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Guidelines and Standards for Flood Risk Analysis and Mapping

Appendix K: Format and Standards for Flood Insurance Rate Maps

October 2011



FEMA

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Table of Revisions for Appendix K: Format and Standards for Flood Insurance Rate Maps

The following Summary of Changes details revisions to *Appendix K* subsequent to the initial publication of the appendix in February 2002. These changes represent new or updated guidance for Flood Risk Analysis and Mapping.

Affected Section or Subsection	Revision Date	Revision Description
Various	April 2003	Moved the following item standards (From/To): Gaging Stations (K.1.2, Other Base Map Features and Notes / K.4.3, Other Flood Hazard Features and Notes) River mile markers (K.1.2, Other Base Map Features and Notes / K.4.3, Other Flood Hazard Features and Notes) Neatlines (K.4.3, Other Flood Hazard Features and Notes / K.2, Map Frame Features and Notes) Colorado River floodway screen (K.4.2, Standard Flood Hazard Features and Notes / K.4.3, Other Flood Hazard Features and Notes)
Throughout	April 2003	Revised Map Number convention: deleted space between Map Number and suffix; added suffix to Index panel numbers
Throughout	April 2003	Changed “DOQ” references to “orthophoto;” “non-DOQ” to “vector;” “FIRM” to “digital FIRM”
K.3.1	April 2003	Added a description of the Index production process
K.3.1.3	April 2003	Added example of an all 0.2 percent (500-year) floodplain panel PNP note and updated PNP examples
K.3.1.4	April 2003	Re-titled “Note to Users;” updated standards for Designated Coastal Barriers note; added standards for Map Number label; added Community Panel Number
K.3.1.6	April 2003	Added standards for Area Not Included labels
K.3.2.1	April 2003	Updated Listing of Communities table
K.3.2.2	April 2003	Updated Map Repositories list examples
K.3.3	April 2003	Updated Index title block examples
K.3.4	April 2003	Added guidance for the use of 8.5” x 11” Map Indexes

Affected Section or Subsection	Revision Date	Revision Description
K.4.1.2	April 2003	Added to the list of base map features to be shown on the FIRM; updated bridge label standards; added airstrip graphic standard; added halos to benchmark "X;" updated guidance for showing political and cultural entities; added standards for secondary horizontal grid crosshairs; updated standards for horizontal grid labels; added guidance on using local vertical monuments
K.4.2	April 2003	Updated Limit of Study graphic standards, zone boundary definition, and floodway screen example; added an alternate cross section example and leader usage notes; revised levee note wording
K.4.2.7	April 2003	Clarified use and depiction of Limit of Detailed Study and Limit of Study labels
K.4.2.9	April 2003	Added alternative cross section labeling styles for use in areas with space limitations
K.4.4.3	April 2003	Updated guidance on using abbreviated CBRS notes
K.5	April 2003	Updated map legend examples
K.5.1	April 2003	Added new map revision note (to reflect the incorporation of a new community) and graphic standards for map bar scales
K.5.1.2	April 2003	Modified guidance on when and how to prepare a CBRS legend
K.6	April 2003	Added more specific guidance on how to list floodprone communities on the map title block
K.7	April 2003	Added graphic standards for Map Locator Diagrams
K.8	April 2003	Deleted three Notes to Users regarding benchmarks
K.9	April 2003	Added sample Title Block with Preliminary stamp
K.10	April 2003	Modified guidance on deliverable digital file formats for the MSC
Throughout	October 2011	Replaced "study" with "flood risk project" when not referring strictly to the engineering study.
Throughout	October 2011	Changed all references to FEMA oversight to FEMA Project Officer
Throughout	October 2011	Changed all references to Flood Insurance Study Report to FIS report
Table of Contents	October 2011	Added table of contents

Affected Section or Subsection	Revision Date	Revision Description
Index of Tables	October 2011	Added index of tables
Index of Figures	October 2011	Added index of figures
Appendix K: Format and Standards for Flood Maps	October 2011	Revised introduction to include automated map production as goal of the appendix; removed references to FIRM Panel Index, Flood Boundary and Floodway Map (FBFM) and Computer-Assisted Drafting and Design (CADD) software
Appendix K: Format and Standards for Flood Maps	October 2011	Added reference to sample FIRM panels on MSC website
K.1. Map Production Methods and Formats	October 2011	Removed discussion about production methods - Digital is now the only map production option
K.1.1. Digital Method	October 2011	Removed section - digital map production is now discussed in K.1.1, Countywide Format
K.1.2. Manual Method	October 2011	Removed section - all-manual map production is no longer an option
K.1.3. Standard Map Format	October 2011	Removed section - map production format will not be used in the future
K.1.4. Map Initiatives Format	October 2011	Removed section
K.1.5. Partial Map Initiatives Format	October 2011	Removed section - map production format will not be used in the future
K.1.6. Countywide Map Format	October 2011	Now section K.1.1 - added discussion about relationship between Appendices J and L and MAF/TIGER base map data
Multiple-County Communities	October 2011	Now section K.1.2 - most up-to-date analysis is now required to be shown if there are data disagreements
Processing Option 1	October 2011	Renamed section to "Processing Option 1: Single Jurisdiction"
Processing Option 2	October 2011	Renamed section to "Processing Option 2: Entire Community Mapped in Only One of the Countywides"
Processing Option 3	October 2011	Renamed section to "Processing Option 3: Community Split Between Counties"
K.1.7. Single-Jurisdiction Format	October 2011	Now section K.1.5 - removed manual conversion discussion from section

Affected Section or Subsection	Revision Date	Revision Description
K.1.8. FIRM/Flood Insurance Study (FIS) Report Combination Format	October 2011	Now section K.1.5 - removed section and added reference to Appendix K (April 2003)
K.1.3. Partial Countywide Map Format	October 2011	New section - added decision-making guidance for partial countywide mapping; added checklist of considerations; added mapping guidance for title block, suffix, panel numbers, overlap interface area, datum conversion, and lettered cross sections
K.1.6. Partial Digital Conversions	October 2011	New section - added language to discourage partial digital conversions
K.2. Map Frames	October 2011	Removed references to FIRM Panel Index, manual production method, and Table K-1
Table K-1	October 2011	Removed table - Joins Panel note eliminated (replaced by Panel Locator Diagram)
K.2.1. Z-fold Digital Frame Sizes	October 2011	Renamed section to "K.2.1 Digital Frame Size" - removed references to FIRM Panel Index, updated map sizes to ARCH D standards, and added references to Figures K-1 through K-4
K.2.2. Z-fold Manual Frame Sizes	October 2011	Removed section - manual frame sizes will not be used in the future
K.2.2. Frame Size Exceptions	October 2011	New section - added guidance for cases where K.2.1 standards cannot be met
Figure K-1. Digital Map Frame Dimensions	October 2011	Updated figure to reflect new map size and standards
Figure K-2. Manual Map Frame Dimensions	October 2011	Removed figure - manual frame sizes will not be used in the future
Figure K-2. Digital Map Frame Dimensions Including Logo Sizes and Locations	October 2011	New figure - provides position information for map elements and logos
Figure K-3. Digital Map Frame Margin Standards	October 2011	New figure - provides margin standards for map frame
Figure K-4. Digital Map Frame Folding Standards	October 2011	New - figure - provides folding standards for map frame
K.2.3. 8½" x 11" Frames	October 2011	Removed section - 8½" x 11" frames will not be used in the future

Affected Section or Subsection	Revision Date	Revision Description
K.3. Map Index	October 2011	Removed section and added reference to Appendix J and Procedure Memorandum No. 66 - Map Index information is now part of the FIS report and no longer part of Appendix K
K.3.1. Map Index Body Elements and Standards	October 2011	Removed section - Map Index information is no longer part of Appendix K
K.3.1.1. Community-Panel Numbers and Map Numbers	October 2011	Removed section - Map Index information is no longer part of Appendix K
K.3.1.2. Map Dates	October 2011	Removed section - Map Index information is no longer part of Appendix K
Figure K-3. Panel Effective Dates on Map Index	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-4. FIRM Panel Dates	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Table K-2. Panel Not Printed Footnotes	October 2011	Removed table - Map Index information is no longer part of Appendix K
K.3.1.3. Panel Not Printed Footnotes	October 2011	Removed section - Map Index information is no longer part of Appendix K
K.3.1.4. Index Body Notes	October 2011	Removed section - Map Index information is no longer part of Appendix K
Table K-3. Index Body Notes	October 2011	Removed table - Map Index information is no longer part of Appendix K
K.3.1.5. Flood Boundary and Floodway Map Index	October 2011	Removed section - Map Index information is no longer part of Appendix K
Table K-4. FBFM Index Body Notes	October 2011	Removed table - Map Index information is no longer part of Appendix K
K.3.1.6. Map Index Panel Element Graphic Standards	October 2011	Removed section - Map Index information is no longer part of Appendix K
Table K-5. Map Index Panel Elements	October 2011	Removed table - Map Index information is no longer part of Appendix K
K.3.2. Countywide Index	October 2011	Removed section - Map Index information is no longer part of Appendix K

Affected Section or Subsection	Revision Date	Revision Description
K.3.2.1. Listing of Communities Table and Note to User	October 2011	Removed section - Map Index information is no longer part of Appendix K
Table K-6. Listing of Communities Table Note	October 2011	Removed table - Map Index information is no longer part of Appendix K
Figure K-5. Listing of Communities Table	October 2011	Removed figure - Map Index information is no longer part of Appendix K
K.3.2.2. Map Repositories List	October 2011	Removed section - Map Index information is no longer part of Appendix K
Table K-7. Countywide Map Repositories List	October 2011	Removed table - Map Index information is no longer part of Appendix K
K.3.2.3. Multiple Map Index Panels	October 2011	Removed section - Map Index information is no longer part of Appendix K
Figure K-6. Index Locator Diagram for Sheet 1 of 2	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-7. Index Locator Diagram for Sheet 2 of 2	October 2011	Removed figure - Map Index information is no longer part of Appendix K
K.3.3. Index Title Block	October 2011	Removed section - Map Index information is no longer part of Appendix K
Figure K-6. Index Locator Diagram for Sheet 1 of 2	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-7. Index Locator Diagram for Sheet 2 of 2	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-8. Countywide FIRM Index Title Block	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-9. Countywide Multiple-sheet FIRM Index Title Block, Sheet 1 of 2	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-10. Countywide Multiple-sheet FIRM Index Title Block, Sheet 2 of 2	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-11. Single-Jurisdiction FIRM Index Title Block	October 2011	Removed figure - Map Index information is no longer part of Appendix K

Affected Section or Subsection	Revision Date	Revision Description
Figure K-12. Single-Jurisdiction Manual FIRM Index Title Block	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-13. Single-Jurisdiction Manual FBFM Index Title Block	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-14. Map Index Title Block Element Suggested Font Standards	October 2011	Removed figure - Map Index information is no longer part of Appendix K
K.3.4. 8½"x11" Map Index	October 2011	Removed section - Map Index information is no longer part of Appendix K
Figure K-15. Example of 8½" x 11" Map Index	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Figure K-16. Title Block for 8½" x 11" Map Index, with Suggested Font Standards	October 2011	Removed figure - Map Index information is no longer part of Appendix K
Table K-8. 8½" x 11" Map Index Elements	October 2011	Removed table - Map Index information is no longer part of Appendix K
K.4. Map Body	October 2011	Revised introduction to include abbreviation conventions; added information on overprinting, halos, hierarchy for labels and map features, and leader lines
Figure K-5. Example of Acceptable Overprint	October 2011	New figure - added example of acceptable overprint
Figure K-6. Text Size and Corresponding Halo Sizes	October 2011	New figure - added standards for relationship between text and halo sizes
Figure K-7. Overprinting Hierarchy for Labels	October 2011	New figure - defined label weights and overprinting hierarchy for labels on FIRM panels
Figure K-8. Hierarchy for Standard Map Elements	October 2011	New figure - defined feature weight and overprinting hierarchy for standard FIRM panel elements
Figure K-9. Overprinting Hierarchy for Boundaries	October 2011	New figure - defined overprinting hierarchy for boundaries shown on FIRM panels
Table K-1. Base Map Features: Leader Line	October 2011	New table - defined leader line standard
K.4.1. Base Map	October 2011	Removed reference to horizontal control, FBFMs and FHBMs; added MAF/TIGER as preferred vector base map standard

Affected Section or Subsection	Revision Date	Revision Description
K.4.1.1. Base Map Types	October 2011	Raster Images: removed requirement of covering entire FIRM panel outside of the jurisdiction; removed requirement to include the potential flood hazard note outside of the jurisdiction; removed requirement to add note if updating image with vector data
K.4.1.1. Base Map Types	October 2011	Vector Data: removed reference to dual-line feature representation; added centerline as preferred representation
K.4.1.2. Base Map Features	October 2011	Removed NGS benchmarks, significant land forms, other features from base map requirements; updated symbolization requirements for hydrographic features to include profile baseline guidance; updated symbolization requirements for hydraulic structures to include levee guidance
K.4.1.2. Base Map Features	October 2011	Updated guidance for common base map sources to include USGS Geographic Names Information System and U.S. Census Bureau Topologically Integrated Geographic Encoding and Reference System (TIGER)
K.4.1.2. Base Map Features	October 2011	Transportation Features: relaxed labeling requirements for roads to only require roads shown on Flood Profiles and when feasible within the SFHA; relaxed labeling requirements for railroads to only require generic label on Flood Profiles and when feasible; allowed halos, splining, and overprints for transportation features; clarified labeling requirements for airports and abbreviated street name directions and suffixes; referenced source for transportation names in FIRM Database
Table K-9. Base Map Features: Transportation	October 2011	Now Table K-2: removed all road and railroad feature symbology variations except one symbol and label for each type; removed all other transportation feature symbols except highway shields
K.4.1.2. Base Map Features	October 2011	Hydrographic features: updated guidance to allow splining of labels; made all line representations for water features optional
Table K-10. Base Map Features: Hydrographic	October 2011	Now Table K-3: removed all symbology variations except one symbol and label
Table K-10. Base Map Features: Hydraulic	October 2011	Hydraulic Structures: updated guidance to label only levees regardless of their accreditation status and structures that are shown on Flood Profiles
Table K-11. Base Map Features: Hydraulic Structures	October 2011	Now Table K-4: simplified symbol for aqueduct, channel, culvert, and storm sewer; simplified symbol for dam, jetty, and weir; added bridge symbol; added new symbols for accredited and non-accredited levees

Affected Section or Subsection	Revision Date	Revision Description
K.4.1.2. Base Map Features	October 2011	Benchmarks: removed section because benchmarks will not be shown in the future
Table K-12. Base Map Features: Bench Marks	October 2011	Removed table - benchmark information is no longer part of Appendix K
K.4.1.2. Base Map Features	October 2011	Political and Cultural Entities and Boundaries: now called Political Entities and Boundaries - removed requirement to label boundary lines; removed information about single-jurisdiction FIRMs; changed labeling and data display requirements for 'Area Not Included'; updated guidance for State and national parks; added guidance for coincident features; removed line weight guidance
Table K-13. Base Map Features: Boundaries	October 2011	Now Table K-5: updated jurisdiction boundaries to be a single symbol; updated political area labels to include new labeling guidance for parks
K.4.1.2. Base Map Features	October 2011	Horizontal Reference Grids: updated guidance to make secondary grid optional if UTM is the primary grid; required the primary grid on the map to be identical with database coordinate system; created separate subsection for U.S. Public Land Survey System, and Breakout Panels
K.4.1.2. Base Map Features	October 2011	U.S. Public Land Survey System: now separate subsection - relaxed requirement to label sections; added guidance for land grants; clarified usage of Township and Range Information note when no township and range lines intersect the panel
K.4.1.2. Base Map Features	October 2011	Breakout Panels: new section - added guidance on placement and labeling of breakout panels (when a smaller panel within a larger panel is also printed)
Table K-14. Base Map Features: Horizontal Reference Grids	October 2011	Now Table K-6: simplified section number labeling; added land grant and Township and Range Information note labeling guidance
K.4.1.2. Base Map Features	October 2011	Other Base Map Features and Notes - now called Other Base Map Features: simplified other base map features to allow additional land forms only in special cases
Table K-15. Base Map Features: Other Features and Notes	October 2011	Now Table K-6: Included "THIS AREA SHOWN AT A SCALE OF..." note, Land Grant label, secondary grid crosshairs, and Township and Range notes

Affected Section or Subsection	Revision Date	Revision Description
K.4.2.1. Floodplains and Floodways	October 2011	Simplified guidance for flood insurance risk zones by requiring all zones to be shown on the FIRM; added transparency requirement of "70% recommended"; clarified requirement to show flood zone boundary lines between different zones and elevations; added guidance for special floodways and standard floodway labels and notes; added reference to digital mapping tolerances in Appendix L
K.4.2.2. Flood Hazard Information Based on Future-Conditions Analyses	October 2011	Simplified guidance for future-conditions mapping; removed Zone X (shaded) discussion and special note
K.4.2.3. Zone Labels	October 2011	Updated labeling guidance to exclude Zone X (unshaded and shaded) from the labeling requirements; added guidance on labeling static elevations, depth and velocity
K.4.2.4. Base Flood Elevations	October 2011	Updated section to reflect removal of BFE line symbols in studies areas with associated Flood Profiles and BFE line interpolation requirement; added labeling requirement for cross sections with regulatory WSEL values; updated guidance for static BFEs and studied areas without associated Flood Profiles; removed plotting guidelines for BFEs; clarified BFE unit preference
K.4.2.5. Cross Sections	October 2011	Removed reference to FBFM
K.4.2.6. Cross-Section Labeling	October 2011	Added WSEL labeling requirement; added guidance for rounding, graphic adjustments of cross section lines for labeling, labeling for cross section with multiple elevations, and guidance for insertion of additional cross section in existing studies; added consistency requirement for label types on single streams within a study; added placement guidance for unlettered cross sections and notes
K.4.2.7. Limit of Detailed Study and Limit of Study	October 2011	Now called K.4.2.7 Limit of Study - eliminated "Limit of Detailed Study" terminology; simplified placement guidelines for Limit of Study lines
K.4.2.8. Coastal Transects	October 2011	Added reference to Appendix D
K.4.2.9. Coastal Transect Labeling	October 2011	Removed option for Transect Location Map; revised guidance for insertion of additional transects in existing studies
K.4.2.10. Limit of Moderate Wave Action (LiMWA)	October 2011	New section - added LiMWA and reference to Procedure Memorandum 50.

Affected Section or Subsection	Revision Date	Revision Description
Table K-16. Standard Flood Hazard Features and Notes	October 2011	Now Table K-7: updated examples, feature/usage and graphic standards for: flood zone boundaries; Limit of Study; 1-percent-annual-chance flood hazard area; 0.2-percent-annual-chance flood hazard area; Zone D areas; Zone X Protected by Levee; Floodways; Narrow Floodways note; Colorado River Floodway; Special Floodways; Future-Conditions; Future-Conditions label; Flood Zone labels; Flood Zone labels with static elevation, depth or velocity; Cross sections; coastal transects; BFE lines and labels; LiMWA; accredited and provisionally accredited levee notes; levees not providing protection note; and removed all other notes and symbols
Table K-17. Other Flood Hazard Features and Notes	October 2011	Now Table K-8: removed Special Floodway, State Encroachment Line, Flowage Easement Boundary and Zone D Boundary note; removed gaging station; update profile baseline symbology and usage guidelines; added transect baseline example, feature/usage, and standard
K.4.4. Coastal Barrier Resources System Map Components	October 2011	Added reference to Procedure Memorandum 39 for additional information about delineation about CBRS boundaries
K.4.4.1. Coastal Barrier Resources System Boundaries	October 2011	Simplified CBRS boundary and labeling description; removed digitization guidance
K.4.4.2. Map Screens for Coastal Barrier Resources System Areas	October 2011	Now called Coastal Barrier Resources System Area Screens - simplified CBRS area and labeling description; removed symbology swatches from text; removed historic CBRS symbology swatches from text
K.4.4.3. Coastal Barrier Notes for the Body of the FIRM	October 2011	Now called Coastal Barrier Resources Area FIRM Note - updated descriptive text; removed references to other sections and tables
Table K-18. CBRS Features and Notes	October 2011	Now Table K-9: removed all title block notes and CBRS boundary symbol; replaced all specific notes with unified CBRS note
K.5. Map Legend	October 2011	Removed references to community variables
Figure K-10. Legend Standards	October 2011	New table - defined legend standards
Table K-10. Map Legend Neatlines Lines	October 2011	New table - defined map legend neatline standards

Affected Section or Subsection	Revision Date	Revision Description
Figure K-17. Countywide Digital FIRM, Orthophoto Base Map Legend	October 2011	Now Figure K-11: shows new color legend for orthophoto based FIRMs
Figure K-18. Countywide Digital FIRM, Vector Base Map Legend	October 2011	Now Figure K-12: shows new color legend for vector based FIRMs
Figure K-19. Single-Jurisdiction Digital FIRM, Orthophoto Base Map, Map Revised Legend	October 2011	Removed table
Figure K-20. Single-Jurisdiction Digital FIRM, Vector Base Map	October 2011	Removed table
Figure K-21. Single-Jurisdiction Digital FIRM, Vector Base Map, Map Revised Legend	October 2011	Removed table
Figure K-22. Single-Jurisdiction Manual FIRM, Map Initiatives Format, Map Revised Legend	October 2011	Removed table
Figure K-23. Single-Jurisdiction Manual FIRM, Standard Format Legend	October 2011	Removed table
K.5.1. Map Legend Components	October 2011	Now Map Legend Components (no separate heading) - added standards for MSC note and FIS report reference; removed benchmarks, river mile markers, map repository notes, NFIP map dates, map revision dates, general FIRM legend notes, and all associated guidance
Table K-19. Map Legend Features and Notes	October 2011	Now Table K-11. Map Legend Features: removed NFIP and map repository reference and revision notes; updated legend title, legend header descriptions, zone label examples, general structures and other features labels, hydrologic feature labels, FIS report reference note and MSC website note; removed scale bar, projection and north arrow information
K.5.1.1. Coastal Barrier Resources System Map Revision Notes	October 2011	Removed section - information is no longer stored on FIRM panels

Affected Section or Subsection	Revision Date	Revision Description
Table K-20. Coastal Barrier Revision Notes Matrix	October 2011	Removed table - information is no longer stored on FIRM panels
K.5.1.2. Coastal Barrier Resource System Legend	October 2011	Now part of K.6 Notes to Users: renamed to Coastal Barrier Resource System Note; simplified guidance for placement of CBRS note; clarified usage as part of Notes to Users
Figure K-24. Coastal Barrier Legend	October 2011	Now part of Table K-12 Notes to Users - updated standards for CBRS legend title, CBRS note, OPA note, and FWS note
Figure K-13. FIRM Notes to Users Standards	October 2011	New figure - added standards for dimensions of Notes to Users
Table K-21. Coastal Barrier Legend Features and Notes	October 2011	Removed table - information is no longer stored on FIRM panels
K.6. Map Title Block	October 2011	Now K.8: removed detailed descriptions for non-countywide title blocks; added map suffix guidance; added version number guidance; added community name examples
Figure K-25. Countywide Digital FIRM Title Block	October 2011	Now Figure K-21. FIRM Title Block - updated graphics
Figure K-26. Countywide Digital FIRM Title Block with CBRS Areas	October 2011	Removed figure - this title block format no longer applies
Figure K-27. Single-Jurisdiction Multiple-Panel Digital FIRM Title Block	October 2011	Removed figure - this title block format no longer applies
Figure K-28. Single-Jurisdiction Digital FIRM Title Block, Only Panel Printed	October 2011	Removed figure - this title block format no longer applies
Figure K-29. Single-Jurisdiction Manual FIRM Title Block	October 2011	Removed figure - this title block format no longer applies
Figure K-31. Title Block Element Usage Notes	October 2011	Removed figure - this graphic no longer applies
Figure K-32. Additional Title Block Element Usage Notes	October 2011	Removed figure - this graphic no longer applies

Affected Section or Subsection	Revision Date	Revision Description
Table K-15. FIRM Title Block	October 2011	New table - added standards for title block elements; NFIP header, FIRM header, dividing line, flood risk project area name, panel numbering, version number, text heading for community list, community number panel suffix, listing of communities, map number, map dates, DHS logo and NFIP/ FEMA banner
Table K-16. Preliminary FIRM Title Block	October 2011	New table – standards for preliminary FIRM title block
K.7. Map Locator Diagram	October 2011	Now called Scale Box and Panel Locator Diagram - updated guidance for panel locator diagram; specified requirements, panel not printed information, diagram size, panel numbering, content and county inset; added information about north arrow, scale bar and projection
Figure K-33. Map Locator Diagram	October 2011	Now Figure K-19 Panel Locator Diagram - example of panel locator diagram
Figure K-18. Scale Box and Map Locator Diagram Standards	October 2011	New figure - added standards for dimensions of map locator diagram and scale box
Table K-13. Panel Locator Diagram	October 2011	New table - added standards for map locator diagram elements, title, colors, outlines, and numbers
Table K-14. Scale Box	October 2011	New table - added standards for north arrow, scale bar and projection information
K.8. Notes to Users	October 2011	Now K.6 Notes to Users
Figure K-34. Countywide Digital FIRM Notes to Users, Orthophoto Base Map	October 2011	Now Figure K-14 FIRM Notes to Users - simplified and reduced number of notes to users and is the same for ortho- and vector-based maps
Figure K-35. Countywide Digital FIRM Notes to Users, Vector Base Map	October 2011	Now Figure K-14 FIRM Notes to Users - simplified and reduced number of notes to users and is the same for ortho- and vector-based maps
Figure K-36. Single-Jurisdiction Multiple-Panel Digital FIRM Notes to Users, Orthophoto Base Map	October 2011	Removed figure - this graphic no longer applies

Affected Section or Subsection	Revision Date	Revision Description
Figure K-37. Single-Jurisdiction Digital FIRM Notes to Users, Orthophoto Base Map, Only Panel Printed	October 2011	Removed figure - this graphic no longer applies
Figure K-15. FIRM Levee Notes to Users	October 2011	New figure - updated notes for accredited and provisionally accredited levees
Figure K-16. Limit of Moderate Wave Action Notes to Users	October 2011	New figure - updated LiMWA note including legend symbol and description
Figure K-17. Coastal Barrier Resources System (CBRS) Notes to Users	October 2011	New figure - updated CBRS note including CBRS and OPA legend symbol and description
Figure K-20. FIRM Title Block Standards	October 2011	New figure - added standards for dimensions of title block elements
Table K-22. Notes to Users	October 2011	Now Table K-12. Notes to Users - revised standards for Notes to Users; updated standards for title and the following notes: FEMA Map Information Exchange, community annexation, NFIP, FIS report, insurance, base map, accredited levees, provisionally accredited levees, local vertical monuments, LiMWA and CBRS; removed all other Notes to Users
K.9. Preliminary Flood Insurance Rate Map Deliverables	October 2011	Removed guidance for plotting preliminary FIRMs versus final FIRMs
Figure K-38. Title Block with Preliminary Stamp	October 2011	Now Figure K-22: updated graphic for title block with stamp
K.10. Deliverables to Map Service Center	October 2011	Now K.10 Map Service Center Deliverables - replaced text with reference to MSC Deliverable Package Guide
K.11. National Flood Hazard Layer	October 2011	New chapter - specifies that the NFHL should match the graphic standards for raster-based FIRMs whenever possible

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Appendix K

Format and Standards for Flood Insurance Rate Maps

Mapping Partners are to use this Appendix as a guide for the production and use of Flood Insurance Rate Maps (FIRMs). It sets forth standards for the graphic elements that are shown on each FIRM, including the mapping format representation, presentation of base map information, map frame sizing, legend, title block, and presentation of flood hazard information. For the user's ease of reading, an entire flood risk project's worth of panels will be referred to as a FIRM throughout this document. Individual panels will be noted as "FIRM Panel." The intent of this document, in conjunction with *Appendix L*, is to produce a map that requires little or no manual cartographic finishing. All labels and symbols contained within this document should be automatically placed using either a private or commercially available labeling mechanism. Although occasional guidance (or best practices) have been included where necessary throughout this appendix, the majority of the content in this appendix represent standards to be used in preparing the Preliminary and Final FIRM deliverables.

Examples of final FIRM products can be obtained free of charge from the FEMA Map Service Center (MSC) website at <http://msc.fema.gov> (search for "Flood County, USA").

**NOTE: FEMA recognizes that not all Geographic Information Systems (GIS) support identical font styles. Any font herein that cannot be matched shall be emulated as closely as possible, with consideration given to space constraints and the overall presentation of the finished product.*

K.1 Map Production Formats [October 2011]

K.1.1 Countywide Format [October 2011]

FIRMs will most often be prepared in the FEMA countywide format, whereby all jurisdictions within a given county are shown on one set of FIRM Panels. The assigned Mapping Partner shall prepare new countywide FIRMs using digital production techniques, with the creation of a database based on *Appendix L*, and subsequently the production of the FIRM (*Appendix K*) and Flood Insurance Study (FIS) report (*Appendix J*) from this database. For raster base maps, FEMA encourages the use of community- or county-supplied digital base maps for the production of countywide FIRMs; therefore, each base map supplied for this purpose may have its own unique standards and appearance. For vector base maps, the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) street centerline data are the default source. At the discretion of the FEMA Project Officer, data provided by the community may be substituted for MAF/TIGER data. The data format must match that of the MAF/TIGER, so the assigned Mapping Partner can easily integrate it into the mapping process. Any significant deviations from the format presented in these Guidelines must be coordinated with the FEMA Project Officer or other designated FEMA staff.

There are several additional points to consider when creating a countywide FIRM:

- Countywide mapping must provide seamless coverage within the entire county area. Any previously existing mismatches in floodplains, flood hazard information, base map information, etc., between communities and counties must be resolved.
- To ensure seamless coverage, the portrayal of floodplains, the Flood Profile, and the Floodway Data Table (FDT) information should be continuous for the length of the flooding source. Toward that, the cross section information shall be lettered sequentially and contain water-surface elevations (WSELs) that are consistent for the length of the detailed flooding sources.
- Where analyses overlap community boundaries and analyses do not agree, the analysis with the most recent effective date shall be used.

K.1.2 Multiple-County Communities [October 2011]

When processing a countywide FIRM that contains a multiple-county community, the assigned Mapping Partner shall select from one of the three processing options described below. The community can be mapped as a single-jurisdiction FIRM; it can be mapped completely in a single county; or the portions of the community can be mapped in their respective counties. Seamless mapping coverage between all affected jurisdictions must be obtained, and overlapping coverage and/or disclaimed flood hazard information shall be avoided.

Before a decision is made regarding the processing method, which occurs during the Discovery/Project Planning Phase (See *Appendix I*), the following questions must be answered:

- In how many counties does the subject community lie?
- How are the multiple-county communities shown on the FIRMs of surrounding counties?
- What is the status of the surrounding counties relative to countywide processing?
- Does the subject community have full jurisdiction over its lands?
- How much of the subject community falls within the county that is being processed?
- What is the map scale of the existing community-based FIRM or countywide FIRM?
- How many panels would be added to the countywide FIRM in order to include the subject community in its entirety?

Once these questions have been answered and all information has been obtained, the final decision regarding processing shall be made in consultation with the FEMA Project Officer. The three options discussed below ensure seamless mapping coverage for all jurisdictions and prevent overlapping and/or duplicated flood hazard information from being shown on two separate FIRMs. The most up-to-date analysis should be applied from one community to another if there are data disagreements.

Processing Option 1: Single Jurisdiction

Under this option, the FIRMs of the surrounding counties would show the community as an “Area Not Included” (ANI), with no flood hazard or base map information shown, and the community would retain

the format of its Single-Jurisdiction FIRM. If orthophoto base maps are used for the countywide FIRMs, the base map imagery will continue through the ANI. When this option is chosen during the processing of a countywide format FIRM, a concurrent community-based FIRM revision must be processed, if required, to ensure that seamless coverage between the multiple-county community and the surrounding counties will be maintained. Minor revisions of the FIRMs of adjacent counties may be necessary to ensure that no overlaps or gaps in coverage exist.

Only National Flood Insurance Program (NFIP) communities (i.e., those that have been assigned a Community Identification Number [CID]) may be shown as an Area Not Included. All other land-use areas, such as military reservations, shall be shown and labeled on the FIRM.

Processing Option 2: Entire Community Mapped in Only One of the Countywide FIRMs

Under this option, the entire community is mapped on the new countywide FIRM. This option shall be used when the following criteria are met:

- The multiple-county community can be shown on the new countywide FIRM without substantially increasing the panel count; and
- At least 70 percent of the community area is located within the countywide FIRM being processed.

When Processing Option 2 is chosen, the assigned Mapping Partner shall notify the FEMA MSC to supersede the community-based FIRM for the multiple-county community. The MSC must also be advised to include a notation in the Flood Map Status Information System that the multiple-county community is shown in its entirety on the new countywide FIRM. The adjacent counties will continue to show the multiple-county community as an ANI on their FIRMs, even if their FIRMs are converted to the countywide format at a future date. This decision will be made on a case-by-case basis with the FEMA Project Officer.

Processing Option 3: Community Split Between Counties

Under this option, flood hazards in the multiple-county community are shown on the countywide FIRMs of the respective counties. This option shall be used only when the following criteria are met:

- All adjacent counties in which the multiple-county community is located either already have countywide FIRMs or will in the near future; and
- The multiple-county community has been consulted and has not expressed significant concerns with being shown on more than one countywide FIRM.

When Processing Option 3 is chosen, if the processing of any of the contiguous countywide FIRMs that share the subject community are delayed (usually as a result of an appeal, protest, or other flood risk project complication), thereby making it impossible for all countywide FIRMs to become effective at the same time, the multiple-county community shall retain the effective community-based FIRM or previous single- or multiple-county map for the portion of the community in the county with the delayed map. In this situation, the assigned Mapping Partner must consult the FEMA Project Officer for a decision on how to proceed. Decisions will be made on a case-by-case basis but must result in continuous and non-

conflicting coverage for all land areas being mapped. Once all issues causing the delay are resolved, the assigned Mapping Partner can proceed with the inclusion of the community into each countywide FIRM.

When Processing Option 3 is chosen, the assigned Mapping Partner must notify the MSC to supersede the community-based FIRM for the multiple-county community.

K.1.3 Partial Countywide Map Format [October 2011]

Current methods for publishing partial countywide maps are very inefficient, mainly because new panel layout schemes differ from prior panel layouts, resulting in the partial overlap of unrevised panels surrounding the updated area with the panels for the revised area. Because the overlapping panels must be modified to avoid duplicate coverage and subsequently republished, the cost of updated information is higher, per panel, than the full countywide mapping. As a result, the burden and cost of producing partial countywide maps may outweigh the benefits.

If a partial countywide mapping format will be pursued, the Mapping Partner must submit a request to the FEMA Region with a copy to FEMA Headquarters. The request must include a cost comparison to the standard countywide format, written justification of the decision to pursue partial countywide mapping, and answers to the following considerations.

- How many panels will the partial countywide mapping entail?
- How many existing panels will be unaffected?
- How many existing panels will need to be republished as “This Area Shown” panels? (These are panels that refer the user to another panel for information)
- How many communities are in the county?
- How many communities will be completely mapped by the partial countywide mapping?
- How many communities will be only partially mapped as a result of the partial countywide mapping limits?
- How many of these communities have an effective FIS report that will need to be revised and republished?
- Will adding additional panels to the partial countywide mapping plan complete any of these communities and eliminate their single-community FIS report?
- How many existing detailed flooding sources are there in all communities?
- What are the existing map formats?
- How many Letters of Map Revision (LOMRs) will be incorporated into the partial countywide mapping?
- How many LOMRs will not be incorporated?
- How many detailed flooding sources will be fully mapped in the partial countywide mapping?

- How many detailed flooding sources will be only partially mapped as a result of the partial countywide mapping limits?
- How will the cross-section lettering appear on the partial countywide panels and the existing unrevised panels where a traditional continuous lettering series is not possible now?
- Will there be a datum issue created by the partial countywide mapping limits?
- Will adding additional panels to the partial countywide mapping simplify any of the cross section relettering and datum conversion challenges?

Because each proposed partial countywide mapping project is unique, FEMA will evaluate submittals on a case-by-case basis.

The FEMA Region, in consultation with FEMA Headquarters, will evaluate the request and approve or disapprove the request based on information provided by the Mapping Partner. The FEMA Region will advise the Mapping Partner of the decision in writing, and will copy Headquarters and FEMA's national contractor(s).

If partial countywide mapping is pursued, the following guidance must be followed:

Title Block

Use the Countywide Title Block detailed in Section K.8. All jurisdictions in the county will be listed, but the ones not included in the partial countywide mapping will be noted as having their FIRMs and FIS reports published separately.

Suffix

Determine the suffix for partial countywide maps by considering all suffixes in use in all communities being revised. Use the next highest one for the partial countywide maps with the letters "I" and "O" being skipped. This is the same process followed when determining the panel suffix for countywide maps.

Panel Numbers

Assign panel numbers for the entire county, just as for a full countywide. Numbering of countywide panels must consider the numbering of the existing panels so as not to create two panels with the same number. Start countywide numbering by going up to the first even thousand above the highest existing FIRM panel number.

Overlap Interface Area

When producing a new partial countywide quad-based panel layout, some existing FIRM panels will be only partially covered by the new quad-based panels. To avoid duplicate coverage, areas shown on quad-based panels must be blanked out on the existing non-quad-based community panels, which must then be republished. Most of these will be manually produced panels. Label the blanked-out area with a reference to the new countywide panel which begins with "This Area Shown..." Additionally, any "This Area Shown..." panels in Standard Format must be converted to Map Initiatives Format (e.g., numbered

A zones converted to AE zones; B and C zones converted to X zones; and floodway boundaries and cross sections added, as necessary).

Datum Conversion

All new FIRMs shall be mapped in the North American Datum of 1988 (NAVD88). Since most existing FIRMs are referenced to the National Geodetic Vertical Datum of 1929 (NGVD29), partial countywide mapping will, at a minimum, create dual-datum FIRMs for the counties. Flood Profiles and FDTs within an individual FIS report will now be potentially referenced to either datum, which will increase the complexity of production and quality control reviews. To minimize datum shifts within individual Flood Profiles and FDTs, minimize the number of partially mapped, detailed flooding sources by carefully selecting the FIRM panels to include in the partial countywide layout.

Lettered Cross Sections

In the traditional countywide process, the entire length of a detailed stream is re-lettered into a continuous sequence. In a partial countywide, some portions of a detailed stream may fall on panels not planned for publication, making a continuous lettering series impossible. To minimize lettering discontinuities, minimize the number of partially mapped detailed flooding sources as a result of the partial countywide limit; consider expanding the number of panels included in the new partial countywide layout to accomplish this. New cross sections inserted between existing cross sections should be numbered with an alphanumeric sequence (i.e., Cross Sections 5A and 5B may be inserted between existing cross sections 5 and 6).

K.1.4 FIRM/FIS Report Combination Format [October 2011]

This section has been removed from this version of *Appendix K* [October 2011].

K.1.5 Single-Jurisdiction (Community-based) Format [October 2011]

For single-jurisdiction FIRMs, all areas within a single community's jurisdiction are shown on one FIRM. The assigned Mapping Partner shall prepare a single-jurisdiction FIRM when funding constraints or lack of suitable base map data prohibit full countywide mapping.

K.1.6 Partial Digital Conversions [October 2011]

Digital conversion of only the revised panels (partial digital conversion) is not the preferred option, but it may be undertaken when funding constraints prohibit a full digital conversion.

K.2 Map Frames

[October 2011]

The frame size for the FIRM panels is defined in the following sections.

K.2.1 Digital Frame Size

[October 2011]

All FIRM panels shall be printed to full page, portrait orientation, Architectural (ARCH) D map frames of the dimensions shown below:

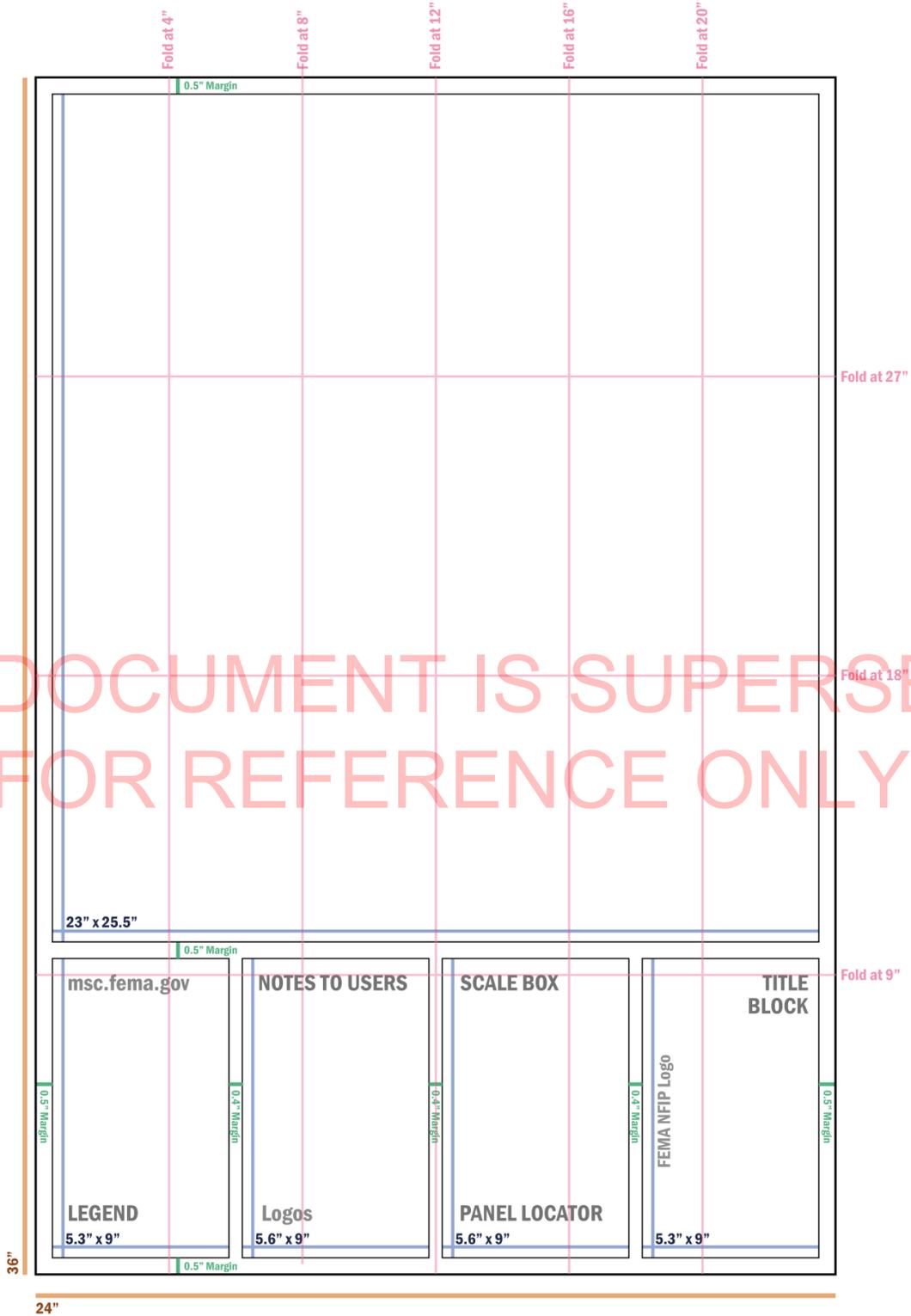
- Trimmed paper size: Height 36” x Width 24”
- Map border size: Height 35.5” x Width 23.5”
- Map Panel border: Height 25.5” x Width 23”
- Legend, msc.fema.gov note border: Height 9” x Width 5.3”
- Notes to Users, Logos border: Height 9” x Width 5.6”
- Panel Locator, North Arrow, Scale Bar border: Height 9” x Width 5.6”
- Map Info Panel, FEMA NFIP Logo border: Height 9” x Width 5.3”
- Figures K-1 through K-4 describe the dimensions of a FIRM digital map frame, including the overall dimensions (K-1), the dimensions including logo sizes and locations (K-2), frame margin standards (K-3), and frame folding standards (K-4). See section K.5, Map Legend, for detailed information regarding the legend.

The map image size (the image inside the FIRM neatline) shall vary depending on the latitude of the community being mapped.

K.2.2 Frame Size Exceptions

[October 2011]

When the dimensions specified in section K.2.1 cannot be matched because the map image sizes are larger due to far southern latitudes, a different system of measurement has been used, or other reasons that would make the use of ARCH D – sized paper not feasible, a different map size may be used at the discretion of the FEMA Project Officer. Examples may include Hawaii (Universal Transverse Mercator [UTM] projection size), North Carolina, and Puerto Rico (metric). If an alternative size is selected, all other map content not related to map format in this appendix must be adhered to.



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Figure K-1. Digital Map Frame Dimensions

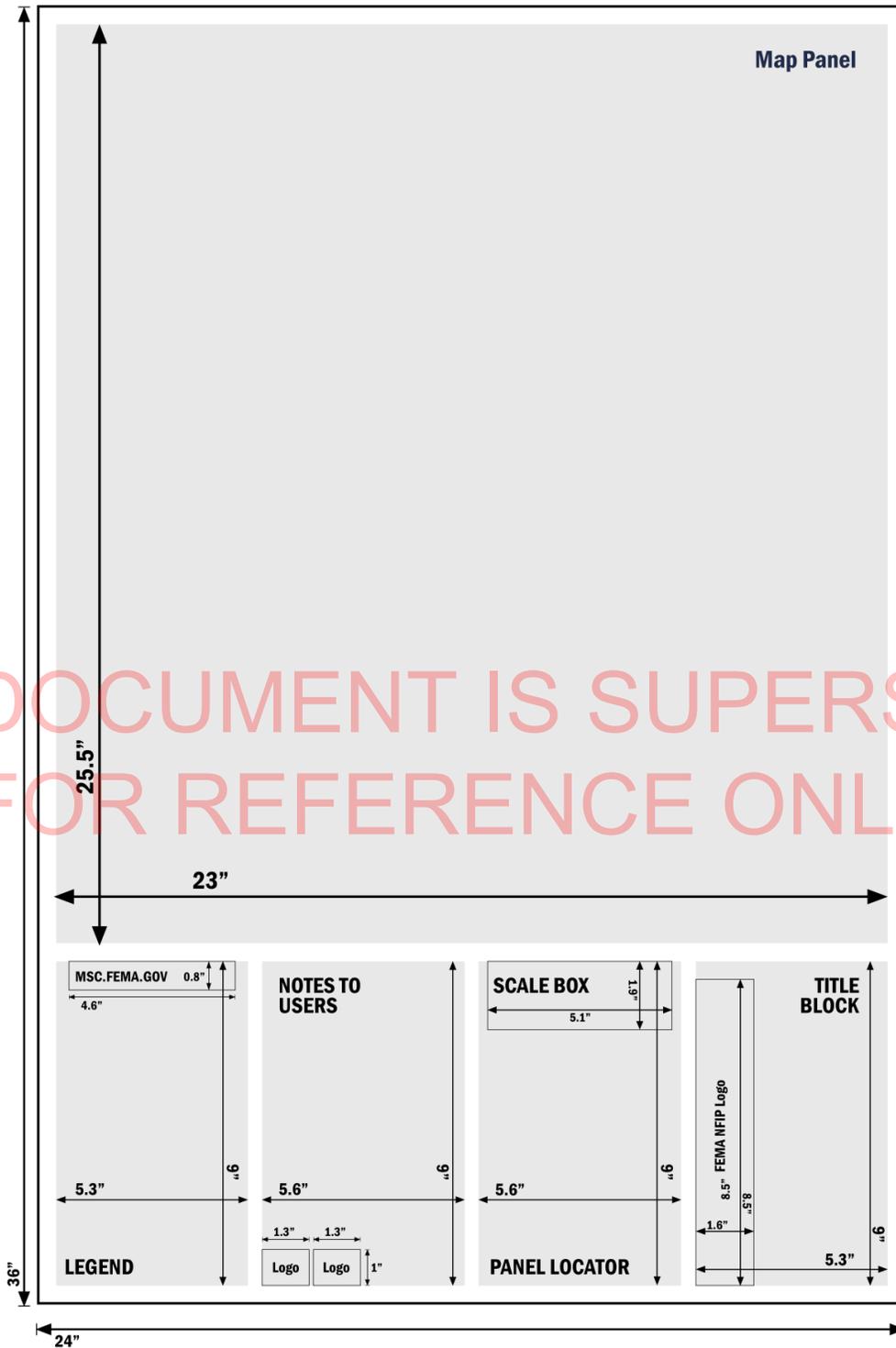


Figure K-2. Digital Map Frame Dimensions Including Logo Sizes and Locations

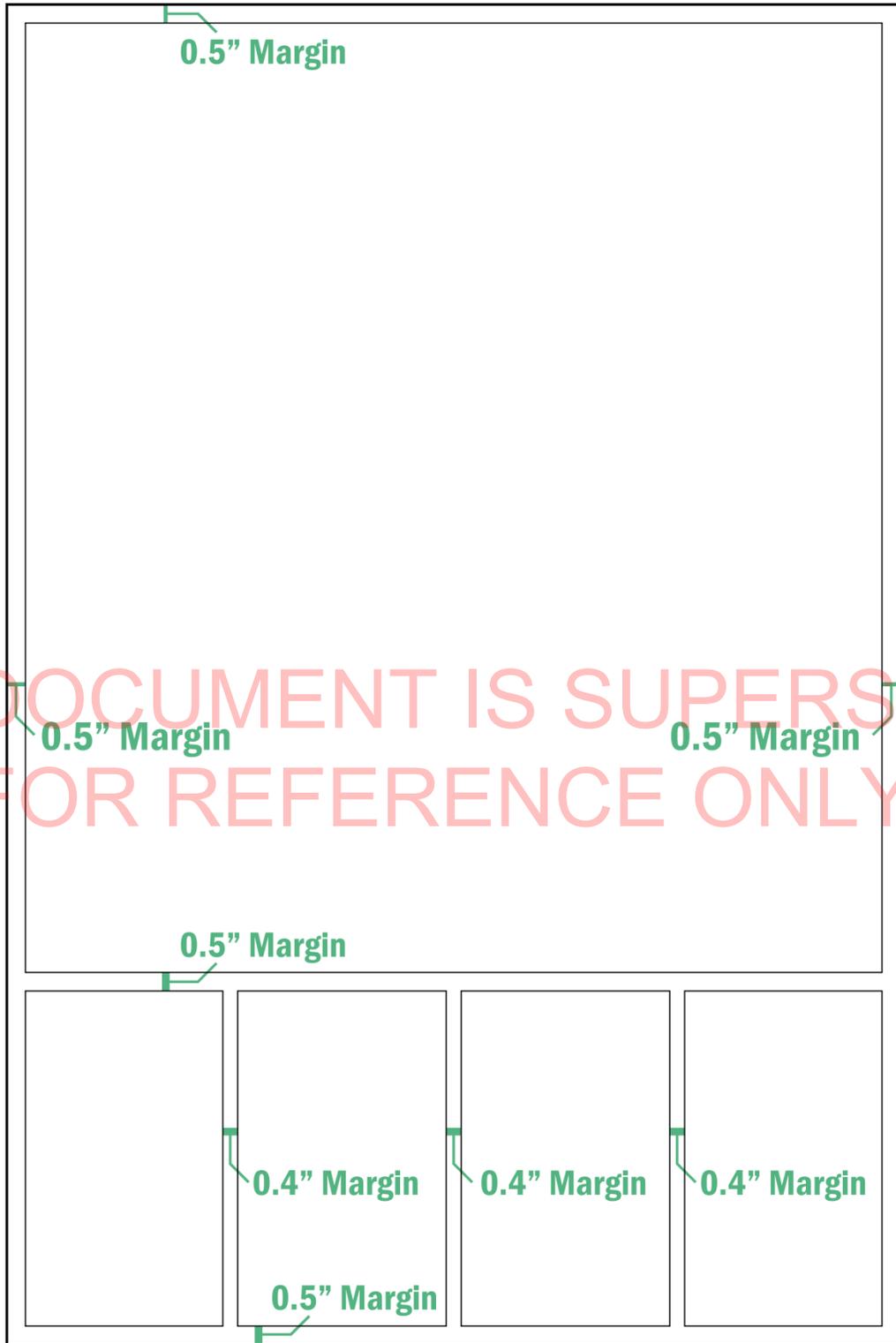


Figure K-3. Digital Map Frame Margin Standards

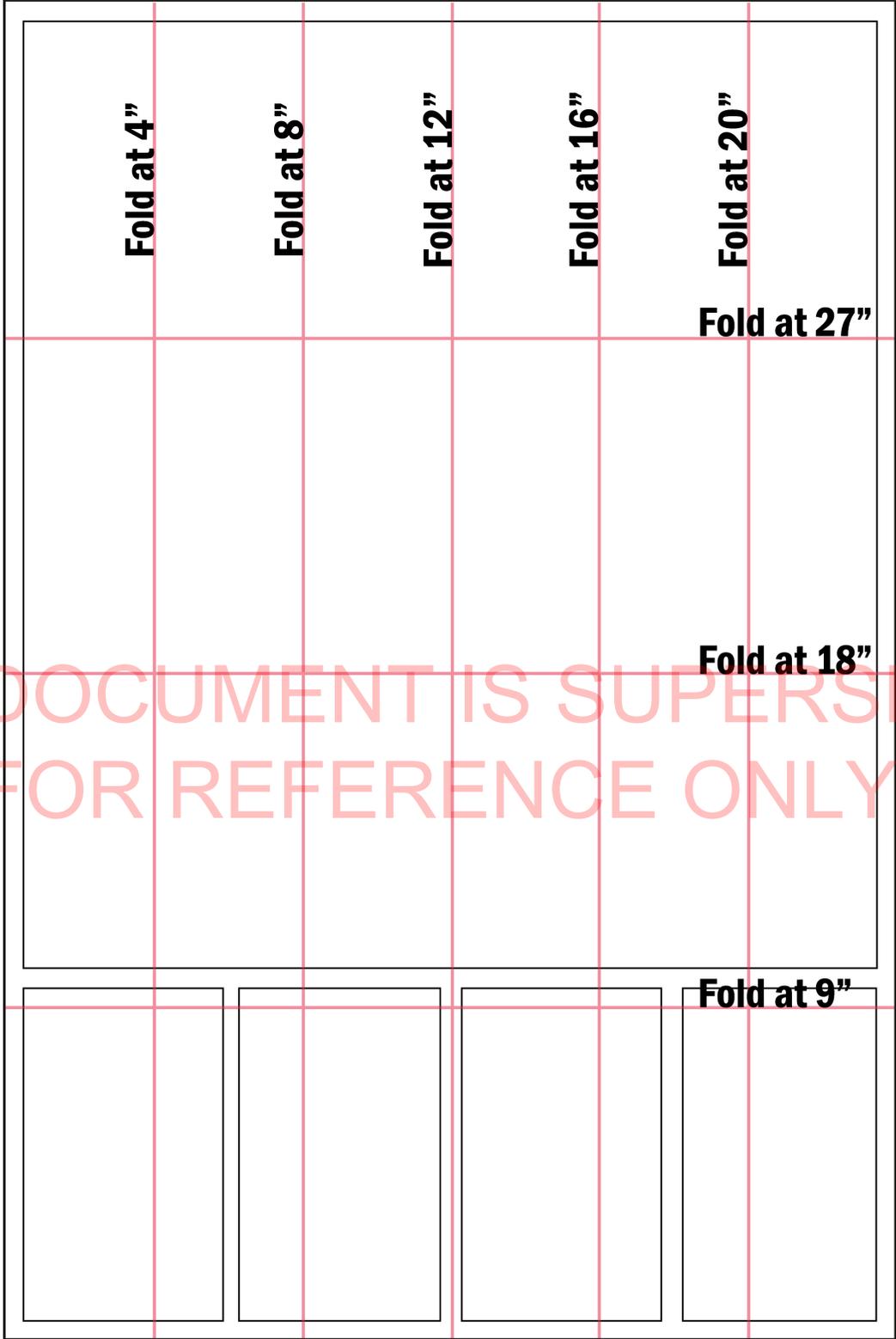


Figure K-4. Digital Map Frame Folding Standards

K.3 Map Index

[October 2011]

This section has been removed from this version of *Appendix K* [October 2011]. Please refer to Procedure Memorandum No. 66 and future revisions to *Appendix J*.

K.4 Map Body

[October 2011]

The body of the FIRM shall comprise base map information and flood hazard information, including any special notes needed for clarification. In applicable communities, it shall also include areas designated as Coastal Barrier Resources System (CBRS) units, where Federal flood insurance is unavailable.

Overprint hierarchies and graphic standards are provided in the tables below, with separate paragraphs emphasizing information of particular importance. All features depicted in the map body are described in four subsections: K.4.1, Base Map Features; K.4.2, Flood Hazard Features; K.4.3, Other Flood Hazard Features and Notes; and K.4.4, Coastal Barrier Resources System Map Components. The graphic standards in Tables K-1 through K-9 provide graphic examples, feature descriptions, and standards, including line weights, fonts, hatching, and RGB color identities.

**NOTE: Throughout this appendix, the following abbreviation conventions are used to specify the case of text appearing on the FIRM:*

- CAPS: All upper case
- CLC: Upper and lower case

Overprinting

Overprinting is the placement of text such that it overlaps other map features or text. Overprinting shall be avoided, but if it becomes necessary, the Mapping Partner should choose to overprint base map features that are of least importance to the theme of the map. Overprinting of any base feature that is within the flooding area should be avoided. Text in and around the outside of the map body must not overprint other text. Where a text overprint cannot be avoided within the map body, the hierarchies listed in Figures K-7, K-8, and K-9 should be followed, and all text should be haloed. Cross section and coastal transect lines and labels, Base Flood Elevation (BFE) labels, flood zone and floodway boundaries and labels, and CBRS boundaries must not be overprinted and are listed in Figures K-7 through K-9 for completeness only.

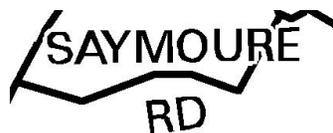


Figure K-5. Example of Acceptable Overprint

Halos

All labels shown on FIRM panels with a raster base map shall be depicted with a white halo to ensure readability of all annotation. Labels on FIRM panels using a vector base map shall be depicted with a white halo when overprinting occurs or the label is not clearly visible on the FIRM panel. White halos may be used in other cases at the discretion of the Mapping Partner.

Text Size (pt)	Halo Size (pt)
Below 12	0.75
12 - 14	1.0
Greater than 14	1.25

Figure K-6. Text Size and Corresponding Halo Sizes

Hierarchy for Labels and Map Features

The following figures illustrate the order of priority (rank) of the various items depicted in the map body. These lists shall be used as a guideline to resolve overprinting issues for labels and map features.

Rank	Item
1	Cross Section and Coastal Transect Labels
2	BFE Labels
3	Flood Zone Labels
4	CBRS and Otherwise Protected Areas Labels
5	Special Notes
6	Jurisdiction Labels
7	All Other Labels
8	Base Map Labels

Figure K-7. Overprinting Hierarchy for Labels

Rank	Item
1	Cross Sections and Coastal Transects
2	BFE Lines
3	CBRS and Otherwise Protected Areas
4	Jurisdiction Lines
5	Levees and General Structures
6	Flood Hazard Lines
7	Profile Baselines
8	Water Lines and Areas
9	PLSS Lines
10	Transportation Features
11	Flood Hazard Areas
12	Ortho Imagery

Figure K-8. Overprinting Hierarchy for Standard Map Elements

Rank	Item
1	Jurisdiction Boundary
2	Coastal Barrier Boundary
3	Flood Insurance Risk Boundary
4	Other Boundaries
5	Base Map Features

Figure K-9. Overprinting Hierarchy for Boundaries

Leader Lines

Labels may be leadered to a feature using a plain line, if space does not permit the label to be adjacent.

Table K-1. Base Map Features: Leader Line

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
	Leader line	Line weight 1.0 Pt, Black

*Font standards that cannot be matched may be approximated

K.4.1 Base Map [October 2011]

Base maps form the backdrop against which flood hazard information is viewed. Base maps cover the entire geographical area of a community and include planimetric data such as transportation features, hydrographic features, hydraulic structures, landforms, and political boundaries. Base map features are employed by map users to identify properties and structures relative to the floodplains; therefore, the accuracy of the base maps used in the production of FIRMs is important to the overall precision of the FIRMs.

MAF/TIGER data are preferred for use in FIRM production. Once a base map has been accepted, the locations of features in the base map data files are used “as is.” Base map features from one source may be clipped where they meet those from another source. Graphical mismatches between communities, where roads or other features cross community boundaries, must be resolved. For additional details regarding base map standards, refer to Volume 1, Subsection 1.4.3.1, of these Guidelines.

K.4.1.1 Base Map Types [October 2011]

This subsection contains guidance for the presentation of raster images and vector data used as FIRM base map information. Further graphic standards are provided in the tables below, with separate paragraphs emphasizing information of particular importance.

Raster Images

The most common form of raster image map is the digital orthophoto. One example is the standard Digital Orthophoto Quadrangle produced by the U.S. Geological Survey (USGS). All raster base maps used for FIRM preparation must be accurately georeferenced, with any distortions removed.

Georeferencing means that the map depicts the spherical earth projected as a plane map, normally with UTM or State Plane coordinates.

Whenever possible, the assigned Mapping Partner shall use orthophoto images as they are received from the USGS or the community, with little or no modification to the actual image. The image shall cover the entire jurisdiction being studied.

Variations in tones between orthophoto images are acceptable. If more than one image is included on a FIRM panel, lightening or darkening of individual images to balance tones is not necessary. Overall lightening of all orthophoto images for a Flood Map Project using a single factor may be done so that flood hazard features can be clearly seen.

The assigned Mapping Partner may update roads or other features that have changed since the orthophotos were produced, placing vector data on top of the images, if available.

The assigned Mapping Partner may show vectors that depict studied flooding sources on top of the orthophotos to clarify their locations. Flooding source vectors shall not be shown outside the Special Flood Hazard Areas (SFHAs) unless removing them would entail additional work.

Vector Data

Vector base maps depict linear features (e.g., roads, railroads, streams) digitized as single-line centerlines. Roadway right-of-ways or buffered road centerlines are not desirable because they do not depict a feature that can be physically located by users, who rely on the base map features for general orientation. Users often measure distances from road features in order to locate structures. Road centerlines are more suitable for this type of use.

K.4.1.2 Base Map Features [October 2011]

The assigned Mapping Partner shall depict the following types of base map features on the FIRM if they occur within the community:

- Transportation features, including roads and railroads, shall be depicted. If digital orthophotos are supplied, these features must be clearly visible. Structures that are included in the hydraulic models shall be included on the FIRM. Unimproved roads or trails (i.e., those travel ways not intended for motorized vehicles or not usually used by motorized vehicles due to width or seasonal conditions) may be included, particularly if they cross the floodplains.
- Hydrographic features (e.g., streams, rivers, lakes, shorelines) shall be depicted following the guidance in Table K-3 regarding the display of hydrographic features and Table K-8 regarding profile baselines.
- Hydraulic structures (e.g., levees, dams, weirs, floodwalls, jetties) shall be depicted. Per Procedure Memorandum 34, all structures identified as levees shall be mapped, and those that do not meet the certification requirements in Section 65.10 of the NFIP Regulations should be mapped and noted as not providing protection from the 1-percent-annual-chance flood. Notes accompanying levees shall be shown on the map as specified in Table K-7.
- Boundaries that identify county and State boundaries, corporate limits, extraterritorial jurisdiction (ETJ) areas, military lands, and tribal lands shall be depicted.
- U.S. Public Land Survey System (PLSS) features, also known as range, township, and section lines, and their designators, shall be depicted.

The assigned Mapping Partner shall separately symbolize base map features that are not clearly visible on the orthophoto if their location within a floodplain is significant to the floodplain analysis. Base map features that are referenced on the Flood Profile in the FIS report shall be symbolized and labeled on the map.

The assigned Mapping Partner shall derive base map feature names from the USGS Geographic Names Information System (GNIS), U.S. Census Bureau TIGER files, community-supplied files, current FIRM panels, and/or other sources. All feature labels on orthophoto-based FIRM panels shall be shown with a white halo around the letters to enable the names to be clearly read against the intensity of the background image. A halo may also be implemented on vector-based maps when necessary.

Transportation Features

Any road shown and labeled on a Flood Profile shall be labeled on the map. As many named roads as possible should be labeled inside of and within 1 inch of an SFHA. Primary roads, as defined by the MAF/TIGER data, farther than 1 inch from an SFHA, shall be labeled. Communities can provide road labels beyond these stated minimums. Community-supplied labels shall be shown on the FIRM, provided they meet the text placement standards and do not render the map unreadable due to excessive clutter. See Figures K-7, K-8, and K-9 for overprint hierarchies of labels and map features.

Depicted road labels should match the primary name stored in the FIRM Database. Road name labels shall be placed parallel to the road. Additional road name labels shall be added for roads that traverse entire FIRM panels, or as necessary for clarity. To avoid unnecessary clutter on the map, prefix, qualifier or suffix may be abbreviated. For example, “West Highland Drive”, may be labeled as “W Highland Dr”. A mix of spelled out and abbreviated road labels is acceptable. If space is limited, a label may be placed over a transportation feature as long as the feature is still recognizable and the label is haloed. The application of curved labels, also known as splining, may be used as necessary. Road name labels may be leadered into the feature as necessary. If space is limited and leadering is not an option, the use of a numbered road key is acceptable.

If a label is larger than a transportation feature, the feature does not need to be labeled.

Only railroads that are shown on a Flood Profile shall be labeled. The label ‘RAILROAD’ shall be placed along the feature when feasible, or leadered if space is limited. Airports and runways do not need to be labeled.

Standards for the depiction of transportation features on base maps are provided in Table K-2.

Table K-2. Base Map Features: Transportation

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
	Road	Line weight 1.22 Pt., Black
	Railroad	Vertical hash symbol offset at 90 degrees from main line; Line weight 4 Pt., Black, Hash spacing [7pt - 1pt - 7pt] Line weight 0.72 Pt., Black
	Interstate Highway	Standard Interstate Route Shield Line weight 0.72 Pt. Black Size .200" x .200" to .400" x .480" 8 Pt. Arial Bold Narrow, Black, 0.75 Pt. White Halo, CAPS
	U.S. Highway Symbol	Standard U.S. Route Shield Size .200" x .200" to .400" x .480" 8 Pt. Arial Bold Narrow, Black, 0.75 Pt. White Halo, CAPS Line weight 0.72 Pt., Black
	State Highway Symbol	Circle Diameter .200" to .280" 8 Pt. Arial Bold Narrow, Black, 0.75 White Halo, CAPS Line weight 0.72 Pt., Black
	County Highway Symbol	Rectangle Size .150" x .250" to .300" x .400" 8 Pt. Arial Bold Narrow, Black, 0.75 Pt. White Halo, CAPS Line weight 0.72 Pt., Black
SPRING CREEK LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile	8 Pt., Arial Bold, Black, Aligned left, 0.75 Pt. White Halo, CAPS
<i>RAILROAD</i>	Railroad Label	8 Pt. Arial Italics, Black, Aligned left, 0.75 Pt. White Halo, CAPS

*Font standards that cannot be matched may be approximated

Hydrographic Features

All hydrographic features (streams, lakes, ponds, bays, and oceans) that have an identified flood hazard associated with them shall be labeled. Stream name labels shall be placed parallel to the feature. The application of curved labels, also known as splining, is allowed. Additional stream name labels may be added for streams that traverse entire FIRM panels, or as necessary for clarity. When streams continue onto adjoining panels, stream labels should be placed at panel edges. Large hydrographic features, such as oceans and lakes, may be labeled using larger font sizes and/or more than once on individual FIRM panels (as necessary for clarity).

A profile baseline must be shown on vector-based and ortho-based FIRM panels for all valid studies with profiles or otherwise established BFE. See Table K-8 for profile baseline specifications. In areas where no profile baseline is available but a flood hazard has been identified, the bank or centerline representation of the hydrographic feature must be shown on vector-based FIRM panels. Line representations of hydrographic features are optional on ortho-based FIRM panels. They must not overlap the profile baseline and may be shown at the request of the FEMA Project Officer.

Standards for hydrographic features are presented in Table K-3.

Table K-3. Base Map Features: Hydrographic

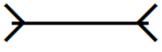
Example	Feature	Standard* [Hatch Pattern] (RGB Values)
	River, Stream, or Other Hydrographic Feature	Line weight 1 Pt., Blue (0, 77, 168)
<i>Missouri Creek</i>	Name of River, Stream, or Other Hydrographic Feature	11 Pt., Times New Roman, Italic, Aligned left., Blue (0, 77, 168), 0.75 Pt. White Halo, CLC

*Font standards that cannot be matched may be approximated

Hydraulic Structures

All levees stored in the FIRM Database shall be shown on the map, with those providing base flood protection or better labeled per Table K-7, and those not providing protection from the 1-percent-annual-chance flood (base flood) noted as per Table K-7. Other hydraulic structures, such as dams, culverts, weirs, bridges, and floodwalls, shall be labeled on the FIRM panel only if shown on the Flood Profile of the FIS report. The labels shall be placed near the structure and leadered in as appropriate. The label name must match what is shown on the Flood Profile. Standards for the depiction of hydraulic structures are presented in Table K-4.

Table K-4. Base Map Features: Hydraulic Structures

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
 <i>Bridge</i>	Bridge	Line weight 0.72pt, Black Wing tick length 1.8 pt., angle 45 degrees 8 Pt. Arial Italics, Black, Aligned left, 0.75 Pt. White Halo, CLC
 <i>Dam</i> <i>Jetty</i> <i>Weir</i>	Dam, Jetty, Weir	Line weight 0.72pt, Black; 8 Pt. Arial Italics, Black, Aligned left, 0.75 Pt. White Halo, CLC
 <i>Aqueduct</i> <i>Channel</i> <i>Culvert</i> <i>Storm Sewer</i>	Channel, Culvert, Aqueduct, or Storm Sewer	Line weight 1 pt, Black, Dashing [4pt - 1pt] 8 Pt. Arial Italics, Black, Aligned left, 0.75 Pt. White Halo, CLC
1%-ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN STRUCTURE 0.2%-ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN STRUCTURE FLOODWAY CONTAINED IN STRUCTURE	This note shall accompany any structure that contains flooding and shall only refer to the highest contained discharge.	8 Pt. Arial, Black, Aligned left, 0.75 Pt. White Halo, CAPS
 <i>West Ranch Levee</i>	Levee, Dike or Floodwall not accredited to provide protection from the 1-percent-annual-chance flood.	Line weight 3.6 Pt., Black, Vertical hash symbol at 90 degrees, Hash spacing [4pt - 1pt] 8 Pt. Arial Italics, Black, Aligned left, 0.75 Pt. White Halo, CLC

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
 <i>East Ranch Levee</i>	Levee, Dike or Floodwall accredited or provisionally accredited to provide protection from the 1-percent-annual-chance flood.	Vertical line weight 3.6 Pt., Black, Vertical hash symbol at 90 degrees, Hash spacing [4pt - 1pt] Top Line, Offset 1.8 pt, Black, line weight 0.5 pt. Bottom Line, Offset -1.8 pt, Black, line weight 0.5 pt. 8 Pt. Arial Italics, Black, Aligned left, 0.75 Pt. White Halo, CLC

*Font standards that cannot be matched may be approximated

Political Entities and Boundaries

All political entities shall be depicted and labeled as described below. The Mapping Partner should use leader lines as appropriate to reduce clutter. Large area features may be labeled using larger font sizes and/or more than once on individual FIRM panels (as necessary for clarity).

Political entities (incorporated areas, unincorporated areas, ETJ areas, “Areas Not Included,” etc.) shall be labeled with the appropriate jurisdiction names and CIDs or area designator, placed near the center of the jurisdiction, if possible. For incorporated communities, the community type shall be followed by the name of the community (e.g., City of Smithville), and the CID placed immediately under the community name. For unincorporated county areas, the county name should be shown with “Unincorporated Areas” beneath it, and the county CID should be placed immediately under that label.

When ETJ areas are significant for the purposes of the NFIP, they shall be shown on the FIRM. The ETJ area shall be labeled with the community name, followed by the words “Extraterritorial Jurisdiction,” and the CID number of the community exercising its ETJ authority.

Any area shown as an ANI because it is being mapped under another jurisdiction or because access to the area is limited for security reasons (e.g., a military base) shall be labeled with the entity’s name and the notation “Area Not Included.” All tribal lands are mapped on a case-by-case basis. Vector data, including flood information and base map information, shall not be depicted for areas defined as an ANI, regardless of why the area is not included. For orthophoto-based FIRMs, the raster orthophoto base map shall be shown in the ANI.

Military and tribal lands shall be labeled with the official name at least once. State and National Park and Forest labels are not required. However, if these areas appear in the database, the boundaries must appear on the FIRM panels. If parks or forests boundaries are present they shall be labeled. The political area in which the park or forest resides will be used for the beginning of the political label along with the community’s CID. An additional line will be added to the political label to describe these areas generically as a park, forest, etc. This community and CID will also appear in the title block of the FIRM panel to represent the park area. No specific park or forest information will appear in the title block. In crowded or segmented areas, this political label can be leaded or made smaller. An example of a park or forest political label is shown in Table K-5.

When boundaries of different types are coincident with each other or with base map features, the Mapping Partner shall show only one. Priorities are defined in the Hierarchies for Labels and Map Features subsection at the beginning of section K.4. Jurisdiction standards are provided in Table K-5.

Table K-5. Base Map Features: Boundaries and Political Areas

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
	All Jurisdiction Boundaries	Line weight 0.6 Pt., Black Line weight 2.2 Pt., Yellow (255, 255, 0)
Flood County Unincorporated Areas 123456 City of Coastland 123457	Community Area Label and Community Identification Number	14 Pt. Times New Roman Bold, Black, Centered; 1.0 Pt. Halo, White, CLC
City of Blades (AREA NOT INCLUDED)	Community Area and Area Not Included Label	(Community name) 14 Pt. Times New Roman Bold, Black, Centered 1.0 Pt. White Halo, CLC (Note) 8 Pt. Arial, Black, Centered, 0.75 Pt. White Halo, CAPS
Fort Bragg Military Base	Area Label	14 Pt. Times New Roman, Bold, Black, Centered 1.0 Pt. White Halo, CLC
Flood County Unincorporated Areas 123456 State Park	Park or forest political label. This label is required only when park or forest boundaries are displayed.	14 Pt. Times New Roman Bold, Black, Centered; 1.0 Pt. Halo, White, CLC

*Font standards that cannot be matched may be approximated

Horizontal Reference Grids

The assigned Mapping Partner shall ensure that the FIRM contains a primary horizontal reference grid and secondary horizontal reference grid ticks to orient map readers to real-world coordinates. In addition, the latitude and longitude in degrees, minutes, and seconds shall be referenced at each of the four corners of the map panel, and the UTM reference grid (or grid ticks) shall be included on the FIRM. If the primary reference grid is UTM, then a secondary grid is optional. Other reference grids (e.g., State Plane) may be used as the primary reference grid. If UTM is not the primary grid, then it shall be used as the

secondary reference grid (shown as grid ticks) and included on the FIRM. UTM and State Plane reference grids or grid ticks shall be shown extending to the FIRM neatline.

The primary horizontal reference grid shall be the same as the coordinate system of the digital data. For example, if the digital files are referenced to the UTM coordinate system, a UTM grid shall be shown on the map. If the digital files are referenced to the State Plane coordinate system, a State Plane grid of Northings and Eastings shall be shown on the map. The secondary grid ticks shall be shown as cross hairs within the body of the map and ticks along the edge.

The grid interval shown on the FIRM shall not vary between panels within the same FIRM, even if the panels are shown at different scales. Generally, a UTM grid interval of 1,000 meters and a State Plane grid interval of 5,000 feet shall be used.

U.S. Public Land Survey System

U.S. PLSS features (i.e., section lines with range and township information) shall be shown on a FIRM if they are available in digital format and/or were shown on a previous FIRM. Gridlines, range, township, and section lines shall be terminated at the panel neatline and at the political boundaries of the subject community.

Township lines shall be labeled at the left and right edges of the panel along both sides of the line. Range lines shall be labeled at the top and bottom edges of the panel along both sides of the line. If a panel does not contain any township and range lines, a township and range information note should be placed in an area of the map body void of flood risk data, or in the map fringe just below the bottom neatline. See Table K-6 for examples of township and range notes and labels.

Section numbers should be placed in the center of the section, parallel to the horizontal neatlines of the panel. If the section is too small to fit the section number without crowding relevant data, the section number may be omitted. Land Grants and other specially designated areas shall be labeled.

If the subject community uses a PLSS grid, the primary grid shown on the FIRM shall be the PLSS. The secondary grid ticks shall be the same as the coordinate system of the digital data. When the digital files are referenced to the UTM coordinate system, UTM grid ticks shall be shown as cross hairs within the body of the map; State Plane grid ticks may also be shown along the edges of the panel but are not required. When the digital files are referenced to the State Plane coordinate system, both UTM and State Plane grid ticks will be shown through the map body.

Standards for reference grids are listed in Table K-6.

Breakout Panels

If a printed panel falls within the area of a smaller-scale panel that is also printed, the smaller-scale panel shall show a breakout note in the blank area represented by the larger-scale panel (the breakout panel area). This note is placed in the center of the breakout panel area and specifies the larger-scale panel's map number and scale. The suffixes shall not be used in breakout panel notes (to avoid unnecessary updates in Partial Map Revisions). The standards for the breakout panel note are detailed in Table K-6.

Table K-6. Base Map Features: Horizontal Reference Grids and Panel Tile Notes

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
—————	Horizontal Reference Grid line	Line weight 0.57 Pt., Black
—	Horizontal Reference Grid Ticks	Line weight 1.44 Pt., Black Length .300"
+	Secondary Grid Crosshairs	Crosshair symbol, Line weight 10 Pt., Black
Land Grant	Name of Land Grant	12 Pt. Arial, Black, 1.0 Pt. White Halo Aligned left
7	Section Number	12 Pt. Arial, Black, 1.0 White Halo, Aligned left
R. 43 W. T. 22 N.	Range, Township Number	10 Pt. Arial CAPS
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 11 NORTH, RANGE 7 WEST.	Township and Range note for panels with a single township and range present on a panel. This note is placed when a panel does not contain any township and range lines.	9 Pt. Arial, Black, 0.75 Pt. White Halo, Aligned Left, CAPS
MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 11 NORTH, RANGE 7 WEST AND TOWNSHIP 12 NORTH, RANGE 7 WEST.	Township and Range note for panels with two townships or ranges present on a panel. This note is placed when a panel does not contain either township or range lines.	9 Pt. Arial, Black, 0.75 Pt. White Halo, Aligned Left, CAPS
42⁷⁶000m^E	Horizontal Reference Grid Coordinates (UTM)	10 Pt. Arial Bold and 10 Pt. Arial Superscript Bold, Black, Centered, CAPS
365000 FT	Horizontal Reference Grid Coordinates (State Plane)	10 Pt. Arial Bold, Black, Centered, CAPS
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)	10 Pt. Arial Bold, Black, Centered

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
<p>THIS AREA SHOWN AT A SCALE OF <i>[scale]</i> ON MAP NUMBER <i>[number]</i></p>	<p>This note is used in the blank area of a breakout panel. The map number includes the 10-digit map number without the suffix. The scale shall be stated in feet (e.g. 1"=500').</p>	<p>24 Pt. Arial, Black, Centered, CAPS</p>

*Font standards that cannot be matched may be approximated

Other Base Map Features

In special cases, at the request of the FEMA Project Officer, additional landforms may be added to the FIRM.

K.4.2 Flood Hazard Features [October 2011]

This subsection provides guidance for showing floodplains and regulatory floodways, flood insurance risk zone labels, BFEs, cross sections, limits of study, coastal transects, and other items needed to depict hydrologic and hydraulic analyses, and contains a table of their graphic standards.

K.4.2.1 Floodplains and Floodways [October 2011]

All flood insurance risk zones must be shown on the FIRM. A transparency setting of 70 percent is recommended for all flood insurance risk zones. Slight transparency adjustments of all flood insurance risk zones for a Flood Map Project using a single factor may be made so that flood hazard features can be clearly seen. Each flood risk zone shall be bounded by a flood zone boundary line when adjacent to another flood hazard area of a different type or elevation. The seaward side of a coastal flood risk zone does not require a boundary.

Regulatory floodways shall be shown on the FIRM and, at lettered or numbered cross-section locations, floodway widths must agree with the values shown on the FDT in the FIS report and the FIRM Database tables, within a maximum tolerance of 5 percent of the map scale or 5 percent of the distance, whichever is greater.

Specific designations of floodways will use a unique Special Floodway symbol. The following Special Floodways will use the Special Floodway symbol and notes shown in Table K-7:

- Colorado River Floodway
- Density Fringe Area
- Area of Special Consideration

The following floodways will use the standard floodway symbol in conjunction with a note identifying the type of floodway (Refer to Table K-7):

- Riverine Floodway Shown in Coastal Zone
- Administrative Floodway
- State Encroachment Areas
- Community Encroachment Area
- Flowage Easement Area

The use of GIS and automated mapping techniques for the delineation of floodplain and floodway boundaries allows very small areas of flooding to be shown in the digital files. Mapping Partners must exercise some judgment in selecting which of these areas to show on the FIRM and in the digital files. Please see *Appendix L* for digital mapping tolerances.

K.4.2.2 Flood Hazard Information Based on Future-Conditions Analyses

[October 2011]

At the request of community officials, FEMA will show future-conditions 1-percent-annual-chance floodplains on the FIRM and will reference them in the accompanying FIS report for informational purposes. The future-conditions flood insurance risk zone will be labeled as “Zone X (Future).”

K.4.2.3 Zone Labels

[October 2011]

All zone areas except Zone X (shaded and unshaded) shall be labeled at least once with the flood zone and, if appropriate, static elevation or depth. Zone labels should be repeated as necessary for clarity in large or complicated areas. Zone X areas shall be labeled where they represent future-conditions (see K.4.2.2) or areas protected by accredited levees.

In the 1-percent-annual-chance floodplains, the floodway fringe areas should not be considered separate areas requiring labels. One zone label should be sufficient for both the regulatory floodway and the floodway fringe.

In SFHAs with assigned static elevations, depths, or velocities, the static BFE, depth, or velocity value shall be placed under the zone label. Graphic standards for these cases are shown in Table K-7.

K.4.2.4 Base Flood Elevations

[October 2011]

All BFE lines stored in the FIRM Database must be shown on FIRM panels. *Appendix L* of these Guidelines specifies placement rules for BFE lines and cross sections. Static BFEs will be shown under the zone labels (e.g., in areas of ponding or coastal areas). Specifications for BFE lines and labels can be found in Table K-7.

The preferred unit for static elevations, depth, and velocity is feet. Metric values, where required such as in Puerto Rico and other studies, are also acceptable.

K.4.2.5 Cross Sections **[October 2011]**

Cross sections stored in the FIRM Database must be shown on the FIRMs if they are attributed as the following line types: LETTERED, MAPPED and NOT LETTERED, MAPPED. See *Appendix L* of these Guidelines and the *Domain Tables Guide* for more information on cross section line types.

K.4.2.6 Cross Section Labeling **[October 2011]**

Lettered or numbered cross sections for each stream studied by detailed methods shall be labeled alphabetically from the downstream to the upstream limits of the study. At the request of a community and with the approval of the FEMA Project Officer, cross sections may be labeled numerically instead of using letters. Alphabetical labeling is the preferred method. Along a single stream within a study, only one labeling method shall be used. The typical numbering sequence is from the downstream to the upstream limit of study, using the stream distance value at that location divided by 100.

Lettered or numbered cross sections shall be labeled on the map with a hexagon at one end of the cross section line. Cross section hexagons shall be oriented so that the letter or number can be clearly read and is not upside down. If necessary, the hexagon may be detached from the end of the cross section and situated closer to the feature. In especially crowded areas, the hexagon may be reduced in size at the Mapping Partner's discretion.

All cross sections will be labeled with the regulatory WSEL value, rounded to the nearest tenth of a foot. All lettered or numbered cross section WSEL values should match the FDT in the FIS report. The WSEL value shall be placed parallel to and above the cross section line. If overprints cannot be avoided, leadering of the WSEL value is an acceptable option.

Cross section lines shall cross the entire floodplain (past the limits of the 1-percent-annual-chance floodplain, whenever possible). If a lettered or numbered cross section line cannot exit either side of the floodplain on the panel, the hexagon should be placed in the middle or on top of the cross section line. All graphic adjustments to cross sections shall remain separate from modeled cross section locations that are stored in the FIRM Database.

All lettered and numbered cross sections must be placed on the map. If unlettered cross sections cannot be shown on the FIRM because of crowding due to steep terrain, a note shall be placed referring the user to the profiles in the FIS report. The note can be found in Table K-7.

In the event that a cross section contains multiple elevations (e.g., the cross section spans a levee), the cross section shall be segmented and each segment labeled with its corresponding WSEL value and a hexagon.

New cross sections inserted between existing lettered cross sections may be numbered with an alphanumeric sequence to avoid re-lettering cross sections upstream (i.e. Cross Sections A1 and A2 might be inserted between existing Cross Sections A and B).

K.4.2.7 Limit of Study **[October 2011]**

Limit of Study lines shall be placed at the beginning and at the end (terminus) of flow in every area studied by detailed methods. When SFHAs are adjacent to the terminus of the detailed study area, the

terminus shall be depicted as a white line with a red halo. See Table K-7 for detailed information about Limit of Study lines.

K.4.2.8 Coastal Transects

[October 2011]

For coastal flood hazard studies, the assigned Mapping Partner shall evaluate the effects of waves accompanying the storm surge flood event on BFEs and hazard zones. The wave analyses performed shall be referenced in the FIS report and mapped on the FIRM. Wave transects shall be located with careful consideration of the physical and cultural characteristics of the land, so that they will closely represent conditions at those locations. Transect lines shall be delineated and labeled on the FIRM to identify the physical location of the wave transects described in the FIS report.

The transect delineation on the FIRM should also help users determine which wave transect analysis may influence or directly affect their property or area of interest. The wave effects mapped for any transect begin at the shoreline and end at the limits of 1-percent-annual-chance flood hazards, even though the actual transect line on the FIRM extends further seaward and landward of the flood hazard areas. See *Appendix D* for more information regarding coastal transects.

K.4.2.9 Coastal Transect Labeling

[October 2011]

Coastal transect numbers shall be placed in a circle on one end of the transect line. Number placement should be uniform across transect lines. If the end of the line cannot be labeled due to space limitations, the label may be placed in the middle of the transect. If necessary, the circle may be detached from the end of the coastal transect and situated close to the feature. Transect numbers shall be oriented so that the number can be clearly read and is not upside down. Transect numbering should generally proceed consecutively from north to south or west to east along a shoreline. New coastal transects inserted between existing transects may be numbered with an alphanumeric sequence to avoid re-numbering transects on unrevised panels (i.e. Transects 5A and 5B might be inserted between existing Transects 5 and 6).

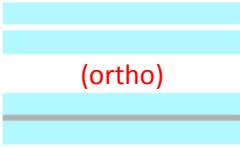
Table K-7 provides examples of the standard flood hazard map features and their graphic portrayal on FIRMs.

K.4.2.10 Limit of Moderate Wave Action

[October 2011]

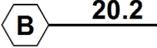
The inland limit of the area affected by waves greater than 1.5 feet is called the Limit of Moderate Wave Action (LiMWA). Guidance on identifying and mapping the LiMWA is provided in FEMA's *Procedure Memorandum 50 – Policy and Procedures for Identifying and Mapping Areas Subject to Wave Heights Greater than 1.5 feet as an Informational Layer on Flood Insurance Rate Maps (FIRMs)*.

Table K-7. Standard Flood Hazard Features and Notes

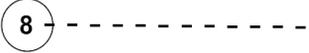
Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
	<p>All flood hazard lines coded as SFHA / FLOOD ZONE BOUNDARY. Lines coded as OTHER BOUNDARY indicate different source citations, apparent limits, or end of spatial extent and are not symbolized.</p>	<p>Ortho: Line weight 1 Pt., White (255, 255, 255) Vector: Line weight 1 Pt., Grey (178, 178, 178)</p>
	<p>The Limit of Study line is used to indicate the terminus of a 1-percent-annual-chance floodplain of a stream or backwater area that has not been independently studied by detailed analyses, or of a stream that has been studied by detailed methods.</p>	<p>1 Line weight 1 Pt., White (255, 255, 255), 2 Line weight 2.5 Pt., Red (250, 52, 17),</p>
	<p>1-percent-annual-chance Flood Hazard Area (Zones A, AE, AO, AH, AR, A99, V, and VE)</p>	<p>Blue (0, 230, 255), 70 percent Transparency</p>
	<p>0.2-percent-annual-chance Flood Hazard Area (shaded Zone X)</p>	<p>Orange (255, 128, 0), 70 percent Transparency</p>
	<p>Zone D areas</p>	<p>Tan (242, 230, 115), 70 percent Transparency</p>
	<p>Area with Reduced Flood Risk due to Levee</p>	<p>1 Line weight 5 Pt., Black (0,0,0), Angle 45; Offset 5, Separation 10; 70 percent Transparency 2 Line weight 5 Pt., Orange (255, 128, 0), Angle 45; Offset 0, Separation 10; 70 percent Transparency</p>

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
	Unshaded X areas. For orthophoto-based legends an orthophoto shall be shown in the background.	13 Pt. Franklin Gothic Medium Cond, Black, Centered, CAPS
	Floodway area	<ol style="list-style-type: none"> 1 Line weight 5 Pt., Red (255, 0, 0), Angle 45; Offset 5, Separation 10; 70 percent Transparency 2 Line weight 5 Pt., Blue (0, 230, 255) Angle 45; Offset 0, Separation 10; 70 percent Transparency
Floodway too narrow to be shown. Refer to Floodway Data Table.	This note shall be used in areas where the floodway is less than 1/20th of an inch on the map.	10 Pt. Arial, Black, Aligned Left, CLC
 <p><Floodway Type> - Refer to the Flood Insurance Study Report for additional information</p>	Floodway symbol and note for the following specific floodway types: Floodway Floodway Contained in Structure Narrow Floodway Riverine Floodway Shown in Coastal Zone Administrative Floodway State Encroachment Area Community Encroachment Area Flowage Easement Area	<ol style="list-style-type: none"> 1 Line weight 5 Pt., Red (255, 0, 0), Angle 45; Offset 5, Separation 10; 70 percent Transparency 2 Line weight 5 Pt., Blue (0, 230, 255) Angle 45; Offset 0, Separation 10; 70 percent Transparency 3 Note: 10 Pt. Arial, Black, Aligned Left, CLC
 <p>FLOOD INSURANCE IS NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER APRIL 8, 1987, IN THE DESIGNATED COLORADO RIVER FLOODWAY.</p>	Congress established the Colorado River Floodway in the Colorado River Floodway Protection Act of 1986, Public Law 99-450 (100 Statute 1129). The Act imposes certain restrictions within the Floodway. If the Colorado River Floodway is shown on a panel, the panel shall be symbolized with this symbol and note.	<ol style="list-style-type: none"> 1 Line weight 6 Pt., Blue (0, 230, 255) Angle 45; Offset 0, Separation 10; 70 percent Transparency 2 Line weight 4 Pt., Red (255, 0, 0), Angle 45; Offset 5, Separation 10; 70 percent Transparency 3 Line weight 4 Pt., Red (255, 0, 0), Angle -45; Offset 5, Separation 10; 70 percent Transparency 4 Note: 10 Pt. Arial, Black, Aligned Left, CAPS

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
 <Floodway Type> - Refer to the Flood Insurance Study Report for additional information	Floodway symbol and note for the following special floodway types: Area of Special Consideration Density Fringe Area	<ol style="list-style-type: none"> 1 Line weight 6 Pt., Blue (0, 230, 255) Angle 45; Offset 0, Separation 10; 70 percent Transparency 2 Line weight 4 Pt., Red (255, 0, 0), Angle 45; Offset 5, Separation 10; 70 percent Transparency 3 Line weight 4 Pt., Red (255, 0, 0), Angle -45; Offset 5, Separation 10; 70 percent Transparency 4 Note: 10 Pt. Arial, Black, Aligned Left , CLC
	Future-Conditions 1% Annual Chance Flood Hazard	<ol style="list-style-type: none"> 1 Line weight 5 Pt., Black (0, 0, 0), Angle -45; Offset 5, Separation 10; 70 percent Transparency 2 Line weight 5 Pt., Grey (130, 130, 130) Angle -45; Offset 0, Separation 10; 70 percent Transparency
ZONE AE	Zone Designation (A, AE, AO, AH, AR, A99, D, V, and VE)	11pt, Arial, Bold, Black, 0.75 Pt. White Halo, Centered, CAPS
ZONE AE (EL 16)	Zone designation with Static BFE	11pt, Arial, Bold, Black, CAPS, Centered; *Second line; 11 Pt., Bold, Arial, Black, 0.75 Pt. White Halo, CAPS
ZONE AO (DEPTH 2)	Zone designation with Depth.	11pt, Arial, Bold, Black, CAPS, Centered; *Second line; 11 Pt., Bold, Arial, Black, 0.75 Pt. White Halo, CAPS
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity.	11pt, Arial, Bold, Black, CAPS, Centered; *Second line; 11 Pt., Bold, Arial, Black, 0.75 Pt. White Halo, CAPS
ZONE X	Zone X – Protected by Accredited Levee	11pt, Arial, Bold, Black, 0.75 Pt. White Halo, Centered, CAPS

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
<p>ZONE X (FUTURE)</p>	<p>Zone X – Future-Conditions 1% Annual Chance Flood Hazard</p>	<p>11pt, Arial, Bold, Black, 0.75 Pt. White Halo, Centered, CAPS</p>
	<p>Lettered Cross Section <i>with</i> Regulatory Water Surface Elevation Value</p>	<p>CROSS SECTION LETTER</p> <ol style="list-style-type: none"> 1 10pt, Black, Arial, Bold, 0.75 Pt White Halo, CAPS, Centered 2 18pt, Black, Hexagon Marker, Scaled to fit text <p>CROSS SECTION LINE</p> <ol style="list-style-type: none"> 1 Line weight 1 Pt., Black <p>ELEVATION VALUE</p> <ol style="list-style-type: none"> 1 10pt, Black, Arial Bold, 0.75 Pt. White Halo
	<p>Numbered Cross Section <i>with</i> Regulatory Water Surface Elevation Value</p>	<p>CROSS SECTION NUMBER</p> <ol style="list-style-type: none"> 1 10pt, Arial Bold, Black, 0.75 Pt. White Halo, Centered 2 18pt, Black, Hexagon Marker, Scaled to fit text <p>CROSS SECTION LINE</p> <ol style="list-style-type: none"> 1 1 Pt., Black <p>ELEVATION VALUE</p> <ol style="list-style-type: none"> 1 10pt, Arial Bold, Black, 0.75 Pt. White Halo
	<p>Unlettered Cross Section <i>with</i> Regulatory Water Surface Elevation Value</p>	<p>CROSS SECTION LINE</p> <ol style="list-style-type: none"> 1 1 Pt., Black <p>ELEVATION VALUE</p> <ol style="list-style-type: none"> 1 10pt, Arial Bold, Black, 0.75 Pt. White Halo
<p>Note: Terrain is too steep to map all cross sections. Refer to profile for Water Surface Elevations.</p>	<p>Note for areas on profiles with steep terrain. It shall be placed whenever cross sections cannot be shown on the FIRM.</p>	<p>9 Pt., Arial, Black, Aligned Left; 0.75 Pt. White Halo</p>

Appendix K

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
	Coastal Transect	<p>TRANSECT NUMBER</p> <p>1 10pt, Arial Bold, Black, 0.75 Pt. White Halo, Centered</p> <p>2 29pt, Black, Circle Marker,</p> <p>TRANSECT LINE</p> <p>1 1 Pt., Black, Dashing [2 Pt. -5 Pt. - 2.pt]</p>
	BFE line	Line weight 1.25, Black
646	BFE value for the BFE line	10 Pt. Arial Italics, Black, 0.75 Pt. White Halo, Centered
	LiMWA – Limit of Moderate Wave Action. Indicates the inland limit of the area affected by waves greater than 1.5 feet.	<p>1 Line weight 1 Pt, Red (255, 0, 0), Dashing [4 Pt-1 Pt]</p> <p>2 Line weight 2 pt, Black (0, 0, 0),</p>
Note: This area is shown as being protected from the 1-percent-annual-chance or greater flood hazard by a levee system. Overtopping or failure of any levee system is possible. For additional information see the “Accredited Levee Note” in Notes to Users.	Accredited Levee Note. This note must be placed on the map panel with all accredited levee systems.	9 Pt., Arial, Black, Aligned Left; 0.75 Pt. White Halo
Note: This area is shown as being protected from the 1-percent-annual-chance or greater flood hazard by a levee system that has been provisionally accredited. Overtopping or failure of any levee system is possible. For additional information see the “Provisionally Accredited Levee Note” in Notes to Users.	Provisionally Accredited Levee Note. This note must be placed on the map panel with all provisionally accredited levee systems.	9 Pt., Arial, Black, Aligned Left; 0.75 Pt. White Halo
Note: This panel contains levees that have not been accredited and are therefore not shown as providing protection from the 1%-annual-chance flood.	Note for levees not providing protection from the 1-percent-annual-chance flood. This note must be placed on the map panel with all levees systems not providing protection from the 1% Annual Chance Flood	9 Pt., Arial, Black, Aligned Left; 0.75 Pt. White Halo

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
LIMIT OF STUDY	Limit of study label will be placed when special flood hazard areas truncate abruptly.	10pt, Arial, Black, 0.75 Pt. White Halo, Centered, CAPS

*Font standards that cannot be matched may be approximated

K.4.3 Other Flood Hazard Features and Notes [October 2011]

The features in Table K-8 shall be added to the FIRM, as needed, to clarify flood hazard areas or features within the flood hazard areas, or to help locate related information on the FIRM.

Table K-8. Other Flood Hazard Features

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
	The profile baseline indicates the modeled flow path of a stream. It is required to be shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation. At the discretion of the FEMA Project Officer water lines may be shown on vector maps to represent the stream bank or stream centerline location. When profile baseline and water lines are available for the same stream reach, only the profile baseline must be shown in order to eliminate overlaps on the map.	Line weight 1Pt Blue (0,76,168), Dashing [20 Pt- 2Pt- 3 Pt- 2Pt 13]
	The transect baseline used in the coastal flood hazard model represents the 0.0-foot elevation contour and represents the starting point for the transect and the measuring point for the coastal mapping. It is shown as a single line with two dashes. A transect baseline shall be added to all new coastal studies funded in FY10 or later.	Line weight 1Pt Black, Dashing [15Pt- 2Pt- 3Pt- 2Pt - 3Pt - 14Pt]
	River Mile Marker	Circle Marker – 6.5 Pt., Black, 1.0 Pt. White Halo
M4.0	River Mile Marker Distance Label	10 Pt., Arial Bold, Black, 0.75 Pt., Centered White Halo

*Font standards that cannot be matched may be approximated

K.4.4 Coastal Barrier Resources System Map Components [October 2011]

In cooperation with the U.S. Department of the Interior, Fish and Wildlife Service, FEMA transfers CBRS boundaries to FIRMs using congressionally adopted CBRS source maps. FIRMs clearly depict the different CBRS areas and their insurance prohibition dates with special map notes and symbologies. It should be noted that although FEMA shows CBRS areas on FIRMs, Congress is the only entity that may authorize a revision to CBRS boundaries. For more information about the delineation of CBRS boundaries on FIRMs, see FEMA Procedure Memorandum 39.

This appendix uses the terms “Coastal Barriers” and “CBRS units.” These terms are intended to be inclusive of all classifications of Coastal Barriers within the CBRS, including areas designated as Otherwise Protected Areas (OPAs). For additional information regarding the CBRS, see Volume 2, Section 2.2 of these Guidelines.

K.4.4.1 Coastal Barrier Resources System Boundaries [October 2011]

Boundary lines must be shown to differentiate between contiguous barriers of different classifications, because each CBRS classification carries a different insurance prohibition. Each CBRS area shall be bounded on all sides by a boundary.

K.4.4.2 Coastal Barrier Resources System Area Screens [October 2011]

Although there are several different types of coastal barrier areas, there are only two unique map screens. Coastal barrier areas shall be portrayed with the two screens shown in Table K-9 to differentiate between CBRS and OPA units, which contain differing prohibitions. All barriers must be labeled or identified by notes that list the CBRS classification of each area.

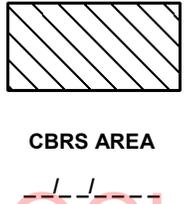
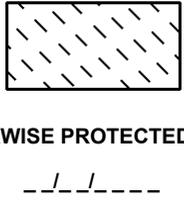
K.4.4.3 Coastal Barrier Resources System Area FIRM Note [October 2011]

All separate CBRS areas on a FIRM shall be labeled with the appropriate identification note showing the prohibition date associated with that CBRS area. Table K-9 contains the CBRS identification notes.

CBRS identification notes shall be located, whenever possible, on or near the land area, and shall not overprint existing base or floodplain features. When the note cannot be located on the land area because of space and clarity considerations, the note shall be placed in the open water within the CBRS screen, near the land area. When the note cannot be placed within the CBRS screen without creating overprints, the note shall be leadered to the land area.

Table K-9. Coastal Barrier Resources System Features and Notes

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
COASTAL BARRIER RESOURCES SYSTEM BOUNDARY COINCIDENT WITH CORPORATE LIMITS	This note, shown on the body of the FIRM, is an example of one that may be used to clarify coincident features. See Section K.4 for a discussion of coincident boundaries.	11 Pt., Arial, Black, Centered; 1 Pt. White Halo, CAPS

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
<p style="text-align: center;">THIS AREA IS CONTAINED WITHIN THE COASTAL BARRIER RESOURCES SYSTEM</p>	<p>This note is used on FIRM panels when a CBRS area overlaps an area of floodway, and the assigned Mapping Partner believes that it may be unclear to users that the area within the floodway is also a coastal barrier. In this situation, both the floodway screen and the coastal barrier screen shall be shown, and the note shall be leadered to the area of overlap.</p>	<p>11 Pt., Arial, Black, Centered, Bold, 1 Pt. White Halo, CAPS</p>
 <p style="text-align: center;">CBRS AREA</p>	<p>Coastal Barrier Resources System Area Screen and Label</p>	<ol style="list-style-type: none"> 1 Area pattern: Line weight 0.72 pt, Black, Angle 135 degrees, Offset 0, Separation, 7. 2 Outline: Line weight 1 pt, Solid, Black 3 Text: 8 pt Arial Bold, Black, 0.75 pt White Halo, Centered, CAPS
 <p style="text-align: center;">OTHERWISE PROTECTED AREA</p>	<p>Otherwise Protected Area Screen and Label</p>	<ol style="list-style-type: none"> 1 Area pattern: Line weight 0.72 pt, Black, Dashing [7Pt- 7Pt], diagonals hatching, Angle 135 degrees, Offset 0, Separation, 7. 2 Outline: Line weight 1 pt, Solid, Black 3 Text: 8 pt Arial Bold, Black, 0.75 pt White Halo, CAPS
	<p>CBRS Boundary</p>	<p>Line weight 1 pt, Solid, Black</p>

*Font standards that cannot be matched may be approximated

K.5 Map Legend

[October 2011]

The map legend shall contain those items that are needed to assist the map user in interpreting map symbols, flood hazard screens, linework, flood hazard zone information, and other regulatory information that is depicted on the FIRM panel. Planimetric data (such as roads and railroads) shall not be included in the FIRM legend.

Most of the FIRM legend elements are standardized and do not vary. However, the content of the FIRM legend varies slightly based on the chosen base map, its coordinate system and horizontal datum, the vertical datum used for the study, whether CBRS areas are included on the map, and the map scale. Figures K-10 through K-13 and K-18 show the standards for the map legend, panel locator, map standards, and Notes to User Panel.

The MSC box should be centered on the 5.3" legend (Figure K-10).

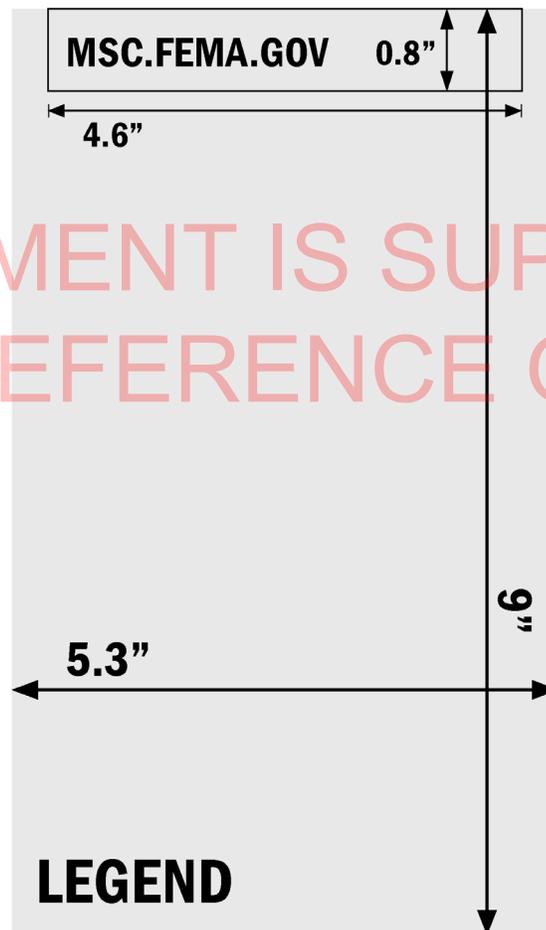


Figure K-10. Legend Standards

Table K-10. Map Legend Neat Lines

Example	Feature/Usage	Standard*
	Lines used to separate Legend, Panel Locator, Notes to Users, and Title Block	0.35 Pt. Black (0,0,0) Horizontal Line 8.6" Tall Vertical Line 5.6" Wide Vertical Line (Legend only) 5.3" Wide

*Font standards that cannot be matched may be approximated

The figures on the following pages contain examples of map legends for the following different types of FIRMs:

- FIRM Orthophoto Base Map (Figure K-11); and
- FIRM Vector Base Map (Figure K-12).

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FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
 THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
 DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

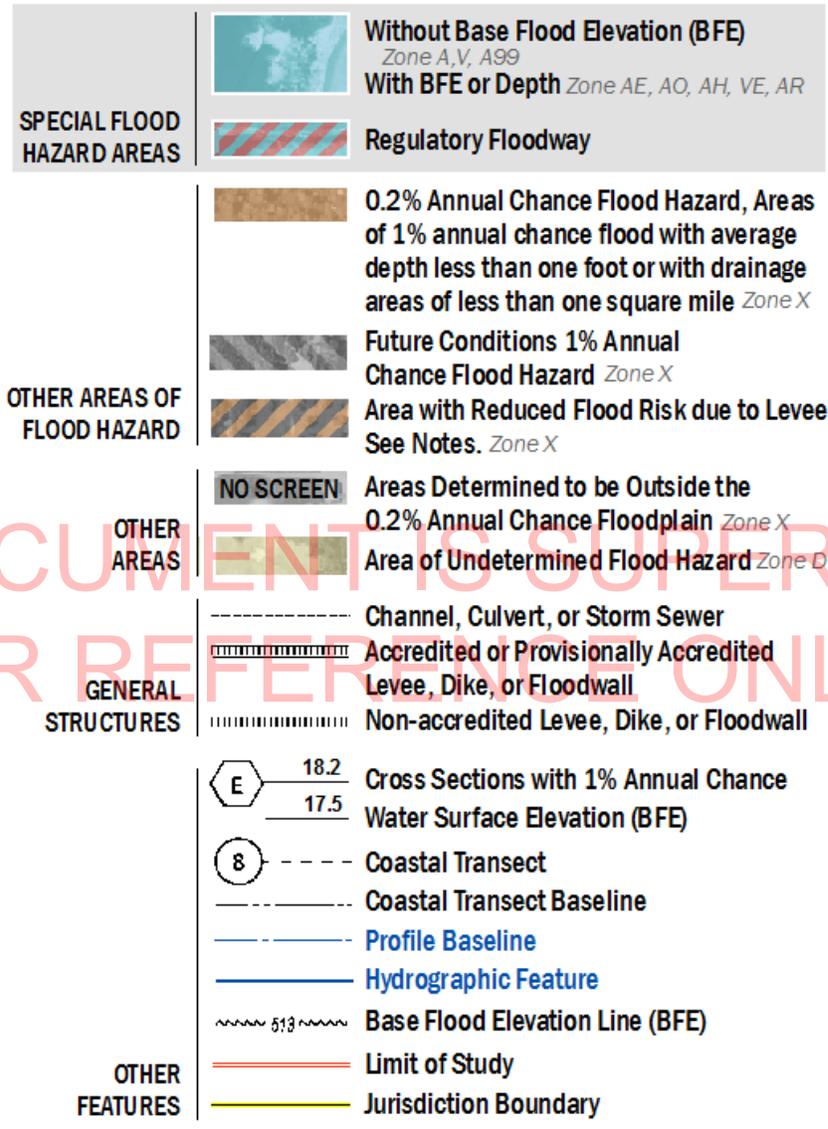


Figure K-11. FIRM Orthophoto Base Map Legend

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
 THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
 DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

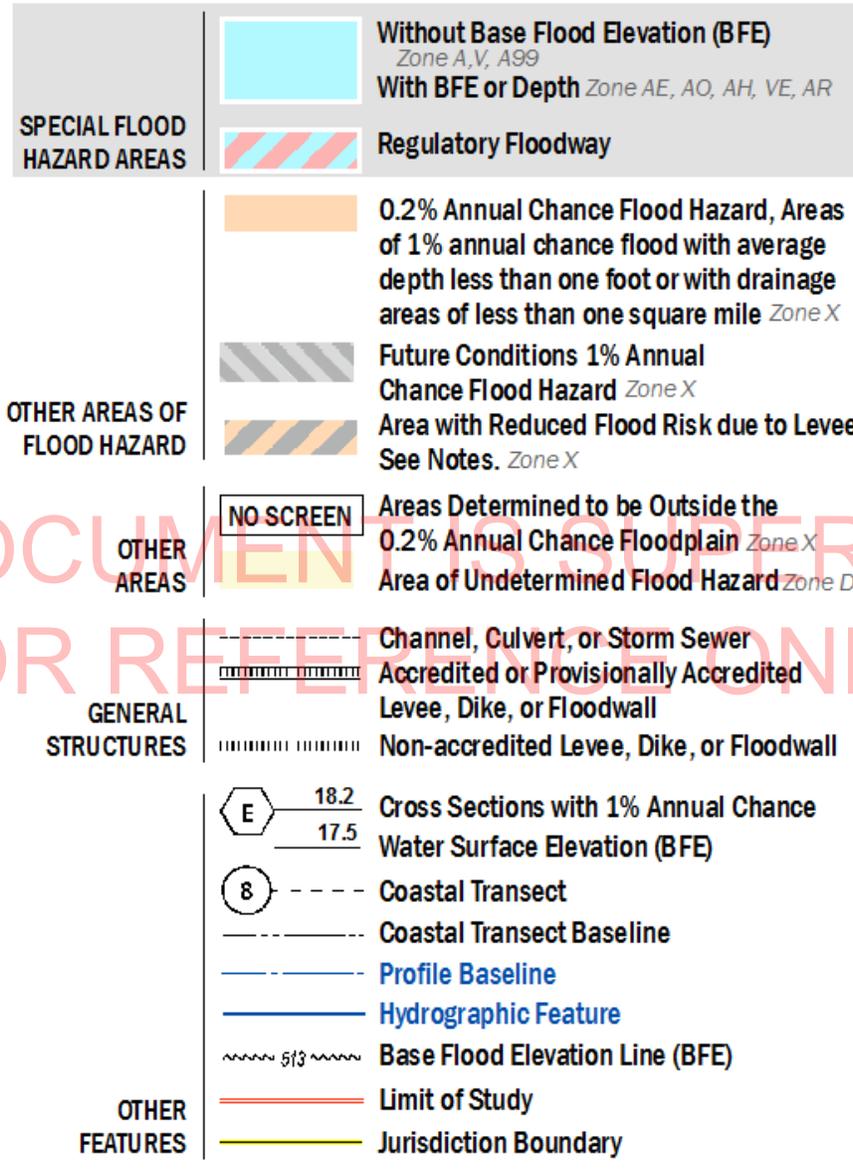


Figure K-12. FIRM Vector Base Map Legend

Map Legend Components

The Map Legend provides the user with explanations of flood hazard feature representations as they are depicted on the FIRM. The following list contains items that shall appear in the Map Legend. The flood hazard features being described shall also be shown in the Map Legend; graphic standards for those features are provided elsewhere in these Guidelines. A table of standards for the items is also presented in this subsection (Table K-11).

- Note referring the user to the FIS report for a detailed legend and index map, and to the MSC website for other digital products;
- Flood hazard area and floodway descriptions;
- Floodplain, regulatory floodway, and CBRS boundary descriptions;
- Elevation labels; and
- Cross section and transect labels.

Information on map repositories, map revision dates and notes, and general FIRM legend descriptions has been removed from this version of *Appendix K* (October 2011). Refer to *Procedure Memorandum No. 66*.

Table K-11. Map Legend Features

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
FLOOD HAZARD INFORMATION	Legend title	21 Pt. Franklin Gothic Medium, Black Aligned Left, CAPS
SPECIAL FLOOD HAZARD AREAS OTHER AREAS OF FLOOD HAZARD OTHER AREAS GENERAL STRUCTURES OTHER FEATURES	Legend header descriptions	13 Pt. Franklin Gothic Medium Cond, Black, Aligned Right, CAPS Special Flood Hazard Area Shading (225, 225, 225)

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
<p>Future-Conditions 1% Annual Chance Flood Hazard <i>Zone X</i></p>	<p>Example zone labels</p>	<p>1 14 Pt. Franklin Gothic Medium Cond, Black, Aligned Left, CLC 2 11 Pt. Franklin Gothic Book, Italics, Aligned Left, Grey (104, 104, 104)</p>
<p>Channel, Culvert or Storm Sewer</p>	<p>General Structure and Other Feature labels</p>	<p>14 Pt. Franklin Gothic Medium Cond, Black, Aligned Left, CLC</p>
<p>Profile Baseline</p>	<p>Hydrologic Feature labels</p>	<p>14 Pt. Franklin Gothic Medium Cond, Blue (0, 77, 168), Aligned Left, CLC</p>
<p>SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP</p>	<p>FIS report reference</p>	<p>11 Pt. Franklin Gothic Medium Cond, Black, Centered, CAPS</p>
<p>THE INFORMATION DEPICTED ON THIS MAP AND SUPPORING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV</p>	<p>This note is above the Legend and refers users to the MSC website.</p>	<p>1 14 Pt. Franklin Gothic Medium Cond, Red (255,0,0), Centered, CAPS 2 16 Pt Franklin Gothic Medium, Red (255,0,0), Centered, CAPS</p>

*Font standards that cannot be matched may be approximated

K.6 Notes to Users

[October 2011]

The Notes to Users section of the FIRM provides map users with contact information regarding how to obtain additional information, available related products, and flood insurance availability. The Notes to Users section also provides information about levees and the CBRS.

Users are referred to the accompanying FIS report for general information about specific items on the FIRM, background and reference information about sources of data used to prepare the FIRM, and sources of additional information pertinent to specific items on the FIRM.

The assigned Mapping Partner may find it necessary to add special, flood risk project-specific notes if a community requests a reference to local vertical monuments. The monuments will not appear on the map, but the Notes to Users section shall provide information on where those monuments can be obtained.

Small areas for State Seals or Cooperating Technical Partner logos have been blocked out at the bottom of the Notes to Users for use as needed. Logo box placeholders do not need to be shown if no additional logos are included on the map.

Websites listed in Notes to Users should be black and not underlined.

The Limit of Moderate Wave Action Note and the Coastal Barrier Resources System Note shall include a legend as described in Table K-7 for LiMWA and in Table K-9 for CBRS.

Notes to Users dimension standards are shown in Figure K-13, and examples are provided in Figures K-14 through K-17.

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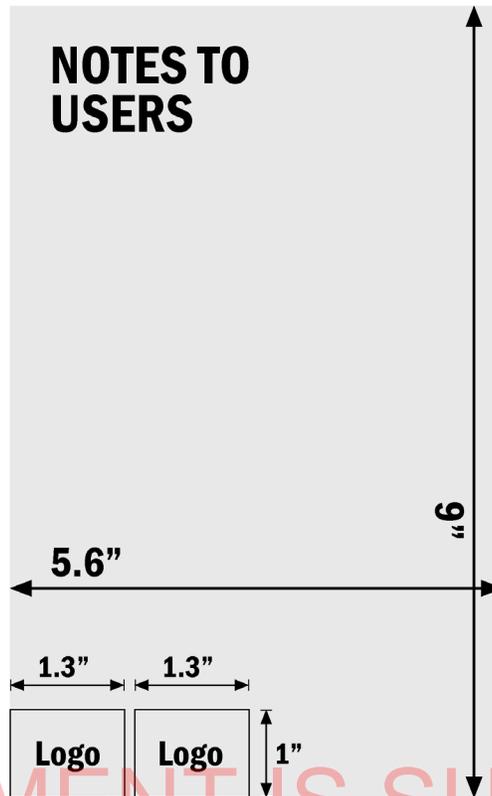


Figure K-13. FIRM Notes to Users Standards

NOTES TO USERS

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

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

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

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.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 2-foot resolution from photography dated 2010.

Figure K-14. FIRM Notes to Users

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

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

Figure K-15. FIRM Levee Notes to Users

The AE Zone category 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 the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

 **Limit of Moderate Wave Action (LiMWA)**

Figure K-16. Limit of Moderate Wave Action Notes to Users

COASTAL BARRIER RESOURCES SYSTEM (CBRS) NOTE

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



CBRS Area



Otherwise Protected Area

Figure K-17. Coastal Barrier Resources System (CBRS) Notes to Users

The assigned Mapping Partner shall use the following notes (Table K-12) in the FIRM Notes to Users section.

Table K-12. Notes to Users

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
NOTES TO USERS	Notes to Users title	21 Pt. Franklin Gothic Medium, Black, Aligned Left, CAPS
<p>For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.</p> <p>Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.</p>	<p>This note directs users to the FEMA Map Information Exchange for other pertinent information that may be available and as a reference for communities annexing land. It shall be shown on all FIRM panels.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>
<p>For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.</p>	<p>This note directs the map user to the FIS report for previous map date information. It shall be shown on all FIRM panels.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>
<p>To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.</p>	<p>This note provides users with flood insurance contact information. It shall be shown on all FIRM panels.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>
<p>Base map information shown on this FIRM was provided in digital format by <agency> Flood County GIS Department. This information was derived from <source> dated <date>.</p>	<p>This note shall be used to tell map users the source of the base map data. It shall be included on all FIRM panels, but the content of the note should be specific to the flood risk project. This is a sample note and should be worded according to the base provider information.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
<p>ACCREDITED LEVEE NOTES TO USERS: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at http://www.fema.gov/business/nfip/index.shtm.</p>	<p>This note directs map users to the location of additional information about accredited levees. This note shall be on all panels that contain accredited levees.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>
<p>PROVISIONALLY ACCREDITED LEVEE NOTES TO USERS: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by (). If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at http://www.fema.gov/business/nfip/index.shtm.</p>	<p>This note directs map users to the location of additional information about provisionally accredited levees. This note shall be on all panels that contain provisionally accredited levees.</p> <p>Refer to <i>Appendix H</i> or <i>FEMA PM 45</i> and its attachment for more information and instructions regarding the blanks in the note.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>
<p>Local vertical monuments were used to create this map. To obtain current monument information, please contact the [community contact information, phone number] or visit the website at [website address]</p>	<p>This note directs users where to find additional information about local vertical monuments used to create the FIRM. It is only required when requested by a community.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
<p>The AE Zone category 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 the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.</p>	<p>This note explains the LiMWA boundary. The note will be printed only on the panels where the feature appears. There is no specific priority order for the listing of the note.</p>	<p>8 Pt. Arial, Black, Full Justified to 5.6", CLC</p>
<p>COASTAL BARRIER RESOURCES (CBRS) NOTE</p>	<p>Coastal Barrier Resources Note title</p>	<p>10 Pt. Arial, Black, Bold, Aligned Left, CAPS</p>
<p>This map includes approximate boundaries of the CBRS for informational purposes only. Flood insurance is not available within CBRS areas for structures that are newly built or substantially improved on or after the date(s) indicated on the map. For more information see http://www.fws.gov/habitatconservation/coastal_barrier.html, the FIS report, or call the U.S. Fish and Wildlife Service Customer Service Center at 1-800-344-WILD.</p>	<p>This note directs users to the FWS for more information regarding the CBRS.</p>	<p>8 Pt. Arial, Black, Bold. CLC Full Justified to 5.6"</p>

*Font standards that cannot be matched may be approximated

K.7 Scale Box and Panel Locator Diagram

[October 2011]

Panel Locator Diagrams serve as a reference to orient the map user to the entire community or county and to adjacent panels. The following guidelines shall be followed when preparing a Panel Locator Diagram, which shall be shown on every FIRM panel, unless a community or county has only one printed panel:

- The diagram shall be located within the ‘Legend, Panel Locator’ border on the bottom of the FIRM.
- The diagram size may vary with the size of the community and the space constraints of the diagram.
- The panels shall be numbered using four-digit panel numbers (for example, 0001); the font shall be Arial CAPS; its size shall vary with space constraints and the size of the diagram.
- The diagram shall center on the FIRM panel on which the locator lies and at a minimum will show all adjacent panels; the Mapping Partner may choose to show more panels as long as the diagram remains readable.
- The diagram shall have the map panel highlighted in dark grey.
- A diagram inset will show the area of detail within the county; if the entire county can fit in the Panel Locator Diagram, no diagram inset needs to be included.

The Panel Locator Diagram dimensions and an example are depicted below in Figures K-18 and K-19. Standards are listed in Table K-13.

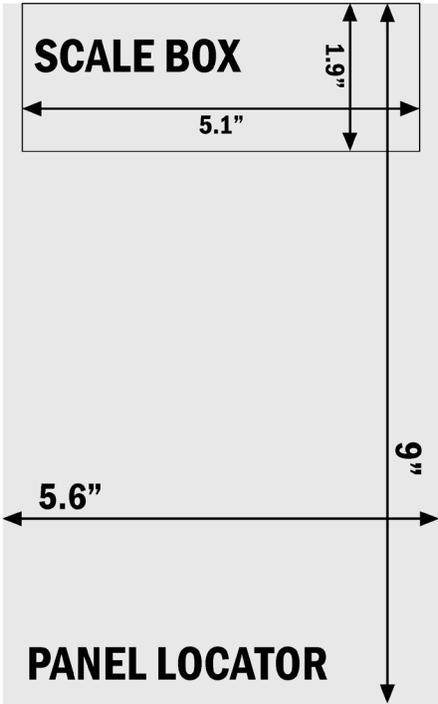


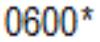
Figure K-18. Scale Box and Map Locator Diagram Standards

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Figure K-19. Panel Locator Diagram

Table K-13. Panel Locator Diagram

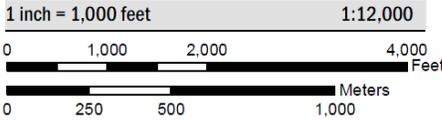
Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
PANEL LOCATOR	Panel Locator Title	21 Pt. Franklin Gothic Medium, Black, Aligned Left, CAPS
	County Background, for both the main diagram and inset map	Grey (204, 204, 204)
	Current Panel Fill Pattern	Dark Gray (52, 52, 52)
	Panel outline	0.25 Pt. line width, Dark Gray (78, 78, 78)
	Current Panel Number. Four digit number.	12 Pt. Arial Narrow, Bold, White (255, 255, 255), Aligned Left
	Surrounding Panel Numbers. Four digit number.	12 Pt. Arial Narrow, Black, Aligned Left
	Surrounding Panels not Printed. Four digit number with asterisk.	12 Pt. Arial Narrow, Black, Aligned Left
*PANEL NOT PRINTED	Panel Not Printed note.	11 Pt. Franklin Gothic Book, Black, Centered, CAPS
	Inset diagram extent locator	1 Pt. line width, Red (255, 0, 0)

*Font standards that cannot be matched may be approximated

The scale box contains the north arrow, scale bar and information about map projections and datums. See Table K-14 for standards.

The scale box should be centered in the 5.6” Panel Locator box (Figure K-18).

Table K-14. Scale Box

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
SCALE	Scale Box Title	21 Pt. Franklin Gothic Medium, Black, Aligned Left, CAPS
<p>Map Projection: Universal Transverse Mercator Zone 10N; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88</p>	<p>This note identifies the projection of the primary horizontal reference grid shown on the FIRM and identifies the horizontal datum of the geographic (latitude and longitude) coordinates shown at the four corners of each map panel.</p> <p>This note also identifies the vertical datum used for the digital files.</p> <p>Place above scale bar to the right of the north arrow.</p>	<p>9 Pt Franklin Gothic Book, Black, Aligned left, CLC</p> <p>“Map Projection:” title is Franklin Gothic Medium Cond, Black, Aligned left, CLC</p>
	<p>North arrow; can be ESRI standard or equivalent</p> <p>Place to the left of the scale bar.</p>	<p>Line weight .72 Pts.</p> <p>Width 0.2219”</p> <p>Height 0.9819”</p> <p>Black</p>
	<p>The FIRM scale bar includes references to both feet and meters and emulates the scale bar used by USGS on topographic quadrangles. Note that this scale bar is not shown to actual size; can be ESRI standard or equivalent.</p> <p>Place above panel locator in the section of the map collar to the left of the title block.</p>	<p>Line weight .72 Pts.</p> <p>(Scale Bar [Feet]) Length: 4”, Black</p> <p>(Scale Bar [Meters]) Length: 3.3”, Black</p> <p>(Map Scale Note) 15 Pt. Franklin Gothic Medium, Black, CAPS</p> <p>(Scale Bar Labels) 12 Pt. Arial, Black, CAPS</p>

*Font standards that cannot be matched may be approximated

K.8 FIRM Title Block

[October 2011]

The FIRM title block shall contain those items that identify the community and provide panel-specific information, including the map number and effective date of the FIRM panel. Communities shall be listed in alphabetical order. The community name must include, at a minimum, the community type (e.g., city, town, or village), community name, and full State name. FIRMs for individual communities shall also include the name of the county, except for jurisdictions that are officially classified as “Independent.” County FIRMs may include flood hazard information either for unincorporated areas administered directly by the county government, or for the entire geographic area within the county. “All Jurisdictions” FIRMs include flood hazard information for entire counties in which no separate county government exists; all land is administered by community agencies. Although FEMA allows for single-jurisdiction and unincorporated area mapping as well as countywide, this appendix has only set a table with standards for a countywide title block. The Mapping Partners should use it as a guide for those other types of mapping scenarios, with exceptions such as the community list.

The map suffix is used to track published editions of each FIRM panel. All panels within a flood risk project may not have the same map suffix if they were not all updated at the same time. When each new edition of a FIRM is prepared, the suffix for each revised FIRM panel is changed to the next alphabetical letter, with the letters “I” and “O” being skipped. For first-time countywide FIRMs, the suffix will be the next letter following the highest suffix letter of any FIRM panel that maps land within the extents of countywide mapping. Likewise, any FIRM being revised to reflect a completely new panel layout will have suffixes one letter higher than the highest of any previously published panel.

The version number indicates the version of these Guidelines and Standards under which a product was produced. More information on the version number can be found in the Risk MAP Version Guide.

The title block shall include the identifying community information shown in the following examples of naming formats. These examples illustrate proper dimensions, punctuation, line breaks, and wording. A Title block example and layout standards are shown in Figures K-20 and K-21. Feature standards are shown in Table K-15.

CARBON COUNTY, UTAH

and Incorporated Areas

ST. JOHN THE BAPTIST PARISH, LOUISIANA

and Incorporated Areas

CITY OF ALLAGASH, MAINE

Independent City

PIKE COUNTY, PENNSYLVANIA
(All Jurisdictions)

BOONE COUNTY, ILLINOIS
(Unincorporated Areas)

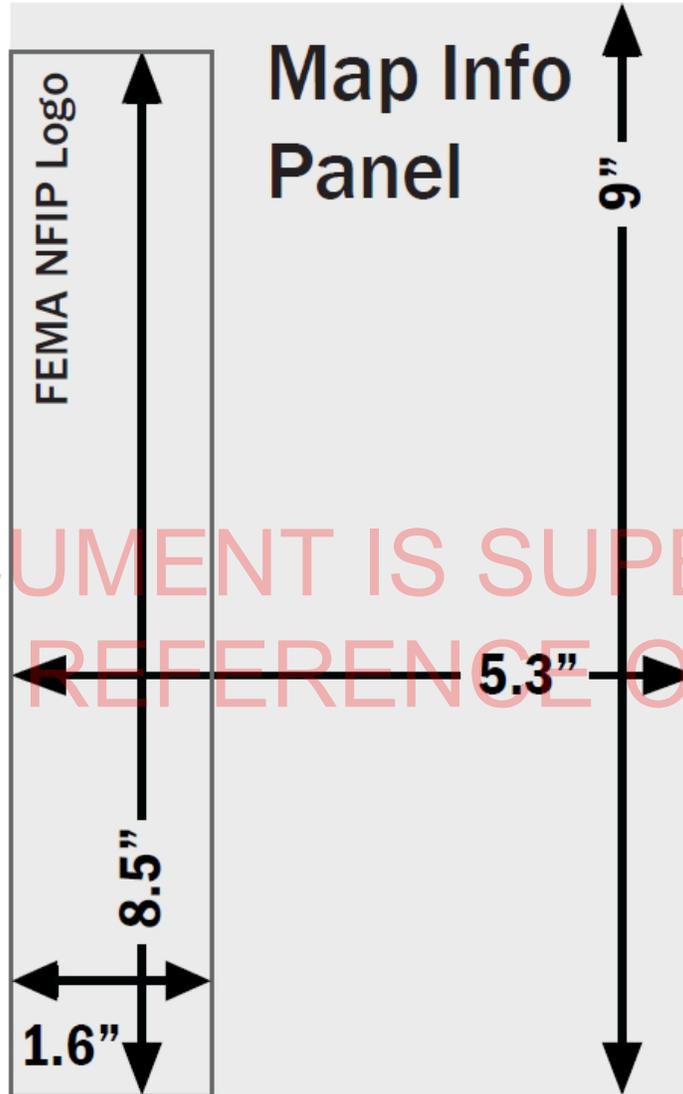


Figure K-20. FIRM Title Block Standards



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Figure K-21. FIRM Title Block

Table K-15. FIRM Title Block

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
<p>NATIONAL FLOOD INSURANCE PROGRAM</p>	<p>National Flood Insurance Program Header</p>	<p>16 Pt. Franklin Gothic Medium Cond, Blue (0, 82, 171), Aligned Left, CAPS</p>
<p>FLOOD INSURANCE RATE MAP</p>	<p>FIRM Header</p>	<p>13.5 Pt. Franklin Gothic Medium, Grey (156, 156, 156), Aligned Left, CAPS</p>
<p>—————</p>	<p>Dividing line</p>	<p>Line weight 1 Pt., Black, 3.4" Long</p>
<p>FLOOD COUNTY, USA and Incorporated Areas</p>	<p>Flood risk project area name</p>	<p>16 Pt. Franklin Gothic Medium Cond, Black, Aligned Left, CAPS 10 Pt. Franklin Gothic Book, Black, Aligned Left, CLC</p>
<p>PANEL 420 OF 750</p>	<p>The FIRM panel number and the highest FIRM panel number in the series are included in the title blocks of multiple-panel FIRMs. "Only Panel Printed" shall be used when the community may be shown on a single map.</p>	<p>10 Pt. Franklin Gothic Medium Cond, Black, Aligned Left, CAPS 18 Pt. Franklin Gothic Medium Cond, Black, Aligned Left, CAPS</p>
<p>Panel Contains:</p>	<p>Text heading for community list</p>	<p>12 Pt. Franklin Gothic Medium, Grey (156, 156, 156), Aligned Left, CLC</p>
<p>VERSION NUMBER 1.0.0.0</p> <p>MAP NUMBER 12345C0420X</p> <p>EFFECTIVE DATE DECEMBER 31, 2011</p> <p>MAP REVISED DECEMBER 31, 2011</p>	<p>Version number, map number, and effective date or map revised date text.</p> <p>Place this text in the bottom right corner of the title block.</p>	<p>12 Pt. Franklin Gothic Medium Cond, Blue (0,82,171), Aligned Right, CAPS 14 Pt. Franklin Gothic Medium, Black, Aligned Right, CAPS</p>

Appendix K

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
<p>COMMUNITY NUMBER PANEL SUFFIX</p>	<p>Community information, panel, and suffix</p> <p>Column headings for community list</p>	<p>12 Pt. Franklin Gothic Medium Cond, Black, Aligned Left, CAPS</p>
<p>FLOOD COUNTY</p> <p>123456</p> <p>0420</p> <p>X</p>	<p>Listing of communities, associated CID, panel, and suffix</p>	<p>9 Pt. Franklin Gothic Book, Black, Aligned Left, CAPS</p>
	<p>National Flood Insurance Program and FEMA logo and banner.</p>	<p>Width: 1.6" Height: 8.5"</p> <p>Banner graphic should be acquired from FEMA's Mapping Information Platform: http://hazards.fema.gov/ in the "Mapping Partner Resources" section of "Tools & Links."</p>

Example	Feature/Usage	Standard* [Hatch Pattern] (RGB Values)
	<p>Department of Homeland Security Seal</p> <p>Place this seal in the top of the title block to the right of the panel number.</p>	<p>Width: 1”</p> <p>Height: 1.4”</p>

*Font standards that cannot be matched may be approximated

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K.9 Preliminary Flood Insurance Rate Map Deliverables [October 2011]

Preliminary FIRMs shall be sent to communities for review and comment. FIRMs shall be sent to communities in full color at the preliminary stage. All Preliminary Title Blocks shall be stamped “Preliminary” or “Revised Preliminary” as appropriate, in a manner similar to that shown in Table K-16 and Figure K-22. No effective date or map revised date shall be shown on the preliminary or revised preliminary title blocks.

Table K-16. Preliminary FIRM Title Block

Example	Feature	Standard* [Hatch Pattern] (RGB Values)
PRELIMINARY 11/12/2010	Preliminary and Date stamp or digital watermark.	20pt Times New Roman, Red (192, 0, 0), Bold, Aligned Centered, CAPS
REVISED PRELIMINARY 11/12/2010	Preliminary or Revised Preliminary and Date stamp or digital watermark.	20pt Times New Roman, Red (192, 0, 0), Bold, Aligned Centered, CAPS

*Font standards that cannot be matched may be approximated

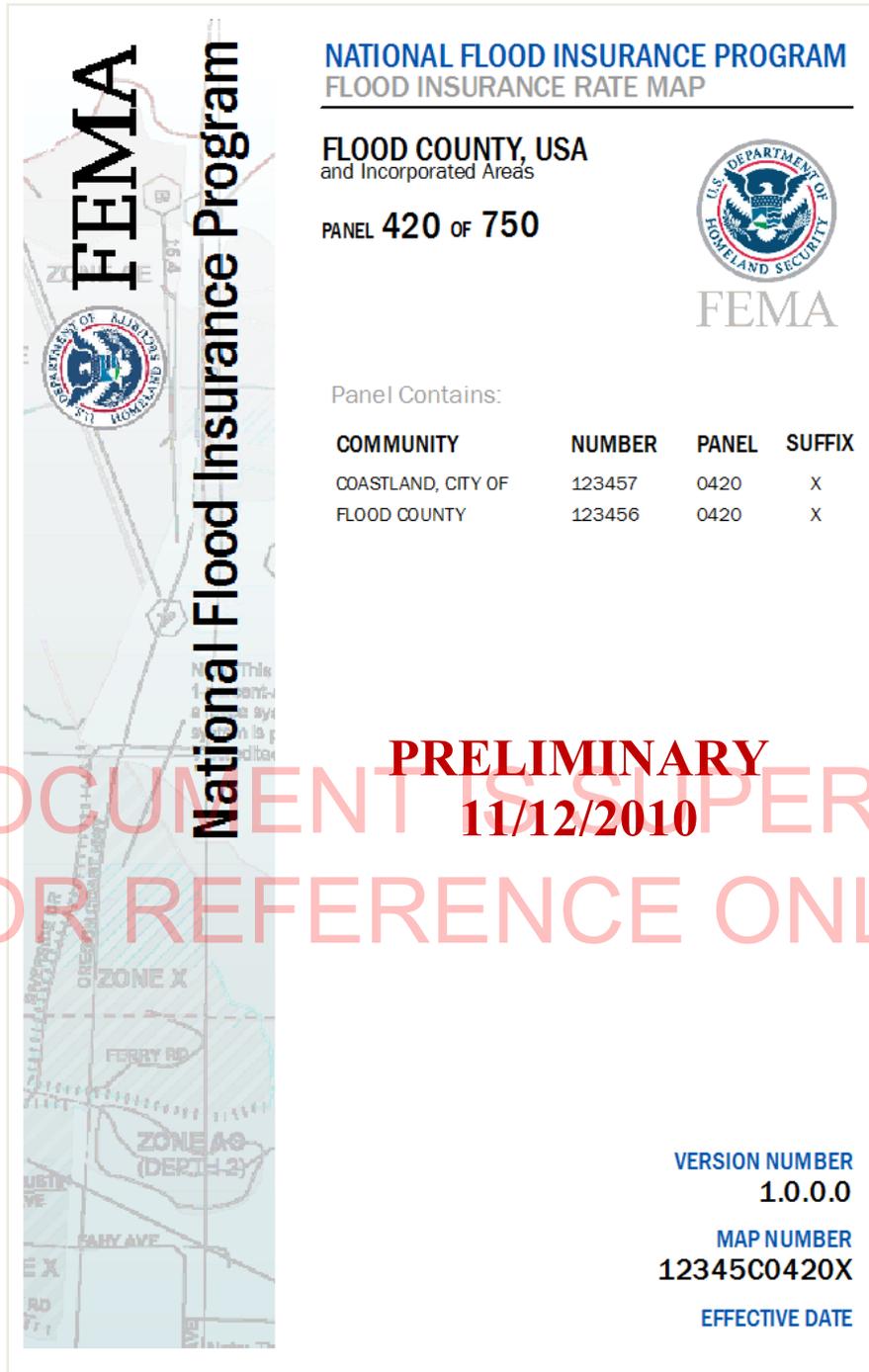


Figure K-22. Title Block with Preliminary Stamp

K.10 Map Service Center Deliverables [October 2011]

The assigned Mapping Partner shall send all FIRM deliverables to the MSC on a regular predetermined schedule. See the MSC Deliverable Package Guide for deliverable standards.

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K.11 National Flood Hazard Layer [October 2011]

Graphic standards for the National Flood Hazard Layer (NFHL) should match the graphic standards for raster-based FIRMs as defined in this appendix within the technical limitations of the systems and formats used to host and maintain the NFHL. SFHA colors shall be matched to ensure consistency between FEMA products.

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