the project such as base map data, elevation data, and data needed to support flood hazard modeling and risk assessments.

FEMA Geospatial Data Coordination Procedures outline sources of geospatial data and contact information, preferences for base map data in flood risk studies, information for the Discovery process, and other useful information. To implement the Geospatial Data Coordination Procedures, each Region maintains State Standard Operating Procedure (SOP) documents that detail how specific datasets within each State should be used for flood hazard mapping and Discovery projects. Some of the data to be used in those projects can be retrieved from national data suppliers, which are typically OFAs.

To supplement the Discovery element of the Geospatial Data Coordination Procedures, the Project Team should follow the guidance in the National Discovery Data Coordination Procedure document, which provides instruction on the most appropriate data to collect on a national scale for the Discovery process. This information, in conjunction with the State SOPs, is intended to help reduce the level of effort needed to find appropriate data and respect the ongoing geospatial data coordination efforts at Federal, state and local agencies.

The Project Team communicates to watershed stakeholders which data and information can be used for a flood risk project, including the appropriate formats and specifications. In conjunction with required data from CNMS (such as "mapping needs" information as shown in Figure 2 below), the Project Team may use the data and information obtained during this process to make the draft Discovery Map, regulatory products (i.e., FIRMs, FIS reports, FIRM databases), and Flood Risk Products (i.e., Flood Risk Reports, Flood Risk Maps, Flood Risk Databases). Flood Risk Products are described further in Guidance Document No. 63, Guidance for Stakeholder Engagement: Risk Awareness Phase, which is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

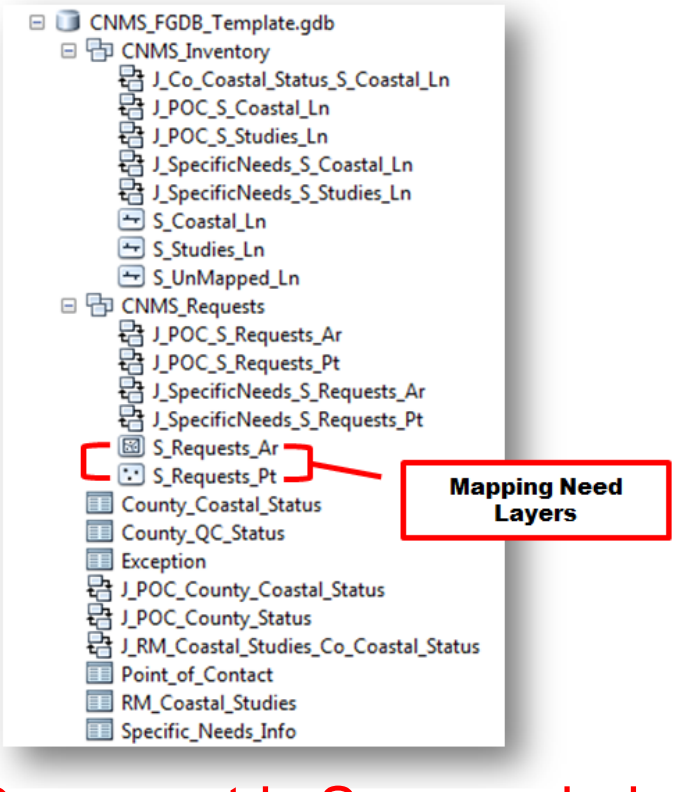

Figure 2. Mapping Needs Layers

The types of information that the Project Team should consider collecting before the first Discovery Meeting include information about the following:

- The community or Tribe planning capabilities and the timing and level of any needed technical assistance for mitigation planning
- Regional and/or National Geospatial Data Coordination datasets
- The status of local or Tribal Hazard Mitigation Plans
- NFIP status, including mapping status (dates of effective)
- NFIP Insurance Information (e.g., policy count, total coverage, number of Repetitive Losses)
- Demographics
- Current storm water activities such as culvert or ditch cleaning
- Current outreach programs to residents about flooding/storm water issues

- Stormwater Best Management Practices, programs for reducing flows, etc.
- Community identified risk and flood study needs
- Coastal inundation information from OFAs
- Awareness and attitudes about flood risk in the area, as available through open sources such as media scans and social media posts
- History of storms that have affected the area, with summary information about the extent of damages and recovery
- Key influencers in the region who may support flood mapping activities
- Status of ongoing mitigation actions or those under consideration
- Disaster and non-disaster grant activities
- Existing partnerships between watershed communities and non-traditional organizations such as NGOs, colleges and universities, and members of the National Partnership Network
- Areas of increasing population and/or development within the 1-percent and 0.2-percent- annual-chance floodplains
- Nonstructural flood mitigation features, and their design level of protection (if applicable / available)
- Flood-control structure locations, and their design level of protection (if applicable / available)
- Flooding issues, including (where applicable) ice jams, historical flooding, and declared flood disasters
- Participation in the Community Rating System (CRS)
- Actionable projects identified in the Hazard Mitigation Plan
- Community development plans and comprehensive plans
- Prior proactive mitigation actions and planning efforts resulting in reduced losses
- Community interest/ability to provide elevation data or pursue partnership opportunities
- Community priorities in order to focus mitigation discussions through knowledge of what is important to the public

- Community-identified mitigation opportunities and priorities
- Communication capability assessment; use of social media, websites and online tools
- Regional or State information about communities and flooding within a watershed, such as information from Community Assistance Visits (CAVs)
- Community correspondence, and other data that the FEMA Regional Office, State NFIP Coordinator, or SHMO possesses
- Information from OFAs, NGOs, and other watershed stakeholders, as referenced in Section 216 of BW-12
- Coastal inundation information (In Section 216 of BW-12, as amended by HFIAA, the U.S. Congress directed FEMA to include any relevant information from the following in updating flood hazard maps: (1) an applicable inundation map prepared by the USACE; and (2) NOAA data related to storm surge modeling.)
- Information on streamflows and watershed characteristics (In Section 216 of BW-12, as amended by HFIAA, the U.S. Congress directed FEMA to include any relevant USGS information on streamflows and watershed characteristics that is useful in the identification of flood hazard areas in updating flood hazard maps.)

- Information on land subsidence, coastal erosion areas, changing lake levels, and other flood-related hazards (In Section 216 of BW-12, as amended by HFIAA, the U.S. Congress directed FEMA to include any relevant information on land subsidence, coastal erosion areas, changing lake levels, and other flood-related hazards in updating flood hazard maps. Federal agency partners would be the primary sources of this information.)
- Data from the other FEMA sources, such as Building Science and the FEMA Engineering library.
- Information on available elevation data
- Information on available base map data
- Information on available soils data, climate data, high water mark data, bridge, dam, levee, coastal structure, culvert data, and other technical data supporting flood hazard and flood risk analysis
- Community's BCEGS rating

- Current building code including the name and date the model code was adopted, date of last update, references to sections with modifications to flood provisions, and additional flood requirements

- History of other major hazards

- Building Science publications and websites that would be useful for the community using the building code status, number of flood claims, and types of flood related hazards.

The Project Team also should evaluate local Hazard Mitigation Plans and prior local mitigation projects for insight into the stakeholders' participation in proactive mitigation initiatives, and information on a community's or Tribe's capability, capacity, and/or desire to implement mitigation actions and to communicate flood risk to citizens.

Because the above noted data may be included on the Discovery Map, if a data-sharing (release) agreement is required for use of community, Tribal, or other third-party data, the Project Team should discuss this issue with appropriate stakeholders before producing a final Discovery Map.

Geospatial data collected by the Project Team may be used in the Discovery Map. In some cases, the Project Team may wish to convert data not provided in geospatial format by communities to a geospatial format for visualization on the Discovery Map. For example, the status of a community or Tribal Hazard Mitigation Plan is not geospatial data; however, the area covered by the plan can be shown on a map and highlighted appropriately to show the plan status.

The Project Team will compile the information that is not displayed on a map (such as information about flood/storm water ordinances) into a Discovery Report, along with a listing of all data collected, the stakeholders involved, and other information. The Project Team will use the draft Discovery Map as a reference and as a discussion starter during the Discovery Meeting(s). One objective of the Discovery Meeting(s) is to validate the information collected and determine whether a flood risk project is appropriate for the watershed under consideration.

8.0 Data Analysis

To prepare for and facilitate the Discovery Meeting(s), the Project Team will complete a robust, thoughtful analysis of the data and information obtained during stakeholder coordination. The Project Team will distribute the collected information to stakeholders before the Discovery Meeting; this advance distribution will enable meeting attendees to focus on discussions about the watershed characteristics, flood risk, flood hazard communication, hazard mitigation, stakeholder engagement, and outreach.

While additional data and information may be discussed at the Discovery Meeting(s), and some post-meeting data and information collection may take place as a result of meeting discussions,

the Discovery Meeting(s) should be an opportunity for the Project Team to confirm the data and information gathered during their initial pre-meeting research. FEMA does not have a mandatory format or guidance for analyzing the data and information collected, as each set of collected data and information will differ based on several factors and is dependent on the watershed.

9.0 Discovery Map

The Project Team will create a draft Discovery Map using the data and information collected during the Discovery process and share it with communities and other stakeholders in order to facilitate further discussion and collaboration about future mapping and mitigation actions in the watershed. The Project Team will provide the draft Discovery Map to the communities, Tribes (if appropriate), and other stakeholders before the Discovery Meeting(s) and then present it at the Discovery Meeting as a facilitation tool. A Discovery Map example is shown below.

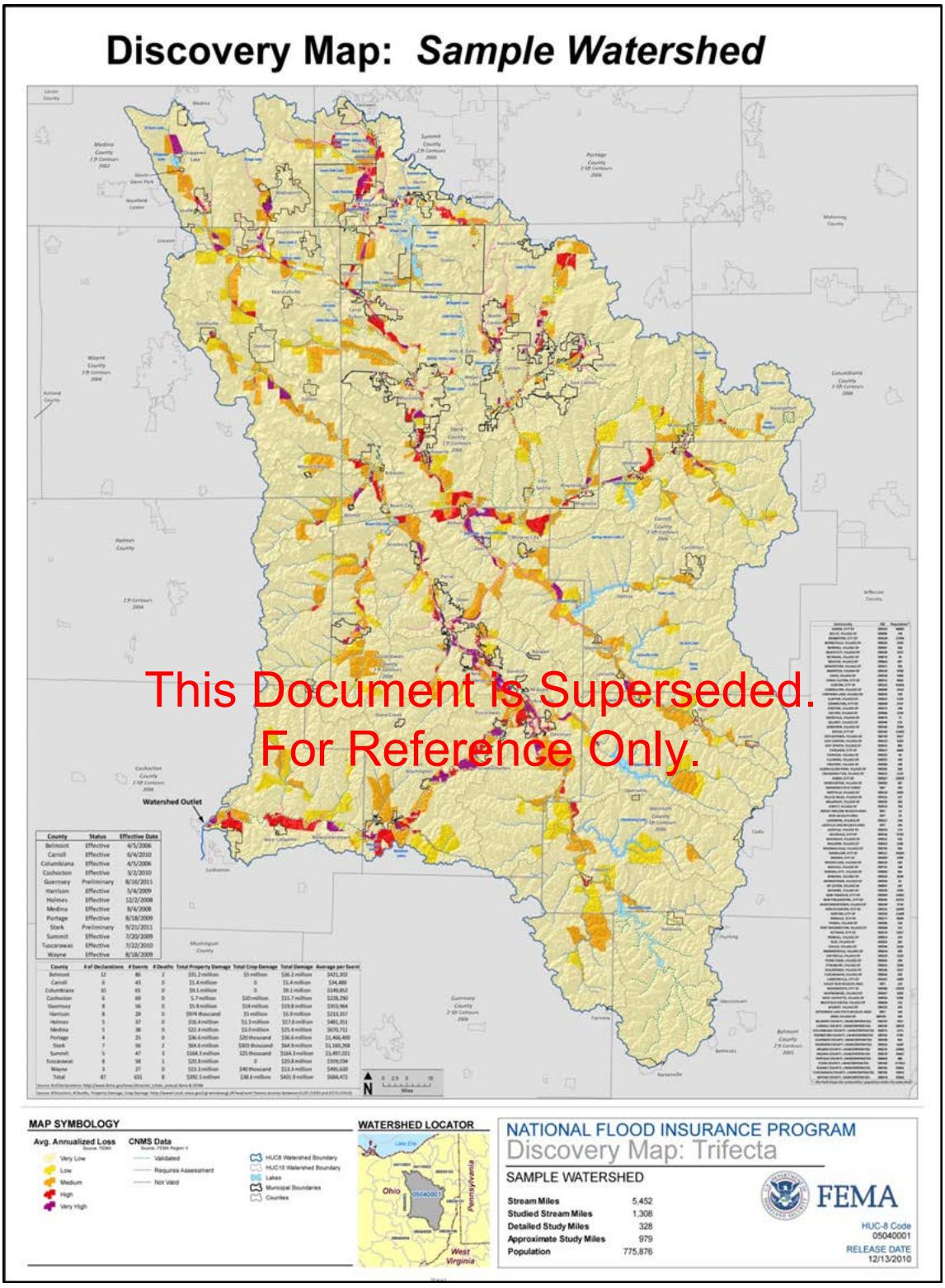

Figure 3. Sample Discovery Map

The Project Team may present the data and information electronically or as a printed map or set of maps. Recommended data and information to show on the draft Discovery Map is listed in Subsection 9.1. The Project Team may show other data and information collected on the map at Regional Office (or, in some cases, CTP) discretion if it would benefit the discussion within the watershed. Some examples of this other data and information is listed in Subsection 9.2.

The amount of data and information collected will likely not be reasonably shown on one map. This would require map layers, which can be manipulated and depicted electronically. The Project Team may develop multiple maps at various scales and bring them to the Discovery Meeting(s) to facilitate discussion and for readability.

The Project Team should prepare users' notes or other documentation that help community members understand and interpret information included on the Discovery Map(s). The Project Team should create these notes for a nontechnical audience.

The Project Team will create a final Discovery Map following the last Discovery Meeting(s) to illustrate the decisions that were made during the Discovery Meeting. The Project Team will provide the final Discovery Maps to all meeting attendees as well as invitees that were not able to attend the meeting(s).

To ensure privacy, sensitive data, such as data that may name a unique address or person, will be aggregated and/or generalized at the centroid of the census block and represented as a point or generalized area.

Two FEMA documents provide additional information regarding the formatting and submittal of data at the Discovery phase: Data Capture Technical Reference and Guidance No. 46, Data Capture – General Guidance. Data Technical Reference and other Technical References are accessible through the "Technical References" section of the online FEMA Library. Guidance Document No. 46 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

In addition, the Project Team should deliver both the draft and final Discovery Maps to the final MIP location for future reference and for future update. See the Data Capture Guidance (General and Workflow Details), and MIP User Care for more detailed information.

9.1 Required Discovery Map Information

The information that is beneficial to be shown (if applicable to watershed) on the draft Discovery Map includes:

- Base data reflecting watershed boundaries, jurisdictional boundaries, Tribal land boundaries, State lands, Federal lands, major roads, and stream lines

- Coastal Barrier Resource System (CBRS) and Otherwise Protected Areas (OPAs) from U.S. Fish and Wildlife Service (USFWS)
- S_Request_Ar and/or S_Request_Pt (mapping needs)
- Topographic and bathymetry data status and availability, locations of future topographic and/or bathymetric data acquisition
- Flood risk assessment data
- The coverage areas of known community or Tribal risk assessment data
- Flood-control structure location data from national or regional inventories (e.g., National Inventory of Dams, levee inventories) and accreditation status information, including information from Dam Emergency Action Plans (if available)
- Locations of stream gages
- Location of past flood claims and repetitive loss properties (to be shown using the centroid of the census block to maintain privacy requirements)
- Location of clusters of Letters of Map Change
- Known flooding issues not represented on effective FIRMs or listed in the CNMS database
- Areas of ongoing or planned development and
- Areas of high growth or other natural land changes (e.g., wildfires, landslides, subsidence)
- Locations of other ongoing studies or projects and studied stream reaches that have been modified since the effective map and require an updated study (e.g., highway improvements)
- In coastal areas, the locations of wave and tide gages; wind stations; the proposed inland limit of the Primary Frontal Dune, if present; the location of any beach nourishment or dune restoration projects; a comparison of preliminary stillwater elevations with effective stillwater elevations
- Available effective study data
- Available orthophotography

- Proposed discussion areas, problem areas, areas of proposed mitigation projects, and other areas of interest to discuss based on Regional Office knowledge and analysis of the data collected during the Discovery process
- Community's BCEGS rating
- Current building code including the name and date the model code was adopted, date of last update, references to sections with modifications to flood provisions, and additional flood requirements
- History of other major hazards
- Building Science publication and websites that would be useful for a community using the building code status, number of flood claims, and types of flood related hazards.

9.2 Other Data and Information

A variety of data and information may be shown on the draft Discovery Map at Regional (or, in cases, CTP) discretion provided it can be presented legibly on the Discovery Map. In cases where the data or information cannot be presented legibly, the FEMA Project Officer may opt to have the information included in the accompanying report or database. Data and information that may be presented includes, but is not limited to, the following:

- Land use and soil information (such as information from the Urban Change Land Use Map, existing or future land use maps, zoning maps, or other sources)
- Land ownership in the watershed
- Reference points to locate areas with flooding issues
- Hydraulic structures such as bridges or culverts, with inspection status, if available
- Coastal structures, including flood protection structures (e.g., levees), shoreline structures (e.g., jetties, groins, seawalls), manmade embankments (e.g., elevated roads, railroads), surge conveyance pathways, and shoreline change data
- Locations of any identified nonstructural flood mitigation features
- Local structure and topographic data from Hazard Mitigation Plans, if applicable (The data that may be available for use in risk assessment products and enhanced Hazus analysis include GIS-formatted building stock/inventory information, tax assessor records, high-quality terrain data, local building footprint or parcel data, essential facility data, number of stories, usage, and assessed value.)

- Inundation areas of historic major flood events and declared disasters and high-water marks lusters or locations of Individual Assistance/Public Assistance grants and locations of grant projects completed, planned, or underway; locations of projects and structures completed or planned for FEMA Hazard Mitigation Assistance (HMA) grant programs or mitigation funds from other agencies or entities, such as the Small Business Administration

- Whether the community or tribe has received, is currently using, or intends to apply for Federal grants to achieve mitigation planning or mitigation projects, including whether applications for mitigation planning or project grants are under review

- If using Federal funds, whether the community or Tribe hires a contractor to assist with the development of mitigation plans or whether they need FEMA or CTP assistance

- Whether the previously approved Hazard Mitigation Plans indicated any data deficiencies for flood hazards that could be addressed through a flood risk study

- Information from the NFIP on market penetration of insurance policies in force

- The locations and outcomes of recent CAVs or Community Assistance Contacts (CACs), especially noted violations

- CRS class information

- Information from OFAs (e.g., USFWS, NOAA, USGS, NRCS, EPA, USACE, USFS, BLM, FHWA, U.S. military bases)

- Information from State agencies (such as Departments of Transportation or Natural Resources)

- Information obtained from non-profit organizations (including grass-roots watershed groups)

- Information from other professional associations (e.g., Association of State Floodplain Managers, American Water Resources Association, American Society of Civil Engineers) and other nongovernmental organizations (NGOs)

- Information from colleges and universities

- Current community plans, ordinances, or programs to alleviate flooding or manage storm water

- Information on other known hazards with geographical boundaries (e.g., earthquake faults, landslide hazard areas, storm surge inundation zones, wildfire hazard areas), to

review hazard risk assessments and mitigation strategies that have already been completed within the watershed, slosh zones, and wildland-urban interface areas

- Information on active disaster in the watershed
- Campgrounds/recreational areas and emergency access routes
- Community's BCEGS rating
- Current building code including the name and date the model code was adopted, date of last update, references to sections with modifications to flood provisions, and additional flood requirements
- Identify the Building Science publications and websites that would be useful for the community using the building code status, number of flood claims, and types of flood related hazards
- Any other information or data that may be appropriate

10.0 Discovery Report

The Project Team prepares a Discovery Report, which includes findings of the Discovery process, identified mapping needs, and areas of desired mitigation technical assistance or future projects. The Discovery Report is intended to help FEMA and the communities involved determine whether to conduct additional flood risk project activities. In addition, the information within the Discovery Report can and should be used by communities to help further discussions of mitigation action.

The Project Team should assure that the completed Discovery Report includes a section listing the data and information collected including what data and information were received, when they were received, data sources, and an analysis of the data and information. As mentioned earlier in this guidance document, the Project Team will share the draft Discovery Report with communities (and Tribes, if appropriate) before the Discovery Meeting as preparation for the Discovery Meeting.

The final version of the Discovery Report will include meeting documents, such as meeting notes and attendee list, and the Project Team will provide them to communities (and Tribes, if appropriate) after the Discovery Meeting. A Discovery Report template and a prototype Discovery Report are accessible through the "Templates and Other Resources" section of the online FEMA Library. The Project Team should confirm with the FEMA Project Officer whether the Regional Office has different templates to use.

The template in the FEMA Library provides a format and instruction for preparation of the Discovery Report, while the prototype serves as an example of how the addition of data and the unique characteristics of a particular watershed can be assembled to create a final product.

The Discovery Report template was developed to allow the Project Team flexibility in reporting. The Discovery Report template contains numerous sections for the compilation of particular community facts and data findings throughout the Discovery process. The sections listed should be included and thoughtfully expanded by the Project Team as required to present a complete profile of the watershed, its communities, needs, and expectations in the final Discovery Report.

The Project Team will provide both draft and final versions of the Discovery Report to all project participants. The versions will reflect the following:

- First Iteration (Draft): During the Watershed Stakeholder Coordination and Data Analysis phases of Discovery, the draft Discovery Report will house all information and data compiled by the Project Team in preparation for the Discovery Meeting(s). The Project Team will share this first version of the Discovery Report with the watershed stakeholders before the Discovery Meeting(s).

- Final Iteration: The final Discovery Report is a result of the successful completion of the Discovery Meeting(s) held in the watershed. The Project Team will finalize this final iteration following a review of an interim draft report by stakeholders who attended the Discovery Meeting(s). The Project Team will provide the final Discovery Report to watershed stakeholders, and it will include information about the Discovery Meeting(s), including the meeting agenda, meeting announcement and publication, sign-in sheets, discussion topics, and decisions made.

The Project Team should deliver each version of the Discovery Report to stakeholders as a Portable Document Format (PDF). In addition, the Project Team should deliver the draft and final Word File Document, and final PDF, including appendices, to the final MIP location for future reference and for future update. See the Data Capture Guidance (General and Workflow Details), and MIP User Care for more detailed information.

The Discovery Report Prototype provides an example of watershed (non-coastal) Discovery, which includes watershed, county, and community details for Project Team member reference. The Discovery process for coastal projects is not typically watershed based; therefore, this prototype may be refined further at Regional Office discretion and direction for coastal projects. Subsections 10.1 through 10.7 provide additional guidance per report element.

10.1 Discovery Report Elements and General Format

The Project Team should prepare the Discovery Report at the watershed level or at the Region Office's discretion for coastal projects. The Discovery Report template is designed to be flexible to the needs of the watershed. At the beginning of each report section, the template includes instructions in bold italic font. Before distributing the Discovery Report, the Project Team must remove the italic text. The Discovery Report sections and subsections (as applicable) are described in the subsections that follow.

10.2 Report Cover

The report cover shown in the template is considered the standard cover for the Discovery Report and it lists the communities in the watershed. If the Project Team wishes to list the communities, but there are too many communities to list on the cover, then the Project Area Community List, found on the first inside page of the Report, can be populated.

The cover should include the watershed name and HUC-8 code for the watershed area for which the Discovery effort is being performed. The Watershed Boundary Dataset naming convention should be used to name the Discovery Report in order to maintain geographic clarity as future watersheds are developed.

The Project Team should consider:

- In alphabetical order, list the counties within the project area. Then, list the independent communities and incorporated jurisdictions within the project area in alphabetical order. If spanning States, identify State(s) in alphabetical order. Specific characteristics of a community, such as non-participation in the NFIP, or other information deemed relevant to the project may be noted with this table of jurisdictions.

- Include the Draft or Final version, as appropriate.

- Update the report date to indicate the following dates:

  - Draft – Date initial Discovery Report is sent out to stakeholders in advance of the Discovery Meeting

  - Final – Date of final Discovery Report sharing the Discovery Meeting findings with watershed stakeholders

10.3 General Information

In this section, a watershed or project area description is to be included, including, for instance, physical land description, mention major lakes and rivers, large communities, and other topics of interest, as applicable and deemed necessary.

The Project Team should prepare this section of the Discovery Report before the Discovery Meeting. This section can be further updated in any following document versioning of the Discovery Report to describe the Discovery process and the completed and/or upcoming steps to allow external stakeholder interaction.

The Project Team may also include additional data for informational and educational purposes with the external stakeholder audiences in mind.

The Project Team should remember that most end users of the Discovery Report will not be experts in floodplain mapping or mitigation; therefore, FEMA processes should be described in

simple, nontechnical terms. A table explaining acronyms and abbreviations and/or a Glossary of Terms may be appropriate to aid the end user in understanding the language and overall themes of the Discovery Report.

10.4 Watershed Stakeholder Coordination

This section of the Discovery Report details the activities that occurred during the Stakeholder Coordination phase.

The template allows the assigned Project Team member to provide headings as appropriate. Section titles may include a description of how the data and information were collected, who was contacted, and may include a list of watershed contacts for possible future Risk MAP project use.

This section, based on the number of contacts, should include a list of stakeholders contacted. The stakeholders can be included as a table, as a reference to a Discovery Report appendix, as an attached list, or by referencing a table in the Discovery Map.

The Project Team should include scanned or photocopied records of conversations, email messages, call logs, and other communications as an appendix.

10.5 Data Analysis

The Project Team should populate this section for the draft version. It should be divided into two subsections: Data that can be used for flood risk projects, and other data and information.

Subsection i. Data that can be used for flood risk projects section will be used for listing topographic data availability and other data that can be used in flood risk projects (such as building footprints that can be used for refined Hazus analysis).

Subsection ii. Other Data and Information section will be different for each watershed, and should contain thoughtful analysis of the data and information as opposed to lists of data and information. Types of information include economic, demographic, growth, industry, etc. information which may be helpful to inform a communication and/or outreach strategy.

For each type of data collected, the Project Team should include a brief summary and analysis. The summaries may be watershed-specific with individual Community Briefings included as an appendix to the report providing summaries for each community.

The Project Team may complete this section using one page per data type, with a brief summary at the top of the page and the bottom half of the page showing a map or screen shot of data.

Some section examples are provided below. The list is not exhaustive, nor does it imply a requirement of topics that must be addressed in a Discovery Report. Rather is intended to

demonstrate the breadth of subjects that may be appropriate to discuss within the Discovery Report. Therefore, this section will be different for each watershed.

- Communities and Tribal Entities within Project Area
- NFIP Participation
- Effective FIS Reports and FIRMs
- Demographics
- CRS Participation
- Flood Insurance Policies and Repetitive Loss
- Levees (include description of adjacent floodplain areas)
- Flood-Control Structures
- Endangered Species Act Considerations
- Emergency Action Plans (Dams, Levees)
- Topographic Data Availability
- Hazus Data and Building Stock Information
- BCEGS Rating
- Historical Construction Type and Information on Loss Avoidance from Past Events
- CBRS Areas and OPAs
- Flood Hazard Mitigation and All Hazard Mitigation Plan Information
- Historical Flooding/High-Water Marks
- Other Historical Hazards
- Declared Disasters
- CAVs/CACs
- Stream Gages
- CNMS Information

- Ordinances and Building Codes including weakening of flood provisions
- Areas of Growth in 1- and 0.2-Percent-Annual-Chance Floodplains
- Information Regarding Federal, State, and Local Representation (i.e., names, offices, district maps, other relevant information)

10.6 Discovery Meeting(s)

This Project Team should include the Discovery Meeting date(s), location(s), organizations represented, agenda, and meeting notes (located in this section or as an appendix) in this section. Because the draft Discovery Report is completed before the Discovery Meeting, the Project Team will not complete this section in the Draft version, however, a note indicating that a review of the Discovery Meeting(s) will be included in the final Discovery Report may be placed in this section as a placeholder in the draft report.

The Project Team also may include a description of the Discovery Map with a table or list showing the data included and pre- and post-Discovery Meeting notes and analysis. At a minimum, the final Discovery Report should include action items and decisions made at the meeting.

10.7 Appendix and Tables

This section is to be used at the Project Team's discretion. This is also an opportunity to include items such as stakeholder lists and individual/community contact preferences (e.g., email message versus telephone call), meeting notes, data tables, and other items that are referenced in the report without duplicating the effort made during the other phases of the Discovery process.

11.0 Discovery Meeting

As discussed in Section 6, stakeholder outreach, engagement, and coordination occurs throughout the Discovery process to build positive working relationships and to collect pertinent flood risk and mitigation data and other community information to help inform and ensure a productive Discovery Meeting. The earlier engagement may have taken the form of face-to-face meetings, conference calls, web meetings, or other means of two-way communication.

The Discovery Meeting(s) may be the first formal face-to-face meeting(s) that the Project Team will have in which most key watershed and community stakeholders participate. To achieve a better understanding of the needs of the watershed, Project Team members may wish to hold a planning meeting or conference call with key stakeholders before a Discovery Meeting to discuss and review what material is already available and what strategies may be useful in optimizing the success of the Discovery Meeting(s) with local communities and other stakeholders. This planning meeting/conference call might also give the Project Team an opportunity to work with the watershed communities to choose the time(s) and place(s) to hold

the Discovery Meeting(s) that encourage maximum attendance and active stakeholder participation.

In the best-case scenario, information previously collected through communication with key stakeholders is validated and expanded on at the Discovery Meeting. This should not be a forum for hearing the bulk of necessary information for the first time. Rather, it is an opportunity to increase understanding, confirm priorities, and identify any remaining knowledge gaps.

A broad representation of watershed stakeholders should be invited to each Discovery Meeting. For some watersheds, it may be desirable or necessary to hold multiple Discovery Meetings to encourage stakeholder attendance. Reasons for multiple Discovery Meetings might include, but are not limited to, the following:

- Watersheds with a large number of communities
- Geographically large watersheds
- Watersheds that have topographic impediments (e.g., large lakes)
- Watersheds that encompass multiple States (requiring out-of-State travel)

As mentioned earlier, the Project Team will analyze all data and information collected before the Discovery Meeting and summarize in the Draft Discovery Report. The Draft Discovery Map and Draft Discovery Report are used to aid discussions of the data and provide meeting attendees an overview of flood risk in the watershed.

Decisions to perform additional analyses, data development activities, and/or community engagement within the flood risk project area must be supported by the outcomes from the Discovery process. These decisions are communicated to project stakeholders before executing those activities.

Information on the objectives of the Discovery Meeting and who should be involved is provided in Guidance Document No. 22, Guidance for Stakeholder Engagement: Discovery Phase. Guidance Document No. 22 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

In addition, data specific to the Discovery Meeting, such as, meeting date, location, meeting invitations, sign-in sheet, and meeting minutes, should be included in the Discovery task.

12.0 Finalizing Discovery

If a flood risk project is not necessary for the watershed, the Discovery process is complete once the final, post-Discovery Meeting Final versions of the Discovery Map and Discovery Report have been received by the watershed stakeholders.

FEMA may determine that a flood risk project including a flood hazard mapping element is appropriate for the watershed during a future planning and budgeting phase. To prepare and inform that decision, FEMA will review pertinent data and information in coordination with communities (and, when appropriate, Tribal entities) to discuss expectations of the results.

Community stakeholders will be interested in knowing where Special Flood Hazard Areas (SFHAs) and Base Flood Elevations (BFEs) will change and how (increase or decrease), what areas of the community will be impacted and other information. To provide this information to communities, the Project Team should conduct an Automated Engineering Analysis. FEMA has not issued any mandatory standards for how the analysis should be conducted. The Project Team's decision will depend on the availability and format of the engineering data, topographic information, and other inputs. For example, if the information collected during the Discovery process and discussed at the Discovery Meeting(s) reveals that significant development has occurred since the original flood study that has increased discharges, then the results of the automated engineering should be discussed with the communities during the Discovery Meeting, or shortly following.

The post-Discovery Meeting coordination occurs before initiating a flood risk project and will assist in determining whether the impacts are significant enough that new regulatory products are necessary. The discussions must include an explanation of the expected impacts of potential study results (i.e., increase/decrease in SFHA delineations, increase/decrease in BFEs). The Project Team should also document those expectations in the Project Charter, if one is used. The Project Team should develop the project scope and Project Charter (if used) concurrently through coordination with communities (and Tribes, if appropriate).

In coastal areas where an updated surge model is available, data from the model should be used to foster these discussions with communities. The surge study occurs in advance of the Discovery effort and this information is reviewed and discussed at the Discovery Meeting.

If the model or models that will be used to update the flood hazard information shown on the FIRM are known at this stage, then each community affected by the update must be notified of the planned model(s) to be used and provided with: (1) an explanation of the appropriateness of using the model(s) are appropriate and (2) a 30-day period beginning upon notification to consult with FEMA regarding the appropriateness of the mapping model(s) to be used. For additional information, best practices, and associated tools and templates, the Project Team should refer to Guidance Document No. 61, Guidance for Stakeholder Engagement: Data and Product Development Phase. Guidance Document No. 61 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

12.1 Scope Refinement

After the discussions on study expectations, the Project Team develops a scope of work in coordination with communities, Tribes (if appropriate), and State partners. Working together with watershed stakeholders, the Project Team refines the scope of the flood risk project,

including a decision about the regulatory products and Flood Risk Products to be provided, the mitigation planning technical assistance that may be offered, and the communications and outreach assistance to be provided.

The guidelines and considerations to take into account when determining the flooding sources to study within a watershed, and the type of study within that same area, are defined below.

Location of Study

1. Stream segments with engineering data validated through the NVUE process in CNMS are not required to be restudied, unless they either do not tie-in or they have inconsistent hydrology. Reaching compliance with the NVUE metrics for all mapped flood studies is to be a driving factor in this consideration as well.

2. Stream segments with unverified engineering data and high risk levels should be considered for restudy. Segments with unverified engineering data and low risk levels may be addressed in later studies, and should be listed in CNMS for future study.

3. Existing Levee Analysis and Mapping procedural guidance should be used to determine which segments containing levees should be studied.

4. While the level of need for a stream segment will be defined by CNMS data, Regional Offices have discretion in prioritizing those needs within a specific project area based on things learned during the Discovery process.

5. Areas with low risk, no needs defined, and minimal potential for future development should not be studied unless necessary to address gaps in flooding or to correct inconsistent hydrology.

6. Areas with low risk, less than four secondary needs in CNMS, and minimal potential for future development do not need to be studied, unless necessary to address gaps in flooding or to correct inconsistent hydrology.

7. Where hydrology between adjacent stream segments does not agree within the 95-percent confidence limits of the applicable USGS regression equations, one or both stream segments will be revised to correct the mismatch.

8. Where water-surface elevations (WSELs) between contiguous stream segments do not agree within 0.5 foot, one or both stream segments should be revised to correct the mismatch.

9. Where floodplain or regulatory floodway widths between adjacent stream segments do not agree within 5 percent of the total width, one or both stream segments should be revised to correct the mismatch. Special considerations related to this rule may be required where the stream is a boundary between two jurisdictions with different floodway surcharges.

10. It may be necessary to review adjacent watersheds for tributary inflows, bordering floodplains from other sources, and other considerations that would affect flow in the subject watershed.

11. Any new study that is performed to provide continuity between existing mapped study areas or to address discrepancies shall be accomplished using the most basic study method that is appropriate based on the risk and need of those connecting areas.

Type of Study

1. The existing effective study should be the baseline for future study. For example, if an area has published BFEs, it should continue to do so. Likewise, once a floodway has been defined, a floodway should not be eliminated or downgraded. Special situations should be discussed in consultation with the FEMA Project Officer.

2. Along a stream segment, varying hydraulic methods (within the FEMA Acceptable Models list) may be used; however, the continuity of WSELs should be maintained within the required tie-in of 0.5 foot for all recurrence intervals in the models.

3. As noted above, any new study that is performed to provide continuity between study areas, or to address hydrologic discrepancies, should be accomplished using the most basic study method that is appropriate based on the risk and need of those connecting areas.

Regulatory Products and Flood Risk Products

The FEMA Project Officer will make decisions regarding the types of products (regulatory products and/or Flood Risk Products) to scope as part of the flood risk project in discussions with the other Project Team members, taking into consideration requirements mandated by the Flood Risk Analysis and Mapping standards and while navigating the Key Decision Point process.

In addition, the FEMA Project Officer and Project Team should discuss datum conversion (if needed) at this point in the Discovery process. FEMA's goal is to have the entire inventory of flood hazard products referenced to the North American Vertical Datum of 1988 (NAVD88).

The Project Team should discuss the datum conversion process with communities including information about the benefits of converting to NAVD88. Communications should also note that full documentation of the datum conversion will be shared with communities during the process.

For additional details on the information to be shared with stakeholders regarding datum conversion, the Project Team should refer to Section 6 of Guidance Document No. 22, Guidance for Stakeholder Engagement: Discovery Phase. Guidance Document No. 22 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage

12.2 Project Determination

When considering final project parameters, it is important to note that FEMA standards require that no flooding source receive a lower level of regulatory product than what currently exists on effective maps. The Project Team should consider the demands of this standard in discussions of the final project scope. For more details about working with communities and other

stakeholders to define the project scope, the Project Team should refer to Section 6 of Guidance Document No. 22, Guidance for Stakeholder Engagement: Discovery Phase.

At the close of Discovery, the Project Team will ensure that the following take place:

- Update or populate CNMS.
- Add community-requested project or flooding areas to CNMS.
- Populate or update National Digital Elevation Program information.
- Populate or update National Digital Orthophoto Program information.
- Update and upload final versions of the appropriate data (e.g., Final Discovery Map, Final Discovery Report) to the MIP. See the Data Capture Guidance (General and Workflow Details), and MIP User Care for more detailed information.
- Consider evaluating areas of population growth in the 1-percent-annual-chance and 0.2-percent-annual-chance floodplains.
- Consider evaluating areas protected by nonstructural flood mitigation features based on the information collected during the data collection effort as discussed in Section 7 of this guidance document.

13.0 Final Outputs

The final outputs of Discovery are a Final Discovery Map; Final Discovery Report; and, if desired, a Project Charter.

If a flood risk project is appropriate for the watershed, a project scope will document the products and data that the community will receive and will specify the mitigation technical assistance to be provided. Recommendations for a project scope may be documented in a Project Charter to be developed in coordination with watershed stakeholders.

A Project Charter, if used, can also be used to identify and clarify roles and responsibilities for the Project Team, communities and Tribes, State NFIP Coordinator and SHMO, and other stakeholders; list the data to be provided with associated deadlines and expectations of the study results; and provide a projected timeline and an explanation of what would be expected from FEMA or CTPs and communities or Tribes at each major milestone.

A Project Charter provides documentation of FEMA commitment to the watershed and the commitments of the communities and Tribes at each major milestone of a Flood Risk Project. If communities or Tribes express interest in natural hazard data in addition to flood data, appropriate sources of such data will be identified. In addition, if funding is needed to generate such data, leverage opportunities should also be identified.

If a flood risk project will include flood hazard mapping, the charter can document the desired study areas, and the impact these changes will have on the communities or Tribes. This outline of expected conditions can support the need for a community outreach plan early in the process to ensure that the final product delivered meets the community expectations.

When a Project Charter is to be created, the Project Team should create the Project Charter in partnership with communities (and Tribes, if appropriate) in the watershed. The Project Charter should be sent for their review, collectively revised, finalized, and signed. The Project Charter may have to include a draft or recommended scope of work.

The Project Charter is not a binding agreement, but rather a tool to convey a clear understanding of the scope and its impact in a community. The Charter is also a way for the Protect Team to assist communities in developing a sense of "ownership" in the project. Therefore, while not required, the Project Team should encourage communities to sign and return a final Project Charter. If used, Project Charters should be signed by as many impacted communities as possible.

Regardless of whether a Project Charter is developed, the Project Team must share the final scope with watershed communities, tribes (if appropriate), and other watershed stakeholders, at the time that a Risk MAP Project is funded.

Once recommendations for a scope of work have been defined and discussed with the affected communities, FEMA may create a CTP Mapping Activity Statement or Task Order to formally initiate the analysis and mapping work portion of the flood risk project.