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Data Capture Technical Reference

May 2014



Data Capture Technical Reference

Table of Revisions for the Data Capture Technical Reference

The following summary of changes details revisions to the Data Capture Technical Reference subsequent to its initial publication in August 2013.

Affected Section or Subsection	Revision Date	Revision Description
Throughout	May 2014	Changed title from <u>Data Capture Standards Technical Reference</u> to <u>Data Capture Technical Reference</u>
Throughout	May 2014	Changed references to non-regulatory products to Flood Risk Products.
Throughout	May 2014	Changed references to Map Index to Flood Insurance Rate Map (FIRM) Index.
Section 3 (Topographic Breakline Topology Requirements)	May 2014	Removed link to Knowledge Sharing Site.
Section 4 (Field Survey Submittal Standards)	May 2014	Removed link to Knowledge Sharing Site. Noted that alternate survey code definitions should be documented in the Survey Metadata file.
Section 5 (Deliverables)	May 2014	Added introductory paragraph and clarification that file naming applies to Mapping Information Platform (MIP) uploads as well as deliverables.
Section 5 (Deliverables) Preliminary Regulatory Products	May 2014	Added Preliminary Regulatory Products Deliverables section. Noted that standalone PDF of 11" x 17" FIRM Index must be submitted at Preliminary.
Section 5 (Deliverables) Final Regulatory Products	May 2014	Added directory structure for digital data submitted to the Map Service Center (MSC) on media.
Section 5 (Deliverables) FIS Report	May 2014	Removed duplication with <u>Flood Insurance Study (FIS) Report Technical Reference</u> regarding Portable Document Format (PDF) bookmarks. Removed references to native file formats for FIS Report components (e.g., Word, DXF) that are uploaded to the MIP under Section 6.
Section 5 (Deliverables) FIRM Scans and World Files	May 2014	Noted that standalone georeferenced PNG of FIRM Index (including 11"x17") must be submitted with final deliverables. Removed references to MXD files of FIRM panels that are uploaded to the MIP under Section 6.

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Section 5 (Deliverables) FIRM Database	May 2014	<p>Changed name of submittal directory from <CID or County FIPS>_FIRM to <CID or County FIPS>_DFIRM to conform with MSC requirements.</p> <p>Noted that users can contact the MSC to determine the alpha-character to use for revised FIRM Database submission directory name.</p> <p>Noted that Shapefile file names do not receive a suffix for revised submissions.</p>
Section 5 (Deliverables) Metadata	May 2014	Clarified that file naming applies to FIRM Database metadata files.
Section 5 (Deliverables) Final Flood Risk Products	May 2014	Noted that currently final deliverables are submitted on media, but that in the future they will be submitted to the MIP only.
Section 5 (Deliverables) Project ID	May 2014	Added definition of Project ID used in Flood Risk Product naming.
Section 5 (Deliverables) Flood Risk Database	May 2014	<p>Changed the Flood Risk Database (FRD) submittal from one .ZIP file to three .ZIP files to conform to MSC requirements.</p> <p>Added <Volume Number> to FRD .ZIP file names if needed.</p> <p>Changed and clarified FRD file naming convention from FRD_<HUC8>_<YYYYMMDD> to FRD_<Project ID>_<YYYYMMDD> to allow for different geographic extents of data submittals.</p>
Section 5 (Deliverables) Metadata Files	May 2014	Changed metadata file naming convention from FRD_<HUC8>_metadata to <Project ID>_FRD_metadata.
Section 5 (Deliverables) Flood Risk Report	May 2014	Changed Flood Risk Report file naming convention from FRR_<HUC8>_<YYYYMMDD> to FRR_<Project ID>_<Volume Number (if applicable)>_<YYYYMMDD>.
Section 5 (Deliverables) Flood Risk Map	May 2014	Changed Flood Risk Map file naming convention from FRM_<HUC8>_<YYYYMMDD> to FRM_<Project ID>_<Sheet Number (if applicable)>_<YYYYMMDD>.
Section 5 (Deliverables) Flood Risk Products Index	May 2014	Changed Flood Risk Products Index file name from FRD_<HUC8>_Index to FRD_<Project ID>_Index.
Section 5 (Deliverables) Post-Preliminary Documents	May 2014	Removed list of Flood Elevation Determination Docket (FEDD) File components and added reference to FEDD Checklist.

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Section 6 (MIP Directory Structure and File Formats)	May 2014	Noted current MIP upload directories for Flood Risk Products and future implementation of dedicated Flood Risk Products directory structure.
Section 6 (MIP Directory Structure and File Formats) Preliminary Mapping Data	May 2014	Clarified requirement to submit standalone FIRM Index PDF.
Section 6 (MIP Directory Structure and File Formats) Final Mapping Data	May 2014	Clarified requirement to submit standalone georeferenced FIRM Index file. Changed directory name from FRD_<HUC8>_<YYYYMMDD> to FRD_<Project ID>_<YYYYMMDD>. Clarified submittal of FRD in three .ZIP files.
Section 6 (MIP Directory Structure and File Formats) Coastal	May 2014	Revised Coastal directory structure based on input from Coastal Integrated Product Team group.
Section 6 (MIP Directory Structure and File Formats) Flood Risk Products Data	May 2014	Corrected name of Flood Depth and Analysis Grids.
Appendix D (Community Map Action List and Sample)	May 2014	Updated form to remove the requirement to provide listing of parcel numbers and map repositories associated with each community.
Appendix F (Flood Risk Products Index Form)	May 2014	Updated form to conform with MSC requirements and updated examples in the form to reflect file name changes made in this revision.

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1. Introduction

The purpose of the *Data Capture Technical Reference* is to provide a consistent framework for submittal, storage, and retrieval of the technical and administrative data needed for a Flood Risk Project. In addition, this document provides data submittal standards for supporting data that are used in performing risk assessment analyses and the creation of flood risk products. This framework is intended to improve the quality of flood risk project documentation; facilitate effective project handoff between organizations; provide easier retrieval of flood risk project data; and preserve the investment made in the data.

The following major production data capture points in the Mapping Information Platform (MIP) workflow are included in this technical reference: discovery, base map, terrain, survey, hydrologic analysis, hydraulic analysis, alluvial fan analysis, coastal analysis, floodplain mapping for redelineation and digital conversion, draft Flood Insurance Rate Map (FIRM) mapping data, preliminary FIRM mapping data, post-preliminary data, final FIRM mapping data, and risk assessment for studies.

This document is intended to be used in conjunction with the *FIRM Database Technical Reference* document, which details the Geographic Information System (GIS) file formats and content of the FIRM Database files. Most of the FIRM Database files are initially developed during the data development stages outlined in the MIP workflow and will be submitted incrementally as the Flood Risk Project progresses through that workflow. The standards outlined in the *FIRM Database Technical Reference* must be applied to the FIRM Database elements of the Data Capture data submittals.

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This document outlines some additional data standards for Discovery, Terrain, and Survey data. It also provides the required submittal directory structure and file format requirements for each MIP workflow step.

2. Discovery Data Submittal Standards

Discovery deliverables include all the data collected during Discovery (including data collected after the Discovery meeting) and the draft and final Discovery Map. Any data collected during Discovery that are required by the Coordinated Needs Management Strategy (CNMS) must use the data model provided in the *CNMS Technical Reference* to enter the data and update CNMS.

Discovery deliverables that are not captured by the CNMS are listed in the following sections and must be submitted as specified in this section and Section 6. An Extensible Markup Language (XML) file with the Discovery spatial data schema can be found on the FEMA Templates and Other Resources page at <http://www.fema.gov/media-library/assets/documents/32786?id=7577>.

If additional data are collected during Discovery that are not specifically mentioned in this section, those data must also be submitted in the format collected as part of Discovery deliverables as supplementary data. Data submitted to the MIP as part of this section must be consistent with data listed in the Discovery Report.

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2.1 Table: DCS_L_Mtg_POC

This table is required for all Discovery projects. This non-spatial table includes contact information for the county and every incorporated community in the flood risk project that has the following positions/roles occupied: Chief Executive Officer (CEO), such as Mayor, City Manager, County Judge, or other; State National Flood Insurance Program (NFIP) Coordinator; local Floodplain Administrator (if community participates in the NFIP); State Hazard Mitigation Officer (SHMO); and data/GGIS contact (person to contact to obtain local data for use in the flood risk project).

Table 1: DCS_L_Mtg_POC

Field	Type	Length	R/A	Description
POC_ID	Text	25	R	Primary key for this table. Assigned by table creator.
POC_NAME	Text	50	R	Point of Contact Full Name.
FIRST_NAME	Text	25	R	Point of Contact First Name.
LAST_NAME	Text	25	R	Point of Contact Last Name.
CNT_TITLE	Text	50	A	Contact Position or Title.
AGENCY	Text	50	R	Contact Agency Name.
AGY_ROLE	Text	50	A	Role of Contact Agency.
CEO	Text	1	R	Community CEO for NFIP Purposes. Acceptable values for this field can be found in the D_TrueFalse domain table
FPA	Text	1	R	Community Floodplain Administrator for NFIP Purposes. Acceptable values for this field can be found in the D_TrueFalse domain table
SHMO	Text	1	R	State Hazard Mitigation Officer. Acceptable values for this field can be found in the D_TrueFalse domain table
GIS	Text	1	R	GIS Point of Contact for Community/Agency. Acceptable values for this field can be found in the D_TrueFalse domain table
ADDRESS	Text	75	A	Contact Address.
ADDRESS_2	Text	75	A	Contact Address 2.
CITY	Text	25	A	Contact City.
STATE	Text	24	A	Contact State. Acceptable values for this field are listed in the D_State_Name domain table.
ZIP	Text	10	A	Contact ZIP Code.
PHONE	Text	10	A	Contact Primary Phone Number. Only numbers (i.e. 3035551212).
PHONE_EXT	Text	6	A	Contact Primary Phone Number Extension. For example, x2345.
EMAIL	Text	50	A	Contact E-mail Address.
COMMENTS	Text	254	A	User provided comments.

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2.2 Table: DCS_L_Source_Cit

This table is required for all Discovery projects. This non-spatial table includes information about the sources of the spatial data that are submitted.

Table 2: DCS_L_Source_Cit

Field	Type	Length	R/A	Description
SOURCE_CIT	Text	11	R	Source Citation identifier used in the FIRM Database and in the metadata files. Default source abbreviations are listed in Table 4 of the <i>FIRM Database Technical Reference</i> . Source citations start with the type of source, followed by sequential numbers, for example "BASE1," "BASE2," etc.
CITATION	Text	25	A	Citation A short and unique citation name (Author and Year) used within the Flood Insurance Study (FIS) Report to reference this publication, such as "U.S. Census 2010."
PUBLISHER	Text	254	R	Publisher Name This is the name of the publishing entity.
TITLE	Text	254	R	Title of referenced publication or data Should include a volume number if applicable.
AUTHOR	Text	254	A	Author/Editor/Source This is the author or editor of the reference. Multiple authors may be listed in this field.
PUB_PLACE	Text	100	A	Publication Place This is the place of publication (i.e. "Washington DC").
PUB_DATE	Text	30	R	Publication Date This the date of publication or date of issuance.
WEBLINK	Text	128	A	Reference Web Address This is the web address for the reference, if applicable.
SRC_SCALE	Text	12	A	Scale of the source data, if applicable. For example 1:24000.
MEDIA	Text	50	R	Media on which the source data were received.
SRC_DATE	Date	Default	A	Calendar date of the source data. Required for spatial sources. Used in metadata.
DATE_REF	Text	254	A	Date currentness reference. What the source date represents (e.g., ground condition, effective date, publication date, model date, MIP submission date, etc.). Required for spatial sources. Used in metadata.
CONTRIB	Text	254	A	Source contribution. Information contributed by the source to the data set. Required for spatial sources. Used in metadata.
NOTES	Text	254	A	User Defined Notes.

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2.3 Table: DCS_S_Pol_Ar

This table is required for all Discovery projects. This spatial file contains the political boundaries that cover the geographic extent of the flood risk project/mapping project. The spatial entity for this layer is a polygon.

Table 3: DCS_S_Pol_Ar

Field	Type	Length	R/A	Description
POL_AR_ID	Text	25	R	Primary key for table lookup. Assigned by table creator.
POL_NAME1	Text	50	R	Political Area Name 1. This is the primary name of the area shown, the area with floodplain management jurisdiction. For areas that have more than one name, this would be the primary name, with additional names shown in the field below. This would correspond to the official name of this jurisdiction used by FEMA within the NFIP. For unincorporated areas of a county, this must be the county name (e.g., Montgomery County).
POL_NAME2	Text	50	A	Political Area Name 2. This is the secondary name of the area shown. Populated if there is a common name for an area other than the official jurisdiction name.
POL_NAME3	Text	50	A	Political Area Name 3. This is the tertiary name of the area shown. Populated if there is a situation where islands, National Parks, National Forests, military bases, or other area boundaries and labels need to be shown on the FIRM underneath the POL_NAME1 and POL_NAME2 labels.
CO_FIPS	Text	3	R	County FIPS Code. This is the three-digit county Federal Information Processing Standard (FIPS) code. This is a standard numbering system that is used by the Federal government. Defined in FIPS Pub 6-4.
ST_FIPS	Text	2	R	State FIPS. This is the two-digit code that corresponds to the State FIPS code. This is a standard numbering system that is used by the Federal government. Defined in FIPS Pub 6-4. These two numbers correspond to the first two digits of the panel number. Acceptable values for this field are listed in the D_State_FIPS domain table.
COMM_NO	Text	4	R	Community Number. This is the four-digit number assigned by FEMA to each community for tracking purposes under the NFIP. On newer FIRMs the State FIPS and the community number appear below the community name.

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Field	Type	Length	R/A	Description
CID	Text	6	R	Community Identification Number. This is the six-digit Community Identification (CID) number assigned by FEMA. It is created by combining the State FIPS code with the COMM_NO. If the jurisdiction does not have a community number assigned by FEMA, the CID is created by combining the State FIPS code with the abbreviation contained in the COMM_NO field (FED, ST, or OTHR).
ANI_TF	Text	1	R	Area Not Included. Acceptable values for this field are listed in the D_TrueFalse domain table.
ANI_FIRM	Text	6	A	Used for Area Not Included (ANI) polygons where ANI_TF equals "T" and where the data is included in another FIRM Database, usually because it is a multicounty community. Enter the DFIRM_ID of the FIRM Database that contains the Special Flood Hazard Area (SFHA) data of the ANI community. For a single-jurisdiction flood risk project, the value is composed of the 2-digit state FIPS code and the 4-digit FEMA CID code (e.g., 480001). For a countywide flood risk project, the value is composed of the 2-digit state FIPS code, the 3-digit county FIPS code, and the letter "C" (e.g., 48107C). Populate with "NP" if the area has never been converted to a FIRM Database from paper FIRM format.
SOURCE_CIT	Text	11	R	Source Citation. Abbreviation used in the metadata file when describing the source information for the feature. The abbreviation must match a value in the DCS_L_Source_Cit table.

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2.4 Table: DCS_S_Trnsport_Ln

This table is required for all Discovery projects. This spatial file provides transportation features that cover the geographic extent of the flood risk project/mapping project. The spatial entity for this layer is a line.

Table 4: DCS_S_Trnsport_Ln

Fields	Type	Length	R/A	Description
TRANS_ID	Text	25	R	Primary key for table lookup. Assigned by table creator.

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Fields	Type	Length	R/A	Description
MTFCC	Text	70	R	Census Bureau Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) feature class code. Defines the primary feature for the edge. Acceptable values for this field are listed in the D_MTFCC domain table.
FULLNAME	Text	100	R	Full name of feature. Concatenation of expanded text for prefix, qualifier, prefix direction, prefix type, basemap name, suffix type, suffix direction, and suffix qualifier (as available) with a space between each expanded text field. This is the primary name of the feature. For areas that have more than one name, this would be the primary name with subsequent names shown in fields below. Route numbers and "Intercoastal Waterway" would also be included in this item.
ALTNAME1	Text	100	A	First alternative name of feature. This is the secondary name of the feature.
ALTNAME2	Text	100	A	Second alternative name of feature. This is the tertiary name of the feature.
SOURCE_CIT	Text	11	R	Source Citation. Abbreviation used in the metadata file when describing the source information for the feature. The abbreviation must match a value in the DCS_L_Source_Cit table.

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2.5 Table: DCS_S_HUC

This table is required for all Discovery projects. This spatial file contains the Hydrologic Unit Codes (HUCs) for the flood risk project flood risk project area. This will enable the capture of appropriate drainage basins, including those outside the community boundary. The spatial entity for this layer is a polygon.

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Table 5: DCS_S_HUC

Field	Type	Length	R/A	Description
HUC_ID	Text	25	R	Primary key for table lookup. Assigned by table creator.
HUC_CODE	Text	14	R	Unique hydrologic unit based on United States Geological Survey (USGS) levels of classification in the hydrologic unit system
HUC_NAME	Text	80	R	The primary name of the hydrologic unit
DIGITS	Short Integer	14	R	Number of digits in HUC-Code (8, 10, 12, or 14)
SOURCE_CIT	Text	11	R	Source Citation. Abbreviation used in the metadata file when describing the source information for the feature. The abbreviation must match a value in the DCS_L_Source_Cit table.

2.6 Table: DCS_S_Discovery_Map

This table is required for all Discovery projects. This spatial file contains each stream segment and/or coastline contained within the FIRM database, National Hydrography Dataset (NHD) 100k coverage, or best available streamline data for flood sources included in the scope of work for the flood map project update. This table should provide an inventory of stream mileage for the project area by effective and proposed zone and flood risk project type. This will be shown on the final discovery map. The spatial entity for this layer is a line.

Table 6: DCS_S_Discovery_Map

Field	Type	Length	R/A	Description
DISCMAP_ID	Text	25	R	Primary key for table lookup. Assigned by table creator.
COUNTY	Text	100	R	County Name
COMMUNITY	Text	100	R	Community Name
STATE	Text	24	R	State Name. Acceptable values for this field are listed in the D_State_Name domain table.

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Field	Type	Length	R/A	Description
CID	Text	6	R	Community Identification Number. This is the six-digit community identification number assigned by FEMA. It is created by combining the State FIPS code with the COMM_NO. If the jurisdiction does not have a community number assigned by FEMA, the CID is created by combining the State FIPS code with the abbreviation contained in the COMM_NO field (FED, ST, or OTHR).
ST_FIPS	Text	2	R	State FIPS. This is the two-digit code that corresponds to the State FIPS code. This is a standard numbering system that is used by the Federal government. Defined in FIPS Pub 6-4, these two numbers correspond to the first two digits of the panel number. Acceptable values for this field are listed in the State_FIPS domain table.
EZONE_TYP	Text	17	R	Flow effective flood risk project. Acceptable values for this field are listed in the D_Zone domain table.
EST_TYP	Text	28	R	Effective Study Type. Acceptable values for this field are listed in the D_Study_Typ domain table.
FLOOD_TYP	Text	10	R	Flooding type. Acceptable values for this field are listed in the D_Flood_Typ domain table.
WTR_NM	Text	100	R	Surface Water Feature Name. This is the name of the stream or water body, including lakes and shorelines.
STREAM_LEN	Double	Default	R	Length of stream associated with a flood risk project in feet
FBS_TF	Text	1	R	Are stream segments anticipated to meet Floodplain Boundary Standard (FBS)? Acceptable values for this field are listed in the D_TrueFalse domain table.
RANKING	Text	6	A	Ranking based on local/regional input. Values to be used for this field are High, Medium or Low.

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Field	Type	Length	R/A	Description
FST_TYP	Text	28	R	Final Study Type. Acceptable values for this field are listed in the D_Study_Typ domain table.
SOURCE_CIT	Text	11	R	Source Citation. Abbreviation used in the metadata file when describing the source information for the feature. The abbreviation must match a value in the DCS_L_Source_Cit table.

2.7 Table: DCS_S_Prj_FirmPan

This table is required for Discovery projects if a flood risk project will result from Discovery. This spatial file contains the proposed panel scheme for the flood risk project area and the panels to be updated as a result of the Discovery meeting. The spatial entity for this layer is a polygon.

Table 7: DCS_S_Prj_FirmPan

Field	Type	Length	R/A	Description
FIRM_ID	Text	25	R	Primary key for table lookup. Assigned by table creator.
ST_FIPS	Text	2	R	State FIPS. Acceptable values for this field are listed in the D_State_FIPS domain table.
PCOMM	Text	4	R	Community or County Identification Number. This is the 3rd through the 6th digits of the panel number. For community based maps this corresponds to the FEMA CID. For countywide maps, this is the county (or county equivalent) FIPS code with a "C".
PANEL	Text	4	R	Panel Number. This is the 7th through the 10th digits in the complete panel number. This is assigned by the scale of the map and the position within the community or county.
SUFFIX	Text	1	R	Map Suffix. This is the final digit in the complete panel number. This is a letter suffix at the end of the panel number. The map suffix is incremented one letter every time the panel gets republished.

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Field	Type	Length	R/A	Description
FIRM_PAN	Text	11	R	FIRM Panel Number. This is the complete FIRM panel number, which is made up of ST_FIPS, PCOMM, PANEL, and SUFFIX. This is the 11-digit FIRM panel number that is shown in the title block of the map.
PANEL_TYP	Text	30	R	Panel Type. The type of FIRM panel that identifies whether the panel is printed or not printed and whether it is community based or countywide mapping. Acceptable values for this field are listed in the D_Panel_Typ domain table.
SCALE	Text	5	R	Map Scale. This is the denominator of the FIRM scale as a ratio. For example, 24000 is the denominator for a 1" = 2000' map. Acceptable values for this field are listed in the D_Scale domain table.
BASE_TYP	Text	10	R	Basemap type. The type of base map used for the FIRM panel shall be recorded in this field. Acceptable values for this field are listed in the D_Basemap_Typ domain table.
UPDATED_TF	Text	1	R	Will this panel be updated as a result of Discovery meeting? Acceptable values for this field are listed in the D_TrueFalse domain table.
SOURCE_CIT	Text	11	R	Source Citation. Abbreviation used in the metadata file when describing the source information for the feature. The abbreviation must match a value in the DCS_L_Source_Cit table.

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3. Topographic Breakline Topology Requirements

Topographic breaklines are optional and may be needed depending upon the planned procedures used to perform hydrologic and hydraulic modeling. When optional breaklines are produced, the following breakline topology rules must be followed for the applicable feature classes.

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Table 8: Topographic Breakline Topology Rules

Topology Filename (*_TOPOLOGY)	Spatial Layer	Topology Rule	Parameter	Minimum Cluster Tolerance (ft)
HydraulicStruct	HydraulicStructure	Must Not Intersect		0.003
HydraulicStruct	HydraulicStructure	Must Not Self Intersect		0.003
HydrographicStruct	HydrographicFeature	Must Not Intersect		0.003
HydrographicStruct	HydrographicFeature	Must Not Self Intersect		0.003
HydrographicStruct	HydrographicFeature	Must not Overlap		0.003
Coastal	CoastalShoreline	Must Not Intersect	CoastalShoreline	0.003
Coastal	CoastalShoreline	Must Not Self Intersect		0.003
PondsLakes	Ponds_and_Lakes	Must Not Intersect		0.003
PondsLakes	Ponds_and_Lakes	Must Not Self Intersect		0.003
Island	Island	Must Not Intersect		0.003
Island	Island	Must Not Self Intersect		0.003

4. Field Survey Submittal Standards

Table 9 lists the recommended survey codes and descriptions that should be used for new survey data submissions. However, alternative survey code definitions are acceptable if complete documentation is provided for the survey codes used during field data collection. Alternate survey code definitions should be included in the submitted Survey Metadata file in the Entity and Attribute Information section. Figures 1 through 7 show specific examples for some of the field survey point locations and the corresponding survey codes. All annotated photographs provided in this sub-section are for informational purposes only and show the locations of data points with corresponding survey codes for reference.

Table 9: Survey Codes

Code	Description	Field Survey Location
ABT	Abutment	face/foot of abutment of bridge
BOCEDS	Back Of Curb Edge Down Stream	where slope meets top of culvert or top of headwall above culvert centerline on downstream end for determining outlet projection
BOCEUS	Back Of Curb Edge Up Stream	where slope meets top of culvert or top of headwall above culvert centerline on upstream end for determining inlet projection
BRCL	Bridge Centerline	centerline of bridge in overtopping section
CH	Channel	stream bottom between TOS shots
CHCL	Channel Centerline	center of the main flow area of the stream
CUL	Culvert Shape	multiple CUL codes can be used to define shapes for culverts, especially irregular shapes

Data Capture Technical Reference

Code	Description	Field Survey Location
CULCL	Culvert Centerline	centerline of culvert in overtopping section
CULDSCR	Culvert Down Stream Crown	the highest point of the downstream end of a culvert
CULDSINV	Culvert Down Stream Invert	the lowest point of the downstream end of a culvert
CULUSCR	Culvert Up Stream Crown	the highest point of the upstream end of a culvert
CULUSINV	Culvert Up Stream Invert	the lowest point of the upstream end of a culvert
DAMCL	Dam Centerline	the high point of a dam
DH	Dune Heel	landward toe of primary frontal dune
DP	Dune Peak	peak or rear shoulder of primary frontal dune
DT	Dune Toe	seaward toe of primary frontal dune
EOB	End Of Bridge	end of the bridge deck at the road/rail elevation
ERM	Elevation Reference Mark	Permanent elevation monument. An ERM must be set at every structure and at cross sections if they are more than half a mile to the nearest structure.
FBCL	Foot Bridge Centerline	centerline of non-vehicular bridges in overtopping section
GDR	Guardrail	top of guardrail at ends to define limit and height
GDRBOT	Guardrail at Bottom	base of guardrail at ends to define and height
GR	Ground	to indicate elevation changes, used outside TOB shots, between TOB and TOS, and to indicate islands or bars within the channel. When used in channel cross-section surveys, a GR point must be placed at least 15 feet past the top of bank or until there is no overhead obstruction from foliage. If overhead foliage is too thick for the entire overbank area, full valley cross sections should be a consideration for modeling.
HWMARK	High Water Mark	historical high water marks-mud/stain lines, drift lines, parole evidence, etc.
INVDS	Invert Down Stream	channel invert at downstream end of structure, used to define paved aprons
INVUS	Invert Up Stream	channel invert at upstream end of structure, used to define aprons
LC	Low Chord	change in bridge deck thickness, usually at center of a pile row or pier. Multiple low chord codes can be used to define irregular shaped bridges such as arched bridges with the explanation of the multiple LC shots shown in the sketch for the structure.
LCDSL	Low Chord Down Stream Left	bottom of deck and beam at the downstream left corner of bridge ¹
LCDSR	Low Chord Down Stream Right	bottom of deck and beam at the downstream right corner of bridge ¹

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Code	Description	Field Survey Location
LCUSL	Low Chord Up Stream Left	bottom of deck and beam at the upstream left corner of bridge ¹
LCUSR	Low Chord Up Stream Right	bottom of deck and beam at the upstream right corner of bridge ¹
LV	Levee	Centerline of the top of a levee
PIER	Pier	the up and downstream centerline of a pier
PILE	Pile	the up and downstream centerline of a row of piles
RAIL	Rail	top of rail to define limits and height of railing on structures
RAILBOT	Rail Bottom	bottom of rail to define limits and height of railing on structures
RDCL	Road Centerline	the centerline on a crowned road or the high side of a road with super elevation
SFLOOR	Sea Floor	shots either direct or combination of bathymetric and conventional/Global Positioning System (GPS) survey of coastal area which can be collected during structure or transect survey
TEMP	Temporary Control Point	temporary control point used for data collection of cross sections and structures. TEMPs are established when ERMs are not present.
TOB	Top Of Bank	top of bank in a multiple channel scenario
TOBL	Top Of Bank Left	break point from over bank to channel on the left side when looking downstream
TOBR	Top Of Bank Right	break point from over bank to channel on the right side when looking downstream
TOD	Top Of Deck	to show an irregular arch or dip in a bridge deck between the bridge corner shots
TODDSL	Top Of Deck Down Stream Left	downstream left corner of a bridge on the deck directly above the LCDSL shot to measure deck thickness and width ¹
TODDSR	Top Of Deck Down Stream Right	downstream right corner of a bridge on the deck directly above the LCDSR shot to measure deck thickness and width ¹
TODUSL	Top Of Deck Up Stream Left	upstream left corner of a bridge on the deck directly above the LCUSL shot to measure deck thickness and width ¹
TODUSR	Top Of Deck Up Stream Right	upstream right corner of a bridge on the deck directly above the LCUSR shot to measure deck thickness and width ¹
TOS	Toe Of Slope	the toe in a multiple channel scenario
TOSL	Toe Of Slope Left	break point from channel bank to channel bed on the left side when looking downstream
TOSR	Toe Of Slope Right	break point from channel bank to channel bed on the right side when looking downstream
WALL	Wall	top of a retaining wall, also used outside TOBL and TOBR when the stream banks are vertical walls or rock cuts
WALLBOT	Wall Bottom	bottom of a retaining wall, also used outside TOBL and TOBR when the stream banks are vertical walls or rock cuts

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Code	Description	Field Survey Location
WEIR	Weir	top of dam spillways and outlet structures. Multiple weir codes may be used to collect data for gates, flashboards, and other operable structures. The explanation of the multiple shots must be shown in the structure sketch.
WW	Wing Wall	top face of each end of a wing wall or headwall on a structure to define height and length
WWBOT	Wing Wall Bottom	base of each end of a wing wall or head wall on a structure to define height and length

¹ The four bridge corner shots need to be taken outside of any rail to accurately measure hydraulic length.



Figure 1: Typical Cross-Section Photograph: Indian Creek IND-6600 (Displays Survey Code Locations)

Data Capture Technical Reference



Figure 2: Typical Bridge Photograph: White Creek WHI-1800 (Displays Survey Code Locations)



Figure 3: Typical Culvert Photograph: Sanderson Creek SAN-0880 (Displays Survey Code Locations)

Data Capture Technical Reference



DAM CENTERLINE

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SPILLWAY



OUTLET STRUCTURE

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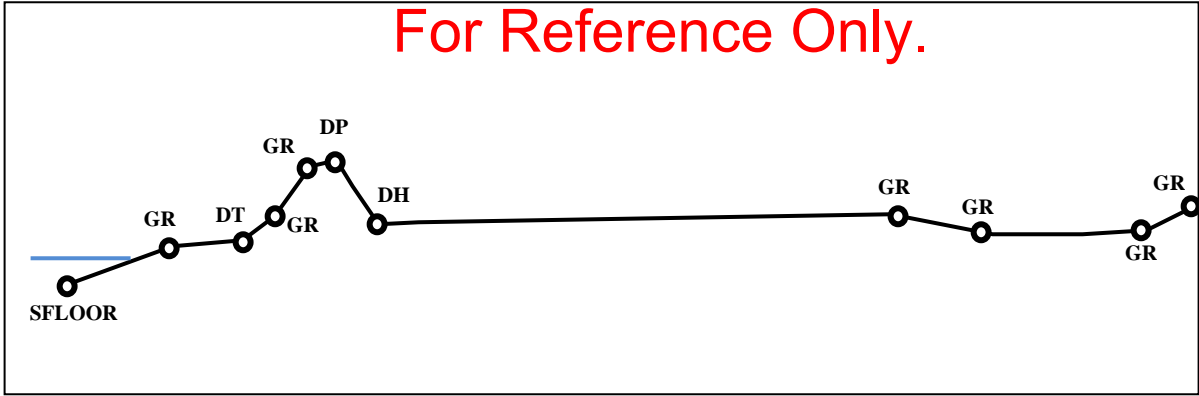


Figure 5: Typical Transect (Displays Survey Code Locations)



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Figure 6: Typical Levee (Displays Survey Code Locations)

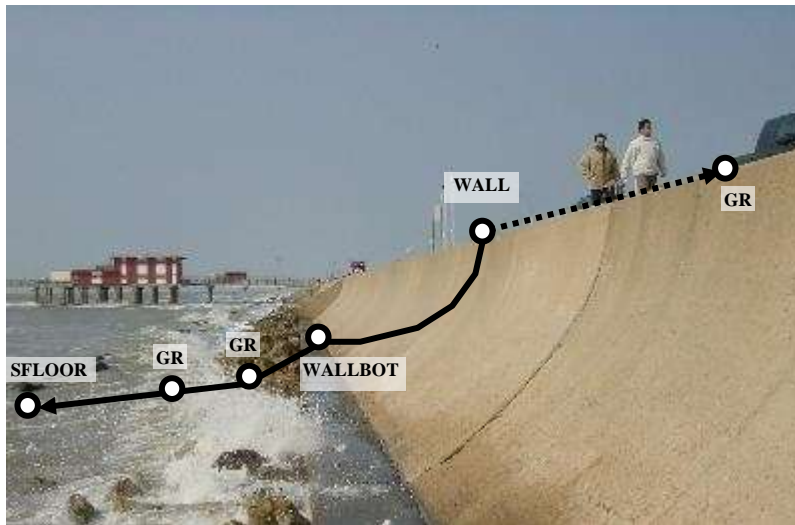


Figure 7: Typical Coastal Structure (Displays Survey Code Locations)

5. Deliverables

This section provides information about the required deliverables for the regulatory and Flood Risk products. For the most part, these deliverables are submitted to the Map Service Center (MSC) and will subsequently be made available to the public. The data capture submittals for MIP data development tasks are outlined in Section 6.

Note that the file names for deliverable products specified in this section also apply to the corresponding files in native format that are submitted to the MIP as outlined in Section 6. For example, the file naming convention used for the deliverable FIS Report Portable Document Format (PDF) file(s) also applies to the FIS Report Word file uploaded to the MIP.

5.1 Preliminary Regulatory Products

The required documents that make up the preliminary regulatory products package are outlined in Section 6. They must be named using the product naming conventions outlined below for the final regulatory products and must be submitted in the digital format and directory structure indicated in Section 6.

Note that a separate standalone PDF of any 11"x17" FIRM Index page(s) must be submitted at Preliminary even though they are also included within the FIS report PDF.

5.2 Final Regulatory Products

The required documents that make up the final regulatory products package include the following items. They must be in the digital format and directory structure indicated below and in Section 6. The final paperwork (Transmittal Form, Transmittal Letters, Inventory Worksheets, and Community Map Action List [CMAL]) are currently submitted electronically to the MSC via email, File Transfer Protocol (FTP), or Sharepoint. The remaining deliverables (FIS Report, FIRM Scans, FIRM Database, Metadata, Orthophotos) are submitted to the MIP and to the

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MSC on media (i.e., Compact Disc Read Only Memory [CD-ROM], Digital Video Disc [DVD]). In the future, all data will be submitted to the MIP only.

The digital file structure for the deliverables submitted on media is shown below in Figure 8. Note that folder names are case sensitive.

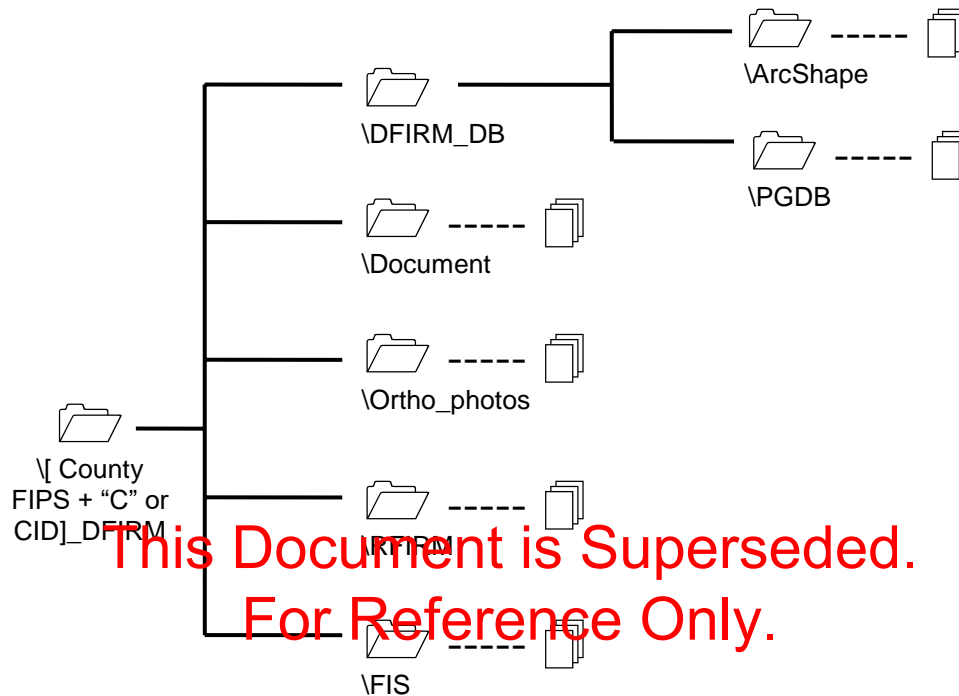


Figure 8: Final Deliverables Digital File Structure

5.2.1 Transmittal Form

The Transmittal Form provides a listing of all of the items being submitted to the MSC. It is designed as a checklist to ensure that all contents that constitute the MSC Deliverables Package are included with the submittal to the MSC. The Transmittal Form must be provided in Word format. See Appendix B for a sample Transmittal Form.

5.2.2 Transmittal to Community CEO

A Transmittal Letter to the community CEO (179 Letter) is sent by the MSC to each community, along with the final mapping products distributed by the MSC. Refer to *Appendix A* of the *Document Control Procedures Manual* for the current letter templates.

There must be one letter for each community that appears on a printed map panel of the FIS. For Physical Map Revisions (PMRs), only communities that lie or appear on a revised printed map panel will receive a letter. The letter must include the current (as of the date the post-

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preliminary study deliverables are prepared) CEO's name and address, the six-digit community identification number, and the effective date. Each letter must be provided in Word format.

5.2.3 Inventory Worksheet for Each Community

The Inventory Worksheet is used by the MSC to update the MSC inventory and management information systems. Every community—including the Unincorporated Areas, the countywide or all-jurisdictions mapping number, if applicable, and mapped non-flood-prone and non-participating communities—requires a separate Inventory Worksheet. The Inventory Worksheet must be provided in Excel format (XLS/XLSX). The formatting of the standard Inventory Worksheet template must not be modified or otherwise altered. See Appendix C for a sample Inventory Worksheet.

5.2.4 Community Map Action List (CMAL)

One copy of the CMAL must accompany each submission to the MSC; however, several communities may be shown on one CMAL, provided that the FIRMs have the same effective date. Each CMAL should list all the communities within the county, including the non-flood-prone communities. Areas Not Included should not be listed. For PMRs, only communities that lie or appear on a revised printed map panel should be listed in the CMAL. The CMAL must be provided in Excel format (XLS/XLSX). See Appendix D for a CMAL and sample. For a more detailed list of the CMAL codes, see Appendix E.

5.2.5 FIS Report

The FIS Report must be submitted in digital format as an unsecure PDF file, with a resolution of 400 dots per inch (dpi). There must be one PDF file per FIS volume that is bookmarked as described in the *Flood Insurance Study (FIS) Report Technical Reference*.

The PDF version of the FIS Report must be named <ST_FIPS><PCOMM><VOLUME NUMBER>.pdf.

Examples:

24031CV000B.pdf – Single volume countywide FIS

120234V001A. pdf – Community FIS Volume 1 of 2

120234V002A.pdf – Community FIS Volume 2 of 2

5.2.6 FIRM Scans and World Files

FIRM Scans are the raster images of the FIRM panels and FIRM Index. The FIRM Scans must be georeferenced. The FIRM Scans of the FIRM panels must conform to the requirements of the *FIRM Panel Technical Reference*. The FIRM Scans of the FIRM Index must conform to the requirements of the *Flood Insurance Study (FIS) Technical Reference* if the FIRM Index is prepared in the new 11"x17" format. Note that a separate stand alone georeferenced FIRM Index scan must be submitted even if it is also included as a figure within the FIS Report. The FIRM Scans must be named according to the map number shown on the title block of the FIRM

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panel or FIRM Index. Color images must be 400 dpi, in 24 bit Portable Network Graphics (PNG) format. All images must be accompanied by their world file.

Examples:

FIRM Scans

24031C0001A.png – FIRM panel

24031CIND0A.png – FIRM Index

World files for the image files above:

24031C0001A.pgw – FIRM panel

24031CIND0A.pgw – FIRM Index

5.2.7 FIRM Database

FIRM Databases must be submitted in Shapefile (SHP) and Personal Geodatabase (PGDB) format. The FIRM Database must conform to the requirements of the *FIRM Database Technical Reference*. When submitted on CD-ROM or DVD-ROM, each FIRM Database must be submitted in a single directory that contains all subordinate subdirectories. The name of this directory is designed to identify the study and whether these data represent an initial FIRM Database or revise an existing FIRM Database. The directory for an initial FIRM Database must be named <CID or County FIPS>_DFIRM, while a submission that replaces a current FIRM Database must be named <CID or County FIPS>_<Alpha>_DFIRM. Each subsequent revision for which there is a new effective date requires the <Alpha> character to be advanced. To determine the appropriate alpha-character, view the current effective FIRM Database listed under the FIRM Database section of the MSC's Express Document Delivery (EDDIE) or contact the MSC for clarification of what alpha-character to use.

The FIRM Database PGDB files must also conform to the same naming convention. FIRM Database Shapefiles must be named using the table names in the *FIRM Database Technical Reference*. Note that Shapefiles named using the table names in the *FIRM Database Technical Reference* do not receive a suffix.

Examples:

Initial FIRM Database Submission Directory

120234_DFIRM – community FIRM Database

12345C_DFIRM – countywide FIRM Database

Revised FIRM Database Submission Directory

120234_A_DFIRM – community FIRM Database that revises a current FIRM Database

12345C_A_DFIRM – countywide FIRM Database that revises a current FIRM Database

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FIRM Database

120234_FIRM.mdb – community FIRM Database

12345C_FIRM.mdb – countywide FIRM Database

120234_A_FIRM.mdb – community FIRM Database that revises a current FIRM Database

12345C_A_FIRM.mdb – countywide FIRM Database that revises a current FIRM Database

5.2.8 Orthophotos

The aerial images and any associated world files that were used to create the FIRM (if applicable) must be submitted. These data should be in the format in which the orthophotos were provided to the FEMA Mapping Partner, unless the appearance of any portion of the orthophotos shown on the FIRM was modified by re-projection, re-sampling, etc. In this case, only the modified orthophotos should be submitted.

5.2.9 Metadata Files

Metadata files should be provided in XML format. The metadata files must conform to the requirements of the *Metadata Profiles Technical Reference*. The FIRM Database metadata files must be named `<ST_FIPS><PCOMM>_<EFF_DATE>_metadata.xml` where ST_FIPS is the two-digit state FIPS code. PCOMM is either the three-digit county FIPS code with a trailing “C” or the four-digit CID. EFF_DATE is the effective date of the study in YYYYMMDD format. Note that the metadata file name for a revised submission also requires the `_<Alpha>` addition to the filename.

Examples:

24031C_20031217_metadata.xml – a countywide FIRM Database

241234_20031217_metadata.xml – a community FIRM Database

5.3 Final Flood Risk Products

The required documents that make up the final Flood Risk Products package include the following items. They must be in the digital format and directory structure indicated below and in Section 6. The Flood Risk Products deliverables (i.e., the Flood Risk Database [FRD], Flood Risk Report [FRR], and Flood Risk Map [FRM]) are currently submitted to the MSC on media (i.e., CD/DVD) or by FTP. In the future, all Flood Risk Products deliverables and artifacts will be submitted to the MIP only.

5.3.1 Project ID

The Project ID should be a description that most effectively summarizes what area is covered by the project. The Project ID may be an 8-digit HUC identifying the watershed (strongly preferred for watershed based projects); a text description (e.g., the coastal flooding source studied – “Delaware Bay”); or a CID or FIPS code identifying the primary county or community mapped. The Project ID should be the same across all products for the Flood Risk Project. Note that it is good practice to limit the Project ID to 40 characters or less.

5.3.2 Flood Risk Database

Because the FRD datasets are quite large, the FRD data must be submitted in a series of .ZIP files that each contains data in one file format. FRD submittals must contain the following items:

- A .ZIP file containing the FRD files in Shapefile (SHP) format and the FRD metadata file in XML format
- A .ZIP file containing the FRD in File Geodatabase (fGDB) format (including the Flood Depth and Analysis rasters in Environmental Systems Research Institute, Inc. (Esri) grid format) and the FRD metadata file in XML format
- A .ZIP file containing the Flood Depth and Analysis rasters in Georeferenced Tagged Image File Format (GeoTIFF) format and the FRD metadata file in XML format

The FRD must conform to the requirements of the *Flood Risk Database Technical Reference*.

The names of the .ZIP files identify the Project ID for the FRD, the volume number if applicable, the file format, and the date the data are submitted to the MSC. The .ZIP files must be named <Project ID>_<Volume Number (if applicable)>_<File Format>_<YYYYMMDD>. The <Volume Number> is used only if there are multiple volumes; it is not needed for a single volume .ZIP file. The <File Format> is “GeoDatabase” for the fGDB, “ShapeFiles” for the SHP files, and “GeoTIFFS” for the GeoTIFFS. The <YYYYMMDD> is the date the data are submitted to the MSC.

The directory for an FRD must be named FRD_<Project ID>_<YYYYMMDD>. The FRD fGDB file must also be named FRD_<Project ID>_<YYYYMMDD>. FRD Shapefiles must be named using the table names in the *Flood Risk Database Technical Reference*. The GeoTIFF versions of the rasters must be named using the file naming convention in the *Flood Risk Database Technical Reference*.

Examples:

FRD_87654321_20130419.gdb – a watershed-wide FRD fGDB

FRD_87654321_GeoDatabase_20130419.zip – a single volume watershed-wide FRD fGDB .ZIP file

FRD_87654321_1_GeoDatabase_20130419.zip – volume 1 of a two-volume watershed-wide FRD fGDB .ZIP file

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FRD_87654321_2_GeoDatabase_20130419.zip – volume 2 of a two-volume watershed-wide FRD fGDB .ZIP file

FRD_87654321_ShapeFiles_20130419.zip – a watershed-wide FRD shapefiles .ZIP file

FRD_87654321_GeoTIFFS_20130419.zip – a watershed-wide FRD GeoTIFFs .ZIP file

FRD_Delaware_Bay_20130419.gdb – a coastal FRD fGDB

FRD_Delaware_Bay_GeoDatabase_20130419.zip – a single volume coastal FRD fGDB .ZIP file

FRD_Delaware_Bay_1_GeoDatabase_20130419.zip – volume 1 of a single volume coastal FRD fGDB .ZIP file

FRD_Delaware_Bay_2_GeoDatabase_20130419.zip – volume 2 of a two-volume coastal FRD fGDB .ZIP file

FRD_Delaware_Bay_Shapefiles_20130419.zip – a coastal FRD shapefiles .ZIP file

FRD_Delaware_Bay_GeoTIFFS_20130419.zip – a coastal FRD GeoTIFFs .ZIP file

FRD_42079C_20130419.gdb – a countywide FRD fGDB

FRD_42079C_GeoDatabase_20130419.zip – a single volume countywide FRD fGDB .ZIP file

FRD_42079C_1_GeoDatabase_20130419.zip – volume 1 of a two-volume countywide FRD fGDB .ZIP file

FRD_42079C_2_GeoDatabase_20130419.zip – volume 2 of a two-volume countywide FRD fGDB .ZIP file

FRD_42079C_ShapeFiles_20130419.zip – a countywide FRD shapefiles .ZIP file

FRD_42079C_GeoTIFFS_20130419.zip – a countywide FRD GeoTIFFs .ZIP file

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5.3.3 Metadata Files

Metadata files must be provided in XML format. The metadata files must conform to the *Metadata Profiles Technical Reference*. The FRD metadata files must be named <Project ID>_<FRD >_metadata.

Examples:

87654321_FRD_metadata.xml – metadata for a watershed-wide FRD

Delaware_Bay_FRD_metadata.xml – metadata for a coastal FRD

42079C_FRD_metadata.xml – metadata for a countywide FRD

5.3.4 Flood Risk Report

The Flood Risk Report (FRR) must be submitted in digital format as an unsecure PDF file, with a resolution of 400 dpi. The FRR must also be uploaded to the MIP in Word format.

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The PDF version of the FRR must be named FRR_<Project ID>_<Volume Number (if applicable)>_<YYYYMMDD>.pdf. The <Volume Number> is used only if the FRR requires multiple volumes; it is not needed for a single volume FRR. The <YYYYMMDD> is the date the data are submitted to the MSC. The FRR in Word format must also conform to the same naming convention.

Examples:

FRR_87654321_20130419.pdf – a single volume watershed-wide FRR

FRR_87654321_1_20130419.pdf – volume 1 of a two-volume watershed-wide FRR

FRR_87654321_2_20130419.pdf – volume 2 of a two-volume watershed-wide FRR

FRR_Delaware_Bay_20130419.pdf – a single volume coastal FRR

FRR_Delaware_Bay_1_20130419.pdf – volume 1 of a two-volume coastal FRR

FRR_Delaware_Bay_2_20130419.pdf – volume 2 of a two-volume coastal FRR

FRR_42079C_20130419.pdf – a single volume countywide FRR

FRR_42079C_1_20130419.pdf – volume 1 of a two-volume countywide FRR

FRR_42079C_2_20130419.pdf – volume 2 of a two-volume countywide FRR

5.3.5 Flood Risk Map **For Reference Only.**

The Flood Risk Map (FRM) must be submitted in digital format as an unsecure PDF file, with a resolution of 400 dpi. The MXD file used to create the FRM must also be uploaded to the MIP.

The PDF version of the FRM must be named FRM_<Project ID>_<Sheet Number (if applicable)>_<YYYYMMDD>.pdf. The <Sheet Number> is used only if the FRM is too large or detailed to fit on a single sheet; it is not needed for a single page FRM. The <YYYYMMDD> is the date the data are submitted to the MSC. The FRM in MXD format must also conform to the same naming convention.

Examples:

FRM_87654321_20130419.pdf – a single page watershed-wide FRM

FRM_87654321_1_20130419.pdf – sheet 1 of a two-page watershed-wide FRM

FRM_87654321_2_20130419.pdf – sheet 2 of a two-page watershed-wide FRM

FRM_Delaware_Bay_20130419.pdf – a single page coastal FRM

FRM_Delaware_Bay_1_20130419.pdf – sheet 1 of a two-page coastal FRM

FRM_Delaware_Bay_2_20130419.pdf – sheet 2 of a two-page coastal FRM

FRM_42079C_20130419.pdf – a single page countywide FRM

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FRM_42079C_1_20130419.pdf – sheet 1 of a two-page countywide FRM

FRM_42079C_2_20130419.pdf – sheet 2 of a two-page countywide FRM

5.3.6 Flood Risk Products Index

The index provides a listing of the communities covered in the FRD being submitted to the MSC. It is a table designed to ensure that all communities with data in the dataset are accurately represented on the MSC website. See Appendix F for a sample Flood Risk Products Index form. All Regions, states, counties, CIDs, and products associated with the Flood Risk Products submission should be listed.

The Transmittal Form must be provided in Excel format. The Index for the Flood Risk Dataset must be named FRD_<Project ID>_Index.

Example:

FRD_87654321_Index.xls

5.4 Post-Preliminary Documents

The required documents that make up the Post-Preliminary package include the following items. They must be in the digital format and directory structure indicated below and in Section 6.

- A project narrative describing the Statement of Work (SOW), direction from FEMA, issues, information for the next Mapping Partner, etc.
- Floodplain Boundary Standard (FBS) Self-Certification Document (this document must be submitted within 30 days after issuance of preliminary maps). The file must be named as follows: County or Community_State_FBS_Preliminary.
- Revised FBS Self-Certification Document (this document must be submitted within 30 days after issuance of the Letter of Final Determination (LFD) if floodplain boundaries were revised during the post-preliminary phase). The file must be named as follows: County or Community_State_FBS_Final.
- Correspondence file including any documentation not previously submitted during earlier tasks or as part of the Flood Elevation Determination Docket (FEDD) file related to coordination and processing decisions made during the course of the study documented in the forms of memorandums, records of communication, Special Problem Reports, etc. Also included are reports of meetings among the Agency representatives, property owners, State coordinating agency, flood risk project contractors, or other interested persons; meeting minutes and meeting attendance lists.

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- FEDD for each affected community, including the documents listed in the FEDD Checklist, per 44 CFR 67.3¹. Rolled into this file are copies of all correspondence related to due process and the FEDD File Checklist, organized in chronological order. One PDF file is to be submitted for each community. The file must be named as follows: County_state_Community_FEDD (Example: Bergen_NJ_Alpine_FEDD_Effective Date).

6. MIP Directory Structure and File Formats

A complete set of the most up-to-date engineering and mapping data associated with changes to FEMA maps must be captured in the MIP before their effective date. These data form the scientific and technical basis for the flood map and are needed in the future to address challenges or changes to the maps. This requirement replaces the previous requirement to submit a hardcopy Technical Study Data Notebook (TSDN) at the end of each mapping project.

Mapping Partners must submit data to the MIP in the file format(s) and in the MIP directory structure shown below for each of their assigned workflow tasks. Where multiple file formats are shown separated by a slash, either is acceptable (e.g., Word/PDF). When multiple file formats are required to be submitted, they are noted as such (e.g., Word and PDF). Note: See Appendix A for a list of file format acronyms used in this section.

The MIP is currently organized with pre-defined directories for each FEMA Region, state, county, community, MIP case number, assigned MIP workflow tasks, and an auto-generated System ID# (Task SYSID), as illustrated below. Note that the directory structure shown in this section represents the structure below the Task SYSIDs that are assigned in the MIP for each workflow task. Directory names are shown in bold for clarification.

The MIP is organized into J: and K: drives. Unless noted otherwise, all references in the following section are to the directory structure on the J: drive.

Note: Currently Flood Risk metadata and in some cases products are uploaded to the MIP in the following directories associated with the Flood Risk Product development case number: FRR under Survey, FRM under Floodplain Mapping, FRD under Hydraulics, and Flood Risk Assessment data under Hydrology. In the future, it is envisioned that the directories outlined in this document will be developed for the Flood Risk Products in the MIP.

¹ The correspondence noted below may not be applicable to all communities. For instance, communities that have adopted an automatic revision clause in their floodplain management ordinances may not receive a 90- or 30- suspension letter.

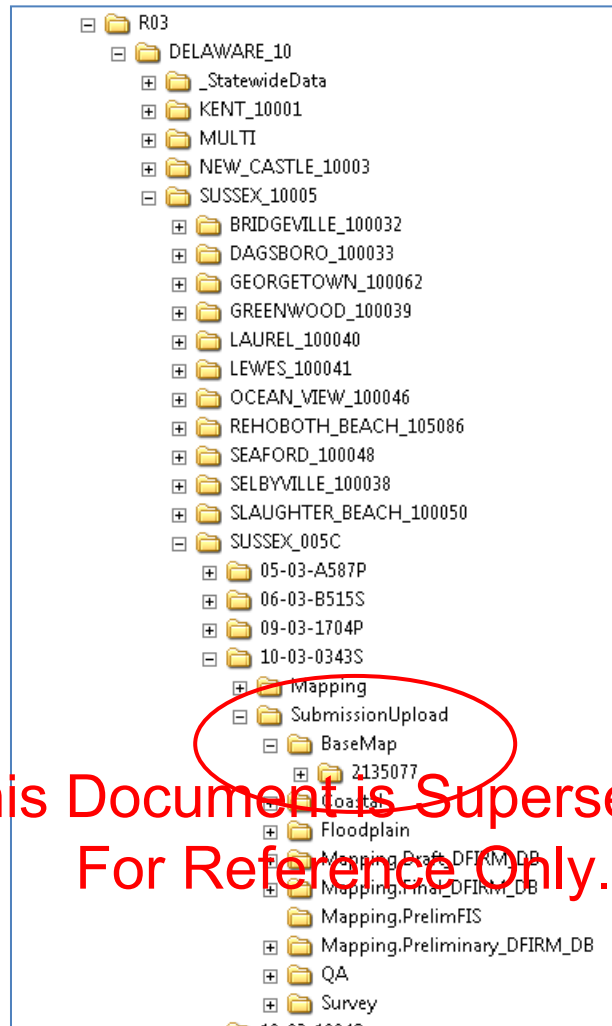


Figure 9: MIP Pre-Defined Directory Structure

6.1 Discovery

Scoping/Task SYSID

HUC-8 (use for Riverine data)

General

- Project Narrative – Word
- Certification – PDF
- Discovery Metadata - XML

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Project_Discovery_Initiation

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- Project Management Team – Word/PDF
- Discovery Report – Word/PDF

Discovery_Meeting

- Meeting Invitations – Word/PDF
- Meeting Agendas/Meeting Minutes – Word/PDF
- Meeting Attendance Records – Word/PDF
- Meeting Summary – Word/PDF
- Project Charter – Word/PDF

Post_Discovery

- Discovery Map – PDF
- SOW or MAS – Word/PDF
- Geospatial Data Summary – Word/PDF

Spatial_Files

- Community Contact List – (DCS_L_Mtg_POC)
DBF/PGDB/fGDB/GML
- Source citations (DCS_L_Source_Cit) MDB/DBF/PGDB/fGDB/GML
- Political Areas (DCS_S_Pol_Ar) – SHP/PGDB/fGDB/GML
- Transportation (DCS_S_Trnsport_Ln) – SHP/PGDB/fGDB/GML
- Discovery Map (DCS_S_Discovery_Map) – SHP/PGDB/fGDB/GML
- Proposed FIRM Panel Index (DCS_S_Prp_FIRMPan) –
SHP/PGDB/fGDB/GML
- HUC (DCS_S_HUC) – SHP/PGDB/fGDB/GML

Supplemental_Data

- All other data collected during Discovery – Format as received

Water_Body_Name/Project_Name (use for coastal data)

General

- Project Narrative – Word
- Certification – PDF
- Discovery Metadata - XML

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Project_Discovery_Initiation

- Project Management Team – Word/PDF
- Discovery Report – Word/PDF
- Political Areas (DCS_S_Pol_Ar) – SHP/PGDB/fGDB/GML
- Transportation (DCS_S_Trnsport_Ln) – SHP/PGDB/fGDB/GML
- HUC (DCS_S_HUC) – SHP/PGDB/fGDB/GML

Discovery_Meeting

- Meeting Invitations – Word/PDF
- Meeting Agendas/Meeting Minutes – Word/PDF

Data Capture Technical Reference

- Meeting Attendance Records – Word/PDF
- Meeting Summary – Word/PDF
- Project Charter – Word/PDF

Post_Discovery

- Discovery Map – PDF
- SOW or MAS – Word/PDF
- Geospatial Data Summary – Word/PDF

Spatial_Files

- Community Contact List – (DCS_L_Mtg_POC)
DBF/PGDB/fGDB/GML
- Source citations (DCS_L_Source_Cit) MDB/DBF/PGDB/fGDB/GML
- Political Areas (DCS_S_Pol_Ar) – SHP/PGDB/fGDB/GML
- Transportation (DCS_S_Trnsport_Ln) – SHP/PGDB/fGDB/GML
- Discovery Map (DCS_S_Discovery_Map) – SHP/PGDB/fGDB/GML
- Proposed FIRM Panel Index (DCS_S_Prpr_FIRMPan) –
SHP/PGDB/fGDB/GML
- HUC (DCS_S_HUC) – SHP/PGDB/fGDB/GML

Supplemental_Data

- All other data collected during Discovery – Format as received

6.2 Base Map

BaseMap/Task SYSID

HUC-8

General

- Project Narrative – Word
- Certification – PDF
- Basemap and/or Orthoimagery Metadata – XML

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Spatial_Files

- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML
- Feature Names– SHP/PGDB/fGDB/GML/text/annotation
- Orthophotos – BIL/BIP/ECW/GeoTIFF/IMG/JPEG2000/MrSID/PNG + PGW/georeferenced JPEG/TIF + TFW

Supplemental_Data

- Any additional Base Map data collected for use in the preparation of this flood risk project – Format as received

This Document is Superseded.
For Reference Only.

6.3 Terrain

Terrain/Task SYSID

General

- Project Narrative – Word
- Certification – PDF
- Flight plans and logs – Word/PDF
- Mapping Partner and independent QA/QC reports – Word/PDF
- Photogrammetric Reports (if applicable) – Format as received
- Terrain Metadata – XML

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Source

Raw_Point_Cloud_Data

- LiDAR Data – LAS/ASCII
- LiDAR Tile Index – SHP/PGDB/fGDB

Classified_Point_Cloud_Data

- LiDAR Data – LAS/ASCII
- LiDAR Tile Index – SHP/PGDB/fGDB

Breaklines

- 3D Breaklines – SHP/PGDB/fGDB/DXF
- 3D Breakline Tile Index – SHP/PGDB/fGDB
- 2D Breaklines – SHP/PGDB/fGDB/DXF
- 2D Breakline Tile Index – SHP/PGDB/fGDB
- Mass Points – SHP/PGDB/fGDB/DXF

Bare_Earth_DEM

- DEMs – Esri grid/GeoTIFF/ASCII grid
- DEM Tile Index – SHP/PGDB/fGDB

Contours

- Contours – SHP/PGDB/fGDB/DXF
- Contour Tile Index – SHP/PGDB/fGDB
- Bathymetric Data – SHP/PGDB/fGDB/DXF
- Bathymetry Tile Index – SHP/PGDB/fGDB

TIN

- Uncorrected TIN Files – Esri ArcGIS
- Terrain – Esri ArcGIS
- TIN Tile Index – SHP/PGDB/fGDB

HDEM

- Hydrologically Corrected DEMs – Esri grid/GeoTIFF/ASCII grid

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For Reference Only.

Data Capture Technical Reference

- Terrain – Esri ArcGIS
- HDEM Tile Index – SHP/PGDB/fGDB

Final

Classified_Point_Cloud_Data

- LiDAR Data – LAS/ASCII
- LiDAR Tile Index – SHP/PGDB/fGDB

Breaklines

- 3D Breaklines – SHP/PGDB/fGDB/DXF
- 3D Breakline Tile Index – SHP/PGDB/fGDB
- 2D Breaklines – SHP/PGDB/fGDB/DXF
- 2D Breakline Tile Index – SHP/PGDB/fGDB
- Mass Points – SHP/PGDB/fGDB/DXF

Bare_Earth_DEM

- DEMs – Esri grid/GeoTIFF/ASCII grid
- DEM Tile Index – SHP/PGDB/fGDB

Contours

- Contours – SHP/PGDB/fGDB/DXF
- Contour Tile Index – SHP/PGDB/fGDB
- Bathymetric Data – SHP/PGDB/fGDB/DXF
- Bathymetry Tile Index – SHP/PGDB/fGDB

This Document is Superseded.
For Reference Only.

TIN

- Uncorrected TIN Files – Esri ArcGIS
- Terrain – Esri ArcGIS
- TIN Tile Index – SHP/PGDB/fGDB

HDEM

- Hydrologically Corrected DEMs – Esri grid/GeoTIFF/ASCII grid
- Terrain – Esri ArcGIS
- HDEM Tile Index – SHP/PGDB/fGDB

Spatial_Files

- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML

Supplemental_Data

- As-built drawings – As received
- GIS representations of structures – As received
- Any additional Terrain data collected for use in the preparation of this flood risk project – Format as received

6.4 Survey

Survey/Task SYSID

HUC-8

General

- Project Narrative – Word
- Certification – PDF
- Survey Metadata – XML

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Photos

- Digital Photographs – JPEG/TIFF/BMP

Sketches

- Digital Sketches – JPEG/TIFF/BMP/PDF

Survey_Data

- Survey Files – MDB/PGDB/fGDB/XLS/XLSX/DBF/ASCII/CSV

Supplemental_Data

- Any additional Survey data collected for use in the preparation of this flood risk project (e.g., survey notebooks, etc.) – Format as received

As-Built

- As-Built Data – Format as received

Spatial_Files

- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML

6.5 Hydrology

Hydrology/Task SYSID

HUC-8

General

- Hydrology Report – Word and PDF
- Draft FIS Section 5.1 – Word and PDF
- Project Narrative – Word
- Certification – PDF
- Hydrology Metadata – XML

Correspondence

Data Capture Technical Reference

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Watershed_Name

Simulations

- Model input and output files – Native format
- Readme file explaining contents of each named file – TXT

Supplemental_Data

- Database file(s) and/or spatial files such as data and analyses for stream and rainfall gages and computations for regional regression equations such as output from USGS PeakFQ, NFF or NSS computer programs – Native format
- Any additional Hydrology data collected for use in the preparation of this flood risk project – Format as received

Spatial_Files

- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML

6.6 Hydraulics

Hydraulics/Task_SYSID

HUC-8

General

- Hydraulics Report – Word and PDF
- Draft FIS Section 5.2 – Word and PDF
- Project Narrative – Word
- Certification – PDF
- Hydraulics Metadata – XML

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Stream_Name (Station)

Simulations

- Model input and output files for all flood frequencies required by the task order and floodway analysis – Native format
- Model input and output files for levee analysis for the 1-percent-annual-chance flood including, if applicable: de-accredited left levee and hold right levee; de-accredited right levee and hold left levee; both levees in place; and both levees de-accredited (for floodway analysis) – Native format
- Model input and output files for levee analyses for all flood frequencies required by the task order [e.g., the 10-, 4-, 2-

Data Capture Technical Reference

(normally with levees in place), 1-, 0.2-(normally without levees) percent-annual-chance floods] – Native format

- Readme file explaining contents of each named file – TXT

Profiles

- Profiles – RASPLOT (MDB)/DXF/DWG

FWDT

- Floodway Data Tables – MDB/XLS/XLSX/DBF
- Flood Hazard Data Tables – MDB/XLS/XLSX/DBF

Supplemental_Data

- Database file(s) and/or spatial files such as high water mark data for model calibration – Native format
- Zone A backup files – Native format
- Any additional Hydraulics data collected for use in the preparation of this flood risk project – Format as received

Spatial_Files

- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML

6.7 Alluvial Fan

AlluvialFan/Task SYSID

HUC-8

General

- Alluvial Fan Technical Report (including Stage 1, Stage 2, and Stage 3 documentation) – Word and PDF
- Draft FIS Section 5.4 – Word and PDF
- Project Narrative – Word
- Certification – PDF
- Alluvial Fan Metadata – XML

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Stream_Name

Simulations

- Model input and output files – Native format
- Readme file explaining contents of each named file – TXT

Profiles

- Profiles – RASPLOT (MDB)/DXF/DWG

Hydraulic_Databases

This Document is Superseded.
For Reference Only.

Data Capture Technical Reference

- Database File(s) – Native format

FAN_Program_Files

- Model input and output files – Native format

Supplemental_Data

- Any additional spatial or non-spatial Alluvial Fan data collected for use in the preparation of this flood risk project – Format as received

Spatial_Files

- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML

6.8 Coastal

Coastal/Task SYSID

Water_Body_Name

Project_Name

General

- ReadMe – simple text document describing the types of documents in the folder and the folder structure
- White Papers, Technical Memos, etc. related to Coastal Analyses and Mapping – Word/DOC
- Draft FIS Coastal Hydrology and Coastal Hydraulic Analysis Sections (typically 5.1 and 5.3) – Word and PDF
- FIS Graphics (e.g., SWEL contour map, transect location map) – PDF/JPEG
- FIS Tables – MDB/XLS/XLSX/DBF
- FIS Coastal Profiles – PDF/JPEG and DXF/DWG
- Project Narrative – Word
- Certification – PDF
- Metadata – XML

Coastal_IDS_1

- Final IDS 1Report – PDF
- IDS 1 QA/QC Tracking forms – Word or XLS/XLSX

Coastal_IDS_2

- Final IDS 2Report – PDF
- IDS 2 QA/QC Tracking forms – Word or XLS/XLSX

Coastal_IDS_3

- Final IDS 3Report – PDF
- IDS 3 QA/QC Tracking forms – Word or XLS/XLSX

Coastal_IDS_4

Data Capture Technical Reference

- Final IDS 4Report – PDF
- IDS 4 QA/QC Tracking forms – Word or XLS/XLSX

Coastal_IDS_5

- Final IDS 5Report – PDF
- IDS 5 QA/QC Tracking forms – Word or XLS/XLSX

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Stillwater_Data

Tidal Water Level Data

- ReadMe – simple text file describing organization and naming convention of files within this directory including data source, units and datum for all raw data files – PDF/TXT
- Graphic showing location and names of stations from which tidal water level data was retrieved – PDF/JPEG
- Historical hourly water level data for each station from which tidal water level data was retrieved – MDB/XLS/XLSX/DBF
- Historical annual maximum water level data for each station from which tidal water level data was retrieved – MDB/XLS/XLSX/DBF

This Document is Superseded
For Reference Only.

High Water Mark Data

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Graphic showing location and names of locations where high water mark data was retrieved – PDF/JPEG
- High water mark data from each location from which high water mark data was retrieved – MDB/XLS/XLSX/DBF
 - If available, any notes or documentation on methods applied to obtain the high water mark data or the quality of individual data points. – PDF

Stillwater_Analysis

Stillwater_Analysis_Approach

- Narrative of approach used to determine water levels for use in performing the FIS (e.g., 2D surge modeling with JPM-OS, 2D modeling for multi-decadal hindcast, desktop analysis for multi-decadal hindcast, etc.) – PDF

Desktop_Hydro_Analysis_Name

Data Capture Technical Reference

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- One fully worked example demonstrating inputs, analysis technique and outputs used for the analysis of water levels – PDF
- Input and output data referenced in the fully worked example – Native format
- Complete analysis input and output for all stations within the study – Native format

2D_Hydro_Modeling_Analysis_Name

Hydro_Model_Geometry

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Final model mesh including nodal elevations, roughness coefficients and all other static boundary conditions assigned. – Native Format
- Final DEM of topography and bathymetry used in model mesh creation – SHP/PGDB/fGDB/GML

This Document is Superseded.
For Reference Only.

Tidal Calibration

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Model input files needed to reproduce final tidal simulations – Native format
- Model output files from final tidal simulations – Native format

Hydro_Historic_Storm_Verification

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Model input files needed to reproduce final storm verification simulations – Native format
- Model output files from final storm verification simulations – Native format

Hydro_Production_Runs

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT

Data Capture Technical Reference

- Model inputs needed to reproduce time varying water level elevations throughout the model domain for each event modeled – Native format
- Model output needed to reproduce results from the statistical analysis – Native format
- Optional additional output from analysis – Native format

Hydro_Statistical_Analysis

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- One fully worked example demonstrating inputs, analysis technique and outputs used to calculate the 0.2% and 1%-annual-chance water levels – PDF
- Input and output data referenced in the fully worked example – Native format

Hydro_Supplemental_Data

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Any additional data used in the water level modeling of this flood risk project – Native format

Hydro_Spatial_Files

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Final 0.2% and 1%-annual-chance surge surfaces used as input for the transect based wave analysis – SHP/PGDB/fGDB/GML

Wave_Analysis

Wave_Analysis_Approach

- Narrative of approach used to determine regional wave conditions for use in performing the FIS (e.g., 2D wave modeling within JPM-OS, 2D wave modeling for multi-decadal hindcast, desktop analysis for multi-decadal hindcast, etc.). Includes explanation of how different ocean/regional/coastal scale wave domains were linked. – PDF

Desktop_Wave_Analysis_Name

This Document is Superseded.
For Reference Only.

Data Capture Technical Reference

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- One fully worked example demonstrating inputs, analysis technique and outputs used for the analysis of regional wave conditions – PDF
- Input and output data referenced in the fully worked example – Native format
- Final analysis output for all locations within the study area – Native format

2D_Wave_Modeling_Analysis_Name

Wave_Model_Geometry

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files. Includes explanation of how different ocean/regional/coastal scale wave domains were linked – PDF/TXT
- Final model mesh including nodal elevations, roughness coefficients and all other static boundary conditions assigned. – Native format

This Document is Superseded.
For Reference Only.

Wave_Historic_Storm_Verification

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files. Includes explanation of how different ocean/regional/coastal scale wave domains were linked – PDF/TXT
- Model input files needed to reproduce final storm verification simulations – Native format
- Model output files from final storm verification simulations – Native format
- Wave data used to compare with model results from the verification runs – Native format

Wave_Production_Runs

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files. Includes explanation of how different ocean/regional/coastal scale wave domains were linked – PDF/TXT
- Model inputs needed to reproduce time varying wave conditions throughout the model domain for each event modeled – Native format
- Model output needed to reproduce results from the statistical analysis – Native format

Data Capture Technical Reference

- Final analysis output for all locations within the study area – Native format
- Data necessary to develop the final 1-percent- and 0.2-percent- annual-chance wave conditions – Native format

Wave_Supplemental_Data

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Any additional data used in the modeling of offshore wave conditions for this flood risk project – Native format

Transect_Based_Wave_Hazard_Analysis

- Narrative of approach used to determine wave hazards – PDF
- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT

Wave_Statistical_Analysis_Event

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- One fully worked example demonstrating inputs, analysis technique and outputs used to determine the input wave conditions for use within the transect based wave analysis – PDF
- Input and output data referenced in the fully worked example – Native format

This Document is Superseded
For Reference Only.

Wave_Hazard_Model_Name

Simulations

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Model/calculation input and output files for wave hazard analyses – Native format
- For response-based studies, one fully worked example demonstrating inputs, analysis technique and outputs used to determine the Total Water Level – PDF
- Wave Envelope Files – PDF and DXF or spatially compatible file

Spatial_Files

- ReadMe – simple text file describing organization and naming convention of files within this directory

Data Capture Technical Reference

- including units and datum for all raw data files – PDF/TXT
- Field survey, land-use and other reference files for 1D wave calculations – Native format
- Topographic and bathymetric datasets if different from 2D_Hydro_Modeling_Analysis_Name\Hydro_Model_Geometry – SHP/PGDB/fGDB/GML
- Spatial files by model including Transect Layout file –SHP/PGDB/fGDB/GML

Supplemental_Data

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Any additional data used in the modeling of wave hazards for this flood risk project – Native format

Spatial_Files

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML

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Coastal_Flood_Risk_Spatial_Files

- ReadMe – simple text file describing organization and naming convention of files within this directory including units and datum for all raw data files – PDF/TXT
- Final coastal Flood Risk Products produced for the study (i.e., depth grids, erosion hazard, etc.) – SHP/PGDB/fGDB/GML
- Maps of coastal final Flood Risk Products produced for the study. – PDF

6.9 Floodplain Mapping / Redelineation

Floodplain/Task SYSID

HUC-8

General

- Draft FIS Report – Word and PDF
- FIS Tables – MDB/XLS/XLSX/DBF
- FIS text overflow for Principal Flood Problems and Special Considerations (if necessary) – TXT
- Project Narrative – Word
- Certification – PDF
- Floodplain/Redelineation Metadata – XML

Data Capture Technical Reference

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Base_Map

- Orthophotos (if not submitted under Base Map) – BIL/GeoTIFF/IMG/JPEG2000/MrSID/PNG + PGW/JPEG/TIF + TFW

Spatial_Files

- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP/PGDB/fGDB/GML

Topographic_Data

- Topographic Data Files (if not submitted under Terrain) – LAS/ASCII/SHP (2D or 3D)/PGDB/fGDB/DXF/Esri Grid/GeoTIFF/ASCII Grid/Esri ArcGIS

Supplemental_Data

- Rectified effective maps and any other data that was used to re-create effective profiles and delineations – Native format

6.10 Draft Mapping Data

Mapping.Draft_DFIRM_DB/Task SYSID

- FIRM Database Draft Metadata – XML
- FIS text overflow for Principal Flood Problems and Special Considerations (if necessary) – TXT
- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP and PGDB

6.11 Preliminary Mapping Data

Note that currently the DFIRM Verification Tool (DVT) requires all data used for verification (i.e., SHP files and metadata) to be in the Task SYSID folder.

Mapping.Preliminary_DFIRM_DB/Task SYSID

- FIRM Database Preliminary Metadata – XML
- FIS text overflow for Principal Flood Problems and Special Considerations (if necessary) – TXT
- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – SHP
- FIRM Database files as described in the *FIRM Database Technical Reference* Table 3 – PGDB

RFIRM

- Preliminary FIRM Panel Images – PDF
- Preliminary FIRM Index Images – PDF

FIS

Data Capture Technical Reference

- Preliminary FIS Report – PDF

Using the MIP Tools & Links >Data Upload >Load Studies Data Artifacts interface, the following Preliminary TSDN information must be uploaded to the MIP K: drive in the SubmissionRepository folder.

TSDN

FIPS

Preliminary_TSDN

General

- Certification forms. – PDF
- Checklists – Word/PDF
- Project Charter (if signed after Discovery) – PDF

Quality_Records

- Pre-QR3Submission Questionnaire and Self-Certification – PDF
- Post-QR3 Confirmation and Self-Certification forms. – PDF
- QR3 and SOMA Checklists, – Word/PDF

FBS

- Preliminary Self-Certification – PDF

**This Document is Superseded.
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SOMA

- Preliminary SOMA documents – Word

6.12 Final Mapping Data

Note that currently the DVT requires all data used for verification (i.e., SHP files and metadata) to be in the Task SYSID folder.

Mapping.Final_DFIRM_DB/Task SYSID

- FIRM Database Final Metadata – XML
- FIS text overflow for Principal Flood Problems and Special Considerations (if necessary) – TXT
- FIRM Database files as described in the FIRM Database Technical Reference Table 3 – SHP
- FIRM Database files as described in the FIRM Database Technical Reference Table 3 – PGDB

RFIRM

- Final georeferenced FIRM Panel *Images* – PNG + PGW/TIF + TFW
- Final georeferenced FIRM Index Image(s) – PNG + PGW/TIF + TFW

Ortho_photos

- Orthoimagery used as base map for FIRMs – BIL/BIP/GeoTIFF/MrSID/PNG + PGW/Georeferenced JPEG/TIF + TFW/ECW/JPEG2000

FIS

Data Capture Technical Reference

- Final FIS Report – Word and Bookmarked PDF
- Profiles – RASPLOT (MDB)/DXF/DWG

MSC_Paperwork

- Transmittal Form – Word
- Transmittal Letters – Word
- Community Map Action List – XLS/XLSX
- Inventory Worksheets – XLS/XLSX

MXD

- FIRM Panel and FIRM Index MXD Files – MXD

FRD_<Project ID>_<YYYYMMDD>

.ZIP files containing the following (note that the FRD Metadata XML file should be included in each of the three .ZIP files):

- .ZIP file containing the FRD fGDB as described in *the Flood Risk Database Technical Reference* (**note** that the depth grids and other rasters are included in the fGDB in addition to being submitted as GeoTIFFs in a separate .ZIP file) – fGDB
- .ZIP file containing the FRD shapefiles as described in the *Flood Risk Database Technical Reference* – SHP
- .ZIP file containing the depth grids and other rasters – GeoTIFF
- FRD Metadata – XML

NR_Index

- Flood Risk Products Index by communities within the FRD dataset – XLS/XLSX (see Appendix F for sample)

FRM

- Flood Risk Map – PDF and MXD

FRR

- Flood Risk Report – PDF and Word

6.13 QA Reports

QA/Task SYSID

FIPS

MIP_Reports

- DVT or other MIP reports, MIPHelp emails, etc. – As received

6.14 Post Preliminary

Using the MIP Tools & Links >Data Upload >Load Studies Data Artifacts interface, the following information must be uploaded to the MIP K: drive in the Submission Repository folder.

The Post Preliminary files must be submitted as a .ZIP file for each of the data categories organized in the following directory structure.

TSDN

Data Capture Technical Reference

FIPS

General

- Final Project Narrative – Word
- Certification – PDF
- Checklists including the TSDN Checklist – Word/PDF
- Project Charter (if signed after Discovery) – PDF

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Quality_Records

- Pre-QR3 Submission Questionnaire and Self-Certification – PDF
- Post-QR3 Confirmation and Self-Certification forms – PDF
- QR3, QR5, QR7, QR8, and SOMA Checklists – Word/PDF
- QR5 Shapefile(s) – SHP
- QR5 and QR7 Passing Reports – Word/PDF

FBS

- Preliminary Self-Certification – PDF
- Final Self-Certification – PDF

FEDD

FEDD files (one file per community) – PDF

**This Document is Superseded.
For Reference Only.**

6.15 Flood Risk Products Data

There is not yet an automatically created pre-defined MIP directory structure for the Flood Risk Products data. Mapping Partners submitting Flood Risk Products data will need to create all of the folders listed below.

Flood_Risk_Data

Project ID

General

- Project Narrative – Word
- Certification – PDF

Correspondence

- Letters; transmittals; memoranda; general status reports and queries; SPRs; technical issues; direction by FEMA; and internal communications, routing slips, and notes – Word/PDF

Flood_Risk_Datasets

CSLF

Data Capture Technical Reference

- Input and output data associated with the Changes Since Last FIRM dataset (not the actual CSLF dataset which is submitted with the FRD) – Native format

FDAG

- Input and output data associated with the Flood Depth and Analysis Grids dataset (not the actual grids which are submitted with the FRD) – Native format

FRA

- Input and output data associated with the Flood Risk Assessment dataset, which include Hazus data (not the actual Risk Assessment dataset which is submitted with the FRD) – Native format (.hpr files for Hazus data)

AOMI

- Input and output data associated with the Areas of Mitigation Interest dataset (not the actual AOMI dataset which is submitted with the FRD) – Native format

Flood_Risk_Products

FRD

- Input and output data associated with the FRD (not the actual FRD which is submitted with the final mapping data) – Native format

FRR

- Input and output data associated with the Flood Risk Report (not the actual FRR which is submitted with the FRD) – Native format

FRM

- Input and output data associated with the Flood Risk Map (not the actual FRM which is submitted with the FRD) – Native format

Supplemental_Data

- Any additional data used to assist in the preparation of this flood risk project – Native format

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Appendix A. File Format Acronyms List

The following acronyms are used in the list of file format(s) shown in the directory structure.

ASCII – American Standard for Information Interchange

BIL – Band Interleaved by Line

BIP – Band Interleaved by Pixel

BMP – Bitmap image file

CSV – Comma Separated Values

DBF – dBase DataBase File

DXF – AutoCAD® Drawing Interchange Format or Drawing Exchange Format

DWG – AutoCAD® DraWinG file

ECW – Intergraph® (ERDAS) Enhanced Compression Wavelet

Esri grid – Esri® raster file format

fGDB – Esri® File Geodatabase

GML – Geographic Markup Language

GeoTIFF – Georeferenced TIFF

IMG – Image file

JPEG/JPEG2000 – Joint Photographic Experts Group

LAS – LASer (ASPRS)

MDB – Microsoft® Access Database

MrSID – LizardTech® Multiresolution Seamless Image Database

MXD – Esri® ArcMap document

PDF – Adobe® Portable Document Format

PGDB – Esri® Personal Geodatabase

PGW – PNG World File

PNG – Portable Network Graphics

SHP – Esri® Shapefile

TFW – TIFF World File

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TIFF – Tagged Image File Format

TIN – Triangulated Irregular Network

TXT – Text file

Word – Microsoft® Word .doc or .docx file format

XLS/XLSX – Microsoft® Excel format

XML – Extensible Markup Language

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Appendix B. Transmittal Form

TRANSMITTAL FORM

1. Point of Contact:

Name of PTS Contractor

Name/Title

Address

Phone Number

Email

Name of Study / CID

Effective Date

2. MSC Deliverables Package:

Transmittal Letter(s)

LFD Letter

Inventory Worksheet

CMAL

RFIRM (PNG w/PGW)

Orthoimagery (w/world files)

FIS Report (PDF)

Metadata (XML)

Shapefiles (SHP w/PRJ)

Geodatabase (PGDB)

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Appendix C. Inventory Worksheet

INVENTORY WORKSHEET		
TWO COLOR? YES: <input type="checkbox"/> NO: <input type="checkbox"/>		PTS: STARR
EFFECTIVE DATE: 11/18/2009		PROGRAM STATUS: R
COMMUNITY NUMBER: 470267		MAPPING PARTNER: AMEC
STATE AND COUNTY NUMBER (FIPS): 47145		COUNTY CODE: 145
COMMUNITY NAME: Roane County*		STATE/REGION: TN/04
COUNTY NAME: Roane County		MSC USE ONLY DATE DIGITAL RECEIVED:
PRINT TYPE NEW: <input type="checkbox"/> REV: <input type="checkbox"/>		

NEW/REVISED FIRMS		STUDY/ FLOODWAYS		OBSOLETE
PANEL & SUFFIX	QTY TO TRANSFER	PANEL & SUFFIX	QTY TO TRANSFER	PANEL & SUFFIX
47145CIND0B		47145CV000B		47145CIND0A
47145C0093G				47145C0093F
47145C0094G				47145C0094F
47145C0113G				47145C0113F
47145C0140G				47145C0140F
47145C0145G				47145C0145F
47145C0160G				47145C0160F
47145C0170G				47145C0170F
47145C0180G				47145C0180F
47145C0185G				47145C0185F
47145C0190G				47145C0190F
47145C0195G				47145C0195F
47145C0205G				47145C0205F
47145C0206G				47145C0206F
47145C0207G				47145C0207F
47145C0210G				47145C0210F
47145C0215G				47145C0215F
47145C0220G				47145C0220F
47145C0226G				47145C0226F

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COMMUNITY MAP ACTION LIST

REVIEW CONTRACTOR: Michael Baker Corp

Effective Date: January 19, 2006

List Number:

State	FIA Community Number	Community Name (County Name)	Printed Panel(s) & Suffix	Inland/Coastal	Hazard	60.3 Code	Program Status	Map Status		Initial Map Date		Printed Floodway Panels	Location of Map Repository	Comments
								FHBM	FIRM	FHBM	FIRM			
MO	290813	Linn County (Unincorporated Areas)		I	FL	D	2	1	3		12/15/83			
MO	290214	City of Brookfield (Linn County)		I	FL	D	2	5	3	02/01/74	07/16/90			
MO	290619	City of Bowling (Linn County)		I	FL	B	2	5	3	02/11/75	05/18/83			
MO	290913	City of Bucklin (Linn County)		I	NF	A	2	1	2					
MO	290557	City of Laclede (Linn County)		I	FL	B	2	4	2	06/25/76				
MO	290563	City of Linneus (Linn County)		I	FL	B	2	4	3	07/11/75				

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Appendix E. Community Map Action List Codes

Community Map Action List Select Category Codes and their Usage

August 2, 2006

The FEMA Map Service Center (MSC) has created this document with the assistance of FEMA's Community Assistance Section to help identify the proper usage of select category codes found on the Community Map Action List (CMAL). The intent of this document is to reduce the data entry errors found on CMALs that are submitted to the MSC as part of the MSC Deliverables Package. The tables provided below correspond to select categories of the CMAL. Each table includes the various codes found in that category and a detailed description of each code's usage.

Column: INLAND/COASTAL – (only one code can be selected for a community):

CMAL Code	Explanation and Usage of Code
I – Inland	Used for inland flooding. Should be used if the 60.3 code shown in the LFD is “b”, “c”, or “d”.
C – Coastal	Used for coastal flooding. Should be used if the 60.3 code shown in the LFD is “e”.
IC – Inland and Coastal	Used if a community is affected by both inland and coastal flooding. Should be used if the 60.3 code shown in the LFD is either “b”, “c”, or “d” and “e”.

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Column: HAZARD – (only one code can be selected for a community):

CMAL Code	Explanation and Usage of Code
“FL” – Flood	Used if the community has SFHAs identified. SFHAs consist of Zones AE, AO, AH, AR, A99, A1-A30, VE, VO, and V1-V30 included on FHBM/FIRM). Do not use this code for communities with only Zones A or V; use “MF” for minimally flood-prone instead.
“MS” – Mudslide	Used if the community is subject to mudslides (Zones M, N, and/or P shown on FHBM/FIRM. Maps may be published or non-published).
“ER” – Erosion	Used if the community is subject to erosion hazards (Zone E shown on FHBM/FIRM).
“NF” – Non-floodprone	Used if the community has no SFHAs identified (Only Zones B, C, or X shown on FHBM/FIRM).
“MF” – Minimally floodprone	Used if the community has only unnumbered/unlettered Zones A or V identified.
“DF” – Undetermined but possible flood hazard	Used if the community has undetermined but possible flood hazards (Zone D shown on FHBM/FIRM. Maps may be published or non-published).

Column: PROGRAM STATUS – (only one code can be selected for a community)

CMAL Code	Explanation and Usage of Code
1 – Emergency	Community participates in the Emergency Program.
2 – Regular	Community participates in the Regular Program.
3 – Not participating, no	Community is non-participating in the NFIP and is not shown on a

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CMAL Code	Explanation and Usage of Code
map	FHBM/FIRM.
4 – Not participating, with map	Community is non-participating in the NFIP and is shown on a FHBM/FIRM.
5 – Withdrew	Community has withdrawn from the NFIP.
6 – Suspended	Community is currently suspended from the NFIP.
7, 8, and 9	Internal codes. Contact MSC before use.

Column: MAP STATUS (FHBM) – (only one code can be selected for a community)

CMAL Code	Explanation and Usage of Code
1 – Never mapped	A FHBM was never produced for the community. Leave the date field on the CMAL blank.
2 – Original	The FHBM is the original for the community. The effective date of the map should be recorded on the CMAL.
3 – Revised	The original FHBM was revised by another FHBM. The revision date of the map should be recorded in the notes section of the CMAL.
4 – Rescinded	The FHBM was rescinded. The date of and reason for the rescission should be recorded in the notes section of the CMAL.
5 – Superseded by FIRM	The FHBM was superseded by a FIRM. The effective date of the FIRM represents the date on which the FHBM was superseded.

Column: MAP STATUS (FIRM) – (only one code can be selected for a community):

CMAL Code	Explanation and Usage of Code
1 – Never mapped	A FIRM has never been produced for the community. Leave the date field on the CMAL blank.
2 – Original	The FIRM represents the first FIRM for the community that contains SFHAs with BFEs. For FIRMs produced in the non-countywide format, the date of the FIRM is identified as “Effective Date” on the title block. This FIRM’s effective date would be listed in CIS under the initial FIRM field.
3 – Revised	The current FIRM for the community is being superseded by a new FIRM (the FIRM is being revised). For FIRMs produced in the non-countywide format, the date of the FIRM is identified as “Map Revised” on the title block. The FIRM must contain SFHAs with BFEs.
4 – Rescinded	The FIRM was rescinded. The date of, and reason for, the rescission should be recorded in the notes section of the CMAL.
5 – All Zone C/X – No published FIRM	The community is participating in the Regular Program as non-flood prone with no published FIRM (identified NSHFA community). This code can be used for non-participating communities; however, they will not be sanctioned after one year if they fail to adopt.
6 – All Zones A & C/X – no elevation determined	The community is either non-participating or participating in the Regular Program as minimally flood-prone and the published FIRMs include only Zones A and C/X.
7 – All Zones A & C/X – original FIRM by letter	The community is participating in the Regular Program as minimally flood-prone and the FHBM was converted to a FIRM by letter. In the rarest of occasions, this code may apply to non-participating communities.
8 – All Zone D – no published FIRM	The community is all Zone D and there is no published FIRM. This code can apply to non-participating or participating communities.

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CMAL Code	Explanation and Usage of Code
9 – All Zone D – with published FIRM	The community is all Zone D with a published FIRM. This code can apply to non-participating or participating communities.
10 – All Zone C/X – with published FIRM	The community is all Zone C/X and a FIRM was published. If used for non-participating communities, they will not be sanctioned after one year if they fail to adopt.

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Appendix F. Flood Risk Products Index Form

A sample Flood Risk Products Index form is shown below. All Regions, states, counties, CIDs, and products associated with the Flood Risk Products submission should be listed.

Flood Risk Products Index

Project ID	87654321
Case Number	12-04-1235S
FEMA Region	04
State FIPS	01 13
FRR	FRR_87654321_20130606.pdf
FRM	FRM_87654321_20130606.pdf
FRD	FRD_87654321_1_GeoDatabase_20130606.zip FRD_87654321_2_GeoDatabase_20130606.zip FRD_87654321_ShapeFiles_20130606.zip FRD_87654321_GeoTIFFS_20130606.zip
County FIPS	12456 13456
FEMA CID	12345C 123456 123455 123466 124893 124897

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