FEMA

Operating Guidance No. 2-11

For use by FEMA staff and Flood Hazard Mapping Partners

Title: Operating Guidance for Creation of Risk MAP Products

Effective Date: October 18, 2011

Approval: Luis Rodriguez
                   Branch Chief, Engineering Management Branch
                   Federal Insurance and Mitigation Administration

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Operating guidance documents provide best practices for the Federal Emergency Management Agency's (FEMA's) Risk MAP program. These guidance documents are intended to support current FEMA standards and facilitate effective and efficient implementation of these standards. However, nothing in Operating Guidance is mandatory, other than program standards that are defined elsewhere and reiterated in the operating guidance document. Alternate approaches that comply with program standards that effectively and efficiently support program objectives are also acceptable.

Background: As the Risk MAP Program evolves new products are created to communicate flood risk. These Risk MAP products are the Discovery Report, Flood Risk Report (FRR) and Flood Risk Map. Additionally, a significant overhaul of the regulatory Flood Insurance Study (FIS) Report has been accomplished to better align with the Risk MAP Program.

Issues: In order to achieve a reasonable level of consistency amongst the new / revised products, guidance needs to be provided to Mapping Partners in the form of templates and prototypes, as well as recommended best practices in the creation of these Risk MAP products.

Actions Taken: This Operating Guidance document provides Mapping Partners with guidance, as well as templates and prototypes that may be used to create the Discovery Report, FRR and Flood Risk Map, as well as the new format Flood Insurance Study Report.

Supersedes/Amends: This Operating Guidance document does not supersede or amend any existing guidance relative to the non-regulatory products, but does supersede guidance on the FIS Report found in Appendix J of the FEMA Guidelines and Standards, entitled *Format and Specifications for Flood Insurance Study Reports*.

Attachments:

Attachment A – Operating Guidance for Creation of Risk MAP Products

Distribution List (electronic distribution only):

Office of the Assistant Administrator for Flood Insurance and Mitigation

Director, Risk Analysis Division

Director, Risk Reduction Division

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Regional Mitigation Division Directors

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FEMA

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Operating guidance documents provide best practices for the Federal Emergency Management Agency's (FEMA's) Risk MAP program. These guidance documents are intended to support current FEMA standards and facilitate effective and efficient implementation of these standards. However, nothing in Operating Guidance is mandatory, other than program standards that are defined elsewhere and reiterated in the operating guidance document. Alternate approaches that comply with program standards that effectively and efficiently support program objectives are also acceptable.

1. Guidance Overview

The purpose of this document is to provide guidance to the Flood Hazard Mapping Partners (Mapping Partners) on how to create the following Risk MAP Products shown in Figure 1:

o Flood Risk Report (Section 2.0)

o Flood Risk Map (Section 3.0)

o Discovery Report (Section 4.0)

o Flood Insurance Study Report (Section 5.0)

In order to facilitate creation of these products, templates have been created for Mapping Partners. These templates are considered a best practice. Faster, less expensive, and/or more effective solutions are permitted. The Flood Insurance Study (FIS) Report section is the exception to this rule, as this is a regulatory product with less flexibility.

Each section of this document provides an overview and general guidance for the specific Risk MAP product, which is then followed by more detailed guidance to create each product using the templates provided. Within each overview, the location of the product template and prototype(s) are provided. The templates are intended to serve as the starting point for the preparation of the final documents to be released as a part of ongoing Risk MAP studies. The templates are prepared as text replacement documents (replace as you type), and the prototypes serve as examples of how to emulate the desired products. The templates are provided as MS Word files for the Flood Risk Report, Discovery Report, and FIS Report. Whereas, the template for the Flood Risk Map (FRM) is provided as an ArcMap MXD file. The prototypes are all provided as PDF files.
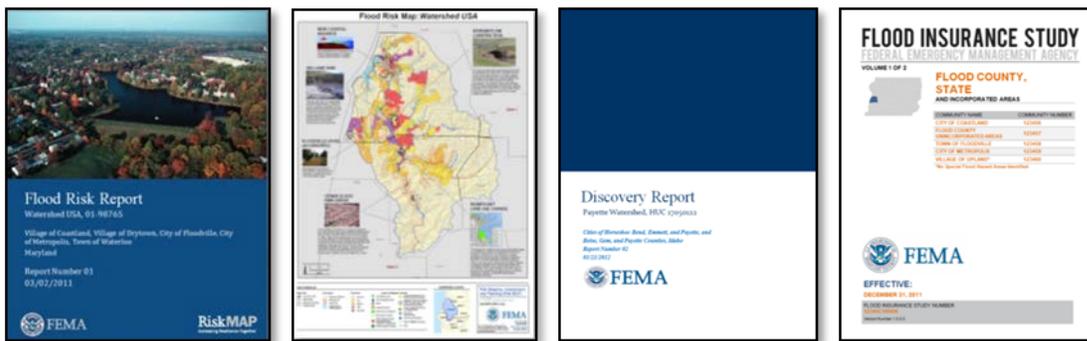
Flood Risk Report   Discovery Report   Flood Insurance Study

Figure 1: Risk MAP Products

2. Flood Risk Report

The Flood Risk Report (FRR) presents key risk analysis data for a particular project area.

2.1. Flood Risk Report Overview

The objective of this product is to describe and summarize the flood risk for a particular project area. The MS Word template for the FRR can be downloaded at http://www.fema.gov/plan/prevent/fhm/og_main.shtm.
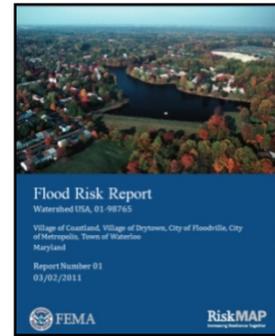
The template is prepared as a text replacement document (replace as you type); the Flood Risk Report preface includes generic instructions for use of the Flood Risk Report template. The prototype(s) serve as an example to emulate the desired product.

Once the Mapping Partner creates the Flood Risk Report, it is to be delivered to the community as a PDF and as a Word document with a hyperlinked Table of Contents. For purposes of this guidance, community may include a village, city, town, county, or tribal entity. The Mapping Partner should deliver both the PDF and the Word document as a part of the final deliverable to FEMA, for ease of future updates.

The Flood Risk Report contains largely standard language that will not be changed from study to study. However, the Mapping Partner is responsible for including community-specific data and assuring that the community flood risk is discernable throughout the report. Most of the data that will inform the tables and documentation in the FRR reside within the Flood Risk Database (FRD), which is detailed in Appendix O of the FEMA *Guidelines and Standards for Flood Risk Analysis and Mapping (G&S)*.

Detailed guidance for the preparation of the FRR is provided in Sections 2.2 through 2.6 of this guidance document. Each FRR should include the following sections:

- o Introduction
- o Risk Analysis
- o Flood Risk Analysis Results
- o Actions to Reduce Flood Risk
- o Acronyms and Definitions
- o Additional Resources
- o Data Used to Develop Flood Risk Products

In addition to a template that Mapping Partners may use to create the Flood Risk Report, a prototype has also been made available for Mapping Partner reference. The template and prototype may be found at http://www.fema.gov/plan/prevent/fhm/og_main.shtm.

2.2. Report Cover

The FRR report cover page is two-sided; it includes the standard cover with title block on the front and tables on the back to list the names of all jurisdictions included in the flood risk project as shown in Figure 2. If there are less than eight (8) jurisdictions included, they may also be listed on the cover (as shown on the prototype). If more than seven (7) jurisdictions are included, the name of the flood risk project area should be listed on the front and the individual jurisdictions listed individually on the back of the cover page, as shown in on Page i of the template.
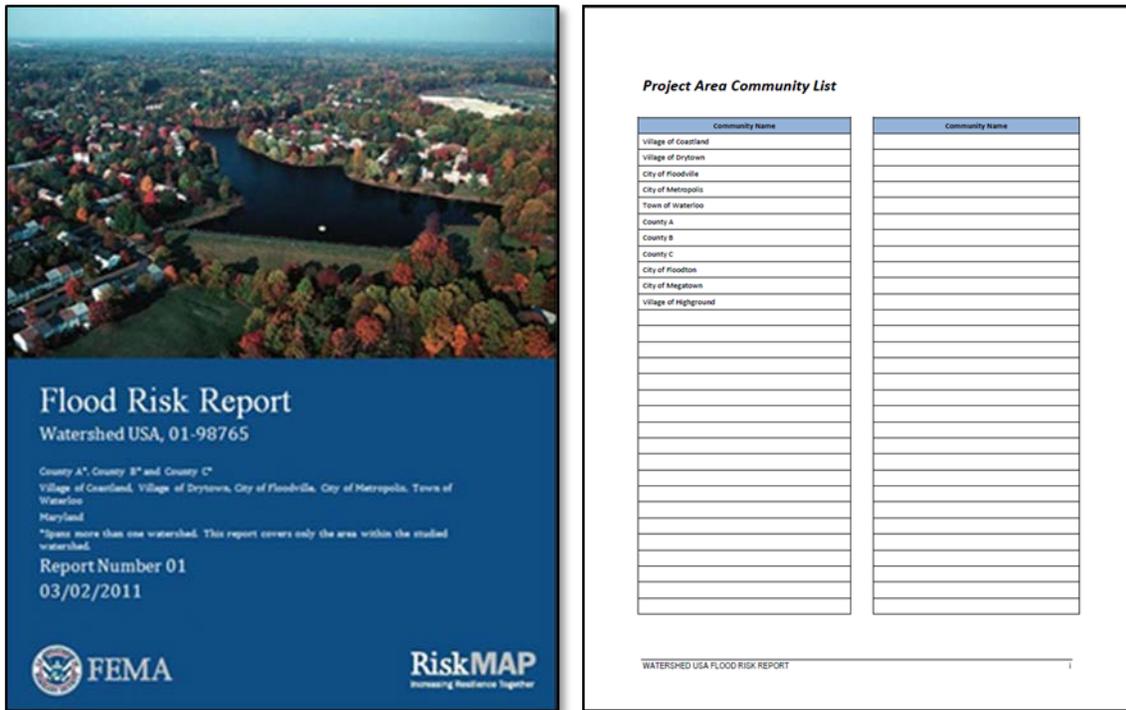
Figure 2: Flood Risk Report Cover

Further instruction for the report cover are as follows:

o Describe the project area beginning with the name of the project area. If this is a watershed project, the HUC-8 sub-basin name and code should be entered. The naming convention should be in agreement with the Watershed Boundary Dataset (WBD) for compatability as future watersheds are developed, for instance – Lower North Canadian River (11100302).

◆ Next, list the counties within the project area in alphabetical order. Then, list the independent communities and incorporated jurisdictions within the project area. Finally, add the State(s).

o In the case of a watershed FRR, if a county or incorporated area spans more than one watershed, place an asterisk after the name of the county or incorporated area to indicate a multi-watershed jurisdiction. If the FRR does not cover multiple HUC-8 watersheds, remove the asterisk and the following reference that describes inclusion of more than one watershed.

o Update the report number by increasing the number sequentially, by a single integer beginning with 001, each time the FRR is updated for the project area.

o Update the report date to reflect the date of delivery of the FRR.

2.3. Preface

The Preface is used to introduce the Mapping Partner to the FRR. Instructions to the Mapping Partner for using the template are included in bold italized text. These instructions should be deleted upon completion of the FRR.

2.4. Table of Contents

The Table of Contents lists all of the sections and subsections included in the FRR. It is recommended that the table of contents heading be Cambria, Bold, 14 pt., with a color of Blue (RGB: 54, 95, 145). It is recommended that the table of contents listings be Calibri, 11 pt. with a color of Automatic/Black (RGB: 0, 0, 0). Italicized text is used to denote sections that correspond to enhanced Flood Risk datasets or type of project area. The Table of Contents is setup for auto-population; therefore, the Mapping Partner should auto-populate upon completion of the product by selecting "Update Field" within the Table of Contents right-click menu.

For the risk analysis results presented in community pages in Section 3, the name of the flood risk project area should be updated. The sub-basin name and code should be entered as applicable. In Section 3, Flood Risk Analysis Results, the jurisdictional names should be updated. The community and tribal entity summaries need to be updated with their respective names and be listed in alphabetical order. The county summaries should be listed in ascending alphabetical order by name following the community and tribal areas. A numerical sub heading should be entered for each community summary heading, beginning with 3.# for the first corporate area summary and advancing the number after the decimal for each subsequent listing until the last county summary entry is reached.

2.5. General Content

Most of the report is standard language and will not require updating. All sections, tables, and figures in the FRR prototype should be included in the actual FRR unless it is boilerplate language shown as italics. Standard language that is shown in italics denotes variable text that will either be removed (because it does not apply to the specific Flood Risk Study) or kept and changed to non-italics. When the Mapping Partner removes large sections of variable text, they should be careful to ensure that photographs and captions in the margins are re-positioned as needed and the graphic is kept nearby to the relevant section.

The FRD is referenced throughout the FRR. Flood risk datasets and enhancements are housed in the FRD. The FRR includes text encouraging end users of these data to view the FRD data in a native GIS environment, as this information can be utilized as a stand-alone dataset or used in conjunction with other data layers at the user's discretion. The FRR is not intended to present visualizations of the data housed in the FRD.

2.5.1. General Format

It is recommended that the body of the FRR be Calibri, 11 pt., left aligned, single space with one line between paragraphs. Heading 1 (e.g., 2. Risk Analysis) is Calibri, 18 pt., Bold, left aligned. Heading 2 (e.g., 1.2 Uses of This Report) is Calibri, 12 pt., left aligned. Update the footer with the project area name and status of report (i.e., draft versus final).

Information obtained from web pages should cite the link to at least the top web page (http://www.fema.gov). Avoid referencing specific links and only use more general links; this will decrease the occurrence of links becoming nonfunctional over time.

The information and photographs in the sidebars of the document are intended to be standard and should not be changed.

2.6. Section-Specific Guidance

Guidance on preparation of content for Sections 1 through 7 of the FRR is as follows:

o **Sections 1 through 2.2**

These sections use standard language in the form of a narrative. This information should not be changed. Language is only modified where text replacement is requested in the MS Word document template.

o **Section 2.2.1: Changes Since Last FIRM**

This section uses standard language to describe the Changes Since Last FIRM dataset.

Italic text in this section references enhanced datasets. Unless enhanced analysis is being performed as part of the study, these sections should be removed. If enhanced analysis is being conducted, the italicized sections should remain in the report and be changed to standard non-italicized text. The language in these sections is also standard and will normally not be changed.

o **Section 2.2.2: Flood Depth and Analysis Grids**

This section uses standard language to describe the various depth and analysis rasters created as part of a study. Italic text in this section references enhanced datasets. Unless the datasets are ordered as part of the study, these sections should be removed. If any or all of the enhanced datasets are being provided, the italicized sections should remain in the report and be changed to standard non-italicized text. The language in these sections is also standard and will normally not be changed.

o **Section 2.2.3: Estimated Flood Loss Information**

This section uses standard language to describe the usefulness of Hazus (a free risk assessment software application developed by FEMA) in flood loss estimations and the characteristics of its various outputs.

Italic text in this section references enhanced datasets. Unless the datasets are ordered as part of the flood risk project, these sections should be removed. If any or all of the enhanced datasets are being provided, the italicized sections should remain in the report and be changed to standard non-italicized text. The language in these sections is also standard and will normally not be changed.

o **Section 2.2.4: Areas of Mitigation Interest (AoMIs)**

This section uses standard language to describe the various areas of mitigation interest and how they are useful in mitigation planning. AoMIs is an enhanced dataset and shall not be included unless it has been ordered as part of the project. Italic text in this section references AoMIs data. If any or all of the enhanced datasets are being provided, the italicized sections should remain in the report and be changed to standard non-italicized text. The language in this section is also standard and will normally not be changed.

o **Section 3: Flood Risk Analysis Results**

This section uses standard language to give a summary of the types of results of the Flood Risk Project. This information will normally not be changed.

o **Section 3.1: Flood Risk Map**

The Flood Risk Map will be created separately. Guidance for the creation of the Flood Risk Map can be found in this guidance document in Section 3.0, Flood Risk Map. The Flood Risk Map graphic is inserted into this section and should be kept on a page by itself. The map should be sized to fit the page.

o **Section 3.2: Flood Risk Project Area Summary**

This section uses standard language to communicate flood risk within the project area. A description of the project area should be added.

o **Section 3.2.1: Overview**

The Flood Risk Project Area Summary Overview table captures metrics for each community within the project area. Please refer to Appendix O of the FEMA *G&S* for information needed to populate the table. What follows is additional information regarding the table:

♦ The heading must be changed to reflect the name of the flood risk project area. In the text, the name of the state(s) that the flood risk project area represents must replace the (insert state).

♦ The sub-basin name and code should be entered as applicable. The naming convention should be in agreement with the WBD source data for compatibility as sub-basins are modified (e.g., Lower North Canadian River [11100302])

♦ List the unincorporated area first for the "Community Name" column.

♦ A numerical sub heading should be entered for each community summary heading, beginning with 3.# for the first corporate area summary and advancing the number after the decimal for each subsequent listing until the last county summary entry is reached. The corresponding CID for each community (county, community, or Tribal entity) summary needs to be added after their respective names as they appear in the community listing or inside the report cover.

♦ If a project area is not a watershed level study, revise the "Percent of Population in Watershed" and "Percent of Land Area in Watershed" headings.

♦ Where percentages are calculated, enter percent by number but do not include percent symbol.

♦ Where applicable, use a comma for numbers over 999 (to separate hundreds from thousands).

- ♦ For jurisdictions that participate in the NFIP Community Rating System (CRS), enter their rating in the "CRS Rating" column; otherwise, use a "10" for not applicable.

- o **Section 3.2.2: Flood Risk Datasets**

  - ♦ Populate the CSLF table using values contained in the FRD. The areas from which to derive this information are included in Appendix O of the FEMA *G&S*.

  - ♦ Flood Depth and Analysis rasters are housed in the FRD. They are not included as a feature of the FRR. End users of these data are encouraged to view them in a GIS environment. This information can be utilized as a standalone dataset or used in conjunction with other data layers at the user's discretion. The FRR is not intended to present visualizations of the data housed in the FRD.

  - ♦ Update the Hazus data on exposure and estimated loss for the project area from values contained in the FRD. The information required is listed in Appendix O of the FEMA *G&S*.

- o **Section 3.3: Communities**

  This section shall be used to provide a high-level summary of the communities that comprise the Flood Risk Project area. This section will also introduce the following sections that provide community-specific flood risk data.

- o **Section 3.3.x: Community Summaries**

  A new section will need to be created for each jurisdiction within the project area. For each new section created, a section number should be assigned. The numbering will begin with 3.3.1, and for each jurisdiction added, the number after the second decimal will be increased by one whole number. Each jurisdiction should have its corresponding CID listed in parenthesis after its respective name in the section title.

  The Overview table is populated with the same data used in the Project Area Summary table in Section 3.2. For the purposes of this section, it is populated only with the data relevant to the community described by the particular section. Instructions for the data entered below the Overview table are provided below:

  - ♦ Update the name of the Mitigation Plan that the jurisdiction has adopted. Identify when the community has an expired mitigation plan.

  - ♦ Update the number of Past Federal Disaster Declarations for flooding within the project area.

- Update NFIP Policy Coverage information for the project area.

- Update NFIP-recognized repetitive loss properties information for the project area. Indicate the number of commercial and residential properties within the total.

- Update NFIP-recognized severe repetitive loss properties information for the project area. Indicate the number of commercial and residential properties within the total.

Information needed to populate the bulleted text above is available in the FRD in Appendix O of the FEMA *G&S*.

- Populate the Changes Since Last FIRM table using values contained in the FRD. The areas from which to derive this information are listed in Appendix O of the FEMA *G&S*.

- Update the Hazus Estimated Loss Information for the project each community from values contained in the FRD. The information required is listed in Appendix O of the FEMA *G&S*.

- Update the Hazus Estimated Loss Information for the project each community from values contained in the FRD and apply the rounding factors listed in Appendix O of the FEMA *G&S*.

- If the AoMI dataset is ordered for the study, update the italicized text as appropriate and then remove the italics, summarizing the conditions that affect flooding in the study region. This section is intended to be a user-defined narrative and does not employ standard language. No italicized text should exist in the body of the delivered FRR. Update the table in this section using the values found in Appendix O of the FEMA *G&S*.

- If AoMI is not ordered, remove this section from the report.

o **Section 4: Actions to Reduce Flood Risk**

This section uses standard language to give an introduction about various ways to reduce flood risk. This information should not be changed.

o **Section 4.1: Types of Mitigation Actions**

This section uses standard language to discuss the various mitigation actions that stakeholders can take following the assessment of flood risk. This information should not be changed.

o **Section 4.2: Identifying Specific Actions for your Community**

This section uses standard language to outline examples of methodologies that communities can employ to identify what actions are appropriate for that community. This information should not be changed.

o **Section 4.3: Mitigation Programs and Assistance**

This section uses standard language to describe the various funding sources available to communities that wish to take further mitigation action. This standard language should not be changed. If an AoMIs dataset is ordered for the study, Mapping Partners should update the italicized text as appropriate and then remove the italics, summarizing the conditions that affect flooding in the study region. This section is intended to be a user-defined narrative and does not employ standard language. No italicized text should exist in the body of the delivered FRR.

o **Section 5: Acronyms and Definitions**

This section lists acronyms and definitions that pertain to the standard language in the FRR. Because the language is standard throughout, changes to the content of this section will most likely not need to be made. Should a change be warranted, maintain alphabetical order of listings and keep within the same format used in the section being updated.

o **Section 6: Additional Resources**

This section lists supplemental resources that a community can use to learn more about the topics being discussed in this report.

Should the need arise to add to the list of FEMA publications, follow the following format and list alphabetically in ascending order:

[Author], [Year of publication]. [Title], FEMA[Publication #]. [City of Publication], [State of Publication], [Month and Year of publication].

All other resources should be listed alphabetically by title and given a brief description.

o **Section 7: Data Used to Develop Flood Risk Products**

This section will include paragraphs of free-form text or a table describing the data provided by the local/State stakeholders in the production of this flood risk project.

3. Flood Risk Map (FRM)

The FRM serves as the graphical summation of project level findings and is prepared on a project area basis with community-specific details shown.
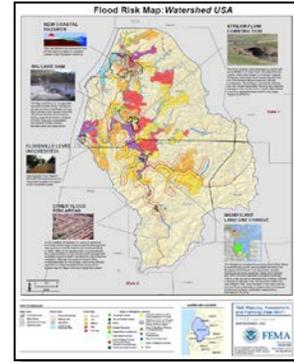
3.1. Flood Risk Map Overview

The FRM is developed from both nationally available data and data that resides within the FRD. The objective of this product is to provide a graphical summary of the flood risk information in a single map. Therefore, map developers will need to decide how much data can effectively be shown on the FRM. These choices will include both which datasets to show and how much data within a dataset should be shown. While this document provides general guidelines to help with these choices, each project area may have unique considerations associated with satisfying the objective of graphically summarizing the flood risk within the study area. Full specifications for the preparation of the FRM are provided in Appendix O of the FEMA *G&S*.

The product will be available and delivered as a PDF and a hardcopy for community officials on an Arch E (36" x 48") sized sheet. A prototype of the FRM for a watershed study area is available at http://www.fema.gov/plan/prevent/fhm/og_main.shtm.

The project file for the FRM and a full resolution example PDF FRM can be downloaded at http://www.fema.gov/plan/prevent/fhm/og_main.shtm. The template is provided as an ArcMap MXD and MXT files in version 9.3, and as an ArcMap MXD in version 9.2 The MXD file has placeholders and symbology set up for all map data elements, font styles, and suggested call-out examples for FRM users to follow. All elements of these call-outs (font size and color, graphic size, placement on maps, etc.) should be adjusted to support the overall objective of graphically summarizing the flood risk information. This guidance assumes GIS proficiency. It is written with instructions for using ESRI software, but Mapping Partners are free to use other GIS platforms at their discretion.

3.2. Flood Risk Map Guidance

3.2.1. Page Size

Appendix O of the FEMA *G&S* has the page size specifications. The following is additional information regarding the dimensions.

o **North Arrow, Scale border**

 ♦ Height 4" x Width 1.5"

o **Legend**

 ♦ Portrait: Height 7" x Width 19.5"

 ♦ Landscape: Height 7" x Width 31.5"

o **Project Locator**

 ♦ Portrait: Height 7" x Width 6"

 ♦ Landscape: Height 7" x Width 6"

o **Title Block, FEMA Logo border**

 ♦ Portrait: Height 7" x Width 7.5"

 ♦ Landscape: Height 7" x Width 7.5"

o **FEMA Logo**

 ♦ Portrait: Height 2.25" x Width 6.3"

 ♦ Landscape: Height 2.25" x Width 6.3"

3.2.2. Map Layout and Dimensions

The FRM panel should have dimensions that make the map readable. Suggested dimensions are depicted in Figure 3 and Figure 4. A Portrait or Landscape layout will be chosen by the Mapping Partner to best fit the project area based on the polygon in S_FRD_Proj_Ar. It is recommended that the map panel frame outline be 1 Pt. with a color of black (RGB: 0,0,0).
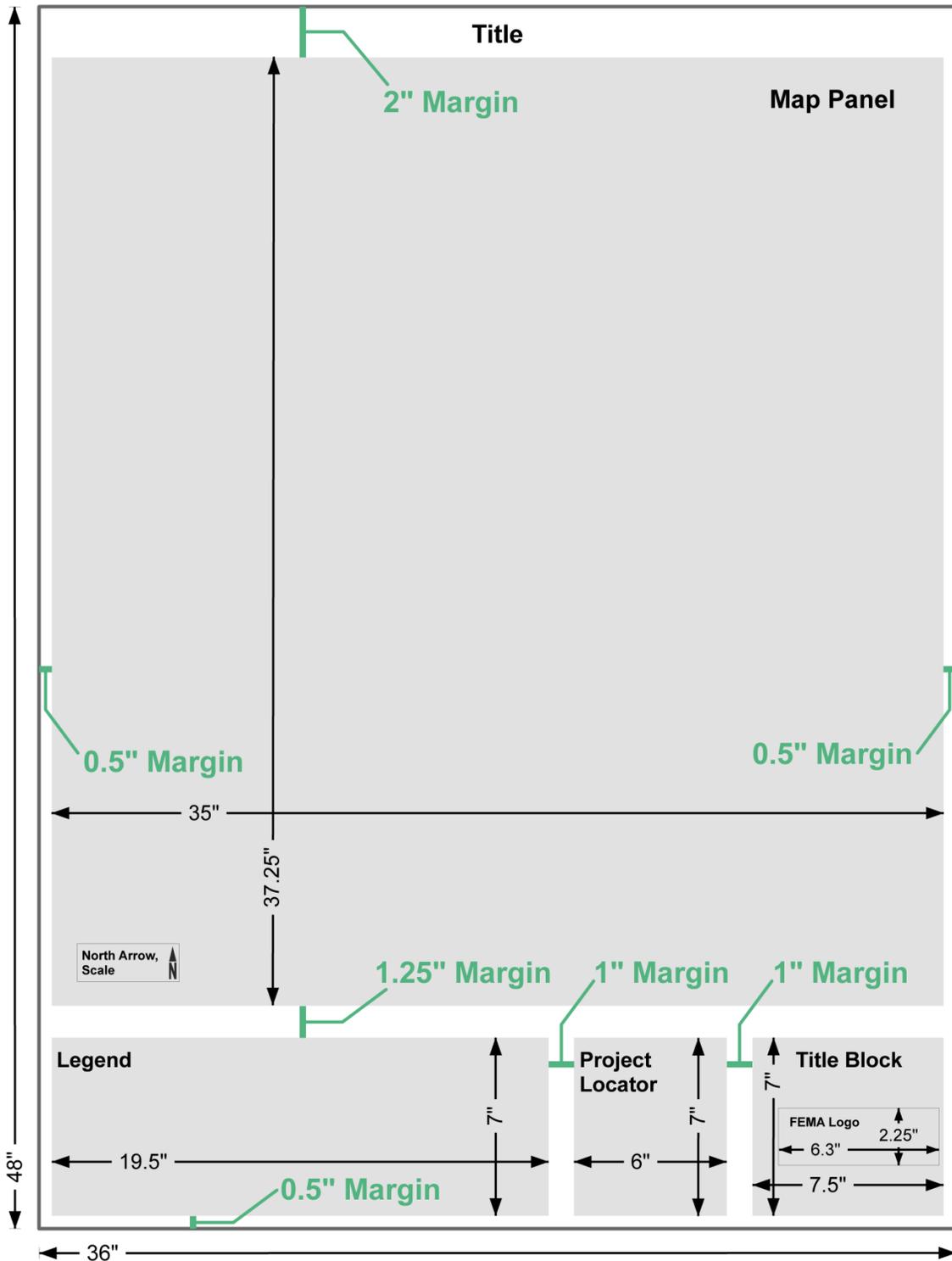
Figure 3: Map Dimensions (Portrait)
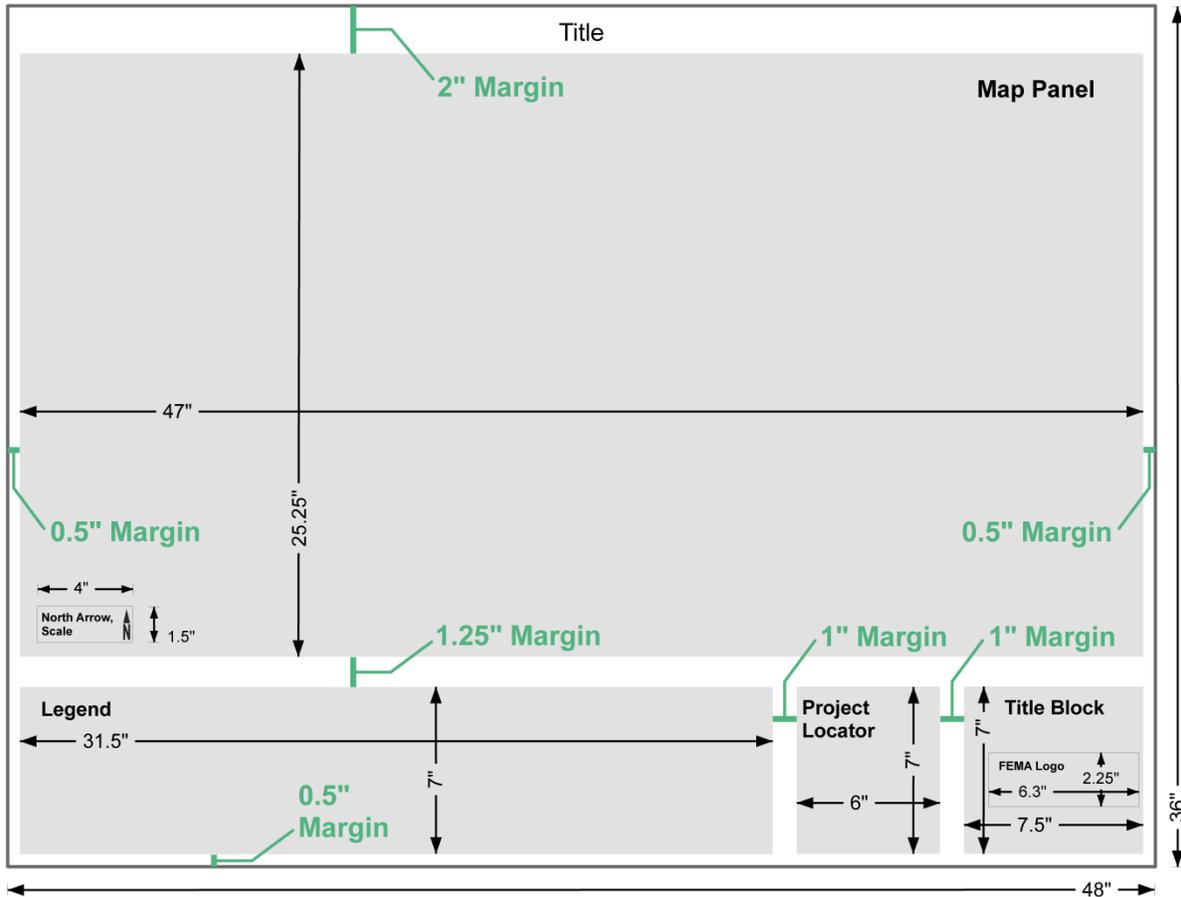
Figure 4:   Map Dimensions (Landscape)

3.2.3. Map Title

It is recommended that the first part of the map title be Arial, Bold, 82 pt., aligned center with a color of black (RGB: 0,0,0). For the second part of the map title (the watershed or project name) it is recommended that it be Arial, Bold, Italic, 82 pt., aligned center with a color of black (RGB: 0,0,0). Alternate fonts that emulate these recommendations may also be used.

3.2.4. Legend (Map Symbology)

It is recommended that the legend title be Franklin Gothic Medium, 28 pt., aligned left with a color of black (RGB: 0,0,0). It is recommended that the legend category title be Franklin Gothic Medium, 24 pt., aligned center or left with a color of black (RGB: 0,0,0). It is recommended that the legend item label be Franklin Gothic Medium, 18 pt., aligned left with a color of black (RGB: 0,0,0).   Alternate fonts that emulate these recommendations may also be used.

3.2.5. Project Locator

The diagram shall be located within the 'Legend, Panel Locator' border on the bottom of the FRM. See Appendix O of the FEMA *G&S* for additional specifications.

- ♦ If applicable, the watersheds immediately adjacent (share a border) to the studied watershed shall be numbered using their eight (8) digit HUC; the font shall be Arial CAPS; and its size shall vary with space constraints and the size of the diagram.

- ♦ If the study is not a sub-basin study, adjacent counties may be shown and labeled.

Recommended fonts are described in Table 1.

Table 1: Project Locator

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
PROJECT LOCATOR	Title	28 Pt., Franklin Gothic Medium, Aligned center, Black (0, 0, 0), CAPS
12345678	Project Area or Watershed Label	12-22 Pt., Arial Bold, Aligned center, Blue (0, 77, 168), 2 Pt. White Halo
12345678	Adjacent Watershed or County Label	10-14 Pt., Arial Bold, Italic, Aligned center, Black (0, 0, 0), 2 Pt. White Halo
State	State Label	12-22 Pt., Arial Bold, Italic, Aligned center, Brown (115, 0, 0), 2 Pt. White Halo, CLC
Lake Erie	Major Body of Water	10-14 Pt., Arial, Italic, Aligned center., Blue (0, 92, 230), CLC
	Project Area	Grey (225, 225, 225) Outline, Line weight 3 Pt., Grey (104, 104, 104)
	State	Yellow (255, 255, 173) Top Line, Line weight 2 Pt., Brown (115, 0, 0), Dashing [6pt- 4pt- 2pt- 4pt- 2pt- 4pt] Outline, Line weight 3 Pt., Grey (170, 170, 170) 50 percent Transparency
	Surrounding Watersheds or Counties	Outline, Line weight 3 Pt., Grey (204, 204, 204)
	Major Body of Water	Blue (190, 232, 255) Outline, Line weight 0.4 Pt., Blue (0, 197, 255)
————	Leader line	Line weight 2.0 Pt, Black
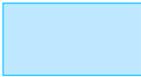
* Alternate fonts that emulate these recommendations may also be used

3.2.6. Title Block

The title block should contain the name of the project area (and HUC-8 code if applicable), and the release date. The project area name should match the FRR and the data in the field PROJ_NM in the S_FRD_Proj_Ar feature class. The HUC-8 code can go after the project name if the study is watershed based, the HUC-8 code can be found in the HUC8_CODE field in the S_FRD_Proj_Ar feature class. Table 2 provides recommendations for the title block features.

Table 2: Title Block Features

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
▬▬▬▬▬	Title Block Neatline	3 Pt. Black (0,0,0)
Risk Mapping, Assessment, and Planning (Risk MAP)	Risk MAP Header	40 Pt. Franklin Gothic Medium Cond, Blue (0, 82, 171), Aligned Left, CAPS
▬▬▬	Dividing Line	3 Pt. Black (0,0,0) Horizontal Line 6.9" Wide
FRMFLOOD RISK MAP	FRM Header	56 Pt. Franklin Gothic Medium, (168, 194, 194), Aligned Left, CAPS 30 Pt. Franklin Gothic Medium, Grey (168, 194, 194) , Aligned Left, CAPS
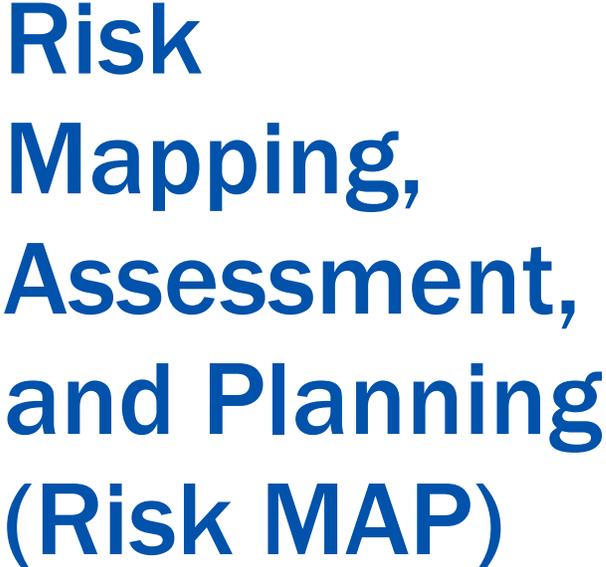
Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
FEMA (Department of Homeland Security Seal)	Department of Homeland Security Seal Place this seal on the right side of the title block	Width: 6.3" Height: 2.25"
PROJECT NAME, HUC-8 Code	Project Name text (HUC-8 Code if applicable). Place this text below FRM Header.	28 Pt. Arial, Aligned Left, Black CAPS
RELEASE DATE 12/31/9999	Release date text. Place this text in the bottom right corner of the title block.	24 Pt. Franklin Gothic Medium Cond, Blue (0,82,171), Aligned Right, CAPS 26 Pt. Franklin Gothic Medium, Black, Aligned Right, CAPS
For more information on the data used for this map, please consult the Project Name Flood Risk Database and Flood Risk Report.	This note identifies that the Flood Risk Map corresponds to data in the Flood Risk Database and the Flood risk report. Replace "Watershed" text with the name of the watershed or project area studied. Place this note in the bottom left corner of the title block.	16 Pt. Arial, Aligned Left, Black CAPS

* Alternate fonts that emulate these recommendations may also be used

3.2.7. Scale and North Arrow

The extent of the FRM is to be determined by the Mapping Partner. The initial extent is based on the project area (S_FRD_Proj_Ar); yet allowing room for supporting data, extra room within the layout for callout boxes, and then scaled to fit appropriately. The map should also have a north arrow, scale bar, and scale text. Table 3 gives a list of recommendations for the north arrow and scale features.

Table 3: North Arrow and Scale Features

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
	North arrow; can be ESRI standard or equivalent Place to the left of scale bar.	Line weight 0.72 Pt. Width 0.2219" Height 0.9819" Black
	Top and Bottom line	3 Pt. Black (0,0,0) **Horizontal Line** 4" Wide
	The FRM scale bar includes references to miles. Note that this scale bar is not shown to actual size; can be ESRI standard or equivalent. Place within Map Panel frame in the bottom left, center or right. Mapping Partner shall make the scale bar length equal to a whole number, and the dividers set at half or thirds of the entire scale bar length.	Line weight 1.0 Pt. **(Scale Bar [Miles])** Length: 5", Black **(Scale Bar Labels)** 22 Pt. Arial, Black CAPS

* Alternate fonts that emulate these recommendations may also be used

3.2.8. Page Content

The following sections describe the extent of the mapping and overprint hierarchies and graphic recommendations for the body of the map.

3.2.8.1. Geographic Extent

The FRM will most often be prepared on a HUC-8 sub-basin basis. This follows FEMA's watershed based approach to represent the impacts of floods in a natural flow regime rather than in relation to political boundaries. Creating the FRM based on a sub-basin level means that all stakeholders within the watershed are involved.

3.2.8.2. Map Body

The body of the FRM is comprised of base data, flood data, flood risk data, and areas of mitigation interest. Overprint hierarchies and graphic recommendations are provided in the tables below, with separate paragraphs emphasizing information of particular importance. The graphic recommendations in Tables 4 through 6 provide cartographic hierarchies for map body features, as well as examples and feature descriptions, including line weights, fonts, hatching, and RGB color identities.

Overprinting

Where a text overprint cannot be avoided within the map body, it is suggested that the hierarchies listed in Table 4 be followed.

Hierarchy for Labels and Map Features

Table 4 illustrates the order of priority (rank) of the various items depicted in the map body. These lists shall be used as a guideline to resolve overprinting issues for labels and map features. The items are listed in rank from most important to least important. Those items with a lower numbered rank (e.g., 1) may be printed on top of higher numbered rank (e.g., 3) items.

Table 4: Overprinting Hierarchy

Rank	Item
Labels	
1	Rivers and Streams
2	Jurisdiction Labels
3	Transportation Features
Standard Map Elements	
1	Areas of Mitigation Interest
2	Callout Lines
3	Hydraulic Features
4	Restudy Area
5	New SFHA
6	HUC-8 Sub-basin Line
7	Coastal Surge Influenced Area
8	Corporate Limits
9	River and Stream Features
10	Lakes and Waterbody Areas
11	Transportation Features
12	Flood Risk Areas
13	Hillshade
14	HUC-8 Sub-basin Area
15	HUC-10 Watershed Area
16	County Areas
Boundaries	
1	HUC-8 Sub-basin Boundary
2	Community Boundary
3	County Boundary
4	State Boundary

Leader Lines

Labels may be leadered to a feature using a plain leader if space does not permit the label to be within or adjacent to the feature, using line weight 1.0 pt., with the color black (RGB: 0,0,0).

3.3. Map Elements

The FRM will include the following elements: Base Data, Flood Data, Flood Risk Data, and Areas of Mitigation Interest. Guidance for specific elements of the FRM template (excluding the call-outs, which can be adjusted as needed) is provided in the following sections. Not all map elements must be included with every FRM, and only significant map elements should be shown on the FRM. Cartographic abstraction is acceptable to fit multiple elements into a small geographic area, and the FRM should be designed to show the user the type and extent of data contained within the FRD.

3.3.1. Base Data

It should be noted that any outside data source must be imported into the FRD. Also, other data sources are permissible, e.g. S_Transport_Ln for transportation. When boundaries of different types are coincident with each other or with base map features, the Mapping Partner shall show only one. Priorities are defined in the Hierarchy for Labels and Map Features subsection in Section 3.2.8.2. Jurisdiction boundary and label recommendations are provided in Table 5.

o **Corporate Limits**

   ♦ Data source: FIRM database (S_Pol_Ar if from FIRM Database). Can come from S_FRD_Pol_Ar and S_Carto_Ar if needed.

   ♦ Data used to: identify key geographic areas within project area

   ♦ Data considerations: Should only include communities reported in the FRR, including any significant large land areas such as military bases, national parks or forests, or other features that might influence where floodplain mapping has been performed.

o **Major Roads**

   ♦ Data source: National dataset from ESRI Streetmap Data. See http://www.esri.com/ for details.

   ♦ Data used to: identify key transportation routes within project area

   ♦ Data considerations: May need to include selected secondary roads when other datasets are located in close proximity, such as floodprone bridges or other stream

flow constrictions. Recommendations for the depiction of transportation features on base data features are provided in Table 5.

- o **State Boundaries**

  - ♦ Data source: National dataset from ESRI Streetmap Data. See http://www.esri.com/ for details.

  - ♦ Data used to: identify key geographic areas within project area

  - ♦ Data considerations: Source data needs to be of sufficient detail to match up with more detailed local community boundary data.

- o **USA Watershed Boundaries**

  - ♦ Data source: Watershed Boundary Dataset (WBD). The WBD is a companion dataset to the NHD. The USGS and NRCS update and maintain the WBD as needed. FEMA uses the HUC boundaries in the WBD to prioritize projects based on multiple criteria. The boundaries delivered should be those HUCs from the WBD used for the most recent FEMA prioritization.

  - ♦ Data used to: identify watershed boundaries within project area and adjacent areas

  - ♦ Data considerations: For project areas that do not follow watershed boundaries (coastal, levee, etc.), be sure to clearly show boundary location in relation to project area boundary.

- o **Project Area Boundary**

  - ♦ Data source: FEMA Regions (Final Discovery Report for Project)

  - ♦ Data used to: identify the Risk MAP project area boundary

  - ♦ Data considerations: should line up with "source" data used to define the project area (watershed boundaries, community boundaries, FIRM Panels, etc.).

- o **Shaded Relief**
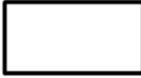
  - ♦ Data source: Hillshade raster created from the DEM for the watershed

  - ♦ Data used to: topographic relief adds cartographic realism and depth to map

  - ♦ Data considerations: The watershed hillshade should be shown on the Flood Risk Map to convey a sense of the watershed's overall topographic relief. The cartographic recommendations for the hillshade are shown in Table 5.

o **Project Area Mask**

♦ Data source: Created from Project Area Boundary clipped out of larger background dataset that extends outside of the map extent, such as a subset of the national HUC 8 sub-basin data from NRCS at: http://www.ncgc.nrcs.usda.gov/.

♦ Data used to: grey out data not in study area

♦ Data considerations: May need to be modified in coastal areas when background dataset not clipped at coastline.

Table 5: Base Data Features

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
		Boundaries
	Counties (within Watershed or Project Area)	Top Line, Line weight 0.4 Pt., Black, Dashing [6pt- 1pt- 3pt- 1pt] Bottom Line, Line weight 3 Pt., Grey (170, 170, 170)
	Counties (outside Watershed or Project Area)	Grey (225, 225, 225) Top Line, Line weight 0.4 Pt., Black, Dashing [6pt- 1pt- 3pt- 1pt] Outline, Line weight 3 Pt., Blue (170, 170, 170) 50 Percent Transparency
	Corporate Limits (within Watershed or Project Area)	Outline, Line weight 1.5 Pt., Black
	Corporate Limits (outside Watershed or Project Area)	Grey (204, 204, 204) Outline, Line weight 1.5 Pt., Grey (104, 104, 104) 50 Percent Transparency
	HUC-8 Sub-basin	Outline, Line weight 3 Pt., Blue (0, 77, 168)
	HUC-10 Watershed	Outline, Line weight 1 Pt., Grey (104, 104, 104) 20 Percent Transparency
Flood County	County Label	8-14 Pt. Times New Roman Bold, Italic, Aligned center., Black, Centered; 1.0 Pt. Halo, White, CLC
City, Village, or Other	Community Area Label	8-14 Pt. Times New Roman Bold, Black, Centered; 1.0 Pt. Halo, White, CLC

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
Fort Bragg Military Base	Area Label	14 Pt. Times New Roman, Bold, Black, Centered 1.0 Pt. White Halo, CLC
		Transportation
	Interstates	Top Line, line weight 1 Pt., White Bottom Line, line weight 2 Pt., Black
	Interstate Highway, can be ESRI standard or equivalent	Interstate Marker – 24 Pt., Black Interstate Marker – 24 Pt., Blue (0, 0, 255) Interstate Marker – 24 Pt., Red (255, 0, 0) 7 Pt. Arial Bold Narrow, White, CAPS
	U.S. Highway Symbol, can be ESRI standard or equivalent	Standard U.S. Route Shield Size 0.200" x 0.200" to 0.400" x 0.480" 8 Pt. Arial Bold Narrow, Black, 0.75 Pt. White Halo, CAPS Line weight 0.72 Pt., Black
	State Highway Symbol, can be ESRI standard or equivalent	Circle Diameter 0.200" to 0.280" 8 Pt. Arial Bold Narrow, Black, 0.75 White Halo, CAPS Line weight 0.72 Pt., Black
	County Highway Symbol (optional), can be ESRI standard or equivalent	Rectangle Size .150" x .250" to 0.300" x 0.400" 8 Pt. Arial Bold Narrow, Black, 0.75 Pt. White Halo, CAPS Line weight 0.72 Pt., Black
	Major Roads	Top Line, Line weight 1 Pt., Yellow (255, 255, 190) Bottom Line, Line weight 2 Pt., Red (255, 0, 0)
SPRING CREEK LANE	Major Roads Label (optional)	8 Pt., Arial Bold, Black, Aligned left, 0.75 Pt. White Halo, CAPS
Dulles International Airport	Major Airport	12 Pt., Calibri Bold, Aligned center, Grey (78, 78, 78), 1 Pt. White Halo, CLC
Floodville Community Airport	Airport (optional)	8 Pt., Calibri Bold, Aligned center, Grey (78, 78, 78), 1 Pt. White Halo, CLC
		Hydraulic Structures
--------------	Levees, (or other flood control features)	Top Line, Black, Line weight 1.5 Pt., Dashing [2pt - 1pt] Bottom Line, Line weight 2 Pt., White, Dashing [2pt - 1pt]
●	Dams	Circle Marker, 0.06" Diameter, Black Outline, Line weight 0.1 Pt., White (255, 255, 255)

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
●	Significant Hydraulic Structures	Top Circle Marker, 0.05" Diameter, (255, 0, 197) Bottom Circle Marker, 0.06" Diameter, Black Outline, Line weight 0.1 Pt., White (255, 255, 255)
STRUCTURE NAME	Structures Label (optional)	8 Pt., Arial Bold, Black, Aligned left, 0.75 Pt. White Halo, CAPS
		Hillshade
Value High : 255 Low : 0	Watershed Hillshade	Black to White color ramp (High : 254, Low : 0) Hillshade Effect : Z:1 Stretch Type: Standard Deviations, n:2 30 Percent Transparency

* Alternate fonts that emulate these recommendations may also be used

Hydraulic Structures

All levees (or other flood control features) stored within the S_Carto_Ln feature class in the FRD should be shown on the FRM. All dams or other significant hydraulic structure stored in the FRD should be shown on the FRM. A label may be placed for the structure(s) if the map would be enhanced by doing so. The hydraulic structures can be stored as a point, line, or polygon in their respective feature classes (i.e., S_Carto_Ar, S_Carto_Ln or S_Carto_Pt). Recommendations for hydraulic structures are presented in Table 5.

3.3.2. Flood Data

Recommendations for hydrographic features are presented in Table 6.

o **Rivers and Streams**

  ♦ Data source: National dataset from ESRI Streetmap Data or NHD. See http://www.esri.com/ for details.

  ♦ Data used to: identify key hydrologic features within project area

  ♦ Data considerations: Use care not to confuse this dataset with any Regulatory or Flood Risk Datasets.

o **Restudy Area**

  ♦ Data source: buffer around streams or areas where new flood studies are being conducted

  ♦ Data used to: identify areas to be studied during Risk MAP project

- Data considerations: Shape of this buffer should consider how to clearly show where new studies are being conducted and may need to be modified to avoid other map layers, such as new SFHA.

o **New SFHA**

- Data source: produced during project (from S_Fld_Haz_Ar feature class in the FIRM Database). This is inserted into S_Carto_Ar.

- Data used to: identify areas that have been newly studied and processed.

- Data considerations: On early draft FRMs, this data may not be available.

o **Coastal Surge Influenced Area**

- Data source: produced during project (from S_Fld_Haz_Ar feature class in the FIRM Database).

- Data used to: identify areas influenced by coastal studies.

- Data considerations: Product only available as a possible enhanced Flood Risk dataset; on early draft FRMs, this data may not be available.

Table 6: Flood Data Features: Hydrographic Features

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
	River, Stream, or Other Hydrographic Feature	Line weight 1 Pt., Blue (151, 219, 242)
	Lake	Blue (151, 219, 242) Outline, Line weight 0.4 Pt., Blue (64, 101, 235) 50 Percent Transparency
Missouri Creek	Name of River, Stream, or Other Hydrographic Feature	5-10 Pt., Times New Roman Bold, Italic, Aligned left., Blue (0, 77, 168), 0.75 Pt. White Halo, CLC
	Restudy Area	Top Line, Line weight 1.5 Pt., Orange (255, 85, 0) Bottom Line, Line weight 3 Pt., Yellow (255, 255, 0)
	New SFHA	Area Pattern #1, Line weight 0.7 Pt., Grey (107, 126, 174), Angle 45 degrees, Offset 0, Separation 0.1" Area Pattern #2, Top Line, Line weight 0.7 Pt., Grey (107, 126, 174), Angle 135 degrees, Offset 0, Separation 0.1"

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
	River, Stream, or Other Hydrographic Feature	Line weight 1 Pt., Blue (151, 219, 242)
	Lake	Blue (151, 219, 242) Outline, Line weight 0.4 Pt., Blue (64, 101, 235) 50 Percent Transparency
	Coastal Surge Influenced Area	Area pattern #1, Line weight 1.5 Pt., Blue (115, 223, 255), Angle 135 degrees, Offset 0, Separation 0.2" Area pattern #2, Line weight 1.5 Pt., Blue (115, 223, 255), Angle 135 degrees, Offset 0, Separation 0.2"

* Alternate fonts that emulate these recommendations may also be used

3.3.3. Flood Risk Data

o **Flood Risk: Composite Hazus Data from Flood Risk Assessment Dataset**

♦ Data source: Total loss for 1% annual chance (100-yr) from Flood Risk Assessment Dataset, Composite Hazus data at the Census Block level. This is linked with S_CenBlk_Ar.

♦ Data used to: identify the relative risk of project area.

♦ Data considerations: Derivation of this data is described in Appendix N of the FEMA *G&S*.

♦ Categories names: Each FRM will use the same description risk categories (Very Low, Low, Medium, High, Very High). Their cartographic recommendations are a light color for very low, gradually increasing to a bold color for very high (all with a 20 percent transparency)

♦ Categories breaks: Each FRM may use a unique range of Total loss for 1% annual chance event value for each category. Range choices should consider clarity of showing those locations' greatest relative risk and map scale issues. A suggested starting point could be using Natural Breaks (Jenks) within ArcGIS to classify into 5 categories.

3.3.4. Areas of Mitigation Interest

Derivation of all of Areas of Mititgation Interest Datasets is described in Appendix N, along with detailed definition and cartographic considerations. This is an enhanced Flood Risk dataset choice and will only be included on the FRM when included in the Flood Risk

Products choices identified in the Final Discovery Report and Project Charter. Table 7 lists suggestions for the features.

- **Accredited Levees**
  - Data source: compiled during the project lifecycle from a variety of sources.
  - Data used to: identify accredited levees that may cause risk.
  - Data considerations: The FRM may only show a subset of all accredited levee data stored in the FRD.

- **De-accredited Levees**
  - Data source: compiled during the project lifecycle from a variety of sources.
  - Data used to: identify de-accredited levees that may cause risk.
  - Data considerations: The FRM may only show a subset of all unaccredited levee data stored in the FRD.

- **Dams**
  - Data source: compiled during the project lifecycle from a variety of sources.
  - Data used to: identify dams that may cause risk.
  - Data considerations: The FRM may only show a subset of all dams data stored in the FRD.

- **Coastal Structures**
  - Data source: compiled during the project lifecycle from a variety of sources.
  - Data used to: identify coastal structures that may cause risk.
  - Data considerations: The FRM may only show a subset of all coastal structure data stored in the FRD.

- **Stream Flow Constrictions**
  - Data source: compiled during the project lifecycle from a variety of sources.
  - Data used to: identify stream flow constrictions such as undersized culverts that may cause risk.
  - Data considerations:
    - The FRM may only show a subset of all stream flow constrictions data stored in the FRD.
    - Other map layers may need to be adjusted (such as roads data) to better show stream flow constrictions data location.

- o **At-Risk Essential Facilities**

  - ♦ Data source: compiled during the project lifecycle from a variety of sources.

  - ♦ Data used to: identify essential facilities as areas susceptible to risk.

  - ♦ Data considerations: The FRM may only show a subset of all at-risk essential facilities data stored in the FRD.

- o **Past Claims Hotspots**

  - ♦ Data source: compiled during the project lifecycle from a variety of sources.

  - ♦ Data used to: identify past claims hot spots as areas susceptible to risk.

  - ♦ Data considerations:

    - ▪ The FRM may only show a subset of all past claims hot spot data stored in the FRD.

    - ▪ Care should be taken to not have points appear to be associated with specific structures.

- o **Key Emergency Routes Overtopped During Frequent Flooding Events**

  - ♦ Data source: compiled during the project lifecycle from a variety of sources.

  - ♦ Data used to: identify potential barriers to evacuation during storm event.

  - ♦ Data considerations: The FRM may only show a subset of all overtopped routes data stored in the FRD.

- o **Individual Assistance (IA) and Public Assistance (PA) Data**

  - ♦ Data source: compiled during the project lifecycle from a variety of sources.

  - ♦ Data used to: identify areas where Federal Assistance has been requested during a disaster response.

  - ♦ Data considerations:

    - ▪ The FRM may only show a subset of all IA and PA data stored in the FRD.

    - ▪ Care should be taken to not have points appear to be associated with specific structures.

- o **Areas of Significant Land Use Change**

  - ♦ Data source: compiled during the project lifecycle from a variety of sources.

- ◆ Data used to: identify areas that have undergone significant land use changes and may be contributing more storm water to runoff (within the past 5-years and looking forward 5 years).

- ◆ Data considerations: FRM may only show a subset of all land use change data stored in the FRD.

- o **Areas of Significant Riverine or Coastal Erosion**

  - ◆ Data source: compiled during the project lifecycle from a variety of sources.

  - ◆ Data used to: identify areas prone to erosion.

  - ◆ Data considerations: FRM may only show a subset of all erosion data stored in the FRD.

- o **Major Embankments**

  - ◆ Data source: compiled during the project lifecycle from a variety of sources.

  - ◆ Data used to: identify significant hydraulic embankments that may cause risk.

  - ◆ Data considerations: The FRM may only show a subset of all embankment data stored in the FRD.

- o **Other Flood Risk Areas**

  - ◆ Data source: compiled during the project lifecycle from a variety of sources.

  - ◆ Data used to: identify other areas prone to flood risk.

  - ◆ Data considerations: The FRM may only show a subset of other flood risk area data stored in the FRD.

- o **Areas of Mitigation Success**

  - ◆ Data source: compiled during the project lifecycle from a variety of sources.

  - ◆ Data used to: identify areas that have shown mitigation success.

  - ◆ Data considerations: The FRM may only show a subset of mitigation success data stored in the FRD.

Table 7: Areas of Mitigation Interest Features

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
◆	Accredited Levees	Diamond Marker – 28 Pt., Green (56, 168, 0) 2 Pt. White Halo

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
◆	Non-accredited Levees	Diamond Marker – 28 Pt., Black 2 Pt. White Halo
●	Dams	Circle Marker – 17 Pt., Blue (0, 169, 230) Outline, 1 Pt., Black
⊗	Coastal Structures	Cross Hair Marker – 16.8 Pt., Red (230, 0, 0) Circle Marker – 16.8 Pt., White Circle Marker – 19.6 Pt., Red (255, 0, 0) Circle Marker Outline – 28 Pt., Black Circle Marker – 28 Pt., Yellow (255, 255, 0)
■	Stream Flow Constriction	Square Marker Outline – 21 Pt., Black Square Marker – 21 Pt., Green (0, 255, 0)
⬡	Past Claims Hot Spot	Hexagon Symbol Outline – 76 Pt., Green (85, 255, 0) Hexagon Symbol Outline – 80 Pt., Green (211, 255, 190)
◉	Key Emergency Routes Overtopped During Frequent Flooding Events	Circle Marker Outline -20.57 Pt., Black Circle Marker – 20.57 Pt., Red (230, 76, 0) Circle Marker – 24 Pt., Blue (0, 92, 230)
◎	At-Risk Essential Facilities	Circle Marker Outline -20.57 Pt., Black Circle Marker – 20.57 Pt., Green (85, 255, 0)
●	Individual Assistance (IA) and Public Assistance (PA) Data	Circle Marker Outline – 22 Pt., Black Circle Marker – 22 Pt., Yellow (255, 255, 0)
⊕	Significant Land Use Changes (within the past 5 years and looking forward 5 years)	Symbol Hatch Marker – 80 Pt., Black
▲	Areas of Significant Riverine or Coastal Erosion	Triangle Symbol Marker – 22 Pt., Black Triangle Marker – 22 Pt., Yellow (255, 255, 0)
✳	Non-Levee Embankments	Symbol Marker Outline – 24 Pt., Black Symbol Marker – 24 Pt., Blue (115, 178, 255)
💧	Other Flood Risk Areas	Symbol Marker – 23.81 Pt., Blue (0, 92, 230) Symbol Marker – 30 Pt., White
✔	Areas of Mitigation Success	Symbol Marker – 28 Pt., Green (85, 255, 0) 1 Pt. White Halo
★	Other	Symbol Marker Outline – 30 Pt., Black Symbol Marker – 30 Pt., Orange (255, 170, 0)

* Alternate fonts that emulate these recommendations may also be used

3.3.5. Callouts

See Appendix O of the FEMA _G&S_ for callout specifications and the FRM prototype for examples. Table 8 provides callout feature recommendations.

Table 8: Callout Features

Example	Feature	Recommendation* [Hatch Pattern] (RGB Values)
AREA OF MITIGATION SUCCESS	Callout Title	17 Pt., Arial Bold, Aligned left and top, Black, 2 Pt. White Halo, CAPS
———	Callout Leader Line	Line weight 2.0 Pt, Black
⬜	Callout Image Box Frame	White (255, 255, 255) Outline, Line weight 1.0 Pt., Black (0, 0, 0)
In the southeast area of Swan Lake, several repetitive loss properties were acquired through the Hazard Mitigation Grant Program.	Callout Caption Text	12 Pt., Arial, Aligned left, Black, CLC, 254 characters max
⬜	Callout Descriptive Text Frame	White (255, 255, 255) Outline, Line weight 1.0 Pt., Black (0, 0, 0) 5 Pt. Margins

* Alternate fonts that emulate these recommendations may also be used

3.3.5.1 Callout Placement

The callout leader layer is to be shown below the callout box. Callouts should make for a reasonable product and readability for the user.

4. Discovery Report

The Discovery Report documents the Discovery activities and findings for a watershed area.

4.1. Discovery Report Overview

The Discovery Report is a document prepared and updated throughout the Discovery process. Figure 5 below presents the phases of Discovery. More information about these phases and about the Discovery process and requirements can be found in *Appendix I* of the FEMA Guidelines and Standards at the following location:

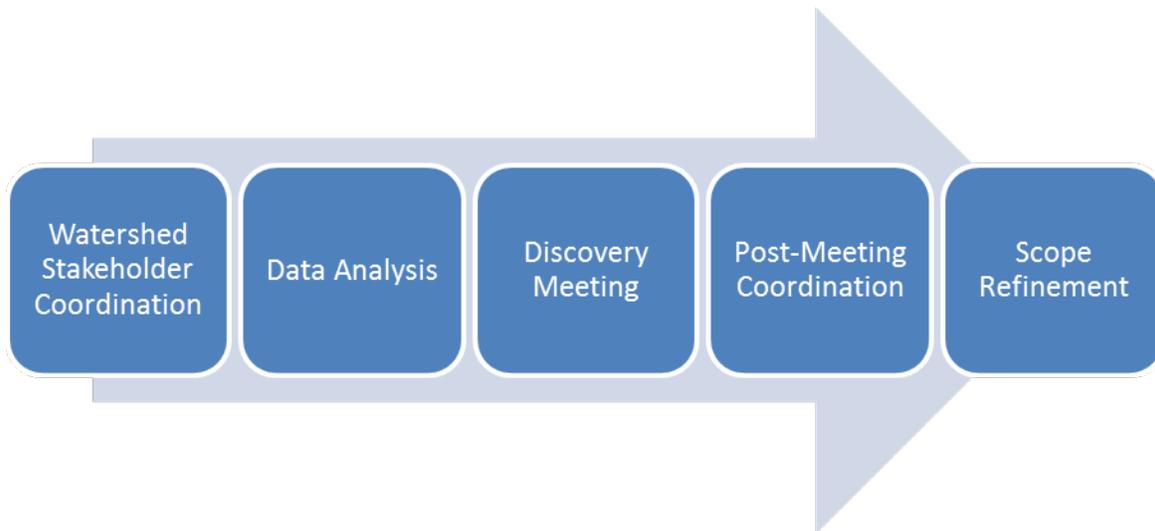*http://www.fema.gov/library/viewRecord.do?id=2206*

Figure 5. Phases of Discovery

The MS Word template for the Discovery Report can be downloaded at http://www.fema.gov/plan/prevent/fhm/og_main.shtm. The template provides a format and instruction for preparation of the Discovery Report, while the prototype(s) serve as an example of how to emulate the desired product. The Discovery Report template was developed to allow the Mapping Partner flexibility in reporting. The Discovery Report template contains numerous sections for the compilation of all community and data findings throughout the Discovery Process. The sections should be included and thoughtfully expanded upon as required to complete the preparation of the Discovery Report.

The Discovery Report will be developed in two separate versions to mirror the Discovery process. The versions will reflect the following:

o   First Iteration (Draft): During the Watershed Stakeholder Coordination and Data Analysis phases of Discovery, the Discovery Report will house all information and data compiled by the Mapping Partner in preparation for the Discovery Meeting. This first version of the Discovery Report will be shared with the watershed stakeholders prior to the Discovery Meeting.

o   Second Iteration (Final): The Discovery Report is updated following the successful completion of the Discovery Meeting(s) held in the watershed. This second iteration is to be provided to watershed stakeholders and will include information about the meeting (including the meeting agenda, meeting announcement and publication, sign in sheets, discussion topics, decisions made, etc.)

Each version of the Discovery Report should be delivered to external communities and other stakeholders as a PDF. In addition, the Mapping Partner should also deliver the Word File Document to the final MIP location for future reference and for future update.

A Discovery Report prototype is available for reference by Mapping Partners at the following location: http://www.fema.gov/plan/prevent/fhm/og_main.shtm. The Discovery Report prototype provides an example of watershed (non-coastal) Discovery, which includes watershed, county, and community details for Mapping Partner reference. Discovery for coastal projects are not typically watershed based; therefore, this prototype can be further refined at the Region's discretion for coastal projects. The following section provides guidance per report element.

4.2. Report Elements

This section provides general guidance in Subsections A and B. Where further instruction is necessary to guide the Mapping Partner, those details are provided in Subsection C.

4.2.1. 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 Mapping Partner wishes to list the communities but there are too many communities to list on the cover, then the Project Area Community List can be populated. This is provided on Page i of the template for Mapping Partner use.

o   Include the watershed name and code for the watershed area on which Discovery is being performed. The naming convention should be in agreement with the Watershed

Boundary Dataset (WBD) for compatability as future watersheds are developed, for instance – Lower North Canadian River (11100302).

o 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.

o Include the Draft or Final version, as appropriate.

o 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 secondary Discovery Report sharing the Discovery Meeting findings with watershed stakeholders

4.2.2. General Format

The Discovery Report should be prepared at the watershed level or at the Region's discretion for coastal projects. At the beginning of each report section, the template includes instructions in bold italic font. Prior to completion of the Discovery Report, remove the text which is shown in italics.

4.2.3. Report Elements

The following sections (and sub-sections, as appropriate) should be included in the Discovery Report.

o **Section I – General Information**

In this section, include a watershed or project area description, including, for instance, physical land description, mention major rivers, large communities, a table of communities and water sources, as applicable and deemed necessary.

This section of the Discovery Report is initially prepared prior to holding 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 up-coming steps to allow external stakeholder interaction.

♦ The Mapping Partner may also include additional data for informational and educational purposes with the external stakeholder audiences in mind.

♦ The Mapping Partner is advised to keep the external audience in mind and describe FEMA processes in laymen's terms.

o **Section II – Watershed Stakeholder Coordination**

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

♦ The template allows the Mapping Partner 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 should include a list of stakeholders contacted—either as a table, an attached list, or by referencing a table in the Discovery Map.

♦ Notes on conversations, emails, call logs, etc., may be photocopied or scanned and used as an appendix or other attachment.

o **Section III – Data Analysis**

This section should be populated for the Draft version. This section should be divided into two subsections: Data that can be used for Flood Risk Products (regulatory and non-regulatory) and Other Data and Information.

♦ Subsection i. *Data that can be used for Flood Risk Products* section will be used for listing topographic data availability and other data that can be used in Flood Risk products (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, a brief summary and analysis should be provided.

♦ The summaries may be watershed-specific with individual Community Briefings included as an appendix to the report providing summaries for each community.

♦ This section may be completed using one page per data type, with a brief summary at the top of the page and the bottom half of page showing map or screen shot of data.

Some section examples are provided below. However, this section will be different for each watershed.

♦ Communities and Tribal Entities within the project area

- ◆ Communications Assessment Findings

- ◆ Demographics and Industry

- ◆ Community Rating System

- ◆ Flood Insurance Policies and Repetitive Loss

- ◆ NFIP Policies

- ◆ Ordinances

- ◆ Historical Flooding

- ◆ Other Historical Hazards

- ◆ Declared Disasters

- ◆ Community Assistance Visits

- ◆ Coastal Considerations

- ◆ Levees (include description of adjacent floodplain areas)

- ◆ Flood Control Structures

- ◆ Emergency Action Plans (Dams, Levees)

- ◆ Topographic Data Availability

- ◆ Hazus Data and Building Stock Information

- ◆ Stream Gauges

- ◆ Flood Hazard Mitigation and All Hazard Mitigation Plan Information

- ◆ Mitigation Projects (completed, current, and identified)

- ◆ Coordinated Needs Management Strategy (CNMS)

- ◆ Effective Flood Insurance Studies and Flood Insurance Rate Maps

- ◆ Endangered Species Act Considerations

- ◆ Coastal Barrier Resources System Areas (CoBRAs) and Otherwise Protected Areas (OPAs)

o **Section IV – Discovery Meeting**

This section should include the Discovery Meeting date(s), location, organizations represented, agenda, and meeting notes (located in this section or as an appendix). Because the Draft of the Discovery Report is completed before the Discovery Meeting, this section will not appear in the Draft version.

This section may also 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, include action items and decisions made at the meeting.

o **Appendix and Tables**

This section is to be used at the Mapping Partners discretion. This is also an opportunity to include items such as stakeholder lists and contact preferences (such as a preference for email communications), meeting notes, data tables, and other items that are referenced in the report without duplicating the effort made during the Stakeholder Engagement, Data Analysis, and other phases of Discovery.

5. Flood Insurance Study Report

This section provides information for Mapping Partners that will be preparing the new format Flood Insurance Study (FIS) Reports.

5.1. Flood Insurance Report Overview

This section provides guidance for the redesigned Flood Insurance Study Report. The FIS Report revises and updates information on the existence and severity of flood hazards for a project area. Through hydrologic and hydraulic and/or coastal studies, flood-risk data is developed that will help establish actuarial flood insurance rates and assist communities in efforts to promote sound floodplain management. The FIS Report presents this data and background material as narrative text and tables.

Requirements for producing the FIS Report are provided in _Procedure Memorandum No. 66 - Flood Insurance Study Report Alignment to Digital Vision,_ which is available at http://www.fema.gov/plan/prevent/fhm/gs_memos.shtm. This Procedure Memorandum includes an attachment entitled, _Guidance for Creation of Flood Insurance FIS Reports_, with guidance for the content, format, and source data for the FIS Report. The Guidance includes four annexes, as follows:

o Annex A – Sections of Appendix J, Published April 2003, that are superseded by this Procedure Memorandum

o Annex B – FIS Report Template (Microsoft Word Format)

o Annex C – FIS Report Template (PDF Format, including profiles and bookmarks)

o Annex D – Watershed Project Considerations

The FIS Report template organizes as much flood risk project information as possible into a tabular format. The Guidance provides information regarding how mapping partners can populate the template based on information stored within the available databases. The Guidance also presents items that Regions and Mapping Partners will need to take into consideration as they choose the appropriate way to update the FIS Report with the results from a watershed study.