Flood Insurance Study (FIS) Report Technical Reference

Preparing FIS Reports

November 2016

FEMA

For more information, please visit the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage (www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping). Copies of the Standards for Flood Risk Analysis and Mapping policy, related guidance, technical references, and other information about the guidelines and standards development process are all available here. You can also search directly by document title at www.fema.gov/library.

Implementation Instructions

This version of the Technical Reference must be used on projects as described below. Generally, the changes in this version may also be implemented on any project, in coordination with the FEMA Project and Contracting Officer's Representative.

Revision Date	Implementation
November 2016	Implemented with all new projects initiated in FY17.

Table of Revisions

The following summary of changes details revisions to the Flood Insurance Study (FIS) Report Technical Reference subsequent to its most recent version in May 2016.

Affected Section or Subsection	Revision Date	Revision Description
Section 4.3.23 - Table 23	November 2016	Revised table columns to address the requirement to report the accuracy of the terrain data used for mapping.
Section 4.3 - Table 28 Additional Notes	November 2016	Added footnote option for multi-county communities containing no SFHAs.
Section 5.1 - Figure 1 Additional Notes (FIRM Index)	November 2016	Clarified applying CBRS/OPA/PNP information and multi-county community information to the FIRM Index.
Section 5.2 – Figure 2, FIRM Notes to Users	November 2016	Modified NGS contact information, per request from NGS.

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1.0 Introduction

This Technical Reference provides instructions for creating Flood Insurance Study (FIS) Reports. An FIS Report template, 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 References. The tables included within the FIS Report and the Flood Insurance Rate Map (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 within this Technical Reference explain specific elements that must be followed when developing FIS Reports in this new format. The FIS Report Guidance document also provides additional recommendations on the creation of FIS Reports.

2.0 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.
- **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 practice 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	**5.3 Coastal Flood Hazard Areas** **5.3.1 Total Stillwater Elevations** This section is not applicable to this Flood Risk Project.
Example of not applicable table	**Table 16: Summary of Coastal Analyses** **[Not Applicable to this Flood Risk Project]**
Example of not applicable figure	**Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas** **[Not Applicable to this Flood Risk Project]**

- 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	*

- Table 1 is the only location within the FIS Report that stores information about communities that are not included in the FIS Report ("Areas Not Included").

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.

3.0 FIS Report Cover and Table of Contents

3.1 Cover

- Choose the appropriate cover from the FIS Report 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. FIS Reports that are issued preliminary should include a stamp, text, or image on the cover indicating that the report is "Preliminary".
- 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".
- Multi-county communities that are included in their entirety within another county's FIS Report should not be listed on the cover.
- The "VOLUME 1 OF X" text on the cover should be updated based on the number of volumes (where X = 1, 2, 3, etc.) in the report.
- The "Version Number" at the bottom of the cover is used to identify the version of the Guidelines and Standards that the FIS Report production was based upon. Additional information regarding the version number that should be assigned is available at www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/guidelines-standards-maintenance.

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

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Figure 6: Coastal Transect Schematic
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Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas
Figure 9: Transect Location Map

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Table 21: Stream-Based Vertical Datum Conversion
Table 22: Base Map Sources
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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.

4.0 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.
- 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".
- Table entries should be alphabetized/sequenced by the content in the first column of the table. For tables with two or more entries that have the same value in the first column, the table should be ordered based on the values in the second column, and so on. Exceptions or clarifications to this rule, if any, are noted within the specific notes following each table example in section 4.3.
- When a table spans multiple pages, footnote numbers are applied to the entire table; footnote numbering does not restart on each page of a multi-page table. For Table 24, "Floodway Data Table," footnote numbers are applied to each stream entry, and the footnote numbering does not restart on each page of a multi-page stream entry.

4.2 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. Tables 1 and 2 show 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 Table / Figure / Section	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
Cover	Community Name	S_Pol_Ar	POL_NAME1
Cover	Community Number	S_Pol_Ar	CID
Cover	Effective Date	Study_Info	INDX_EFFDT
Cover	FIS Number	Study_Info	FIS_NM
Table 1: Listing of NFIP Jurisdictions	Community	S_Pol_Ar	POL_NAME1
Table 1	CID	S_Pol_Ar	CID
Table 1	HUC-8 Sub-basin(s)	S_Subbasins	HUC8

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 1	Located on FIRM Panels(s)	S_FIRM_Pan	FIRM_PAN
Table 1	If Not Included, Location of Flood Hazard Data	S_Pol_Ar	ANI_FIRM
Table 1	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
Figure 1	-	S_FIRM_Pan	EFF_DATE
Figure 1	-	S_FIRM_Pan	PNP_REASON
Figure 1	-	S_Pol_Ar	POL_NAME1
Figure 1	-	S_Subbasins	HUC8
Figure 1	-	S_Subbasins	SUBBAS_NM
Figure 1	-	S_Wtr_Ln and/or S_Wtr_Ar	WTR_NM
Figure 1	-	S_Trnsport_Ln	ROUTENUM
Figure 1	-	Study_Info	STUDY_PRE + STUDY_NM + STATE_NM + JURIS_TYP
Figure 1	-	Study_Info	INDX_EFFDT
Figure 2: FIRM Notes to Users	Coastal Base Flood Elevation limits – landward value	Study_Info	LANDWD_VAL
Figure 2	Coastal Base Flood Elevation limits	Study_Info	V_DATUM
Figure 2	Projection	Study_Info	PROJECTION + PROJ_ZONE
Figure 2	Horizontal Datum	Study_Info	H_DATUM
Figure 2	Vertical Datum	Study_Info	V_DATUM
Figure 2	Base Map Information: source, scale	L_Source_Cit	TITLE + PUBLISHER + SRC_SCALE + PUB_DATE
Figure 2	Revisions to Index: Effective Date	Study_Info	INDX_EFFDT
Figure 2	Study Name	Study_Info	STUDY_PRE + STUDY_NM
Figure 2	Effective Date	Study_Info	INDX_EFFDT
Table 2: Flooding Sources Included in this FIS Report	Flooding Source	S_Profil_Basln and/or S_Tsct_Basln	WTR_NM
Table 2	Community	S_Pol_Ar	POL_NAME1
Table 2	Downstream Limit	S_Profil_Basln and/or S_Tsct_Basln	R_ST_DESC
Table 2	Upstream Limit	S_Profil_Basln and/or S_Tsct_Basln	R_END_DESC
Table 2	HUC-8 Sub-Basin(s)	S_Subbasins	HUC8

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 2	Length (mi) (streams or coastlines)	S_Profil_Basln and/or S_Tsct_Basln	Read from Geographic Information System (GIS) data
Table 2	Area (mi^2) (estuaries or ponding)	S_Profil_Basln and/or S_Tsct_Basln	Read from GIS data
Table 2	Floodway (Y/N)	S_Profil_Basln	True where STUDY_TYP = SFHAs WITH HIGH FLOOD RISK
Table 2	Zone shown on FIRM	S_Fld_Haz_Ar	FLD_ZONE
Table 2	Date of Analysis	S_Submittal_Info	COMP_DATE
Table 3: Flood Zone Designations by Community	Community	S_Pol_Ar	POL_NAME1
Table 3	Flood Zone(s)	S_Fld_Haz_Ar	FLD_ZONE
Table 4: Coastal Barrier Resources System Information	Primary Flooding Source	S_CBRS	WTR_NM
Table 4	CBRS/OPA Type	S_CBRS	CBRS_TYP
Table 4	Date CBRS Area Established	S_CBRS	CBRS_DATE
Table 4	FIRM Panel Number(s)	S_FIRM_Pan	FIRM_PAN
Table 5: Basin Characteristics	HUC-8 Sub-Basin Name	S_Subbasins	SUBBAS_NM
Table 5	HUC-8 Sub-Basin Number	S_Subbasins	HUC8
Table 5	Primary Flooding Source	S_Subbasins	WTR_NM
Table 5	Description of Affected Area	S_Subbasins	BASIN_DESC
Table 5	Drainage Area (units)	S_Subbasins	SUB_AREA
Table 5	Drainage Area (units)	S_Subbasins	AREA_UNIT
Table 6: Principal Flood Problems	Flooding Source	S_Profil_Basln	WTR_NM
Table 6	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 Flood Elevations	Flooding Source	S_HWM	WTR_NM
Table 7	Location	S_HWM	LOC_DESC
Table 7	Historic Peak (vertical datum)	S_HWM	ELEV
Table 7	Historic Peak (vertical datum)	S_HWM	LEN_UNIT
Table 7	Historic Peak (vertical datum)	S_HWM	V_DATUM
Table 7	Event Date	S_HWM	EVENT_DT

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 7	Approximate Recurrence Interval (years)	S_HWM	APX_FREQ
Table 7	Source of Data	S_HWM	HWM_SOURCE
Table 8: Non-Levee Flood Protection Measures	Flooding Source	S_Gen_Struct	WTR_NM
Table 8	Structure Name	S_Gen_Struct	STRUCT_NM
Table 8	Type of Measure	S_Gen_Struct	STRUCT_TYP
Table 8	Location	S_Gen_Struct	LOC_DESC
Table 8	Description of Measure	S_Gen_Struct	STRUC_DESC
Table 9: Levees	Community	S_Pol_Ar	POL_NAME1
Table 9	Flooding Source	S_Levee	WTR_NM
Table 9	Levee Location	S_Levee	BANK_LOC
Table 9	Levee Owner	S_Levee	OWNER
Table 9	USACE Levee	S_Levee	USACE_LEV
Table 9	Levee ID	S_Levee	LVDBASE_ID
Table 9	Covered Under PL84-99 Program?	S_Levee	PL84_99TF
Table 9	FIRM Panel(s)	S_FIRM_Pan	FIRM_PAN
Table 10: Summary of Discharges	Flooding Source	S_Nodes	WTR_NM via L_Summary_Discharges NODE_ID field
Table 10	Location	L_Summary_Discharges	NODE_DESC
Table 10	Drainage Area (units)	L_Summary_Discharges	DRAIN_AREA
Table 10	Drainage Area (units)	L_Summary_Discharges	AREA_UNIT
Table 10	Discharge (units)	L_Summary_Discharges	DISCH_UNIT
Table 10	Peak Discharge (units) 10% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 10 Percent Chance
Table 10	Peak Discharge (units) 4% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 4 Percent Chance
Table 10	Peak Discharge (units) 2% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 2 Percent Chance
Table 10	Peak Discharge (units) 1% Annual Chance Existing	L_Summary_Discharges	DISCH where EVENT_TYP = 1 Percent Chance
Table 10	Peak Discharge (units) 1% Annual Chance Future	L_Summary_Discharges	DISCH where EVENT_TYP = 1 Percent Chance Future Conditions
Table 10	Peak Discharge (cfs) 0.2% Annual Chance	L_Summary_Discharges	DISCH where EVENT_TYP = 0.2 Percent Chance
Table 11: Summary of Non-Coastal Stillwater Elevations	Flooding Source	S_Nodes	WTR_NM via L_Summary_Elevations NODE_ID field

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 11	Location	S_Nodes	NODE_DESC via L_Summary_Elevations NODE ID field
Table 11	Elevations (Vertical Datum)	L_Summary_Elevations	V_DATUM
Table 11	Elevations (unit)	L_Summary_Elevations	WSEL_UNIT
Table 11	Elevation 10% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 10 Percent Chance
Table 11	Elevation 4% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 4 Percent Chance
Table 11	Elevation 2% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 2 Percent Chance
Table 11	Elevation 1% Annual Chance	L_Summary_Elevations	WSEL where EVENT_TYP = 1 Percent Chance
Table 11	Elevation 1% Annual Chance Future*	L_Summary_Elevations	WSEL where EVENT_TYP = 1 Percent Chance Future Conditions
Table 11	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
Table 12	Gage Identifier	S_Gage	GAGE_OWNID
Table 12	Agency that Maintains Gage	S_Gage	AGENCY
Table 12	Site Name	S_Gage	GAGE_DESC
Table 12	Drainage Area (Square Miles)	S_Gage	DRAIN_AREA
Table 12	Drainage Area (Square Miles)	S_Gage	AREA_UNIT
Table 12	Period of Record From	S_Gage	START_PD
Table 12	Period of Record To	S_Gage	END_PD
Table 13: Summary of Hydrologic and Hydraulic Analyses	Flooding Source	S_Profil_Basln	WTR_NM
Table 13	Downstream Limit	S_Profil_Basln	R_ST_DESC
Table 13	Upstream Limit	S_Profil_Basln	R_END_DESC
Table 13	Hydrologic Model or Method Used	S_Submittal_Info	HYDRO_MDL
Table 13	Hydraulic Model or Method Used	S_Submittal_Info	HYDRA_MDL
Table 13	Date Analyses Completed	S_Submittal_Info	COMP_DATE

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 13	Flood Zone on FIRM	S_Fld_Haz_Ar	FLD_ZONE (+ ZONE_SUBTY if floodway)
Table 13	Special Considerations	S_Profil_Basln	SPEC_CONS1 + SPEC_CONS2 or separate text file if more characters are needed
Table 14: Roughness Coefficients	Flooding Source	L_ManningsN	WTR_NM
Table 14	Channel "n"	L_ManningsN	CHANNEL_N
Table 14	Overbank "n"	L_ManningsN	OVERBANK_N
Table 15: Summary of Coastal Analyses	Flooding Source	L_Cst_Model	WTR_NM
Table 15	From	L_Cst_Model	LIMIT_FROM
Table 15	To	L_Cst_Model	LIMIT_TO
Table 15	Hazard Evaluated	L_Cst_Model	HAZARDEVAL
Table 15	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
Table 15	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
Table 16: Tide Gage Analysis Specifics	Gage Name	S_Cst_Gage	GAGE_NM
Table 16	Managing Agency of Tide Gage Record	S_Cst_Gage	AGENCY
Table 16	Gage Type	S_Cst_Gage	GAGE_TYPE
Table 16	Start Date	S_Cst_Gage	START_PD
Table 16	End Date	S_Cst_Gage	END_PD
Table 16	Statistical Methodology	L_Cst_Model	TDESTAT_MT via CST_MDL_ID
Table 17: Coastal Transect Parameters	Flood Source	S_Cst_Tsct_Ln	WTR_NM
Table 17	Coastal Transect	S_Cst_Tsct_Ln	TRAN_NO
Table 17	Significant Wave Height H_s (unit)	S_Cst_Tsct_Ln	SIG_HT
Table 17	Significant Wave Height H_s (unit)	S_Cst_Tsct_Ln	ELEV_UNIT

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 17	Peak Wave Period T_p (unit)	S_Cst_Tsct_Ln	SIG_PD
Table 17	Peak Wave Period T_p (unit)	S_Cst_Tsct_Ln	TIME_UNIT
Table 17	Starting Stillwater Elevations (Vertical Datum)	S_Cst_Tsct_Ln	V_DATUM
Table 17	Stillwater (SWEL) Elevation Unit	S_Cst_Tsct_Ln	ELEV_UNIT
Table 17	Starting Stillwater Elevation - 10% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 10 Percent Chance
Table 17	Range of Stillwater Elevations - 10% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 10 Percent Chance
Table 17	Starting Stillwater Elevation - 4% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 4 Percent Chance
Table 17	Range of Stillwater Elevations - 4% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 4 Percent Chance
Table 17	Starting Stillwater Elevation - 2% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 2 Percent Chance
Table 17	Range of Stillwater Elevations - 2% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 2 Percent Chance
Table 17	Starting Stillwater Elevation - 1% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 1 Percent Chance
Table 17	Range of Stillwater Elevations - 1% Annual Chance	L_Cst_Tsct_Elev	WSEL_MIN + WSEL_MAX where EVENT_TYP = 1 Percent Chance
Table 17	Starting Stillwater Elevation 0.2% Annual Chance	L_Cst_Tsct_Elev	WSEL_START where EVENT_TYP = 0.2 Percent Chance
Table 17	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
Figure 9	-	S_Tsct_Basln and/or S_Wtr_Ln and/or S_Wtr_Ar	WTR_NM
Figure 9	-	S_Pol_Ar	POL_NAME1

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Figure 9	-	S_Trnsport_Ln	FULLNAME
Table 18: Summary of Alluvial Fan Analyses	Flooding Source	S_Profil_Basln	WTR_NM
Table 18	Location From (apex)	S_Profil_Basln	R_ST_DESC
Table 18	Location To (toe)	S_Profil_Basln	R_END_DESC
Table 18	Drainage Area above Apex (sq mi)	S_Alluvial_Fan	FANAPEX_DA
Table 18	Drainage Area above Apex (sq mi)	S_Alluvial_Fan	AREA_UNITS
Table 18	Model(s) Used	S_Submittal_Info	HYDRA_MDL
Table 18	Date Analysis was Completed	S_Submittal_Info	COMP_DATE
Table 18	Method Description	S_Alluvial_Fan	METH_DESC
Table 19: Results of Alluvial Fan Analyses	Flooding Source	S_Profil_Basln	WTR_NM
Table 19	From (apex)	S_Profil_Basln	R_ST_DESC
Table 19	To (toe)	S_Profil_Basln	R_END_DESC
Table 19	1% Annual Chance Peak Flow at Fan Apex (unit)	S_Alluvial_Fan	FANAPEX_Q
Table 19	1% Annual Chance Peak Flow at Fan Apex (unit)	S_Alluvial_Fan	DISCH_UNIT
Table 19	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
Table 19	Depth (unit)	S_Alluvial_Fan	DEPTH_UNIT
Table 19	Minimum Velocity	S_Alluvial_Fan	FAN_VEL_MN
Table 19	Maximum Velocity	S_Alluvial_Fan	FAN_VEL_MX
Table 19	Velocity (unit)	S_Alluvial_Fan	VEL_UNIT
Table 20: Countywide Vertical Datum Conversion	Quadrangle Name	S_Datum_Conv_Pt	QUAD_NM
Table 20	Quadrangle Corner	S_Datum_Conv_Pt	QUAD_COR
Table 20	Latitude	S_Datum_Conv_Pt	Read from GIS data
Table 20	Longitude	S_Datum_Conv_Pt	Read from GIS data
Table 20	Conversion from (feet)	S_Datum_Conv_Pt	CONVFACTOR
Table 20	Conversion from (feet)	S_Datum_Conv_Pt	FROM_DATUM + TO_DATUM
Table 20	Conversion from (feet)	S_Datum_Conv_Pt	LEN_UNIT
Table 20	Conversion from	S_Datum_Conv_Pt	FROM_DATUM
Table 20	Conversion to	S_Datum_Conv_Pt	TO_DATUM

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 20	Average Conversion	Study_Info	AVG_CFACTR calculated based on CONVFACTOR for all points if maximum variance from average is <0.25 feet
Table 20	Average Conversion (units)	S_Datum_Conv_Pt	LEN_UNIT
Table 21: Stream-Based Vertical Datum Conversion	Flooding Source	S_Datum_Conv_Pt	WTR_NM
Table 21	Average Vertical Datum Conversion Factor (feet)	S_Datum_Conv_Pt	Calculated based on average CONVFACTOR for each WTR_NM
Table 21	Average Vertical Datum Conversion Factor (feet)	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
Table 22	Data Provider	L_Source_Cit	PUBLISHER
Table 22	Data Date	L_Source_Cit	PUB_DATE
Table 22	Data Scale	L_Source_Cit	SRC_SCALE
Table 22	Data Description	FIRM database metadata	Source_Contribution keyword
Table 23: Summary of Topographic Elevation Data Used in Mapping	Community	S_Pol_Ar	POL_NAME1
Table 23	Flooding Source	S_Profil_Basln and/or S_Tsct_Basln	WTR_NM
Table 23	Source for Topographic Elevation Data: Description	S_Submittal_Info	TOPO_SRC
Table 23	Source for Topographic Elevation Data: Vertical Accuracy	S_Submittal_Info	TOPO_VERT_ACC where TASK_TYP = “TERRAIN_CAPTURE”
Table 23	Source for Topographic Elevation Data: Horizontal Accuracy	S_Submittal_Info	TOPO_HORIZ_ACC where TASK_TYP = “TERRAIN_CAPTURE”
Table 23	Source for Topographic Elevation Data: Citation	L_Source_Cit	CITATION
Table 24: Floodway Data	Flooding Source	S_XS	WTR_NM
Table 24	Cross Section	S_XS	XS_LTR where XS_LN_TYP = “LETTERED, MAPPED”.
Table 24	Distance	S_XS	STREAM_STN
Table 24	Floodway: Width (feet)	L_XS_ELEV	FW_WIDTH

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 24	Floodway: Width (feet)	L_XS_ELEV	LEN_UNIT
Table 24	Floodway Width In Jurisdiction (feet)	L_XS_ELEV	FW_WIDTHIN
Table 24	Floodway Width In Jurisdiction (feet)	L_XS_ELEV	LEN_UNIT
Table 24	Floodway: Section Area (sq feet)	L_XS_ELEV	XS_AREA
Table 24	Floodway: Section Area (sq feet)	L_XS_ELEV	AREA_UNIT
Table 24	Floodway: Mean Velocity (feet/sec)	L_XS_ELEV	VELOCITY
Table 24	Floodway: Mean Velocity (feet/sec)	L_XS_ELEV	VEL_UNIT
Table 24	1% Annual Chance Flood Water Surface Elevation: Existing Conditions	L_XS_ELEV	WSEL where EVENT_TYP = 1 Percent Chance
Table 24	1% Annual Chance Flood Water Surface Elevation: Existing Conditions: Left Levee	L_XS_ELEV	WSELREG_LL via XS_LN_ID
Table 24	1% Annual Chance Flood Water Surface Elevation: Existing Conditions: Right Levee	L_XS_ELEV	WSELREG_RL via XS_LN_ID
Table 24	1% Annual Chance Flood Water Surface Elevation: Future Conditions	L_XS_ELEV	WSEL where EVENT_TYP = 1 Percent Chance Future
Table 24	1% Annual Chance Flood Water Surface Elevation: Existing Conditions without Floodway	L_XS_ELEV	WSEL_WOFWY
Table 24	1% Annual Chance Flood Water Surface Elevation: Existing Conditions with Floodway	L_XS_ELEV	WSEL_FLDWY
Table 24	1% Annual Chance Flood Water Surface Elevation: Increase	L_XS_ELEV	WSEL_INCRS
Table 24	Footnote for Station Start Description	S_Stn_Start	START_DESC via S_XS START_ID
Table 24	Footnote for elevations computed w/o backwater	L_XS_ELEV	If CALC_WO_BW equals F, add stock text “Computed without consideration of backwater effects”

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams	Flooding Source	S_XS	WTR_NM
Table 25	Cross Section	S_XS	XS_LTR
Table 25	Stream Station	S_XS	STREAM_STN
Table 25	1% Annual Chance Flood Discharge (cfs)	L_Summary_Discharges	DISCH where EVENT_TYP = 1 Percent Annual Chance
Table 25	1% Annual Chance Water Surface Elevation (vertical datum)	L_XS_ELEV	V_DATUM
Table 25	1% Annual Chance Water Surface Elevation	L_XS_ELEV	WSEL where EVENT_TYP = 1 Percent Annual Chance
Table 25	Non-Encroachment Width: Left	L_XS_ELEV	NE_WIDTH_L
Table 25	Non-Encroachment Width: Right	L_XS_ELEV	NE_WIDTH_R
Table 25	Footnote for Station Start Description	S_Stn_Start	START_DESC via S_XS START_ID
Table 26: Summary of Coastal Transect Mapping Considerations	Coastal Transect	S_Cst_Tsct_Ln	TRAN_NO
Table 26	Primary Frontal Dune (PFD) Identified	N/A	Populate manually as needed
Table 26	Wave Runup Analysis: Zone Designation and BFE	N/A	Populate manually as needed
Table 26	Wave Height Analysis: Zone Designation and BFE	N/A	Populate manually as needed
Table 26	Zone VE Limit	S_Cst_Tsct_Ln	VZONE_EXT
Table 26	SFHA Boundary		Populate manually as needed
Table 27: Incorporated Letters of Map Change (where STATUS field = “Incorporated”)	Case Number	L_MT2_LOMR	CASE_NO
Table 27	Effective Date	L_MT2_LOMR	EFF_DATE
Table 27	Flooding Source	L_MT2_LOMR	WTR_NM
Table 27	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

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 28	Initial Identification Date (First NFIP Map Published)	L_Comm_Info	IN_NFIP_DT
Table 28	Initial FHBM Effective Date	L_Comm_Info	IN_FHBM_DT
Table 28	FHBM Revision Date(s)	L_Pol_FHBM	FHBM_DATE via S_Pol_Ar CID via S_Pol_Ar COM_NFO_ID
Table 28	Initial FIRM Effective Date	L_Comm_Info	IN_FRM_DAT
Table 28	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	Flooding Source	S_Profil_Basln and/or S_Tsct_Basln	WTR_NM
Table 29	FIS Report Dated	S_Submittal_Info	EFF_DATE
Table 29	Contractor	S_Submittal_Info	SUBMIT_BY
Table 29	Number	S_Submittal_Info	CONTRCT_NO
Table 29	Work Completed Date	S_Submittal_Info	COMP_DATE
Table 29	Affected Communities	S_Pol_Ar	POL_NAME1
Table 30: Community Meetings	Community	S_Pol_Ar	POL_NAME1 via L_Comm_Info COM_NFO_ID
Table 30	FIS Report Dated	L_Meetings	FIS_EFF_DT
Table 30	Date of Meeting	L_Meetings	MTG_DATE
Table 30	Meeting Type	L_Meetings	MTG_TYP
Table 30	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
Table 31	Address	L_Comm_Info	REPOS_ADR1 + REPOS_ADR2 + REPOS_ADR3
Table 31	City	L_Comm_Info	REPOS_CITY
Table 31	State	L_Comm_Info	REPOS_ST
Table 31	Zip Code	L_Comm_Info	REPOS_ZIP
Table 32: Additional Information	FEMA and the NFIP: FEMA website	Boilerplate (verify that the link works)	-
Table 32	FEMA and the NFIP: NFIP website	Boilerplate (verify that the link works)	-
Table 32	FEMA and the NFIP: NFHL Dataset	Boilerplate (verify that the link works)	-
Table 32	FEMA and the NFIP: FEMA Region	https://hazards.fema.gov and search for Geospatial Data Coordination Contacts by State	-

FIS Report Table / Figure / Section	FIS Report Template Table Column Name	FIRM Database Table Name	FIRM Database Table Field
Table 32	Other Federal Agencies: USGS website	Boilerplate (verify the link works)	-
Table 32	Other Federal Agencies: Hydraulic Engineering Center website	Boilerplate (verify the link works)	-
Table 32	State Agencies and Organizations: State NFIP Coordinator	https://hazards.fema.gov and search for Geospatial Data Coordination Contacts by State	-
Table 32	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
Table 33	Publisher/Issuer	L_Source_Cit	PUBLISHER
Table 33	Publication Title, "Article", Volume, Number, etc.	L_Source_Cit	TITLE
Table 33	Author/Editor	L_Source_Cit	AUTHOR
Table 33	Place of Publication	L_Source_Cit	PUB_PLACE
Table 33	Publication Date/Date of Issuance	L_Source_Cit	PUB_DATE
Table 33	Link	L_Source_Cit	WEBLINK

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

Table 2: Additional FIS Report Table Derivation Information

FIS Report Table / Figure	Additional Derivation Notes, Instructions, and/or Information
Table 1: Listing of NFIP Jurisdictions	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).
Figure 2: FIRM Notes to Users	Special Notes for Specific FIRM Panels: The CBRS notes could be triggered by the S_CBRS feature class not being empty; the Limit of Moderate Wave Action (LiMWA) note could be triggered by the S_LiMWA feature class not being empty and the levee notes could be triggered from S_Levee.
Table 2: Flooding Sources 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, S_Fld_Haz_Ar and S_Submittal_Info, summarized on WTR_NM (one record per Flooding Source).

FIS Report Table / Figure	Additional Derivation Notes, Instructions, and/or Information
Table 3: Flood Zone Designations by Community	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).
Table 4: Coastal Barrier Resources System Information	This table can be created by a spatial overlay of S_CBRS and S_FIRM_Pan (one record per Primary Flooding Source).
Table 9: Levees	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).
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).
Section 5.3: Variable Text	Provide as needed to summarize methodology
Table 18: Summary of Alluvial Fan Analyses	This table can be created by a spatial overlay of S_Alluvial_Fan, S_Profil_Basln and S_Submittal_Info (one record per studied alluvial fan where the S_Submittal_Info information is consistent across the entire fan).
Table 19: Results of Alluvial Fan Analyses	This table can be created by a spatial overlay of S_Alluvial_Fan and S_Profil_Basln (one record per studied alluvial fan).
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.
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.
Table 23: Summary of Topographic Elevation Data Used in Mapping	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).
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).
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).

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 instruction 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
Coastland, City of	123457	99999998	12345C0234X	
Flood County, Unincorporated Areas	123456	99999996, 99999997, 99999998	12345C0234X 12345C0235X	
Floodville, Town of	123458	99999998	12345C0200X	
New Metropolis, City of	123480	99999995, 99999996	N/A	Dry County FIS Report, 2006
Summer Beaches, Village of	123470	99999996	12345C0150X[2]	
Upland, Village of[1]	123460	99999997	12345C0100X	

[1] No Special Flood Hazard Areas Identified

[2] Panel Not Printed

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 City of New Metropolis illustrates a multi-county community that was mapped in its entirety and published in another county's FIS Report. This table is the only location within the FIS Report that should include information about communities that are not included in the FIS Report, like the City of New Metropolis.
- For Physical Map Revisions (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.
- If multiple FIRM panel numbers need to be included in one of the table cells, they must be listed in ascending numerical order.
- Communities should be listed in alphabetical order, based on the community name (e.g. "Floodville", as opposed to "Town of Floodville"). The unincorporated portion of the county, if applicable, should also be listed alphabetically, as shown in the example.

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	Coastland, City of; Flood County, Unincorporated Areas	Entire Coastline	Entire Coastline	N/A	16.3		N	VE, AE, AO	1989
Culvert Creek	Flood County, Unincorporated Areas	Confluence with South Fork Inundation River	2.3 miles upstream of confluence of Ripple Creek	99999998	0.7		N	AE	1997
Inundation River	Flood County, Unincorporated Areas; Metropolis, City of	Confluence with Big Ocean	Approximately 500 feet upstream of State Highway 999	99999998	12.5		Y	AE	2007
Inundation River	Flood County, Unincorporated Areas; Metropolis, City of	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	Metropolis, City of	Pear Tree Circle	Westwood Lane	99999997		1.6	N	AE	2002
North Fork Inundation River	Coastland, City of; Flood County, Unincorporated Areas	Confluence with Inundation River	0.7 miles upstream of Lilac Stream	99999998	4.2		Y	AE	2010
South Fork Inundation River	Flood County, Unincorporated Areas	Confluence with Inundation River	3.2 miles upstream of confluence of Culvert Creek	99999998	3.8		Y	AE	2010
West River and Zone A Tributaries	Flood County, Unincorporated Areas	Confluence of West River with Inundation River	1 square mile drainage area of all Zone A streams	99999998	206.8		N	A	2010
Wood Branch and Zone A Tributaries	Flood County, Unincorporated Areas; Floodville, Town of	Confluence of Wood Branch with North Fork Inundation River	1 square mile drainage area of all Zone A streams	99999998	58.7		N	A	2009

Table 2 Additional Notes

- This table is not intended to be a historical record of all the studies ever performed in the county for each flooding source. It is, rather, a listing of all the current studies reflected on the most recent FIRMs.
- 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).

- It is acceptable to delete the "Area…" column if the study limits for all flooding sources within the FIS Report are best reported within the "Length…" column, and vice versa.

4.3.3 Table 3, Flood Zone Designations by Community

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

Table 3 Additional Notes

- Communities should be listed in alphabetical order, based on the community name (e.g. "Floodville", as opposed to "Town of Floodville"). The unincorporated portion of the county, if applicable, should also be listed alphabetically, as shown in the example.

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

Table 4 Additional Notes

- If multiple FIRM panel numbers need to be included in one of the table cells, they must be listed in ascending numerical order.

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	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
Big Ocean	N/A	Tidal flooding warnings	Low-lying coastal areas	Flood Weather Forecast Office issues storm tide warnings
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

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)
Flood County, Unincorporated Areas	Inundation River	Left Bank	Flood County Water Supply	Yes	1234545362	Yes	12345C0234X
Flood County, Unincorporated Areas	Inundation River	Right Bank	Flood County Water Supply	Yes	1354212346	Yes	123450C234X
Floodville, Town of	Inundation River	Left Bank	Floodville Waterworks	No	1901990990	No	12345C0245X

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.
- Communities should be listed in alphabetical order, based on the community name (e.g. “Floodville”, as opposed to “Town of Floodville”). The unincorporated portion of the county, if applicable, should also be listed alphabetically, as shown in the example.
- If multiple FIRM panel numbers need to be included in one of the table cells, they must be listed in ascending numerical order.
- Levees that have not been demonstrated to meet the requirements of 44CFR 65.10 should be identified in this table.

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	Just downstream 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	1.2 miles downstream of US Highway 27	980	73,100	86,800	101,000	116,000	119,000	136,000
Inundation River	2,000 feet downstream of 3rd Avenue	930	70,500	82,360	97,100	111,000	115,000	130,000
Inundation River	500 feet upstream of Main Street	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	Just upstream of 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.
- Flooding sources with multiple discharge locations should be listed from the largest drainage area to the smallest drainage area, in decreasing order.
- Levee Seclusion Zones: Typically, seclusion mapping should not affect the discharges for the secluded flooding source and therefore no seclusion mapping

notation would be needed for the Summary of Discharges Table. If analysis supports secluding discharges, coordination with the FCS Community of Practice will be required. If appropriate, notation similar to that used for the Floodway Data Table can be used.

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
Central Reservoir	Flood County, Unincorporated Areas	12.6	*	14.5	15.2	17.0
Lily Pond	Metropolis, City of	8.6	*	11.6	12.6	13.3

*Not calculated for this Flood Risk Project

Table 11 Additional Notes

- This table is intended to show non-coastal stillwater elevations within the county. When completing this table based on entries in the L_Summary_Elevations FIRM Database table, only those records that have a valid NODE_ID should be used to populate Table 11. Records whose NODE_ID is not populated ("NP") reflect a coastal stillwater elevation and should not be included in this table.
- Entries in this table are not required for all static polygons present in S_Fld_Haz_Ar; entries are required only for records that warrant inclusion in the FIS Report. Please reference the FIRM Database Technical Reference, Section 9, S_Nodes, L_Summary_Discharges, and L_Summary_Elevations Tables, for further details.

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	Levee analysis and mapping procedures were applied to Levee IDs 1354212346 and 1234545362.
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).
- 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

Flooding Source	Channel "n"	Overbank "n"
North Fork Inundation River	0.080-0.100	0.040-0.080
South Fork Inundation River	0.030	0.030-0.035
West River and Zone A Tributaries	0.035-0.050	0.080-0.120

4.3.15 Table 15, Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Overland Wave Propagation	WHAFIS	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	Storm Surge	ADCIRC	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	Wave Runup	TAW	99/99/9999
Big Ocean	Entire coastline of Flood County	Entire coastline of Flood County	Wave Setup	Direct Integration Method (DIM)	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, Coastal Transect Parameters

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	15.7 15.2-15.8	19.6 18.6-19.8

*Not calculated for this Flood Risk Project

4.3.18 Table 18, Summary of Alluvial Fan Analyses

Flooding Source	Location From (apex)	Location 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 and 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 From (apex)	Location To (toe)	1% Annual Chance Peak Flow at Fan Apex (cfs)	Flood Zones and Depths (ft)	Minimum Velocity (fps)	Maximum Velocity (fps)
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 Forest	SE	44.500	-83.625	-0.620
Flood Lake	SE	44.500	-83.500	-0.665
Flood Point	SE	44.500	-83.875	-0.658
Flood Pond	SE	44.500	-83.750	-0.594
Flood SE	SE	44.250	-83.750	-0.647
Flood SW	SW	44.250	-83.625	-0.682
Floodland	SE	44.250	-83.500	-0.705
Metropolis SE	SE	44.375	-83.875	-0.554
Metropolis SW	SW	44.500	-83.375	-0.722
Average Conversion from NGVD29 to NAVD88 = **-0.650 feet**				

4.3.21 Table 21, Stream-Based Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Flower Creek	-0.604
Inundation River	-0.681
Little Creek	-0.545
North Fork Inundation River	-0.627
Petal Creek	-0.513
South Fork Inundation River	-0.592
Spring Creek	-0.447
Summer Creek, Winter 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
Public Land Survey System (PLSS)	State Center for Geographic Information	2005	1:24,000	PLSS data were digitized from USGS quadrangles
Surface Water Features	State Center for Geographic Information	2003	1:5,000	Streams, rivers, and lakes were derived from NHD data
Transportation Features	State Center for Geographic Information	2003	1:10,000	Roads and railroads, were delineated from 2005 orthoimagery

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

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Flood County	All within HUC 99999998	LiDAR	9.25 cm $RMSE_z$	1 meter at 95% confidence level	USGS 2008
Metropolis, City of	Lily Pond	Contour Lines	92.7 cm $RMSE_z$	+/- 40 ft at 90% confidence level	USGS 1988

Table 23 Additional Notes

- Entries should be listed in reverse chronological order, with the most recently collected topographic data listed first.
- Data listed in Table 23 should be the finished terrain surface used for modeling, not the original source topographic data.

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

[1]Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CULVERT CREEK

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	20.6[2]	20.7	0.1
048	4,830	26	102	4.2	22.3	21.4[2]	21.5	0.1
053	5,270	26	109	3.9	22.6	22.3[2]	22.5	0.2
054	5,360	26	109	3.9	23.0	23.0	23.2	0.2
055	5,530	36	167	2.6	23.5	23.5	24.5	1.0

[1]Feet above mouth
[2]Elevation 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

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

[1]Feet above mouth
[2]Elevation riverward of levees
[3]Elevation landward of right bank levee
[4]Elevation landward of left bank levee

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: INUNDATION RIVER

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

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

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: NORTH FORK INUNDATION RIVER

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

[1]Floodway not computed/shown for this cross section
[2]Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PETAL CREEK

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

[1]Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WOOD BRANCH

Example of Floodway Data Table containing locations where the base flood is controlled by coastal flood processes and locations where the Base Flood Elevations (BFEs) are the product of a coastal and riverine combined rate of occurrence analysis:

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	8,600	265	2,464	3.9	*	8.5[3]	8.9	0.4
B	9,250	320	3,014	2.9	*	8.9[3]	9.6	0.7
C	9,830	250	1,977	3.6	9.8[2]	9.2[3]	10.1	0.9
D	11,680	135	1,024	4.8	10.5[2]	10.4[3]	10.7	0.3
E	12,690	80	739	7.0	12.8	12.8	13.3	0.5
F	13,470	71	746	6.9	15.6	15.6	16.5	0.9
G	16,030	33	318	14.4	18.0	18.0	18.8	0.8
H	16,765	75	357	12.8	23.0	23.0	23.6	0.6
I	17,059	125	797	5.7	26.4	26.4	27.1	0.7
J	17,559	325	1,296	5.4	29.1	29.1	29.5	0.4
K	17,860	154	1,512	4.7	30.7	30.7	31.6	0.9
L	18,239	88	1,098	6.4	32.3	32.3	33.2	0.9
M	18,730	190	1,977	3.6	36.7	36.7	37.6	0.9

[1]Feet above U.S. Highway 101
[2]Combined coastal and riverine effects from University Bay and College Creek
[3]Elevation computed without consideration of backwater effects from University Bay
* Controlled by coastal flooding – see Flood Insurance Rate Map for regulatory base flood elevation

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: COLLEGE CREEK

Example of Floodway Data Table containing locations where the flooding source is partially secluded by a levee seclusion zone. If a single cross section is partially secluded, a secluded and non-secluded entry must be shown by indicating the cross section twice, and making a reference to the seclusion footnote.

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	22.5	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
H[3]	128,400	6,440	125,613	0.9	24.1	24.1	25.1	1.0
I[3]	130,300	7,170	133,927	0.8	24.1	24.1	25.1	1.0
J[3]	132,250	6,701	128,508	0.9	24.1	24.1	25.1	1.0
K[3]	133,050	7,198	131,137	0.8	24.1	24.1	25.1	1.0
L[3]	135,700	6,116	113,706	1.0	24.1	24.1	25.1	1.0

[1]Feet above mouth
[2]Elevation computed without consideration of backwater effects from University Bay

[3]This cross section lies within an area that has not been updated on the FIRM at this time due to the presence of levees that have not been demonstrated to meet the requirements of NFIP Regulation Section 65.10. Please refer to Section 4.4 of this FIS for more information.

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, STATE

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: INUNDATION RIVER

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.
- Flooding sources should be ordered alphabetically when including the Floodway Data Tables in the FIS Report.

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 Cooperating Technical Partner (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 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 NAVD88)	Zone Designation and BFE (ft NAVD88)		
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 (LOMCs)

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 Letter of Map Revision (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 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.
- Entries should be listed in reverse chronological order, by effective date.
- It is intended that this table only show the LOMRs that were incorporated into the current revision. This table should not be used to show a history of all LOMRs ever incorporated within the county.
- If multiple FIRM panel numbers need to be included in one of the table cells, they must be listed in ascending numerical order.

4.3.28 Table 28, Community Map History

Community Name	Initial Identification Date	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	04/15/1975	04/15/1975	N/A	12/15/1984	07/23/2008 01/05/2003 05/26/1998
Metropolis, City of[1]	11/01/1974	11/01/1974	09/06/1977	08/15/1984	12/31/2011 07/23/2008 10/26/2002 02/18/1998
Upland, Village of[2, 3]	07/23/2008	N/A	N/A	07/23/2008	12/31/2011
Water, City of[3]	07/23/2008	N/A	N/A	07/23/2008	N/A

[1] Dates for this community were taken from Flood County, Unincorporated Areas
[2] No Special Flood Hazard Areas Identified
[3] This community did not have a FIRM prior to the first countywide FIRM for Flood County

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 multi-county communities that are included in this county's FIS Report, non-participating communities, and communities with some (but not all) maps that have been rescinded. A combined entry for the unincorporated and incorporated areas used for a countywide study (e.g. "Flood County and Incorporated Areas" or "Flood County (All Jurisdictions)") should not be included in this table. Multi-county communities that are mapped in their entirety within another county's FIS Report should not be listed here.
- 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. Where multi-county communities are included in this county's FIS Report, but contain No identified SFHAs, add the following footnote:

  [1]Special flood hazard areas have been identified in this community; however, none exist within the portion of the community located in [studied] County.
- 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.
- Communities should be listed in alphabetical order, based on the community name (e.g. "Floodville", as opposed to "Town of Floodville"). The unincorporated portion of the county, if applicable, should also be listed alphabetically, as shown in the example.
- Rescinded map dates should not be listed in this table.

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
Big Ocean	02/18/1998	ABC Engineers, Inc.	EMW-B-8888	September 1989	Coastland, City of; Flood County, Unincorporated Areas
Culvert Creek	02/18/1998	ABC Engineers, Inc.	EMW-C-9999	April 1997	Flood County, Unincorporated Areas
Inundation River (Zone AE)	07/23/2008	State DNR	MAS-B-1234	March 2007	Flood County, Unincorporated Areas; Metropolis, City of
Inundation River (Zone A)	02/18/1998	ABC Engineers, Inc.	EMW-C-9999	March 1997	Flood County, Unincorporated Areas; Metropolis, City of
Lily Pond	10/26/2002	State DNR	HSF-J-7654	January 2002	Metropolis, City of
North Fork Inundation River	12/31/2011	State DNR	HSF-J-7654	May 2010	Coastland, City of; Flood County, Unincorporated Areas
South Fork Inundation River	12/31/2011	State DNR	HSF-J-7654	June 2010	Flood County, Uninorporated Areas
West River and Zone A Tributaries	12/31/2011	State DNR	HSF-J-7654	February 2010	Flood County, Uninorporated Areas; Metropolis, City of
Wood Branch and Zone A Tributaries	12/31/2011	State DNR	HSF-J-7654	December 2009	Flood County, Unincorporated Areas; Floodville, Town of

Table 29 Additional Notes

- This table is not intended to be a historical record of all the studies ever performed in the county for each flooding source. It is, rather, a listing of all the current studies reflected on the most recent FIRMs.
- This table should include the same listing of studies as Tables 13, 15, and 18. If the contracting information is not available for older studies, the use of “N/A” is acceptable.

4.3.30 Table 30, Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Coastland, City of	12/31/2011	03/16/2008	Discovery	FEMA, the community, the study contractor, and USACE
		02/08/2010	Resilience	FEMA, the community, the study contractor, and the State Hazard Mitigation office
		11/30/2010	CCO Meeting	FEMA, the community, and the study contractor
Flood County Unincorporated Areas	12/31/2011	03/16/2008	Discovery	FEMA, the community, the study contractor, and USACE
		02/08/2010	Resilience	FEMA, the community, the study contractor, and the State Hazard Mitigation office
		11/30/2010	CCO Meeting	FEMA, the community, and the study contractor
Floodville, Town of	07/23/2008	01/08/2004	Scoping	FEMA, the community, and the study contractor
		08/15/2006	CCO Meeting	FEMA, the community, and the study contractor
Metroplis, City of	12/31/2011	03/16/2008	Discovery	FEMA, the community, the study contractor, and USACE
		02/08/2010	Resilience	FEMA, the community, and the study contractor
		11/30/2010	CCO Meeting	FEMA, the community, and the study contractor
		12/01/2010	Open House	FEMA, the community, and the study contractor
Upland, Village of	12/31/2011	03/17/2008	Discovery	FEMA, the community, the study contractor, and USACE
		11/28/2010	CCO Meeting	FEMA, the community, and the study contractor
Water, City of	07/23/2008	01/07/2004	Scoping	FEMA, the community, and the study contractor
		08/15/2006	CCO Meeting	FEMA, the community, and the study contractor

Table 30 Additional Notes

- Entries in this table should be ordered alphabetically by community.
- The dates shown in the "FIS Report Dated" column correlate to those shown in Table 28 – Community Map History and are an example of how to properly record information in this table. Per the examples in Table 28, the first countywide FIRMs went effective on 7/23/2008. A PMR was issued on 12/31/2011 that affected all communities except for the Town of Floodville and City of Water.
- This table is not intended to be a historical record of all meetings held with each community for FIS Reports in the past. For each community, only list the dates

associated with the most recent FIS Report for which community meetings were held. The meetings for each community should be listed in reverse chronological sequence (earliest meeting listed first).

4.3.31 Table 31, Map Repositories

Community	Address	City	State	Zip Code
Coastland, City of	456 Sump Pump Boulevard	Coastland	USA	99999
Flood County, Unincorporated Areas	123 Noah's Ark Drive	Floodville	USA	99999
Floodville, Town of	789 Highwaters Street	Floodville	USA	99999
Metropolis, City of	1234 Stilts Avenue	Metropolis	USA	99999
Upland, Village of [1]	800 River Road	Upland	USA	99999

[1] No Special Flood Hazard Areas Identified

Table 31 Additional Notes

- Communities should be listed in alphabetical order, based on the community name (e.g. "Floodville", as opposed to "Town of Floodville"). The unincorporated portion of the county, if applicable, should also be listed alphabetically, as shown in the example.
- All communities that are part of the Flood Risk Project should be listed in this table, regardless of whether SFHAs have been identified or not.
- Indicate communities with no identified SFHA with a footnote.
- 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.

4.3.32 Table 32, Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	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.	*Flower Creek Water Supply, Coastland Water Board, City of Coastland, State,* C10933.00		City of Coastland, State	April 1978	City of Coastland Water Board
Coastland 1977	City of Coastland	*Inventory of Coastal Resources for the 1990 Comprehensive Plan*			December 1977	City of Coastland library
Coastland 1978	City of Coastland	*1990 Comprehensive Plan*			September 1978	City of Coastland library
FEMA 1989	Federal Emergency Management Agency	*Flood Insurance Study, Flood County, State, and Unincorporated Areas*		Washington, D.C.	1989	FEMA Map Service Center msc.fema.gov
FEMA 1996	Federal Emergency Management Agency	*Flood Insurance Study, City of Floodville, Flood County, State*		Washington, D.C.	1996	FEMA Map Service Center msc.fema.gov

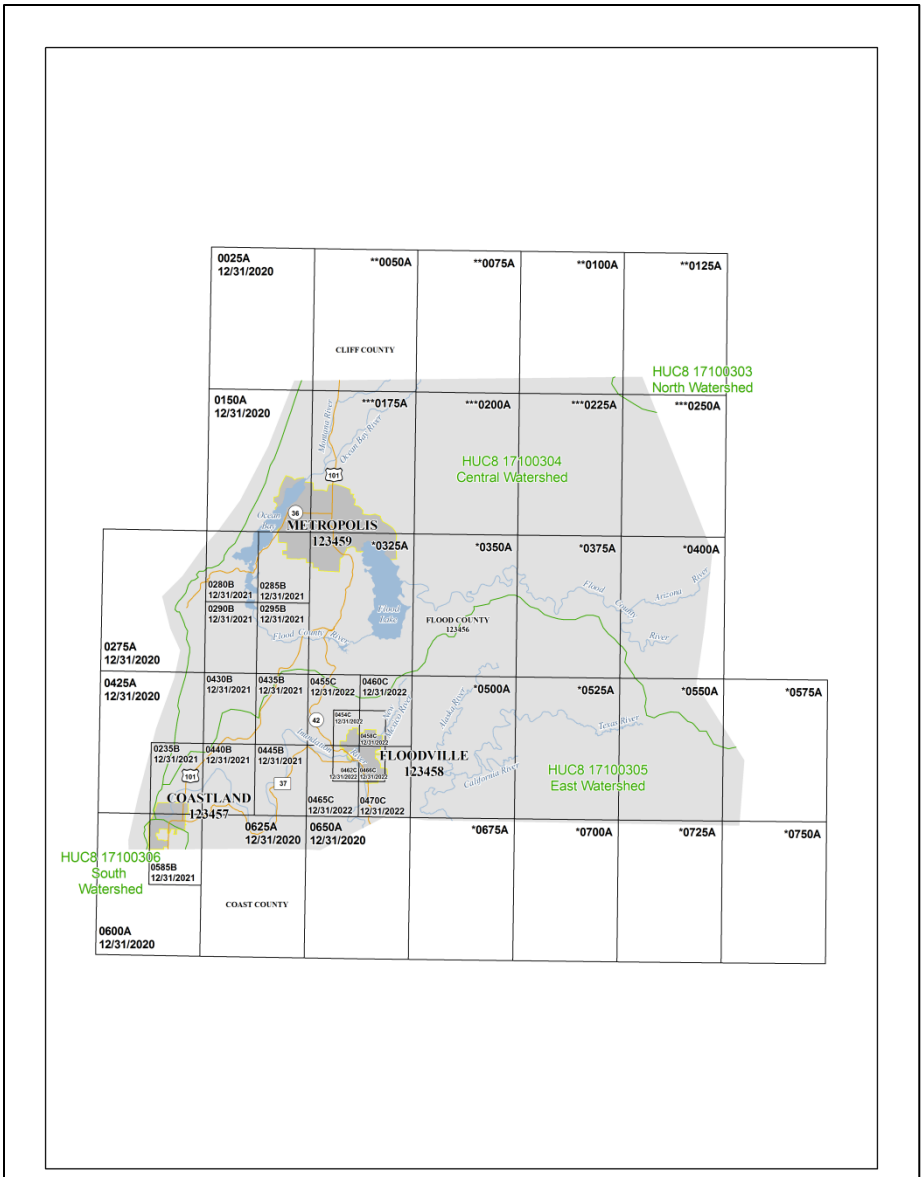
Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FIA 1977	U.S. Department of Housing and Urban Development, Federal Insurance Administration	*Flood Hazard Boundary Map, Flood County,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

5.0 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 on their use or customization.

5.1 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 www.fema.gov/library/viewRecord.do?id=7577.



1 inch = 26,667 feet 1:320,000

0 7,500 15,000 30,000 45,000 60,000 feet

Map Projection:
Universal Transverse Mercator Zone 10 North;
North American Datum 1983

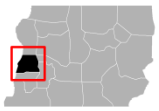
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - AREA IN ZONE D
*** PANEL NOT PRINTED - AREA IN ZONE X AND ZONE D

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

FLOOD COUNTY, USA and Incorporated Areas

PANELS PRINTED:

0025, 0150, 0235, 0275, 0280, 0285, 0290, 0295, 0425, 0430, 0435, 0440, 0445, 0454, 0455, 0458, 0460, 0462, 0465, 0466, 0470, 0585, 0600, 0625, 0650

FEMA

MAP NUMBER
12345CIND0C

MAP REVISED
DECEMBER 31, 2022

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 to all multi-page FIRM Indexes using a rectangle to show the extent of the current index panel.
- 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: 8-digit Hydrologic Unit Code (HUC-8) boundaries, and political entities. Each HUC-8 area shall be labeled as detailed in Table 3 below. All base map features including HUC-8 data should be shown only within the county boundary. Political entities must include CID labels.
- Multi-county communities that are mapped in their entirety within another county's FIS Report should be shown on the FIRM Index as an "Area Not Included" (ANI). Where multi-county communities are included in this county's FIS Report, the portion of the multi-county community applying to this county's FIS Report should be shown and labeled on the FIRM Index.
- FIRM panels shown on the index should only be labeled with the four-digit panel number and suffix. For printed panels, 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 is optional for any other annotation that may overprint features. Printed panels that are in the Preliminary stage should not be labeled with their "9/9/9999" effective date placeholder from the FIRM Database. Please reference the FIRM Database Technical Reference for full details on populating FIRM panel attributes.
- 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). A listing of appropriate footnotes is provided in Table 3. Unprinted panels should not be labeled with the effective date, although the associated FIRM panel attribute in the FIRM Database must be populated per the FIRM Database Technical Reference.

- The FIRM Index shall identify FIRM panels (printed and not printed) affected by CBRS/OPA areas with an additional note, applied to the body of the FIRM Index, formatted as in this example:

  - NOTE-
  Designated CBRS Areas are located on panels:
  0030[1], 0036, 0037, 0038, 0039, 0041[1], 0043,
  0044[1], 0102, 0106 and 0107[1]
  [1]Panel Not Printed

  A FIRM panel containing a CBRS/OPA area may be a PNP only when the related CBRS/OPA area is entirely over open water on that FIRM panel. Where FIRM panels contain land area corresponding to a CBRS/OPA feature, the FIRM Panel must be printed.

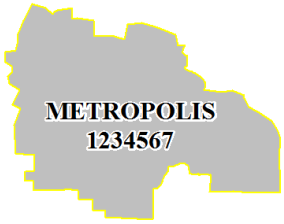
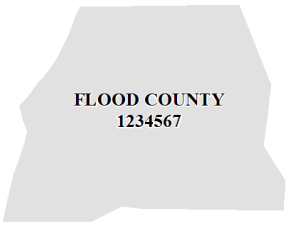
- For panels affected by Levee Seclusion, the only time a secluded area would exist on an unprinted FIRM panel is if the entire panel was included in the secluded area <u>and</u> the entire effective FIRM panel is unshaded Zone X. Otherwise, the panel must be printed. If a panel meets this criterion, it will carry the custom Panel Not Printed note shown in Table 3 below.

- The FIRM Index shall always reside at the top of the page, while the Panel Not Printed (PNP) Notes, North Arrow, Map Service Center (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. Data Frame and dividing boxes shall be black 1.25 pt lines.

- For multi-page Indexes, apply only the applicable PNP footnotes to the individual Index Sheet in question, and number the footnotes only per that Index Sheet. Do not continue PNP footnote numbering from Index Sheet 1 onto Index Sheet 2.

Table 3: 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.)
MAIN STREET	Road Line Road Name	Optional	Line weight 0.72 pt., Orange (230, 152, 0) 6 pt. Arial CAPS, Black
234	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
234	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
234	State Highway Symbol	Required when roads shown	Circle Line weight 0.72 pt. Diameter .200” to .280”, White Fill 6 pt. Arial CLC
234	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 Line Railroad Label	Optional	Vertical hash symbol offset at 90 degrees from main line; Hash line weight 0.40 pt., Black, Hash spacing [7pt - 1pt - 7pt] Line weight 0.72 pt., Black 6 pt. Arial Italic CAPS, Black
Clear River	River or other Hydrographic Feature River or other Hydrographic Feature Name	Optional	Line weight 0.72 pt., Blue (158, 187, 215) 8 pt. Times New Roman Italic, CLC, Blue (68, 101, 137)

Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
	Lake or other Hydrographic Feature Lake or other Hydrographic Feature Name	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
0488C 12/31/2020 **0235B** **12/21/9999** **0625A** **12/21/9999**	FIRM Panel Number and Effective Dates. Effective Dates are applied only to Effective printed panels.	Required	1:6000 – 5 pt. Arial, Black, Bold, CAPS, 0.75 White Halo 1:12000 – 8 pt. Arial, Black, Bold, CAPS, 0.75 White Halo 1:24000 – 10 pt. Arial, Black, Bold, CAPS, 0.75 White Halo
_____	FIRM Panel Boundary	Required	Line weight 0.58 pt., Black

Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
N	North arrow; can be ESRI standard or equivalent	Required	Line weight .72 pt. Width 0.0903” Height 0.4005”
Map Projection: Universal Transverse Mercator Zone 10 North; North American Datum 1983	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.	Required	8 pt. Arial, Black, CLC
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV	This note refers users to the Map Service Center	Required	7 pt. (255,0,0), Franklin Gothic Medium Cond, CAPS 12 pt. (255,0,0), Franklin Gothic Medium, CAPS
SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION	This note is placed below the red MSC note	Required	7 pt. Franklin Gothic Book, Black, CAPS
1 inch = 26,667 feet 1:320,000 feet 0 7,500 15,000 30,000 45,000 60,000	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	Required	Line weight 0.72 pts. **Map Scale Note [feet] =** 7 pt. Arial Lower Case **Scale Bar [feet] =** Length: 2.5” **Scale Bar Labels =** 6 pt. Arial Lower Case

Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
	County Locator (within State)	Required when more than one panel index page is required; optional for single-page index	Title: 8 pt. Arial, Black, CAPS Line: Black, 1.25 pt. County of Interest: White outline, width 0.40 pt.; Black fill Other Counties: White outline, width 0.40pt; Gray fill (178, 178, 178) Rectangle: Red (255, 0, 0), width 2.0 pt.
NATIONAL FLOOD INSURANCE PROGRAM	National Flood Insurance Program Header	Required	12 pt. Franklin Gothic Medium, (0, 82, 171), CAPS
FLOOD INSURANCE RATE MAP INDEX	Flood Insurance Rate Map Header	Required	11 pt. Franklin Gothic Medium, (156, 156, 156), CAPS
FLOOD INSURANCE RATE MAP INDEX (Sheet 1 of 2)	Panel Index for multiple index pages	Required when applies	11 pt. Franklin Gothic Medium, (156, 156, 156), CAPS
▬▬▬	Title Block dividing line	Required	Width 1 pt., Black
FLOOD COUNTY, USA and Incorporated Areas	County Name Study Type	Required	10 pt. Franklin Gothic Medium Cond, Black, CAPS 8 pt. Franklin Gothic Book, Black, CLC
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 **12345CIND0C** MAP REVISED **DECEMBER 31, 2020**	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

Example (not shown to scale)	Feature/Usage	Optional or Required	Specification [Hatch Pattern] (RGB Values) (Font specifications that cannot be matched may be approximated.)
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
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

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 – 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
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
PANEL NOT PRINTED – NO SPECIAL FLOOD HAZARD AREAS: This panel is on the landward side of a levee that has not been demonstrated by the community or levee owner to meet the requirements of Section 65.10 of the NFIP Regulations in 44 CFR as it relates to the levee's ability to provide 1-percent-annual-chance flood protection. FEMA will revise, and, if appropriate, print this FIRM panel at a later date to show updated flood hazards associated with the levee.	This note is used only for a secluded area where the entire panel is included in the secluded area <u>and</u> the entire effective FIRM panel is unshaded Zone X. Otherwise, the panel must be printed.	Required when applies	7 pt. Arial, Black, CAPS

5.2 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 Flood 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 Flood 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 Flood Map Service Center at the number listed above.

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

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 Non-Coastal 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 (NAVD88). Coastal flood elevations are also provided in the Coastal Transect Parameters table in the FIS Report for this jurisdiction. Elevations shown in the Coastal Transect Parameters 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

NOTES TO USERS

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.

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.

NOTES TO USERS

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 SYSTEM (CBRS): 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/cbra, 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 LEVEE: 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 http://www.fema.gov/national-flood-insurance-program.

PROVISIONALLY ACCREDITED LEVEE: 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 http://www.fema.gov/national-flood-insurance-program.

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.

5.3 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.
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.
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.
	Regulatory Floodway determined in Zone AE.
	Non-encroachment zone (see Section 2.4 of this FIS Report for more information)
FLOOD INSURANCE IS NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER APRIL 8, 1987, IN THE DESIGNATED COLORADO RIVER FLOODWAY	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.
OTHER AREAS OF FLOOD HAZARD	
	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.
	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.
	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.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.

OTHER AREAS

Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

NO SCREEN

Unshaded Zone X: Areas of minimal flood hazard.

FLOOD HAZARD AND OTHER BOUNDARY LINES

(ortho) (vector)

Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)

Limit of Study

Jurisdiction Boundary

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

GENERAL STRUCTURES

Aqueduct
Channel
Culvert
Storm Sewer

Channel, Culvert, Aqueduct or Storm Sewer

Dam
Jetty
Weir

Dam, Jetty, Weir

Levee, Dike or Floodwall

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

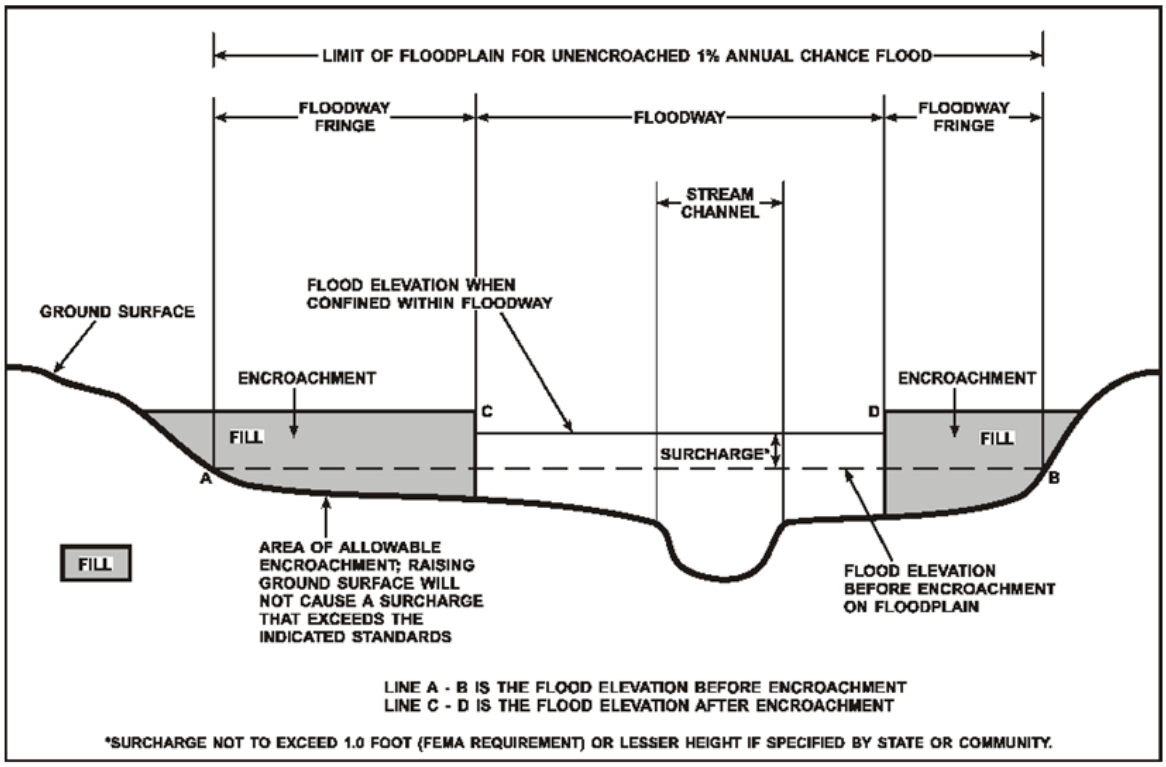
REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	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.
	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.
513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	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
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

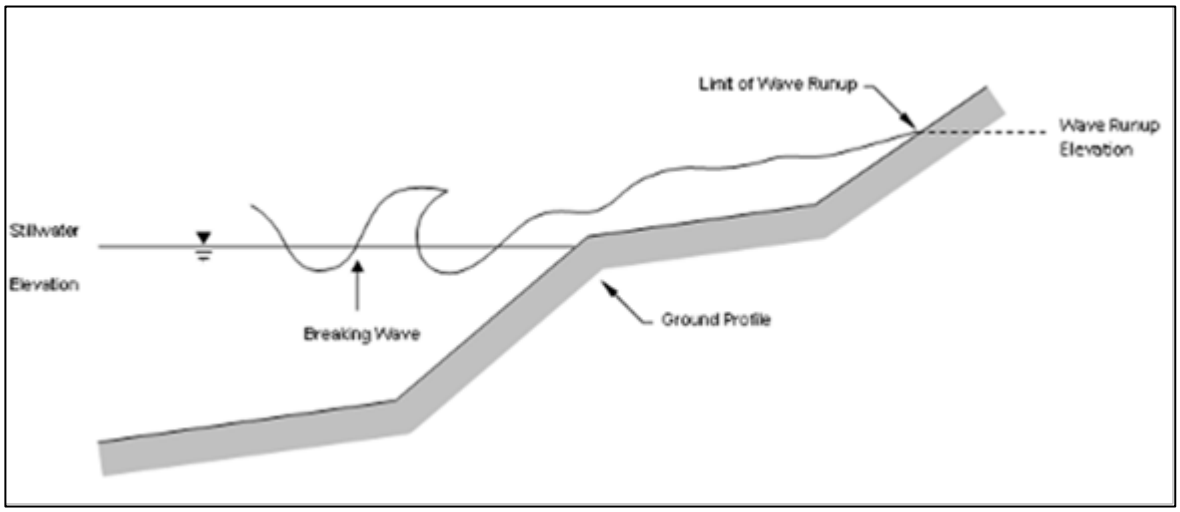
Figure 3 Additional Notes

- 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.
- The special cross-hatching used to indicate Area with Flood Risk due to Levee applies to flood polygons where data is available for Zone D areas established using the levee analysis and mapping approach.
- 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.

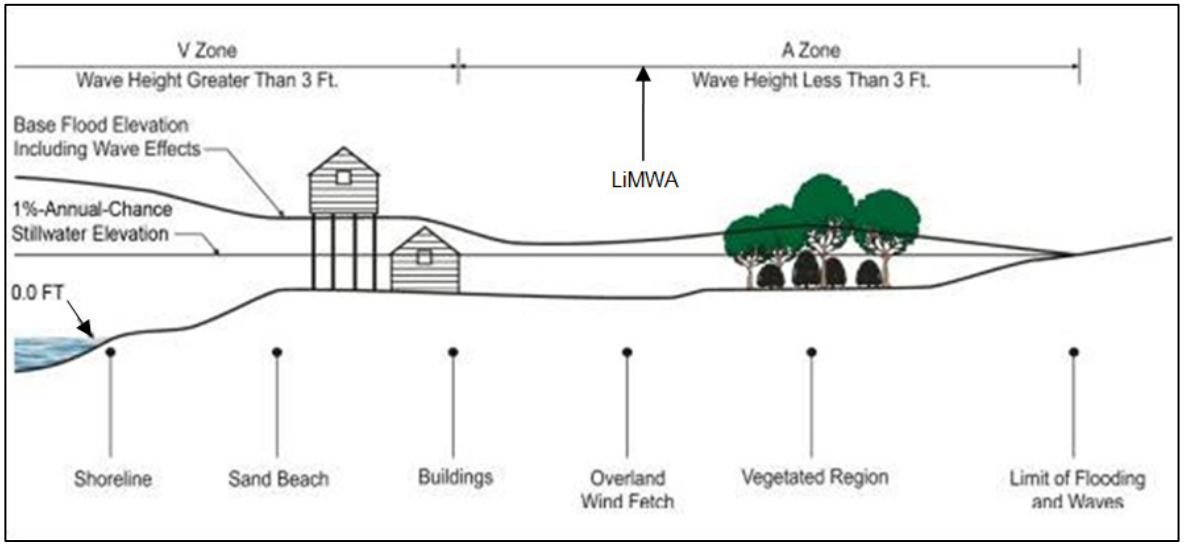
5.4 Figure 4, Floodway Schematic



5.5 Figure 5, Wave Runup Transect Schematic



5.6 Figure 6, Coastal Transect Schematic



5.7 Figure 7, Frequency Discharge – Drainage Area Curves

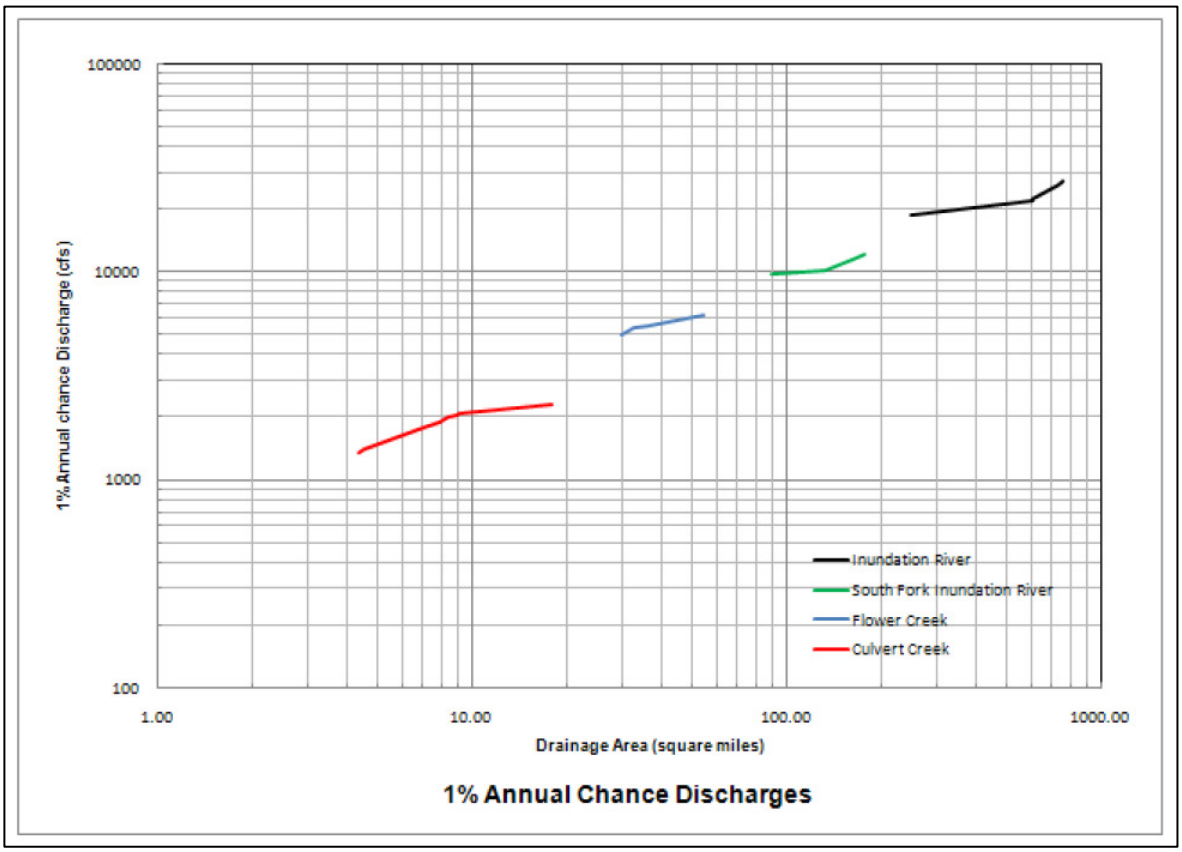


Figure 7 Additional Notes

- 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.

5.8 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.

5.9 Figure 9, Transect Location Map

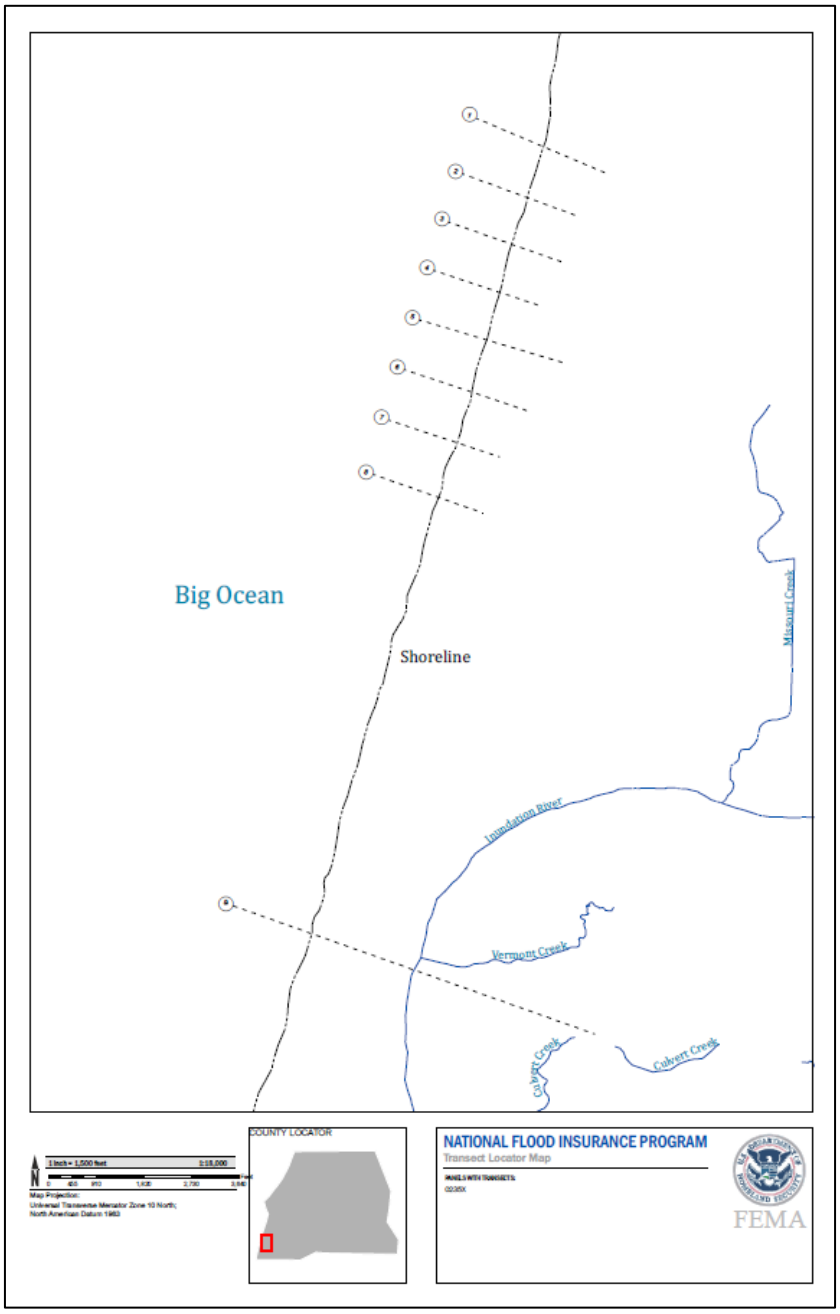


Figure 9 Additional Notes

- 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.

6.0 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 examples 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."

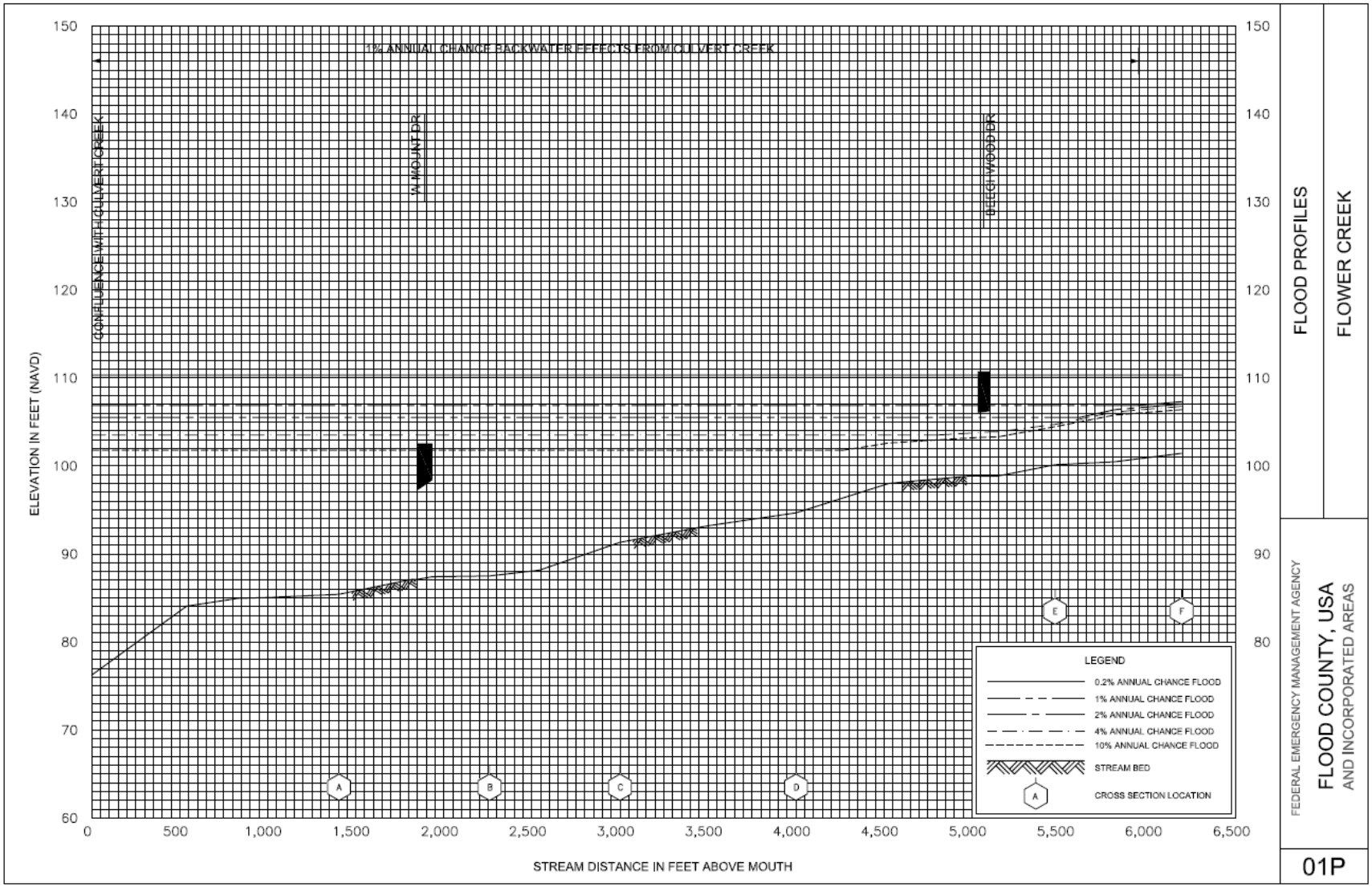
7.0 Profiles

Flood profiles communicate flood elevations along a profile baseline for riverine Zone AE flooding sources backed by an engineering model. Unless specifically required by a Mapping Partner's contract, task order, or agreement, flood profiles are not required to be produced for model-backed Zone A streams or streams studied by "limited detail" methods. For these types of streams, Table 25 can be used to publish elevations at cross-section locations. Flood profiles are also not required for model-backed Zone AE streams whose 1% annual chance flood elevations are entirely controlled by the backwater of the receiving flooding source, or for flooding sources whose studies produce static elevations and are reported in Table 11 – Summary of Non-Coastal Stillwater Elevations.

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 Numbering

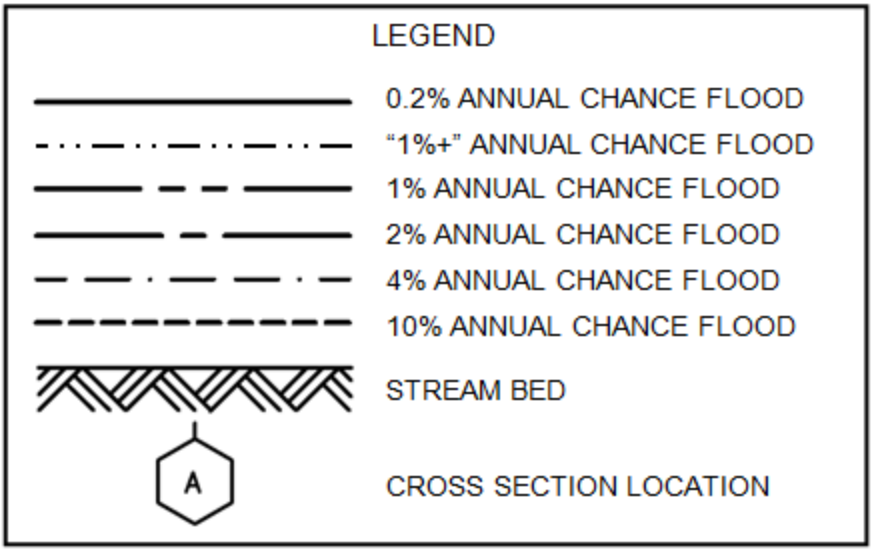
Profile numbers are included in the lower righthand corner of the profile panel, and should be numbered in 01P, 02P, 03P, etc. sequence. FIS Reports that have more than 100 profile panels should use a numbering sequence of 001P, 002P, 003P, etc. For streams whose flood profile spans more than one profile panel, the profiles must be organized from downstream to upstream order. Flood profiles should be organized alphabetically by flooding source name.


1% ANNUAL CHANCE BACKWATER EFFECTS FROM CULVERT CREEK
CONFLUENCE WITH CULVERT CREEK
MOUNT DR
BEECH WOOD DR
ELEVATION IN FEET (NAVD)
STREAM DISTANCE IN FEET ABOVE MOUTH
150
140
130
120
110
100
90
80
70
60
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
5,000
5,500
6,000
6,500
A
B
C
D
E
F
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
4% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
FLOWER CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
FLOOD COUNTY, USA
AND INCORPORATED AREAS
01P

7.2 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.

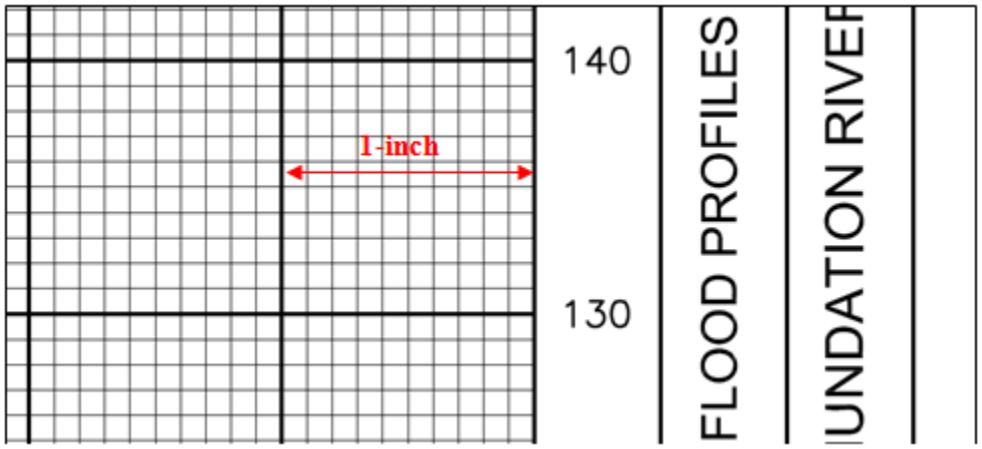
Figure 3: Profile Legend Example



7.3 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.

Figure 4: Profile Grid Spacing



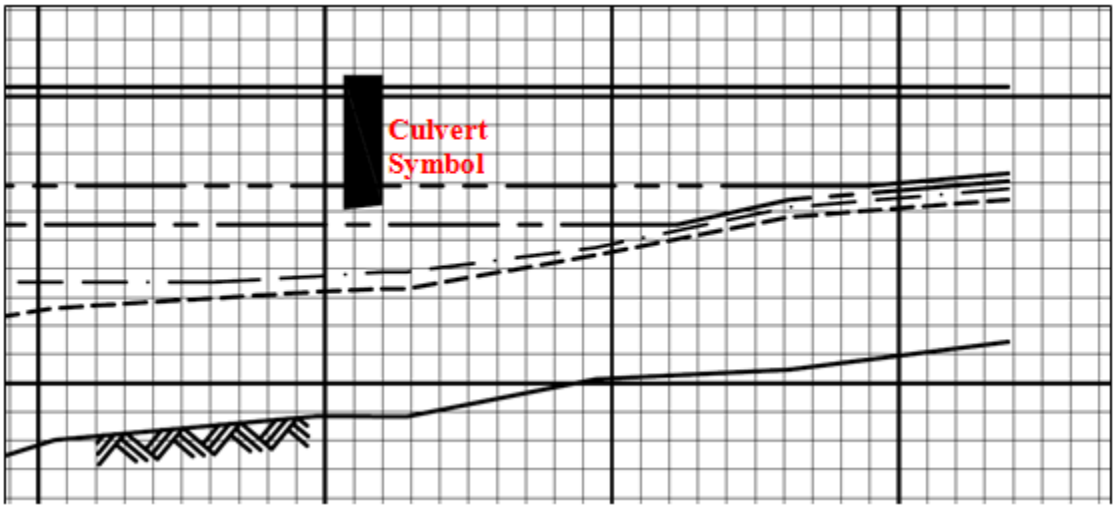
7.4 Structures Shown on Profiles

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

7.4.1 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.

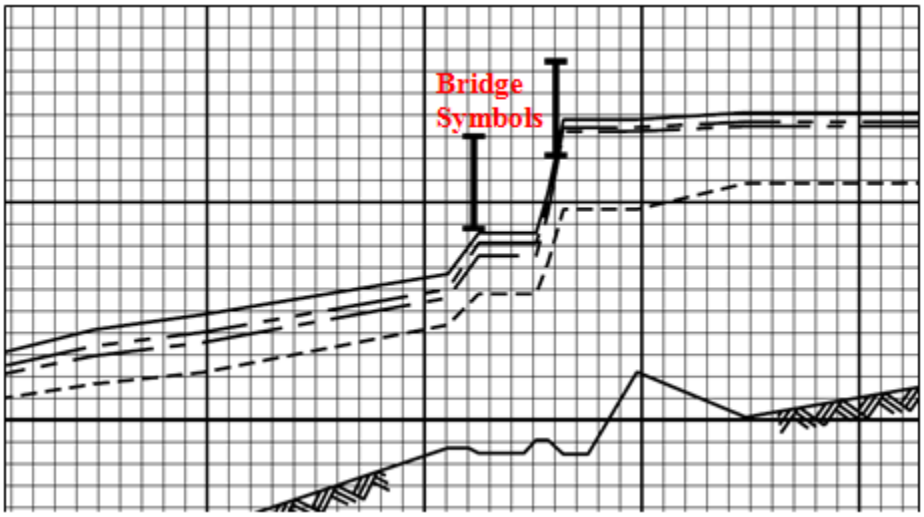
Figure 5: Culvert Symbol Example on Profile



7.4.2 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.

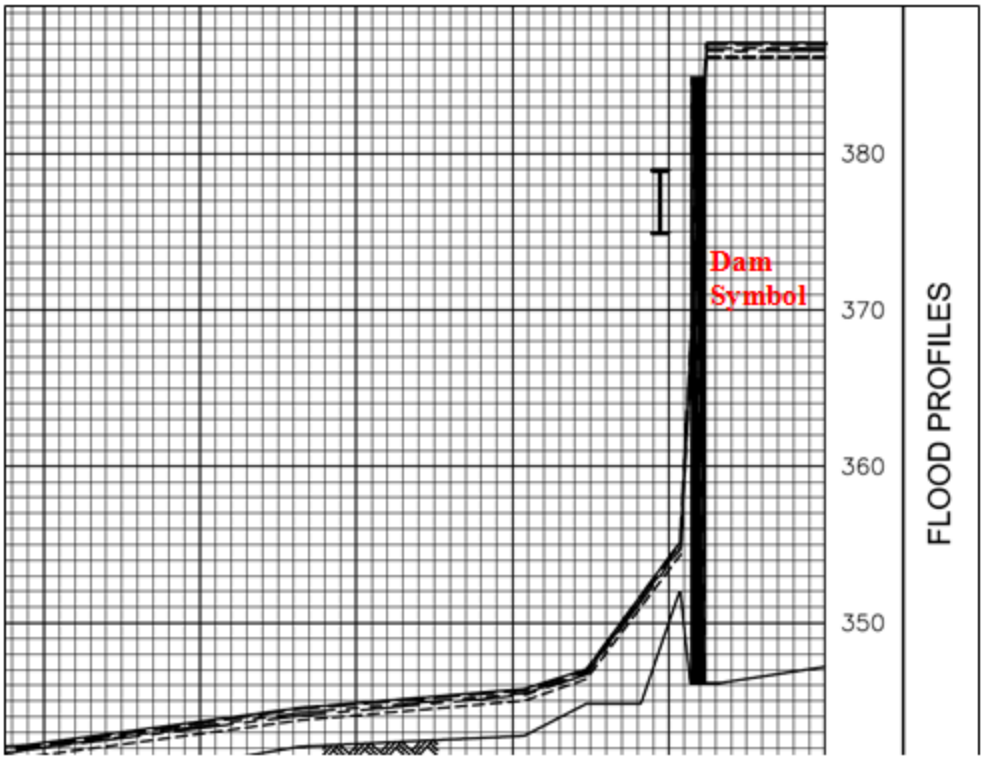
Figure 6: Bridge Symbol Example on Profile



7.4.3 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.

Figure 7: Dam Symbol Example on Profile



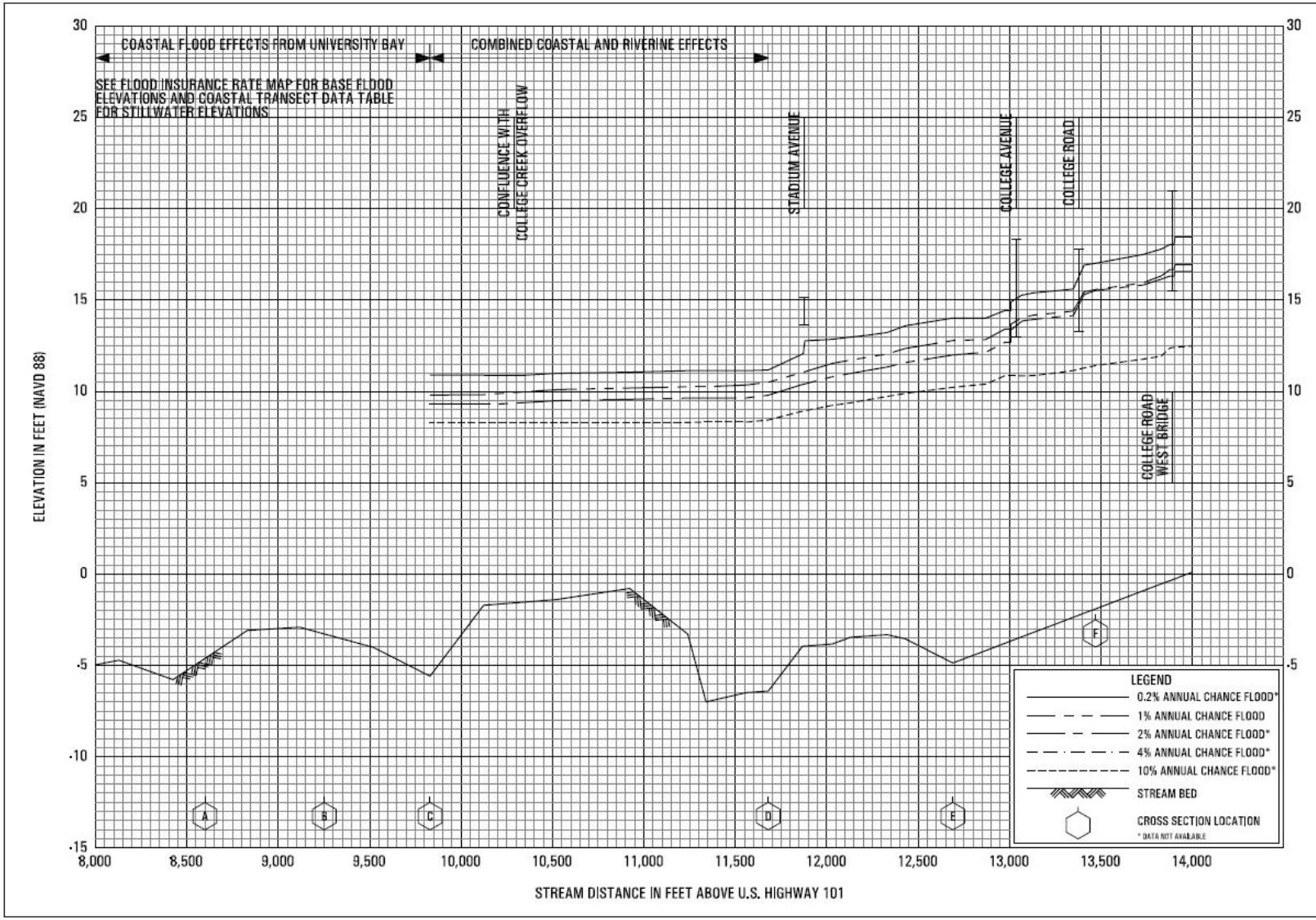
7.5 Coastal and Riverine Combined Rate of Occurrence Analysis Profiles

Flood profile elevations for the 1%-annual-chance flood should be consistent with the regulatory water surface elevations listed in the Floodway Data Tables.

Results from the coastal and riverine combined rate of occurrence analysis should be reflected in the FIS Report flood profiles when the combined coastal and riverine elevations control the base flood elevation for portions of the modeled stream. The profiles are labeled with arrows along the top of the plot indicating the reaches depicting "Combined coastal and riverine effects."

Coastal surge elevations should not be included in the profiles for cross sections in the coastal floodplain. Profiles should be truncated so as to begin with the first cross section that is in the combined coastal and riverine or the riverine floodplain. The coastal floodplain portion of the profile is labeled with arrows along the top of the plot indicating the reaches depicting "Storm surge effects from [coastal flooding source]." If coastal floodplain mapping controls the entirety of a modeled stream, the profile should be removed from the FIS Report. If the stream has a mapped floodway, it will remain listed in the Floodway Data Table and the floodway will be mapped, unless it is entirely contained in a Zone VE.

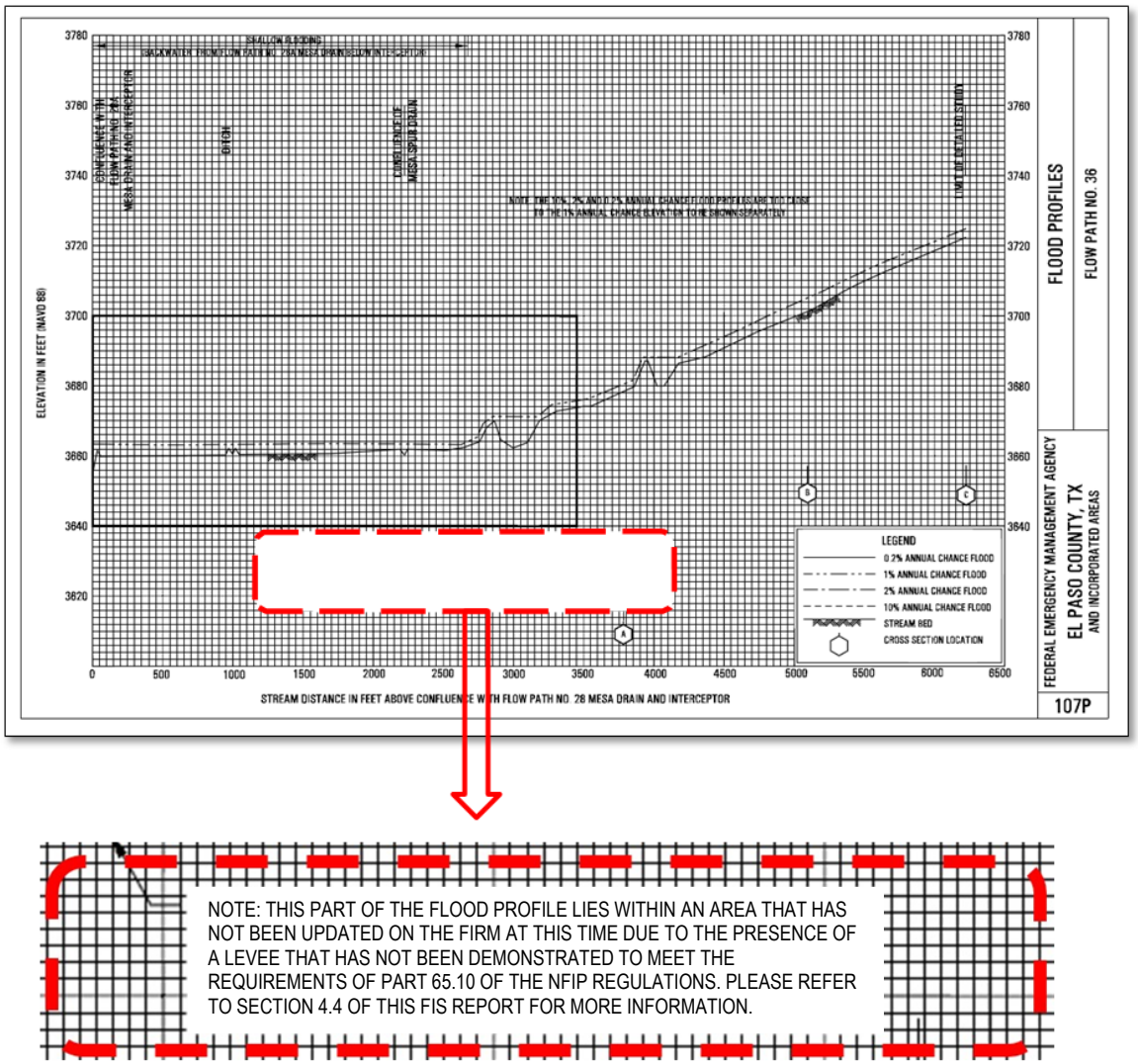
The flood profile on the following page shows an example of how this looks.


COASTAL FLOOD EFFECTS FROM UNIVERSITY BAY
COMBINED COASTAL AND RIVERINE EFFECTS
SEE FLOOD INSURANCE RATE MAP FOR BASE FLOOD ELEVATIONS AND COASTAL TRANSECT DATA TABLE FOR STILLWATER ELEVATIONS
CONFLUENCE WITH COLLEGE CREEK OVERFLOW
STADIUM AVENUE
COLLEGE AVENUE
COLLEGE ROAD
COLLEGE ROAD WEST BRIDGE
ELEVATION IN FEET (NAVD 88)
STREAM DISTANCE IN FEET ABOVE U.S. HIGHWAY 101
LEGEND
0.2% ANNUAL CHANCE FLOOD*
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD*
4% ANNUAL CHANCE FLOOD*
10% ANNUAL CHANCE FLOOD*
STREAM BED
CROSS SECTION LOCATION
* DATA NOT AVAILABLE
FLOOD PROFILES
COLLEGE CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
FLOOD COUNTY, USA
AND INCORPORATED AREAS
01P

7.6 Profiles Affected by Levee Seclusion

In some circumstances, a seclusion boundary may cover a portion or all of a flooding source that was restudied and will be shown as such on the non-secluded portion of the FIRM. It will be necessary to seclude information for these streams in this case.

Notate a levee seclusion zone on the profile as shown below. If a flooding source is partially secluded the note should include a thick black box around the impacted area.



7.7 Other Profile-Related Information

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.

Four tables have been added into the FIRM Database to accommodate creation of the Flood Profiles from the FIRM Database and import / export from RASPLOT 3.0 or higher:

- **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

8.0 Preparation of the FIS Report in PDF Format

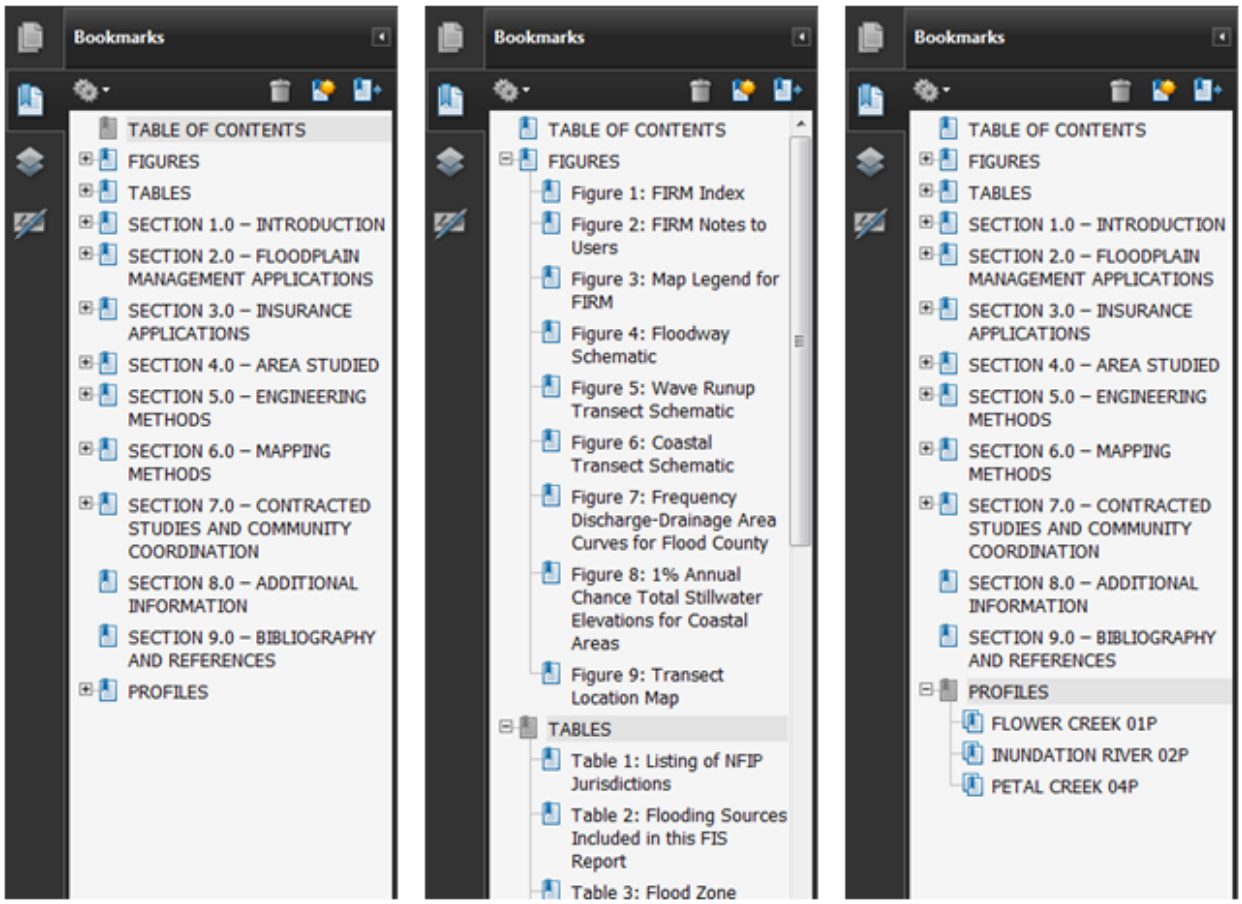
In order for the PDF-formatted FIS Report to be as usable as possible, bookmarks must be added to facilitate searching throughout the document.

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

Figure 8: PDF Bookmarking Examples



8.2 Other Formatting Requirements

- 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.