

Flood Insurance Study (FIS) Report Technical Reference

Guidance for Creation of FIS Reports

June 2013

Risk MAP Version ID 2.3.2.1



FEMA

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1. Introduction

This Technical Reference provides instructions for creating Flood Insurance Study (FIS) Reports. An FIS Report template (available on FEMA's website at <http://www.fema.gov/library/viewRecord.do?id=7577>), which outlines the sections, tables, text, and other components of the FIS Report, has been created to align with the information contained in this Technical Reference. The tables included within the FIS Report and the FIRM Database Technical Reference have also been aligned as far as possible so that population of the appropriate fields in the FIRM Database will allow the respective data in the FIS Report tables to be incorporated more easily. The following sections provide additional information and explain specific elements that should be used when developing FIS Reports in this new format.

2. General Information

2.1. FIS Report Content

The following information applies to the content contained in the FIS Report, and provides reference to the formatting of the text in the FIS Report template:

- Text that is not to be edited is shown in black, regular (non-bold-faced) type in the template.
- Text that is required for specific types of data in the FIS Report is indicated in **blue, bold-faced type**. This text can be deleted if it does not apply to the Flood Risk Project and replaced by the statement, "This section is not applicable to this Flood Risk Project." An example of non-applicable text that can be deleted is coastal data for an inland county. If the optional text is left in the report because it is applicable, change the font to black, non-bold-faced for final publication.
- Text for a few sections (such as those describing hydrologic, hydraulic, coastal, and alluvial fan analyses) may require manual editing for the specific project area. Descriptions of additional information such as specific methodology with references will need to be added manually. Variable text and study-specific table entries that should be edited are shown in **orange, bold-faced type**. Change the type to black, non-bold-faced for final publication.
- Hyperlink text should be shown in black print with no underlining; however, active links may be retained so that they will be carried over when creating the PDF.
- **IMPORTANT NOTE** – The study-specific content (bold, orange font) provided within the tables in the FIS Report template is for illustration only and should not be used to infer standards for data. For example, some tables include more flooding sources listed so that a variety of examples may be shown, whereas other tables do not need lengthy entries to convey the information they are to include. As an additional example, and in order to reduce the overall size of the template, not every Zone AE flooding source listed in Table 2, "Flooding Sources Included in this FIS Report", has a companion Flood Profile at the back of the Report. These variations should not be construed as a change to current guidance or to the expectation that exhaustive quality control checks must be performed to reach agreement between all modeling results, tables, and profiles. Rather, the bold, orange font content should simply be used as an example of the type of information that is to be included in each FIS Report. Mapping Partners are responsible for making sure that

each table in the FIS Report contains the relevant information for each flooding source so that the details and results of the study can effectively be communicated to the end user.

- All numbered sections, tables, and figures in the template are required for every FIS Report and should not be removed. Text shown as optional in the template that does not apply to the specific project should be deleted; if all text under a heading is non-applicable and deleted, insert the statement, “This section is not applicable to this Flood Risk Project.” under the heading. Tables or figures that do not apply to the specific project should be indicated below the caption by adding “[Not Applicable to this Flood Risk Project]”.

Figure 1: Examples of Not Applicable Text, Table, and Figure

Example of not applicable section	<p>5.3 Coastal Flood Hazard Areas</p> <p>5.3.1 Total Stillwater Elevations</p> <p>This section is not applicable to this Flood Risk Project.</p>
Example of not applicable table	<p>Table 16: Summary of Coastal Analyses</p> <p>[Not Applicable to this Flood Risk Project]</p>
Example of not applicable figure	<p>Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas</p> <p>[Not Applicable to this Flood Risk Project]</p>

- Avoid using “detailed,” “limited detailed,” or “approximate” to describe flooding sources or the methodologies used to analyze them. Specify the flood zone or actual methodology instead.
- Use “Flood Risk Project” or “project” to refer to the entire project. Components of the project include compilation of flooding data, hydrologic and hydraulic analyses, base map preparation, mapping boundaries and elevations, and publishing the FIRM and FIS Report. Refer to the document as “Flood Insurance Study Report” or “FIS Report” to clearly identify the published report that accompanies the FIRM. Use “study” to refer to specific engineering analyses.
- References to tables or figures in the one section or subsection can omit the title of the table or figure if it is obvious from the context.
- Use an (Author Year) format rather than consecutive numbering to cite references within the text. The references should match the citation listed in the Bibliography and References table.
- If a future conditions analysis has been performed, the data should be reported in the FIS Report. The mapping partner should edit the Summary of Discharges and Floodway Data

tables, as in the following illustration, and the text referring to floods wherever it occurs in the report as appropriate.

Figure 2: Example of Future Conditions column

Elevations (feet NAVD88)				
10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	
			Existing	Future
13.8	*	15.6	16.9	*
41.4	*	50.6	54.2	*

2.2. Type Specifications for Text

- The text in the body of the FIS Report is Times New Roman, 11 point; justified (left and right side); single space with one line between paragraphs. One space is inserted after a period (.) at the end of a sentence.
- Heading 1 is Arial, 12 point, Bold, All Caps; left aligned; with 24 point spacing before.
- Heading 2 is Arial, 11 point, Bold; left aligned; with 18 point spacing before and 6 point spacing after.
- Heading 3 is Arial, 11 point, Bold; left aligned; with 12 point spacing before and 6 point spacing after.
- Heading 4 is unnumbered, Arial, 11 point, Bold; left aligned; with 0 point spacing before and 0 point spacing after.
- Text in the body of the report is aligned under the words of the heading rather than the number for Headings 1 and 2. Text is aligned under the number for Headings 3 and 4.

3. FIS Report Cover and Table of Contents

3.1. Cover

- Communities and CIDs are shown in Arial, 12 point. The date is shown in Arial, 14 point, bold. The Flood Insurance Study number is shown in Arial, 12 point, bold.
- Choose the appropriate cover template depending on the number of communities included in the report. Delete the cover from the template that is not being used.
- Use “EFFECTIVE” for the first version of a countywide FIS Report; use “REVISED” for subsequent versions of a countywide FIS Report.
- Community-based FIS Report ID numbering shall be as follows: 2-digit state FIPS + 4-digit FEMA CID + V00x (where x = 0, 1, 2, etc.) + Suffix. Countywide FIS Report ID numbering shall be as follows: 2-digit state FIPS + 3-digit county FIPS + C + V00x (where x = 0, 1, 2, etc.) + Suffix. If the FIS Report is one volume, use “V000” with the FIPS code preceding this part of the number. If there are multiple volumes, use “V001” on the cover of Volume 1, “V002” on the cover of Volume 2, etc. For a first-time countywide FIS

Report, the suffix “A” is to be used as it indicates that this is the first countywide study. For each subsequent revision of the FIS Report, the suffix will advance in alphabetical order (excluding the use of the letter I – “eye” or the letter O – “oh”). If there is a revision to an existing countywide that does not already have a suffix on the FIS number, the first revision would use the suffix “B”.

3.2. Notice to Flood Insurance Study Users

The Notice to FIS Users that appeared after the cover page and before the Table of Contents in previous FIS Reports is now included in the content of Section 1.4 of the FIS Report.

3.3. Table of Contents and Lists of Figures and Tables

As previously mentioned, and in order to maintain consistency with the regulatory products delivered across the program, the following numbered sections, figures, and tables are required for every FIS Report prepared in accordance with this Technical Reference, regardless of whether the topic addressed by that element is applicable to the Flood Risk Project.

SECTIONS

SECTION 1.0 – INTRODUCTION

- 1.1 The National Flood Insurance Program
- 1.2 Purpose of this Flood Insurance Study Report
- 1.3 Jurisdictions Included in the Flood Insurance Study Report
- 1.4 Considerations for using this Flood Insurance Study Report

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

- 2.1 Floodplain Boundaries
- 2.2 Floodways
- 2.3 Base Flood Elevations
- 2.4 Non-Encroachment Zones
- 2.5 Coastal Flood Hazard Areas
 - 2.5.1 Water Elevations and the Effects of Waves
 - 2.5.2 Floodplain Boundaries and BFEs for Coastal Areas
 - 2.5.3 Coastal High Hazard Areas
 - 2.5.4 Limit of Moderate Wave Action

SECTION 3.0 – INSURANCE APPLICATIONS

- 3.1 National Flood Insurance Program Insurance Zones
- 3.2 Coastal Barrier Resources System

SECTION 4.0 – AREA STUDIED

- 4.1 Basin Description
- 4.2 Principal Flood Problems
- 4.3 Non-Levee Flood Protection Measures
- 4.4 Levees

SECTION 5.0 – ENGINEERING METHODS

- 5.1 Hydrologic Analyses
- 5.2 Hydraulic Analyses
- 5.3 Coastal Analyses

- 5.3.1 Total Stillwater Elevations
- 5.3.2 Waves
- 5.3.3 Coastal Erosion
- 5.3.4 Wave Hazard Analyses
- 5.4 Alluvial Fan Analyses
- SECTION 6.0 – MAPPING METHODS
 - 6.1 Vertical and Horizontal Control
 - 6.2 Base Map
 - 6.3 Floodplain and Floodway Delineation
 - 6.4 Coastal Flood Hazard Mapping
 - 6.5 FIRM Revisions
 - 6.5.1 Letters of Map Amendment
 - 6.5.2 Letters of Map Revision Based on Fill
 - 6.5.3 Letters of Map Revision
 - 6.5.4 Physical Map Revisions
 - 6.5.5 Contracted Restudies
 - 6.5.6 Community Map History
- SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION
 - 7.1 Contracted Studies
 - 7.2 Community Meetings
- SECTION 8.0 – ADDITIONAL INFORMATION
- SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

FIGURES

- Figure 1: FIRM Index
- Figure 2: FIRM Notes to Users
- Figure 3: Map Legend for FIRM
- Figure 4: Floodway Schematic
- Figure 5: Wave Runup Transect Schematic
- Figure 6: Coastal Transect Schematic
- Figure 7: Frequency Discharge-Drainage Area Curves for [Jurisdiction Name]
- Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas
- Figure 9: Transect Location Map

TABLES

- Table 1: Listing of NFIP Jurisdictions
- Table 2: Flooding Sources Included in this FIS Report
- Table 3: Flood Zone Designations by Community
- Table 4: Coastal Barrier Resources System Information
- Table 5: Basin Characteristics
- Table 6: Principal Flood Problems
- Table 7: Historic Flooding Elevations
- Table 8: Non-Levee Flood Protection Measures
- Table 9: Levees
- Table 10: Summary of Discharges
- Table 11: Summary of Non-Coastal Stillwater Elevations

Table 12: Stream Gage Information used to Determine Discharges
Table 13: Summary of Hydrologic and Hydraulic Analyses
Table 14: Roughness Coefficients
Table 15: Summary of Coastal Analyses
Table 16: Tide Gage Analysis Specifics
Table 17: Coastal Transect Parameters
Table 18: Summary of Alluvial Fan Analyses
Table 19: Results of Alluvial Fan Analyses
Table 20: Countywide Vertical Datum Conversion
Table 21: Stream-Based Vertical Datum Conversion
Table 22: Base Map Sources
Table 23: Summary of Topographic Elevation Data used in Mapping
Table 24: Floodway Data
Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams
Table 26: Summary of Coastal Transect Mapping Considerations
Table 27: Incorporated Letters of Map Change
Table 28: Community Map History
Table 29: Summary of Contracted Studies Included in this FIS Report
Table 30: Community Meetings
Table 31: Map Repositories
Table 32: Additional Information
Table 33: Bibliography and References

All Table of Contents items are shown in Arial, 11 point.

4. Tables in the Body of the FIS Report

4.1. General Formatting

- Section 4.3 of this Technical Reference outlines the required table names and column headings that are to be used for each table in the FIS Report.
- Tables should be sized to the width of the preceding text block. If a table needs to be wider than the previous text block to be readable, insert section breaks before and after the table and change the page orientation to landscape. Centered page numbers should be included at the bottom of tables in landscape orientation. Column width can be adjusted as needed to accommodate data.
- If a table is split between two pages, consider adding a header for each page with “(continued)” next to the title. In general, rows should not be allowed to split between pages unless this causes too many page breaks and large areas of white space. For example, the Principal Flood Problems table may contain rows with long descriptive passages, so the rows are permitted to split between pages.
- Table and figure captions are Arial, 11 point, bold; centered; with 12 point spacing before and 6 point spacing after the caption.
- Text in tables is Arial, 10 point, single spaced with 3 point before and after (row height not specified) except for the Floodway Data table (FDT). The FDT is 0 point before and after each row – row height is governed by paragraph spacing rather than specifying row height. Text may be reduced to 9 point to accommodate data as long as readability is not reduced.

- Text or dates in tables should be left aligned (for running text or longer content that wraps in the cell) or centered. Headings in tables should be centered at the bottom of the cell.
- Numeric data in tables should be aligned on decimal points or right aligned (if no decimals are present in the entire column). Numbers greater than 999 should include a comma appropriately placed.
- All cells in tables should be populated with data, an explanatory entry or a footnote giving more explanation of why they are blank. You may need to edit the FIS Report to replace default output for missing values that have been exported from the FIRM database.
- Depending on decisions made for updating to the FIS Report format outlined in this Technical Reference, the information requested for certain table fields in the FIS Report may be unknown, or simply may not be scoped to be populated. In these cases, it may be necessary to manually populate those table entries (or use a footnote) with a value of “Unknown”, “Not Included”, or “Not Provided”.

4.2. Guidance for Derivation of Data from the FIRM Database

Most of the data shown in tables in the FIS Report can be derived from tables of the FIRM Database as specified in the FIRM Database Technical Reference. Table 1 provides guidance for the tables and fields that can be used to help accomplish this.

Table 1: Derivation of FIS Report Template Tables from Data in FIRM Database Tables

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Cover		
Study Name	Study_Info	STUDY_PRE + STUDY_NM + STATE_NM + JURIS_TYP
Community Name	S_Pol_Ar	POL_NAME1
Community Number	S_Pol_Ar	CID
Effective Date	Study_Info	INDX_EFFDT
FIS Number	Study_Info	FIS_NM
<p>Table 1: Listing of NFIP Jurisdictions</p>  <p>This table can be created by a spatial overlay of S_Pol_Ar joined to L_Comm_Info, S_FIRM_Pan, and S_Subbasins, summarized on POL_NAME1 (one record per community).</p>		
Community	S_Pol_Ar	POL_NAME1
CID	S_Pol_Ar	CID
HUC-8 Sub-basin(s)	S_Subbasins	HUC8
Located on FIRM Panels(s)	S_FIRM_Pan	FIRM_PAN
If Not Included, Location of Flood Hazard Data	S_Pol_Ar	ANI_FIRM

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FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
No SFHA identified footnote	L_Comm_Info	FLOODPRONE = "F"
Section 1.4		
Initial Countywide FIS Report	L_Comm_Info	FST_CW_FIS
Figure 1. FIRM Index		
	S_FIRM_Pan	FIRM_PAN or PANEL + SUFFIX
	S_FIRM_Pan	EFF_DATE
	S_FIRM_Pan	PNP_REASON
	S_Pol_Ar	POL_NAME1
	S_Subbasins	HUC8
	S_Subbasins	SUBBAS_NM
	S_Wtr_Ln and/or S_Wtr_Ar	WTR_NM
	S_Trnsport_Ln	ROUTENUM
	Study_Info	STUDY_PRE + STUDY_NM + STATE_NM + JURIS_TYP
	Study_Info	INDX_EFFDT
Figure 2. FIRM Notes to Users		
Coastal Base Flood Elevation limits – landward value	Study_Info	LANDWD_VAL
Coastal Base Flood Elevation limits	Study_Info	V_DATUM
Projection	Study_Info	PROJECTION + PROJ_ZONE
Horizontal Datum	Study_Info	H_DATUM
Vertical Datum	Study_Info	V_DATUM
Base Map Information: source, scale	L_Source_Cit	TITLE + PUBLISHER + SRC_SCALE + PUB_DATE
Revisions to Index: Effective Date	Study_Info	INDX_EFFDT
Special Notes for Specific FIRM Panels: The CBRS notes could be triggered by the S_CBRS feature class not being empty; the LiMWA note could be triggered by the S_LiMWA feature class not being empty; and the levee notes could be triggered from S_Levee.		
Study Name	Study_Info	STUDY_PRE + STUDY_NM
Effective Date	Study_Info	INDX_EFFDT

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FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
<p>Table 2: Flooding Sources Included in this FIS Report</p>  <p>This table can be created by a spatial overlay of S_Pol_Ar, S_Profil_Basln and/or S_Tsct_Basln, S_Fld_Haz_Ar, and S_Submittal_Info, summarized on WTR_NM (one record per Flooding Source).</p>		
Flooding Source	S_Profil_Basln and/or S_Tsct_Basln	WTR_NM
Community	S_Pol_Ar	POL_NAME1
Downstream Limit	S_Profil_Basln and/or S_Tsct_Basln	R_ST_DESC
Upstream Limit	S_Profil_Basln and/or S_Tsct_Basln	R_END_DESC
HUC-8 Sub-Basin(s)	S_Subbasins	HUC8
Length (mi) (streams or coastlines)	S_Profil_Basln and/or S_Tsct_Basln	Read from GIS data
Area (mi ²) (estuaries or ponding)	S_Profil_Basln and/or S_Tsct_Basln	Read from GIS data
Floodway (Y/N)	S_Profil_Basln	True where STUDY_TYP = SFHAs WITH HIGH FLOOD RISK
Zone shown on FIRM	S_Fld_Haz_Ar	FLD_ZONE
Date of Analysis	S_Submittal_Info	COMP_DATE
<p>Table 3: Flood Zone Designations by Community</p>  <p>This table can be created by a spatial overlay of S_Pol_Ar and S_Fld_Haz_Ar (one record per community, using SELECT DISTINCT SQL query on POL_NAME1 field).</p>		
Community	S_Pol_Ar	POL_NAME1
Flood Zone(s)	S_Fld_Haz_Ar	FLD_ZONE
<p>Table 4: Coastal Barrier Resources System Information</p>  <p>This table can be created by a spatial overlay of S_CBRS and S_FIRM_Pan (one record per Primary Flooding Source).</p>		
Primary Flooding Source	S_CBRS	WTR_NM
CBRS/OPA Type	S_CBRS	CBRS_TYP
Date CBRS Area Established	S_CBRS	CBRS_DATE

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FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
FIRM Panel Number(s)	S_FIRM_Pan	FIRM_PAN
Table 5: Basin Characteristics		
HUC-8 Sub-Basin Name	S_Subbasins	SUBBAS_NM
HUC-8 Sub-Basin Number	S_Subbasins	HUC8
Primary Flooding Source	S_Subbasins	WTR_NM
Description of Affected Area	S_Subbasins	BASIN_DESC
Drainage Area (units)	S_Subbasins	SUB_AREA
	S_Subbasins	AREA_UNIT
Table 6: Principal Flood Problems		
Flooding Source	S_Profil_Basln	WTR_NM
Description of Flood Problems	S_Profil_Basln	FLD_PROB1 + FLD_PROB2 + FLD_PROB3 or separate text file if more characters are needed
Table 7: Historic Flooding Elevations		
Flooding Source	S_HWM	WTR_NM
Location	S_HWM	LOC_DESC
Historic Peak (vertical datum)	S_HWM	ELEV
	S_HWM	LEN_UNIT
	S_HWM	V_DATUM
Event Date	S_HWM	EVENT_DT
Approximate Recurrence Interval (years)	S_HWM	APX_FREQ
Source of Data	S_HWM	HWM_SOURCE
Table 8: Non-Levee Flood Protection Measures		
Flooding Source	S_Gen_Struct	WTR_NM
Structure Name	S_Gen_Struct	STRUCT_NM
Type of Measure	S_Gen_Struct	STRUCT_TYP
Location	S_Gen_Struct	LOC_DESC
Description of Measure	S_Gen_Struct	STRUC_DESC
Table 9: Levees		
 <p>This table can be created by a spatial overlay of S_Pol_Ar, S_Levee, and S_FIRM_Pan (one record per Levee Segment defined by the same flooding source, owner, and contiguous bank location).</p>		
Community	S_Pol_Ar	POL_NAME1
Flooding Source	S_Levee	WTR_NM

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FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Levee Location	S_Levee	BANK_LOC
Levee Owner	S_Levee	OWNER
USACE Levee	S_Levee	USACE_LEV
Levee ID	S_Levee	LVDBASE_ID
Covered Under PL84-99 Program?	S_Levee	PL84_99TF
FIRM Panel(s)	S_FIRM_Pan	FIRM_PAN
Levee Status	S_Levee	LEVEE_STAT
Table 10: Summary of Discharges		
Flooding Source	S_Nodes	WTR_NM via L_Summary_Discharges NODE_ID field
Location	L_Summary_Discharges	NODE_DESC
Drainage Area (units)	L_Summary_Discharges	DRAIN_AREA
	L_Summary_Discharges	AREA_UNIT
Discharge (units)	L_Summary_Discharges	DISCH_UNIT
Peak Discharge (units) 10% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 10 Percent Chance
Peak Discharge (units) 4% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 4 Percent Chance
Peak Discharge (units) 2% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 2 Percent Chance
Peak Discharge (units) 1% Annual Chance Existing	L_Summary_Discharges	DISCH where EVENT_TYP = 1 Percent Chance
Peak Discharge (units) 1% Annual Chance Future	L_Summary_Discharges	DISCH where EVENT_TYP = 1 Percent Chance Future Conditions
Peak Discharge (cfs) 0.2% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 0.2 Percent Chance
Figure 7: Frequency Discharge - Drainage Area Curves – provided only if needed –		
Table 11: Summary of Non-Coastal Stillwater Elevations		
Flooding Source	S_Nodes	WTR_NM via L_Summary_Elevations NODE_ID field
Location	S_Nodes	NODE_DESC via L_Summary_Elevations NODE ID field
Elevations (Vertical Datum)	L_Summary_Elevations	V_DATUM

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FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Elevations (unit)	L_Summary_Elevations	WSEL_UNIT
Elevation 10% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 10 Percent Chance
Elevation 4% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 4 Percent Chance
Elevation 2% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 2 Percent Chance
Elevation 1% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 1 Percent Chance
Elevation 1% Annual Chance Future*	L_Summary_Elevations	WSEL where EVENT_TYP = 1 Percent Chance Future Conditions
Elevation 0.2% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 0.2 Percent Chance
Table 12: Stream Gage Information Used to Determine Discharges		
Flooding Source	S_Gage	WTR_NM
Gage Identifier	S_Gage	GAGE_OWID
Agency that Maintains Gage	S_Gage	AGENCY
Site Name	S_Gage	GAGE_DESC
Drainage Area (Square Miles)	S_Gage	DRAIN_AREA
	S_Gage	AREA_UNIT
Period of Record From	S_Gage	START_PD
Period of Record To	S_Gage	END_PD
Table 13: Summary of Hydrologic and Hydraulic Analyses		
	This table can be created by a spatial overlay of S_Profil_Basln and S_Submittal_Info (one record per studied profile baseline where the S_Submittal_Info information is consistent across the entire profile).	
Flooding Source	S_Profil_Basln	WTR_NM
Downstream Limit	S_Profil_Basln	R_ST_DESC
Upstream Limit	S_Profil_Basln	R_END_DESC
Hydrologic Model or Method Used	S_Submittal_Info	HYDRO_MDL
Hydraulic Model or Method Used	S_Submittal_Info	HYDRA_MDL
Date Analyses Completed	S_Submittal_Info	COMP_DATE
Flood Zone on FIRM	S_Fld_Haz_Ar	FLD_ZONE (+ ZONE_SUBTY if floodway)

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Special Considerations	S_Profil_BasIn	SPEC_CONS1 + SPEC_CONS2 or separate text file if more characters are needed
Table 14: Roughness Coefficients		
Flooding Source	L_ManningsN	WTR_NM
Channel “n”	L_ManningsN	CHANNEL_N
Overbank “n”	L_ManningsN	OVERBANK_N
Table 15: Summary of Coastal Analyses		
Flooding Source	L_Cst_Model	WTR_NM
From	L_Cst_Model	LIMIT_FROM
To	L_Cst_Model	LIMIT_TO
Hazard Evaluated	L_Cst_Model	HAZARDEVAL
Model or Method Used	L_Cst_Model	SURGE_MDL, STRM_PRM, TDESTAT_MT, WAVEHT_MDL, RUNUP_MDL, SETUP METH, R_FETCH_MT, and/or EROS METH
Date Analysis was Completed	L_Cst_Model	SURGE_DATE, STM_PRM_DT, TDESTAT_DT, WAVEHT_DT, RUNUP_DATE, SETUP_DATE, R_FETCH_DT, WAVE_EFFDT, and/or EROS_DATE
Section 5.3 Variable Text – provide as needed to summarize methodology		
Figure 8: 1% Annual Chance Total Stillwater Elevation for Coastal Areas – Provide as applicable		
Table 16: Tide Gage Analysis Specifics		
Gage Name	S_Cst_Gage	GAGE_NM
Managing Agency of Tide Gage Record	S_Cst_Gage	AGENCY
Gage Type	S_Cst_Gage	GAGE_TYPE
Start Date	S_Cst_Gage	START_PD
End Date	S_Cst_Gage	END_PD
Statistical Methodology	L_Cst_Model	TDESTAT_MT via CST_MDL_ID
Table 17: Coastal Transect Parameters		
Flood Source	S_Cst_Tsct_Ln	WTR_NM

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Coastal Transect	S_Cst_Tsct_Ln	TRAN_NO
Significant Wave Height H _s (unit)	S_Cst_Tsct_Ln	SIG_HT
	S_Cst_Tsct_Ln	ELEV_UNIT
Peak Wave Period T _p (unit)	S_Cst_Tsct_Ln	SIG_PD
	S_Cst_Tsct_Ln	TIME_UNIT
Starting Stillwater Elevations (Vertical Datum)	S_Cst_Tsct_Ln	V_DATUM
Stillwater (SWEL) Elevation Unit	S_Cst_Tsct_Ln	ELEV_UNIT
Starting Stillwater Elevation - 10% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 10 Percent Chance
Range of Stillwater Elevations - 10% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 10 Percent Chance
Starting Stillwater Elevation - 4% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 4 Percent Chance
Range of Stillwater Elevations - 4% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 4 Percent Chance
Starting Stillwater Elevation - 2% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 2 Percent Chance
Range of Stillwater Elevations - 2% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 2 Percent Chance
Starting Stillwater Elevation - 1% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 1 Percent Chance
Range of Stillwater Elevations - 1% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 1 Percent Chance
Starting Stillwater Elevation 0.2% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 0.2 Percent Chance
Range of Stillwater Elevations (ft) 0.2% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 0.2 Percent Chance
Figure 9: Transect Location Map		
	S_Cst_Tsct_Ln	TRAN_NO

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
	S_Tsct_BasIn and/or S_Wtr_Ln and/or S_Wtr_Ar	WTR_NM
	S_Pol_Ar	POL_NAME1
	S_Trnsport_Ln	FULLNAME

Table 18: Summary of Alluvial Fan Analyses



This table can be created by a spatial overlay of S_Alluvial_Fan, S_Profil_BasIn, and S_Submittal_Info (one record per studied alluvial fan where the S_Submittal_Info information is consistent across the entire fan).

Flooding Source	S_Profil_BasIn	WTR_NM
Location From (apex)	S_Profil_BasIn	R_ST_DESC
Location To (toe)	S_Profil_BasIn	R_END_DESC
Drainage Area above Apex (sq mi)	S_Alluvial_Fan	FANAPEX_DA
	S_Alluvial_Fan	AREA_UNITS
Model(s) Used	S_Submittal_Info	HYDRA_MDL
Date Analysis was Completed	S_Submittal_Info	COMP_DATE
Method Description	S_Alluvial_Fan	METH_DESC

Table 19: Results of Alluvial Fan Analyses



This table can be created by a spatial overlay of S_Alluvial_Fan and S_Profil_BasIn (one record per studied alluvial fan).

Flooding Source	S_Profil_BasIn	WTR_NM
From (apex)	S_Profil_BasIn	R_ST_DESC
To (toe)	S_Profil_BasIn	R_END_DESC
1% Annual Chance Peak Flow at Fan Apex (unit)	S_Alluvial_Fan	FANAPEX_Q
	S_Alluvial_Fan	DISCH_UNIT
Flood Zones and Depths	If multiple zones and depths, manual from spatial overlay with S_Alluvial_Fan and S_Fld_Haz_Ar	if only one flood zone and depth exist for the alluvial fan, S_Alluvial_Fan FLD_ZONE + DEPTH
Depth (unit)	S_Alluvial_Fan	DEPTH_UNIT
Minimum Velocity	S_Alluvial_Fan	FAN_VEL_MN
Maximum Velocity	S_Alluvial_Fan	FAN_VEL_MX
Velocity (unit)	S_Alluvial_Fan	VEL_UNIT

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 20: Countywide Vertical Datum Conversion Calculate variance for each point from CONV_FACTOR to determine if Table 21 needs to be populated (>0.25 ft.). If less than 0.25 ft. variance, populate Study_Info.AVG_CFACTR with the average conversion factor.		
Quadrangle Name	S_Datum_Conv_Pt	QUAD_NM
Quadrangle Corner	S_Datum_Conv_Pt	QUAD_COR
Latitude	S_Datum_Conv_Pt	Read from GIS data
Longitude	S_Datum_Conv_Pt	Read from GIS data
Conversion from (feet)	S_Datum_Conv_Pt	CONVFACTOR
	S_Datum_Conv_Pt	FROM_DATUM + TO_DATUM
	S_Datum_Conv_Pt	LEN_UNIT
Conversion from	S_Datum_Conv_Pt	FROM_DATUM
Conversion to	S_Datum_Conv_Pt	TO_DATUM
Average Conversion	Study_Info	AVG_CFACTR calculated based on CONVFACTOR for all points if maximum variance from average is <0.25 feet
Average Conversion (units)	S_Datum_Conv_Pt	LEN_UNIT
Table 21: Stream-Based Vertical Datum Conversion Populate only if countywide conversion factor cannot be used due to maximum variance from CONV_FACTOR average is >0.25 feet.		
Flooding Source	S_Datum_Conv_Pt	WTR_NM
Average Vertical Datum Conversion Factor (feet)	S_Datum_Conv_Pt	Calculated based on average CONVFACTOR for each WTR_NM
	S_Datum_Conv_Pt	LEN_UNIT
Table 22: Base Map Sources		
Data Type	L_Source_Cit	TITLE for all entries where SOURCE_CIT = "BASE" type
Data Provider	L_Source_Cit	PUBLISHER
Data Date	L_Source_Cit	PUB_DATE
Data Scale	L_Source_Cit	SRC_SCALE
Data Description	– FIRM database metadata –	Source_Contribution keyword
Table 23: Summary of Topographic Elevation Data Used in Mapping		
 <p>This table can be created by a spatial overlay of S_Pol_Ar, S_Profil_Basln and/or S_Tsct_Basln and S_Submittal_Info (one record per topographic data source).</p>		
Community	S_Pol_Ar	POL_NAME1
Flooding Source	S_Profil_Basln and/or S_Tsct_Basln	WTR_NM

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Source for Topographic Elevation Data: Description	S_Submittal_Info	TOPO_SRC
Source for Topographic Elevation Data: Scale	S_Submittal_Info	TOPO_SCALE
Source for Topographic Elevation Data: Contour Interval	S_Submittal_Info	CONT_INTVL
Source for Topographic Elevation Data: Citation	L_Source_Cit	CITATION
Table 24: Floodway Data		
Flooding Source	S_XS	WTR_NM
Cross Section	S_XS	XS_LTR where XS_LN_TYP = "LETTERED, MAPPED".
Distance	S_XS	STREAM_STN
Floodway: Width (feet)	L_XS_ELEV	FW_WIDTH
	L_XS_ELEV	LEN_UNIT
Floodway Width In Jurisdiction (feet)	L_XS_ELEV	FW_WIDTHIN
	L_XS_ELEV	LEN_UNIT
Floodway: Section Area (sq feet)	L_XS_ELEV	XS_AREA
	L_XS_ELEV	AREA_UNIT
Floodway: Mean Velocity (feet/sec)	L_XS_ELEV	VELOCITY
	L_XS_ELEV	VEL_UNIT
1% Annual Chance Flood Water Surface Elevation: Existing Conditions	L_XS_ELEV	WSEL where EVENT_TYP = 1 Percent Chance
1% Annual Chance Flood Water Surface Elevation: Existing Conditions: Left Levee	L_XS_ELEV	WSELREG_LL via XS_LN_ID
1% Annual Chance Flood Water Surface Elevation: Existing Conditions: Right Levee	L_XS_ELEV	WSELREG_RL via XS_LN_ID
1% Annual Chance Flood Water Surface Elevation: Future Conditions	L_XS_ELEV	WSEL where EVENT_TYP = 1 Percent Chance Future
1% Annual Chance Flood Water Surface Elevation: Existing Conditions without Floodway	L_XS_ELEV	WSEL_WOFWY

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
1% Annual Chance Flood Water Surface Elevation: Existing Conditions with Floodway	L_XS_ELEV	WSEL_FLDWY
1% Annual Chance Flood Water Surface Elevation: Increase	L_XS_ELEV	WSEL_INCRS
Footnote for Station Start Description	S_Stn_Start	START_DESC via S_XS START_ID
Footnote for elevations computed w/o backwater	L_XS_ELEV	If CALC_WO_BW equals T, add stock text "Computed without consideration of backwater effects"

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams



Most of this table can be created from S_XS joined to L_XS_Elev on the 1% Annual Chance event. The Flood Discharge Field can be obtained via a spatial over using S_XS, L_XS_Elev, L_Summary_Discharges, S_Nodes and S_Subbasins (one record per SELECTED cross section).

Flooding Source	S_XS	WTR_NM
Cross Section	S_XS	XS_LTR
Stream Station	S_XS	STREAM_STN
1% Annual Chance Flood Discharge (cfs)	L_Summary_Discharges	DISCH where EVENT_TYP = 1 Percent Annual Chance
1% Annual Chance Water Surface Elevation (vertical datum)	L_XS_ELEV	V_DATUM
1% Annual Chance Water Surface Elevation	L_XS_ELEV	WSEL where EVENT_TYP = 1 Percent Annual Chance
Non-Encroachment Width: Left	L_XS_ELEV	NE_WIDTH_L
Non-Encroachment Width: Right	L_XS_ELEV	NE_WIDTH_R
Footnote for Station Start Description	S_Stn_Start	START_DESC via S_XS START_ID

Table 26: Summary of Coastal Transect Mapping Considerations – populate fields manually as needed

Table 27: Incorporated Letters of Map Change - where STATUS field = "Incorporated"

Case Number	L_MT2_LOMR	CASE_NO
Effective Date	L_MT2_LOMR	EFF_DATE
Flooding Source	L_MT2_LOMR	WTR_NM

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
FIRM Panel(s)	L_MT2_LOMR	FIRM_PAN
Table 28: Community Map History		
Community Name	S_Pol_Ar	POL_NAME1 via L_Comm_Info COM_NFO_ID
Initial Identification Date (First NFIP Map Published)	L_Comm_Info	IN_NFIP_DT
Initial FHBM Effective Date	L_Comm_Info	IN_FHBM_DT
FHBM Revision Date(s)	L_Pol_FHBM	FHBM_DATE via S_Pol_Ar CID via S_Pol_Ar COM_NFO_ID
Initial FIRM Effective Date	L_Comm_Info	IN_FRM_DAT
FIRM Revision Date(s)	L_Comm_Revis	REVIS_DATE via L_Comm_Info COM_NFO_ID
Table 29: Summary of Contracted Studies Included in this FIS Report		
	This table can be created by a spatial overlay of S_Pol_Ar, S_Profil_Basln and/or S_Tsct_Basln and S_Submittal_Info (one record per flooding source).	
Flooding Source	S_Profil_Basln and/or S_Tsct_Basln	WTR_NM
FIS Report Dated	S_Submittal_Info	EFF_DATE
Contractor	S_Submittal_Info	SUBMIT_BY
Number	S_Submittal_Info	CONTRCT_NO
Work Completed Date	S_Submittal_Info	COMP_DATE
Affected Communities	S_Pol_Ar	POL_NAME1
Table 30: Community Meetings		
Community	S_Pol_Ar	POL_NAME1 via L_Comm_Info COM_NFO_ID
FIS Report Dated	L_Meetings	FIS_EFF_DT
Date of Meeting	L_Meetings	MTG_DATE
Meeting Type	L_Meetings	MTG_TYP
Attended By	L_Mtg_POC	AGENCY via MTG_ID
Table 31: Map Repositories		
Community	S_Pol_Ar	POL_NAME1 via L_Comm_Info COM_NFO_ID
Address	L_Comm_Info	REPOS_ADR1 + REPOS_ADR2 + REPOS_ADR3

FIS Report Technical Reference

FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
City	L_Comm_Info	REPOS_CITY
State	L_Comm_Info	REPOS_ST
Zip Code	L_Comm_Info	REPOS_ZIP
Table 32: Additional Information		
FEMA and the NFIP: FEMA website	Boilerplate (verify that the link works)	
FEMA and the NFIP: NFIP website	Boilerplate (verify that the link works)	
FEMA and the NFIP: NFHL Dataset	Boilerplate (verify that the link works)	
FEMA and the NFIP: FEMA Region	https://hazards.fema.gov and search for Geospatial Data Coordination Contacts by State	
Other Federal Agencies: USGS website	Boilerplate (verify the link works)	
Other Federal Agencies: Hydraulic Engineering Center website	Boilerplate (verify the link works)	
State Agencies and Organizations: State NFIP Coordinator	https://hazards.fema.gov and search for Geospatial Data Coordination Contacts by State	
State Agencies and Organizations: State GIS Coordinator	https://hazards.fema.gov and search for Geospatial Data Coordination Contacts by State	
Table 33: Bibliography and References		
Citation in this FIS Report	L_Source_Cit	CITATION
Publisher/Issuer	L_Source_Cit	PUBLISHER
Publication Title, "Article", Volume, Number, etc	L_Source_Cit	TITLE
Author/Editor	L_Source_Cit	AUTHOR
Place of Publication	L_Source_Cit	PUB_PLACE
Publication Date/Date of Issuance	L_Source_Cit	PUB_DATE
Link	L_Source_Cit	WEBLINK

Not included in template; add column in table when data is developed in studies, per this Guidance

4.3. Specific Table Formatting and Information

The following subsections provide an overview of each table within the FIS Report, examples of the type of content that might be included in the tables, and the table field names that must be included. For some tables, there are notes that provide additional guidance or clarification on the content or format of the specific table. Overall table or column widths can be modified to fit the spacing requirements or limitations of the content or page within the actual FIS Report.

4.3.1. Table 1, Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
City of Coastland	123457	99999998	12345C0234X	
Village of Summer Beaches	123470	99999996	N/A	
Flood County, Unincorporated Areas	123456	99999996, 99999997, 99999998	12345C0234X 12345C0235X	
Town of Floodville	123458	99999998	12345C0200X	
City of New Metropolis	123480	99999995, 99999996	N/A	Dry County FIS Report, 2006
Village of Upland ¹	123460	99999997	12345C0100X	

¹ No Special Flood Hazard Areas Identified

Table 1 Additional Notes

- Include all communities that fall within the geographic area covered by the FIS Report in this table, including communities that fall on the boundary line, nonparticipating communities, Areas Not Included, and multi-jurisdictional communities.
- Indicate communities that have no identified Special Flood Hazard Areas (SFHAs) with a footnote.
- In the table example, the Village of Summer Beaches illustrates a community for which panels are not printed.
- For PMRs that are not revising all panels in the county, this table will not reflect corporate limit changes outside of the PMR footprint unless political boundaries are made available during the PMR process. If they are made available, the corporate limits will be updated on the FIRM Index and the listing of FIRM Panels upon which the community is located shall be updated accordingly in this table.

FIS Report Technical Reference

4.3.2. Table 2, Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Big Ocean	City of Coastland, Flood County	Entire Coastline	Entire Coastline	N/A	16.3		N	VE, AE, AO	1989
Culvert Creek	Flood County	Confluence with South Fork Inundation River	2.3 miles upstream of confluence of Ripple Creek	99999998	0.7		N	AE	1997
Inundation River	City of Metropolis	Confluence with Big Ocean	Approximately 500 feet upstream of State Highway 999	99999998	12.5		Y	AE	2007
Inundation River	City of Metropolis	Approximately 500 feet upstream of State Highway 999	Confluence of North Fork Inundation River and South Fork Inundation River	99999998	3.8		N	A	1997
Lily Pond	City of Metropolis	Pear Tree Circle	Westwood Lane	99999997		1.6	N	AE	2002
North Fork Inundation River	City of Coastland, Flood County	Confluence with Inundation River	0.7 miles upstream of Lilac Stream	99999998	4.2		Y	AE	2010

Table 2 Additional Notes

- Alphabetize the rows by flooding source first; if multiple entries exist for the same flooding source (such as to account where the methodology and/or mapped zone change along the same stream), list in reverse chronological order (newest study first).
- If more than 20 Zone A streams are included, consider listing only large named streams and group other Zone A streams.

4.3.3. Table 3, Flood Zone Designations by Community

Community	Flood Zone(s)
Flood County, Unincorporated Areas	A, AE, AO, AH, V, VE, X
City of Coastland	A, AE, AO, VE, X
Town of Floodville	A, X
City of Metropolis	A, AE, X

4.3.4. Table 4, Coastal Barrier Resources System Information

Primary Flooding Source	CBRS/OPA Type	Date CBRS Area Established	FIRM Panel Number(s)
Big Ocean	CBRS	1/1/1999	12345C0235X

4.3.5. Table 5, Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Great-Red River	99999997	Great River	Begins at confluence with Inundation River, extends northwest, affecting one third of Flood County	598
Inundation River	99999998	Inundation River	Largest watershed within Flood County, encompassing the southeastern half of the county	1,058

4.3.6. Table 6, Principal Flood Problems

Flooding Source	Description of Flood Problems
Inundation River	The Inundation River at Metropolis typically exceeds flood stage at least once each winter. In the lower reaches of the Inundation River, higher than normal tides combining with high runoff can cause extensive flooding. Storm runoff is high because of moderately steep to steep terrain and the characteristic low soil permeability in the upper Inundation River valley. A natural constriction in the Inundation River valley downstream of Coastland and tidal influences control the flood elevations at the City of Metropolis. The river valley at Metropolis is flooded an average of 3 months each year. The worst flooding occurs when high tides combine with high runoff and onshore winds during major winter storms.
South Fork Inundation River	The South Fork Inundation River at Floodville typically exceeds flood stage at least once each winter. Flood stage in the Coastland area is higher than in the areas downstream because of a natural constriction in the flood plain immediately downstream of the confluence of the North and South Forks of the Inundation River. In December 1964, the Spruce Street Bridge staff gage at Coastland, indicated that the South Fork Inundation River crested at approximately 11 feet above flood stage (bankfull discharge) with an estimated discharge of 100,000 cfs. This flow has a return period greater than 500 years. Stream gage No. 19999999 on the South Fork Inundation River at Floodville recorded a peak flow of 48,900 cfs . This flow has a return period of about 500 years.

Table 6 Additional Notes

- The Descriptions of Flood Problems column is populated by combining three fields from the database. If a longer description is needed for a specific flooding source, a tab separated value text file may be submitted instead. After populating this table from the database, check the Descriptions to determine if you need to find and manually copy the text file into this table. Also check that the three fields have been combined correctly and no additional punctuation or spacing is needed.

4.3.7. Table 7, Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Inundation River	Outlet of Inundation River at Big Ocean	19.8	1986	80	USGS gage
South Fork Inundation River	700 feet upstream of Fulton Road	18.8	2007	50	NRCS high water marks

4.3.8. Table 8, Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Big Ocean	A.B. Smith Jetty	Jetties	At entrance channel	Constructed by USACE in 1929
Big Ocean	N/A	Tidal flooding warnings	Low-lying coastal areas	Flood Weather Forecast Office issues storm tide warnings
Big Ocean	N/A	Berms and riprap	Floodville, along the coast of the Big Ocean	Several property owners in this city have placed berms and riprap to protect homes
Inundation River	N/A	Dam	1.5 miles upstream of Rockhampton Circle	Maintained by Floodville Waterworks
Inundation River	N/A	Dike	Various locations	Not high enough to completely prevent flooding

FIS Report Technical Reference

4.3.9. Table 9, Levees

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)	Levee Status
Flood County, Unincorporated Areas	Inundation River	Right Bank	Flood County Water Supply	Yes	1354212346	Yes	123450C234X	Accredited
Flood County, Unincorporated Areas	Inundation River	Left Bank	Flood County Water Supply	Yes	1234545362	Yes	12345C0234X	Provisionally Accredited
Town of Floodville	Inundation River	Left Bank	Floodville Waterworks	No	1901990990	No	12345C0245X	Non-Accredited

Table 9 Additional Notes

- All accredited levees, PALs, and non-accredited levees should be shown in this table. The decision on whether to include other levees should be made in consultation with FEMA Regional staff and the local communities.

4.3.10. Table 10, Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Culvert Creek	Downstream side of Smith Lane	1.0	130	*	170	190	*	240
Inundation River	Confluence with Big Ocean	1,058	77,200	*	107,000	122,000	132,000	143,000
Inundation River	At Coastland	980	73,100	86,800	101,000	116,000	119,000	136,000
Inundation River	At Floodville	930	70,500	82,360	97,100	111,000	115,000	130,000
Inundation River	At Metropolis	902	69,000	81,100	95,000	109,000	113,000	128,000
Inundation River	Confluence with North Fork Inundation River and South Fork Inundation River	879	67,700	*	93,200	107,000	114,000	125,000
North Fork Inundation River	Above State Highway 42	137	18,100	*	24,000	27,000	*	31,600
South Fork Inundation River	Confluence with North Fork	598	51,100	*	69,700	79,600	*	93,300

*Not calculated for this Flood Risk Project

Table 10 Additional Notes

- The example above outlines the situation where future conditions analyses were included as part of the project, and how the 1% Annual Chance discharges would be included in this table accordingly.
- If future conditions analyses are not a part of the project, a “1% Annual Chance” column would be shown, in place of the “1% Annual Chance Existing” and “1% Annual Chance Future” columns.

4.3.11. Table 11, Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Lily Pond	Metropolis	8.6	*	11.6	12.6	13.3
Central Reservoir	Flood County Unincorporated Areas	12.6	*	14.5	15.2	17.0

*Not calculated for this Flood Risk Project

4.3.12. Table 12, Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
North Fork Inundation River	19999998	USGS	North Fork Inundation River near Floodville	161	01/14/1915	01/08/2009

4.3.13. Table 13, Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Culvert Creek	Confluence with South Fork Inundation River	2.3 miles upstream of confluence of Ripple Creek	1994 State Regression Equations – Region 3	HEC-2 4.6	03/22/1997	AE	Ice jam analysis evaluated by Modified Indirect Method (CRREL 2004). Flood Profile reflects results of ice jam analysis.
Inundation River	Confluence with Big Ocean	Approximately 500 feet upstream of State Highway 999	2004 State Regression Equations – Region 3	HEC-RAS 3.1	06/30/2007	AE w/ Floodway	With and without levee analyses were performed for the reach affected by Levee IDs 1354212346 and 1234545362.

FIS Report Technical Reference

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Inundation River	Approximately 500 feet upstream of State Highway 999	Confluence of N. Fork Inundation River and S. Fork Inundation River	2004 State Regression Equations – Region 3	HEC-RAS 3.1	06/30/2007	A	Effects of hydraulic structures were not considered in the model.
Lily Pond	Pear Tree Circle	Westwood Lane	ICPR 2.20	ICPR 2.20	05/28/2002	AE	Elevations determined using ICPR. Survey data utilized in model was based on county information collected in 2008.
North Fork Inundation River	Confluence with Inundation River	0.7 miles upstream of confluence of Lilac Stream	Log Pearson Type III Frequency Analysis	HEC-RAS 4.0	12/12/2010	AE	Gage No. 19999998 was used in hydrologic analysis. Hydraulic models incorporated field measured bridge and culvert data.
South Fork Inundation River	Confluence with Inundation River	3.2 miles upstream of confluence of Culvert Creek	HEC-HMS 3.4	Unsteady HEC-RAS 4.0	12/12/2010	AE w/ Floodway	Hydraulic model was calibrated to high water marks collected for flood of 2007, which was estimated to be the 2% annual chance flood.

Table 13 Additional Notes

- Query the database and manually populate the “Zone shown on the FIRM” column for non-profile ponding sources (examples include Zones AO and AH and AE associated with ponding).
- If more than 20 Zone A streams are included, consider listing only large named streams and group other Zone A streams.
- The Special Considerations column is populated by combining two fields from the database. If a longer description is needed for a specific flooding source, a tab separated value text file may be submitted instead. After populating this table from the database, check the Special Considerations to determine if you need to find and manually copy the text file into this table. Also check that the two fields have been combined correctly and no additional punctuation or spacing is needed.

4.3.14. Table 14, Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Culvert Creek	0.040-0.060	0.040-0.080
Inundation River	0.040-0.060	0.040-0.080
North Fork Inundation River	0.080-0.100	0.040-0.080
South Fork Inundation River	0.030	0.030-0.035

4.3.15. Table 15, Summary of Coastal Analyses

Flooding Source	Study Limits		Hazard Evaluated	Model or Method Used	Date Analysis was Completed
	From	To			
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Storm Surge	ADCIRC	99/99/9999
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Wave setup	Direct Integration Method (DIM)	99/99/9999
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Statistical Analyses	JPM	99/99/9999
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Wave Runup	TAW	99/99/9999
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Wave Generation	ACES	99/99/9999
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Overland Wave Propagation	WHAFIS	99/99/9999

4.3.16. Table 16, Tide Gage Analysis Specifics

Gage Name	Managing Agency of Tide Gage Record	Gage Type	Start Date	End Date	Statistical Methodology
N-408	NOAA	Tide	1968	2003	GEV
N-422	NOAA	Tide	1985	2010	GEV

4.3.17. Table 17, Tide Gage Analysis Specifics

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
		Big Ocean	1	27.2	13	5.6 5.6-5.6	* *	10.6 10.1-10.9

*Not calculated for this Flood Risk Project

4.3.18. Table 18, Summary of Alluvial Fan Analyses

Flooding Source	Location From (apex)	To (toe)	Drainage Area above Apex (sq mi)	Model(s) Used	Date Analysis was Completed	Method Description
Culvert Creek Fan	From apex of fan	Highway I-10	24.2	N/A	2005	Geomorphic Data, Post Flood Hazard Verification, and Historical Information
Mountain Wash Fan	Apex of fan	Stan Rd	54.5	FLO-2D, version 2006.07	2006	Risk-Based Analysis
Petal Creek fan	From apex of fan	Tangerine Road	15.8	FLO-2D version 2007.06	2009	Composite Methods
Valley Creek Fan	Apex of N. Fork Inundation River Fan	Maple Ln	44.7	FAN Computer Program	1993	Areas identified with historical aerial photos. FAN analysis used for 1% annual chance flood in active areas. HEC-2 4.6 was used in inactive areas, where incised networks and little risk of avulsion observed.

Table 18 Additional Notes

- For an alluvial fan analysis, the “start” is the apex of the study; the “end” is the toe of the study area. The drainage area is the area above the apex.
- Manually edit the “Models Used” output to include multiple models if needed, because the FIRM database will only store a single domain value for model.

4.3.19. Table 19, Results of Alluvial Fan Analyses

Flooding Source	Location		1% Annual Chance Peak Flow at Fan Apex (cfs)	Flood Zones and Depths (ft)	Minimum Velocity (fps)	Maximum Velocity (fps)
	From (apex)	To (toe)				
Culvert Creek Fan	From apex of fan	Highway I-10	1,750	AO 1-2', AE	1	6
Mountain Wash Fan	From apex of fan	Stan Rd	2,140	AO 1-3'	2	6
Petal Creek Fan	From apex of Petal Creek fan	Tangerine Rd	880	AO 1-3', A	1	7
Valley Creek Fan	From apex of N. Fork Inundation River Fan	Maple Ln	1,500	AO	N/A	N/A

4.3.20. Table 20, Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Flood SW	SW	44.250	-83.625	-0.682
Flood SE	SE	44.250	-83.750	-0.647
Flood City	SE	44.250	-83.875	-0.654
Flood Town	SE	44.375	-83.375	-0.708
Coastland	SE	44.375	-83.500	-0.722
Flooding	SE	44.375	-83.625	-0.646
Floodopolis	SE	44.375	-83.750	-0.600
Metropolis SE	SE	44.375	-83.875	-0.554
Metropolis SW	SW	44.500	-83.375	-0.722
Flood Lake	SE	44.500	-83.500	-0.666
Flood Forest	SE	44.500	-83.625	-0.620
Flood Pond	SE	44.500	-83.750	-0.594
Flood Point	SE	44.500	-83.875	-0.658
Floodland	SE	44.250	-83.500	-0.705
Average Conversion from NGVD29 to NAVD88 = -0.640 feet				

4.3.21. Table 21, Stream-Based Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Culvert Creek	-0.457
Flower Creek	-0.604
Inundation River	-0.681

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Flooding Source	Average Vertical Datum Conversion Factor (feet)
Little Creek	-0.545
North Fork Inundation River	-0.627
Petal Creek	-0.513
Small Creek	-0.350
South Fork Inundation River	-0.592
Spring Creek	-0.447
Summer Creek	-0.463

4.3.22. Table 22, Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Digital Orthophoto	Flood County & USGS	2005	1 foot GSD	Color orthoimagery was provided for urban areas of the county
Digital Orthophoto	USGS	1998	1:12,000	Digital Orthophoto Quadrangles were used in rural areas of the county
Political boundaries	Flood County	2005	1:5,000	Municipal and county boundaries
Transportation Features	State Center for Geographic Information	2003	1:10,000	Roads and railroads, were delineated from 2005 orthoimagery
Surface Water Features	State Center for Geographic Information	2003	1:5,000	Streams, rivers, and lakes were derived from NHD data
Public Land Survey System (PLSS)	State Center for Geographic Information	2005	1:24,000	PLSS data were digitized from USGS quadrangles

4.3.23. Table 23, Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Scale	Contour Interval	Citation
Flood County	All within HUC 999999998	LiDAR	1:4,800	2 ft	USGS 2008
City of Metropolis	Lily Pond	Topographic maps	1:24,000	10 ft	USGS 1988

4.3.24. Table 24, Floodway Data

See following pages for examples.

Example of Floodway Data Table using lettered cross-sections:

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	60	46	262	5.8	20.1	20.1	20.2	0.1
B	160	51	353	4.3	21.5	21.5	22.5	1.0
C	680	170	1,253	1.2	22.0	22.0	22.9	0.9

¹Feet above mouth

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	FLOOD COUNTY, STATE	FLOODING SOURCE: CULVERT CREEK
	AND INCORPORATED AREAS	

FIS Report Technical Reference

Example of Floodway Data Table using numbered cross-sections and reflecting backwater effects:

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
009	920	34	219	4.4	22.0	14.2 ²	15.2	1.0
026	2,560	38	188	4.6	22.0	18.0 ²	18.1	0.1
036	3,560	34	187	4.7	22.0	20.0 ²	20.1	0.1
043	4,280	38	169	2.5	22.0	20.1 ²	20.2	0.1
044	4,390	38	169	2.5	22.1	20.1 ²	20.2	0.1
048	4,830	26	102	4.2	22.3	20.6 ²	20.7	0.1
053	5,270	26	109	3.9	22.6	21.5 ²	21.7	0.2
054	5,360	26	109	3.9	22.7	21.5 ²	21.7	0.2
055	5,530	36	167	2.6	22.8	22.0 ²	23.0	1.0

¹Feet above mouth

²Elevation computed without consideration of backwater effects from Inundation River

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY
FLOOD COUNTY, STATE
AND INCORPORATED AREAS**

FLOODWAY DATA

FLOODING SOURCE: FLOWER CREEK

FIS Report Technical Reference

Example of Floodway Data Table showing multiple 1% annual chance flood elevations at a single cross-section (Cross Section I):

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	82,440	1,395	23,879	4.9	22.2	22.2	23.2	1.0
B	84,620	2,208	42,275	2.7	22.8	22.8	23.8	1.0
C	86,800	2,500	45,371	2.6	23.1	23.1	24.1	1.0
D	89,600	3,921	72,926	1.6	23.3	23.3	24.3	1.0
E	121,600	5,548	88,146	1.3	24.0	24.0	25.0	1.0
F	123,550	6,965	129,249	0.9	24.0	24.0	25.0	1.0
G	126,250	7,598	138,886	0.8	24.0	24.0	25.0	1.0
H	128,400	6,440	125,613	0.9	24.1	24.1	25.1	1.0
I	130,300	7,170	133,927	0.8	24.1	24.1 ² / 21.3 ³ / 22.1 ⁴	25.1	1.0
J	132,250	6,701	128,508	0.9	24.1	24.1	25.1	1.0
K	133,050	7,198	131,137	0.8	24.1	24.1	25.1	1.0
L	135,700	6,116	113,706	1.0	24.1	24.1	25.1	1.0
M	137,800	5,938	103,284	1.1	24.1	24.1	25.1	1.0
N	139,600	6,274	115,736	1.0	24.2	24.2	25.2	1.0
O	141,500	6,398	111,041	1.0	24.2	24.2	25.2	1.0
P	143,150	6,551	101,204	1.1	24.2	24.2	25.2	1.0
Q	145,200	5,993	88,563	1.2	24.3	24.3	25.3	1.0

¹Feet above mouth

²Elevation riverward of levees

³Elevation landward of right bank levee

⁴Elevation landward of left bank levee

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: INUNDATION RIVER

FIS Report Technical Reference

Example of Floodway Data Table containing locations where floodway extends beyond county boundaries, and how floodway widths are represented:

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	39,950	611	16,224	1.7	36.7	36.7	37.7	1.0
B	43,630	284	7,306	3.7	36.7	36.7	37.7	1.0
C	45,630	282	7,335	3.7	37.0	37.0	38.0	1.0
D	46,590	431	7,137	2.5	37.2	37.2	38.2	1.0
E	48,910	332	6,198	2.9	37.5	37.5	38.5	1.0
F	50,070	439 / 208 ²	6,885	2.6	37.7	37.7	38.7	1.0
G	50,670	297 / 184 ²	5,233	3.2	37.8	37.8	38.8	1.0
H	50,760	300 / 177 ²	5,330	3.2	38.1	38.1	39.1	1.0
I	50,860	297	5,335	3.1	38.2	38.2	39.2	1.0
J	52,260	247	4,812	3.5	38.4	38.4	39.3	0.9
K	53,700	251	4,275	3.9	38.7	38.7	39.6	0.9
L	54,080	175	3,835	4.4	38.8	38.8	39.7	0.9
M	54,130	175	3,835	4.4	38.8	38.8	39.7	0.9
N	54,350	173	3,784	4.4	39.0	39.0	39.8	0.8
O	55,190	173	3,605	4.7	39.2	39.2	40.1	0.9
P	57,150	139	3,352	5.0	39.9	39.9	40.9	1.0

¹Feet above mouth
²Total floodway width / width within jurisdiction

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	FLOOD COUNTY, STATE	FLOODING SOURCE: NORTH FORK INUNDATION RIVER
	AND INCORPORATED AREAS	

FIS Report Technical Reference

Example of Floodway Data Table for flooding sources where a floodway was calculated, but for which there are cross-sections where either the floodway was not computed or was not mapped:

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ²	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A ¹	12,930	*	*	*	11.4	11.4	*	*
B	13,165	25	98	4.5	12.2	12.2	13.2	1.0
C	13,315	47	210	2.1	12.8	12.8	13.5	0.7
D	13,835	71	279	1.6	12.9	12.9	13.7	0.8
E	14,345	29	85	4.7	14.1	14.1	14.4	0.3
F ¹	14,425	*	*	*	14.6	14.6	*	*
G ¹	14,695	*	*	*	15.5	15.5	*	*
H	14,985	53	144	2.8	16.2	16.2	16.3	0.1
I	15,785	28	98	2.2	17.2	17.2	17.4	0.2
J	16,465	22	80	2.7	18.4	18.4	19.3	0.9
K	17,965	19	69	3.2	19.8	19.8	20.3	0.5

¹Floodway not computed/shown for this cross section

²Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PETAL CREEK

FIS Report Technical Reference

Example of Floodway Data Table for flooding sources where the results from future conditions analyses are being shown:

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)				
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY (EXISTING CONDITIONS)	FUTURE CONDITIONS	EXISTING CONDITIONS WITHOUT FLOODWAY	EXISTING CONDITIONS WITH FLOODWAY	INCREASE
A	500	350	7,466	1.8	37.2	37.7	37.2	38.2	1.0
B	620	350	7,221	1.8	37.2	37.7	37.2	38.2	1.0
C	1,020	350	7,632	1.8	37.3	37.8	37.3	38.3	1.0
D	2,620	404	9,307	1.5	37.4	37.9	37.4	38.4	1.0
E	4,580	321	6,278	2.2	37.4	37.9	37.4	38.4	1.0
F	7,020	347	6,501	2.1	37.6	38.1	37.6	38.6	1.0
G	7,940	223	3,395	4.0	37.6	38.1	37.6	38.6	1.0
H	8,140	219	3,346	4.1	37.7	38.2	37.7	38.7	1.0
I	8,190	219	3,337	4.1	37.7	38.2	37.7	38.7	1.0
J	8,420	201	3,175	4.3	37.8	38.3	37.8	38.8	1.0
K	10,700	194	3,745	3.7	38.6	38.4	38.6	39.6	1.0

¹Feet above mouth

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	FLOOD COUNTY, STATE	FLOODING SOURCE: WOOD BRANCH
	AND INCORPORATED AREAS	

Table 24 Additional Notes

- If unlettered cross sections have been displayed on the FIRM panels, these are not to be included in the Floodway Data Table. Only lettered or numbered cross sections are displayed in the Floodway Data Tables. These are coded “LETTERED, MAPPED” in the FIRM Database. All floodway widths must be rounded to the nearest whole foot.

4.3.25. Table 25, Flood Hazard and Non-Encroachment Data for Selected Streams

Flooding Source	Cross Section	Stream Station ¹	1% Annual Chance Flood Discharge (cfs)	1% Annual Chance Water Surface Elevation (feet NAVD88)	Non-Encroachment Width (feet)	
					Left	Right
Culvert Creek	179	17,857	850	22.3	50	60
Culvert Creek	195	19,499	780	23.6	60	80
Culvert Creek	210	20,993	780	24.3	20	200
Spring Branch	025	2,487	1,230	32.4	N/A	N/A
Spring Branch	056	5,612	1,090	37.5	N/A	N/A
Spring Branch	077	7,659	860	40.1	N/A	N/A

¹ Feet above mouth

Table 25 Additional Notes

- This table should only be populated if flooding sources were studied that (1) do not have published elevations on the FIRMs, or (2) do not have a profile in the FIS Report, but for which there is a project, FEMA Regional, or CTP requirement to report the 1% annual chance flood elevations at selected cross sections. Widths for non-encroachment zones should be provided in this table if these have been determined rather than floodways. Consult with the FEMA Regional Project Officer if questions remain about whether this table needs to be populated.

4.3.26. Table 26, Summary of Coastal Transect Mapping Considerations

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
1	✓	VE 12	VE 14-16	PFD	PFD
2		N/A	VE 14-16 AE 9-12	Wave Height	SWEL
3		VE 16	N/A	Runup	Overtopping

4.3.27. Table 27, Incorporated Letters of Map Change

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
10-10-0012P	01-01-2010	Inundation River	1234C0234E 1234C0244D ¹
10-10-0014P	01-01-2005	North Fork Inundation River	1234C0234E

¹ Although a portion of LOMR 10-10-0012P falls within the scope of this map revision, panel 1234C0244D was not revised. Therefore, users must continue to refer to the annotated FIRM attachment for this LOMR for FIRM panel 1234C0244D.

Table 27 Additional Notes

- In PMR cases where an effective LOMR is partially located within the PMR panel footprint, but not in its entirety (i.e. a portion of the LOMR extends outside the PMR footprint, and thus will only be partially incorporated onto the revised FIRM panels), the following rules apply to these cross-PMR footprint LOMRs:
 - All information about that LOMR will be incorporated into the tables within the FIS Report (including Table 27).
 - All FIRM panels upon which the LOMR is located should be listed in Table 27 under the “FIRM Panel(s)” column, but a footnote for the panel(s) that did not get updated as part of the PMR process should be added, with wording similar to what is listed under footnote 1 in the example table.
 - When the partially-included LOMR is reissued, the FIS Report components (tables, profiles, etc.) should not be included since that information would have already been reflected in the updated FIS Report.
- For counties whose FIRM panels are not being updated countywide (i.e. only selected panels are being updated), the text immediately preceding Table 27 in the FIS Report should be updated to say something similar to the following:

Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may

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not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

- For PMRs, LOMRs that fall entirely outside the PMR footprint shall not be included in the FIS Report in this table or any others.

4.3.28. Table 28, Community Map History

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Coastland, City of	02/15/1973	02/15/1973	10/10/1980 06/23/1975	09/28/1984	12/31/2011 07/23/2008 02/14/2005 09/02/1998
Flood County Unincorporated Areas	11/01/1974	11/01/1974	09/06/1977	08/15/1984	12/31/2011 07/23/2008 10/26/2002 02/18/1998
Floodville, Town of	11/01/1974	04/15/1975	N/A	12/15/1984	07/23/2008 01/05/2003 05/26/1998
Metropolis, City of	11/01/1974	12/21/1974	03/04/1983 10/17/1978	06/19/1986	12/31/2011 07/23/2008 09/31/2002 03/22/1999 10/04/1995
Upland, Village of ¹	08/15/1984	N/A	N/A	09/24/1984	07/23/2008 02/18/1992

¹ No Special Flood Hazard Areas Identified

Table 28 Additional Notes

- The format of the Community Map History table may have changed slightly from previous versions that Mapping Partners are accustomed to seeing.
- Include all communities that fall within the geographic area covered by the FIS Report, including dual-county communities, nonparticipating communities, and communities with some (but not all) maps that have been rescinded. (The unincorporated area and incorporated areas used for a countywide study are not considered a community and should not be included in this table.)
- List the dates for the FHBM and FIRM Revision Date(s) columns in reverse chronological order (most recent date first).
- Indicate communities without SFHAs (No identified Special Flood Hazard Areas) with a footnote.

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- As PMRs are completed, include the effective date of the PMR in the “FIRM Revisions Date(s)” column for the communities that received updated FIRMs, even if the PMR did not revise all the panels within that community. Users should, therefore, be aware that the “FIRM Revision Date(s)” column includes all the effective dates of FIRMs for that community, whether the date corresponds to a community-based update, first-time or subsequent countywide revision, or PMR of individual panels.

4.3.29. Table 29, Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Culvert Creek	12/31/2011	ABC Engineers, Inc.	EMW-C-9999	April 2011	Flood County Uninc. Areas, Metropolis
Inundation River	12/31/2011	ABC Engineers, Inc.	EMW-C-9999	April 2011	Flood County Uninc. Areas, Metropolis
North Fork Inundation River	12/31/2011	ABC Engineers, Inc.	EMW-C-9999	April 2011	City of Coastland, Flood County Uninc. Areas
South Fork Inundation River	12/31/2011	ABC Engineers, Inc.	EMW-C-9999	April 2011	Flood County Uninc. Areas
Big Ocean	2/18/1998	DEF Engineers, Inc.	EMW-C-0000	September 1995	All communities

4.3.30. Table 30, Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Flood County and Incorporated Areas	12/31/2011	03/16/2008	Discovery	FEMA, City of Coastland, Town of Floodville, City of Metropolis, the State Department of Land and Development, and the State Department of Geology and Mineral Industries
		02/08/2010	Resilience	FEMA, City of Coastland, Town of Floodville, City of Metropolis
		11/30/2010	CCO Open House	FEMA, City of Coastland, Town of Floodville, City of Metropolis, the State Department of Land and Development, and the State Department of Geology and Mineral Industries
Town of Coastland	07/23/2008	05/01/2005	Scoping	FEMA, this community and the study contractor

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Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
		06/30/2007	Final CCO	FEMA, this community and the study contractor
City of Metropolis	01/08/2006	05/01/2003	Scoping	FEMA, this community and the study contractor
		01/20/2005	Final CCO	FEMA, this community and the study contractor
Town of Floodville	10/26/2002	01/07/1999	Initial CCO	FEMA, this community and the study contractor
		08/15/2001	Final CCO	FEMA, this community and the study contractor
Flood County, Unincorporated Areas	10/1/1974	11/27/1970	Initial CCO	FEMA, City of Coastland, Town of Floodville, City of Metropolis, county, State Department of Land and Development, and the study contractor
		08/30/1973	Final CCO	FEMA, City of Coastland, Town of Floodville, City of Metropolis, county and the study contractor

4.3.31. Table 31, Map Repositories

Community	Address	City	State	Zip Code
Flood County, Unincorporated Areas	123 Noah's Ark Drive	Floodville	USA	99999
City of Coastland	456 Sump Pump Boulevard	Coastland	USA	99999
Town of Floodville	789 Highwaters Street	Floodville	USA	99999
City of Metropolis	1234 Stilts Avenue	Metropolis	USA	99999
Village of Upland	800 River Road	Upland	USA	99999

Table 31 Additional Notes

- For previous versions of the FIRM Index (i.e. those not produced in compliance with this Technical Reference), the Map Repository information was included on the FIRM Index itself. That information, however, has been moved to this table. Flood Risk Projects whose FIS Report is not produced in compliance with this Technical Reference, but whose FIRM Index is produced in compliance with this Technical Reference must include the above table within its FIS Report, so as to capture the Map Repository information. The table can be inserted into the legacy FIS Report wherever deemed most appropriate, and the table number should be updated so that it fits in sequentially with the other tables in the legacy FIS Report.

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4.3.32. Table 32, Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	http://www.fema.gov
NFIP website	http://www.fema.gov/business/nfip
NFHL Dataset	http://msc.fema.gov
Other Federal Agencies	
USGS website	http://www.usgs.gov
Hydraulic Engineering Center website	http://www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Chris Harris, CFM Dept. of Land Conservation & Development 1234 Stilts Avenue Metropolis, State 99999 111-999-0050 x111 chris.harris@state.gov.us
State GIS Coordinator	Julio Gonzales, GISP Statewide GIS Coordinator 1234 Stilts Avenue Metropolis, State 99999 Phone: 111-999-6066 julie.gonzales@state.gov.us

4.3.33. Table 33, Bibliography and References

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
ABC Eng, 1978	ABC Engineers, Inc.	<i>Flower Creek Water Supply, Coastland Water Board, City of Coastland, State, C10933.00</i>		City of Coastland, State	April 1978	City of Coastland Water Board
Coastland 1977	City of Coastland	<i>Inventory of Coastal Resources for the 1990 Comprehensive Plan</i>			December 1977	City of Coastland library
Coastland 1978	City of Coastland	<i>1990 Comprehensive Plan</i>			September 1978	City of Coastland library
FEMA 1989	Federal Emergency Management Agency	<i>Flood Insurance Study, Flood County, State, and Unincorporated Areas</i>		Washington, D.C.	1989	FEMA Map Service Center http://msc.fema.gov
FEMA 1996	Federal Emergency Management Agency	<i>Flood Insurance Study, City of Floodville, Flood County, State</i>		Washington, D.C.	1996	FEMA Map Service Center http://msc.fema.gov

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Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FIA 1977	U.S. Department of Housing and Urban Development, Federal Insurance Administration	<i>Flood Hazard Boundary Map, Flood County, USA, Community-Panel Numbers 410042 0001 through 0021</i>	Sidney McFlood	Washington, D.C.	September 1977	FEMA Express Document Delivery (EDDIE) http://edd.msc.fema.gov/edd/
State CES 1967	State University, Resource Development Section, Cooperative Extension Service	<i>Resources Analysis, Flood County, State</i>	Dave Waters and Gary Mapper	City of Coastland, State	December 1967	http://extension.state.edu/catalog/
USGS 2008	U.S. Department of Interior, Geological Survey	<i>LiDAR Data, Scale 1:4,800, Contour Interval 2 Feet.</i>		Washington, D.C.	2008	http://lidar.cr.usgs.gov/
USGS 1988	U.S. Department of Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet. Coastland, ST (1984, revised 1988)</i>		Washington, D.C.	Various	http://topomaps.usgs.gov

5. Guidelines for Figures

5.1. General Guidelines

- The FIS Report now includes the FIRM Index as Figure 1. The FIRM Notes to Users that were previously printed on the FIRM Index and individual panels are now included in the FIS Report as Figure 1. The Legend that was printed on individual FIRM panels is included as Figure 3. Refer to the FIRM Panel Technical Reference for Notes to Users and Legend elements that are still shown on the FIRM.
- Figures should be the width of the preceding text block. If they need to be wider than the previous text block to be readable, insert section breaks before and after and change the orientation to landscape. Include centered page numbers at the bottom of figures in landscape orientation.
- Captions are Arial, 11 point, **bold**; centered; with 12 point spacing before and 6 point spacing after.
- Text in figures should be at least the size of body text. Sans serif type is preferred for labeling.

5.2. Guidelines for Specific Figures

The following graphics show examples of the figures to be included in the FIS Report, where applicable. For some figures, notes are included to provide additional clarification or guidance on their use or customization.

5.2.1. Figure 1, FIRM Index

The following graphic shows a sample of a FIRM Index. An example to scale is included in the FIS Report template at <http://www.fema.gov/library/viewRecord.do?id=7577>.

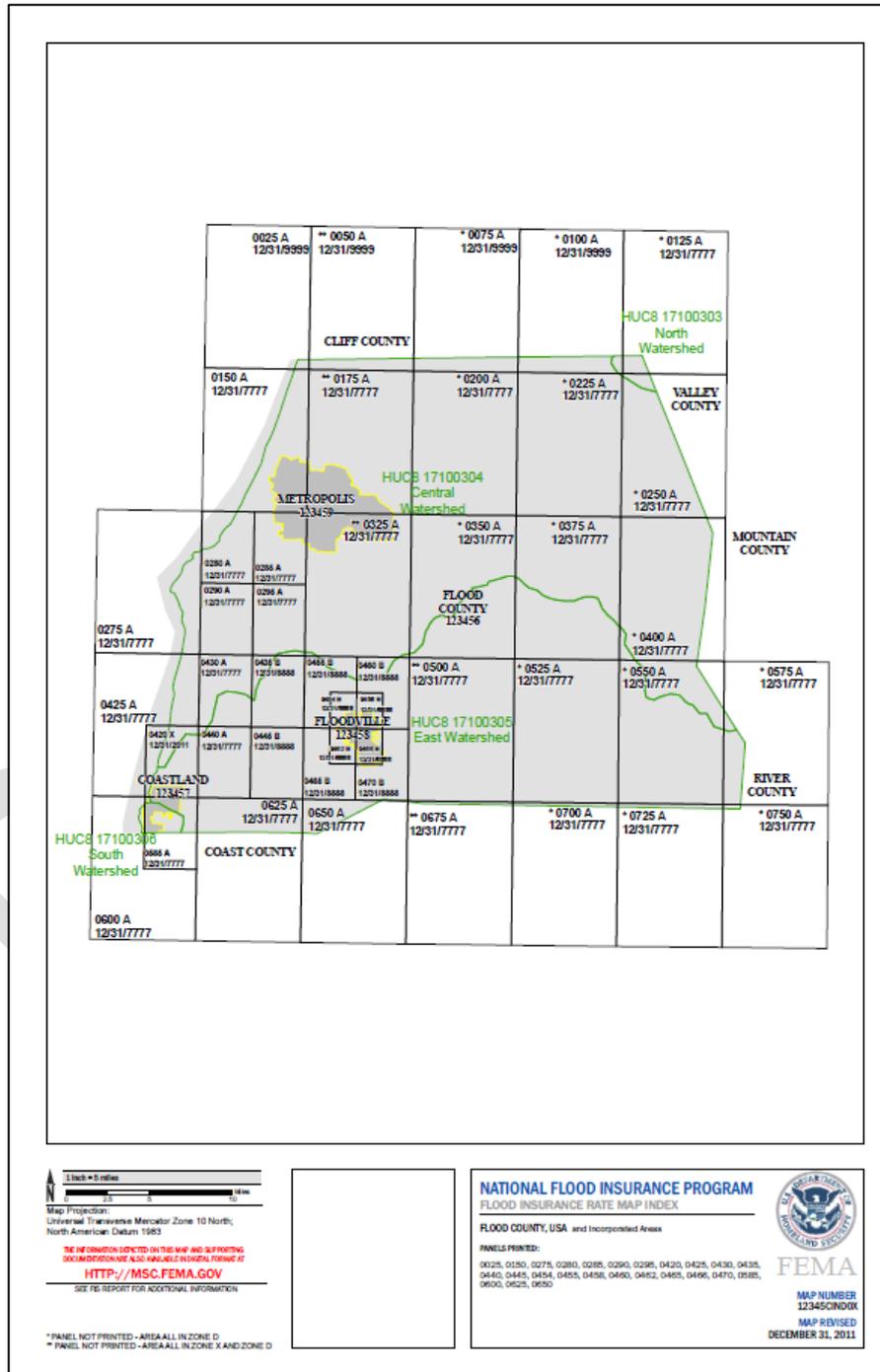


Figure 1 Additional Notes (FIRM Index)

- A FIRM Index will be produced for every community or county that requires more than one printed map panel. FIRM Indexes are prepared in an 11” x 17” format to facilitate inclusion in the FIS Report text. A county locator map shall be added with a rectangle showing the extent of the current index panel. The county locator map is optional for studies with a single page index.
- For community-based FIRM Indexes, the ID numbering shall be as follows: 2-digit state FIPS + 4-digit FEMA CID + INDx (where x = 0, 1, 2, etc.). Countywide FIRM Index ID numbering shall be as follows: 2-digit state FIPS + 3-digit county FIPS + C+ INDx (where x = 0, 1, 2, etc.) + Suffix. For single page indexes, the ID numbering uses “IND0”. For multi-page indexes, the numbering begins at 1, where “x” is the number of the index sheet for a particular community (IND1, IND2, etc.). In the case where more than one Index page is required, the page number should also be included in the title block in the following manner: FLOOD INSURANCE RATE MAP INDEX (Sheet 1 of x), where x equals the total number of Index pages.
- The following base map features shall be shown on the FIRM Index: HUC-8 boundaries and political entities. The HUC-8 boundaries are stored in the S_Subbasins layer in the FIRM Database, coded as BASIN_TYP = “HUC8” to differentiate them from hydrologic analysis sub-basins. HUC-8 basins should at a minimum cover the entire county and should be clipped to the county boundary. Each HUC-8 area shall be labeled as detailed in Table 2 below. All base map features including HUC-8 data should be shown only within the county boundary. Political entities will include CID labels. State parks and national parks do not need to be labeled. If there is not enough space to label them within the map, a numbered key may be used for the congested area.
- Optional features include: Interstate Highways, U.S. Highways, State Highways, County Highways, and railroads as well as major studied streams. The optional features are a subset of the vector data in the FIRM database. Major roads and streams may be shown and labeled, where appropriate, in order to facilitate ease of geographic location by the user.
- FIRM panels shown on the index should only be labeled with the four-digit panel number and suffix. The effective date is to be placed directly beneath the four-digit FIRM panel number in dd/mm/yyyy format. A 0.75-point white halo is required for all panel labels and optional for any other annotation that may overprint features.
- The FIRM Index shall identify unprinted panels with asterisks and footnotes that define the reason(s) for the panel not being printed. The appropriate reason(s) for the panel not being printed shall appear as a footnote(s) below the lower left-hand corner of the grid layout. A listing of appropriate footnotes is provided in Table 2.
- The FIRM Index layout is customizable to a certain degree based upon space requirements for certain features. The FIRM Index shall always reside at the top of the page, while the

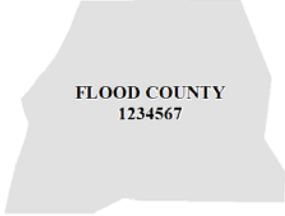
FIS Report Technical Reference

PNP Notes, North Arrow, MSC Note and other notes shall reside at the bottom left, followed by the County Locator (where applicable) and Title Block to the bottom right. In cases where the list of printed panels does not fit in the title block due to the number of panels, the size of the title block may be increased. If more than one FIRM Index page is included, only the panels shown on the page should be listed in the Title Block for that page.

Table 2: FIRM Index Elements

Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
	Road Line Road Name	Optional	Line weight 0.72 pt., Orange (230, 152, 0) 6 pt. Arial CAPS, Black
	Interstate Highway Symbol	Required when roads shown	Standard Interstate Route Shield Line weight 0.72 pt. Size .200" x .200" to .400" x .480", White Fill 6 pt. Arial CLC
	U.S. Highway Symbol	Required when roads shown	Standard U.S. Route Shield Line weight 0.72 pt. Size .200" x .200" to .400" x .480", White Fill 6 pt. Arial CLC
	State Highway Symbol	Required when roads shown	Circle Line weight 0.72 pt. Diameter .200" to .280", White Fill 6 pt. Arial CLC
	County Highway Symbol	Required when roads shown	Rectangle Line weight 0.72 pt Size .150" x .250" to .300" x .400", White Fill 6 pt. Arial CLC
	Railroad Railroad Label	Optional	Vertical hash symbol offset at 90 degrees from main line; Line weight 4 Pt., Black, Hash spacing [7pt - 1pt - 7pt] Line weight 0.72 Pt., Black 6 pt. Arial CAPS, Black

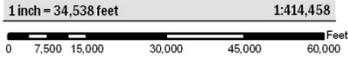
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Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
	River or other Hydrographic Feature	Optional	Line weight 0.72 pt., Blue (158, 187, 215) 8 pt. Times New Roman Italic, CLC, Blue (68, 101, 137)
	Lake or other Hydrographic Feature	Optional	Blue Fill (158, 187, 215) 8 pt. Times New Roman Italic, CLC, Blue (68, 101, 137)
	HUC-8 Boundary	Required	Line weight 0.70 pt., Green (56, 168, 0)
HUC8 17100303 North Watershed	HUC-8 Label	Required	12 pt. Arial, Green (56, 168, 0)
	Incorporated Area, Extraterritorial Jurisdiction and label	Required	Gray Fill (191, 191, 191) Yellow Border (255, 255, 0) 0.50 pt. Width 12 pt. Times New Roman, Bold, CAPS, 0.75 White Halo
	Unincorporated Area and Label	Required	Gray Fill (225, 225, 225) No border 7 pt. Times New Roman, Bold, CAPS

FIS Report Technical Reference

Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
<p>0488B 12/21/9999</p> <p>0235X 12/21/9999</p> <p>0625A 12/21/9999</p>	FIRM Panel Number and Effective Dates	Required	<p>1:6000 – 5 pt. Arial, Black, Bold, CAPS, 0.75 White Halo</p> <p>1:12000 – 8 pt. Arial, Black, Bold, CAPS, 0.75 White Halo</p> <p>1:24000 – 10 pt. Arial, Black, Bold, CAPS, 0.75 White Halo</p>
	FIRM Panel Boundary	Required	Line weight 0.58 pt., Black
	North arrow; can be ESRI standard or equivalent	Required	<p>Line weight .72 pt.</p> <p>Width 0.075"</p> <p>Height 0.075"</p>
<p>Map Projection: Universal Transverse Mercator Zone 10 North; North American Datum 1983</p>	<p>This note identifies the projection of the primary horizontal reference grid shown on the FIRM, as well as identifies the horizontal datum of the geographic (latitude and longitude) coordinates shown at the four corners of each map panel.</p>	Required	8 pt. Arial, Black, CLC
<p style="color: red; font-size: small;">THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV</p>	<p>This note refers users to the Map Service Center</p>	Required	<p>7 pt. (255,0,0), Franklin Gothic Medium Cond, CAPS</p> <p>12 pt. (255,0,0), Franklin Gothic Medium, CAPS</p>
<p>SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION</p>	<p>This note is placed below the red MSC note</p>	Required	7 pt. Franklin Gothic Book, Black, CAPS

FIS Report Technical Reference

Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
	<p>The FIRM scale bar includes reference to feet and emulates the scale bar used by USGS on topographic quadrangles. Note that this scale bar is not shown to actual size; can be ESRI standard or equivalent</p>	<p>Required</p>	<p>Line weight . 72 pts. (Scale Bar [Feet]) =Length: 5" (Scale Bar [Meters]) = Length: 4.5" (Map Scale Note) = 15 pt. Arial CAPS (Scale Bar Labels) = 12 pt. Arial CAPS</p>
	<p>County Locator (within State)</p>	<p>Required when more than one panel index page; optional for index on one page</p>	<p>8 pt. Arial, Black, CAPS Line: Black, 1.25 pt. County of Interest: Black Other Counties: Gray (178, 178, 178) Boundary: White, width 0.40 pt. Rectangle: Red (255, 0, 0), width 2.0 pt.</p>
<p style="text-align: center;">NATIONAL FLOOD INSURANCE PROGRAM</p>	<p>National Flood Insurance Program Header</p>	<p>Required</p>	<p>12 pt. Franklin Gothic Medium, (0, 82, 171), CAPS</p>
<p style="text-align: center;">FLOOD INSURANCE RATE MAP INDEX</p>	<p>Flood Insurance Rate Map Header</p>	<p>Required</p>	<p>11 pt. Franklin Gothic Medium, (156, 156, 156), CAPS</p>
<p style="text-align: center;">FLOOD INSURANCE RATE MAP INDEX (Sheet 1 of 2)</p>	<p>Panel Index for multiple index pages</p>	<p>Required when applies</p>	<p>11 pt. Franklin Gothic Medium, (156, 156, 156), CAPS</p>
	<p>County dividing line</p>	<p>Required</p>	<p>Width 1 pt., Black</p>

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Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
FLOOD COUNTY, USA and Incorporated Areas	County Name	Required	10 pt. Franklin Gothic Medium Cond, Black, CAPS 8 pt. Franklin Gothic Book, Black, CAPS
PANELS PRINTED:	Panels Printed	Required	8 pt. Franklin Gothic Medium Cond, Black, CAPS
0025, 0150, 0235	Printed Panel Numbers	Required	8 pt. Franklin Gothic Book, Black, CAPS
MAP NUMBER 12345CINDOX MAP REVISED DECEMBER 31, 2011	Map Number and Map Revised (or Effective Date)	Required	8 pt. Franklin Gothic Medium Cond, Blue (0, 82, 171), CAPS 8 pt. Franklin Gothic Medium, Black, CAPS
 FEMA	Department of Homeland Security seal	Required	Width: 1" Height: 1.4"
PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS	This note is used to designate panels not printed because the entire panel area does not contain floodplain areas.	Required when applies	7 pt. Arial, Black, CAPS

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Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS; ALL AREAS WITHIN 0.2% ANNUAL CHANCE FLOODPLAIN	This note is used to indicate panels not printed because the panel area is entirely contained within the 0.2% annual chance floodplain. This note shall be used on a discretionary basis for undeveloped areas of the community. If this area is behind a levee or at least moderately developed (>25000 people per square mile), it shall be a printed panel.	Required when applies	7 pt. Arial, Black, CAPS
PANEL NOT PRINTED – AREA IN ZONE D	This note is used to indicate panels not printed because the panel area is entirely Zone D.	Required when applies	7 pt. Arial, Black, CAPS
PANEL NOT PRINTED – AREA NOT INCLUDED	This note is used when the area of an entire panel is contained in an Area Not Included.	Required when applies	7 pt. Arial, Black, CAPS
PANEL NOT PRINTED – OPEN WATER AREA	This note is used when an area of all water and no land is contained within the panel area.	Required when applies	7 pt. Arial, Black, CAPS

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Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
PANEL NOT PRINTED – AREA ALL WITHIN ZONE AE (EL x)	This note is used when the area of the panel falls within one flood hazard zone (either Zone AE or VE with one flood elevation or A or V). If the panel contains any land area, this procedure shall only be used with the approval of a FEMA Project Officer, as normally any lands areas with flood hazards should be printed. The elevation value is shown here as “x.”	Required when applies	7 pt. Arial, Black, CAPS

5.2.2. Figure 2, FIRM Notes to Users

The following notes to users are examples of content that should be included (black text) as part of each Notes to Users Figure, and content that is included if applicable (**bold, blue text**). **Bold, orange text** should be updated according to the specifics of the study.

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

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To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

Coastal Base Flood Elevations shown on the map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the FIS Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction

PROJECTION INFORMATION: The projection used in the preparation of the map was **Universal Transverse Mercator (UTM) Zone 10**. The horizontal datum was **NAD83, GRS1980 spheroid**. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the **North American Vertical Datum of 1988**. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the **North American Vertical Datum of 1988**, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by **Flood County GIS Department at a scale of 1:5,000. The following panels used base map information provided by the U.S. Geological Survey at a scale of 1:12,000: 125, 130, and 140.** For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within **Flood County, USA**, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for **Flood County, USA**, effective **December 31, 9999**.

COASTAL BARRIER RESOURCES (CBRS) NOTE: This map includes approximate boundaries of the CBRS for informational purposes only. Flood insurance is not available within CBRS areas for structures that are newly built or substantially improved on or after the date(s) indicated on the map. For more information see http://www.fws.gov/habitatconservation/coastal_barrier.html, the FIS Report, or call the U.S. Fish and Wildlife Service Customer Service Center at 1-800-344-WILD.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in Zone VE.

ACCREDITED LEEVE NOTES TO USERS: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at <http://www.fema.gov/business/nfip/index.shtm>.

PROVISIONALLY ACCREDITED LEEVE NOTES TO USERS: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by **December 31, 2011**. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at <http://www.fema.gov/business/nfip/index.shtm>.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Figure 2 Additional Notes

- Every note that is shown on the Notes to Users on one or more of the county's FIRM panels will be included once in the Notes to Users section in the FIS Report.
- If specific panels need to be referenced in the notes, add this information manually.
- For communities whose FIS Report is maintained in its prior format and is not updated to the format outlined by this Technical Reference, but for which FIRM panels are being updated to the format specified by the FIRM Panel Technical Reference, the Notes to Users will be included as an appendix to the FIS Report. The Notes to Users should be checked to make sure references to specific FIRM panels or FIS Report tables are appropriate and accurate.

5.2.3. Figure 3, Map Legend for FIRM

The following table outlines the required elements to be in the FIS Report as “Figure 3: Map Legend for FIRM”. Refer to the FIRM Panel Technical Reference for the font and symbology specifications of each of these elements in the Map Legend.

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*



Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

- Zone A

The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
- Zone AE

The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.
- Zone AH

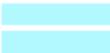
The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
- Zone AO

The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
- Zone AR

The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- Zone A99

The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
- Zone V

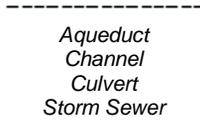
The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.

	<p>Zone VE Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.</p> <p style="margin-left: 20px;">Regulatory Floodway determined in Zone AE.</p>	
 	<p>Non-encroachment zone (see Section 2.4 of this FIS Report for more information)</p> <p>The Colorado River Floodway was established by Congress in the Colorado River Floodway Protection Act of 1986, Public Law 99-450 (100 Statute 1129). The Act imposes certain restrictions within the Floodway.</p>	
<p>FLOOD INSURANCE IS NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER APRIL 8, 1987, IN THE DESIGNATED COLORADO RIVER FLOODWAY</p>		
<p>OTHER AREAS OF FLOOD HAZARD</p>		
  	<p>Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.</p> <p>Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.</p> <p>Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.</p>	
<p>OTHER AREAS</p>		
 <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">NO SCREEN</div>	<p>Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.</p> <p>Unshaded Zone X: Areas of minimal flood hazard.</p>	
<p>FLOOD HAZARD AND OTHER BOUNDARY LINES</p>		
 (ortho)	 (vector)	<p>Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)</p>
	<p>Limit of Study</p>	
	<p>Jurisdiction Boundary</p>	



Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet

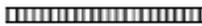
GENERAL STRUCTURES



Channel, Culvert, Aqueduct, or Storm Sewer



Dam, Jetty, Weir



Levee, Dike, or Floodwall accredited or provisionally accredited to reduce the flood risk from the 1% annual chance flood.



Levee, Dike or Floodwall not accredited to reduce the flood risk from the 1% annual chance flood.



Bridge

Bridge

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS

(OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*



CBRS AREA
09/30/2009

Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.



**OTHERWISE
PROTECTED AREA**
09/30/2009

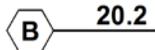
Otherwise Protected Area

REFERENCE MARKERS



River mile Markers

CROSS SECTION & TRANSECT INFORMATION

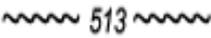


Lettered Cross Section with Regulatory Water Surface Elevation (BFE)



Numbered Cross Section with Regulatory Water Surface Elevation (BFE)

FIS Report Technical Reference

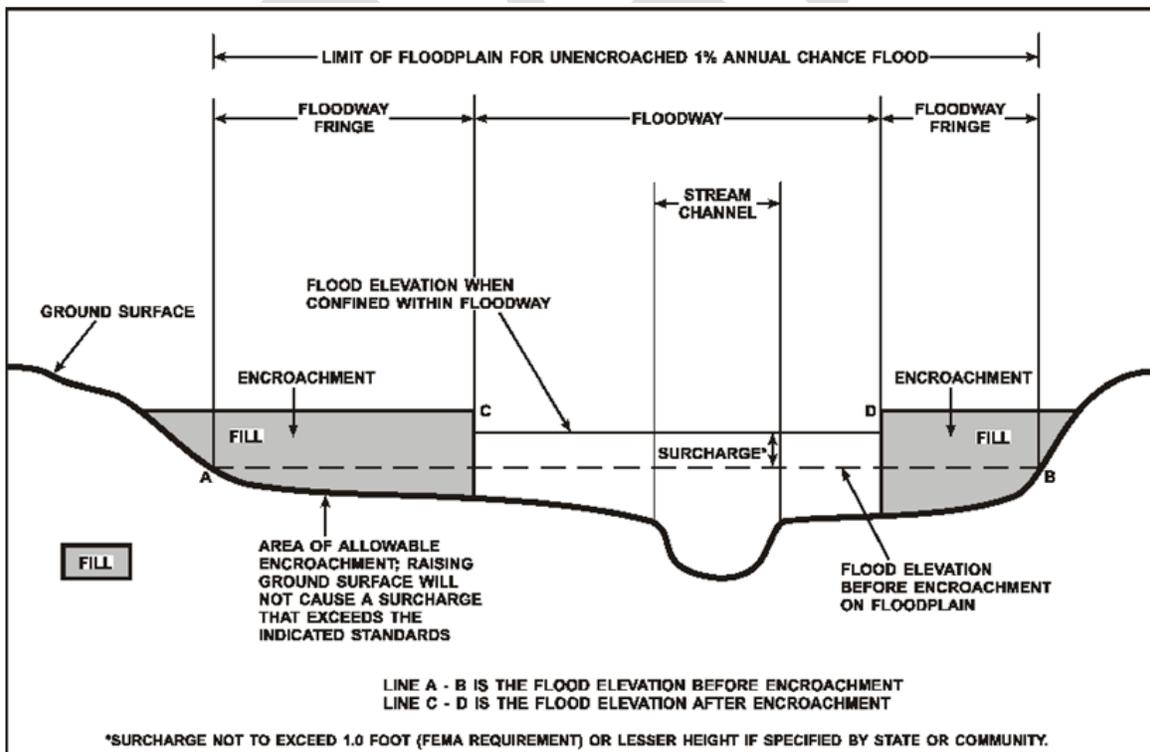
<u>17.5</u>	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
(8) - - - - -	Coastal Transect
 	<p>Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.</p> <p>Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.</p>
 ZONE AE (EL 16) ZONE AO (DEPTH 2) ZONE AO (DEPTH 2) (VEL 15 FPS)	<p>Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)</p> <p>Static Base Flood Elevation value (shown under zone label)</p> <p>Zone designation with Depth</p> <p>Zone designation with Depth and Velocity</p>
BASE MAP FEATURES	
<u>Missouri Creek</u>	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
MAPLE LANE 	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
 RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number

R. 43 W. T. 22 N.	Range, Township Number
$4276^{000m}E$	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

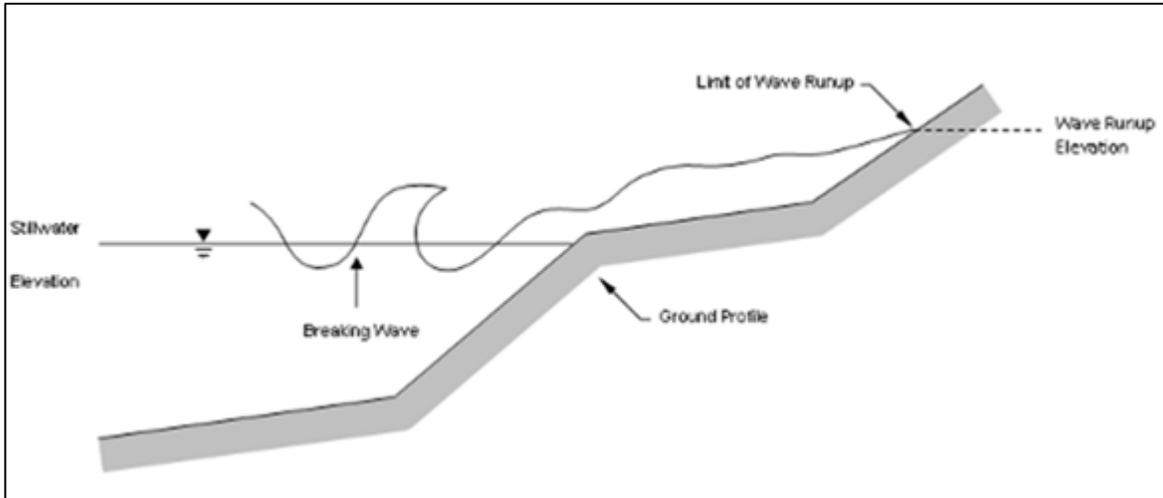
Figure 3 Additional Notes

- The special double cross-hatching used to indicate the Colorado River Floodway in the template should only be used in special situations and removed whenever it is not used on the FIRM. This pattern is used to indicate any Area of Special Consideration, the Colorado River Floodway, or a Density Fringe Area.
- With the exception of the elements for Non-Encroachment Zone and Area of Special Consideration, all other elements of the Map Legend should be included in each FIS Report.
- For communities whose FIS Report is maintained in its prior format and is not updated to the format outlined by this Technical Reference, but for which FIRM panels are being updated to the format specified by the FIRM Panel Technical Reference, the Map Legend will be included as an appendix to the FIS Report.

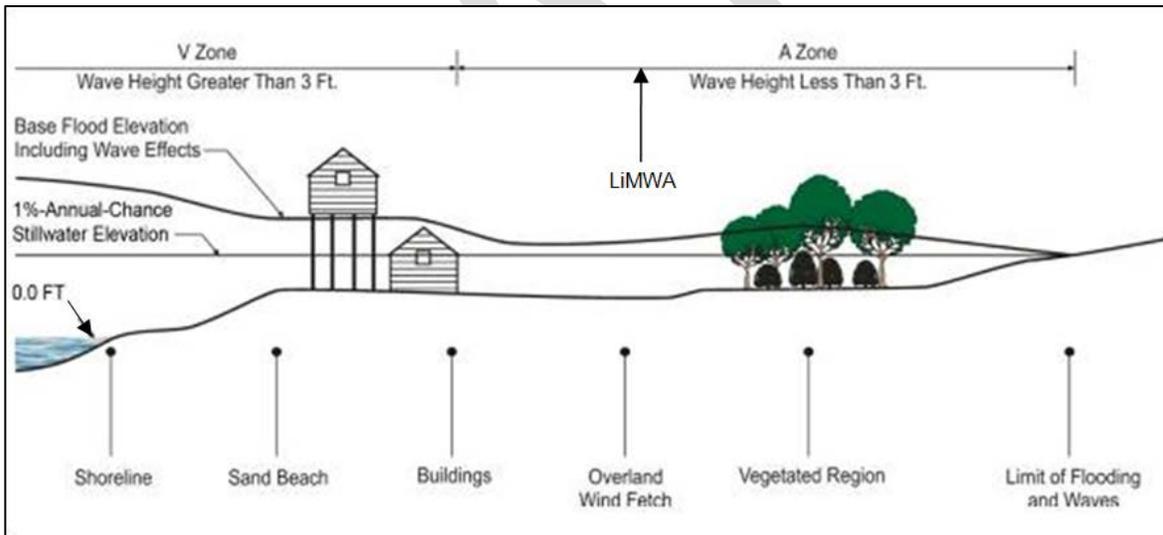
5.2.4. Figure 4, Floodway Schematic



5.2.5. Figure 5, Wave Runup Transect Schematic



5.2.6. Figure 6, Coastal Transect Schematic



5.2.7. Figure 7, Frequency Discharge - Drainage Area Curves

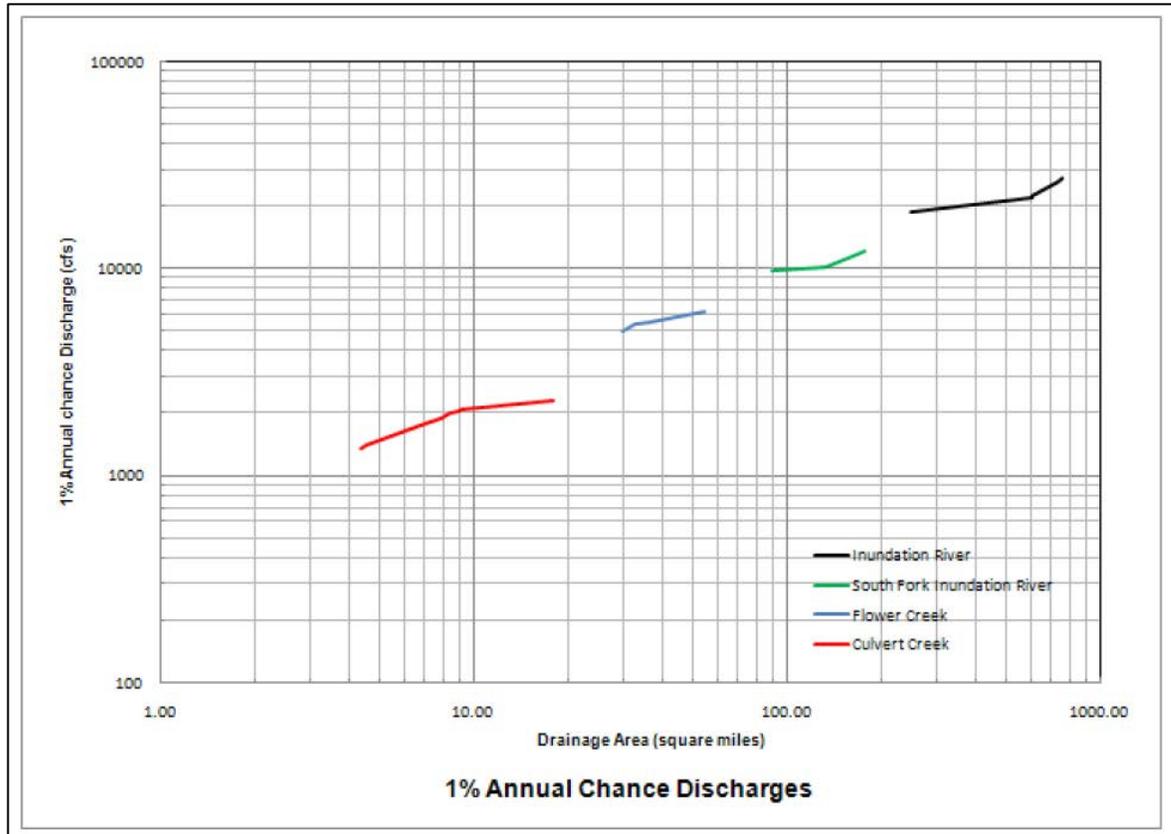


Figure 7 Additional Notes

- Frequency discharge – drainage area curves for selected flooding sources may be added under this caption if they are needed to explain the methodology for hydrologic or hydraulic analysis, but they are not required. The decision to include these figures, and for which flooding sources, should be made on a case-by-case basis.

5.2.8. Figure 8, 1% Annual Chance Total Stillwater Elevations for Coastal Areas



Figure 8 Additional Notes

- This graphic can be customized and included if needed to help communicate the results of the coastal analysis.

5.2.9. Figure 9, Transect Location Map

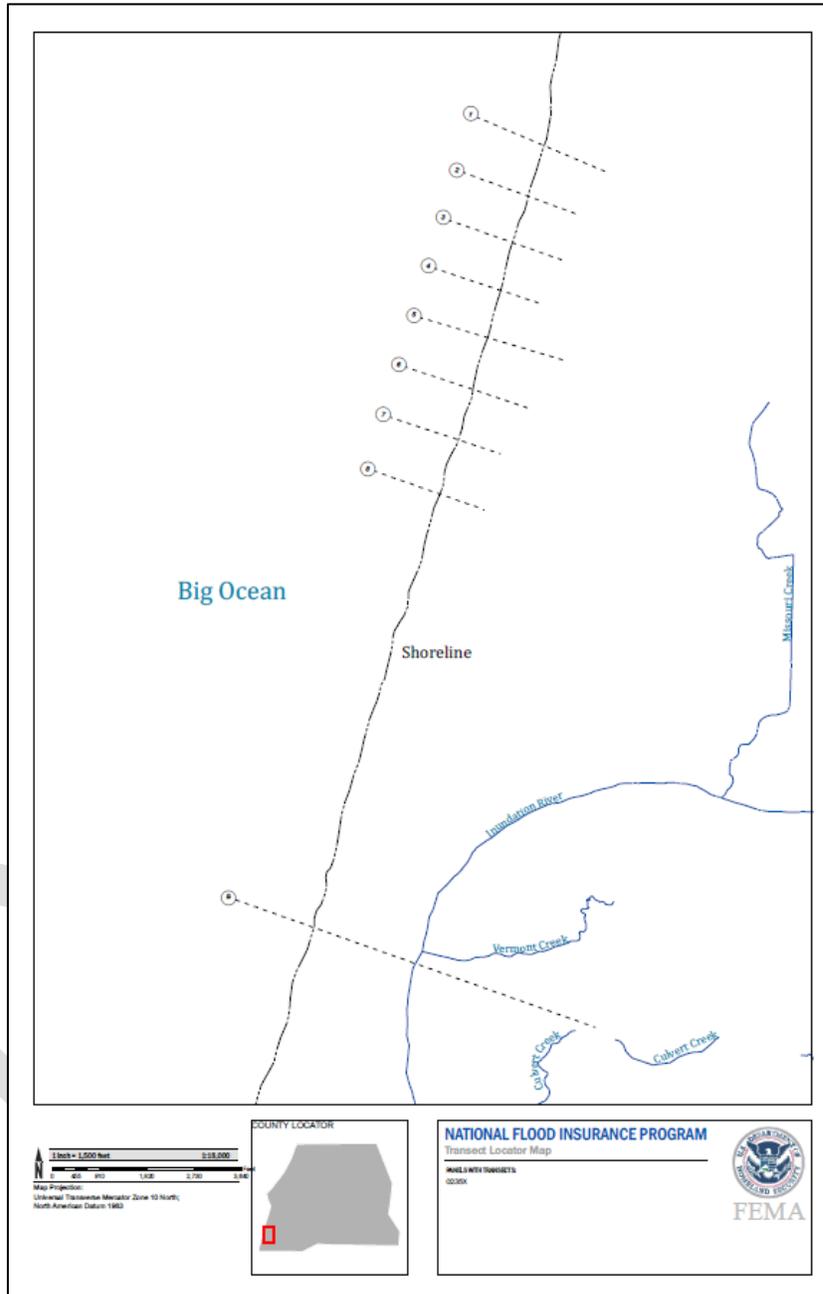


Figure 9 Additional Notes

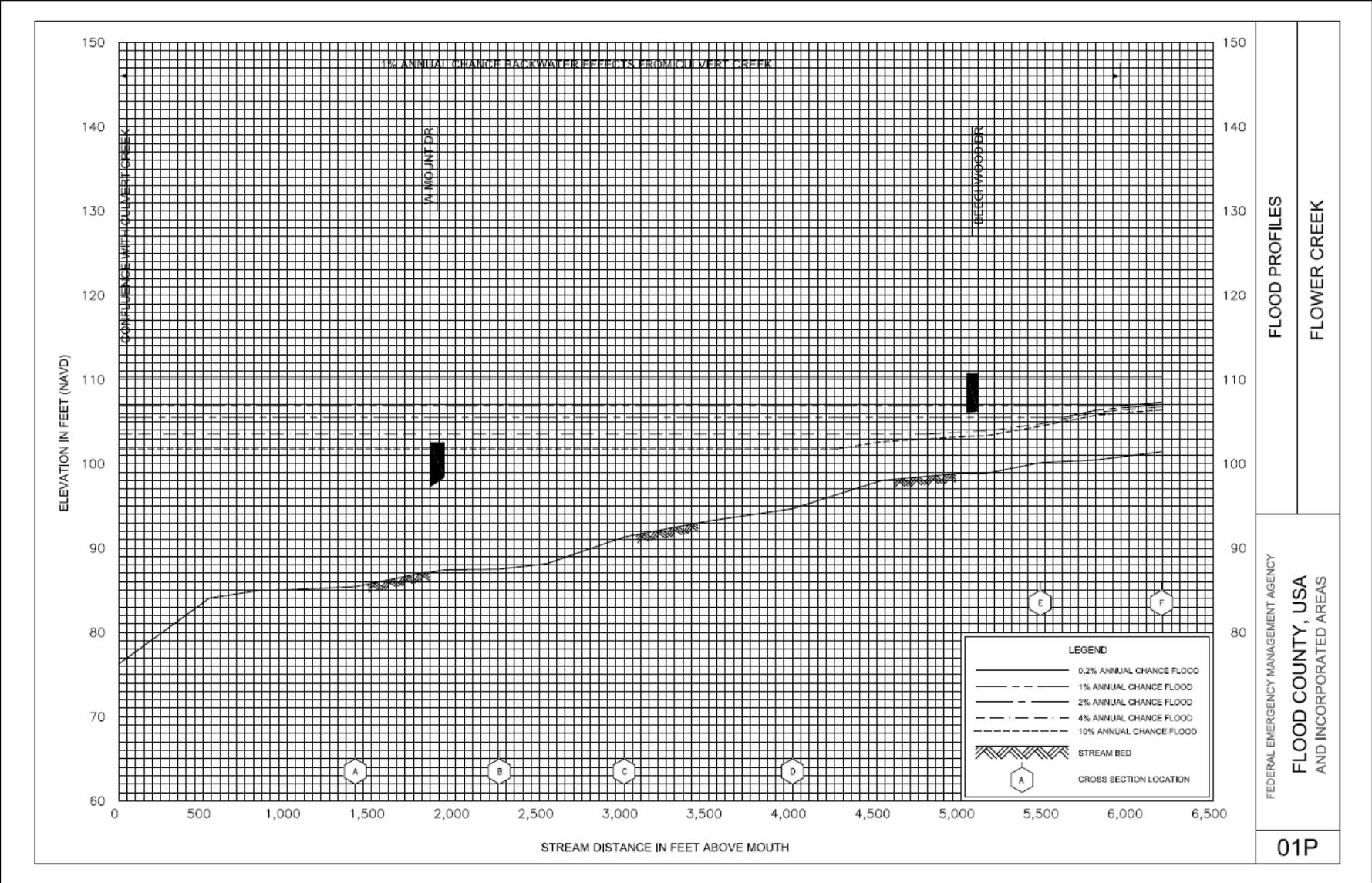
- If included, the transect location map should use the same general specifications as the Map Legend. Refer to the FIRM Panel Technical Reference for the specifications for the Map Legend.

6. Bibliography and References

- Citations (references within the body of the report) should follow the (Author Year) format in the text to eliminate the need to renumber citations. These can be populated from the FIRM Database but may require some manual editing for clarity in the FIS Report. The U.S. Government Printing Office Style Manual (2008 online) notes that “Consistency is more important than the style itself...” The following references provide additional guidance on the use of citations:
 - Better Report Writing, by Willis H. Waldo Reinhold Publishing Corp., New York, 1965.
 - Macmillan Handbook of English, by Robert F. Wilson. Macmillan Co., New York, 1982.
 - Chicago Manual of Style, University of Chicago Press, Chicago, 2003.
 - Words Into Type, Prentice-Hall, New York, 1974.”
- Information obtained from web pages should cite the link to the top web page (such as www.fema.gov) at the very least and the date accessed.
- This table should be arranged alphabetically by “Citation in this FIS Report.”

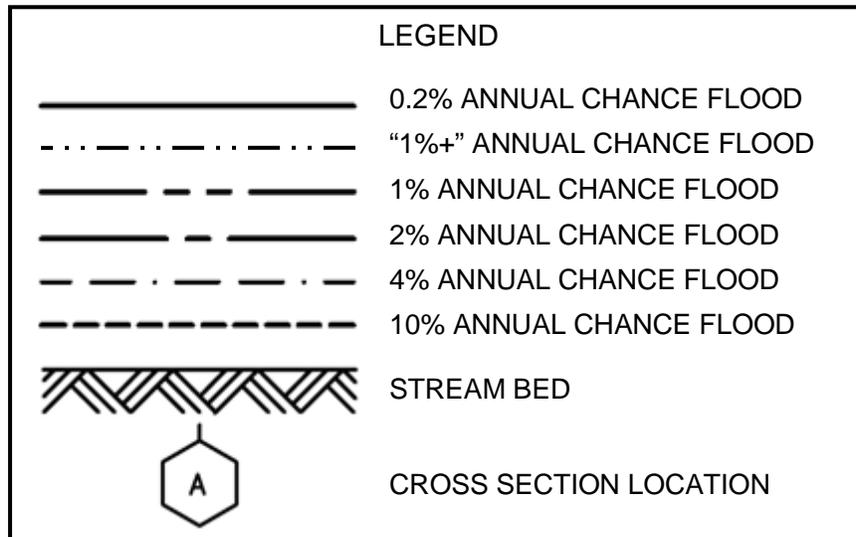
7. Profiles

Profiles should be developed to match the examples shown on the following pages as closely as possible. Details such as fonts or symbols that cannot be matched should be approximated. Additional examples are also included in the FIS Report template.



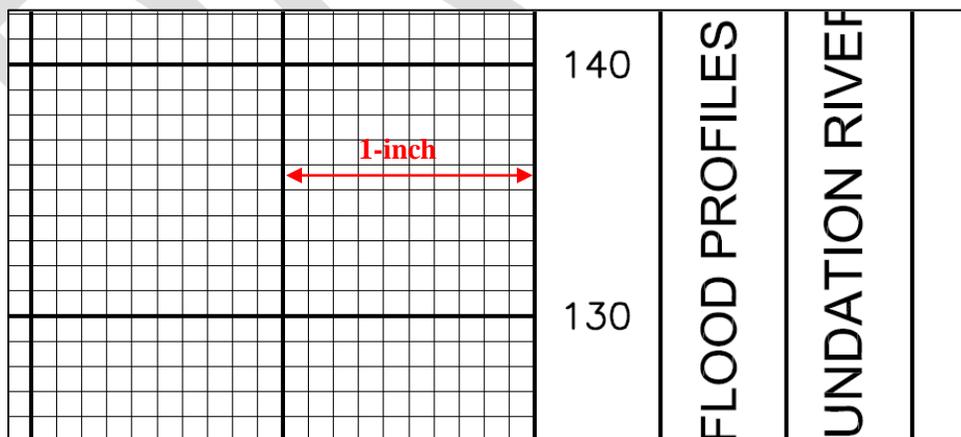
7.1. Profile Legend

The profile legend is included in the bottom right corner of the profile, and contains the flood profiles modeled. It outlines the line type that should be used for each flood profile line. If the “1%+” and 4% annual chance data was calculated for a flooding source, this data should be included in the profile and in the legend.



7.2. Profile Grid

The profile grid contains major gridlines and minor gridlines. Major gridlines should be at 1-inch intervals. Minor gridlines are typically at 1/10th of an inch, as shown below.

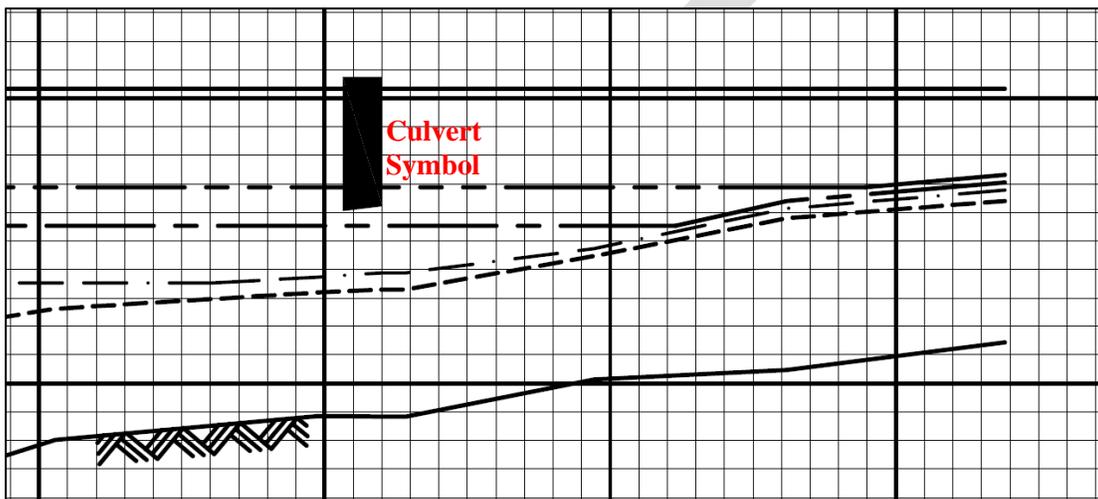


7.3. Structures Shown on Profiles

Hydraulic structures that were modeled should be shown on the flood profiles. Examples of how these should look on the profile are discussed below.

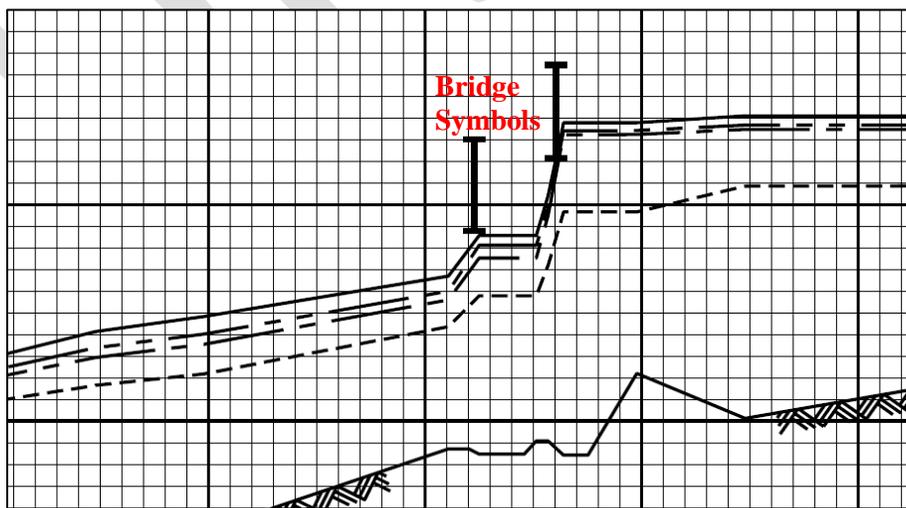
7.3.1. Culverts

For culverts included on the flood profile, the symbol shown is to represent the overburden. The top of the symbol represents the top of road or ground surface. The culvert pipe is assumed to be the open area between the streambed and the bottom of the overburden.



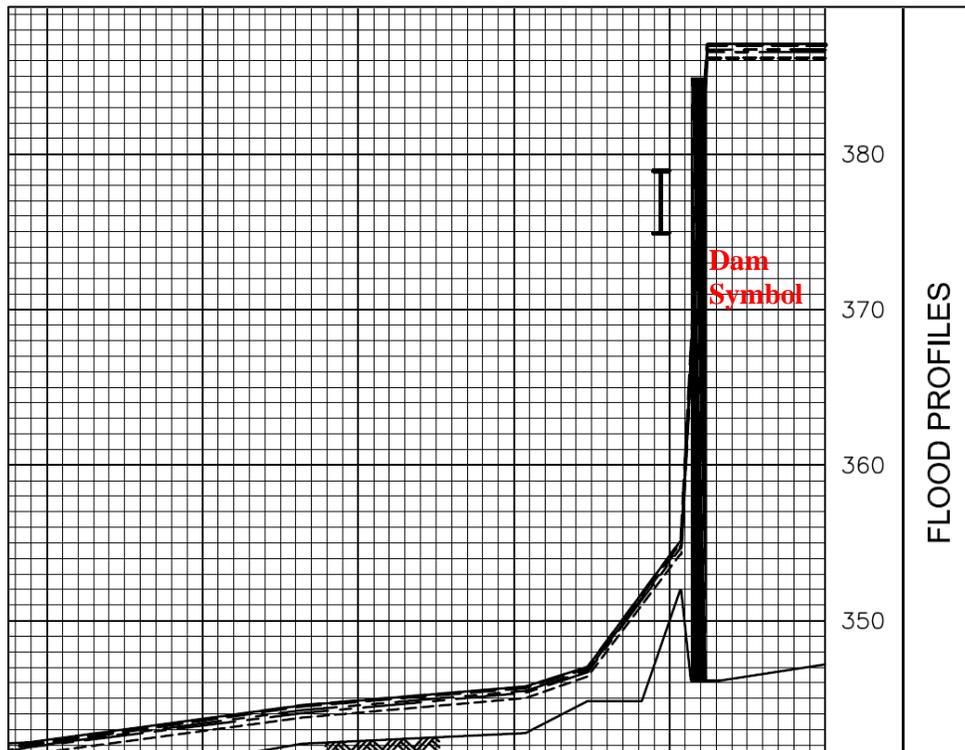
7.3.2. Bridges

For bridges shown on the flood profile, the structure is represented by an "I" symbol. The top of the bridge symbol represents the top of road, and the bottom of the symbol represents the low chord (or low steel) of the bridge.



7.3.3. Dams

For dams shown on the flood profile, the symbol depicted is similar to a culvert, but extended down to the streambed. The top of the symbol represents the top of the dam.



7.4. Other Profile-Related Guidance

If unlettered cross sections have been displayed on the FIRM panels, these are not to be included on the flood profile. Only lettered or numbered cross sections are displayed on the flood profiles.

4 Tables have been added into the FIRM Database to accommodate creation of the Flood Profiles from the FIRM Database and import / export from RASLOT:

- **L_Profil_Bkwtr_El** – stores the backwater elevation for each event
- **L_Profil_Label** – stores the labels (roads, confluences, etc.) used on the profiles
- **L_Profil_Panel** – stores the profile panel information
- **L_XS_Struct** – stores the type of structure, high/low chord, etc. for display on the profiles

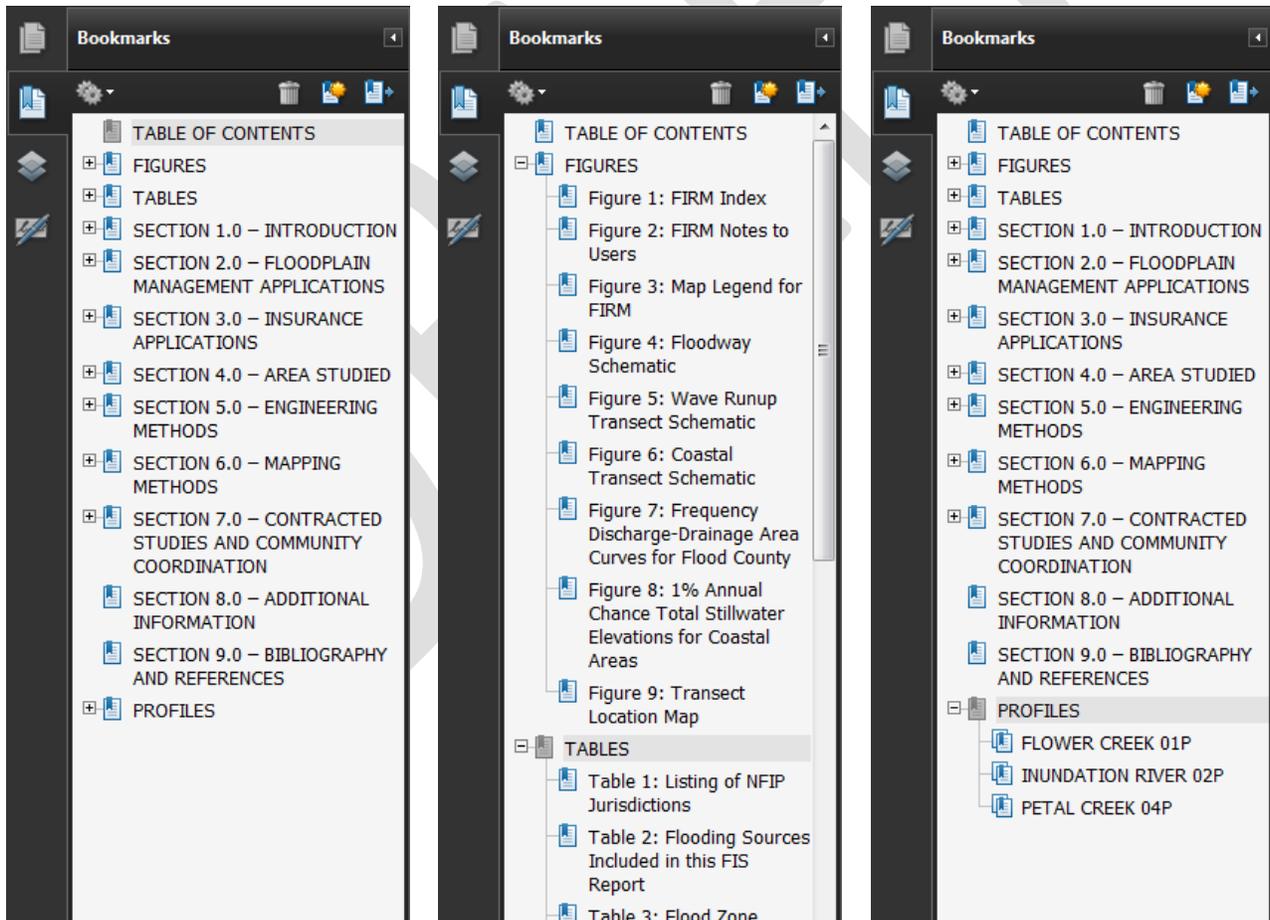
8. Preparation of the FIS Report in PDF Format

In order for the PDF-formatted FIS Report to be as usable as possible, bookmarks must be added to facilitate searching throughout the document.

8.1. FIS Report Bookmarking

The following lists the sections and elements that are to be added as bookmarks or hyperlinks in the PDF-formatted version of the FIS Report.

- First page of the Table of Contents. Each section, figure, table, and exhibit (profiles) should also have a hyperlink from within the Table of Contents.
- All figures. These should be organized under a “FIGURES” bookmark group instead of scattered through the other sections.
- All tables. These should also be organized under a “TABLES” bookmark group instead of scattered through the other sections.
- The first and second heading levels (Heading 1 and Heading 2) of the sections in the Report (e.g. SECTION 5.0 – ENGINEERING METHODS and 5.1 Hydrologic Analyses, 5.2 Hydraulic Analyses, 5.3 Coastal Analyses, and 5.4 Alluvial Fan Analyses).
- Start of each flooding source’s Flood Profile. These should be organized under a “PROFILES” bookmark group.
- All URLs cited in the FIS Report.



8.2. Other Formatting Guidance

- The source Word document should be provided with the PDF to assist in preparing future updates to the FIS Report.
- Embedded graphics within the FIS Report must be produced at a resolution of 400 dpi.
- If software that allows individual layers to be saved is used to generate PDFs of flood profiles, remove any “layer” information.