

# Map MODERNIZATION

Federal Emergency Management Agency



**FEMA's Flood Hazard Mapping Program**

# Guidelines and Specifications *for* Flood Hazard Mapping Partners

*Appendix L: Guidance for Preparing  
Draft Digital Data and DFIRM Database*



**FEDERAL EMERGENCY MANAGEMENT AGENCY**

[www.fema.gov/mit/tsd/dl\\_cgs.htm](http://www.fema.gov/mit/tsd/dl_cgs.htm)

**April 2003**

## Appendix L

### Guidance for Preparing Draft Digital Data and DFIRM Database

The following Summary of Changes details revisions of Appendix L subsequent to the initial publication of the *Guidelines* in February 2002. These changes represent new or updated guidance for Flood Hazard Mapping Partners.

| Date       | Affected Section(s) | Summary of Change  |
|------------|---------------------|--|
| April 2003 | Purpose             | Clarified that the FEMA Lead assigns tasks to the Mapping Partner(s).  |
| April 2003 | L.1                 | Corrected typographic errors.  |
| April 2003 | L.1                 | Expanded the description of the Standard and Enhanced DFIRM Databases.   |
| April 2003 | L.1                 | Rearranged table L-1 alphabetically.   |
| April 2003 | L.1                 | Removed L_Riv_Model from table L-1.  |
| April 2003 | L.1                 | Removed duplicate L_Stn_Start from table L-1.  |
| April 2003 | L.1                 | Added the Enhanced DFIRM Database tables to table L-1.   |
| April 2003 | L.1                 | Removed L_Cst_Model from table L-2.  |
| April 2003 | L.1                 | Removed L_Riv_Model from table L-2.  |
| April 2003 | L.1                 | Added the Enhanced DFIRM Database tables to table L-2.   |
| April 2003 | L.1                 | Added a discussion on Database Design Decisions.   |
| April 2003 | L.1.2               | Expanded the discussion on what option Mapping Partners should follow for their submission.  |
| April 2003 | L.1.2               | Corrected section cross-references.  |
| April 2003 | L.1.2               | Clarified that Mapping Partners submitting Draft digital data may use either Preliminary and Final DFIRM Data structure or Draft Digital Data structure. |
| April 2003 | L.1.2               | Corrected typographic errors.  |
| April 2003 | L.2.1               | Corrected typographic error.   |
| April 2003 | L.2.1               | Clarified that the Appendix provides a standard schema.  |
| April 2003 | L.2.4               | Corrected typographic error.   |
| April 2003 | L.2.4               | Clarified the requirements for the study's projection.   |
| April 2003 | L.2.5               | Clarified that the arrangements are made with the FEMA Lead.   |
| April 2003 | L.2.5.3             | Corrected typographic error.   |
| April 2003 | L.2.5.3             | Corrected formatting error.  |
| April 2003 | L.2.5.8             | Added PLSS tables to base map tables that need not follow the DFIRM structure if existing data is used.  |

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| April 2003 | L.2.5.8  | Corrected typographic error.  |
| April 2003 | L.2.5.8  | Modified discussion to explain the relationship between the base map to the flood hazard data.  |
| April 2003 | L.2.5.8  | Removed the flood hazard data tables from Table L-5.  |
| April 2003 | L.2.5.9  | Clarified that attribute tables are required to have a primary key that matches the spatial data table only when attribute data and spatial data are stored in separate files such as with a CADD data format or when attributes for GIS data are stored in a separate RDBMS. |
| April 2003 | L.2.5.9  | Corrected section cross-references.   |
| April 2003 | L.2.5.10 | Added a discussion on Standard and Enhanced required components.  |
| April 2003 | L.2.5.10 | Described the Standard/Enhanced code used L.4 and L.7.  |
| April 2003 | L.2.5.10 | Enhanced discussion of Null values for various data types. Added discussion of “Not Populated” values for situations where data does not follow requirements of specification.  |
| April 2003 | L.2.5.10 | Added discussion of true/false fields in the DFIRM database.  |
| April 2003 | L.2.5.10 | Corrected typographic errors.   |
| April 2003 | L.2.6    | Corrected section cross-references.   |
| April 2003 | L.2.6    | Corrected typographic error.  |
| April 2003 | L.2.7    | Clarified that metadata file is provided in ASCII text format.  |
| April 2003 | L.2.7.2  | Corrected section cross-references.   |
| April 2003 | L.2.7.2  | Corrected typographic error.  |
| April 2003 | L.2.7.2  | Added SID and PNG as acceptable raster formats.   |
| April 2003 | L.2.7.2  | Changed references to orthophotos to the less restrictive description of raster base maps.  |
| April 2003 | L.2.7.2  | Modified the data directory structure.  |
| April 2003 | L.2.8    | Corrected typographic error.  |
| April 2003 | L.2.8    | Corrected structure of metadata file name.  |
| April 2003 | L.3.2.1  | Corrected typographic error.  |
| April 2003 | L.3.2.1  | Corrected section cross-references.   |
| April 2003 | L.3.5    | Corrected section cross-references.   |
| April 2003 | L.3.5.1  | Clarified discussion of Tiling.   |
| April 2003 | L.3.5.2  | Clarified discussion of nodes and vertices for Topology.  |
| April 2003 | L.3.5.3  | Corrected section cross-references.   |
| April 2003 | L.3.5.4  | Corrected section cross-references.   |
| April 2003 | L.3.5.5  | Corrected section cross-references.   |
| April 2003 | L.3.5.6  | Clarified that issues will be resolved the the FEMA Lead.   |
| April 2003 | L.3.5.7  | Corrected section cross-references.   |
| April 2003 | L.3.5.8  | Added PLSS tables to base map tables that need not follow the DFIRM structure if existing data is used. Clarified the tables to which this exception applies.   |
| April 2003 | L.3.5.8  | Modified discussion to explain the relationship between the base map to the flood hazard data.  |
| April 2003 | L.3.5.8  | Removed the flood hazard data tables from Table L-7.  |
| April 2003 | L.3.5.11 | Added a discussion on Standard and Enhanced required components.  |

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|            |                      | components.  |
| April 2003 | L.3.5.11             | Described the Standard/Enhanced code used L.4 and L.7.   |
| April 2003 | L.3.5.11             | Enhanced discussion of Null values for various data types. Added discussion of “Not Populated” values for situations where data does not follow requirements of specification. |
| April 2003 | L.3.5.11             | Corrected typographic error.   |
| April 2003 | L.3.5.11             | Added discussion of true/false fields in the DFIRM database.   |
| April 2003 | L.3.7                | Clarified that the Mapping Partner should submit the FEMA Mapping Information Checklist.   |
| April 2003 | L.3.7                | Clarified that the FIS text should be in PDF format with appropriate bookmarks.  |
| April 2003 | L.3.7.2              | Corrected typographic error.   |
| April 2003 | L.3.7.2              | Changed references to orthophotos to the less restrictive description of raster base maps.   |
| April 2003 | L.3.7.2              | Corrected reference to format of preliminary data files for QA/QC.   |
| April 2003 | L.3.7.2              | Modified the data directory structure.   |
| April 2003 | L.3.8                | Corrected typographic error.   |
| April 2003 | L.3.8                | Corrected structure of metadata file name.   |
| April 2003 | L.4<br>S_BFE         | Corrected typographic error.   |
| April 2003 | L.4<br>S_BFE         | Renamed UNITS_LID field to LEN_LID.  |
| April 2003 | L.4<br>S_CBRS        | Changed CBRS_LID and CBRS_DATE to required if applicable instead of required.  |
| April 2003 | L.4<br>S_CBRS        | Expanded description of the CBRS_TF field.   |
| April 2003 | L.4<br>S_CBRS        | Clarified description of the S_CBRS table.   |
| April 2003 | L.4<br>S_CBRS        | Clarified description of the CBRS_DATE field.  |
| April 2003 | L.4<br>S_Cst_Gage    | Added the S_Cst_Gage table.  |
| April 2003 | L.4<br>S_Cst_Tsct_Ln | Removed CST_MDL_ID.  |
| April 2003 | L.4<br>S_Cst_Tsct_Ln | Added Enhanced attributes.   |
| April 2003 | L.4<br>S_DOQ_Index   | Renamed the S_DOQ_Index table to S_Base_Index.   |
| April 2003 | L.4<br>S_DOQ_Index   | Renamed DOQ_ID field to BASE_ID.   |
| April 2003 | L.4<br>S_DOQ_Index   | Renamed DOQ_DATE field to BASE_DATE.   |
| April 2003 | L.4<br>S_DOQ_Index   | Changed references to orthophotos to the less restrictive description of raster base maps.   |
| April 2003 | L.4<br>S_FIRM_Pan    | Changed the requirement for panels that extend past the administrative boundaries of the area mapped to extend out to the mapped panel neatlines rather than be clipped to the |

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|            |                     | to the mapped panel neatlines rather than be clipped to the boundary of the area mapped.   |
| April 2003 | L.4<br>S_FIRM_Pan   | Changed capitalization of PNP_REASON.  |
| April 2003 | L.4<br>S_Fld_Haz_Ar | Expanded description of SFHA_TF field.   |
| April 2003 | L.4<br>S_Fld_Haz_Ar | Clarified that the units field applies to depths as well as BFEs.  |
| April 2003 | L.4<br>S_Fld_Haz_Ar | Added a DEP_REVERT field to hold a depth value for AR zones that required depths for the reverted zone.  |
| April 2003 | L.4<br>S_Fld_Haz_Ar | Expanded discussion of SOURCE_CIT to say that the flood zones will be divided to track the sources of the most recent revision, but not previous revisions.  |
| April 2003 | L.4<br>S_Fld_Haz_Ar | Renamed UNIT_LID field to LEN_LID.   |
| April 2003 | L.4<br>S_Fld_Haz_Ar | Renamed VEL_UNITS field to VEL_LID.  |
| April 2003 | L.4<br>S_Fld_Haz_Ar | Added Enhanced attributes.   |
| April 2003 | L.4<br>S_Fld_Haz_Ln | Removed the SOURCE_CIT field.  |
| April 2003 | L.4<br>S_Gen_Struct | Changed the field WTR_NM to WTR_LID.   |
| April 2003 | L.4<br>S_Label_Ld   | Corrected typographic error.   |
| April 2003 | L.4<br>S_Label_Pt   | Expanded description of DEGREES field.   |
| April 2003 | L.4<br>S_LOMR       | Clarified that the polygon is the outline shown on the LOMR attachment.  |
| April 2003 | L.4<br>S_LOMR       | Added Enhanced attributes.   |
| April 2003 | L.4<br>S_Nodes      | Added the S_Nodes table.   |
| April 2003 | L.4<br>S_Ovrbnkln   | Added the S_Ovrbnkln table.  |
| April 2003 | L.4<br>S_Perm_Bmk   | Corrected typographic error.   |
| April 2003 | L.4<br>S_PFD_Ln     | Added the S_PFD_Ln table.  |
| April 2003 | L.4<br>S_PLSS_Ar    | Corrected typographic error.   |
| April 2003 | L.4<br>S_PLSS_Ln    | Changed the requirements for PLSS data to be analogous to Transportation and Water features. Existing data used for a DFIRM is not required to be restructured to follow the DFIRM database specification. The table is not required if the data used for the hard copy map is not available for free public distribution by FEMA. |
| April 2003 | L.4                 | Fixed confusion between the COMM_NO and the CID  |

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|            | S_Pol_Ar              | fields. The CID field is the concatenation of the two-digit state FIPs code and COMM_NO.   |
| April 2003 | L.4<br>S_Pol_Ar       | Added text values to use for COMM_NO when local jurisdiction does not apply to an area.    |
| April 2003 | L.4<br>S_Pol_Ar       | Fixed capitalization of POL_NAME1 and POL_NAME2.   |
| April 2003 | L.4<br>S_Pol_Ar       | Expanded description of ANI_TF field.  |
| April 2003 | L.4<br>S_Pol_Ar       | Removed SOURCE_CIT field.  |
| April 2003 | L.4<br>S_Pol_Ar       | Corrected typographic error.   |
| April 2003 | L.4<br>S_Precip_Gage  | Added the S_Precip_Gage table.   |
| April 2003 | L.4<br>S_Profil_Basln | Added the S_Profil_Basln table.  |
| April 2003 | L.4<br>S_Quad         | Renamed table S_Quad to S_Quad_Index.  |
| April 2003 | L.4<br>S_Shore_Ln     | Added the S_Shore_Ln table.  |
| April 2003 | L.4<br>S_Stn_Start    | Added the S_Stn_Start table.   |
| April 2003 | L.4<br>S_Subbasins    | Added the S_Subbasins table.   |
| April 2003 | L.4<br>S_Trnsport_Ln  | Changed NM_TYP field to NM_LID.  |
| April 2003 | L.4<br>S_Trnsport_Ln  | Changed references to orthophotos to the less restrictive description of raster base maps. |
| April 2003 | L.4<br>S_Trnsport_Ln  | Clarified that FEAT_NM1 should also be used for route numbers and "Intercoastal Waterway." |
| April 2003 | L.4<br>S_Water_Gage   | Added the S_Water_Gage.  |
| April 2003 | L.4<br>S_Wtr_Ar       | Changed references to orthophotos to the less restrictive description of raster base maps. |
| April 2003 | L.4<br>S_Wtr_Ar       | Changed reference to table name D_Wtr_Typ to D_Water_Typ.                                  |
| April 2003 | L.4<br>S_Wtr_Ln       | Changed references to orthophotos to the less restrictive description of raster base maps. |
| April 2003 | L.4<br>S_Wtr_Ln       | Changed reference to table name D_Wtr_Typ to D_Water_Typ.                                  |
| April 2003 | L.4<br>S_XS           | Added fields for vertical datum and units that apply to the WSEL_100 field.                |
| April 2003 | L.4<br>S_XS           | Removed field XS_NO.   |
| April 2003 | L.4<br>S_XS           | Renamed WSEL_100 field to WSEL_REG.  |
| April 2003 | L.4                   | Renamed UNITS_LID field to LEN_LID.  |

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|            | S_XS                 |  |
| April 2003 | L.4<br>S_XS          | Corrected typographic error by renaming V_DATUM_LID field to V_DATM_LID.                                 |
| April 2003 | L.4<br>S_XS          | Removed the RIV_MDL_ID field.  |
| April 2003 | L.4<br>S_XS          | Fixed formatting error.  |
| April 2003 | L.4<br>S_XS          | Clarified that XS_LTR can be either a letter or a number.  |
| April 2003 | L.4<br>S_XS          | Added Enhanced attributes.   |
| April 2003 | L.4<br>Study_Info    | Changed the STUDY_PRE field and JURIS_TYP field to required if applicable rather than required.          |
| April 2003 | L.4<br>Study_Info    | Expanded description of OPP_TF field.  |
| April 2003 | L.4<br>Study_Info    | Expanded description of CW_TF field.   |
| April 2003 | L.4<br>Study_Info    | Expanded description of RTROFT_TF field.   |
| April 2003 | L.4<br>Study_Info    | Added META_NM field.   |
| April 2003 | L.4<br>Study_Info    | Removed UNIT_LID from matrix.  |
| April 2003 | L.4<br>Study_Info    | Added Enhanced attributes.   |
| April 2003 | L.4<br>L_Aux_Data    | Added the S_Aux_Data table.  |
| April 2003 | L.4<br>L_Case_Info   | Added the S_Case_Info table.   |
| April 2003 | L.4<br>L_Comm_Info   | Clarified that all communities within the area of study are included in the table.                       |
| April 2003 | L.4<br>L_Comm_Info   | Changed REPOS_ADR2 to required if applicable rather than required.                                       |
| April 2003 | L.4<br>L_Comm_Info   | Expanded description of REPOS_ST.  |
| April 2003 | L.4<br>L_Comm_Info   | Expanded description of IN_ID_DAT field.   |
| April 2003 | L.4<br>L_Comm_Info   | Expanded description of IN_NFIP_DT field.  |
| April 2003 | L.4<br>L_Comm_Info   | Expanded description of IN_FRM_DAT field.  |
| April 2003 | L.4<br>L_Comm_Info   | Expanded description of IN_RECENT_DAT field.   |
| April 2003 | L.4<br>L_Cst_Model   | Removed from Standard. Existing attributes and additional attributes were added as part of the Enhanced. |
| April 2003 | L.4<br>L_Hydra_Model | Added the L_Hydra_Model table.   |

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| April 2003 | L.4<br>L_Hydro_Model  | Added the L_Hydro_Model table.   |
| April 2003 | L.4<br>L_Media        | Added the L_Media table.   |
| April 2003 | L.4<br>L_MT1_LOMC     | Added a value of “redetermined” for LOMCs included in Draft Digital Data submissions.  |
| April 2003 | L.4<br>L_MT1_LOMC     | Changed the description of the FIRM_PAN field so that it is not described as a foreign key.  |
| April 2003 | L.4<br>L_Node_Disch   | Added the L_Node_Disch table.  |
| April 2003 | L.4<br>L_Pan_Revis    | Added REVIS_ID field as primary key.   |
| April 2003 | L.4<br>L_Pan_Revis    | Changed description of FIRM_PAN field so that it is not described as a primary key.  |
| April 2003 | L.4<br>L_Pol_FHBM     | Changed the name of the COMM_NO field to CID to remain consistent with the S_Pol_Ar table.   |
| April 2003 | L.4<br>L_Pol_FHBM     | Added FHBM_ID as a primary key.  |
| April 2003 | L.4<br>L_Pol_FHBM     | Changed description of CID so that it is not described as a primary key.   |
| April 2003 | L.4<br>L_Regression   | Added the L_Regression table.  |
| April 2003 | L.4<br>L_Riv_Model    | Removed the L_Riv_Model table.   |
| April 2003 | L.4<br>L_Stn_Start    | Clarified that multiple reaches can share the same entry.  |
| April 2003 | L.4<br>L_Stn_Start    | Added a requirement to include units of measure in the start description.  |
| April 2003 | L.4<br>L_Stn_Start    | Removed the SOURCE_CIT field.  |
| April 2003 | L.4<br>L_Storm_Curve  | Added the L_Storm_Curve table.   |
| April 2003 | L.4<br>L_Storm_Info   | Added the L_Storm_Info table.  |
| April 2003 | L.4<br>L_Subbas_Disch | Added the L_Subbas_Disch table.  |
| April 2003 | L.4<br>L_Wtr_Nm       | Removed L_Cst_Model table and L_Riv_Model table from WTR_NM_LID field’s description.   |
| April 2003 | L.4<br>L_XS_Ratings   | Added the L_XS_Ratings table.  |
| April 2003 | L.4                   | Replaced the previous chart showing table structure in Microsoft Access with detailed table structure for Microsoft Access, ESRI Shapefile, ESRI Coverage and MapInfo table formats for all tables.                          |
| April 2003 | L.4                   | Removed acceptable domain values from this section and replaced them with detailed table structure for Microsoft Access, ESRI Shapefile, ESRI Coverage and MapInfo table formats. Added a new Section L.9 listing acceptable |



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|            |                          | values for all standardized domains.   |
| April 2003 | L.4                      | Some domain tables had additional values added and typographic corrections made. |
| April 2003 | L.4<br>D_Area_Units      | Added the D_Area_Units table.  |
| April 2003 | L.4<br>D_CBRS_Typ        | Corrected typographic error.   |
| April 2003 | L.4<br>D_Discharge_Units | Added the D_Discharge_Units table.   |
| April 2003 | L.4<br>D_Eros_Method     | Added the D_Eros_Method table.   |
| April 2003 | L.4<br>D_Frequency       | Added the D_Frequency table.   |
| April 2003 | L.4<br>D_Gage            | Added the D_Gage table.  |
| April 2003 | L.4<br>D_Label_Typ       | Corrected typographic error.   |
| April 2003 | L.4<br>D_Ln_Typ          | Corrected typographic error.   |
| April 2003 | L.4<br>D_Ln_Typ          | Capitalized 'pct' in LN_TYP field description and domain values.                 |
| April 2003 | L.4<br>D_Ln_Typ          | Added a discussion regarding the lines for SFHA boundaries.                      |
| April 2003 | L.4<br>D_Ln_Typ          | Added line type MEANDER to precedence for PLSS data.                             |
| April 2003 | L.4<br>D_Method          | Added the D_Method table.  |
| April 2003 | L.4<br>D_Nodes           | Added the D_Nodes table.   |
| April 2003 | L.4<br>D_Runup_Mdl       | Added the D_Runup_Mdl table.   |
| April 2003 | L.4<br>D_Shr_Rough       | Added the D_Shr_Rough table.   |
| April 2003 | L.4<br>D_Shr_Typ         | Added the D_Shr_Typ table.   |
| April 2003 | L.4<br>D_Storms          | Added the D_Storms table.  |
| April 2003 | L.4<br>D_Surge_Mdl       | Added the D_Surge_Mdl table.   |
| April 2003 | L.4<br>D_Time_Units      | Added the D_Time_Units table.  |
| April 2003 | L.4<br>D_Trans_Typ       | Added discussion on when the value undefined should be used.                     |
| April 2003 | L.4<br>D_Units           | Replaced with D_Length_Units.  |
| April 2003 | L.4<br>D_Velocity_Units  | Added the D_Velocity_Units table.  |

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| April 2003 | L.4<br>D_Volume_Units | Added the D_Volume_Units table.   |
| April 2003 | L.4<br>D_VZone        | Added the D_VZone table.  |
| April 2003 | L.4<br>D_Water_Typ    | Increased the width of the WATER_TYP field.                                   |
| April 2003 | L.4<br>D_Wave_Mdl     | Added the D_Wave_Mdl table.   |
| April 2003 | L.4<br>D_Zone         | Corrected typographic errors.   |
| April 2003 | L.4<br>D_Zone         | Capitalized 'pct' in FLD_ZONE field description and domain values.            |
| April 2003 | L.5                   | Corrected typographic error.  |
| April 2003 | L.5                   | Added SID and PNG to list of raster data formats.                             |
| April 2003 | L.6                   | Modified the metadata to be processed by mp with fewer errors.                |
| April 2003 | L.6                   | Removed "Right of ways" as a format for road data.                            |
| April 2003 | L.6                   | Removed L_Riv_Model from the tables in the data set.                          |
| April 2003 | L.6                   | Changed metadata file name.   |
| April 2003 | L.6                   | Added indents to clarify data structure relative to FGDC metadata standards.  |
| April 2003 | L.7<br>S_Base_Index   | Corrected typographic error.  |
| April 2003 | L.7<br>S_BFE          | Renamed UNITS field to LEN_UNIT.  |
| April 2003 | L.7<br>S_BFE          | Corrected typographic error.  |
| April 2003 | L.7<br>S_CBRS         | Changed CBRS_TYP and CBRS_DATE to required if applicable instead of required. |
| April 2003 | L.7<br>S_CBRS         | Expanded description of the CBRS_TF field.                                    |
| April 2003 | L.7<br>S_CBRS         | Clarified description of the S_CBRS table.                                    |
| April 2003 | L.7<br>S_CBRS         | Clarified description of the CBRS_DATE field.                                 |
| April 2003 | L.4<br>S_Cst_Gage     | Added the S_Cst_Gage table.   |
| April 2003 | L.7<br>S_Cst_Tsct_Ln  | Removed CST_MDL_ID field.   |
| April 2003 | L.7<br>S_Cst_Tsct_Ln  | Added Enhanced attributes.  |
| April 2003 | L.7<br>S_DOQ_Index    | Renamed the S_DOQ_Index table to S_Base_Index.                                |
| April 2003 | L.7<br>S_DOQ_Index    | Renamed DOQ_ID field to BASE_ID.  |
| April 2003 | L.7<br>S_DOQ_Index    | Renamed DOQ_DATE field to BASE_DATE.  |

|            |                     |   |
|------------|---------------------|---|
| April 2003 | L.7<br>S_DOQ_Index  | Changed references to orthophotos to the less restrictive description of raster base maps.  |
| April 2003 | L.7<br>S_FIRM_Pan   | Changed the requirement for panels that extend past the administrative boundaries of the area mapped to extend out to the mapped panel neatlines rather than be clipped to the boundary of the area mapped. |
| April 2003 | L.7<br>S_FIRM_Pan   | Changed capitalization of PNP_REASON.   |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Corrected typographic error.  |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Capitalized 'pct' in FLD_ZONE field description.  |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Expanded description of SFHA_TF field.  |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Renamed UNITS field to LEN_UNIT.  |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Clarified that the units field applies to depths as well as BFEs.   |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Renamed VEL_UNITS to VEL_UNIT.  |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Added a DEP_REVERT field to hold a depth value for AR zones that required depths for the reverted zone.   |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Expanded discussion of SOURCE_CIT to say that the flood zones will be divided to track the sources of the most recent revision, but not previous revisions.   |
| April 2003 | L.7<br>S_Fld_Haz_Ar | Added Enhanced attributes.  |
| April 2003 | L.7<br>S_Fld_Haz_Ln | Corrected typographic error.  |
| April 2003 | L.7<br>S_Fld_Haz_Ln | Removed the SOURCE_CIT field.   |
| April 2003 | L.7<br>S_Label_Ld   | Corrected typographic error.  |
| April 2003 | L.7<br>S_Label_Pt   | Expanded description of DEGREES field.  |
| April 2003 | L.7<br>S_LOMR       | Clarified that the polygon is the outline shown on the LOMR attachment.   |
| April 2003 | L.7<br>S_LOMR       | Added Enhanced attributes.  |
| April 2003 | L.7<br>S_Nodes      | Added the S_Nodes table.  |
| April 2003 | L.7<br>S_Ovrbnkln   | Added the S_Ovrbnkln table.   |
| April 2003 | L.7<br>S_Perm_Bmk   | Corrected typographic error.  |
| April 2003 | L.7<br>S_PFD_Ln     | Added the S_PFD_Ln table.   |

|            |                       |  |
|------------|-----------------------|--|
| April 2003 | L.7<br>S_PLSS_Ar      | Changed the requirements for PLSS data to be analogous to Transportation and Water features. Existing data used for a DFIRM is not required to be restructured to follow the DFIRM database specification. The table is not required if the data used for the hard copy map is not available for free public distribution by FEMA. |
| April 2003 | L.7<br>S_PLSS_Ar      | Corrected typographic errors.  |
| April 2003 | L.7<br>S_PLSS_Ln      | Changed the requirements for PLSS data to be analogous to Transportation and Water features. Existing data used for a DFIRM is not required to be restructured to follow the DFIRM database specification. The table is not required if the data used for the hard copy map is not available for free public distribution by FEMA. |
| April 2003 | L.7<br>S_PLSS_Ln      | Corrected typographic errors.  |
| April 2003 | L.7<br>S_Pol_Ar       | Fixed confusion between the COMM_NO and the CID fields. The CID field is the concatenation of the two digit state FIPs code and COMM_NO.   |
| April 2003 | L.7<br>S_Pol_Ar       | Added text values to use for COMM_NO when local jurisdiction does not apply to an area.  |
| April 2003 | L.7<br>S_Pol_Ar       | Fixed capitalization of POL_NAME1 and POL_NAME2.   |
| April 2003 | L.7<br>S_Pol_Ar       | Expanded description of ANI_TF field.  |
| April 2003 | L.7<br>S_Pol_Ar       | Removed SOURCE_CIT field.  |
| April 2003 | L.7<br>S_Pol_Ar       | Corrected typographic error.   |
| April 2003 | L.7<br>S_Precip_Gage  | Added the S_Precip_Gage table.   |
| April 2003 | L.7<br>S_Profil_Basln | Added the S_Profil_Basln table.  |
| April 2003 | L.7<br>S_Quad         | Renamed table S_Quad to S_Quad_Index.  |
| April 2003 | L.7<br>S_Shore_Ln     | Added the S_Shore_Ln table.  |
| April 2003 | L.7<br>S_Stn_Start    | Added the S_Stn_Start table.   |
| April 2003 | L.7<br>S_Subbasins    | Added the S_Subbasins table.   |
| April 2003 | L.7<br>S_Trnsport_Ln  | Changed references to orthophotos to the less restrictive description of raster base maps.   |
| April 2003 | L.7<br>S_Trnsport_Ln  | Clarified that FEAT_NM1 should also be used for route numbers and "Intercoastal Waterway."   |
| April 2003 | L.7<br>S_Trnsport_Ln  | Corrected typographic error.   |
| April 2003 | L.7<br>S_Water_Gage   | Added the S_Water_Gage table.  |

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| April 2003 | L.7<br>S_Wtr_Ar    | Increased the width of the WATER_TYP field.   |
| April 2003 | L.7<br>S_Wtr_Ar    | Changed references to orthophotos to the less restrictive description of raster base maps.      |
| April 2003 | L.7<br>S_Wtr_Ar    | Changed reference to table name D_Wtr_Typ to D_Water_Typ.                                       |
| April 2003 | L.7<br>S_Wtr_Ln    | Increased the width of the WATER_TYP field.   |
| April 2003 | L.7<br>S_Wtr_Ln    | Changed references to orthophotos to the less restrictive description of raster base maps.      |
| April 2003 | L.7<br>S_Wtr_Ln    | Changed reference to table name D_Wtr_Typ to D_Water_Typ.                                       |
| April 2003 | L.7<br>S_XS        | Added fields for vertical datum and units that apply to the WSEL_100 field.                     |
| April 2003 | L.7<br>S_XS        | Removed field XS_NO.  |
| April 2003 | L.7<br>S_XS        | Renamed WSEL_100 field to WSEL_REG.   |
| April 2003 | L.7<br>S_XS        | Renamed UNITS field to LEN_UNIT.  |
| April 2003 | L.7<br>S_XS        | Removed the RIV_MDL_ID field.   |
| April 2003 | L.7<br>S_XS        | Fixed formatting error.   |
| April 2003 | L.7<br>S_XS        | Clarified that XS_LTR can be either a letter or a number.                                       |
| April 2003 | L.7<br>S_XS        | Added Enhanced attributes.  |
| April 2003 | L.7<br>Study_Info  | Changed the STUDY_PRE field and JURIS_TYP field to required if applicable rather than required. |
| April 2003 | L.7<br>Study_Info  | Expanded description of OPP_TF field.   |
| April 2003 | L.7<br>Study_Info  | Expanded description of CW_TF field.  |
| April 2003 | L.7<br>Study_Info  | Expanded description of RTROFT_TF field.  |
| April 2003 | L.7<br>Study_Info  | Added META_NM field.  |
| April 2003 | L.7<br>Study_Info  | Removed UNITS from the matrix.  |
| April 2003 | L.7<br>Study_Info  | Added Enhanced attributes.  |
| April 2003 | L.7<br>L_Aux_Data  | Added the L_Aux_Data table.   |
| April 2003 | L.7<br>L_Case_Info | Added the L_Case_Info table.  |
| April 2003 | L.7                | Removed from Standard. Existing attributes and additional                                       |

|            |                      |   |
|------------|----------------------|---|
|            | L_Cst_Model          | attributes were added as part of the Enhanced.  |
| April 2003 | L.7<br>L_Comm_Info   | Clarified that all communities within the area of study are included in the table.          |
| April 2003 | L.7<br>L_Comm_Info   | Changed REPOS_ADR2 to required if applicable rather than required.                          |
| April 2003 | L.7<br>L_Comm_Info   | Expanded description of REPOS_ST.   |
| April 2003 | L.7<br>L_Comm_Info   | Expanded description of IN_ID_DAT field.  |
| April 2003 | L.7<br>L_Comm_Info   | Expanded description of IN_NFIP_DT field.   |
| April 2003 | L.7<br>L_Comm_Info   | Expanded description of IN_FRM_DAT field.   |
| April 2003 | L.7<br>L_Comm_Info   | Expanded description of IN_RECENT_DAT field.  |
| April 2003 | L.7<br>L_Hydra_Model | Added the L_Hydra_Model table.  |
| April 2003 | L.7<br>L_Hydro_Model | Added the L_Hydro_Model table.  |
| April 2003 | L.7<br>L_Media       | Added the L_Media table.  |
| April 2003 | L.7<br>L_MT1_LOMC    | Added a value of “redetermined” for LOMCs included in Draft Digital Data submissions.       |
| April 2003 | L.7<br>L_MT1_LOMC    | Changed the description of the FIRM_PAN field so that it is not described as a foreign key. |
| April 2003 | L.7<br>L_Node_Disch  | Added the L_Node_Disch table.   |
| April 2003 | L.7<br>L_Pan_Revis   | Added REVIS_ID field as primary key.  |
| April 2003 | L.7<br>L_Pan_Revis   | Changed description of FIRM_PAN field so that it is not described as a primary key.         |
| April 2003 | L.7<br>L_Pol_FHBM    | Changed the name of the COMM_NO field to CID to remain consistent with the S_Pol_Ar table.  |
| April 2003 | L.7<br>L_Pol_FHBM    | Added FHBM_ID as a primary key.   |
| April 2003 | L.7<br>L_Pol_FHBM    | Changed description of CID so that it is not described as a primary key.                    |
| April 2003 | L.7<br>L_Regression  | Added the L_Regression table.   |
| April 2003 | L.7<br>L_Riv_Model   | Removed the L_Riv_Model table.  |
| April 2003 | L.7<br>L_Stn_Start   | Clarified that multiple reaches can share the same entry.                                   |
| April 2003 | L.7<br>L_Stn_Start   | Added a requirement to include units of measure in the start description.                   |
| April 2003 | L.7<br>L_Stn_Start   | Removed the SOURCE_CIT field.   |

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|------------|-----------------------|---|
| April 2003 | L.7<br>L_Storm_Curve  | Added the L_Storm_Curve table.  |
| April 2003 | L.7<br>L_Storm_Info   | Added the L_Storm_Info table.   |
| April 2003 | L.7<br>L_Subbas_Disch | Added the L_Subbas_Disch table.   |
| April 2003 | L.7<br>L_XS_Ratings   | Added the L_XS_Ratings table.   |
| April 2003 | L.7                   | Replaced the previous chart showing table structure in Microsoft Access with detailed table structure for Microsoft Access, ESRI Shapefile, ESRI Coverage and MapInfo table formats for all tables. |
| April 2003 | L.8                   | Modified the metadata to be processed by mp with fewer errors.  |
| April 2003 | L.8                   | Removed L_Riv_Model from the tables in the data set.  |
| April 2003 | L.8                   | Changed metadata file name.   |
| April 2003 | L.8                   | Added indents to clarify data structure relative to FGDC metadata standards.  |
| April 2003 | L.9                   | Added a new section, Section L.9, listing acceptable values for all standardized domains.   |
| April 2003 | L.9                   | Some domain tables had additional values added and typographic corrections made.  |
| April 2003 | L.9                   | Domain tables for the Enhanced attributes were added.   |

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## **Appendix L**

### **Draft Digital Data and Digital Flood Insurance Rate Map Database Specifications**

The purpose of this Appendix is to provide guidance and specifications to the Mapping Partner that prepares draft digital data for Digital Flood Insurance Rate Map (DFIRM) production and the Mapping Partner that prepares the Preliminary and Final DFIRM and databases for transfer to the Federal Emergency Management Agency (FEMA). For a particular Flood Map Project, the FEMA Lead may assign both tasks to one Mapping Partner or each task to different Mapping Partners. This Appendix is not intended to specify in-process compilation or digitizing procedures, but rather to present specifications and requirements for output and deliverables.

#### **L.1 Digital Flood Insurance Rate Map Database Overview**

The FEMA Geographic Information System (GIS) databases will store the digital data used in the map production process, as well as the engineering backup data for floodplain studies. These databases will provide a standard, systematic method for FEMA to distribute comprehensive details of flood studies to the public and others in a digital format.

Preparing these data in digital format has significant advantages. Digital data allow for more efficient storage, update, records search and distribution. The most significant advantage is that the data are designed to work within a GIS environment. This means that the FEMA database can be used for automated analyses that are costly and impractical with paper products and is compatible with Internet applications.

FEMA will collect as much data as possible in digital format, and archive the data in the GIS database for each DFIRM created. For publication of these data, FEMA will provide two versions of the DFIRM database. The simplified version is called the Standard DFIRM Database. The Standard DFIRM Database is provided to end users who do not require the complete engineering backup data; however, it is not intended to limit the scope of the GIS data collected and submitted to FEMA. The full GIS database that contains all of the available flood study information is called the Enhanced DFIRM Database

The Standard DFIRM Database was designed to present the effective flood hazard information published by FEMA. Users who only need to know whether a structure is in or out of the Special Flood Hazard Area (SFHA), or what the base flood elevation is for a location will be able to use the Standard DFIRM Database. Users who want to reference the engineering analyses or utilize any of the supporting data behind the effective flood hazard data will need to use the Enhanced DFIRM Database.

This Appendix includes the specification for the Standard DFIRM Database and the core elements of the Enhanced DFIRM Database. All of the Standard DFIRM Database information is contained within the Enhanced DFIRM Database. In the sections below that detail the database structure, some database fields and some database tables are identified as “Enhanced”. That means these fields or tables are only included with full GIS database that is built for a particular study. They are not included in the easier to use version, the Standard DFIRM Database, that is also available for the same study.

The amount of data that will be captured digitally and stored in the Enhanced DFIRM Database will vary for each flood study. In general, the production of any digital map will result in a complete Standard DFIRM Database. However, most studies will also have some additional data that will be stored in the Enhanced DFIRM Database. Even studies where existing effective flood hazard analyses are used to produce updated digital maps may include easily accessible elements of the Enhanced DFIRM Database. For new studies where new flood hazard analyses are performed, the core elements of the Enhanced Database described will be populated. For each digital map update undertaken, the Mapping Partner should coordinate with the FEMA Lead to determine how much of the Enhanced DFIRM Database should be completed.

For Preliminary or Final DFIRMs, all of the tables in the DFIRM database are required if they apply to the DFIRM being created. Some tables, like those that depict coastal features, do not apply to every DFIRM. The Mapping Partner that creates the DFIRM shall ensure that all of the applicable tables in the DFIRM database have been completed and documented in the metadata. Generally, the DFIRM database for a new DFIRM will cover the entire jurisdiction. Detailed specifications for the Preliminary or Final DFIRM database are provided in Section L.3. A summary of the standard DFIRM database tables is provided in Table L-1.

**Table L-1. DFIRM Database Table Summary**

| <b>DFIRM Table Name</b> | <b>Table Type</b> | <b>Table Description</b>   |
|-------------------------|-------------------|--|
| L_Aux_Data              | Lookup            | Information about auxiliary data.  |
| L_Case_Info             | Lookup            | Information about data specific to the study.  |
| L_Comm_Info             | Lookup            | Information about each community on the DFIRM  |
| L_Cst_Model             | Lookup            | Information about coastal models used in the engineering analysis.                                   |
| L_Hydra_Model           | Lookup            | Information about hydraulic models used in the engineering analysis.                                 |
| L_Hydro_Model           | Lookup            | Information about hydrologic models used in the engineering analysis.                                |
| L_Media                 | Lookup            | Information about archived media that is linked to a spatial object.                                 |
| L_MT1_LOMC              | Lookup            | Information about LOMCs on the DFIRM   |
| L_Node_Disch            | Lookup            | Information about hydrologic routing.  |
| L_Pan_Revis             | Lookup            | Information about revisions to each FIRM panel   |
| L_Pol_FHBM              | Lookup            | Information about revisions to FHBM for each community   |
| L_Regression            | Lookup            | Information about regression equations utilized in the hydrologic modeling.                          |
| L_Stn_Start             | Lookup            | Location and attributes for starting points for stream distance measurements                         |
| L_Storm_Curve           | Lookup            | Information about Depth-Duration-Frequency and Intensity-Duration-Frequency relationships.           |
| L_Storm_Info            | Lookup            | Information about basic precipitation patterns.  |
| L_Subbas_Disch          | Lookup            | Information about outflow data for each subbasin and recurrence interval in the hydrologic analysis. |
| L_Wtr_Nm                | Lookup            | Information about hydrographic features on the DFIRM   |
| L_XS_Ratings            | Lookup            | Information about cross sections.  |
| S_Base_Index            | Spatial           | Location and attributes for a tiling index for raster data used for the DFIRM                        |
| S_BFE                   | Spatial           | Location and attributes for base flood elevations lines shown on DFIRM                               |
| S_CBRS                  | Spatial           | Location and attributes for Coastal Barrier Resource System units on the DFIRM                       |
| S_Cst_Gage              | Spatial           | Location and attributes for the coastal gages for the study area.                                    |
| S_Cst_Tsct_Ln           | Spatial           | Location and attributes for coastal transect lines shown on the DFIRM                                |
| S_FIRM_Pan              | Spatial           | Location and attributes for DFIRM hardcopy map panels  |
| S_Fld_Haz_Ar            | Spatial           | Location and attributes for flood insurance risk zones on the DFIRM                                  |
| S_Fld_Haz_Ln            | Spatial           | Location and attributes for boundaries of flood insurance risk zones on the DFIRM                    |
| S_Gen_Struct            | Spatial           | Location and attributes for flood control structures shown on the DFIRM                              |
| S_Label_Ld              | Spatial           | Location and attributes for leader lines on transportation and hydrography labels shown on the DFIRM |
| S_Label_Pt              | Spatial           | Location and attributes for transportation and hydrography labels shown on the DFIRM                 |
| S_LOMR                  | Spatial           | Location and attributes for LOMRs on the DFIRM   |
| S_Nodes                 | Spatial           | Location and attributes of points used to define the topology of the hydrologic network.             |
| S_OvrbnkLn              | Spatial           | Location and attributes for the overbank flow lines features for the study area.                     |
| S_Perm_Bmk              | Spatial           | Location and attributes for bench marks on the DFIRM   |
| S_PFD_Ln                | Spatial           | Location and attributes for the primary frontal dune features for the coastal study area.            |
| S_PLSS_Ar               | Spatial           | Location and attributes of sections, townships and ranges on the DFIRM                               |
| S_PLSS_Ln               | Spatial           | Location and attributes section lines, township lines and range lines on                             |

|                |             |   |
|----------------|-------------|---|
|                |             | the DFIRM   |
| S_Pol_Ar       | Spatial     | Location and attributes for political jurisdictions shown on the DFIRM                            |
| S_Pol_Ln       | Spatial     | Location and attributes for political boundaries shown on the DFIRM                               |
| S_Precip_Gage  | Spatial     | Location and attributes for rain gages used in developing the hydrologic analysis.                |
| S_Profil_BasLn | Spatial     | Location and attributes for profile baseline and stream centerline features for the study area.   |
| S_Quad_Index   | Spatial     | Location and attributes for USGS quadrangle maps covering the DFIRM area                          |
| S_Riv_Mrk      | Spatial     | Location and attributes for river mile markers shown on the DFIRM                                 |
| S_Shore_Ln     | Spatial     | Location and attributes for the shoreline used in the coastal flood hazard model.                 |
| S_Stn_Start    | Spatial     | Location and attributes for station points.   |
| S_Subbasins    | Spatial     | Location and attributes for subbasins in the hydrologic analysis.                                 |
| S_Trnsport_Ln  | Spatial     | Location and attributes for roads, railroads and other transportation features shown on the DFIRM |
| S_Water_Gage   | Spatial     | Location and attributes for non-rain gages used in developing the hydrologic analysis.            |
| S_Wtr_Ar       | Spatial     | Location and attributes for hydrography features shown on DFIRM                                   |
| S_Wtr_Ln       | Spatial     | Location and attributes for hydrography features shown on DFIRM                                   |
| S_XS           | Spatial     | Location and attributes for cross-section lines in the area covered by the DFIRM                  |
| Study_Info     | Non-Spatial | General information about the DFIRM   |

Mapping Partners that are assigned other tasks for a Flood Map Project will normally produce draft study components and draft DFIRM digital data. For Mapping Partners that create draft DFIRM digital data, not all the tables in the DFIRM database will apply. These Mapping Partners will often only submit data that cover the geographic area of their work. The tables that are applicable to a specific Flood Map Project will vary, depending on the specific scope of that activity. Table L-2 presents the DFIRM database tables that apply to specific components of a Flood Map Project. The scope of a particular project could include several of these activities and, therefore, all of the tables from each of the activities involved in the project will likely apply. Most Flood Map Projects will include the requirement of a digital base map that meets the requirements as outlined in Appendix K of these Guidelines.



**Table L-2. Mapping Partner Activity Table**

| Digital FIRM Preparation | Digital FIRM Maintenance | Hydrologic and Hydraulic Analyses and Floodplain Mapping | Redelineation of Floodplain Boundaries Using Updated Topographic Data | Refinement of Approximate Zone A Boundaries | Digital Topographic Data Development | Coastal Hazard Analyses and Floodplain Mapping | Digital Base Map Development |
|--------------------------|--------------------------|--|---|---|--------------------------------------|--|------------------------------|
| L_Aux_Data               | L_Aux_Data               | L_Aux_Data   | L_Aux_Data  | L_Wtr_Nm                                    | S_Perm_Bmk                           | L_Aux_Data                                     | L_Wtr_Nm                     |
| L_Case_Info              | L_Case_Info              | L_Case_Info  | L_Case_Info   | S_Fld_Haz_Ar                                |                                      | L_Cst_Model                                    | S_Base_Index                 |
| L_Comm_Info              | L_Comm_Info              | L_Hydra_Model  | L_Hydra_Model   | S_Fld_Haz_Ln                                |                                      | L_Media  | S_Gen_Struct                 |
| L_Cst_Model              | L_Cst_Model              | L_Hydro_Model  | L_Hydro_Model   | S_LOMR                                      |                                      | L_Wtr_Nm                                       | S_Label_Ld                   |
| L_Hydra_Model            | L_Hydra_Model            | L_Media  | L_Media   | S_Perm_Bmk                                  |                                      | S_BFE  | S_Label_Pt                   |
| L_Hydro_Model            | L_Hydro_Model            | L_Node_Disch   | L_Node_Disch  | S_Wtr_Ar                                    |                                      | S_CBRS   | S_Perm_Bmk                   |
| L_Media                  | L_Media                  | L_Regression   | L_Regression  | S_Wtr_Ln                                    |                                      | S_Cst_Gage                                     | S_PLSS_AR                    |
| L_MT1_LOMC               | L_MT1_LOMC               | L_Stn_Start  | L_Stn_Start   |   |                                      | S_Cst_Tsct_Ln                                  | S_PLSS_LN                    |
| L_Node_Disch             | L_Node_Disch             | L_Storm_Curve  | L_Storm_Curve   |   |                                      | S_Fld_Haz_Ar                                   | S_Pol_Ar                     |
| L_Pan_Revis              | L_Pan_Revis              | L_Storm_Info   | L_Storm_Info  |   |                                      | S_Fld_Haz_Ln                                   | S_Pol_Ln                     |
| L_Pol_FHBM               | L_Pol_FHBM               | L_Subbas_Disch   | L_Subbas_Disch  |   |                                      | S_Gen_Struct                                   | S_Quad_Index                 |
| L_Regression             | L_Regression             | L_Wtr_Nm   | L_Wtr_Nm  |   |                                      | S_LOMR   | S_Trnsport_Ln                |
| L_Stn_Start              | L_Stn_Start              | L_XS_Ratings   | L_XS_Ratings  |   |                                      | S_Perm_Bmk                                     | S_Wtr_Ar                     |
| L_Storm_Curve            | L_Storm_Curve            | S_BFE  | S_BFE   |   |                                      | S_PFD_Ln                                       | S_Wtr_Ln                     |
| L_Storm_Info             | L_Storm_Info             | S_Fld_Haz_Ar   | S_Fld_Haz_Ar  |   |                                      | S_Shore_Ln                                     |                              |
| L_Subbas_Disch           | L_Subbas_Disch           | S_Fld_Haz_Ln   | S_Fld_Haz_Ln  |   |                                      | S_Wtr_Ar                                       |                              |
| L_Wtr_Nm                 | L_Wtr_Nm                 | S_Gen_Struct   | S_Gen_Struct  |   |                                      | S_Wtr_Ln                                       |                              |
| L_XS_Ratings             | L_XS_Ratings             | S_LOMR   | S_LOMR  |   |                                      |  |                              |
| S_Base_Index             | S_Base_Index             | S_Nodes  | S_Nodes   |   |                                      |  |                              |
| S_BFE                    | S_BFE                    | S_Ovrbnkln   | S_Ovrbnkln  |   |                                      |  |                              |
| S_CBRS                   | S_CBRS                   | S_Perm_Bmk   | S_Perm_Bmk  |   |                                      |  |                              |
| S_Cst_Gage               | S_Cst_Gage               | S_Precip_Gage  | S_Precip_Gage   |   |                                      |  |                              |
| S_Cst_Tsct_Ln            | S_Cst_Tsct_Ln            | S_Profil_Basln   | S_Profil_Basln  |   |                                      |  |                              |
| S_FIRM_Pan               | S_FIRM_Pan               | S_Riv_Mrk  | S_Riv_Mrk   |   |                                      |  |                              |
| S_Fld_Haz_Ar             | S_Fld_Haz_Ar             | S_Stn_Start  | S_Stn_Start   |   |                                      |  |                              |
| S_Fld_Haz_Ln             | S_Fld_Haz_Ln             | S_Subbasins  | S_Subbasins   |   |                                      |  |                              |
| S_Gen_Struct             | S_Gen_Struct             | S_Water_Gage   | S_Water_Gage  |   |                                      |  |                              |
| S_Label_Ld               | S_Label_Ld               | S_Wtr_Ar   | S_Wtr_Ar  |   |                                      |  |                              |
| S_Label_Pt               | S_Label_Pt               | S_Wtr_Ln   | S_Wtr_Ln  |   |                                      |  |                              |
| S_LOMR                   | S_LOMR                   | S_XS   | S_XS  |   |                                      |  |                              |
| S_Nodes                  | S_Nodes                  |  |   |   |                                      |  |                              |
| S_Ovrbnkln               | S_Ovrbnkln               |  |   |   |                                      |  |                              |
| S_Perm_Bmk               | S_Perm_Bmk               |  |   |   |                                      |  |                              |

|                |                |  |  |  |  |  |  |
|----------------|----------------|--|--|--|--|--|--|
| S_PFD_Ln       | S_PFD_Ln       |  |  |  |  |  |  |
| S_PLSS_Ar      | S_PLSS_Ar      |  |  |  |  |  |  |
| S_PLSS_Ln      | S_PLSS_Ln      |  |  |  |  |  |  |
| S_Pol_Ar       | S_Pol_Ar       |  |  |  |  |  |  |
| S_Pol_Ln       | S_Pol_Ln       |  |  |  |  |  |  |
| S_Precip_Gage  | S_Precip_Gage  |  |  |  |  |  |  |
| S_Profil_BasIn | S_Profil_BasIn |  |  |  |  |  |  |
| S_Quad_Index   | S_Quad_Index   |  |  |  |  |  |  |
| S_Riv_Mrk      | S_Riv_Mrk      |  |  |  |  |  |  |
| S_Shore_Ln     | S_Shore_Ln     |  |  |  |  |  |  |
| S_Stn_Start    | S_Stn_Start    |  |  |  |  |  |  |
| S_Subbasins    | S_Subbasins    |  |  |  |  |  |  |
| S_Trnsport_Ln  | S_Trnsport_Ln  |  |  |  |  |  |  |
| S_Water_Gage   | S_Water_Gage   |  |  |  |  |  |  |
| S_Wtr_Ar       | S_Wtr_Ar       |  |  |  |  |  |  |
| S_Wtr_Ln       | S_Wtr_Ln       |  |  |  |  |  |  |
| S_XS           | S_XS           |  |  |  |  |  |  |
| Study_Info     | Study_Info     |  |  |  |  |  |  |

## **Database Design Decisions**

To facilitate the ease of use of the DFIRM database, FEMA will avoid the use of abbreviations and codes in the published data where feasible.

Where possible, all mapping and engineering data elements will be linked to physical geographic features that are georeferenced. A GIS has the ability to precisely overlay the mapping and engineering data. This approach supports a wide variety of existing and visionary FEMA engineering and mapping products, such as digital mapping; automated hydrologic and hydraulic modeling, automated mapping, web-based publishing, and direct links between modeling and mapping elements.

The DFIRM database is not intended to be used to produce an exact replica of the printed Flood Insurance Rate Map (FIRM). Instead, the DFIRM database is designed to allow a GIS user access to all of the information conveyed on the FIRM in a way that can best take advantage of the automated analysis capabilities of GIS. FEMA will provide a companion product in the form of a scanned or raster image of the hardcopy DFIRM that will allow users to reprint exact replicas of the whole FIRM or portions of the FIRM.

The DFIRM database will be designed to be usable in a standard Relational Database Management System (RDBMS), but will be software independent. Therefore, the products are defined as flat tables in public domain formats (e.g., ESRI Shapefiles, MapInfo MIF files). Users can import these formats into a wide variety of software packages. These file formats manage GIS data in discrete files, generally organized by data theme. As a result, they do not support the inter-table relationships and data integrity enforcement capabilities of an RDBMS. However, the data produced by FEMA will be designed, tested to follow these rules, and fully compatible with an RDBMS.

### **L.1.1 Spatial Data and Tabular Data**

The complete DFIRM database product is a GIS database made up of spatial data describing the location of features on the earth and tabular data that describe the attributes of these spatial features. The tables described in Sections L.4 and L.7 that begin with “S\_” have a spatial component associated with them.

FEMA will distribute Preliminary and Final DFIRM databases to end users in GIS formats where the links between the spatial data and the attribute data are inherent in the data structure.

## **L.1.2 Draft Digital Data Versus Preliminary and Final Digital Flood Insurance Rate Map Databases**

To facilitate the submittal of digital flood hazard mapping data from all Mapping Partners, FEMA has established more flexible requirements for submitting draft DFIRM digital data than for Preliminary or Final DFIRM databases. Sections L.2 and L.4 provide options for submitting draft DFIRM spatial data in a Computer Assisted Drafting and Design (CADD) structure or a GIS structure. Mapping Partners preparing draft DFIRM data have the option of using one of the draft data formats or using the Preliminary or Final DFIRM database format described in L.3 and L.7. The Mapping Partner preparing draft DFIRM data should choose the option that works best for the project. Mapping Partners preparing Preliminary or Final DFIRM databases must follow the format described in L.3 and L.7.

Section L.4 also provides an option for the attribute table structure for DFIRMs that employs a more sophisticated relational structure. This option allows Mapping Partners that create draft DFIRM digital data to take advantage of relational database techniques to ensure data consistency and reduce database size. The Preliminary and Final DFIRM Databases have a simpler structure for ease of use by the general public. The primary difference between the draft table structure and the Preliminary and Final table structure is that domain tables are used in the draft structure and are not used in the Preliminary and Final structure.

The following discussion highlights the differences between the attribute table structure option available for draft DFIRM digital data and the attribute table structure for Preliminary and Final DFIRM Databases. Domain tables (tables in the database that begin with D\_) were established to assist FEMA's Mapping Partners in the creation of the draft DFIRM database. These domain tables provide the Mapping Partner with valid or preferred attribute values for specific fields. A domain table also helps minimize entry differences by standardizing the value. For example, without domain tables, one user might enter "floodway" while another user might enter "FLDWY" while completing the FLOODWAY field in the S\_Fld\_Haz\_Ar table. While both of these entries reflect the same idea, the inconsistency between the two forms makes it difficult to group similar features together. Using a domain table ensures that both users enter the same value (i.e., floodway) to describe the same feature. To capture local characteristics not included in the domain table, Mapping Partners also may add and use their own values in the domain table (e.g., a more restrictive locally regulated floodway could be added to the accepted domain values as "Local Floodway"). An example of a domain table is shown in Table L-3.

**Table L-3. Sample Domain Table**

| <b>FLDWAY_LID</b> | <b>FLOODWAY</b>               |
|-------------------|-------------------------------|
| 1000              | FLOODWAY                      |
| 1010              | COLORADO RIVER                |
| 1020              | FLOODWAY CONTAINED IN CHANNEL |
| 1030              | FLOWAGE EASEMENT BOUNDARY     |
| 1040              | STATE ENCROACHMENT            |
| 1050              | AREA OF SPECIAL CONSIDERATION |

Field names that end with “\_LID” in the draft DFIRM specification (e.g., FLDWAY\_LID) link to a domain table. The “\_LID” field contains an integer that matches a value in the first field of the corresponding domain table. The second field of the domain table provides a more descriptive attribute value. In the Preliminary or Final DFIRM database, the “\_LID” field is replaced by the second field from the domain table (i.e., FLOODWAY). The attribute value stored in the Preliminary or Final DFIRM database is the descriptive attribute value, rather than an integer. The domain tables are not included in the Preliminary or Final DFIRM database. The Mapping Partner creating draft digital data and using domain tables to create the S\_Fld\_Haz\_Ar table, will enter “1000” in that table as the FLDWAY\_LID value. In this instance, “1000” stands for “FLOODWAY.” When the Preliminary or Final DFIRM database is created, the FLDWAY\_LID field becomes FLOODWAY, and the record value of “1000” becomes “FLOODWAY”.

When creating the Preliminary or Final DFIRM database, the assigned Mapping Partner shall treat the water name lookup table (L\_Wtr\_Nm) in the draft DFIRM digital data table structure option as a domain table. The surface water feature names stored in the lookup table must be transferred to related fields in other tables.

## **L.2 Preparation of Draft Digital Data**

### **L.2.1 General**

If the Mapping Partner that creates the draft study components also produces the Preliminary Flood Insurance Study (FIS) report and FIRM, that Mapping Partner does not need to produce separate digital FIS data for the draft study components. Instead, the Mapping Partner will typically be responsible for creating a Preliminary or Final DFIRM database as described in Volume 1, Subsection 1.4.6.6 of these Guidelines and in Section L.3.

The main issues that the assigned Mapping Partner shall consider in the preparation of the digital data are:

- Coordination;

- Standards;
- Horizontal and Vertical Control;
- Data Structure;
- Quality Control;
- Deliverable Format; and
- Metadata.

The portability of the draft digital data is the primary consideration during the Project Scoping phase of a project. This is important because a variety of commercially available mapping and/or survey software packages with varying formats exist. FEMA applications that will use the Mapping Partner's digitally prepared mapping and survey data must be considered when "collecting" the information. To ensure compatibility, the assigned Mapping Partner shall capture the mapping features into a defined schema. The assigned Mapping Partner shall arrange the draft digital data within the draft DFIRM data files in such a manner that features are separated into a GIS table structure or a CADD layer/level and attribute structure. This Appendix provides standard schema for a Mapping Partner to follow.

In addition, the digital data must be capable of being translated into a common spatial data exchange format. Normally, the specific data format and structure will be coordinated with the Project Team during the Project Scoping Meeting or immediately afterwards by technical staff.

A major aspect of GIS is horizontal and vertical position on the earth. Mapping data must be referenced to a standard coordinate system, employ a standard projection, and specify both the horizontal and the vertical datums used. These positional references are established prior to the field data collection and topographic mapping phase of the project. All planimetric and topographic features must be collected and referenced to this coordinate system and projection. See Appendix A of these Guidelines for a detailed discussion of aerial mapping and surveying specifications, which includes horizontal and vertical control for new mapping. Also see Appendix B of these Guidelines for a discussion of vertical datum selection and conversion.

Considerations for transfer of digital data also must include the file structure of the data, the transfer medium, the export/import device and the operating systems of the host and receiving systems (e.g., MS Windows, NT, UNIX).

## **L.2.2 Coordination**

The assigned Mapping Partner must coordinate with the FEMA Lead and other Project Team members before beginning a draft digital submittal. The coordination may occur during the Project Scoping Meeting (see Volume 1, Subsection 1.3.2 of these Guidelines) or during a separate meeting immediately afterward. This meeting should serve to coordinate the digital capture of the restudy data and facilitate the production of digitally generated FIRMs in a timely fashion. Data

format is an important consideration to be discussed prior to data capture, as changing data format after the fact can be both time consuming and costly.

For most Flood Map Projects, the assigned Mapping Partner shall submit to FEMA a sample of the digital files being prepared when approximately 10 percent of the project has been completed. This will enable FEMA or another Mapping Partner selected by FEMA to review and comment on the digital data files, and will enable the submitting Mapping Partner to implement any modifications, if required, to the digital capture procedures at an early production stage.

A meeting between the Mapping Partner that produces the draft study components, FEMA, and the Mapping Partner that produces the Preliminary and Final DFIRM may be required at the interim submittal stage, for all parties to be familiar with any unique conditions in the data files.

Before beginning work to produce draft digital data, the assigned Mapping Partner shall coordinate with FEMA to determine if public domain software has been developed, and is available, for whatever hardware platform is chosen by the Mapping Partner for the digital work. Software may be available to assist in GIS table creation, data capture, data coding, layer/level assignment, quality control, and plotting.

### **L.2.2.1 Data Sources**

As specified in Volume 1, Section 1.3 of these Guidelines, a Mapping Partner must perform initial research to avoid duplication of effort during a Flood Map Project. This is especially critical for digitally prepared study/restudy components because data collection is expensive. The assigned Mapping Partner shall identify and use existing digital data whenever possible, while still meeting required specifications and quality of work.

As part of the initial coordination effort, the Mapping Partner that produces the draft digital study/restudy components shall identify available digital data and obtain datasets and hardcopy plots as necessary for study/restudy areas. Potential sources of digital base map or floodplain boundary data may be State, county, or local government agencies responsible for GIS, planning agencies or real estate assessment agencies. Digital floodplain data also may be available from FEMA, if the area has been previously converted to digital format. Requirement for base maps are specified in Appendix K.

If existing data are available and used by the Mapping Partner that produces the draft digital study/restudy components, that Mapping Partner shall restructure the data to conform to one of the digitizing specification options listed below. If specific arrangements are made with the FEMA Lead—usually, either the FEMA Regional Project Officer or the Project Officer (PO) at FEMA Headquarters—to use another data schema, the assigned Mapping Partner shall provide complete documentation of the spatial data structure and attribute tables.

As part of data collection, coordination and submittal, the assigned Mapping Partner shall document the data sources, date of collection or digitizing, scale of digitizing, projections, coordinate systems, horizontal datum and vertical datum of all of the digital data used and submitted. For each data source used, the assigned Mapping Partner shall add a Source Citation entry to the DFIRM metadata file in the Lineage section under Data Quality. Within the metadata file, each data source is assigned a Source Citation Abbreviation as shown in Table L-4.

**Table L-4. Source Citation Abbreviations**

| <b>Source Citation Abbreviation</b> | <b>Use</b>  |
|-------------------------------------|---|
| BASE                                | For all base map sources (includes digital orthophotography, roads, railroads, airports, hydrography, U.S. Public Land Survey System (PLSS), political, military, park, forest and other lands) |
| FIRM                                | For features extracted from the existing FIRM   |
| FHBM                                | For features extracted from the existing Flood Hazard Boundary Map (FHBM)   |
| FBFM                                | For features extracted from the existing Flood Boundary and Floodway Map (FBFM)   |
| LOMC                                | For information derived from a Letter of Map Change (LOMC)  |
| FIS                                 | For information taken from a previously published FIS report, including Floodway Table and Flood Profiles   |
| STUDY                               | For information developed for the current Flood Map Project   |
| TSDN                                | For any information taken from the Technical Support Data Notebook (TSDN) (used for existing backup information in FEMA's archives not published on previous FIRM)                              |

Each source citation abbreviation for a distinct data source should be numbered (e.g., BASE1, BASE2, BASE3). All spatial tables in the standards below have a SOURCE\_CIT field. This field should be populated with the Source Citation Abbreviation from the metadata file that applies to the related spatial feature.

### **L.2.3 Standards**

Maps and spatial data used for flood hazard analyses, floodplain boundary delineations, and FIRM compilation must meet all requirements specified in these Guidelines. The assigned Mapping Partner shall obtain or create these materials and submit these materials to FEMA, and shall ensure that the accuracy of the data in the submitted files, at a minimum, meets or exceeds FEMA's base map and FIS mapping information standards. The requirements for the flood hazard analyses, floodplain boundary delineations, and the base map are detailed in Volume 1, Section 1.4, Appendix A, and Appendix K of these Guidelines, respectively.

### **L.2.4 Horizontal and Vertical Control**

The preferred projection, coordinate system and horizontal datum for the DFIRM Database spatial data is the UTM projection and coordinate system and referenced to NAD 1983. The data may also be in a State Plane coordinate system and associated projection if there is a compelling reason (e.g., project base map is in State Plane coordinates). The assigned Mapping Partner shall obtain approval for variations from these two options from the FEMA Lead in advance. However, at a minimum, the assigned Mapping Partner shall create all digital data in a system that is capable of referencing the data to a geographic coordinate system and projection. See Appendix K of these Guidelines for information on raster base maps in other projections and coordinate systems.



In the event that the county or other jurisdiction being mapped lies in more than one projection and coordinate system zone, the assigned Mapping Partner shall ensure that all digital data submitted are projected in the zone that contains the largest portion of the jurisdiction in a single zone. The assigned Mapping Partner shall not use multiple State Plane or UTM zones within a single submittal. The assigned Mapping Partner may compile data in another zone, particularly if this facilitates higher positional accuracy of the data, reproject the data to the chosen zone for the jurisdiction being mapped, and merge the reprojected data with the rest of the data.

The assigned Mapping Partner shall compile all horizontal information on either the North American Datum of 1927 (NAD27) (Clarke 1866 ellipsoid) or North American Datum of 1983 (NAD83) (Geodetic Reference System 1980 -- GRS 80 ellipsoid or revisions thereof). However, it is critical that horizontal datums not be mixed within a Flood Map Project. See Appendix A of these Guidelines for details on horizontal datum requirements.

The assigned Mapping Partner shall reference all vertical information to either the National Geodetic Vertical Datum of 1929 (NGVD29) or the North American Vertical Datum of 1988 (NAVD88). However, the Mapping Partner must not mix vertical datums within a Flood Map Project. See Appendix B of these Guidelines for details.

## **L.2.5 Digital Data Structure**

Digital files must be prepared using a pre-defined system or schema that has been consistently used throughout. The layer/level or attribute assigned to a spatial element must be consistent and the information accessible to all users. The data must be organized in one of the data structures described in this Appendix and provided in one of the acceptable data formats unless specific arrangements are made with the FEMA PO.

### **L.2.5.1 Tiling**

FEMA requires that all digital data be in one single file or a series of thematic files that cover the entire geographic area being mapped instead of individual small tiles that cover limited geographic areas. The assigned Mapping Partner shall obtain approval for any variations to this requirement from the FEMA Lead.

### **L.2.5.2 Topology**

The assigned Mapping Partner shall ensure that vector data files must meet the following data structure requirements:

- Digitized linework must be collected at a reasonably fine line weight.
- Only simple linestrings or simple linear elements may be used for all linework.
- Line features must be continuous (no dashes, dots, patterns, or hatching).
- CADD files (e.g., MicroStation DGN files or AutoCAD DWG files) must not contain curves, B-splines, arcs or nested cells.

- CADD files must not contain annotation generated from a database; the annotation must be placed as text. GIS files (e.g. ESRI coverages or ESRI Shape files) may contain annotation and/or database attributes.
- Vectors may not cross other vectors within the same theme and all intersecting vectors must end at intersections.
- Area spatial features for a given theme must cover the entire study area without overlaps, under laps or sliver polygons between adjacent polygons.
- Files must be free of discontinuities such as overlapping lines, gaps, "turn backs," dangling lines and duplicate elements.
- Spatial files must not contain any linear or area patterns.
- Gaps or overshoots between features that should close must be eliminated.

Logical consistency describes certain node-line-area relationships internal to the digital data. The Node-line-area relationship requirements that the assigned Mapping Partner must meet include the following:

- Areas will be represented by closed polygons, without overshoots or undershoots.
- Unattributed polygons are not permitted, including “sliver” polygons that result from poor digitizing methods.
- Unnecessary nodes and vertices must be avoided.
- Vertices must be placed conservatively when designing features so that only the minimal number of vertices or nodes is used to create the desired shape with appropriate smoothness (e.g., a straight line will be defined with two nodes only).
- Lines must begin and end at nodes.
- Lines must connect to each other at nodes.
- Lines must not extend through nodes.

### **L.2.5.3 Edgematching**

The matching of features along the “edge” of a hardcopy map or tiles of digital data is critical in the creation of digital map products. Proper edgematching will ensure that a digital map product can be used as a seamless data layer in a GIS. As edges are digitized, features that cross the edge should snap together to form a seamless feature.

The assigned Mapping Partner shall ensure that all submitted digital data is tied into any existing digital data files so that a seamless transition is effected. The assigned Mapping Partner may produce new digital data to reflect new flood hazard information or to convert effective flood

hazard information to digital format depending on the scope of the Flood Map Project. Hardcopy deliverables must reflect both the new digital data and any existing digital data previously prepared by FEMA. If no existing digital floodplain data are available from FEMA, deliverables must reflect the new digital data only. The assigned Mapping Partner must ensure that proper edgematching is performed at each step of the data creation process. If the Mapping Partner digitizes separate hardcopy sheets to produce the draft DFIRM data, the Mapping Partner must check that all features that cross the boundaries between separate sheets are smooth and continuous at the sheet boundaries. Likewise, the Mapping Partner must check that all features crossing jurisdiction boundaries are smooth and continuous at the jurisdiction boundary and that all features at the boundary of the draft DFIRM digital data submitted matches the contiguous information on the existing published FIRMs.

- The following are edgematching problems that the assigned Mapping Partner must avoid:
- **Disconnects:** Disconnects occur when the linework for features does not connect, either by being too short or too long at the source maps' edge.
- **Jogs:** Jogs occur when a common feature on adjoining maps does not line up seamlessly.
- **Missing Features:** Missing features are those that appear on one source map, but not on the adjacent map. The features may be missing from one map because of a variety of reasons, such as (1) different dates of the two maps; (2) an error in one map; (3) a difference in interpretation by the cartographers of the two maps; (4) differing scales of the two source maps, or (5) adjacent data not available.
- **Different Representation of Features:** Different representation of features occurs when features are represented differently on the source maps. For example, a road is a double line on one, and a single line on the other.

#### L.2.5.4 Coincident Features

Coincident features are those that share the same location or boundary, such as a flood zone boundary and a floodwall. These coincident features must superimpose, vertex (shape point) for vertex, within the files. If not automated properly, it could appear that the flood zone ends before the wall, leaving a strip of land on the waterside of the floodwall that is not in the flood zone. A lack of alignment can cause problems with digital files.

For a new DFIRM, the assigned Mapping Partner shall create coincident features by digitizing the graphic features only once. The assigned Mapping Partner shall create additional copies of coincident features by copying part of the first feature to create the relevant portion of the second, when necessary. This will ensure that the lines match perfectly.

In particular, the following pairs of tables have both area features and line features: S\_Fld\_Haz\_Ln/S\_Fld\_Haz\_Ar, S\_Pol\_Ln/S\_Pol\_Ar, and S\_PLSS\_Ln/S\_PLSS\_Ar. For these feature datasets, two tables are defined because they have attributes that apply to the entire area and attributes that apply to portions of the boundaries of these areas. However, the spatial elements that make up these features must be identical. All elements in the S\_Fld\_Haz\_Ln table

must match exactly with the boundaries of the elements in the S\_Fld\_Haz\_Ar table. The same is true for the other two pairs of tables. For draft DFIRM digital data submitted in a spatial data format that supports both area and line attributes for the same spatial file, the assigned Mapping Partner shall submit a single spatial file with both sets of attributes.

#### **L.2.5.5 Precise Features**

The position of horizontal control features of the DFIRM products will be based on published standards. The assigned Mapping Partner shall not re-digitize these control features, but rather the assigned Mapping Partner shall use the exact coordinates in the published standards. Candidate sources of control points include:

- U.S. Geological Survey 7.5-minute series quadrangle map corner coordinates;
- Coordinate grid; and
- Bench mark coordinates from the National Geodetic Survey or local control network.

#### **L.2.5.6 Data Compilation**

Existing digital data may affect the choice of scale for data compilation. If base mapping is available at a scale greater than 1" = 400' (e.g. 1" = 200') the assigned Mapping Partner may choose to compile and digitize the revised data developed during the Flood Map Project at the base map scale.

FEMA's goal is to develop digital data that are as accurate as possible. In general, the most accurate data source must be relied upon to reference other features compiled onto the map. This may mean that, in some circumstances, floodplain boundary delineations made on very high-resolution topographic maps may appear slightly misplaced on a less accurate base map. However, if the base map meets FEMA standards, these differences should be very small. If application of this approach creates significant visual problems with the floodplain boundary delineations on the base map selected, the assigned Mapping Partner shall resolve the issue with the FEMA Lead.

Likewise, when high accuracy data are collected for a Flood Map Project, it is FEMA's goal to maintain the accuracy of those data. For example, cross-section line features must correspond as closely as possible to the actual field survey locations. Often, the assigned Mapping Partner must graphically extend or reshape that end of a cross section for satisfactory cartographic display. When this is necessary, the Mapping Partner shall perform it as a graphic operation for hardcopy map production. The Mapping Partner shall not modify the digital spatial data that depict the true locations of the surveyed cross sections.

#### **L.2.5.7 Digitizing**

All features must be digitized in their true positions as line strings or simple linear elements. Digitizing must be performed from stable base materials.

How well the registration control points line up to the map to be digitized is an important measurement when digitizing maps. The measurement of fit is sometimes called the Root Mean Square Error (RMSE). The RMSE value represents the amount of error between original and new coordinate locations calculated by the transformation process. The lower the RMSE, the better the fit. The RMSE must be no more than 0.003 inch.

### L.2.5.8 Relationship of Base Map to Flood Hazard Data

Base map features are physical features like roads, railroads, rivers, lakes, levees, and bench marks, that map users may rely on to locate an area of interest on the FIRM. Flood hazard data are flood insurance risk zones, Base Flood Elevations (BFEs), cross-section locations, and hydraulic structures that depict the results of flood hazard analyses on the FIRM. Some physical features such as surface water features and hydraulic structures are used in the performance of the flood hazard analysis and may be grouped in either category.

The purpose of the base map is to present an accurate depiction of the relationship between the results of the flood hazard analyses and the physical features on the ground. Floodplain boundaries are typically delineated on a topographic map and may be subsequently transferred to the base map. The topographic and base map data may be derived from the same sources. The spatial accuracy of both the topographic and the digital base map is critical to maintaining the accuracy of the floodplain delineations.

*The digital base map for a Flood Map Project is to be identified during the Project Scoping phase of the project.* The assigned Mapping Partner shall use the digital base map in conjunction with the topographic data when preparing the floodplain boundary delineations. For a complete discussion of base maps, see Volume 1, Subsection 1.4.3.1 of these Guidelines.

Table L-5 presents the features for the base map.

**Table L-5. Base Map Data Tables**

| <b>Base Map Tables</b> |
|------------------------|
| L_Wtr_Nm               |
| S_Base_Index           |
| S_Gen_Struct           |
| S_Label_Ld             |
| S_Label_Pt             |
| S_Perm_Bmk             |
| S_PLSS_Ar              |
| S_PLSS_Ln              |
| S_Pol_Ar               |
| S_Pol_Ln               |
| S_Quad_Index           |
| S_Trnsport_Ln          |
| S_Wtr_Ar               |
| S_Wtr_Ln               |

For base map files, layers/levels or attributes are provided below for each data structure option. The Mapping Partner should insure that all Draft DFIRM Data files conform to the specifications below. An exception to this is preexisting base map files for PLSS, transportation and water features, which may retain their normal structure. More detail is provided in the table descriptions below. The standard table formats included below should be used when new base map data creation is included in the Mapping Partner scope of work. If any data from the Mapping Partner are not in one of the structures below, the data must be separated by layers/levels or by attributes. If the base map data are not structured following one of the data schema listed below, detailed documentation of the data structure must be included.

The files produced by the Mapping Partner that creates draft digital study/restudy components shall typically cover only the area that is revised as a result of the Flood Map Project.

#### **L.2.5.9 Computer Assisted Drafting and Design or Geographic Information System Preparation**

A GIS database normally contains both spatial features and attribute records in the same file or in tables that can be easily related by the GIS system. A CADD system usually does not manage attribute records associated with each spatial feature as easily. As software evolves, there is less distinction between the two technologies. Users of these two systems still tend to apply these technologies in the traditional way. As a result, it is assumed that fundamentally different approaches will be used based on whether the Mapping Partner submits draft DFIRM data in CADD or GIS format. FEMA prefers to have DFIRM data submitted in GIS format. The CADD option is available for Mapping Partners who are unable to submit data in GIS format.

Mapping Partners that submit digital data in GIS format shall separate the spatial data into individual tables or files for each data theme created (e.g., roads are stored in a separate file from flood zones that are in a separate file from political boundaries). The Mapping Partner may store attribute data in the same GIS file as the associated spatial features, in a parallel table structure in an RDBMS, or in individual data files in a standard database or spreadsheet format. When the attribute data is stored in a separate file from the spatial data, both the spatial data and the attribute data must have the same primary key field.

Mapping Partners that submit data in CADD format shall store the spatial data in a single file with each data theme stored on a separate layer/level and identified by a color number within the file. See Subsection L.2.5.11 for detailed specifications. Each spatial feature in the CADD file must be attributed or tagged with a primary key that can be linked to the DFIRM attribute data for that feature. The Mapping Partner may store attribute data in the DFIRM table structure in an RDBMS or in individual data files in a standard database or spreadsheet format. Attribute data must be linked to the spatial features by the primary key for each table. Both the spatial data and the attribute data must have the same primary key field.

#### **L.2.5.10 Table Structure**

Each DFIRM database table has a primary key field defined. This field is normally the table name followed by “\_ID”. The Mapping Partner that creates the digital data must populate these

fields. Normally, the assigned Mapping Partner shall number the features in each table sequentially using this field; however, the assigned Mapping Partner may choose another method provided that the method is logical, documented, consistently implemented, and results in a unique ID value for each spatial feature.

Regardless of whether the draft DFIRM digital data is submitted in CADD or GIS format, the assigned Mapping Partner must submit all of the applicable DFIRM database attribute tables. Attribute data must be linked to the spatial features by the primary key for each table. Both the spatial data and the attribute data must have the same primary key field. The Mapping Partner may choose to follow either the table structure defined in Section L.4 for draft digital data, or the table structure in Section L.7 for Preliminary and Final DFIRM databases. Regardless of the table structure selected, the Mapping Partner shall ensure that the applicable fields use the appropriate values from the associated domain tables and that these values are treated consistently across all tables.

Which components of the DFIRM database that are required will depend on whether new flood analyses are part of the map update project as well as the judgement of the FEMA Regional Office. In general, the production of any digital map will result in a complete Standard DFIRM Database. However, most studies will also have some data in the Enhanced DFIRM Database. Even studies where existing effective flood hazard analyses are used to produce updated digital maps may capture easily accessible elements of the Enhanced DFIRM Database. In general, where new flood hazard analyses are performed, most of the core elements of the Enhanced Database described below will be populated. For each digital map update undertaken, the Mapping Partner should coordinate with the FEMA Regional Lead to determine how much of the Enhanced DFIRM Database should be completed.

In the detailed table documentation in Sections L.4 and L.7, each field name is followed by a letter code as follows:

- R – Required for all records.
- A – Required if applicable to the described spatial feature.

Plus, each field has a second code:

- S – A component of the Standard DFIRM Database
- E – A component of the Enhanced DFIRM Database

See Section L.4 for specific requirements for each table for draft digital data submittal.

For required fields, Null values are not permitted. In the event that the correct information cannot be obtained for a required field, the Project Officer may allow the mapping partner to substitute a value that indicates that the affected field was intentionally not populated. Any use of not populated values must be documented and explained in the metadata. The value to use for not populated data for each field type is as follows:

- Character – “NP”
- Numeric – -8888
- Date – 88880808
- True.False – “U”

For a field that is required when applicable, but does not apply, the value must be Null (i.e. the field must be left empty, not set to zero). The Mapping Partner shall use the value zero only when an attribute has the specific value of zero. Because of limitations in some of the GIS formats used by FEMA, a true Null value can not be used for some fields. The value to use for “Null” fields for each field type is as follows:

- Character – Null (or “”, the empty string)
- Numeric – -9999
- Date – 99990909
- True.False – Null (or “”, the empty string)

Text fields must follow the capitalization standards that apply to the display of that information on the FIRM.

Date fields in the DFIRM database are stored in the native date format for the data format in which table is distributed. Not all of the database formats used for the DFIRM database support date values in the same way. The time of day is not stored or is set to zero depending on the structure of the date object in a particular data format. Where possible the output format of the date is set to YYYYMMDD.

True/False fields in the DFIRM database are stored as text fields with a field size of one. Since different database programs store the authentic true/false fields in various ways, storing the true/false data as text helps eliminate inconsistencies between programs. For each true/false field in the DFIRM database, the user should enter “T” for true or “F” for false.



### **L.2.5.11 Spatial Files for Computer Assisted Drafting and Design Format**

Mapping Partners that submit data in CADD format shall use the layer/level schema shown in Table L-6. No additional feature categories may be added to any layer/level. This ensures that data will not be miscoded in later processing steps or that time will not be spent separating features. To include feature categories that are not specified in the schema below (e.g., watersheds and sub-basins, land use classifications, building footprints), the Mapping Partner shall submit a second file containing these features and documentation of the layer/level schema.

The main purpose of this schema is to provide a logical separation of data themes by layer/level and color. The assigned Mapping Partner shall name each layer/level following the convention provided in Table L-6. The color numbers in the following schema are also important. The layer/level and color number are used to separate feature types. The actual color used is not important for the digital file. It is important that the correct color number is used. The correct colors, line weights, and other cartographic details for a particular feature on the finished FIRM are specified in Appendix K of these Guidelines. Depending on the software used to create the draft DFIRM digital data, the Mapping Partner that creates the Preliminary or Final DFIRM may be able to provide file templates and other tools to facilitate reproduction of the graphic specifications. Coordination should take place between the Mapping Partners and FEMA shortly after the Project Scoping Meeting. The layer/level and color requirements for CADD submittals of draft digital data are presented in Table L-6. See Appendix K for more detailed descriptions of these features and the Glossary for acronym definitions.

**Table L-6. Layer/Level Schema Requirements**

| DESCRIPTION                   | LEVEL NUMBER | LEVEL NAME     | COLOR |
|-------------------------------|--------------|----------------|-------|
| <b>Flooding Elements</b>      |              |                |       |
| Floodway Boundary             | 1            | floodway       | 1     |
| Colorado River Floodway       | 1            | floodway       | 2     |
| Area of Special Consideration | 1            | floodway       | 3     |
| 1% Flood Boundary             | 2            | 100-year       | 4     |
| 0.2% Flood Boundary           | 3            | 500-year       | 5     |
| 1%/0.2% Flood Boundary        | 4            | 100_500-year   | 6     |
| 1% Flood/Floodway Boundary    | 5            | 100_fldway     | 7     |
| 1%/0.2%/Floodway Boundary     | 6            | 100_500_fldway | 8     |
| Zone D Boundary               | 7            | zoned          | 9     |
| Zone Break                    | 8            | zonebreak      | 10    |
| Limit of Floodway             | 9            | limitfldway    | 11    |
| Limit of Study                | 10           | limitstudy     | 12    |
| Limit of Detailed Study       | 11           | lods           | 13    |
| End of Spatial Extent         | 12           | endspatial     | 14    |
| BFE                           | 13           | bfe            | 15    |
| Cross Section                 | 14           | xs_transect    | 16    |
| Transect                      | 14           | xs_transect    | 17    |
| Interpolated BFE              | 15           | intbfe_intrxs  | 18    |
| Intermediate Cross Section    | 15           | intbfe_intrxs  | 19    |
| Apparent Limit                | 16           | applimit       | 20    |
| Floodway Shape/Hatch          | 17           | shapefldway    | 21    |
| 1% Flood Hazard Shapes        | 18           | shape100       | 22    |
| 0.2% Flood Hazard Shapes      | 19           | shape500       | 23    |
| BFE Text                      | 20           | bfetxt         | 24    |
| Cross Section Hexagon         | 21           | xsectxt        | 25    |
| Limit of Flooding Text        | 22           | limittxt       | 26    |
| Zone Text                     | 23           | zonetxt        | 27    |
| Flowage Easement Line         | 24           | flowage        | 28    |
| State Encroachment Line       | 24           | flowage        | 29    |
| <b>Hydro Elements</b>         |              |                |       |
| Perennial River/Stream        | 25           | hydro          | 30    |
| Intermittent River/Stream     | 25           | hydro          | 31    |
| Shoreline/Coastline           | 25           | hydro          | 32    |
| Lake                          | 25           | hydro          | 33    |
| Surface Water                 | 25           | hydro          | 34    |
| Reservoir                     | 25           | hydro          | 35    |
| Profile Baseline              | 25           | hydro          | 36    |
| Swamp                         | 25           | hydro          | 37    |
| Channel                       | 25           | hydro          | 38    |
| Channel Contains 1% Flood     | 25           | hydro          | 39    |
| Channel Contains 0.2% Flood   | 25           | hydro          | 40    |
| Ditch                         | 25           | hydro          | 41    |
| Glacier                       | 25           | hydro          | 42    |

|                             |    |              |     |
|-----------------------------|----|--------------|-----|
| Hatchery                    | 25 | hydro        | 43  |
| Race                        | 25 | hydro        | 44  |
| Wash                        | 25 | hydro        | 45  |
| Waterfall                   | 25 | hydro        | 46  |
| Water Separation Line       | 25 | hydro        | 47  |
| Bog                         | 25 | hydro        | 48  |
| Retention Pond              | 25 | hydro        | 49  |
| Tailings Pond               | 25 | hydro        | 50  |
| PBL                         | 25 | hydro        | 51  |
| Water Feature Text          | 26 | draintxt     | 52  |
| Landform/Island Text        | 27 | islandtxt    | 53  |
| 1000 Foot Marker & Text     | 28 | rivermk      | 54  |
| River Mile Marker & Text    | 28 | rivermk      | 55  |
| <b>Structure Elements</b>   |    |              |     |
| Weir                        | 29 | weir_dam     | 60  |
| Dam                         | 29 | weir_dam     | 61  |
| Levee                       | 30 | levee        | 62  |
| Culvert                     | 31 | culvert      | 63  |
| Culvert Contains 1% Flood   | 31 | culvert      | 64  |
| Culvert Contains 0.2% Flood | 31 | culvert      | 65  |
| Headwalls/Wing walls        | 31 | culvert      | 66  |
| Bridges                     | 32 | bridge       | 67  |
| Footbridge                  | 32 | bridge       | 68  |
| Pier                        | 33 | other_struct | 69  |
| Dock                        | 33 | other_struct | 70  |
| Jetty                       | 33 | other_struct | 71  |
| Aqueduct                    | 33 | other_struct | 72  |
| Dike                        | 33 | other_struct | 73  |
| Fish Ladder                 | 33 | other_struct | 74  |
| Flume                       | 33 | other_struct | 75  |
| Gate                        | 33 | other_struct | 76  |
| Lock                        | 33 | other_struct | 77  |
| Penstock                    | 33 | other_struct | 78  |
| Seawall                     | 33 | other_struct | 79  |
| Structure Text              | 34 | structxt     | 80  |
| <b>Cobra/OPA Elements</b>   |    |              |     |
| Cobra Boundary              | 35 | cobra        | 90  |
| Otherwise Protected Areas   | 36 | opa          | 91  |
| Cobra Shapes                | 37 | shapecobra   | 92  |
| OPA Shapes                  | 38 | shapeopa     | 93  |
| Cobra/OPA Notes             | 39 | cobratxt     | 94  |
| <b>Political Elements</b>   |    |              |     |
| Corporate Limits            | 40 | corporate    | 100 |
| Extraterritorial Boundary   | 40 | corporate    | 101 |
| Area Not Included           | 40 | corporate    | 102 |
| County Boundary             | 41 | county       | 103 |
| State Boundary              | 42 | state_intl   | 104 |

|                                |    |               |      |
|--------------------------------|----|---------------|------|
| International Boundary         | 42 | state_intl    | 105  |
| Political Boundary Text        | 43 | polbdtxt      | 106  |
| City/Borough/Township Name     | 44 | polareatxt    | 107  |
| Park Boundary                  | 45 | park          | 108  |
| Forest Boundary                | 45 | park          | 109  |
| Reservation Boundary           | 45 | park          | 110  |
| Park/Forest/Reservation Text   | 46 | parktxt       | 111  |
| Urban Growth Boundary          | 47 | other_juris   | 112  |
| MUD Boundary                   | 47 | other_juris   | 113  |
| LID Boundary                   | 47 | other_juris   | 114  |
| <b>Transportation Elements</b> |    |               |      |
| Primary Roads                  | 48 | majorrds      | 120  |
| Secondary Roads                | 49 | minorrds      | 121  |
| Trail                          | 50 | other_rds     | 122  |
| Undefined Roads                | 50 | other_rds     | 123  |
| Road Tunnel                    | 50 | other_rds     | 124  |
| Ford                           | 50 | other_rds     | 125  |
| Road Text                      | 51 | roadtxt       | 126  |
| Route & Highway Symbols        | 51 | roadtxt       | 127  |
| Railroad                       | 52 | railroad      | 128  |
| Abandoned Railroad             | 52 | railroad      | 129  |
| Undefined Railroad             | 52 | railroad      | 130  |
| Dismantled Railroad            | 52 | railroad      | 131  |
| Railroad Tunnel                | 52 | railroad      | 132  |
| Railroad Text                  | 53 | rrtxt         | 133  |
| Airport/Landing Strip & Text   | 54 | airport       | 134  |
| Ferry                          | 54 | airport       | 135  |
| <b>Grid Elements</b>           |    |               |      |
| FIRM Neatline                  | 55 | map_neatlines | 140  |
| Quad Neatline                  | 55 | map_neatlines | 141  |
| Quarter Section Lines          | 56 | plss          | 142  |
| Range Lines                    | 56 | plss          | 143  |
| Township Lines                 | 56 | plss          | 144  |
| Primary Grid & Labels          | 57 | prigrd        | 145  |
| Secondary Grid & Labels        | 58 | secgrd        | 146  |
| DOQ Neatline                   | 63 | nonplot       | 147  |
| <b>Misc Elements</b>           |    |               |      |
| NGS Bench Marks                | 59 | ngs           | 150  |
| NGS Bench Mark Text            | 60 | ngstxt        | 151  |
| Gaging Station                 | 61 | gaging        | 152  |
| Landmark                       | 61 | gaging        | 153  |
| Misc Text & Notes              | 62 | misctxt       | 154  |
| LOMR Box                       | 63 | nonplot       | 155  |
| Non-Plotted Level              | 63 | nonplot       | 200+ |

## **L.2.6 Quality Control**

Digital files must be structured according to one of the pre-established schemas. This allows easy exchange of data between FEMA and Mapping Partners. Files must be free of duplicated elements and complex linestrings. The data must be horizontally controlled and referenced to the appropriate horizontal and vertical datums. All digitizing must be done carefully and in conformance with FEMA accuracy standards. For these reasons, the assigned Mapping Partner shall perform a thorough quality control (QC) review prior to submitting data to FEMA. FEMA will review the data provided by the Mapping Partner using automated and interactive techniques.

The following items must be included in the QC review of a verification plot to ensure that all deliverables meet minimum quality standards:

- All required features have been included.
- The data are correctly referenced to a State Plane or UTM grid coordinates.
- The correct datum has been used and is clearly indicated.
- All digitized linework is within 0.005 inch of its compiled location if digitizing is performed from a hardcopy manuscript. Plotted linework does not show gaps between plotted lines and compiled lines when plots and compilation manuscripts are overlaid.
- Character of features has been maintained (e.g., straight lines are straight; curves are curved).
- No obvious discontinuities exist (e.g., gaps, overshoots).
- Required labels (text) have been placed.
- All plotted data agree with the flood hazard analyses (e.g., regulatory floodway widths match) and cross-section labeling agrees with the appropriate computer model.
- Deliverable plots meet the requirements specified in Subsection L.2.7 for deliverables.
- Feature attributes are correct.
- Pseudo-nodes or shape points have been kept to the minimum required to maintain the correct character of the features.

## **L.2.7 Deliverables**

A complete draft DFIRM data submittal will include the following mapping items:

- Digital base map files and DFIRM database files;
- Digital Elevation Model (DEM) or Digital Terrain Model (DTM) if used;

- Work maps (plots);
- Map index; and
- Metadata file as an ASCII text file.

After completion of an internal QC review process, the Mapping Partner shall submit materials to FEMA in TSDN format. See Appendix M of these Guidelines for detailed requirements for the TSDN.

#### **L.2.7.1 Hardcopy Deliverables**

Each submittal must include hardcopy copies of the work maps. For details on the format and content for work maps, see Volume 1, Section 1.4 of these Guidelines.

#### **L.2.7.2 Digital Deliverables**

The digital data deliverables must clearly identify the data structure option that was used. To facilitate data processing, the assigned Mapping Partner shall submit Federal Geographic Data Committee (FGDC)-compliant metadata as specified in Subsection L.2.8. In addition, the Mapping Partner shall completely fill out the checklist presented in Section L.5 and include it with any digital data submitted to FEMA. If the Mapping Partner's system output capabilities do not fall within these categories, the Mapping Partner shall obtain approval for an exception to these requirements before submitting digital files to FEMA for review.

## **Raster Data**

Digital orthophoto files may be submitted in Tagged Image File Format (.TIF), Georeferenced TIF (GeoTIF), Band Interleaved by Pixel (.BIP or .BIL), Multi-Resolution Seamless Image Database (MrSID), Portable Network Graphics (PNG), or Joint Photographic Experts Group (JPEG) format. Raster files must be accompanied by a file that provides coordinate information that will allow the images to be georeferenced (e.g., a tfw file).

## **Vector Data**

Mapping Partners may submit vector data in the following file formats:

- ESRI export file – E00;
- ESRI shape file – SHP;
- MicroStation design file – DGN;
- MapInfo interchange format – MIF;
- MapInfo native table format – TAB;
- AutoCAD drawing file – DWG;
- Drawing exchange format – DXF;
- Digital Line Graph – DLG; or
- Spatial Data Transfer Standard – SDTS.

## **Transfer Media**

Mapping Partners must submit files on one of the following electronic media:

- CD-ROM (preferred);
- Zip disk;
- 8mm tape;
- 3 ½” diskette;
- DVD;
- Electronic transfer to File Transfer Protocol (FTP) site; or
- Electronic transfer by E-mail (for files under 2 MB).

As technology changes or in special situations, other media may be acceptable if coordinated with FEMA and the Mapping Partner receiving the data.

If a file compression utility was used, provide the utility to uncompress the files.

## File Naming

Wherever possible, the assigned Mapping Partner shall use the table names from the DFIRM database specifications as the file names for draft DFIRM data files with an extension appropriate to the file format.

The draft DFIRM digital data files should be stored in a directory named for the state FIPS and county FIPS or CID and the term “\_DFIRM”. Under each jurisdiction, there should be a separate directory for the standard DFIRM data files; a directory for raster base maps (orthophotos), if applicable; a directory for any enhanced DFIRM database information provided; a directory for raster images of the FIRM panels and their associated world files; a directory for the FIS report; and a directory for the metadata. Under the heading “DFIRM\_DB”, all the files for each data format are stored together in a subdirectory named for the data format. For example, Montgomery County, Maryland, if submitted in ESRI Shapefile format would be stored as:

\\24031\_DFIRM\DFIRM\_DB\ArcShape\ - Directory contains all draft DFIRM data files in ESRI Shapefile format.

\\24031\_DFIRM\Ortho\_photos\ - Directory contains all raster base map data if used.

\\24031\_DFIRM\Document\ - Directory containing metadata and a readme file.

\\24031\_DFIRM\Enhanced\_DB\ArcShape\ - Directory contains any enhanced DFIRM data files in ESRI Shapefile format.

\\24031\_DFIRM\FIRM\ - Directory contains any TIFF or PNG raster images of FIRM panels, the index and their associated world files.

\\24031\_DFIRM\FIS\ - Directory contains PDF of the FIS report.

## Data Identification Requirements

Complete documentation of file names, sizes, and contents is required. All digital media submitted must be labeled with at least the following information:

- Mapping Partner name;
- Community name and state for which the FIS was prepared;
- The date the files were written to the media;
- Details that are necessary to read the media. (e.g., submittals on 8mm tape should include the tape writing format, density and command syntax used); and
- A brief description of contents.

The digital media must clearly identify the data structure used. If any variation from these specifications is used, the assigned Mapping Partner shall submit a comprehensive list of the level



or attribute structure of the affected data. This particularly applies to base map data, which may often be in a non-standard data structure. The Mapping Partner also shall provide thorough documentation for these files.

## **L.2.8 Metadata**

To facilitate the use of these data and the transfer of data files between users, the assigned Mapping Partner shall prepare and submit a metadata file with all digital data submittals. Only one metadata file is required for each Flood Map Project, however, in this one file, the assigned Mapping Partner must distinguish between the different origins of the various datasets included. The Metadata file shall follow the [\*Content Standard for Digital Geospatial Metadata \(version 2.0\)\*](#), FGDC-STD-001-1998. Details of this standard are available at [www.fgdc.gov](http://www.fgdc.gov). A sample metadata file for draft digital data is presented in Section L.6.

The metadata file must include a description of the source material from which the data were derived and the methods of derivation, including all transformations involved in producing the digital files. The description shall include the dates of the source material and the dates of ancillary information used for update. The date assigned to a source must reflect the date that the information corresponds to the ground. If the assigned Mapping Partner does not know this date, then the Mapping Partner may use the date of publication and indicate as such. Each data source in the metadata file must be assigned a Source Citation Abbreviation as described in Subsection L.2.2.1.

The assigned Mapping Partner shall describe any database created by merging information obtained from distinct sources in sufficient detail to identify the actual source for each element in the file.

Because not all DFIRM database tables are included in every draft DFIRM digital data submittal, the Overview Description Section of the Entity and Attribute Information of the metadata file must include a list of all DFIRM database tables included in the submittal.

Wherever possible, the assigned Mapping Partner shall use the following metadata file naming convention. The file should be named with the combination of the two digit state FIPS code and Community or County Identification Number, followed by an “\_” and the effective date of the study (using the YYYYMMDD format), followed by “\_metadata” and the appropriate file extension (i.e., <ST\_FIPS><PCOMM>\_<EFF\_DATE>\_metadata.txt). The Community or County Identification Number is the 3<sup>rd</sup> through the 6<sup>th</sup> digits of the panel number. For community based maps this corresponds to the FEMA Community Identification number. For countywide maps this is the county (or county equivalent) FIPS code with a “C”. For studies that are Preliminary and not yet effective, the word “PRELIM” should be used instead of the effective date. For example, the name of a metadata file for an effective study would be similar to 99001C\_19980915\_metadata.txt while the same file for a preliminary study could be 99001C\_PRELIM\_metadata.txt.

An example of a metadata file for draft DFIRM digital data is presented in Section L.6 of this Appendix. Portions of the file that are double underlined typically vary with each Mapping

Partner's submittal. In addition, the Mapping Partner should modify or replace any other portions of the metadata file to fully document the data submitted.

## **L.3 Preparation of Preliminary and Final Digital Flood Insurance Rate Map Databases**

### **L.3.1 General**

FEMA's goal is to distribute consistent GIS versions of the flood hazard information for new DFIRMs. Therefore, Preliminary or Final DFIRM databases created by Mapping Partners must be consistent in file structure and in data format. The Mapping Partner that produces the draft DFIRM digital data must coordinate with the Mapping Partner that produces the Preliminary or Final DFIRM and the Preliminary or Final DFIRM database and ensure that the finished data meet applicable FEMA standards, include horizontal and vertical control, are documented properly, and conform with the standard data structure. The Mapping Partner that produces the Preliminary or Final DFIRM also must ensure that the Preliminary or Final DFIRM database meets FEMA specifications and that it is delivered to the FEMA Map Service Center in the proper formats.

### **L.3.2 Coordination**

One of the responsibilities of the Mapping Partner that produces the Preliminary or Final DFIRM database is to ensure that the Preliminary or Final DFIRM database is consistent. The Mapping Partner that produces the Preliminary or Final DFIRM database must assist FEMA with coordination of the draft DFIRM digital data submittal. The coordination may occur as part of the Project Scoping Meeting or as a separate meeting immediately afterward. This meeting must serve to coordinate the digital capture of the data and to facilitate the production of a digitally generated FIRM in a timely fashion. Data format is an important consideration to be discussed before data capture, as changing the data format after the fact can be both time consuming and costly.

The Mapping Partner that produces the draft DFIRM digital data shall submit to FEMA a sample of the digital files being prepared when the project is 10-percent complete. The Mapping Partner that produces the Preliminary or Final DFIRM database will assist FEMA to review the data files for any recommended modifications to digital capture procedures to be implemented by the Mapping Partner that produces the draft DFIRM digital data.

#### **L.3.2.1 Data Sources**

As specified in Volume 1, Section 1.3 of these Guidelines, initial research must be performed to avoid duplication of effort. This is especially critical for digitally prepared FIS because data capture is expensive. Existing digital data should be identified and used whenever possible, while still meeting required specifications and quality of work.

It is recommended that as part of the initial coordination effort, the Mapping Partner that produces the draft digital study components identify available digital data and obtain data sets and hardcopy plots as necessary for restudy areas. If the Mapping Partner producing the Preliminary or Final

DFIRM finds that data required for Preliminary or Final DFIRM database are missing, additional data research may be required. If the Mapping Partner that produces the draft DFIRM digital data is unable to supply the missing data, potential sources of digital base map or floodplain boundary data include state, county, or local government agencies responsible for GIS and planning or real estate assessment agencies. Digital floodplain data also may be available from FEMA, if the mapping for the area has been converted to digital format.

If the Mapping Partner that produces the draft digital study components uses pre-existing data, the Mapping Partner shall restructure the data to conform to the spatial data and table structure requirements in Section L.7.

As part of data collection, coordination and submittal, the Mapping Partner that produces the draft DFIRM digital data must document the data sources, date of collection or digitizing, scale of digitizing, projections, coordinate systems, horizontal datum, and vertical datum of all digital data used and submitted. For each data source used, the Mapping Partner shall add a Source Citation entry to the DFIRM metadata file in the Lineage section under Data Quality. Within the metadata file, the Mapping Partner shall assign each data source a Source Citation Abbreviation. These abbreviations are presented above in Subsection L.2.2.1 in Table L-4.

The Mapping Partner that produces the draft DFIRM digital data shall number each source citation abbreviation for a distinct data source (e.g., BASE1, BASE2, BASE3). All spatial tables in the standards discussed in Subsection L.4 have a SOURCE\_CIT field. The Mapping Partner that produces the draft DFIRM digital data shall populate the field with the Source Citation Abbreviation from the metadata file that applies to the related spatial feature.

### **L.3.3 Standards**

The Mapping Partner shall ensure that the Preliminary or Final DFIRM database conforms with the standards listed in this Appendix and Volume 1 and Appendices A, B, K of these Guidelines, as applicable.

### **L.3.4 Horizontal and Vertical Control**

The preferred projection, coordinate system and horizontal datum for the preliminary or final DFIRM Database spatial data is the UTM projection and coordinate system and referenced to NAD 1983. However, certain preliminary or final DFIRM Databases will be referenced to other projections and coordinate systems if the underlying base map data are orthophotos referenced to another projection and coordinate system. All digital data must be in a State Plane coordinate system and associated projection or the UTM projection and coordinate system. The Mapping Partner shall obtain approval from the FEMA Lead in advance for variations to these two options. See Appendix A of these Guidelines for a discussion of horizontal datum and Volume 1, Subsection 1.4.3.2 for a discussion of raster base maps in other projections and coordinate systems.

In the event that the county or other jurisdiction being mapped lies in more than one UTM or State Plane Coordinate System zone, the assigned Mapping Partner must project all digital data submitted to the zone that contains the largest portion of the county or jurisdiction in a single zone.

The assigned Mapping Partner shall not use multiple projection and coordinate system zones in the Preliminary or Final DFIRM database.

All vertical information must reference either NGVD29 or NAVD88. The assigned Mapping Partner must not mix vertical datums within a submittal. See Appendix B of these Guidelines for details.

### **L.3.5 Data Structure**

All Preliminary or Final DFIRM data must consistently follow the data structure described in Subsections L.7.

#### **L.3.5.1 Tiling**

The assigned Mapping Partner shall submit all digital data in a series of thematic files that cover the entire geographic area being mapped and not in individual small tiles that cover limited geographic areas. Preliminary or Final DFIRM databases should normally cover an entire county (or county equivalent). In situations where countywide mapping is not practical, the DFIRM database must cover an entire community or a subset of panels for a community or county.

#### **L.3.5.2 Topology**

Vector data files must meet the following data structure requirements:

- Vectors may not cross other vectors within the same theme and all intersecting vectors must end at intersections.
- Area spatial features for a given theme must cover the entire study area without overlaps, underlaps or sliver polygons between adjacent polygons.
- Unnecessary nodes and vertices should be avoided. Vertices must be placed conservatively when designing features so that only the minimal number of vertices or nodes is used to create the desired shape with appropriate smoothness (e.g., a straight line will be defined with two nodes only).
- Spatial files must not contain any linear or area patterns.
- Gaps or overshoots between features that should close must be eliminated.

Logical consistency describes certain node-line-area relationships internal to the digital data. Node-line-area relationship requirements include the following:

- Areas must be represented by closed polygons, without overshoots or undershoots.
- Uncoded polygons are not permitted, including “sliver” polygons that result from poor digitizing methods.

- Unnecessary nodes and vertices must be avoided. Vertices must be placed conservatively when designing features so that only the minimal number of vertices or nodes is used to create the desired shape with appropriate smoothness (e.g. a straight line will be defined with two nodes only).
- Lines must begin and end at nodes.
- Lines must connect to each other at nodes.
- Lines must not extend through nodes.

### **L.3.5.3 Edgematching**

Preliminary or Final DFIRM databases must meet the edgematching requirements described above in Subsection L.2.5.3.

### **L.3.5.4 Coincident Features**

Preliminary or Final DFIRM databases must meet the coincident feature requirements described above in Subsection L.2.5.4.

### **L.3.5.5 Precise Features**

Preliminary or Final DFIRM databases must meet the precise feature requirements described above in Subsection L.2.5.5.

### **L.3.5.6 Data Compilation**

FEMA's goal is to develop digital data that are as accurate as possible. In general, the most accurate data source must be relied upon to reference other features compiled onto the map. This may mean that, in limited circumstances, floodplain boundary delineations made on very high-resolution topographic maps may appear slightly misplaced on a less accurate base map. However, if the base map meets FEMA standards, these differences should be very small. If this policy creates significant visual problems with the floodplain boundary delineations on the base map selected, the Mapping Partner shall resolve the issue with the FEMA Lead.

Likewise, when high-accuracy data are collected for a Flood Map Project, it is FEMA's goal to maintain the accuracy of those data. For example, cross-section line features must correspond as closely as possible to the actual field survey locations. Often, the Mapping Partner must graphically extend or reshape that end of a cross section for satisfactory cartographic display. When this is necessary, it must be performed as a graphic operation for hardcopy map production. The Mapping Partner will not modify the digital spatial data that depict the true locations of the surveyed cross sections.

### L.3.5.7 Digitizing

Preliminary or Final DFIRM databases must meet the digitizing requirements described above in Subsection L.2.5.7.

### L.3.5.8 Relationship of Base Map to Flood Hazard Data

Base map features are physical features like roads, railroads, rivers, lakes, levees, political boundaries, and bench marks, that map users may rely on to locate an area of interest on the FIRM. Flood hazard data are flood insurance risk zones, BFEs, cross-section locations, and hydraulic structures that depict the results of flood hazard analyses on FIRM. Some physical features such as surface water features and hydraulic structures are used while performing the flood hazard analyses and may be grouped in either category.

The purpose of the base map is to present an accurate depiction of the results of the flood hazard analyses in relation to the physical features on the ground. The floodplain boundaries are typically delineated on a topographic map and may be subsequently transferred to the base map. The topographic and base map data may be derived from the same sources. The spatial accuracy of both the topographic and digital base map is critical to maintaining the accuracy of the floodplain delineations.

Table L-7 presents the features of the base map.

**Table L-7. Base Map Data Tables**

| Base Map Tables |
|-----------------|
| L_Wtr_Nm        |
| S_Gen_Struct    |
| S_Label_Ld      |
| S_Label_Pt      |
| S_Perm_Bmk      |
| S_PLSS_Ar       |
| S_PLSS_Ln       |
| S_Pol_Ar        |
| S_Pol_Ln        |
| S_Quad_Index    |
| S_Trnsport_Ln   |
| S_Wtr_Ar        |
| S_Wtr_Ln        |

The assigned Mapping Partner must ensure that all DFIRM database files conform to the required specifications with the exception of the base map files for PLSS, transportation and water features. If pre-existing data are used by the Mapping Partner for S\_PLSS\_Ar, S\_PLSS\_Ln, S\_Trnsport\_Ln, S\_Wtr\_Ar or S\_Wtr\_Ln, it is not necessary to restructure the files to meet the schema listed. This is discussed in more detail in the description of each of the tables in Section L.7. The data,

however, must be structured logically. If the base map data are not structured following the standard data structure, the Mapping Partner must ensure that the tables that vary are documented in the Entity and Attribute section of the metadata file.

### **L.3.5.9 Computer Assisted Drafting and Design or Geographic Information System Preparation**

Preliminary or Final DFIRM databases must be produced in the standard GIS formats listed below. If the Draft DFIRM data were submitted as CADD format data, it is the responsibility of the Mapping Partner that produces the Preliminary or Final DFIRM data to convert the data to GIS format.

### **L.3.5.10 Table Structure**

Mapping Partners must follow the attribute table structure presented in Section L.7. The attribute data must be stored directly in the ESRI Shapefile, ESRI Export File, or MapInfo Interchange Format table along with the associated spatial data. The attribute data must not be in an independent data file or relational database format. Lookup tables must be stored in dbf format, info format, or MIF format.

### **L.3.5.11 Spatial Files**

Mapping Partners must follow the table structure presented in Section L.7. All tables that begin with S\_ are spatial files.

Which components of the DFIRM database that are required will depend on whether new flood analyses are part of the map update project as well as the judgement of the FEMA Regional Office. In general, the production of any digital map will result in a complete Standard DFIRM Database. However, most studies will also have some data in the Enhanced DFIRM Database. Even studies where existing effective flood hazard analyses are used to produce updated digital maps may capture easily accessible elements of the Enhanced DFIRM Database. In general, where new flood hazard analyses are performed, most of the core elements of the Enhanced Database described below will be populated. For each digital map update undertaken, the Mapping Partner should coordinate with the FEMA Regional Office to determine how much of the Enhanced DFIRM Database should be completed.

Each DFIRM database table has a primary key field defined. This field is normally the table name followed by “\_ID”. The Mapping Partner that creates the digital data must populate these fields. Normally features in each table will be numbered sequentially using this field, although the Mapping Partner may choose another method provided it is logical, documented, consistently implemented, and results in a unique ID value for each spatial feature.

In the table documentation in Section L.7, each field name is followed by a letter code as follows:

- R – Required for all records

- A – Required if applicable to spatial feature described

Plus, each field has a second code:

- S – A component of the Standard DFIRM Database
- E – A component of the Enhanced DFIRM Database

For required fields, Null values are not permitted. In the event that the correct information cannot be obtained for a required field, the Project Officer may allow the mapping partner to substitute a value that indicates that the affected field was intentionally not populated. Any use of not populated values must be documented and explained in the metadata. The value to use for not populated data for each field type is as follows:

- Character – “NP”
- Numeric – -8888
- Date – 88880808
- True.False – “U”

For a field that is required when applicable, but does not apply, the value must be Null (i.e. the field must be left empty, not set to zero). The Mapping Partner shall use the value zero only when an attribute has the specific value of zero. Because of limitations in some of the GIS formats used by FEMA, a true Null value can not be used for some fields. The value to use for “Null” fields for each field type is as follows:

- Character – Null (or “”, the empty string)
- Numeric – -9999
- Date – 99990909
- True.False – Null (or “”, the empty string)

Text fields must follow the capitalization standards that apply to the display of that information on the FIRM.

Date fields in the DFIRM database are stored in the native date format for the data format in which table is distributed. Not all of the database formats used for the DFIRM database support date values in the same way. The time of day is not stored or is set to zero depending on the structure of the date object in a particular data format. Where possible the output format of the date is set to YYYYMMDD.

True/False fields in the DFIRM database are stored as text fields with a field size of one. Since different database programs store the authentic true/false fields in various ways, storing the



true/false data as text helps eliminate inconsistencies between programs. For each true/false field in the DFIRM database, the user should enter “T” for true or “F” for false.

### **L.3.6 Quality Control**

The digital files must be structured following the standard DFIRM database schema. This allows easy exchange of these data between FEMA, Mapping Partners, and other flood hazard data users. All duplicated elements must be removed. The data must be horizontally controlled and referenced to the appropriate horizontal and vertical datum. All digitizing must be done carefully and in conformance with FEMA’s accuracy standards. The assigned Mapping Partner must perform a thorough QC review before submitting data to FEMA. FEMA will review the data provided by the Mapping Partner using automated and interactive techniques.

The Mapping Partner must provide hardcopies of the Preliminary or Final effective DFIRM along with the DFIRM database for quality control review.

### **L.3.7 Deliverables**

A complete DFIRM database submittal will be comprised of the following items:

- Federal Emergency Management Agency Digital Mapping Information Checklist (refer to Section L.5 for detailed information);
- Digital base map files and DFIRM database files in ESRI Shapefile, ESRI Export File, and MapInfo Interchange Format;
- Metadata file as an ASCII text file; and
- PDF version of the FIS report with bookmarks for the section heading and profiles.

#### **L.3.7.1 Hardcopy Deliverables**

The Mapping Partner must provide a transmittal form with the DFIRM database. The transmittal form shall document the scope of the submittal, including the files submitted, jurisdictions covered, etc.

#### **L.3.7.2 Digital Deliverables**

The digital submittal from the Mapping Partner to FEMA must include the complete DFIRM database in ESRI Shapefile, ESRI Export File, and MapInfo Interchange Format. The submittal also must include the metadata file, a readme text file, a raster version of each FIRM panel, and a PDF version of the FIS report.

When a Mapping Partner produces the Preliminary DFIRM database, only ESRI Export File format and a metadata file is required for the initial QA/QC evaluation.

## Transfer Media

The Mapping Partner must submit files to FEMA on one of the following electronic media:

- CD-ROM (preferred); or
- Electronic transfer to File Transfer Protocol (FTP) site.

As technology changes or in special situations, other media may be acceptable, but must be approved by the FEMA Lead.

## File Naming

To name DFIRM Database files, the Mapping Partner must use the table names listed in Section L.7 as the file name with an extension appropriate to the file format.

The draft DFIRM digital data files should be stored in a directory named for the state FIPS and county FIPS or CID and the term “\_DFIRM”. Under each jurisdiction, there should be a separate directory for the standard DFIRM data files; a directory for raster base maps (orthophotos), if applicable; a directory for any enhanced DFIRM database information provided; a directory for raster images of the FIRM panels and their associated world files; a directory for the FIS report; and a directory for the metadata. Under the heading “DFIRM\_DB”, all the files for each data format are stored together in a subdirectory named for the data format. For example, Montgomery County, Maryland, if submitted in ESRI Shapefile format would be stored as:

\\24031\_DFIRM\DFIRM\_DB\ArcExport\ - Directory contains all draft DFIRM data files in ESRI Export format.

\\24031\_DFIRM\DFIRM\_DB\ArcShape\ - Directory contains all draft DFIRM data files in ESRI Shapefile format.

\\24031\_DFIRM\DFIRM\_DB\MapInfo\ - Directory contains all draft DFIRM data files in MapInfo MIF format.

\\24031\_DFIRM\Ortho\_photos\ - Directory contains all raster base map data if used.

\\24031\_DFIRM\Document\ - Directory containing metadata and a readme file.

\\24031\_DFIRM\Enhanced\_DB\ArcExport\ - Directory contains any enhanced DFIRM data files in ESRI Export format.

\\24031\_DFIRM\Enhanced\_DB\ArcShape\ - Directory contains any enhanced DFIRM data files in ESRI Shapefile format.

\\24031\_DFIRM\Enhanced\_DB\MapInfo\ - Directory contains any enhanced DFIRM data files in MapInfo MIF format.

\\24031\_DFIRM\RFIRM\ - Directory contains any TIFF or PNG raster images of FIRM panels, the index and their associated world files.

\\24031\_DFIRM\FIS\ - Directory contains PDF of the FIS report.

## Data Identification Requirements

Complete documentation of file names, sizes, and contents is required. The Mapping Partner shall label all digital media submitted to FEMA with at least the following information:

- Mapping Partner name;
- Community name and state affected by the Flood Map Project;
- Preliminary date or effective date of the DFIRM database; and
- Brief description of contents.

### L.3.8 Metadata

To facilitate the use of these data and the transfer of data files between users, a metadata file shall accompany all digital data submittals. Only one metadata file is required for each Flood Map Project. However, in this file, the assigned Mapping Partner must distinguish between the different origins of the various datasets included. The metadata file shall follow the [Content Standard for Digital Geospatial Metadata \(version 2.0\)](#), FGDC-STD-001-1998. Details of this standard are available at [www.fgdc.gov](http://www.fgdc.gov). A sample metadata file for Preliminary and Final DFIRM databases is presented in Section L.8 of this Appendix.

This metadata file must include a description of the source material from which the data were derived and the methods of derivation, including all transformations involved in producing the final digital files. The description must include the dates of the source material and the dates of ancillary information used for update. The date assigned to a source must reflect the date that the information corresponds to the ground. If the Mapping Partner does not know this date, the Mapping Partner may use the date of publication and indicate as such. For each data source in the metadata file, the Mapping Partner shall assign a Source Citation Abbreviation as described under Data Sources in Subsection L.2.2.1.

The Mapping Partner shall describe any database created by merging information obtained from distinct sources in sufficient detail to identify the actual source for each element in the file.

Because not all DFIRM Database tables are included in every standard DFIRM database, the Overview Description Section of the Entity and Attribute Information should include a list of all DFIRM Database tables included in the submittal.

Wherever possible, the assigned Mapping Partner shall use the following metadata file naming convention. The file should be named with the combination of the two digit state FIPS code and Community or County Identification Number, followed by an “\_” and the effective date of the study (using the YYYYMMDD format), followed by “\_metadata” and the appropriate file extension (i.e., <ST\_FIPS><PCOMM>\_<EFF\_DATE>\_metadata.txt). The Community or County Identification Number is the 3<sup>rd</sup> through the 6<sup>th</sup> digits of the panel number. For community

based maps this corresponds to the FEMA Community Identification number. For countywide maps this is the county (or county equivalent) FIPS code with a “C”. For studies that are Preliminary and not yet effective, the word “PRELIM” should be used instead of the effective date. For example, the name of a metadata file for an effective study would be similar to 99001C\_19980915\_metadata.txt while the same file for a preliminary study could be 99001C\_PRELIM\_metadata.txt.

An example of a metadata file for a DFIRM database is presented in Section L.8. Portions of the file that are double underlined typically vary with each DFIRM Database. In addition, the Mapping Partner must take care to modify or replace other portions of the metadata file to fully document the DFIRM database.

## L.4 Database Table Structure Requirements for Draft Digital Data

### Table: S\_Base\_Index

This table is required if a raster base map was used as the base map for the Flood Insurance Rate Map (FIRM).

The S\_Base\_Index table contains information about the raster data used as a base map for the study area. A spatial file with locational information also corresponds with this data table.

The spatial elements representing raster base map tile index features are rectangular polygons. For standard U.S. Geological Survey Digital Orthophoto Quadrangles, polygons should match quarter-quad boundaries (excluding overedge). Otherwise, polygons should match the boundaries of the raster tiles used (excluding overedge if present).

This is a Standard DFIRM Database table.

The S\_Base\_Index table contains the following elements.

|            |     |   |
|------------|-----|---|
| BASE_ID    | R S | Primary key for table lookup. Assigned by table creator.  |
| FILENAME   | R S | Base Filename. This filename should be assigned by either the raster base map provider or the table creator. The filename should match the filename or specific product identifier assigned by the primary distributor of the raster base map used. This should be the complete filename including the file extension. This identifier must allow the user of the DFIRM database to unambiguously identify the raster base maps used on the FIRM to the primary distributor of the raster base map. |
| BASE_DATE  | R S | Base Date. This is the date that raster base map was acquired by the producer of the base map. For a vector base map that is rasterized for distribution, this data should be the acquisition date for the original vector base map.  |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Base_Index table.  |

**Table: S\_Base\_Index**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| BASE_ID    | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| FILENAME   | R   | S   | text      | 50         |     |          |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| BASE_DATE  | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_BFE

The Base Flood Elevation (BFE) table is required for any digital data where BFE lines will be shown on the corresponding Flood Insurance Rate Map (FIRM). Normally, if there are any riverine AE zones, BFE lines are required.

The S\_BFE table contains information about the BFEs within a study area. A spatial file with locational information also corresponds with this data table. BFE lines indicate the rounded whole-foot water-surface elevation of the 1-percent-annual-chance flood.

The spatial elements representing BFE features are lines extending from Special Flood Hazard Area (SFHA) boundary to SFHA boundary. The BFE lines will have no visible gaps or overshoots between the SFHA boundary and the end of the BFE line at the publication scale of the DFIRM. However, the ends of the BFE lines are not necessarily snapped precisely to the SFHA boundary. Each BFE is represented by a single line. While BFE lines are depicted as wavy lines on the hardcopy FIRM, they should be primarily straight lines in the spatial data, although they may bend consistent with procedures described in Volume 1 of these Guidelines.

This is a Standard DFIRM Database table.

The S\_BFE table contains the following elements:

|            |   |   |  |
|------------|---|---|--|
| BFE_LN_ID  | R | S | Primary key for table lookup. Assigned by table creator.   |
| ELEV       | R | S | Base Flood Elevation. The rounded, whole foot elevation of the 1-percent-annual-chance flood. This is the value of the BFE that is printed next to the BFE line on the FIRM.   |
| LEN_LID    | R | S | Length Unit Lookup Identification. A code that provides a link to a valid unit of length measurement from the D_Length_Units table. This unit indicates the measurement system used for the BFEs. Normally this would be feet.   |
| V_DATM_LID | R | S | Vertical Datum Lookup Identification. A code that provides a link to a valid vertical datum from the D_V_Datum table. The vertical datum indicates the reference surface from which the flood elevations are measured. Normally this would be North American Vertical Datum of 1988 for new studies. |
| SOURCE_CIT | R | S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_BFE table.  |

**Table: S\_BFE**

| Field      | R/A | S/E | MS Access          |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----|--------------------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     |     | type               | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| BFE_LN_ID  | R   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| ELEV       | R   | S   | number<br>(double) | 8          | 2   |        |            | number         | 13    | 2   | numeric       | 8          | 13           | 2   | decimal   | 15    | 2   |
| LEN_LID    | R   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| V_DATM_LID | R   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SOURCE_CIT | R   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |



## Table: S\_CBRS

This table is only required from Mapping Partners producing Preliminary and Final Digital Flood Insurance Rate Map (DFIRM) databases. This table only applies to coastal areas that have specially protected areas designated by Congress on John H. Chafee Coastal Barrier Resources System (CBRS) maps. Authoritative CBRS boundary locations are shown on these maps administered by the U.S. Fish and Wildlife Service. Normally these areas are already shown on existing Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) for the area. CBRS areas have restrictions Federal funding (including flood insurance coverage) after specified dates for new or substantially improved structures. See Section 2.2 and Appendix K of these Guidelines for more detailed information about CBRS areas.

The S\_CBRS table contains information about the CBRS areas within the study area, if applicable. A spatial file with locational information also corresponds with this data table.

The spatial elements representing CBRS features are closed polygons. Each contiguous CBRS area of the same CBRS\_TYP and same CBRS\_DATE should be a single polygon.

This is a Standard DFIRM Database table.

The S\_CBRS table contains the following elements.

|            |   |   |   |
|------------|---|---|---|
| CBRS_ID    | R | S | Primary key for table lookup. Assigned by table creator.  |
| CBRS_LID   | A | S | CBRS Lookup Identification. A code that provides a link to a valid CBRS type codes found in the D_CBRS_Typ table. The type code provides details of the types of prohibitions that apply to the area. Normally this would be CBRS area or an Otherwise Protected Area (OPA). This field is applicable if CBRS_TF is true. Otherwise this field is null. |
| CBRS_DATE  | A | S | CBRS Date. Legislative or administrative date on which prohibitions for the CBRS area apply. This should be indicated on the FIRM with a note or with a fill pattern indicated on the legend. This field is applicable if CBRS_TF is true. Otherwise this field is null.  |
| CBRS_TF    | R | S | This field is True if the area is a CBRS or an OPA. Enter "T" for true or "F" for false.  |
| SOURCE_CIT | R | S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_CBRS table.  |

**Table: S\_CBRS**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| CBRS_ID    | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| CBRS_LID   | A   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| CBRS_DATE  | A   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| CBRS_TF    | R   | S   | text      | 1          |     |          |                |      | string | 1             |      | character  | 1            | 1       |      | character | 1   |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Cst\_Gage

This table is required when gage information is used to support the calibration of models or methods used in the analysis of coastal flood hazards and may be used in the determination of flood heights.

The S\_Cst\_Gage table contains information about coastal gages for the study area. The spatial location of these gages may be some distance from the areas for which coastal flood hazards were determined. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the coastal gages are points.

This is an Enhanced DFIRM Database table.

The S\_Cst\_Gage table contains the following elements.

|            |     |  |
|------------|-----|--|
| GAGE_ID    | R E | Primary key for table lookup. Assigned by table creator.   |
| CST_MDL_ID | A E | Coastal Model Identification. This field is populated by a linking element to the L_Cst_Model table. The L_Cst_Model table contains detailed information about the coastal models that were used to determine the coastal flood hazard for the area of each individual gage. This ID field should contain a number that matches the CST_MDL_ID field for a record in the L_Cst_Model. Multiple gages may link to a single record in the L_Cst_Model table. |
| GAGE_NM    | R E | Gage name assigned by agency maintaining gage.   |
| AGENCY     | R E | Name of agency maintaining gage.   |
| REC_INTVL  | A E | Recording Interval. This field is populated only if the coastal gage is a fixed-interval gage.   |
| TIME_LID   | A E | Recording Interval Time Unit Lookup Identification. Link to D_Time_Units to establish unit of measure of the recording interval. This field is populated only if the coastal gage is a fixed-interval gage.  |
| START_PD   | R E | Gage Record Starting Date. Start of earliest period of record used in gage analysis.   |
| END_PD     | R E | Gage Record Ending Date. End of latest period of record used in gage analysis.   |

|            |     |   |
|------------|-----|---|
| GAGE_LID   | R E | Gage Type Lookup Identification. A code that provides a link to a valid entry from the D_Gage table. This value indicates the type of coastal gage. |
| WVDIR_TF   | R E | Does the gage record wave direction True or False? Enter "T" for true or "F" for false.   |
| WDSPD_TF   | R E | Does the gage record wind speed True or False? Enter "T" for true or "F" for false.   |
| WDDIR_TF   | R E | Does the gage record wind direction True or False? Enter "T" for true or "F" for false.   |
| SOURCE_CIT | R E | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Cst_Gage table.                            |

**Table: S\_Cst\_Gage**

| Field      | R/A | S/E | MS Access |            |     |          |            | ESRI Shapefile |        |     | ESRI Coverage |            |              |     | MapInfo |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|------------|----------------|--------|-----|---------------|------------|--------------|-----|---------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask | type           | width  | dec | type          | item width | output width | dec | type    | width     | dec |  |
| GAGE_ID    | R   | E   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| CST_MDL_ID | A   | E   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| GAGE_NM    | R   | E   | text      | 150        |     |          |            |                | string | 150 |               | character  | 150          | 150 |         | character | 150 |  |
| AGENCY     | R   | E   | text      | 150        |     |          |            |                | string | 150 |               | character  | 150          | 150 |         | character | 150 |  |
| REC_INTVL  | A   | E   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| TIME_LID   | A   | E   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| START_PD   | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000 |                | date   |     |               | date       | 8            | 10  |         | date      |     |  |
| END_PD     | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000 |                | date   |     |               | date       | 8            | 10  |         | date      |     |  |
| GAGE_LID   | R   | E   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| WVDIR_TF   | R   | E   | text      | 1          |     |          |            |                | string | 1   |               | character  | 1            | 1   |         | character | 1   |  |
| WDSPD_TF   | R   | E   | text      | 1          |     |          |            |                | string | 1   |               | character  | 1            | 1   |         | character | 1   |  |
| WDDIR_TF   | R   | E   | text      | 1          |     |          |            |                | string | 1   |               | character  | 1            | 1   |         | character | 1   |  |
| SOURCE_CIT | R   | E   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |

## Table: S\_Cst\_Tsct\_Ln

This table is required when the corresponding Flood Insurance Rate Map (FIRM) and/or Flood Insurance Study (FIS) will show coastal transect locations. Normally this is any area with a coastal study.

The S\_Cst\_Tsct\_Ln table contains information about the Coastal Transect Lines within the study area, if applicable. The transect lines indicate the location that was used to provide representative topographic information for the coastal flood models used. A spatial file with locational information also corresponds with this data table.

The spatial elements representing coastal transects are lines generally extending from offshore all the way across the coastal floodplain. Transects can also extend seaward when wave runup modeling is used into determining coastal flood hazards. Each transect should be represented by a single line feature without the circles on each end shown on the hard copy map. The location and shape of the lines should depict as accurately as possible the position of the transect used.

This is a modified Standard DFIRM Database table that includes Standard DFIRM Database items and Enhanced Database items. All items after SOURCE\_CIT are Enhanced.

The S\_Cst\_Tsct\_Ln table contains the following elements.

|            |     |   |
|------------|-----|---|
| TRAN_LN_ID | R S | Primary key for table lookup. Assigned by table creator.  |
| TRAN_NO    | R S | Transect Number. Transect number as shown on FIRM or in FIS. Each transect is normally numbered sequentially.   |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Cst_Tsct_Ln table.   |
| CST_MDL_ID | A E | Coastal Model Identification. This field is populated by a linking element to the L_Cst_Model table. The L_Cst_Model table contains detailed information about the coastal models that were used to determine the coastal flood hazard for the area of each individual transect line. This ID field should contain a number that matches the CST_MDL_ID field for a record in the L_Cst_Model. Multiple transects may link to a single record in the L_Cst_Model table. This field is not required for digital conversion of existing FISs. Significant additional research may be required to identify the model that applies for each transect. However, for new coastal studies, this field is required. |
| SETUP_DPTH | A E | Wave Set-up Depth. This is the depth of wave setup that is added to the 1% annual chance stillwater elevation.  |
| SIG_HT     | A E | Significant Wave Height. This is the wave height associated with the 1% annual chance storm event. It is the average height of the  |

highest 1/3 of all waves. It is used in WHAFIS 3.0 and RUNUP 2.0 models.

|            |     |   |
|------------|-----|---|
| SIG_PD     | A E | Significant Wave Period. This is the wave period associated with the 1% annual chance storm event. It is the time it takes for a wave of the significant wave height to pass a point.   |
| CON_HT     | A E | Controlling Wave Height. 1.6 times the significant wave height.   |
| CON_PD     | A E | Controlling Wave Period. The time it takes for a wave of the controlling wave height to pass a point.   |
| MEAN_HT    | A E | Mean Wave Height. Average height of all waves. This information is typically derived from wave gage data.   |
| MEAN_PD    | R E | Mean Wave Period. Average period of all waves. This information is typically derived from wave gage data.   |
| EROS_LID   | A E | Erosion Methodology Lookup Identification. A code that provides a link to a valid erosion methodology from the D_Eros_Method table.   |
| TIME_LID   | R E | Units of Time Measurement Lookup Identification. A code that provides a link to valid time measurements from the D_Time_Units table. This field is populated if there is a value entered for the significant wave period, controlling wave period, or the mean wave period. The period values all should use the same unit of time measurement. |
| V_DATM_LID | R E | Vertical Datum Lookup Identification. A code that provides a link to a valid datum from the D_V_Datum table. The vertical datum indicates the reference surface from which the elevations are measured. Normally this would be North American Vertical Datum of 1988 for new studies.   |
| LEN_LID    | R E | Length Unit Lookup Identification. A code that provides a link to a valid unit of measurement from the D_Length_Units table. This unit indicates the measurement system used for the elevation, depth, height, and distance values. Normally this would be feet.  |
| VZONE_LID  | R E | V Zone Extent Lookup Identification. A code that provides a link to a valid V Zone extent from the D_VZone table. This information provides a brief summary to users about the predominating methodology that was used to determine the landward extent of the V Zone in any mapped flood hazard area.  |

|            |     |   |
|------------|-----|---|
| METH_LID   | R E | Source Method Lookup Identification. A code that provides a link to a valid source method from the D_Method table. This value describes the general methodology used in deriving the station and elevation point data along transects used in coastal flood hazards.  |
| EFF_TF     | R E | Is the coastal transect part of the effective study True or False? Enter "T" for true or "F" for false.   |
| SHOWN_FIRM | R E | Transect Shown on FIRM. Is the transect shown on the FIRM True or False? Enter "T" for true or "F" for false.   |
| SHR_LID    | R E | Shoreline Roughness Lookup Identification. A code that provides a link to a valid shoreline type from the D_Shr_Rough table. This value is the shoreline type classification that relates each transect with a shoreline type. This information can be used in conjunction with other coastal hazard analyses or applications and provides a useful set of data about relative shoreline roughness. |
| L_RANGE    | R E | Left Range of Coastal Transect. Looking landward, the range is the along-shore distance to the left of the transect line that the transect is intended to represent.  |
| L_DIRECT   | R E | Direction of Left Range. Direction is entered as the bearing of the range away from the transect. The left range direction is measured in degrees and is the angle of an arc taken in a clockwise direction from north to the range's bearing. If the transect is oriented perpendicular to the shoreline, this value will be +/-90 degrees of the transect's direction in degrees from north.      |
| R_RANGE    | R E | Right Range of Coastal Transect. Looking landward, the range is the along-shore distance to the right of the transect line that the transect is intended to represent   |
| R_DIRECT   | R E | Direction of Right Range. Direction is entered as the bearing of the range away from the transect. The right range direction is measured in degrees and is the angle of an arc taken in a clockwise direction from north to the range's bearing. If the transect is oriented perpendicular to the shoreline, this value will be +/-90 degrees of the transect's in direction in degrees from north. |
| LOC_DESC   | R E | Location Description. This is a description of the location of the coastal transects. This description is used and/or can be found in the transect table in the FIS text.   |



XCOORD

R E X-Coordinate. The X-coordinate of the 0.0-foot elevation point along the transect. This point must fall on the transect and have the same horizontal datum of the study. The coordinates must be entered using the same coordinate system used for the DFIRM GIS data. If the S\_Shore\_Ln table is provided, the shoreline should cross the transect at this point.

YCOORD

R E Y-Coordinate. The Y-coordinate of the 0.0-foot elevation point along the transect. This point must fall on the transect and have the same horizontal datum of the study. The coordinates must be entered using the same coordinate system used for the DFIRM GIS data. If the S\_Shore\_Ln table is provided, the shoreline should cross the transect at this point.

**Table: S\_Cst\_Tsct\_Ln**

| Field      | R/A | S/E | MS Access          |            |     |        |            | ESRI Shapefile |        |     | ESRI Coverage |            |              |     | MapInfo |           |     |   |
|------------|-----|-----|--------------------|------------|-----|--------|------------|----------------|--------|-----|---------------|------------|--------------|-----|---------|-----------|-----|---|
|            |     |     | Type               | field size | dec | format | input mask | type           | width  | Dec | type          | item width | output width | dec | type    | width     | dec |   |
| TRAN_LN_ID | R   | S   | Text               | 11         |     |        |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |   |
| TRAN_NO    | R   | S   | Text               | 4          |     |        |            |                | string | 4   |               | character  | 4            | 4   |         | character | 4   |   |
| SOURCE_CIT | R   | S   | Text               | 11         |     |        |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |   |
| CST_MDL_ID | A   | E   | Text               | 11         |     |        |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |   |
| SETUP_DPTH | A   | E   | number<br>(double) | 8          | 2   |        |            |                | number | 13  | 2             | numeric    | 8            | 13  | 2       | decimal   | 15  | 2 |
| SIG_HT     | A   | E   | number<br>(double) | 8          | 2   |        |            |                | number | 13  | 2             | numeric    | 8            | 13  | 2       | decimal   | 15  | 2 |
| SIG_PD     | A   | E   | number<br>(double) | 8          | 2   |        |            |                | number | 13  | 2             | numeric    | 8            | 13  | 2       | decimal   | 15  | 2 |
| CON_HT     | A   | E   | number<br>(double) | 8          | 2   |        |            |                | number | 13  | 2             | numeric    | 8            | 13  | 2       | decimal   | 15  | 2 |
| CON_PD     | A   | E   | number<br>(double) | 8          | 2   |        |            |                | number | 13  | 2             | numeric    | 8            | 13  | 2       | decimal   | 15  | 2 |

|            |   |   |                    |    |   |  |  |        |    |   |           |    |    |   |           |    |   |
|------------|---|---|--------------------|----|---|--|--|--------|----|---|-----------|----|----|---|-----------|----|---|
| MEAN_HT    | A | E | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| MEAN_PD    | R | E | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| EROS_LID   | A | E | Text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| TIME_LID   | R | E | Text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| V_DATM_LID | R | E | Text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| LEN_LID    | R | E | Text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| VZONE_LID  | R | E | Text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| METH_LID   | R | E | Text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| EFF_TF     | R | E | Text               | 1  |   |  |  | string | 1  |   | character | 1  | 1  |   | character | 1  |   |
| SHOWN_FIRM | R | E | Text               | 1  |   |  |  | string | 1  |   | character | 1  | 1  |   | character | 1  |   |
| SHR_LID    | R | E | Text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| L_RANGE    | R | E | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| L_DIRECT   | R | E | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| R_RANGE    | R | E | number             | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |

|          |   |   |                    |     |   |  |  |        |     |   |           |     |     |   |           |     |   |
|----------|---|---|--------------------|-----|---|--|--|--------|-----|---|-----------|-----|-----|---|-----------|-----|---|
|          |   |   | (double)           |     |   |  |  |        |     |   |           |     |     |   |           |     |   |
| R_DIRECT | R | E | number<br>(double) | 8   | 2 |  |  | number | 13  | 2 | numeric   | 8   | 13  | 2 | decimal   | 15  | 2 |
| LOC_DESC | R | E | Text               | 254 |   |  |  | string | 254 |   | character | 254 | 254 |   | character | 254 |   |
| XCOORD   | R | E | number<br>(double) | 8   | 2 |  |  | string | 13  | 2 | numeric   | 8   | 13  | 2 | decimal   | 15  | 2 |
| YCOORD   | R | E | number<br>(double) | 8   | 2 |  |  | string | 13  | 2 | numeric   | 8   | 13  | 2 | decimal   | 15  | 2 |

## Table: S\_FIRM\_Pan

This table is required for all draft Digital Flood Insurance Rate Map (DFIRM) data.

The S\_FIRM\_Pan table contains information about the Flood Insurance Rate Map (FIRM) panel area. A spatial file with locational information also corresponds with this data table.

The spatial entities representing FIRM panels are polygons. The polygon for the FIRM panel corresponds to the panel neatlines. As a result, the panels are generally rectangular. In situations where a portion of a panel lies outside of the jurisdiction being mapped, the user must refer to the S\_POL\_AR table to determine the portion of the panel area where the DFIRM database shows the effective flood hazard data for the mapped jurisdiction.

This is a Standard DFIRM Database table.

The S\_FIRM\_Pan table contains the following elements.

|           |     |   |
|-----------|-----|---|
| FIRM_ID   | R S | Primary key for table lookup. Assigned by table creator.  |
| ST_FIPS   | R S | State FIPS. This is the two-digit code that corresponds to the State 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. These two numbers correspond to the first two digits of the panel number.  |
| PCOMM     | R S | Community or County Identification Number. This is the 3 <sup>rd</sup> through the 6 <sup>th</sup> digits of the panel number. For community based maps this corresponds to the Federal Emergency Management Agency (FEMA) Community Identification number. For countywide maps this is the county (or county equivalent) FIPS code with a "C". |
| PANEL     | R S | Panel Number. This is 7 <sup>th</sup> through the 10 <sup>th</sup> digits in the complete panel number. This is assigned by the scale of the map and the position within either the community or county. The panel number scheme is described in detail in Appendix K of these Guidelines.  |
| SUFFIX    | R S | Map Suffix. This is the final digit in the complete panel number. This is a letter suffix at the end of the panel number.   |
| FIRM_PAN  | R S | 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_LID | R S | Panel Lookup Identification. A code that provides a link to the D_Panel_Typ table; this field will indicate if the maps are printed   |

or not printed, community based, county wide, or an unmapped community.

|            |     |   |
|------------|-----|---|
| EFF_DATE   | A S | Effective Date. This is the effective date of the current map revision. This field is not populated until the FIRM effective date is established and the Final FIRM is ready for hardcopy production by FEMA. Then it is required.  |
| SCALE_LID  | R S | Map Scale Lookup Identification. A code that provides a link to a value in the D_Scale table, it is the denominator of the scale of the FIRM.   |
| PNP_REASON | A S | Panel Not Printed Reason. If the FIRM panel is not printed, this is the reason. This could include 'All Zone X' or other reasons. See Appendix K for a listing of Panel Not Printed reasons that may be used. Only completed if the hardcopy panel is not printed by FEMA.  |
| NW_LAT     | R S | Northwest Latitude. This is the latitude of the northwest corner of the FIRM panel neat line. This value is in degrees, minutes, seconds (DDD MM SS.SSS). Normally this corresponds to U.S. Geological Survey (USGS) 7.5' quadrangle maps using North American Datum of 1983 (NAD83), or even subdivisions thereof. However this value should reflect the actual latitude if non-standard panel sizes are used. |
| NW_LONG    | R S | Northwest Longitude. This is the longitude of the northwest corner of the FIRM panel. This value is in degrees, minutes, seconds (DDD MM SS.SSS). Normally this corresponds to USGS 7.5' quadrangle maps using NAD83, or even subdivisions thereof. However this value should reflect the actual longitude if non-standard panel sizes are used.  |
| SE_LAT     | R S | Southeast Latitude. This is the latitude of the southeast corner of the FIRM panel. This value is in degrees, minutes, seconds (DDD MM SS.SSS). Normally this corresponds to USGS 7.5' quadrangle maps using NAD83, or even subdivisions thereof. However, this value should reflect the actual latitude if non-standard panel sizes are used.  |
| SE_LONG    | R S | Southeast Longitude. This is the longitude of the southeast corner of the FIRM panel. This value is in degrees, minutes, seconds (DDD MM SS.SSS). Normally this corresponds to USGS 7.5' quadrangle maps using NAD83, or even subdivisions thereof. However this value should reflect the actual longitude if non-standard panel sizes are used.  |

SOURCE\_CIT      R S    Source Citation.    Abbreviation used in the metadata file when describing the source information for the S\_FIRM\_Pan table.

**Table: S\_FIRM\_Pan**

| Field      | R/A | S/E | MS Access |            |     |          |            | ESRI Shapefile |        |     | ESRI Coverage |            |              |     | MapInfo |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|------------|----------------|--------|-----|---------------|------------|--------------|-----|---------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask | type           | width  | dec | type          | item width | output width | dec | type    | width     | dec |  |
| FIRM_ID    | R   | S   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| ST_FIPS    | R   | S   | text      | 2          |     |          |            |                | string | 2   |               | character  | 2            | 2   |         | character | 2   |  |
| PCOMM      | R   | S   | text      | 4          |     |          |            |                | string | 4   |               | character  | 4            | 4   |         | character | 4   |  |
| PANEL      | R   | S   | text      | 4          |     |          |            |                | string | 4   |               | character  | 4            | 4   |         | character | 4   |  |
| SUFFIX     | R   | S   | text      | 1          |     |          |            |                | string | 1   |               | character  | 1            | 1   |         | character | 1   |  |
| FIRM_PAN   | R   | S   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| PANEL_LID  | R   | S   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| EFF_DATE   | A   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000 |                | date   |     |               | date       | 8            | 10  |         | date      |     |  |
| SCALE_LID  | R   | S   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| PNP_REASON | A   | S   | text      | 50         |     |          |            |                | string | 50  |               | character  | 50           | 50  |         | character | 50  |  |
| NW_LAT     | R   | S   | text      | 15         |     |          |            |                | string | 15  |               | character  | 15           | 15  |         | character | 15  |  |
| NW_LONG    | R   | S   | text      | 15         |     |          |            |                | string | 15  |               | character  | 15           | 15  |         | character | 15  |  |
| SE_LAT     | R   | S   | text      | 15         |     |          |            |                | string | 15  |               | character  | 15           | 15  |         | character | 15  |  |
| SE_LONG    | R   | S   | text      | 15         |     |          |            |                | string | 15  |               | character  | 15           | 15  |         | character | 15  |  |



|            |   |   |      |    |  |  |  |        |    |  |           |    |    |  |           |    |  |
|------------|---|---|------|----|--|--|--|--------|----|--|-----------|----|----|--|-----------|----|--|
| SOURCE_CIT | R | S | text | 11 |  |  |  | string | 11 |  | character | 11 | 11 |  | character | 11 |  |
|------------|---|---|------|----|--|--|--|--------|----|--|-----------|----|----|--|-----------|----|--|

## Table: S\_Fld\_Haz\_Ar

This table is required for all draft Digital Flood Insurance Rate Map data.

The S\_Fld\_Haz\_Ar table contains information about the flood hazards within the study area. A spatial file with locational information also corresponds with this data table. These zones are used by the federal Emergency Management Agency (FEMA) to designate the Special Flood Hazard Area (SFHA) and for insurance rating purposes. These data are the flood hazard areas that are or will be depicted on the Flood Insurance Rate Map (FIRM). A spatial file with locational information also corresponds with this data table.

The spatial elements representing the flood zones are polygons. The entire area of the jurisdiction(s) mapped by the FIRM should have a corresponding flood zone polygon. There is one polygon for each contiguous flood zone designated.

This is a modified Standard DFIRM Database table that includes Standard DFIRM Database items and Enhanced Database items. All items after SOURCE\_CIT are Enhanced.

The S\_Fld\_Haz\_Ar table contains the following elements.

|            |     |   |
|------------|-----|---|
| FLD_AR_ID  | R S | Primary key for table lookup. Assigned by table creator.  |
| ZONE_LID   | R S | Flood Zone Lookup Identification. This is a code that provides a link to a valid entry from the D_Zone table. This is the flood zone label/abbreviation for the area.   |
| FLDWAY_LID | A S | Floodway Lookup Identification. This is a code that provides a link to a valid entry from the D_Floodway table. Floodway areas are designated by FEMA and adopted by communities to provide an area that will remain free of development to moderate increases in flood heights due to encroachment on the floodplain. If the corresponding area is not designated as a floodway, this field is null. |
| SFHA_TF    | R S | Special Flood Hazard Area. If the area is within SFHA this field would be True. This field will be true for any area that is coded for any A or V zone flood areas. It should be false for any X or D zone flood areas. Enter "T" for true or "F" for false.  |
| STATIC_BFE | A S | Static Base Flood Elevation. For areas of constant Base Flood Elevation (BFE), the BFE value is shown beneath the zone label rather than on a BFE line. In this situation the same BFE applies to the entire polygon. This is normally occurs in lakes or coastal zones. This field is only populated where a static BFE is shown on the FIRM.  |

|            |     |  |
|------------|-----|--|
| V_DATM_LID | A S | Vertical Datum Lookup Identification. A code that provides a link to a valid vertical datum from the D_V_Datum table. The vertical datum indicates the reference surface from which the flood elevations are measured. Normally this would be North American Vertical Datum of 1988 for new studies. This field is only populated if the STATIC_BFE is populated.                          |
| DEPTH      | A S | Depth Value for Zone AO Areas. This is shown beneath the zone label on the FIRM. This field is only populated if a depth is shown on the FIRM.   |
| LEN_LID    | A S | Length Unit Lookup Identification. A code that provides a link to a valid unit of length from the D_Length_Units table. This unit indicates the measurement system used for the BFEs and/or depths. Normally this would be feet. This field is only populated if the DEPTH or STATIC_BFE field is populated.   |
| VELOCITY   | A S | Velocity Measurement. This is shown beneath the zone label on the FIRM for alluvial fan areas (certain Zone AO areas). This value represents the velocity of the flood flow in this area. This field is only populated when a velocity is shown on the FIRM.   |
| VEL_LID    | A S | Velocity Unit Lookup Identification. A code that provides a link to a valid unit of velocity from the D_Vel_Units table. This unit indicates the measurement system for the velocity of the flood hazard area. The value is shown in the legend where alluvial fans are present. This field is only populated if the VELOCITY field is populated.  |
| AR_REVERT  | A S | If the area is Zone AR, this field would hold the zone that the area would revert to if the AR zone were removed. This field is only populated if the corresponding area is Zone AR. Acceptable values for this field are listed in the D_Zone table.  |
| BFE_REVERT | A S | If Zone is Zone AR, this field would hold the static base flood elevation for the reverted zone. This field is populated when Zone equals AR and the reverted zone has a static BFE.   |
| DEP_REVERT | A S | If Zone is Zone AR, this field would hold that flood depth for the reverted zone. This field is populated when Zone equals AR and the reverted zone has a depth assigned.  |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Fld_Haz_Ar table. Normally, the flood hazard area polygon will be divided to distinguish areas modified by the most recent revision from areas based on the effective FIRM prior to the most recent revision. Revisions and sources prior to the most recent revision will not be |

tracked for individual polygons in the flood hazard areas table in the standard database.

- HYDRO\_ID            A E Hydrologic Model Identification. A code that provides a link to the hydrologic model table, L\_Hydro\_Model. The L\_Hydro\_Model table provides information on the methods used to determine the flood hazard for areas of shallow flooding and ponding. This ID field must contain a number that matches the HYDRO\_ID field for a record in the L\_Hydro\_Model table. This attribute is only required for flood hazard areas with AO and AH zone designations or ponding associated with AE zones.
- CST\_MDL\_ID        A E Coastal Model Identification. This field is populated by a linking element to the L\_Cst\_Model table. The L\_Cst\_Model table contains detailed information about the coastal models that were used to determine the coastal flood hazard for this area. This ID field must contain a number that matches the CST\_MDL\_ID field for a record in the L\_Cst\_Model table that documents coastal model information. This attribute is only required in areas for which flood hazard determinations do not consider wave hazards. The static BFE values in these areas are based on surge modeling and/or tidal analyses. When wave hazards are considered modeling information is linked to the transects used to complete the wave analysis.

**Table: S\_Fld\_Haz\_Ar**

| Field      | R/A | S/E | MS Access          |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----|--------------------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     |     | type               | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| FLD_AR_ID  | R   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| ZONE_LID   | R   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| FLDWAY_LID | A   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SFHA_TF    | R   | S   | text               | 1          |     |        |            | string         | 1     |     | character     | 1          | 1            |     | character | 1     |     |
| STATIC_BFE | A   | S   | number<br>(double) | 8          | 2   |        |            | number         | 13    | 2   | numeric       | 8          | 13           | 2   | decimal   | 15    | 2   |
| V_DATM_LID | A   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| DEPTH      | A   | S   | number<br>(double) | 8          | 2   |        |            | number         | 13    | 2   | numeric       | 8          | 13           | 2   | decimal   | 15    | 2   |
| LEN_LID    | A   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| VELOCITY   | A   | S   | number<br>(double) | 8          | 2   |        |            | number         | 13    | 2   | numeric       | 8          | 13           | 2   | decimal   | 15    | 2   |
| VEL_LID    | A   | S   | text               | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| AR_REVERT  | A   | S   | text               | 6          |     |        |            | string         | 6     |     | character     | 6          | 6            |     | character | 6     |     |

|            |   |   |                    |    |   |  |  |        |    |   |           |    |    |   |           |    |   |
|------------|---|---|--------------------|----|---|--|--|--------|----|---|-----------|----|----|---|-----------|----|---|
| BFE_REVERT | A | S | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| DEP_REVERT | A | S | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| SOURCE_CIT | R | S | text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| HYDRO_ID   | A | E | text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| CST_MDL_ID | A | E | text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |

## **Table: S\_Fld\_Haz\_Ln**

This table is required for all draft Digital Flood Insurance Rate Map data.

The S\_Fld\_Haz\_Ln table contains information about the flood hazard line features for the study area. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the boundaries of the flood hazard areas depicted on the Flood Insurance Rate Map (FIRM) are lines.

This is a Standard DFIRM Database table.

The S\_Fld\_Haz\_Ln table contains the following elements.

|           |     |   |
|-----------|-----|---|
| FLD_LN_ID | R S | Primary key for table lookup. Assigned by table creator.  |
| LN_LID    | R S | Line Lookup Identification. A code that provides a link to a valid entry from the D_Ln_Typ table. These line types describe the flood boundary and may be used to indicate how the feature should be depicted on the hardcopy FIRM. |

**Table: S\_Fld\_Haz\_Ln**

| Field     | R/A | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| FLD_LN_ID | R   | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| LN_LID    | R   | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |



## Table: S\_Gen\_Struct

This table is required whenever hydraulic structures are shown in the flood profile. It is also required if levees are shown on the FIRM, channels containing the flooding are shown on the FIRM, or any other structure that impacts the area's flood risk is shown on the FIRM.

The S\_Gen\_Struct table contains information about the hydraulic structures within the study area. It should include all structures shown in the flood profiles. In addition, levees, sea walls, channels that contain flooding, and other significant flood control structures shown on the Flood Insurance Rate Map (FIRM) should be included. A spatial file with locational information also corresponds with this data table.

Spatial elements representing general structures are represented by lines. The lines should represent the primary characteristic of the structure. For example, bridges should be represented by the transportation centerline carried by the bridge. Dams should be represented by a line corresponding to the top of the dam. Levees should be represented by a line corresponding to the top of levee. A line corresponding to the centerline of the main barrel should represent a culvert.

This is a Standard DFIRM Database table.

The S\_Gen\_Struct table contains the following elements.

|            |     |   |
|------------|-----|---|
| STRUCT_ID  | R S | Primary key for table lookup. Assigned by table creator.  |
| STRUCT_LID | R S | Structure Type Lookup Identification. A code that provides a link to a valid entry from the D_Struct_Typ table. This table contains entries for most major types of structures that would be found in hydraulic analyses.                                 |
| STRUCT_NM  | A S | Structure Name. This is the name of the feature and the name that will be shown on the hardcopy FIRM. This record is left blank if the structure is not named on FIRM and/or the name is unknown.   |
| WTR_NM_LID | R S | Surface Water Name Lookup Identification. A code that provides a link to the name of the surface water feature. The surface water feature name is taken from the table L_Wtr_Nm. This is a lookup table that is populated by the creator of the database. |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Gen_Struct table.  |

**Table: S\_Gen\_Struct**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| STRUCT_ID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| STRUCT_LID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| STRUCT_NM  | A   | S   | text      | 50         |     |        |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| WTR_NM_LID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Label\_Ld

This table is required for Digital Flood Insurance Rate Map (DFIRM) data if any label leader lines are shown on the hardcopy FIRM.

The S\_Label\_Ld table contains information about leader lines that would connect labels to feature locations on base maps. The purpose of this table, along with the S\_Label\_Pt table is so that the DFIRM database can contain the names of roads and other physical features in or near the Special Flood Hazard Areas regardless of the type or structure of the base map used. A spatial file with locational information also corresponds with this data table.

The spatial entities representing label leaders will be lines.

This is a Standard DFIRM Database table.

The S\_Label\_Ld table contains the following elements.

|           |   |   |  |
|-----------|---|---|--|
| LEADER_ID | R | S | Primary key for table lookup. Assigned by table creator.   |
| LABEL_LID | R | S | Label Type Lookup Identification. A code that provides a link to valid entries from the D_Label_Typ table. This type is a description of the planimetric features to which the labels and leaders are associated. For vector based maps, the labels and leaders will be associated with vector features in S_Trnsport_Ln, S_Wtr_Ar and S_Wtr_Ln. For maps with an ortho-photo base, the labels and leaders will be associated with DOQ water and transportation features. For maps that use both vector features and ortho-photos, all values may apply. |

**Table: S\_Label\_Ld**

| Field     | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|-----------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|           |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| LEADER_ID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| LABEL_LID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Label\_Pt

This table is required for all draft Digital Flood Insurance Rate Map (DFIRM) data.

The S\_Label\_Pt table contains information for text insertion point locations that would link labels to base map features. The purpose of this table, along with the S\_Label\_Ld table is so that the DFIRM database can contain the names of roads and other physical features in or near the Special Flood Hazard Areas (SFHAs) regardless of the type or structure of the base map used. A spatial file with locational information also corresponds with this data table.

The spatial entities representing labels are points. The point corresponds to the lower left corner of the label.

This is a Standard DFIRM Database table.

The S\_Label\_Pt table contains the following elements.

|           |     |  |
|-----------|-----|--|
| LABEL_ID  | R S | Primary key for table lookup. Assigned by table creator.   |
| LABEL     | R S | Label for map feature.   |
| LABEL_LID | R S | Label Type Lookup Identification. A code that provides a link to valid entries from the D_Label_Typ table. This type is a description of the planimetric features to which the labels and leaders are associated. For vector based maps, the labels and leaders will be associated with vector features in S_Trnsport_Ln, S_Wtr_Ar and S_Wtr_Ln. For maps with an ortho-photo base, the labels and leaders will be associated with DOQ water and transportation features. For maps that use both vector features and ortho-photos, all values may apply. |
| DEGREES   | R S | The degrees of rotation required for the placement of a feature label onto a hard copy Flood Insurance Rate Map panel. The rotation angle of the text measured in degrees. The angle is zero for unrotated horizontal text and increases in a counterclockwise direction to 359. Text rotated clockwise has a negative value between 0 and -359.   |

**Table: S\_Label\_Pt**

| Field     | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |   |
|-----------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|---|
|           |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |   |
| LABEL_ID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| LABEL     | R   | S   | text      | 254        |     |        |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |   |
| LABEL_LID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| DEGREES   | R   | S   | integer   | 2          | 0   |        |                |      | number | 4             | 0    | binary     | 4            | 10      | 0    | decimal   | 4   | 0 |

## Table: S\_LOMR

This table is required when a Mapping Partner incorporates the results of effective Letters of Map Revision (LOMRs) into the draft Digital Flood Insurance Rate Map (DFIRM) data submitted to the Federal Emergency Management Agency (FEMA).

The S\_LOMR table contains information about LOMR areas that are incorporated into the Flood Insurance Rate Map (FIRM). This table is planned as a mechanism for DFIRM producers to communicate areas of the DFIRM data that were updated to reflect the results of LOMRs. It is included in the draft DFIRM data submittal. It is not planned for distribution by FEMA once a complete map revision has incorporated these LOMRs into the effective FIRM panel. Therefore it is not included in the Preliminary or Final DFIRM data. A spatial file with locational information also corresponds with this data table.

The spatial entities representing LOMRs are polygons. The spatial information contains the bounding polygon for each LOMR area.

This is a modified Standard DFIRM Database table that includes Standard DFIRM Database items and Enhanced Database items. All items after SOURCE\_CIT are Enhanced.

The S\_LOMR table contains the following elements.

|            |     |   |
|------------|-----|---|
| LOMR_ID    | R S | Primary key for table lookup. Assigned by table creator.  |
| EFF_DATE   | R S | Effective Date. Effective Date of the LOMR.   |
| CASE_NO    | R S | Case Number. This is the case number of the LOMR that is assigned by FEMA. The case number is used to track the LOMR's supporting documentation.          |
| SCALE_LID  | R S | Map Scale. A code that provides a link to a value in the D_Scale table. The linked value will contain the denominator of the effective scale of the LOMR. |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_LOMR table.                                      |
| STATUS     | R E | Status of the LOMR. Valid entries for this field include the following:<br><br>'effective'<br><br>'incorporated'<br><br>'superseded'                      |

**Table: S\_LOMR**

| Field      | R/A | S/E | MS Access |            |     |          |            | ESRI Shapefile |        |     | ESRI Coverage |            |              |     | MapInfo |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|------------|----------------|--------|-----|---------------|------------|--------------|-----|---------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask | type           | width  | dec | type          | item width | output width | dec | type    | width     | dec |  |
| LOMR_ID    | R   | S   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| EFF_DATE   | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000 |                | date   |     |               | date       | 8            | 10  |         | date      |     |  |
| CASE_NO    | R   | S   | text      | 13         |     |          |            |                | string | 13  |               | character  | 13           | 13  |         | character | 13  |  |
| SCALE_LID  | R   | S   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |          |            |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| STATUS     | R   | E   | text      | 12         |     |          |            |                | string | 12  |               | character  | 12           | 12  |         | character | 12  |  |



## Table: S\_Nodes

This table is required for all studies with new or revised hydrologic data. A spatial file with locational information also corresponds with this data table.

The S\_Nodes table contains data only on the location of points used to define the topology of the hydrologic network. Nodes can be subbasin pourpoints, confluences, diversions, hydraulic structures, etc. Nodes are connected to each other via links, which are defined in S\_Profil\_Basln (see below).

The spatial elements representing the nodes are points.

This is an Enhanced DFIRM Database table.

The S\_Nodes table contains the following elements.

|            |     |   |
|------------|-----|---|
| NODE_ID    | R E | Primary key for this table. Assigned by table creator.  |
| SOURCE_CIT | R E | Source Citation. Abbreviation used in the metadata file when describing the source information for S_Nodes. |

**Table: S\_Nodes**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |        |       | ESRI Coverage |           |            |              | MapInfo |           |       |     |
|------------|-----|-----|-----------|------------|-----|--------|----------------|--------|-------|---------------|-----------|------------|--------------|---------|-----------|-------|-----|
|            |     |     | type      | field size | dec | format | input mask     | type   | width | dec           | type      | item width | output width | dec     | type      | width | dec |
| NODE_ID    | R   | E   | text      | 11         |     |        |                | string | 11    |               | character | 11         | 11           |         | character | 11    |     |
| SOURCE_CIT | R   | E   | text      | 11         |     |        |                | string | 11    |               | character | 11         | 11           |         | character | 11    |     |

## Table: S\_Ovrbnkln

This table is required for a detailed study that uses overbank flow lengths as input data.

The S\_Ovrbnkln table contains information about overbank flow line features for the study area.

The features are those lines along which overbank flow distances between two cross sections are measured. Between any two adjacent cross sections, there must be two overbank flow lines: one for the right overbank line and one for the left overbank line. The two lines may be one continuous line or may be broken at the cross section. However, if the line is broken, the line must be continuous between the cross sections; the endpoints of an overbank line must lie on a cross section. A spatial file with locational information also corresponds with this data table.

Since models will eventually overlap, these features should represent the lines associated with the model for the base flood from which the effective FIRM was derived.

Locations are based on standard engineering practice and should match locations used in the analysis.

The spatial elements representing the boundaries of the flood hazards depicted on the FIRM are lines.

This is an Enhanced DFIRM Database table.

The S\_Ovrbnkln table contains the following elements.

|            |     |   |
|------------|-----|---|
| OVRBNK_ID  | R E | Primary key for table lookup. Assigned by table creator.  |
| WTR_NM_LID | R E | Surface Water Name Lookup Identification. A code that provides a link to the name of the surface water feature. The surface water feature name is taken from the L_Wtr_Nm table. This is a lookup table that is populated by the creator of the database. |
| OBNK_SIDE  | R E | Overbank Side. Indicates which side the overbank line represents. Enter "L" for left or "R" for right.  |
| SOURCE_CIT | R E | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Ovrbnkln.  |

**Table: S\_Ovrbnkln**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| OVRBNK_ID  | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| WTR_NM_LID | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| OBNK_SIDE  | R   | E   | text      | 1          |     |        |                |      | string | 1             |      | character  | 1            | 1       |      | character | 1   |  |
| SOURCE_CIT | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Perm\_Bmk

This table is required unless there are no National Geodetic Survey (NGS) or other bench marks that meet the minimum standard in the jurisdiction covered by the Flood Insurance Rate Map (FIRM).

The S\_Perm\_Bmk table contains information about Permanent Bench Marks that are associated with the study area. The bench marks shown in this file must meet the requirements specified in Subsection 1.4.1.4.1 of these Guidelines. A spatial file with locational information also corresponds with this data table.

The spatial entities representing bench marks are points. Generally, these points should be placed based on the coordinates in the NGS database. However, the horizontal coordinates maintained by the NGS for vertical bench marks are often not very precise because the users rely on the location descriptions to locate the bench marks. If the source of the horizontal coordinates used by the NGS is not precise, the data creator may adjust the position based on more accurate data.

This is a Standard DFIRM Database table.

The S\_Perm\_Bmk table contains the following elements.

|            |     |  |
|------------|-----|--|
| BM_ID      | R S | Primary key for table lookup. Assigned by table creator.   |
| PID        | R S | Permanent Identifier. This should be the NGS assigned or community assigned permanent identifier. It must be unique for each bench mark. |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Perm_Bmk table.                 |

**Table: S\_Perm\_Bmk**

| Field      | R/A | S/E | MS Access |               |     |        | ESRI Shapefile |        |       | ESRI Coverage |           |               |                 | MapInfo |           |       |     |
|------------|-----|-----|-----------|---------------|-----|--------|----------------|--------|-------|---------------|-----------|---------------|-----------------|---------|-----------|-------|-----|
|            |     |     | type      | field<br>size | dec | format | input mask     | type   | width | dec           | type      | item<br>width | output<br>width | dec     | type      | width | dec |
| BM_ID      | R   | S   | text      | 11            |     |        |                | string | 11    |               | character | 11            | 11              |         | character | 11    |     |
| PID        | R   | S   | text      | 11            |     |        |                | string | 11    |               | character | 11            | 11              |         | character | 11    |     |
| SOURCE_CIT | R   | S   | text      | 11            |     |        |                | string | 11    |               | character | 11            | 11              |         | character | 11    |     |

## Table: S\_PFD\_Ln

This table is required when a primary frontal dune (PFD) is present along portions or all of the coastline within the modeled coastal floodplain. PFDs are not required to be continuous along the length of the studied shoreline. It is applicable when PFD\_TF = "T" in the L\_Cst\_Model table.

The S\_PFD\_Ln table contains information about the primary frontal dune features for the coastal study area. Primary frontal dunes are not shown on the FIRM but are used in the coastal floodplain analysis. They are lines that represent the back side of the first natural ridge inland from the coastal shoreline and where the gradient changes from steep to gentle. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the primary frontal dunes are lines.

This is an Enhanced DFIRM Database table.

The S\_PFD\_Ln table contains the following elements.

|            |   |   |  |
|------------|---|---|--|
| PFD_ID     | R | E | Primary key for table lookup. Assigned by table creator.   |
| SOURCE_CIT | R | E | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_PFD_Ln table. |

**Table: S\_PFD\_Ln**

| Field      | R/A | S/E | MS Access |               |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |               |                 |     | MapInfo   |       |     |
|------------|-----|-----|-----------|---------------|-----|--------|------------|----------------|-------|-----|---------------|---------------|-----------------|-----|-----------|-------|-----|
|            |     |     | type      | field<br>size | dec | format | input mask | type           | width | dec | type          | item<br>width | output<br>width | dec | type      | width | dec |
| PFD_ID     | R   | E   | text      | 11            |     |        |            | string         | 11    |     | character     | 11            | 11              |     | character | 11    |     |
| SOURCE_CIT | R   | E   | text      | 11            |     |        |            | string         | 11    |     | character     | 11            | 11              |     | character | 11    |     |



## Table: S\_PLSS\_Ar

This table is required when U. S. Public Land Survey System (PLSS) areas are shown on the Flood Insurance Rate Map and the data used for the map can be distributed by FEMA at no cost.

The S\_PLSS\_Ar table contains information about the PLSS areas that are associated within the study area. These include the attributes for the range, township, and section areas. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the PLSS areas are polygons. Generally there is one polygon per section. The PLSS areas should cover the entire jurisdiction where sections are defined.

In general, the Public Land Survey System table structure is fairly flexible depending on the format of the data available for the map. The Federal Emergency Management Agency's (FEMA's) objective is to have spatially accurate PLSS data to which the flood hazard information is referenced. Users must be able to identify section, township and range information on the printed maps. If these objectives are met, then almost any file structure is acceptable. PLSS features may be represented as either polygons or lines. With some data structures, it may not be practical to assign attributes to each spatial entity. While these attributes are desirable, FEMA recognizes that they may not always be easily available. This is acceptable because the PLSS system is a public system not maintained by FEMA. This information is provided for reference on the paper maps..

This is a Standard DFIRM Database table.

The S\_PLSS\_Ar table contains the following elements.

|            |     |   |
|------------|-----|---|
| PLSS_AR_ID | R S | Primary key for table lookup. Assigned by table creator.  |
| RANGE      | A S | Range Number. This is the range number assigned to the PLSS area shown. This attribute would also include the designation of E (east) or W (west) as part of the data. For example, 21W would be an acceptable value. This field is applicable whenever the SECT_NO does not equal zero.  |
| TWP        | A S | Township. This is the township number assigned to the PLSS area shown. This attribute would also include the designation of N (north) or S (south) as part of the data. For example, 14S would be an acceptable value. This field is applicable whenever the SECT_NO does not equal zero. |
| SECT_NO    | R S | Section. This is the section number assigned to the PLSS area shown. Where no section number is defined, such as open water, the section number should be zero.   |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_PLSS_Ar table. This  |

field is required when source citation information is not provided by the S\_PLSS\_Ln table.

**Table: S\_PLSS\_Ar**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| PLSS_AR_ID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| RANGE      | A   | S   | text      | 8          |     |        |                |      | string | 8             |      | character  | 8            | 8       |      | character | 8   |  |
| TWP        | A   | S   | text      | 8          |     |        |                |      | string | 8             |      | character  | 8            | 8       |      | character | 8   |  |
| SECT_NO    | R   | S   | text      | 4          |     |        |                |      | string | 4             |      | character  | 4            | 4       |      | character | 4   |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_PLSS\_Ln

This table is required when U.S. Public Land Survey System (PLSS) areas are shown on the Flood Insurance Rate Map (FIRM) and the data used for the map can be distributed by FEMA at no cost.

The S\_PLSS\_Ln table contains information about the boundary lines for the PLSS that is associated with the study area, if applicable. This would include the attributes for the adjacent range and township areas. A spatial file with locational information also corresponds with this data table.

In general, the Public Land Survey System table structure is fairly flexible depending on the format of the data available for the map. The Federal Emergency Management Agency's (FEMA's) objective is to have spatially accurate PLSS data to which the flood hazard information is referenced. Users must be able to identify section, township and range information on the printed maps. If these objectives are met, then almost any file structure is acceptable. PLSS features may be represented as either polygons or lines. With some data structures, it may not be practical to assign attributes to each spatial entity. While these attributes are desirable, FEMA recognizes that they may not always be easily available. This is acceptable because the PLSS system is a public system not maintained by FEMA. This information is provided for reference on the paper maps..

The spatial entities representing PLSS boundaries are lines.

This is a Standard DFIRM Database table.

The S\_PLSS\_Ln table contains the following elements.

|            |     |  |
|------------|-----|--|
| PLSS_LN_ID | R S | Primary key for table lookup. Assigned by table creator.   |
| LN_LID     | R S | Line Lookup Identification. A code that provides a link to a valid entry from the D_Ln_Typ table. These line types describe the PLSS boundaries and may be used to indicate how the feature should be depicted on the hardcopy FIRM.   |
| E_RANGE    | A S | East Range Number. This is the range number assigned to the PLSS area shown to the east of the line feature. This number is shown on the hardcopy FIRM. This attribute would also include the designation of E (east) or W (west) as part of the data. For example, 21W would be an acceptable value. Only populated for lines that divide one range from another. |
| W_RANGE    | A S | West Range Number. This is the range number assigned to the PLSS area shown to the west of the line feature. This number is shown on the hardcopy FIRM. This attribute would also include the designation of E (east) or W (west) as part of the data. For   |

example, 21W would be an acceptable value. Only populated for lines that divide one range from another.

- N\_TWP            A S    North Township. This is the township number assigned to the PLSS area shown to the north of the line feature. This number is shown on the hardcopy FIRM. This attribute would also include the designation of N (north) or S (south) as part of the data. For example, 14S would be an acceptable value. Only populated for lines that divide one township from another.
- S\_TWP            A S    South Township. This is the township number assigned to the PLSS area shown to the south of the line feature. This number is shown on the hardcopy FIRM. This attribute would also include the designation of N (north) or S (south) as part of the data. For example, 14S would be an acceptable value. Only populated for lines that divide one township from another.
- SOURCE\_CIT      R S    Source Citation. Abbreviation used in the metadata file when describing the source information for the S\_PLSS\_Ln table. This field is required when source citation information is not provided by the S\_PLSS\_Ar table.

**Table: S\_PLSS\_Ln**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| PLSS_LN_ID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| LN_LID     | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| E_RANGE    | A   | S   | text      | 8          |     |        |                |      | string | 8             |      | character  | 8            | 8       |      | character | 8   |  |
| W_RANGE    | A   | S   | text      | 8          |     |        |                |      | string | 8             |      | character  | 8            | 8       |      | character | 8   |  |
| N_TWP      | A   | S   | text      | 8          |     |        |                |      | string | 8             |      | character  | 8            | 8       |      | character | 8   |  |
| S_TWP      | A   | S   | text      | 8          |     |        |                |      | string | 8             |      | character  | 8            | 8       |      | character | 8   |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Pol\_Ar

This table is required for all draft Digital Flood Insurance Rate Map data.

The S\_Pol\_Ar table contains information about the Political Areas within the study area. This includes the attributes for the political areas and other areas such as forests, parks, military lands, and Tribal lands. For the National Flood Insurance Program (NFIP), it is important to know the jurisdiction that has land use authority over an area. Political jurisdictions individually agree to participate in the NFIP and availability of insurance, floodplain regulations, and insurance rates may vary by political jurisdiction. The political jurisdiction assigned to each area corresponds to the jurisdiction responsible for NFIP and floodplain management for that area. A spatial file with locational information also corresponds with this data table.

The spatial entities representing political areas are polygons.

This is a Standard DFIRM Database table.

The S\_Pol\_Ar table contains the following elements.

|           |     |  |
|-----------|-----|--|
| POL_AR_ID | R S | Primary key for table lookup. Assigned by table creator.   |
| POL_NAME1 | R S | Political Area Name 1. This is the primary name of the area shown. For areas that have more than one name, this would be the primary name with subsequent names shown in fields below. This would correspond to the official name of this jurisdiction used by the Federal Emergency Management Agency (FEMA) within the NFIP. For unincorporated areas of a county, this should be the county name (e.g., Montgomery County). |
| POL_NAME2 | A S | 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.  |
| CO_FIPS   | R S | 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   | R S | 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.   |
| COMM_NO   | R S | Community Number. This is the four-digit number assigned by FEMA to each community for tracking purposes under the NFIP. On newer Flood Insurance Rate Maps (FIRMs) the state FIPS and the community number appear below the community name where  |

it is shown in the body of the map. For single jurisdiction FIRMs, this is the 3<sup>d</sup> through the 6<sup>th</sup> digits of the panel number. This number can be obtained from the community status book that can be viewed at [www.fema.gov/msc](http://www.fema.gov/msc). Areas under Federal jurisdiction such as National Parks, National Forests, military bases, etc. do not have community numbers assigned by FEMA. These areas should have a value of FED in the COMM\_NO field. Areas under state jurisdiction such as state parks and wildlife reservations should have a value of ST in the COMM\_NO field. For any other jurisdictions where local community does not have the authority to administer the NFIP and FEMA does not assign a community number, the COMM\_NO field should contain OTHR.

- CID R S 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).
- ANI\_TF R S Area Not Included. This field contains information about the geographical area to determine if it is included in the FIRM or not. Areas Not Included fall within the extent of the map, but no flood risk information is shown on the FIRM. This is either because the area is mapped on another FEMA map or because the area is not mapped at all by FEMA. Enter “T” for true or “F” for false.
- COM\_NFO\_ID A S Community Information Identification. This attribute links to the table L\_Comm\_Info that contains information about the specific community. This table should contain a number that matches a corresponding number in the COM\_NFO\_ID field of the L\_Comm\_Info table. This field is populated for any jurisdiction that has a CID number issued by FEMA.



**Table: S\_Pol\_Ar**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| POL_AR_ID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| POL_NAME1  | R   | S   | text      | 50         |     |        |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| POL_NAME2  | R   | S   | text      | 50         |     |        |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| CO_FIPS    | R   | S   | text      | 3          |     |        |                |      | string | 3             |      | character  | 3            | 3       |      | character | 3   |  |
| ST_FIPS    | R   | S   | text      | 2          |     |        |                |      | string | 2             |      | character  | 2            | 2       |      | character | 2   |  |
| COMM_NO    | R   | S   | text      | 4          |     |        |                |      | string | 4             |      | character  | 4            | 4       |      | character | 4   |  |
| CID        | R   | S   | text      | 6          |     |        |                |      | string | 6             |      | character  | 6            | 6       |      | character | 6   |  |
| ANI_TF     | R   | S   | text      | 1          |     |        |                |      | string | 1             |      | character  | 1            | 1       |      | character | 1   |  |
| COM_NFO_ID | A   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Pol\_Ln

This table is required for all draft Digital Flood Insurance Rate Map data.

The S\_Pol\_Ln table contains information about the boundaries of Political Areas within the study area. This would include the attributes for the political areas and other areas such as forests, parks, military lands, and Native American lands. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the boundaries of the political jurisdictions depicted on the Flood Insurance Rate Map (FIRM) are lines.

This is a Standard DFIRM Database table.

The S\_Pol\_Ln table contains the following elements.

|            |     |  |
|------------|-----|--|
| POL_LN_ID  | R S | Primary key for table lookup. Assigned by table creator.   |
| LN_LID     | R S | Line Lookup Identification. A code that provides a link to a valid entry from the D_Ln_Typ table. These line types describe the jurisdictional boundary and can be used to indicate how the feature should be depicted on the hardcopy FIRM. |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Pol_Ln table.   |

**Table: S\_Pol\_Ln**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| POL_LN_ID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| LN_LID     | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Precip\_Gage

This table is required when rain gages are used in developing the hydrologic analysis. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the precipitation gages are points.

This is an Enhanced DFIRM Database table.

The S\_Precip\_Gage table contains the following elements.

|            |     |   |
|------------|-----|---|
| PRECIP_ID  | R E | Primary key for this table. Assigned by table creator.  |
| GAGE_ID    | R E | Rain Gage Identification Number. The ID for the rain gage. Assigned by agency maintaining gage.   |
| AGENCY     | R E | Agency. Name of agency maintaining gage.  |
| CASE_NO    | R E | FEMA Case Number. The case number for the rain gage links to the L_Case_Info table.   |
| GAGE_LID   | R E | Rain Gage Type Lookup Identification. A code that provides a link to a valid entry from the D_Gage table. This attribute establishes gage type. Values include tipping, instantaneous, and fixed interval.  |
| REC_INTVL  | A E | Recording Interval. This field is populated only if the rain gage is a fixed-interval gage.   |
| TIME_LID   | A E | Recording Interval Time Unit Lookup Identification. A code that provides a link to a valid entry from the D_Time_Units table. This attribute establishes the unit of measure of the recording interval. This field is populated only if the rain gage is a fixed-interval gage. |
| START_PD   | R E | Start Period. This value is the start of the earliest period of record used in the gage analysis.   |
| END_PD     | R E | End Date. This value is the end of the latest period of record used in the gage analysis.   |
| SOURCE_CIT | R E | Source Citation. Abbreviation used in the metadata file when describing the source information for S_Precip_Gage.   |

**Table: S\_Precip\_Gage**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| PRECIP_ID  | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| GAGE_ID    | R   | E   | text      | 25         |     |          |                |      | string | 25            |      | character  | 25           | 25      |      | character | 25  |  |
| AGENCY     | R   | E   | text      | 150        |     |          |                |      | string | 150           |      | character  | 150          | 150     |      | character | 150 |  |
| CASE_NO    | R   | E   | text      | 12         |     |          |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |  |
| GAGE_LID   | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| REC_INTVL  | A   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| TIME_LID   | A   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| START_PD   | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| END_PD     | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| SOURCE_CIT | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Profil\_Basln

This table is required for a detailed study when hydrologic and hydraulic models have been developed for reaches of streams. The results of the models are shown on the FIRM. The profile baseline and/or stream centerline may or may not be shown on the FIRM.

The S\_Profil\_Basln table contains information about profile baseline and stream centerline features for the study area. A spatial file with locational information also corresponds with this data table. The spatial elements representing the profile baseline and stream centerline are lines.

This is an Enhanced DFIRM Database table.

The S\_Profil\_Basln table contains the following elements.

|            |     |   |
|------------|-----|---|
| BASELN_ID  | R E | Primary key for table lookup. Assigned by table creator.  |
| WTR_NM_LID | R E | Surface Water Feature Name Lookup Identification. A code that provides a link to the name of the water feature associated with the cross section. The water feature name is taken from the table L_Wtr_Nm. This is a lookup table that is populated by the creator of the database.   |
| WATER_LID  | R E | Surface Water Feature Lookup Identification. A code that provides a link to valid entries from the D_Water_Typ table. The type value describes the kind of watercourse represented. Valid entries include items such as profile baseline, hydrologic link, and stream centerline.   |
| UP_NODE    | A E | Upstream Node. This is the node ID at the upstream end of the reach. This ID field must contain a number that matches the NODE_ID field in the S_Nodes table, which documents points used to define the topology of the hydrologic network. This field is only populated when WATER_LID's value equals "PROFILE BASELINE" or "PROFILE BASELINE AND STREAM CENTERLINE".                  |
| DN_NODE    | A E | Downstream Node. This is the node ID at the downstream end of the reach. This ID field must contain a number that matches the NODE_ID field for a record in the S_Nodes table, which documents points used to define the topology of the hydrologic network. This field is only populated when WATER_LID's value equals "PROFILE BASELINE" or "PROFILE BASELINE AND STREAM CENTERLINE". |
| ROUTE_METH | A E | Hydrologic Routing Method. This is the hydrologic routing method used for the reach. This field is only populated if hydrologic routing is used for the reach.  |

SHOWN\_FIRM R E Profile Baseline Shown on FIRM. This field is true only if the centerline is shown on the FIRM. Enter "T" for true or "F" for false.

SOURCE\_CIT R E Source Citation. Abbreviation used in the metadata file when describing the source information for the S\_Profil\_Basln.

**Table: S\_Profil\_BasIn**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| BASELN_ID  | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| WTR_NM_LID | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| WATER_LID  | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| UP_NODE    | A   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| DN_NODE    | A   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| ROUTE_METH | A   | E   | text      | 254        |     |        |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| SHOWN_FIRM | R   | E   | text      | 1          |     |        |                |      | string | 1             |      | character  | 1            | 1       |      | character | 1   |  |
| SOURCE_CIT | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |



## Table: S\_Quad\_Index

This table is required for all draft Digital Flood Insurance Rate Map data.

The S\_Quad\_Index table contains information about the US Geological Survey (USGS) 7.5-Minute Series Topographic Quadrangle maps that cover the study area. While USGS 7.5-minute quadrangles do not meet the Federal Emergency Management Agency (FEMA) digital base map standards, they are often useful as a supplementary reference source. The quadrangle information is provided as a convenience to users who may want to cross-reference this map series. A spatial file with locational information also corresponds with this data table.

The spatial entities representing the USGS quadrangles are polygons. Each polygon corresponds to the neatline of a USGS map.

This is a Standard DFIRM Database table.

The S\_Quad\_Index table contains the following elements.

|            |     |  |
|------------|-----|--|
| QUAD_ID    | R S | Primary key for table lookup. Assigned by table creator.   |
| QUAD_NO    | R S | Quad Number. This is the eight-digit USGS alphanumeric quadrangle identifier. The list of values for each state is published by USGS in the State Indexes to Topographic and Other Map Coverage. This item is composed of three components: the latitude, rounded down to the nearest whole degree, of the 7.5-minute quadrangle map sheet; the longitude, rounded down to the nearest whole degree, of the 7.5-minute quadrangle map sheet; and the alphanumeric map sheet identifier used by USGS (i.e., A1 through H8). |
| QUAD_NM    | R S | Quad Name. This is the name of the quad that is assigned by USGS.  |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for S_Quad_Index table.   |

**Table: S\_Quad\_Index**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| QUAD_ID    | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| QUAD_NO    | R   | S   | text      | 8          |     |        |                |      | string | 8             |      | character  | 8            | 8       |      | character | 8   |  |
| QUAD_NM    | R   | S   | text      | 50         |     |        |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Riv\_Mrk

This table is required if the Flood Insurance Rate Map (FIRM) shows river distance marks.

The S\_Riv\_Mrk table contains information about the River Marks shown on the hardcopy FIRM if applicable. A spatial file with locational information also corresponds with this data table.

The spatial entities representing the river marks are points. The points are generally located along side of the river at regular intervals.

This is a Standard DFIRM Database table.

The S\_Riv\_Mrk table contains the following elements.

|            |   |   |  |
|------------|---|---|--|
| RIV_MRK_ID | R | S | Primary key for table lookup. Assigned by table creator.   |
| START_ID   | R | S | Start Identification. A code that provides a link to a point in the L_Stn_Start table at which the river mark distances start.   |
| RIV_MRK_NO | R | S | River Mark Number. This attribute usually represents the distance from a known point (identified by START_ID), such as the confluence with another river, to the current river mark. This is the value shown next to the river mark on the FIRM. |
| SOURCE_CIT | R | S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Riv_Mrk table.  |

**Table: S\_Riv\_Mrk**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| RIV_MRK_ID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| START_ID   | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| RIV_MRK_NO | R   | S   | text      | 6          |     |        |                |      | string | 6             |      | character  | 6            | 6       |      | character | 6   |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Shore\_Ln

This table is required for coastal modeling studies.

The S\_Shore\_Ln table contains information about the shoreline used in the coastal flood hazard model. Typically, the S\_Shore\_Ln represents to 0.0-foot elevation contour. The S\_Shore\_Ln shoreline may not be shown on the FIRM but must be archived for informational purposes. The mapped shoreline is stored in the S\_Wtr\_Ln table of the standard DFIRM database. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the shorelines are lines.

This is an Enhanced DFIRM Database table.

The S\_Shore\_Ln table contains the following elements.

|            |     |   |
|------------|-----|---|
| SHR_LN_ID  | R E | Primary key for table lookup. Assigned by table creator.  |
| SHRTYP_LID | R E | Shoreline Type Lookup Identification. A code that provides a link to a valid shoreline type from the D_Shr_Typ table. This value describes the criteria used in determining the shoreline in coastal flood hazard models.   |
| V_DATM_LID | R E | Vertical Datum Lookup Identification. A code that provides a link to a valid vertical datum from the D_V_Datum table. The vertical datum indicates the reference surface from which the 0.0-foot contour is measured. Normally this would be North American Vertical Datum of 1988 for new studies. |
| SOURCE_CIT | R E | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Shore_Ln table.  |

**Table: S\_Shore\_Ln**

| Field      | R/A | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| SHR_LN_ID  | R   | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SHRTYP_LID | R   | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| V_DATM_LID | R   | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SOURCE_CIT | R   | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |

## Table: S\_Stn\_Start

This table is required when the geographic location of station start points exist.

The S\_Stn\_Start contains information about station points. These points indicate the reference point that was used as the origin for distance measurements along streams and rivers. This table links to descriptive information in the L\_Stn\_Start table. A spatial file with locational information also corresponds with this data table.

The spatial entity representing station starting locations are points. The point should be located on the stream centerline at the place where the measurements begin. This point may be outside the jurisdiction mapped in some cases. The location of the stationing start for a group of cross sections is normally referenced as a note on the floodway data table and on the flood profiles. Generally, all the cross sections for a particular reach are reference to the same starting point.

This is an Enhanced DFIRM Database table.

The S\_Stn\_Start table contains the following elements.

|            |     |  |
|------------|-----|--|
| STRT_PT_ID | R E | Primary key for this table. Assigned by table creator.   |
| START_ID   | R E | Start Identification. This is a link to the station start lookup table. The station start describes the origin for the measurements in the STREAM_STN field. This field must contain a number that links to a unique value in the START_ID field in the L_Stn_Start table. |
| SOURCE_CIT | R E | Source Citation. Abbreviation used in the metadata file when describing the source information for S_Stn_Start.  |

**Table: S\_Stn\_Start**

| Field      | R/A | S/E | MS Access |               |     |        | ESRI Shapefile |        |       | ESRI Coverage |           |               |                 | MapInfo |           |       |     |
|------------|-----|-----|-----------|---------------|-----|--------|----------------|--------|-------|---------------|-----------|---------------|-----------------|---------|-----------|-------|-----|
|            |     |     | type      | field<br>size | dec | format | input mask     | type   | width | dec           | type      | item<br>width | output<br>width | dec     | type      | width | dec |
| STRT_PT_ID | R   | E   | text      | 11            |     |        |                | string | 11    |               | character | 11            | 11              |         | character | 11    |     |
| START_ID   | R   | E   | text      | 11            |     |        |                | string | 11    |               | character | 11            | 11              |         | character | 11    |     |
| SOURCE_CIT | R   | E   | text      | 11            |     |        |                | string | 11    |               | character | 11            | 11              |         | character | 11    |     |



## Table: S\_Subbasins

This table is required for all studies with new or revised hydrologic data.

The S\_Subbasins table contains data specific to each subbasin in the hydrologic analysis, including the subbasin's relationship to the hydrologic network. The subbasin may be the subbasin specific to a detailed hydrologic model. It may also correspond to the drainage area used in a regression analysis, or to the drainage area for a stream gage. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the subbasins are polygons. In some cases the extent of these polygons may overlap, for example, cumulative subbasin areas for a regression analysis.

This is an Enhanced DFIRM Database table.

The S\_Subbasins table contains the following elements.

|            |   |   |   |
|------------|---|---|---|
| SUBBAS_ID  | R | E | Primary key for this table. Assigned by table creator.  |
| SUBBAS_NM  | R | E | Name of subbasin.   |
| NODE_ID    | R | E | Node Identification. A code that provides a link to a valid entry from the S_Nodes table. ID for the load/outflow point (pourpoint) for the subbasin. |
| SOURCE_CIT | R | E | Source Citation. Abbreviation used in the metadata file when describing the source information for S_Subbasins.                                       |

**Table: S\_Subbasins**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| SUBBAS_ID  | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SUBBAS_NM  | R   | E   | text      | 254        |     |        |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| NODE_ID    | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SOURCE_CIT | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Trnsport\_Ln

This table or an equivalent that is fully documented is required for all Digital Flood Insurance Rate Map databases that use a vector rather than raster base map data.

The S\_Trnsport\_Ln table contains information about the linear base map transportation features such as roads, railroads, and airports. A spatial file with locational information also corresponds with this data table.

The spatial entities representing linear transportation features are normally lines. However, if the available transportation data depict roads as polygons, this is acceptable also. In general, the transportation table structure is fairly flexible depending on the format of the data available for the map. The Federal Emergency Management Agency's (FEMA's) objective is to have spatially accurate base map data to which the flood hazard information is referenced. Users must be able to identify the names of roads, railroads and other major features in or near the Special Flood Hazard Areas (SFHAs). If these objectives are met, then almost any file structure is acceptable. Road centerlines or edge of pavement files are both acceptable, provided that they meet the FEMA base map standard. With some data structures, it may not be practical to assign feature names or other attributes to each spatial entity. While these attributes are desirable, FEMA recognizes that they may not always be easily available. This is acceptable because the S\_Label\_Pt and S\_Label\_Ld tables will identify the names of all of the important features in or near the SFHA.

This is a Standard DFIRM Database table.

The S\_Trnsport\_Ln table contains the following elements.

|           |     |   |
|-----------|-----|---|
| TRANS_ID  | R S | Primary key for table lookup. Assigned by table creator.  |
| TRANS_LID | R S | Transportation Lookup Identification. A code that provides a link to valid entries from the D_Trans_Typ table. These line types indicate how the feature should be depicted on the hardcopy Flood Insurance Rate Map.                                       |
| RD_S_LID  | R S | Road Status Lookup Identification. A code that provides a link to valid entries in the D_Rd_Stat table.   |
| PREFIX    | A S | Prefix of the Feature Name. Not all features will have an entry in this attribute. Valid entries might include N for a transportation feature named N Main Street.  |
| FEAT_NM1  | R S | Feature Name 1. 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. |

|            |     |  |
|------------|-----|--|
| NM_LID     | R S | Name Type Lookup Identification. A code that provides a link to valid entries in the D_Nm_Typ table.   |
| SUFFIX     | A S | Suffix of the Feature Name. Not all features will have an entry in this attribute. Valid entries might include NW for a transportation feature named Main Street NW. |
| FEAT_NM2   | A S | Feature Name 2. This is the secondary name of the feature.   |
| FEAT_NM3   | A S | Feature Name 3. This is the tertiary name of the feature.  |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Trnsport_Ln table.  |

**Table: S\_Trnsport\_Ln**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| TRANS_ID   | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| TRANS_LID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| RD_S_LID   | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| PREFIX     | A   | S   | text      | 50         |     |        |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| FEAT_NM1   | R   | S   | text      | 100        |     |        |                |      | string | 100           |      | character  | 100          | 100     |      | character | 100 |  |
| NM_LID     | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SUFFIX     | A   | S   | text      | 50         |     |        |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| FEAT_NM2   | A   | S   | text      | 100        |     |        |                |      | string | 100           |      | character  | 100          | 100     |      | character | 100 |  |
| FEAT_NM3   | A   | S   | text      | 100        |     |        |                |      | string | 100           |      | character  | 100          | 100     |      | character | 100 |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Water\_Gage

This table is required when non-rain gages are used in developing the hydrologic analysis. A spatial file with locational information also corresponds with this data table.

The spatial elements representing the water gages are points.

This is an Enhanced DFIRM Database table.

The S\_Water\_Gage table contains the following elements.

|            |   |   |  |
|------------|---|---|--|
| GAG_WTR_ID | R | E | Primary key for this table. Assigned by table creator.   |
| GAGE_ID    | R | E | Gage Identification. Assigned by the agency maintaining the gage.  |
| AGENCY     | R | E | Agency. Name of the agency maintaining the gage.   |
| GAGE_LID   | R | E | Gage Type Lookup Identification. A code that provides a link to a valid entry from the D_Gage table. This attribute establishes the gage type. Values include flow, stage, wind direction, wind speed, wave, and tide. |
| REC_INTVL  | R | E | Recording Interval. Recording interval for the gage.   |
| TIME_LID   | R | E | Recording Interval Time Unit Lookup Identification. A code that provides a link to a valid entry from the D_Time_Units table. This attribute establishes the unit of measure of the recording interval.                |
| CASE_NO    | R | E | FEMA Case Number. The case number for the water gage links to the L_Case_Info table.   |
| START_PD   | R | E | Start Period. This value is the start of the earliest period of record used in the gage analysis.  |
| END_PD     | R | E | End Period. This value is the end of the latest period of record used in the gage analysis.  |
| SOURCE_CIT | R | E | Source Citation. Abbreviation used in the metadata file when describing the source information for S_Water_Gage.   |

**Table: S\_Water\_Gage**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| GAG_WTR_ID | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| GAGE_ID    | R   | E   | text      | 25         |     |          |                |      | string | 25            |      | character  | 25           | 25      |      | character | 25  |  |
| AGENCY     | R   | E   | text      | 150        |     |          |                |      | string | 150           |      | character  | 150          | 150     |      | character | 150 |  |
| GAGE_LID   | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| REC_INTVL  | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| TIME_LID   | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| CASE_NO    | R   | E   | text      | 12         |     |          |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |  |
| START_PD   | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| END_PD     | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   | 11            |      | date       | 8            | 10      |      | date      | 11  |  |
| SOURCE_CIT | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Wtr\_Ar

This table is required for any Digital Flood Insurance Rate Map (DFIRM) database where vector surface water features are shown on the Flood Insurance Rate Map and some of these features are represented as polygons in the spatial data. Vector streams should always be shown with a vector base map. They may also be shown on raster base maps.

The S\_Wtr\_Ar table contains information about surface water area features. A spatial file with locational information also corresponds with this data table.

The spatial elements representing surface water area features are polygons. Normally lakes, ponds and streams wide enough to show both channel banks will be represented as polygons. However, the main purpose of the S\_Wtr\_Ar table and the S\_Wtr\_Ln table are to provide a cartographic depiction of the surface water features for visual interpretation of the mapping data. As a result, the method for structuring surface water features as lines or polygons is very flexible. Surface water features may appear in either the S\_Wtr\_Ar table or the S\_Wtr\_Ln table or both. However, features that appear in both must match exactly. The hydrologic structure of the stream network will be represented by tables in the Enhanced DFIRM Database.

In general, the surface water table structure is fairly flexible depending on the format of the data available for the map. The Federal Emergency Management Agency's (FEMA's) objective is to have spatially accurate surface water feature data to which the flood hazard information is referenced. Users must be able to identify the names of flooding sources and other important surface water features. If these objectives are met, then almost any file structure is acceptable. Streams, rivers and lakes may be represented as either polygons or lines. With some data structures, it may not be practical to assign feature names or other attributes to each spatial entity. While these attributes are desirable, FEMA recognizes that they may not always be easily available. This is acceptable because the S\_Label\_Pt and S\_Label\_Ld tables will identify the names of flooding sources and other important surface water features.

This is a Standard DFIRM Database table.

The S\_Wtr\_Ar table contains the following elements.

|            |   |   |   |
|------------|---|---|---|
| WTR_AR_ID  | R | S | Primary key for table lookup. Assigned by table creator.  |
| WATER_LID  | R | S | Surface Water Feature Lookup Identification. A code that provides a link to valid entries from the D_Water_Typ table. This type value describes the classification of the surface water feature. Valid entries include items such as lake, retention pond, and reservoir. |
| WTR_NM_LID | R | S | Surface Water Name Lookup Identification. A code that provides a link to the name of the surface water feature. The surface water feature name is taken from the table L_Wtr_Nm. This is a lookup table that is populated by the creator of the database.                 |



SOURCE\_CIT      R S    Source Citation.    Abbreviation used in the metadata file when describing the source information for the S\_Wtr\_Ar table.

**Table: S\_Wtr\_Ar**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| WTR_AR_ID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| WATER_LID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| WTR_NM_LID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_Wtr\_Ln

This table is required for any Digital Flood Insurance Rate Map (DFIRM) database where vector surface water features are shown on the Flood Insurance Rate Map and some of these features are represented as lines in the spatial data. Vector streams should always be shown with a vector base map. They may also be shown on raster base maps.

The S\_Wtr\_Ln table contains information about surface water linear features. A spatial file with locational information also corresponds with this data table.

The spatial elements representing surface water line features are lines. Normally stream centerlines will be represented as line features. However, the main purpose of the S\_Wtr\_Ar table and the S\_Wtr\_Ln table are to provide a cartographic depiction of the surface water features for visual interpretation of the mapping data. As a result, the method for structuring surface water features as lines or polygons is very flexible. Lake shorelines and stream channel banks used to show lakes and wide rivers are usually represented as polygons. However, they may be represented as lines based on the structure of the data received and the Mapping Partner's discretion. Surface water features may appear in either the S\_Wtr\_Ar table or the S\_Wtr\_Ln table or both. However, features that appear in both must match exactly. The hydrologic structure of the stream network will be represented by tables in the Enhanced DFIRM Database.

In general, the surface water table structure is fairly flexible depending on the format of the data available for the map. The Federal Emergency Management Agency's (FEMA's) objective is to have spatially accurate surface water feature data to which the flood hazard information is referenced. Users must be able to identify the names flooding sources and other important surface water features. If these objectives are met, then most any file structure is acceptable. Streams, rivers and lakes may be represented as polygons or lines. With some data structures, it may not be practical to assign feature names or other attributes to each spatial entity. While these attributes are desirable, FEMA recognizes that they may not always be easily available. This is acceptable because the S\_Label\_Pt and S\_Label\_Ld tables will identify the names of flooding sources and other important surface water features.

This is a Standard DFIRM Database table.

The S\_Wtr\_Ln table contains the following elements.

|           |     |   |
|-----------|-----|---|
| WTR_LN_ID | R S | Primary key for table lookup. Assigned by table creator.  |
| WATER_LID | R S | Surface Water Feature Lookup Identification. A code that provides a link to valid entries from the D_Water_Typ table. The type value describes the kind of watercourse represented. Valid entries include items such as stream/river, channel, and shoreline/coastline. |
| CHAN_LID  | R S | Channel Lookup Identification. A code that provides a link to valid entries from the D_Chan_Rep table. This channel type value indicates whether a linear water feature is represented as a stream  |

centerline or represented as channel bank locations. Valid entries include single or double.

|            |     |   |
|------------|-----|---|
| WTR_NM_LID | R S | Water Name Lookup Identification. A code that provides a link to the name of the water feature. The water feature name is taken from the table L_Wtr_Nm. This is a lookup table that is populated by the creator of the database. |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_Wtr_Ln table.  |

**Table: S\_Wtr\_Ln**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| WTR_LN_ID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| WATER_LID  | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| CHAN_LID   | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| WTR_NM_LID | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SOURCE_CIT | R   | S   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: S\_XS

This table is required for any Digital Flood Insurance Rate Map database where cross sections are shown on the Flood Insurance Rate Map (FIRM). Normally any FIRM that has associated flood profiles has cross sections.

The S\_XS table contains information about cross section lines. A spatial file with locational information also corresponds with this data table. These lines represent the locations of channel surveys performed for input into the hydraulic model used to calculate flood elevations. These locations are also shown on the Flood Profiles in the Flood Insurance Study (FIS) report and can be used to cross reference the Flood Profiles to the planimetric depiction of the flood hazards. All cross sections for which a spatial location is available should be included in this table.

The spatial elements representing cross sections are lines generally extending from outside the floodplain, across the entire floodplain and out the other side. Each cross section should be represented by a single line feature without the hexagons shown on each end on the hardcopy map. The location and shape of the lines should depict as accurately as possible the position of the cross section used.

This is a modified Standard DFIRM Database table that includes Standard DFIRM Database items and Enhanced Database items. All items after SOURCE\_CIT are Enhanced. The Enhanced DFIRM Database must contain all modeled cross sections, whether they are printed on the FIRM or not.

The S\_XS table contains the following elements.

|            |     |  |
|------------|-----|--|
| XS_LN_ID   | R S | Primary key for table lookup. Assigned by table creator.   |
| XS_LTR     | A S | Cross-Section Letter. The letter or number that is assigned to the cross section on the hardcopy FIRM and in the FIS report. This attribute is blank if the cross section is not shown on the FIRM. For a digital conversion, only cross sections that are shown on the FIRM will be available.  |
| START_ID   | R S | Start Identification. This is a link to the station start lookup table. The station start describes the origin for the measurements in the STREAM_STN field. This field should contain a number that links to a unique value in the START_ID field in the L_Stn_Start table.   |
| STREAM_STN | R S | Stream Station. This is the measurement along the stream to the cross-section location. Normally this information is available in the Floodway Data table in the FIS report. When no Floodway Data table is published, this value can be read from the horizontal scale of the flood profile. The units are clarified in the description in the START_DESC field in the L_Stn_Start table. |

|            |     |   |
|------------|-----|---|
| XS_LN_TYP  | R S | Cross-Section Line Type. This attribute should contain 'LETTERED' for cross sections that are shown on the hardcopy FIRM. If the cross section will not be shown on the hardcopy FIRM, this attribute should contain 'NOT LETTERED' to indicate that the cross section is part of the backup data for the study, but is not shown on the FIRM.  |
| WTR_NM_LID | R S | Surface Water Feature Name Lookup Identification. A code that provides a link to the name of the water feature associated with the cross section. The water feature name is taken from the table L_Wtr_Nm. This is a lookup table that is populated by the creator of the database.   |
| WSEL_REG   | R S | Regulatory Water-Surface Elevation for the 1-Percent-Annual-Chance Flood Event. This is the precise water surface elevation of the base flood calculated at this cross section. This elevation exactly matches the elevation of the base flood in the Flood Profiles and the Floodway Data table. This number is determined during the engineering analysis for the study. This value should match the regulatory column in the Floodway Data table in the FIS report or the elevation from the corresponding flood profile if no Floodway Data table is published. |
| LEN_LID    | R S | Length Unit Lookup Identification. A code that provides a link to valid unit of length from the D_Length_Units table. The unit specifies the system of measurement for the water surface elevation. For the Enhanced Database, this attribute also specifies the length unit for stream bed elevation and top width. Normally this would be feet.   |
| V_DATM_LID | R S | Vertical Datum Lookup Identification. A code that provides a link to a valid vertical datum from the D_V_Datum table. The vertical datum indicates the reference surface from which the flood elevations are measured. Normally this would be North American Vertical Datum of 1988 for new studies.  |
| SOURCE_CIT | R S | Source Citation. Abbreviation used in the metadata file when describing the source information for the S_XS table. Table:   |
| BED_ELEV   | R E | Streambed Elevation. The elevation of the streambed at this cross section as shown on the Flood Profile in the FIS.   |
| TOP_WIDTH  | R E | Top Width. Width of the floodway at this cross section as shown in the Floodway Data table in the FIS.  |
| XS_AREA    | R E | Cross Section Area. Area of the cross section underwater for the width of the floodway as shown in the Floodway Data table in the FIS.  |

|          |     |  |
|----------|-----|--|
| AREA_LID | R E | Area Unit Lookup Identification. A code that provides a link to a valid areal unit from the D_Area_Units table. This unit specifies the areal unit for the area of the cross section underwater for the width of the floodway. |
| VELOCITY | R E | Mean Velocity. The mean velocity of the floodway at this cross section as shown in the Floodway Data table in the FIS.   |
| VEL_LID  | R E | Velocity Lookup Identification. A code that provides a link to a valid velocity unit from the D_Vel_Units table. This unit specifies the unit of measurement for the velocity of the floodway.                                 |



**Table: S\_XS**

| Field      | R/A | S/E | MS Access          |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |   |
|------------|-----|-----|--------------------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|---|
|            |     |     | type               | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |   |
| XS_LN_ID   | R   | S   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| XS_LTR     | A   | S   | text               | 12         |     |        |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |   |
| START_ID   | R   | S   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| STREAM_STN | R   | S   | text               | 12         |     |        |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |   |
| XS_LN_TYP  | R   | S   | text               | 20         |     |        |                |      | string | 20            |      | character  | 20           | 20      |      | character | 20  |   |
| WTR_NM_LID | R   | S   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| WSEL_REG   | R   | S   | number<br>(double) | 8          | 2   |        |                |      | number | 13            | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |
| LEN_LID    | R   | S   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| V_DATM_LID | R   | S   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| SOURCE_CIT | R   | S   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| BED_ELEV   | R   | E   | number<br>(double) | 8          | 2   |        |                |      | number | 13            | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |
| TOP_WIDTH  | R   | E   | number             | 8          | 2   |        |                |      | number | 13            | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |

|          |   |   |                    |    |   |  |  |        |    |   |           |    |    |   |           |    |   |
|----------|---|---|--------------------|----|---|--|--|--------|----|---|-----------|----|----|---|-----------|----|---|
|          |   |   | (double)           |    |   |  |  |        |    |   |           |    |    |   |           |    |   |
| XS_AREA  | R | E | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| AREA_LID | R | E | text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |
| VELOCITY | R | E | number<br>(double) | 8  | 2 |  |  | number | 13 | 2 | numeric   | 8  | 13 | 2 | decimal   | 15 | 2 |
| VEL_LID  | R | E | text               | 11 |   |  |  | string | 11 |   | character | 11 | 11 |   | character | 11 |   |

## Table: Study\_Info

This table is required for all draft Digital Flood Insurance Rate Map data.

The Study\_Info table contains details about the study such as the study name, datum, projection, etc. There is normally only one record in this table for each Flood Insurance Rate Map (FIRM).

This is a modified Standard DFIRM Database table that includes Standard DFIRM Database items and Enhanced Database items. The item STUDY\_ZIP is Enhanced.

The Study\_Info table contains the following elements.

|            |     |   |
|------------|-----|---|
| STD_NFO_ID | R S | Primary key for table lookup. Assigned by table creator.  |
| STUDY_PRE  | A S | Study Prefix. This is the prefix of the study name such as 'City of' or 'Town of'. This field is applicable for single jurisdiction maps where the type of jurisdiction precedes the name of the jurisdiction in the map title. For county-wide maps or maps of the unincorporated portions of a county, this field is NULL.  |
| STUDY_NM   | R S | Study Name. This attribute contains the main portion of the study name, which is shown in the title block of the hardcopy FIRM. For county-wide FIRMs, or FIRMs for the unincorporated portions of counties, the name should include the county or county equivalent descriptor (e.g. Washington County or Iberia Parish).  |
| STATE_NM   | R S | State Name. This attribute contains the state name for the study and is shown in the title block of the hardcopy FIRM.  |
| CNTY_NM    | R S | County Name. This is the county (or county equivalent) name that the study falls within. The name should include the county or county equivalent descriptor (e.g. Washington County or Iberia Parish). The county name is also shown in the title block section of the hardcopy FIRM.   |
| JURIS_TYP  | A S | Political Jurisdiction Type. This attribute contains entries such as 'Unincorporated Areas' or 'All Jurisdictions' or 'and Incorporated Areas'. This field is applicable when the type of map is 'Unincorporated Areas' or 'All Jurisdictions' or 'and Incorporated Areas'. For a single jurisdiction map, this field is NULL. If there are data in this attribute, it is also shown in the title block section of the hardcopy FIRM. |
| LG_PAN_NO  | R S | Largest Panel Number. This is the highest panel number shown on the FIRM Index for the area mapped. This number is shown in the title block section of the hardcopy FIRM.   |

|            |     |  |
|------------|-----|--|
| OPP_TF     | R S | Only Panel Printed. This field is True only if the study has only one printed panel. Enter “T” for true or “F” for false.  |
| H_DATUM    | R S | Horizontal Datum. Valid entries for this attribute include North American Datum of 1927 or North American Datum of 1983 (NAD83). This is the horizontal datum used for the printed FIRM. The horizontal datum describes the reference system on which the horizontal coordinate information shown on the FIRM is based. NAD83 is the preferred horizontal datum.   |
| V_DATM_LID | R S | Vertical datum Lookup Identification. A code that provides a link to valid vertical datum from the D_V_Datum table. This is the vertical datum of the printed FIRM. The vertical datum describes the reference surface from which elevation on the map is measured. Normally, this would be North American Vertical Datum of 1988 for new studies.   |
| PROJECTION | R S | Map Projection used for hardcopy FIRM publication. The preferred projection is Universal Transverse Mercator (UTM). If a State Plane coordinate system and associated projection is used, this field should include the name of the projection, the state and the zone (e.g., Lambert Conformal Conic, Virginia North Zone).   |
| PROJ_ZONE  | A S | Projection Zone. When using many map projections and coordinate systems, there is a zone associated with the area. This field is populated based on the projection selected for the Final hardcopy map production. Applies if the projection used has a zone parameter such as UTM or state plane. The zone should be stated as the appropriate Federal Information Processing Standard zone or FIPZONE. |
| CW_TF      | R S | Countywide, true/false. This attribute is true if the hardcopy FIRM includes all incorporated areas and any unincorporated areas of the county. Enter “T” for true or “F” for false.   |
| CBRS_PHONE | A S | Coastal Barrier Resources System (CBRS) Phone number. This is the phone number for the contact person/office for the CBRS legislative area. Applies if the FIRM contains CBRS areas. Enter the phone number as a ten-digit numeric string with hyphens in the following format, 000-000-0000.  |
| CBRS_REG   | A S | CBRS Coordinator’s region. This attribute contains the Fish and Wildlife Service (FWS) region within which the FIRM is located. Applies if the FIRM contains CBRS areas.   |
| RTROFT_TF  | R S | Retrofit, True/False. The Retrofit attribute should be True if older study data is used with updated stream location data. If flood features were adjusted to fit new stream locations due to better base  |

map information this attribute would be true. Enter “T” for true or “F” for false.

- META\_NM            R   S   Metadata File Name. This attribute stores the name of the metadata file. The file should be named <ST\_FIPS><PCOMM>\_<EFF\_DATE>\_metadata.txt; where ST\_FIPS is the two digit state FIPS code; PCOMM is the four digit community or county identification number; and EFF\_DATE is the effective date of the study. If the study is not yet effective, the effective date, <EFF\_DATE>, should be replaced with the word “PRELIM”.
- STUDY\_ZIP           A   E   Name of the Study Zipfile. This attribute stores the path/filename of the zipped file that contains the FIS report or auxiliary data that is relevant to the entire study.

**Table: Study\_Info**

| Field      | R/A | S/E | MS Access |            |     |              |                | ESRI Shapefile |        |     | ESRI Coverage |            |              |     | MapInfo |           |     |  |
|------------|-----|-----|-----------|------------|-----|--------------|----------------|----------------|--------|-----|---------------|------------|--------------|-----|---------|-----------|-----|--|
|            |     |     | type      | field size | dec | format       | input mask     | type           | width  | dec | type          | item width | output width | dec | type    | width     | dec |  |
| STD_NFO_ID | R   | S   | text      | 11         |     |              |                |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| STUDY_PRE  | A   | S   | text      | 20         |     |              |                |                | string | 20  |               | character  | 20           | 20  |         | character | 20  |  |
| STUDY_NM   | R   | S   | text      | 50         |     |              |                |                | string | 50  |               | character  | 50           | 50  |         | character | 50  |  |
| STATE_NM   | R   | S   | text      | 50         |     |              |                |                | string | 50  |               | character  | 50           | 50  |         | character | 50  |  |
| CNTY_NM    | R   | S   | text      | 50         |     |              |                |                | string | 50  |               | character  | 50           | 50  |         | character | 50  |  |
| JURIS_TYP  | A   | S   | text      | 50         |     |              |                |                | string | 50  |               | character  | 50           | 50  |         | character | 50  |  |
| LG_PAN_NO  | R   | S   | text      | 4          |     |              |                |                | string | 4   |               | character  | 4            | 4   |         | character | 4   |  |
| OPP_TF     | R   | S   | text      | 1          |     |              |                |                | string | 1   |               | character  | 1            | 1   |         | character | 1   |  |
| H_DATUM    | R   | S   | text      | 10         |     |              |                |                | string | 10  |               | character  | 10           | 10  |         | character | 10  |  |
| V_DATM_LID | R   | S   | text      | 11         |     |              |                |                | string | 11  |               | character  | 11           | 11  |         | character | 11  |  |
| PROJECTION | R   | S   | text      | 50         |     |              |                |                | string | 50  |               | character  | 50           | 50  |         | character | 50  |  |
| PROJ_ZONE  | A   | S   | text      | 4          |     |              |                |                | string | 4   |               | character  | 4            | 4   |         | character | 4   |  |
| CW_TF      | R   | S   | text      | 1          |     |              |                |                | string | 1   |               | character  | 1            | 1   |         | character | 1   |  |
| CBRS_PHONE | A   | S   | text      | 15         |     | 000-000-0000 | 000\-000\-0000 |                | string | 15  |               | character  | 15           | 15  |         | character | 15  |  |

|           |   |   |      |     |  |  |  |        |     |  |           |     |     |  |           |     |
|-----------|---|---|------|-----|--|--|--|--------|-----|--|-----------|-----|-----|--|-----------|-----|
| CBRS_REG  | A | S | text | 1   |  |  |  | string | 1   |  | character | 1   | 1   |  | character | 1   |
| RTROFT_TF | R | S | text | 1   |  |  |  | string | 1   |  | character | 1   | 1   |  | character | 1   |
| META_NM   | R | S | text | 50  |  |  |  | string | 50  |  | character | 50  | 50  |  | character | 50  |
| STUDY_ZIP | A | E | text | 254 |  |  |  | string | 254 |  | character | 254 | 254 |  | character | 254 |

## Table: L\_Aux\_Data

This table is required when the data developer wishes to document additional data sources used in developing the study. The table may be used to document other data sets such as topography, soils, land use, coastal roughness, etc.

This is an Enhanced DFIRM Database table.

The L\_Aux\_Data table contains the following elements.

|           |     |   |
|-----------|-----|---|
| DATA_ID   | R E | Primary key for this table. Assigned by table creator.  |
| CASE_NO   | R E | FEMA Case Number. The case number for the auxiliary data links to the L_Case_Info table.  |
| DATA_DATE | R E | Date the data was prepared (e.g., date of file originally supplied by Mapping Partner).   |
| DATA_TYPE | R E | Description of data set.  |
| ORG_NAME  | A E | Organization which generated/supplied the data.   |
| CONTACT   | A E | Name of contact person.   |
| TITLE     | A E | Title of contact person.  |
| PHONE     | A E | Phone number of contact person/organization. Enter the phone number as a ten-digit numeric string with hyphens in the following format, 000-000-0000. |
| ADDRESS1  | A E | Line 1 of mailing address of contact person/organization.   |
| ADDRESS2  | A E | Line 2 of mailing address of contact person/organization.   |
| ADDRESS3  | A E | Line 3 of mailing address of contact person/organization.   |
| CITY      | A E | City of contact person/organization.  |
| STATE     | A E | State/Territory/Commonwealth of contact person/organization.  |
| ZIP       | A E | Postal ZIP code of contact person/organization.   |
| FILE_NM   | R E | Name of accompanying data file.   |
| META_NM   | R E | Name of metadata file that describes the accompanying dataset.  |



**Table: L\_Aux\_Data**

| Field     | R/A | S/E | MS Access |            |     |              | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|-----------|-----|-----|-----------|------------|-----|--------------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|           |     |     | type      | field size | dec | format       | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| DATA_ID   | R   | E   | text      | 11         |     |              |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| CASE_NO   | R   | E   | text      | 12         |     |              |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |  |
| DATA_DATE | R   | E   | date/time | 8          |     | yyyymmdd     | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| DATA_TYPE | R   | E   | text      | 254        |     |              |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| ORG_NAME  | A   | E   | text      | 100        |     |              |                |      | string | 100           |      | character  | 100          | 100     |      | character | 100 |  |
| CONTACT   | A   | E   | text      | 50         |     |              |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| TITLE     | A   | E   | text      | 25         |     |              |                |      | string | 25            |      | character  | 25           | 25      |      | character | 25  |  |
| PHONE     | A   | E   | text      | 15         |     | 000-000-0000 | 000\-000\-0000 |      | string | 15            |      | character  | 15           | 15      |      | character | 15  |  |
| ADDRESS1  | A   | E   | text      | 50         |     |              |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| ADDRESS2  | A   | E   | text      | 50         |     |              |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| ADDRESS3  | A   | E   | text      | 50         |     |              |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| CITY      | A   | E   | text      | 50         |     |              |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| STATE     | A   | E   | text      | 50         |     |              |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| ZIP       | A   | E   | text      | 10         |     |              |                |      | string | 10            |      | character  | 10           | 10      |      | character | 10  |  |

|         |   |   |      |     |  |  |  |        |    |  |           |    |    |  |           |    |  |
|---------|---|---|------|-----|--|--|--|--------|----|--|-----------|----|----|--|-----------|----|--|
| FILE_NM | R | E | text | 254 |  |  |  | string | 25 |  | character | 25 | 25 |  | character | 25 |  |
| META_NM | R | E | text | 50  |  |  |  | string | 50 |  | character | 50 | 50 |  | character | 50 |  |

## Table: L\_Case\_Info

This table is required for all studies with new or revised hydrologic data.

The L\_Case\_Info table is a lookup table that contains data specific to the study, including FEMA Case information and general hydrologic and/or hydraulic backup information. The fields are populated by the Mapping Partner who creates the database. If a Case Number is not available at the time the table is populated, the Mapping Partner shall use a temporary unique identification number.

This is an Enhanced DFIRM Database table.

The L\_Case\_Info table contains the following elements.

|            |     |   |
|------------|-----|---|
| CASE_NO    | R E | Primary key for this table. FEMA Case Number for study. Used to link to archived electronic and hardcopy data, and to link to various hydrologic and hydraulic data tables. |
| CASE_DESC  | R E | General description of the study, for example, the study location and method(s) used.   |
| CASE_ZIP   | R E | Name of the Case Zipfile. This attribute stores the file name/path of the zipped file that contains engineering support data associated with the Case.                      |
| STD_NFO_ID | R E | Study Information Identification. A code that provides a link to a valid entry from the Study_Info table.   |
| EFF_DATE   | R E | Effective date of the Case.   |

**Table: L\_Case\_Info**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| CASE_NO    | R   | E   | text      | 12         |     |          |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |  |
| CASE_DESC  | R   | E   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| CASE_ZIP   | R   | E   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| STD_NFO_ID | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| EFF_DATE   | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |

## Table: L\_Comm\_Info

This table is required for all draft Digital Flood Insurance Rate Map data.

The L\_Comm\_Info table is a lookup table that contains community map repository details and map history information that is shown on the Flood Insurance Rate Map (FIRM) legend or index. This table will include any community that has a CID; even if it is considered non-floodprone or non-participating. Communities that do not have a CID issued by FEMA, or are not included within the area of the data submittal, will not appear in this table. The “not populated” values, that are described in sections L.2.5.10 and L.3.5.11, may be used to fill in some of the required fields when necessary. There is normally one record in this table for each community mapped on the FIRM.

This is a Standard DFIRM Database table.

The L\_Comm\_Info table contains the following elements.

|            |   |   |  |
|------------|---|---|--|
| COM_NFO_ID | R | S | Primary key for table lookup that links to the S_Pol_Ar table. Values in this field should match the values COM_NFO_ID field of the S_Pol_Ar table.  |
| REPOS_ADR1 | R | S | First line of the mailing or street address for the map repository. The map repository is the office the community has designated as responsible for maintaining copies of all the flood hazard information the Federal Emergency Management Agency (FEMA) publishes for the community. The public may view copies of the current effective information at the map repository. This information is also displayed in the FIRM legend or index. For example, this line might read ‘Division of Community and Economic Development’. |
| REPOS_ADR2 | A | S | Second line of the mailing or street address for the map repository. This information is also displayed in the FIRM legend or index. For example, this line might read ‘226 W. Fourth Street’. This field is applicable if the map repository address requires more than one line.   |
| REPOS_ADR3 | A | S | Third line of the mailing or street address for the map repository. This information is also displayed in the FIRM legend or index. For example, this line might read ‘Suite 200’. This field is applicable if address requires additional space.  |
| REPOS_CITY | R | S | City portion of the mailing or street address for the map repository. This information is also displayed in the FIRM legend or index. For example, this line might read ‘Springfield’.   |

|            |     |  |
|------------|-----|--|
| REPOS_ST   | R S | State portion of the mailing or street address for the map repository. This information is also displayed in the FIRM legend or index. The full name of the state should be provided. For example, this line might read 'ILLINOIS'.  |
| REPOS_ZIP  | R S | ZIP Code portion of the mailing or street address for the map repository. This information is also displayed in the FIRM legend or index. For example, this line might read '62269'.   |
| IN_ID_DAT  | R S | Initial identification date for the community as shown on the FIRM legend, index, or Flood Insurance Study (FIS) report. This information can also be obtained from FEMA. See Appendix K of these Guidelines for more detailed information about map dates.  |
| IN_NFIP_DT | R S | Initial date of the first National Flood Insurance Program map published by FEMA for this community. This can be obtained from the FIRM legend, index, or FIS report. This information can also be obtained from FEMA. See Appendix K of these Guidelines for more detailed information about map dates. |
| IN_FRM_DAT | R S | Initial date FIRM was created. This can be obtained from the FIRM legend, index, or FIS report. This information can also be obtained from FEMA. See Appendix K of these Guidelines for more detailed information about map dates.   |
| RECENT_DAT | A S | Most recent panel date. This can be obtained from the FIRM Index or the FEMA Community Status book at <a href="http://www.fema.gov/msc">www.fema.gov/msc</a> . This field is only populated for final DFIRM Databases. See Appendix K of these Guidelines for more detailed information about map dates. |

**Table: L\_Comm\_Info**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| COM_NFO_ID | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| REPOS_ADR1 | R   | S   | text      | 50         |     |          |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| REPOS_ADR2 | A   | S   | text      | 50         |     |          |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| REPOS_ADR3 | A   | S   | text      | 50         |     |          |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| REPOS_CITY | R   | S   | text      | 50         |     |          |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| REPOS_ST   | R   | S   | text      | 50         |     |          |                |      | string | 50            |      | character  | 50           | 50      |      | character | 50  |  |
| REPOS_ZIP  | R   | S   | text      | 9          |     |          |                |      | string | 9             |      | character  | 9            | 9       |      | character | 9   |  |
| IN_ID_DAT  | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| IN_NFIP_DT | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| IN_FRM_DAT | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| RECENT_DAT | A   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |

## Table: L\_Cst\_Model

This table is completed if coastal engineering analysis was performed. It is required for new coastal studies. It is not required for digital conversions of effective flood hazard information because considerable additional effort may be required to research the applicable models.

The L\_Cst\_Model table is a lookup table that contains information about the coastal models that were used during the engineering analysis.

This is an Enhanced DFIRM Database table.

The L\_Cst\_Model table contains the following elements.

|            |   |   |   |
|------------|---|---|---|
| CST_MDL_ID | R | E | Primary key for table lookup that links to the S_Cst_Tsct_Ln table. Value in this field should match the values in the CST_MDL_ID field of the S_Cst_Tsct_Ln table.   |
| WTR_NM_LID | R | E | Surface Water Feature Name Lookup Identification. This is the name of the water feature that the model is associated with. The water feature name is taken from the table L_Wtr_Nm. This is a lookup table that is populated by the Mapping Partner that creates the database.            |
| CASE_NO    | R | E | Case Number Identification. This field is populated by a linking element to the L_Case_Info table. The L_Case_Info table contains information about the FEMA case number and includes archived electronic data that are relevant to the case.   |
| SURGE_LID  | R | E | Hurricane Surge Model Lookup Identification. This is the name or abbreviation of the Federal Emergency Management Agency (FEMA) approved hurricane surge model that is associated with the coastal engineering analysis. The surge model information is taken from the D_Surge_Mdl table. |
| SURGE_DATE | R | E | Hurricane Surge Model Run Date. This is the date the model was run.   |
| SURGE_ZIP  | R | E | Filename/path of zip file containing surge model input, surge model output, README.TXT, and any other supporting reports and documentation.   |
| SURGE_EFF  | R | E | Surge Effective Date. Effective date of the surge model.  |
| WAVEHT_LID | A | E | Wave Height Model Lookup Identification. This is the name or abbreviation of the FEMA approved wave height model that was used for the coastal engineering analysis. The wave height model information is taken from the D_Wave_Mdl table.  |



|            |     |  |
|------------|-----|--|
| WAVEHT_DT  | A E | Wave Height Model Run Date. This is the date the model was run.  |
| RUNUP_LID  | A E | Runup Model Lookup Identification. This is the name or abbreviation of the FEMA approved wave runup model that was used for the coastal engineering analysis. The runup model information is taken from the D_Runup_Mdl table. |
| RUNUP_DATE | A E | Runup Model Run Date. This is the date the wave runup model was run.   |
| SETUP_METH | A E | Wave Setup Methodology. This information should detail the methodology used for determining the wave setup magnitude.  |
| SETUP_DATE | A E | Wave Setup Methodology Date. This is the date the setup methodology was run.   |
| PFD_TF     | R E | Have primary frontal dune criteria been applied in the coastal modeling? Enter "T" for true or "F" for false   |
| EROS_TF    | A E | Has erosion treatment been applied in the coastal modeling? Enter "T" for true or "F" for false.   |
| WAVE_EFF   | A E | Wave Effective Date. Effective date of the wave height and wave runup models.  |
| WAVE_ZIP   | A E | File name/path of zip file containing wave height input, wave height output, wave runup input, wave runup output, README.TXT, and any other supporting reports and documentation.  |

**Table: L\_Cst\_Model**

| Field      | R/A | S/E | MS Access |            |     |          |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----|-----------|------------|-----|----------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     |     | type      | field size | dec | format   | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| CST_MDL_ID | R   | E   | text      | 11         |     |          |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| WTR_NM_LID | R   | E   | text      | 11         |     |          |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| CASE_NO    | R   | E   | text      | 50         |     |          |            | string         | 50    |     | character     | 50         | 50           |     | character | 50    |     |
| SURGE_LID  | R   | E   | text      | 11         |     |          |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SURGE_DATE | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000 | date           |       |     | date          | 8          | 10           |     | date      |       |     |
| SURGE_ZIP  | R   | E   | text      | 254        |     |          |            | string         | 254   |     | character     | 254        | 254          |     | character | 254   |     |
| SURGE_EFF  | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000 | date           |       |     | date          | 8          | 10           |     | date      |       |     |
| WAVEHT_LID | A   | E   | text      | 11         |     |          |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| WAVEHT_DT  | A   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000 | date           |       |     | date          | 8          | 10           |     | date      |       |     |
| RUNUP_LID  | A   | E   | text      | 11         |     |          |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| RUNUP_DATE | A   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000 | date           |       |     | date          | 8          | 10           |     | date      |       |     |
| SETUP_METH | A   | E   | text      | 100        |     |          |            | string         | 100   |     | character     | 100        | 100          |     | character | 100   |     |
| SETUP_DATE | A   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000 | date           |       |     | date          | 8          | 10           |     | date      |       |     |
| PFD_TF     | R   | E   | text      | 1          |     |          |            | string         | 1     |     | character     | 1          | 1            |     | character | 1     |     |

|          |   |   |           |     |          |            |        |     |  |           |     |     |  |           |     |
|----------|---|---|-----------|-----|----------|------------|--------|-----|--|-----------|-----|-----|--|-----------|-----|
| EROS_TF  | A | E | text      | 1   |          |            | string | 1   |  | character | 1   | 1   |  | character | 1   |
| WAVE_EFF | A | E | date/time | 8   | yyyymmdd | 00/00/0000 | date   |     |  | date      | 8   | 10  |  | date      |     |
| WAVE_ZIP | A | E | text      | 254 |          |            | string | 254 |  | character | 254 | 254 |  | character | 254 |

## Table: L\_Hydra\_Model

This table is only completed if detailed hydraulic engineering methods were used. It is required for new studies.

The L\_Hydra\_Model table is a lookup table that contains detailed information about the hydraulic models used in the engineering analysis for the area.

There should be one record for each distinct model run.

This is an Enhanced DFIRM Database table.

The L\_Hydra\_Model table contains the following elements.

|            |     |   |
|------------|-----|---|
| HYDRA_ID   | R S | Hydraulic Model Identification. The primary key for table lookup that links to the L_XS_Ratings table. The value in this field should match the values in the HYDRA_ID field of the L_XS_Ratings table.         |
| HYDRA_LID  | R S | Hydraulic Model Type Lookup Identification. Foreign key for table lookup that links to the D_Hydra table.   |
| HYDRA_DATE | R S | Hydraulic Model Run Date. This is the date that the hydraulic model was run.  |
| CASE_NO    | R S | FEMA Case Number. This is the FEMA case number for the study. This ID may be used to link to the L_Case_Info table.   |
| HYDRA_ZIP  | R E | Name of the Hydraulic Model Zipfile. This attribute stores the file name/pathway of the zipped file that contains the hydraulic model input and output data and any other auxiliary hydraulic data information. |

**Table: L\_Hydra\_Model**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| HYDRA_ID   | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| HYDRA_LID  | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| HYDRA_DATE | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| CASE_NO    | R   | E   | text      | 12         |     |          |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |  |
| HYDRA_ZIP  | R   | E   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |

## Table: L\_Hydro\_Model

This table is required for all studies with new or revised hydrologic data.

The L\_Hydro\_Model table contains data specific to a particular hydrologic model used in the study.

This is an Enhanced DFIRM Database table.

The L\_Hydro\_Model table contains the following elements.

|            |   |   |  |
|------------|---|---|--|
| HYDRO_ID   | R | E | Hydrologic Model Identification. The primary key for table lookup that links to the L_Node_Disch table.  |
| HYDRO_LID  | R | E | Hydrologic Model Lookup Identification. A code that provides a link to a valid entry from the D_Hydro table.   |
| HYDRO_DATE | R | E | Hydrologic Model Run Date. This is the date that the hydrologic model was run.   |
| CASE_NO    | R | E | FEMA Case Number. The case number for the hydrologic model links to the L_Case_Info table.   |
| HYDRO_ZIP  | R | E | Name of the Hydrologic Model Zipfile. The file name/pathway of the zipped file containing input & output files for hydrologic analysis and supporting data analyses. |

**Table: L\_Hydro\_Model**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| HYDRO_ID   | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| HYDRO_LID  | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| HYDRO_DATE | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| CASE_NO    | R   | E   | text      | 12         |     |          |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |  |
| HYDRO_ZIP  | R   | E   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |

## Table: L\_Media

This table is required when digital photographs, sketches, or other media are used to describe spatial objects in the study.

The L\_Media table is a lookup table that links archived media to the spatial object represented in the photograph, sketch, or other media.

This is an Enhanced DFIRM Database table.

The L\_Media table contains the following elements.

|             |   |   |   |
|-------------|---|---|---|
| MEDIA_ID    | R | E | Primary key for table lookup. Assigned by table creator.  |
| MEDIA_PATH  | R | E | The file name/relative path/location of the photograph, sketch, or other media.   |
| OBJ_TABLE   | R | E | Object Table. The DFIRM Database table that corresponds to the spatial object that the photograph, sketch, or other media describes.  |
| OBJ_ID      | R | E | Object Identification. The DFIRM Database primary key that corresponds to the spatial object that the photograph, sketch, or other media describes. Can be used as Foreign Key to object.   |
| MEDIA_TYPE  | R | E | Media Type. This is the type of media used to describe the object (e.g., Photo, Sketch, Video, etc.)  |
| MEDIA_DATE  | R | E | Media Date. This is the date on which the photograph, sketch, or other media was created.   |
| DESCRIPTION | R | E | Description of the Object. This is a brief description of the object. It should include relevant directional information (e.g., Downstream face of Third Street bridge, Left bank of Big Creek, Along transect 21 facing offshore). |
| AZIMUTH     | A | E | Azimuth of a line that represents the line of sight from where the photographer was standing to the object. 0 – 360 degrees.  |



**Table: L\_Media**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| MEDIA_ID   | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| MEDIA_PATH | R   | E   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| OBJ_TABLE  | R   | E   | text      | 20         |     |          |                |      | string | 20            |      | character  | 20           | 20      |      | character | 20  |  |
| OBJ_ID     | R   | E   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| MEDIA_TYPE | R   | E   | text      | 100        |     |          |                |      | string | 100           |      | character  | 100          | 100     |      | character | 100 |  |
| MEDIA_DATE | R   | E   | date/time | 8          |     | yyyymmdd | 00/00/0000     | date |        |               | date | 8          | 10           |         | date |           |     |  |
| DSCRIPTION | R   | E   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| AZIMUTH    | A   | E   | text      | 100        |     |          |                |      | string | 100           |      | character  | 100          | 100     |      | character | 100 |  |

## Table: L\_MT1\_LOMC

The L\_MT1\_LOMC table is a lookup table that contains information about Letters of Map Change (LOMCs) for the area. LOMCs typically include property descriptions. Frequently, LOMCs are issued to show that specific locations are outside the Special Flood Hazard Areas (SFHAs). Generally, the amount of detail that can be shown on the map does not allow these areas to be shown explicitly on the Flood Insurance Rate Map (FIRM). Instead, this information is communicated in the form of a LOMC. For data published by the Federal Emergency Management Agency (FEMA), this table would only include letters of map amendment and letters of map revision based on fill that have been revalidated following the map revision. Revalidated LOMCs indicate that the information presented in the LOMC continues to be true regardless of the depiction of the area on the FIRM.

For LOMCs that appear on more than one map panel, multiple records will exist with the same case number, but different panel numbers.

This is a Standard DFIRM Database table.

The L\_MT1\_LOMC table contains the following elements.

|           |   |   |   |
|-----------|---|---|---|
| LOMC_ID   | R | S | Primary key for table lookup. Assigned by table creator.  |
| CASE_NO   | R | S | Case Number. This is the case number assigned by FEMA to the LOMC. This should be filled in for reference back to the complete LOMC materials. The case number should be entered without hyphens or other separators. |
| EFF_DATE  | R | S | Effective Date of the LOMC.   |
| FIRM_PAN  | R | S | FIRM panel number that the LOMC is on. This field provides a link to the S_FIRM_Pan table. MT1 LOMCs can be matched to a specific FIRM panel by matching this field to the FIRM_PAN field of the S_FIRM_Pan table.    |
| LOMC_STAT | R | S | Status of the LOMC. Valid entries for this field include the following:<br>'superseded'<br>'revalidated'<br>'incorporated'<br>'redetermined'  |

Only revalidated LOMCs are still in effect after a panel has been revised. All others should be superseded, redetermined or incorporated into the new FIRM.

**Table: L\_MT1\_LOMC**

| Field     | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|-----------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|           |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| LOMC_ID   | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| CASE_NO   | R   | S   | text      | 13         |     |          |                |      | string | 13            |      | character  | 13           | 13      |      | character | 13  |  |
| EFF_DATE  | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     | date |        |               | date | 8          | 10           |         | date |           |     |  |
| FIRM_PAN  | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| LOMC_STAT | R   | S   | text      | 20         |     |          |                |      | string | 20            |      | character  | 20           | 20      |      | character | 20  |  |

## Table: L\_Node\_Disch

This table is required when hydrologic routing (flow combining) is used in the hydrologic analysis. For nodes whose subbasins are headwaters, this table will contain the same flow information as the subbasin's outflow table.

L\_Node\_Disch is a lookup table that contains information regarding hydrologic routing.

A node may have none, one, or many links connected to it.

If an existing node is to be moved, it must be renamed.

This is an Enhanced DFIRM Database table.

The L\_Node\_Disch table contains the following elements.

|           |     |   |
|-----------|-----|---|
| FLOW_ID   | R E | Primary key for this table. Assigned by table creator.  |
| NODE_ID   | R E | Node Identification. A code that links to the S_Nodes table.  |
| NODE_LID  | R E | Node Type Lookup Identification. A code that provides a link to the D_Nodes table. This field establishes the node type. Values include junction (default), reservoir, structure, and diversion. A junction node may have none, one, or many links connected to it. |
| HYDRO_ID  | R E | Hydrologic Model Identification. Link to the L_Hydro_Model table, which stores information about the hydrologic methods used in the study.  |
| FREQ_LID  | R E | Frequency Interval Lookup Identification. A code that provides a link to the D_Frequency table. This attribute stores the return period for the associated discharge.   |
| DISCHARGE | R E | Discharge. Subbasin discharge/outflow for the above return period.  |
| DISCH_LID | R E | Discharge Unit Lookup Identification. A code that provides a link to a valid entry from the D_Discharge_Units table.  |

**Table: L\_Node\_Disch**

| Field     | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|-----------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|           |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| FLOW_ID   | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| NODE_ID   | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| NODE_LID  | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| HYDRO_ID  | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| FREQ_LID  | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| DISCHARGE | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| DISCH_LID | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: L\_Pan\_Revis

This table does not apply for an initial Flood Insurance Rate Map (FIRM) or for a FIRM that has a completely new paneling scheme, such as a first time countywide FIRM. Otherwise, this table is required for all draft Digital Flood Insurance Rate Map data.

The L\_Pan\_Revis table is a lookup table that contains information about historic revisions to each FIRM panel.

For each FIRM panel that is being revised, there should be at least one record. There may also be multiple records for multiple revision dates for a particular FIRM panel and there may be multiple records for a single revision date if there are multiple revision notes for that date. Each FIRM panel may have a unique set of revision dates and revision codes. There should be one record for each FIRM\_PAN, REVIS\_DATE, REVIS\_NOTE combination.

This is a Standard DFIRM Database table.

The L\_Pan\_Revis table contains the following elements.

|            |     |  |
|------------|-----|--|
| REVIS_ID   | R S | Primary key for table lookup. Assigned by table creator.   |
| FIRM_PAN   | R S | FIRM Panel Number. This field links to the S_FIRM_Pan table. This should match a value in the FIRM_PAN field of the S_FIRM_Pan table. This is the complete FIRM panel number, which is made up of ST_FIPS, PCOMM, PANEL, and SUFFIX, which are found in S_FIRM_Pan table. The FIRM panel number is the 11-digit FIRM panel number that is shown in the title block of the map. |
| REVIS_DATE | R S | Revision Date. Effective date of revision to the FIRM panel. FIRM revision dates can be found in the FIRM legend or the Flood Insurance Study (FIS) report.  |
| REVIS_NOTE | R S | Revision Note. Note describing the reason for the revision to the panel. This is shown under the effective date in the FIRM legend or in the FIS report. A list of standard revision notes appears in Appendix K of these Guidelines.  |

**Table: L\_Pan\_Revis**

| Field      | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|------------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|            |     |     | Type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| REVIS_ID   | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| FIRM_PAN   | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| REVIS_DATE | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| REVIS_NOTE | R   | S   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |

## Table: L\_Pol\_FHBM

This table does not apply if all communities on the FIRM never had revisions to their Flood Hazard Boundary Maps (FHBM). Otherwise, this table is required for all Digital Flood Insurance Rate Map databases.

The L\_Pol\_FHBM table is a lookup table that contains a list of communities and FHBM revisions.

Each community may have different revision dates. Each revision date may have multiple revision notes.

The L\_Pol\_FHBM table contains the following elements.

|           |     |  |
|-----------|-----|--|
| FHBM_ID   | R S | Primary key for table lookup. Assigned by table creator.   |
| CID       | R S | Community Identification Number, which links to the S_Pol_Ar table. The value in this field should match a value in the CID field of the S_Pol_Ar table. This is the six-digit community identification number assigned by FEMA. It is created by including the state Federal Information Processing Standard or FIPS code with the COMM_NO. Only communities which have had a revision to their FHBM will appear in this table. |
| FHBM_DATE | R S | FHBM revision date.  |
| FHBM_NOTE | R S | FHBM revision note that describes the reason for the revision. FHBM revision notes are shown in the Flood Insurance Rate Map legend or in the Flood Insurance Study report. A list of standard revision notes is included in Appendix K of these Guidelines.   |



**Table: L\_Poi\_FHBM**

| Field     | R/A | S/E | MS Access |            |     |          | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|-----------|-----|-----|-----------|------------|-----|----------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|           |     |     | type      | field size | dec | format   | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| FHBM_ID   | R   | S   | text      | 11         |     |          |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| CID       | R   | S   | text      | 6          |     |          |                |      | string | 6             |      | character  | 6            | 6       |      | character | 6   |  |
| FHBM_DATE | R   | S   | date/time | 8          |     | yyyymmdd | 00/00/0000     |      | date   |               |      | date       | 8            | 10      |      | date      |     |  |
| FHBM_NOTE | R   | S   | text      | 254        |     |          |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |

## Table: L\_Regression

This table is required when regression equations are used in hydrologic analysis.

L\_Regression is a lookup table that stores information regarding the regression equations utilized in the hydrologic modeling.

This is an Enhanced DFIRM Database table.

The L\_Regression table contains the following elements.

|           |     |   |
|-----------|-----|---|
| REGR_ID   | R E | Primary key for this table. Assigned by table creator.  |
| SUBBAS_ID | R E | Subbasin Identification. A code that provides a link to a valid entry from the S_Subbasins table.                                 |
| REGR_EQN  | R E | Regression Equation. Regression equation used in the analysis. Non-Roman symbols (e.g., Greek) should be spelled out (e.g., Phi). |
| REGR_RPT  | R E | Regression Report. This field stores the name of the report in which the regression equation was published.                       |

**Table: L\_Regression**

| Field     | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|-----------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|           |     |     | Type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| REGR_ID   | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| SUBBAS_ID | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| REGR_EQN  | R   | E   | text      | 254        |     |        |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| REGR_RPT  | R   | E   | text      | 254        |     |        |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |

## Table: L\_Stn\_Start

This table is required for any Digital Flood Insurance Rate Map database that has an S\_XS or S\_Riv\_Mrk table. Because of production limitations, it may be omitted at the direction of the FEMA Project Officer.

The L\_Stn\_Start table contains information about station starting locations. These locations indicate the reference point that was used as the origin for distance measurements along streams and rivers. This table is referenced by both the S\_XS table, which contains stream station information for cross section, and by the S\_Riv\_Mrk table, which contains river distance marker points. The location of the stationing start for a group of cross sections is normally referenced as a note on the Floodway Data table and on the Flood Profiles. Generally, all of the cross sections for a particular reach are referenced to the same starting point. If multiple reaches are measured from the same point, they may share the same record in L\_Stn\_Start.

This is a Standard DFIRM Database table.

The L\_Stn\_Start table contains the following elements.

|            |     |   |
|------------|-----|---|
| START_ID   | R S | Primary key for table lookup. Assigned by table creator. This field is the link that is used to reference cross section in the S_XS table or river marks in the S_Riv_Mrk table to the appropriate stationing starting point.                   |
| START_DESC | R S | Start Description. The description of the location of the station starting point. This should include the measurement units. For example, "Distances are measured in feet upstream from the confluence with the Main Channel of the Big River." |

**Table: L\_Stn\_Start**

| Field      | R/A | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| START_ID   | R   | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| START_DESC | R   | S   | text      | 254        |     |        |            | string         | 254   |     | character     | 254        | 254          |     | character | 254   |     |

## Table: L\_Storm\_Curve

This table is required when precipitation data are used in the hydrologic analysis.

The L\_Storm\_Curve table accommodates descriptions of Depth-Duration-Frequency (DDF) and Intensity-Duration-Frequency (IDF) relationships, as well as durations of e.g. design storms and precipitation patterns of historical storms.

This is an Enhanced DFIRM Database table.

The L\_Storm\_Curve table contains the following elements.

|           |   |   |  |
|-----------|---|---|--|
| CURVE_ID  | R | E | Primary key for this table. Assigned by table creator.   |
| STORM_ID  | R | E | Storm Identification. A code that provides a link to a valid entry from the L_Storm_Info table.  |
| DURATION  | R | E | Duration. Duration of precipitation event. The duration is that of a design or historical storm, or of a point on a DDF or IDF curve.  |
| TIME_LID  | R | E | Duration Unit Lookup Identification. A code that provides a link to a valid entry from the D_Time_Units table. This attribute establishes the unit of measure of the corresponding duration entry.   |
| DEPTH     | A | E | Precipitation Depth. This field is populated only if entering data for a DDF curve.  |
| LEN_LID   | A | E | Precipitation Depth Unit Lookup Identification. A code that provides a link to a valid entry from the D_Length_Units table. This attribute establishes the unit of measure for precipitation depth. This field is populated only if a precipitation depth is entered.          |
| INTENSITY | A | E | Rainfall Intensity. This field is populated only if entering data for an IDF curve.  |
| VEL_LID   | A | E | Rainfall Intensity Unit Lookup Identification. A code that provides a link to a valid entry from the D_Velocity_Units table. This attribute establishes the unit of measure for precipitation intensity. This field is populated only if a precipitation intensity is entered. |
| FREQ_LID  | A | E | Frequency Interval Lookup Identification. A code that provides a link to a valid entry from the D_Frequency table. This attribute stores the return period of the associated discharge.  |

**Table: L\_Storm\_Curve**

| Field     | R/A | S/E | MS Access          |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |   |
|-----------|-----|-----|--------------------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|---|
|           |     |     | Type               | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |   |
| CURVE_ID  | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| STORM_ID  | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| DURATION  | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| TIME_LID  | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| DEPTH     | A   | E   | number<br>(double) | 8          | 2   |        |                |      | number | 13            | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |
| LEN_LID   | A   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| INTENSITY | A   | E   | number<br>(double) | 8          | 2   |        |                |      | number | 13            | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |
| VEL_LID   | A   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| FREQ_LID  | A   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |

## Table: L\_Storm\_Info

This table is required when precipitation distributions are used in the hydrologic analysis.

The L\_Storm\_Info table is a lookup table that contains basic descriptions of precipitation patterns.

This is an Enhanced DFIRM Database table.

The L\_Storm\_Info table contains the following elements.

|            |     |  |
|------------|-----|--|
| STORM_ID   | R E | Primary key for this table. Assigned by table creator.   |
| STORM_LID  | R E | Storm Type Lookup Identification. A code that provides a link to a valid entry from the D_Storms table. This attribute establishes the storm type. |
| STORM_DESC | A E | Storm Description. Brief text description/note for the storm.  |
| SUBBAS_ID  | R E | Subbasin Identification. A code that provides a link to a valid entry from the S_Subbasins table.  |



**Table: L\_Storm\_Info**

| Field       | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |  |
|-------------|-----|-----|-----------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|--|
|             |     |     | type      | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |  |
| STORM_ID    | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| STORM_LID   | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |
| STORM_DESCA | R   | E   | text      | 254        |     |        |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |  |
| SUBBAS_ID   | R   | E   | text      | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |  |

## Table: L\_Subbas\_Disch

This table is required for all studies with new or revised non-coastal hydrologic data.

The L\_Subbas\_Disch table is a lookup table that contains outflow data for each subbasin and recurrence interval in the hydrologic analysis. The subbasin outflow data is specific to that subbasin and must not be a cumulative system flow. (System flows, if required, are assigned in L\_Node\_Disch.).

This is an Enhanced DFIRM Database table.

The L\_Subbas\_Disch table contains the following elements.

|           |     |  |
|-----------|-----|--|
| DISCH_ID  | R E | Primary key for this table. Assigned by table creator.   |
| SUBBAS_ID | R E | Subbasin Identification. A code that provides a link to a valid entry from the S_Subbasins table.  |
| FREQ_LID  | R E | Frequency Interval Lookup Identification. A code that provides a link to a valid entry from the D_Frequency table. This attribute stores the return period for the associated discharge. |
| DISCHARGE | R E | Discharge. Subbasin discharge/outflow for the above return period.   |
| DISCH_LID | R E | Discharge Unit Lookup Identification. A code that provides a link to a valid entry from the D_Discharge_Units table.   |

**Table: L\_Subbas\_Disch**

| Field     | R/A | S/E | MS Access          |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |   |
|-----------|-----|-----|--------------------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|---|
|           |     |     | type               | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |   |
| DISCH_ID  | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| SUBBAS_ID | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| FREQ_LID  | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| DISCHARGE | R   | E   | number<br>(double) | 8          | 2   |        |                |      | number | 13            | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |
| DISCH_LID | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |

## Table: L\_Wtr\_Nm

The L\_Wtr\_Nm table is a lookup table that contains the name of the surface water feature shown on the Flood Insurance Rate Map (FIRM) and referenced throughout the database. This table is required if the draft Digital Flood Insurance Rate Map table structure is used.

This is a Standard DFIRM Database table.

The L\_Wtr\_Nm table contains the following elements.

|            |     |  |
|------------|-----|--|
| WTR_NM_LID | R S | Surface Water Feature Name Lookup Identification. The primary key that links to the S_Gen_Struct table, S_Wtr_Ar table, S_Wtr_Ln table, and S_XS table. This value should match the value in the WTR_NM_LID field for related records in these tables. |
| WTR_NM     | R S | Surface Water Feature Name. This is the formal name of the surface water feature, as it will appear on the hardcopy FIRM.  |

**Table: L\_Wtr\_Nm**

| Field      | R/A | S/E | MS Access |            |     |        | ESRI Shapefile |        |       | ESRI Coverage |           |            |              | MapInfo |           |       |     |
|------------|-----|-----|-----------|------------|-----|--------|----------------|--------|-------|---------------|-----------|------------|--------------|---------|-----------|-------|-----|
|            |     |     | type      | field size | dec | format | input mask     | type   | width | dec           | type      | item width | output width | dec     | type      | width | dec |
| WTR_NM_LID | R   | S   | text      | 11         |     |        |                | string | 11    |               | character | 11         | 11           |         | character | 11    |     |
| WTR_NM     | R   | S   | text      | 100        |     |        |                | string | 100   |               | character | 100        | 100          |         | character | 100   |     |

## Table: L\_XS\_Ratings

This table is required for a detailed study.

The L\_XS\_Ratings table is a lookup table that contains information about the cross sections. This table should contain a record for each frequency / scenario associated with a cross section. For instance, if a cross section has data for the 25-, 100- and 500-year recurrence intervals, the L\_XS\_Ratings table should have three associated records. Therefore, each cross section should be associated with at least one record in L\_XS\_Ratings. The L\_XS\_Ratings table should possess at least one record at all times: the data for the 100-year regulatory model.

This is an Enhanced DFIRM Database table.

The L\_XS\_Ratings table contains the following elements.

|            |     |   |
|------------|-----|---|
| XS_RATG_ID | R E | Primary key for table lookup. Assigned systematically by the creator.   |
| XS_LN_ID   | R E | Foreign key for table lookup that links to the S_XS table. Value in this field should match the values in the XS_LN_ID field of the S_XS table.   |
| XS_NO      | R E | Cross Section Number. This attribute is used for all cross sections that are created during the engineering analysis. This must be populated with the number associated with the cross section used by the Mapping Partner in their modeling of the stream.   |
| REACH_NM   | A E | Reach Name. This attribute stores that name of the reach in the model that the cross section intersects. XS_NO and REACH_NM may be used in conjunction as a unique identifier to identify the correct cross section in the model zipfile. This field is not populated if the correct cross section may be identified in the model without merging XS_NO and REACH_NM.   |
| FREQ_LID   | R E | Frequency Interval Lookup Identification. A code that provides a link to the D_Frequency table. This field identifies the hydraulic analysis that applies to this record. Hydraulic analysis can be a recurrence interval (e.g., 1 percent or 0.2 percent flood hazard) or a scenario, for example without levee or with floodway. This ID is taken from the D_Frequency table. D_Frequency is a lookup table that is populated by the Mapping Partner that creates the database. |
| FREQ_WSEL  | R E | Water Surface Elevation. This is the water surface elevation associated with the frequency or scenario identified in FREQ_LID.  |
| LEN_LID    | R E | Length Unit Lookup Identification. A code that provides a link to a valid unit of length from the D_Length_Units table. This unit   |

indicates the measurement system used for the water surface elevation, stream bed elevation, and top width.

|            |     |  |
|------------|-----|--|
| V_DATM_LID | R E | Vertical Datum Lookup Identification. A code that provides a link to a valid vertical datum from the D_V_Datum table. The vertical datum indicates the reference surface from which the flood elevations are measured. Normally this would be North American Vertical Datum of 1988 for new studies.   |
| FREQ_Q     | A E | Discharge Value. This is the discharge value associated with the frequency or scenario identified in FREQ_LID. This field is required when the frequency or scenario identified is based on a discharge value. For example, it is not required for stage gage analysis on rivers near the coast.   |
| DISCH_LID  | A E | Discharge Unit Lookup Identification. A code that provides a link to a valid discharge unit in the D_Discharge_Units table. This unit specifies the unit of measurement for the discharge. This field is populated only if a discharge value is entered.   |
| HYDRA_ID   | R E | Hydraulic Model Identification. A code that provides a link to the hydraulic model table, L_Hydra_Model. The L_Hydra_Model table will identify the hydraulic model used to calculate the flood hazard at this cross section line. This ID field must contain a number that matches the HYDRA_ID field for a record in the L_Hydra_Model table. The L_Hydra_Model table documents model information for this cross section. Multiple cross sections may link to a single record in the L_Hydra_Model table. |
| HYDRO_ID   | R E | Hydrologic Model Identification. A code that provides a link to the hydrologic model table, L_Hydro_Model. The L_Hydro_Model table will identify the hydrologic model used to calculate the flood hazard at this cross section line. This ID field for a record in the L_Hydro_Model table. The L_Hydro_Model table documents model information for this cross section. Multiple cross sections may link to a single record in the L_Hydro_Model table.  |
| EFF_MODELS | R E | Effective Hydraulic and Hydrologic Model. This field is true only if the elevation and discharge are the result of the effective hydraulic and hydrologic models at this cross section. Enter "T" for true or "F" for false.   |

**Table: L\_XS\_Ratings**

| Field      | R/A | S/E | MS Access          |            |     |        | ESRI Shapefile |      |        | ESRI Coverage |      |            |              | MapInfo |      |           |     |   |
|------------|-----|-----|--------------------|------------|-----|--------|----------------|------|--------|---------------|------|------------|--------------|---------|------|-----------|-----|---|
|            |     |     | type               | field size | dec | format | input mask     | type | width  | dec           | type | item width | output width | dec     | type | width     | dec |   |
| XS_RATG_ID | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| XS_LN_ID   | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| XS_NO      | R   | E   | text               | 12         |     |        |                |      | string | 12            |      | character  | 12           | 12      |      | character | 12  |   |
| REACH_NM   | A   | E   | text               | 254        |     |        |                |      | string | 254           |      | character  | 254          | 254     |      | character | 254 |   |
| FREQ_LID   | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| FREQ_WSEL  | R   | E   | number<br>(double) | 8          | 2   |        |                |      | number | 8             | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |
| LEN_LID    | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| V_DATM_LID | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| FREQ_Q     | A   | E   | number<br>(double) | 8          | 2   |        |                |      | number | 8             | 2    | numeric    | 8            | 13      | 2    | decimal   | 15  | 2 |
| DISCH_LID  | A   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| HYDRA_ID   | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |
| HYDRO_ID   | R   | E   | text               | 11         |     |        |                |      | string | 11            |      | character  | 11           | 11      |      | character | 11  |   |



|            |   |   |      |   |  |  |        |   |           |   |   |           |   |
|------------|---|---|------|---|--|--|--------|---|-----------|---|---|-----------|---|
| EFF_MODELS | R | E | text | 1 |  |  | string | 1 | character | 1 | 1 | character | 1 |
|------------|---|---|------|---|--|--|--------|---|-----------|---|---|-----------|---|

## **Table: D\_Area\_Units**

The D\_Area\_Units table lists valid units for area measurement.

This is an Enhanced DFIRM Database table.

The D\_Area\_Units table contains the following elements.

|           |  |
|-----------|--|
| AREA_LID  | Primary key for lookup table that links to various proposed enhanced tables.       |
| AREA_UNIT | Unit of Area Measurement. Varies depending on the variable that it is quantifying. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Area\_Units**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| AREA_LID  | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| AREA_UNIT | E   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_CBRS\_Typ**

The D\_CBRS\_Typ table lists valid types of Coastal Barrier Resources System (CBRS) areas.

This is a Standard DFIRM Database table.

The D\_CBRS\_Typ table contains the following elements.

|          |  |
|----------|--|
| CBRS_LID | Primary key for table lookup that links to the S_CBRS table.                                   |
| CBRS_TYP | CBRS Type. The type code provides details of the types of prohibitions that apply to the area. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_CBRS\_Typ**

| Field    | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|          |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| CBRS_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| CBRS_TYP | S   | text      | 35         |     |        |            | string         | 35    |     | character     | 35         | 35           |     | character | 35    |     |

## **Table: D\_Chan\_Rep**

The D\_Chan\_Rep table lists valid channel representations.

This is a Standard DFIRM Database table.

The D\_Chan\_Rep table contains the following elements.

|          |  |
|----------|--|
| CHAN_LID | Primary key for table lookup that links to the S_Wtr_Ln table.   |
| CHAN_REP | Channel Representation. Single means linear water features represented by a centerline. Double means linear water features represented by shorelines or channel banks. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Chan\_Rep**

| Field    | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|          |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| CHAN_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| CHAN_REP | S   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_Discharge\_Units**

The D\_Discharge\_Units table lists valid units for discharge measurement.

This is an Enhanced DFIRM Database table.

The D\_Discharge\_Units table contains the following elements.

|            |   |
|------------|---|
| DISCH_LID  | Primary key for lookup table that links to various proposed enhanced tables.            |
| DISCH_UNIT | Unit of Discharge Measurement. Varies depending on the variable that it is quantifying. |

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_Discharge\_Units**

| Field      | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| DISCH_LID  | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| DISCH_UNIT | E   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_Eros\_Method**

The D\_Eros\_Method table lists the valid options for identifying the type of erosion methodology applied in areas where the dune feature along a ground profile is eroded to its storm profiles before coastal flood hazards are modeled. The options of removal and retreat are consistent with accepted FEMA methodologies and are related to the volume of sand lost/moved due to storm-induced erosion. If erosion methodology was not applied to the modeling, the valid entry in the table is NOT APPLIED.

This is an Enhanced DFIRM Database table.

The D\_Eros\_Method table contains the following elements.

EROS\_LID                Primary key for table lookup that links to the L\_Cst\_Model table.

EROS\_METH             Erosion Methodology.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Eros\_Method**

| Field     | S/E | MS Access |               |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |               |                 |     | MapInfo   |       |     |
|-----------|-----|-----------|---------------|-----|--------|------------|----------------|-------|-----|---------------|---------------|-----------------|-----|-----------|-------|-----|
|           |     | type      | field<br>size | dec | format | input mask | type           | width | dec | type          | item<br>width | output<br>width | dec | type      | width | dec |
| EROS_LID  | E   | text      | 11            |     |        |            | string         | 11    |     | character     | 11            | 11              |     | character | 11    |     |
| EROS_METH | E   | text      | 15            |     |        |            | string         | 15    |     | character     | 15            | 15              |     | character | 15    |     |

## **Table: D\_Floodway**

The D\_Floodway table lists valid floodway representations.

This is a Standard DFIRM Database table.

The D\_Floodway table contains the following elements.

**FLDWAY\_LID**      Primary key for table lookup that links to the S\_Fld\_Haz\_Ar table.

**FLOODWAY**      Floodway Type. Floodway areas are designated by the Federal Emergency Management Agency to provide an area that must be kept free of encroachment so that the 1-percent-annual-chance flood event can be carried without substantial increase in flood heights. Normal floodway areas are 'floodway'. Special cases will have a note on the hardcopy Flood Insurance Rate Map.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Floodway**

| Field      | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| FLDWAY_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| FLOODWAY   | S   | text      | 30         |     |        |            | string         | 30    |     | character     | 30         | 30           |     | character | 30    |     |

## Table: D\_Frequency

The D\_Frequency table lists valid frequency interval types. This table is not intended to restrict the recurrence intervals or scenarios for which the creator may provide data. Rather, this table is intended to demonstrate how the frequency interval values and scenarios should be handled.

This is an Enhanced DFIRM Database table.

The D\_Frequency table contains the following elements.

|           |   |
|-----------|---|
| FREQ_LID  | Primary key for table lookup that links to the L_XS_Ratings, L_Subbas_Disch, L_Storm_Info, and L_Node_Flow tables.                |
| FREQUENCY | Frequency. This type code provides the recurrence interval or scenario of the associated cross section, subbasin, node, or storm. |

Cross sections that are associated with levees possess frequency values in FREQUENCY that indicate the behavior of the levee during the flood event. All levee related entries possess the word "LEVEE" in the value. In addition, the behavior of the levee is denoted with values for failure. For instance, a cross section that has a levee that does not fail during the 1 percent annual chance flood hazard event would possess "1 PCT LEVEE" as its frequency value. That same cross section could also possess a frequency value, such as "1 PCT LEVEE, RIGHT FAILED", that indicates that the levee on the right side has failed.

For the 1 percent flood annual chance flood hazard, the cross section's water surface elevation and discharge may be associated with a floodway or without a floodway. If the cross section is associated with a floodway, the water surface elevation value and discharge value for the 1 percent flood hazard event should be entered in XS\_WSEL and XS\_Q in the L\_XS\_Ratings table, respectively. To indicate that the frequency is associated with floodway values, "1 PCT WITH FLOODWAY" should be used as the frequency value in D\_Frequency. The water surface elevation value and discharge value for the 1 percent flood event without a floodway for the same cross section should be entered in XS\_WSEL and XS\_Q in the L\_XS\_Ratings table, respectively. To indicate that the frequency is associated with the without floodway values, "1 PCT WITHOUT FLOODWAY" should be used as the frequency value in D\_Frequency.

Example entries are shown in the table below. Additional entries may be added as needed to accommodate the scenarios modeled.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Frequency**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| FREQ_LID  | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| FREQUENCY | E   | text      | 100        |     |        |            | string         | 100   |     | character     | 100        | 100          |     | character | 100   |     |

## **Table: D\_Gage**

The D\_Gage table lists valid gage types.

This is an Enhanced DFIRM Database table.

The D\_Gage table contains the following elements.

GAGE\_LID            Primary key for table lookup that links to the S\_Precip\_Gage, S\_Water\_Gage, and S\_Cst\_Gage tables.

GAGE\_TYPE           Gage Type. The type of data the gage records.

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_Gage**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| GAGE_LID  | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| GAGE_TYPE | E   | text      | 40         |     |        |            | string         | 40    |     | character     | 40         | 40           |     | character | 40    |     |

## **Table: D\_Hydra**

The D\_Hydra table lists valid hydraulic models.

This is an Enhanced DFIRM Database table.

The D\_Hydra table contains the following elements.

|           |  |
|-----------|--|
| HYDRA_LID | Primary key for table lookup that links to the L_Riv_Model table.  |
| HYDRA_MDL | Hydraulic Model. This is the name or abbreviation of the hydraulic model that was used for the engineering analysis. As the Federal Emergency Management Agency approves the use of new engineering models for use in developing Flood Insurance Rate Maps, this list can be expanded. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Hydra**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| HYDRA_LID | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| HYDRA_MDL | E   | text      | 40         |     |        |            | string         | 40    |     | character     | 40         | 40           |     | character | 40    |     |

## **Table: D\_Hydro**

The D\_Hydro table lists valid hydrologic models.

This is an Enhanced DFIRM Database table.

The D\_Hydro table contains the following elements.

|           |  |
|-----------|--|
| HYDRO_LID | Primary key for table lookup that links to the L_Riv_Model table.  |
| HYDRO_MDL | Hydrologic Model. This is the name or abbreviation of the hydrologic model that was used for the engineering analysis. As the Federal Emergency Management Agency approves the use of new engineering models for use in developing Flood Insurance Rate Maps, this list can be expanded. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Hydro**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| HYDRO_LID | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| HYDRO_MDL | E   | text      | 40         |     |        |            | string         | 40    |     | character     | 40         | 40           |     | character | 40    |     |

## **Table: D\_Label\_Typ**

The D\_Label\_Typ table lists valid features to which the labels and leaders apply.

This is a Standard DFIRM Database table.

The D\_Label\_Typ table contains the following elements.

|            |  |
|------------|--|
| LABEL_LID  | Primary key for table lookup that links to the S_Label_Pt and the S_Label_Ld table.  |
| LABEL_TYPE | Label type. This is a description of the planimetric features to which the labels and leaders are associated. For vector based maps, the labels and leaders will be associated with vector features in S_Trnsport_Ln, S_Wtr_Ar and S_Wtr_Ln. For maps with an ortho-photo base, the labels and leaders will be associated with DOQ water and transportation features. For maps that use both vector features and ortho-photos, all values may apply. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Label\_Typ**

| Field      | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| LABEL_LID  | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| LABEL_TYPE | S   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## Table: D\_Length\_Units

The D\_Length\_Units table lists valid units of measurement for length, elevation, height, or distance used throughout the database.

This is a Standard and Enhanced DFIRM Database table.

The D\_Length\_Units table contains the following elements.

|          |  |
|----------|--|
| LEN_LID  | Primary key for table lookup that links to the S_BFE table, the S_Cst_Tset_Ln table, the S_Fld_Haz_Ar table, the S_XS table, the L_Storm_Curve table and the L_XS_Ratings table. |
| LEN_UNIT | Unit of Length Measurement. Varies depending on the variable that it is quantifying.   |

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_Length\_Units**

| Field    | S/E   | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|----------|-------|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|          |       | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| LEN_LID  | S & E | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| LEN_UNIT | S & E | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## Table: D\_Ln\_Typ

The D\_Ln\_Typ table lists valid line types used to determine symbology and drawing order on the hardcopy Flood Insurance Rate Map.

This is a Standard DFIRM Database table.

The D\_Ln\_Typ table contains the following elements.

|        |   |
|--------|---|
| LN_LID | Primary key for table lookup that links to the S_Fld_Haz_Ln table, the S_PLSS_Ln table, and the S_Pol_Ln table. Values 1000 thru 1999 are reserved for political lines, values 2000 thru 2999 are reserved for flood hazard lines, and values 3000 thru 3999 are reserved for U.S. Public Lands Survey System (PLSS) lines. |
| LN_TYP | Line Type. This is the boundary line type such as a floodplain boundary line, political boundary line, or PLSS boundary line. NOTE: The symbol '%' is a reserved symbol in most software packages so the word 'percent' was abbreviated to 'PCT'.   |

Some lines may have multiple values. For the S\_Pol\_Ln table, the following precedence should apply: INTERNATIONAL, STATE, COUNTY, CORPORATE, EXTRATERRITORIAL JURISDICTION, URBAN GROWTH BOUNDARY, MUNICIPAL URBAN DRAINAGE DISTRICT, LEVEE IMPROVEMENT DISTRICT, AREA NOT INCLUDED, RESERVATION, FOREST, and PARK.

For the S\_Fld\_Haz\_Ln table, the following precedence should apply: LIMIT OF DETAILED STUDY, LIMIT OF STUDY, LIMIT OF FLOODWAY, FLOODWAY, 1 PCT ANNUAL-CHANCE FLOOD HAZARD, ZONE BREAK, 0.2 PCT ANNUAL CHANCE FLOOD HAZARD, FLOWAGE EASEMENT BOUNDARY, and STATE ENCHROACHMENT LINE.

The FEMA flood maps divide areas with 1 percent annual chance of flooding into more specific types of flood zones based on the characteristics of potential flooding in each area. Additionally, they divide areas of the same flood zone based on differences in base flood elevation, depth, or velocity. The 1 PERCENT ANNUAL CHANCE FLOOD HAZARD line type should also be used for the external boundaries of the 1 percent annual chance flood hazard areas. The ZONE BREAK line type should be used between different 1 percent annual chance flood hazard areas (e.g., between A and AE or AE and VE zones) and between areas of the same flood zone but different elevation, depth, or velocity.

For the S\_PLSS\_Ln table, the following precedence should apply: TOWNSHIP, RANGE, SECTION, QUARTER SECTION, and MEANDER.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Ln\_Typ**

| Field  | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|--------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|        |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| LN_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| LN_TYP | S   | text      | 45         |     |        |            | string         | 45    |     | character     | 45         | 45           |     | character | 45    |     |

## **Table: D\_Method**

The D\_Method table lists the valid options for describing the general methodology used in deriving the station and elevation point data along transects used in modeling coastal flood hazards.

This is an Enhanced DFIRM Database table.

The D\_Method table contains the following elements.

METH\_LID            Primary key for table lookup that links to the S\_Cst\_Tsct\_Ln table.

METHOD            Survey method used to locate transect points.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Method**

| Field    | S/E | MS Access |               |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |               |                 |     | MapInfo   |       |     |
|----------|-----|-----------|---------------|-----|--------|------------|----------------|-------|-----|---------------|---------------|-----------------|-----|-----------|-------|-----|
|          |     | type      | field<br>size | dec | format | input mask | type           | width | dec | type          | item<br>width | output<br>width | dec | type      | width | dec |
| METH_LID | E   | text      | 11            |     |        |            | string         | 11    |     | character     | 11            | 11              |     | character | 11    |     |
| METHOD   | E   | text      | 20            |     |        |            | string         | 20    |     | character     | 20            | 20              |     | character | 20    |     |

## **Table: D\_Nm\_Typ**

The D\_Nm\_Typ table lists valid transportation feature name types.

This is a Standard DFIRM Database table.

The D\_Nm\_Typ table contains the following elements.

NM\_LID                      Primary key for table lookup that links to the S\_Tnrsport\_Ln table.

NM\_TYP                      Name Type. The transportation feature name type.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Nm\_Typ**

| Field  | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|--------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|        |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| NM_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| NM_TYP | S   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_Nodes**

The D\_Nodes table lists valid node types.

This is an Enhanced DFIRM Database table.

The D\_Nodes table contains the following elements.

|           |   |
|-----------|---|
| NODE_LID  | Primary key for table lookup that links to the S_Nodes table.                                       |
| NODE_TYPE | The type of hydrologic network point that the node represents. The default node type is a junction. |

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_Nodes**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| NODE_LID  | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| NODE_TYPE | E   | text      | 10         |     |        |            | string         | 10    |     | character     | 10         | 10           |     | character | 10    |     |

## **Table: D\_Panel\_Typ**

The D\_Panel\_Typ table lists valid Flood Insurance Rate Map (FIRM) panel types.

This is a Standard DFIRM Database table.

The D\_Panel\_Typ table contains the following elements.

|           |   |
|-----------|---|
| PANEL_LID | Primary key for table lookup that links to the S_FIRM_Pan table.  |
| PANEL_TYP | 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. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Panel\_Typ**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| PANEL_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| PANEL_TYP | S   | text      | 35         |     |        |            | string         | 35    |     | character     | 35         | 35           |     | character | 35    |     |

## **Table: D\_Rd\_Stat**

The D\_Rd\_Stat table lists valid road status values.

This is a Standard DFIRM Database table.

The D\_Rd\_Stat table contains the following elements.

RD\_S\_LID                Primary key for table lookup that links to the S\_Trnsport\_Ln table.

RD\_STAT                Road Status.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Rd\_Stat**

| Field    | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|          |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| RD_S_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| RD_STAT  | S   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_Runup\_Mdl**

The D\_Runup\_Mdl table lists valid wave runup models that can be used for the engineering analysis.

This is an Enhanced DFIRM Database table.

The D\_Runup\_Mdl table contains the following elements.

RUNUP\_LID            Primary key for table lookup that links to the L\_Cst\_Model table.

RUNUP\_MDL           Runup Model. This is the name or abbreviation of the wave runup model that was used for the engineering analysis. As the Federal Emergency Management Agency approves the use of new engineering models for use in developing FIRMs, this list can be expanded.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Runup\_Mdl**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| RUNUP_LID | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| RUNUP_MDL | E   | text      | 30         |     |        |            | string         | 30    |     | character     | 30         | 30           |     | character | 30    |     |

## **Table: D\_Scale**

The D\_Scale table lists valid Flood Insurance Rate Map (FIRM) scales, ratios.

This is a Standard DFIRM Database table.

The D\_Scale table contains the following elements.

**SCALE\_LID**            Primary key for table lookup that links to the S\_FIRM\_Pan table and the S\_LOMR table.

**SCALE**                Map Scale. This is the denominator of the FIRM scale or effective Letter of Map Revision scale as a ratio. For example, 24000 is the denominator for a 1" = 2000' map.

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_Scale**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| SCALE_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SCALE     | S   | text      | 5          |     |        |            | string         | 5     |     | character     | 5          | 5            |     | character | 5     |     |

## Table: D\_Shr\_Rough

The D\_Shr\_Rough table provides the valid shoreline type.

This is an Enhanced DFIRM Database table.

The D\_Shr\_Rough table contains the following elements.

|           |  |
|-----------|--|
| SHR_LID   | Primary key for table lookup that links to the S_Cst_Tsct_Ln table.  |
| SHR_ROUGH | Shoreline Roughness Type. The following lists the shoreline roughness type and a description of the shoreline types that are included in the classification: <ul style="list-style-type: none"><li>• Very Low: barrier beaches, sand beaches, salt marshes, mud flats, deltas, mangroves, coral reefs</li><li>• Low: cobble beaches, estuaries, lagoons</li><li>• Moderate: low cliffs, glacial drift, alluvial plains</li><li>• High: medium cliffs, indented coasts</li><li>• Very High: rocky, cliffed coasts, fiords</li></ul> |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Shr\_Rough**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| SHR_LID   | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SHR_ROUGH | E   | text      | 10         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_Shr\_Typ**

The D\_Shr\_Typ table lists valid criteria used in determining shorelines used in the coastal flood hazards model.

This is an Enhanced DFIRM Database table.

The D\_Shr\_Typ table contains the following elements.

SHRTYP\_LID            Primary key for table lookup that links to the S\_Shore\_Ln table.

SHRLN\_TYP            Criteria used in determining shoreline.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Shr\_Typ**

| Field      | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| SHRTYP_LID | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SHRLN_TYP  | E   | text      | 30         |     |        |            | string         | 30    |     | character     | 30         | 30           |     | character | 30    |     |

## **Table: D\_Storms**

The D\_Storms table lists valid types of storms.

This is an Enhanced DFIRM Database table.

The D\_Storms table contains the following elements.

|            |   |
|------------|---|
| STORM_LID  | Primary key for table lookup that links to the L_Storm_Info table.              |
| STORM_TYPE | Storm Type. The type of precipitation distribution defined by the data records. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Storms**

| Field      | S/E | MS Access |               |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |               |                 |     | MapInfo   |       |     |
|------------|-----|-----------|---------------|-----|--------|------------|----------------|-------|-----|---------------|---------------|-----------------|-----|-----------|-------|-----|
|            |     | type      | field<br>size | dec | format | input mask | type           | width | dec | type          | item<br>width | output<br>width | dec | type      | width | dec |
| STORM_LID  | E   | text      | 11            |     |        |            | string         | 11    |     | character     | 11            | 11              |     | character | 11    |     |
| STORM_TYPE | E   | text      | 20            |     |        |            | string         | 20    |     | character     | 20            | 20              |     | character | 20    |     |

## **Table: D\_Struct\_Typ**

The D\_Struct\_Typ table lists valid structure types associated with general hydraulic.

This is a Standard DFIRM Database table.

The D\_Struct\_Typ table contains the following elements.

STRUCT\_LID            Primary key for table lookup that links to the S\_Gen\_Struct table.

STRUCT\_TYP            Structure Type. These are hydraulic structures within the study area.

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_Struct\_Typ**

| Field      | S/E | MS Access |               |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |               |                 |     | MapInfo   |       |     |
|------------|-----|-----------|---------------|-----|--------|------------|----------------|-------|-----|---------------|---------------|-----------------|-----|-----------|-------|-----|
|            |     | type      | field<br>size | dec | format | input mask | type           | width | dec | type          | item<br>width | output<br>width | dec | type      | width | dec |
| STRUCT_LID | S   | text      | 11            |     |        |            | string         | 11    |     | character     | 11            | 11              |     | character | 11    |     |
| STRUCT_TYP | S   | text      | 36            |     |        |            | string         | 36    |     | character     | 36            | 36              |     | character | 36    |     |

## **Table: D\_Surge\_Mdl**

The D\_Surge\_Mdl table lists valid hurricane surge models that can be used during the engineering analysis.

This is an Enhanced DFIRM Database table.

The D\_Surge\_Mdl table contains the following elements.

|           |  |
|-----------|--|
| SURGE_LID | Primary key for table lookup that links to the L_Cst_Model table.  |
| SURGE_MDL | Hurricane Surge Model. This is the name or abbreviation of the hurricane surge model that was used for the engineering analysis. As the Federal Emergency Management Agency approves the use of new engineering models for use in developing FIRMs; this list can be expanded. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Surge\_Mdl**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| SURGE_LID | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| SURGE_MDL | E   | text      | 40         |     |        |            | string         | 40    |     | character     | 40         | 40           |     | character | 40    |     |

## **Table: D\_Time\_Units**

The D\_Time\_Units table lists valid units for time measurement.

This is an Enhanced DFIRM Database table.

The D\_Time\_Units table contains the following elements.

|           |  |
|-----------|--|
| TIME_LID  | Primary key for lookup table that links to various proposed enhanced tables.       |
| TIME_UNIT | Unit of Time Measurement. Varies depending on the variable that it is quantifying. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Time\_Units**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| TIME_LID  | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| TIME_UNIT | E   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_Trans\_Typ**

The D\_Trans\_Typ table lists valid transportation feature types for base map features.

This is a Standard DFIRM Database table.

The D\_Trans\_Typ table contains the following elements.

**TRANS\_LID**            Primary key for table lookup that links to the S\_Trnsport\_Ln table. Values 1000 thru 1999 are reserved for road types, values 2000 thru 2999 are reserved for railroads, values 3000 thru 3999 are reserved for airports, and values 4000 thru 4999 are reserved for water transportation.

**TRANS\_TYP**            Transportation Feature Type.

The value UNDEFINED ROAD should only be used when it cannot be determined if the road feature is a primary or secondary road. The value UNDEFINED RAILROAD should only be used when it cannot be determined if the railroad feature is an active, abandoned, or dismantled railroad.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Trans\_Typ**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| TRANS_LID | S   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| TRANS_TYP | S   | text      | 50         |     |        |            | string         | 50    |     | character     | 50         | 50           |     | character | 50    |     |

## **Table: D\_V\_Datum**

The D\_V\_Datum table lists valid vertical datums.

This is a Standard and Enhanced DFIRM Database table.

The D\_V\_Datum table contains the following elements.

V\_DATM\_LID      Primary key for table lookup that links to the S\_BFE table, the S\_Fld\_Haz\_Ar table, and the Study\_Info table.

V\_DATUM          Vertical Datum. North American Vertical Datum of 1988 (NAVD88) is preferred. However, older studies may have been prepared using the National Geodetic Vertical Datum of 1929 (NGVD29).

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_V\_Datum**

| Field      | S/E   | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-------|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |       | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| V_DATM_LID | S & E | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| V_DATUM    | S & E | text      | 6          |     |        |            | string         | 6     |     | character     | 6          | 6            |     | character | 6     |     |

## **Table: D\_Velocity\_Units**

The D\_Velocity\_Units table lists valid units for velocity measurement.

This is a Standard and Enhanced DFIRM Database table.

The D\_Velocity\_Units table contains the following elements.

VEL\_LID                      Primary key for table lookup that links to the S\_Fld\_Haz\_Ar table, the S\_XS table, and the L\_Storm\_Curve table.

VEL\_UNIT                    Unit of Velocity Measurement. Varies depending on the variable that it is quantifying.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Velocity\_Units**

| Field    | S/E   | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|----------|-------|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|          |       | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| VEL_LID  | S & E | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| VEL_UNIT | S & E | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## **Table: D\_Volume\_Units**

The D\_Volume\_Units table lists valid units for volume measurement.

This is an Enhanced DFIRM Database table.

The D\_Volume\_Units table contains the following elements.

|          |  |
|----------|--|
| VOL_LID  | Primary key for lookup table that links to various proposed enhanced tables.         |
| VOL_UNIT | Unit of Volume Measurement. Varies depending on the variable that it is quantifying. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Volume\_Units**

| Field    | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|          |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| VOL_LID  | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| VOL_UNIT | E   | text      | 20         |     |        |            | string         | 20    |     | character     | 20         | 20           |     | character | 20    |     |

## Table: D\_VZone

The D\_VZone table lists the valid options for classifying the landward extent of the V Zone along a coastal transect. This information provides a brief summary to users about the predominating methodology that was used to determine the landward extent of the V Zone shown in the mapped flood hazard areas.

This is an Enhanced DFIRM Database table.

The D\_VZone table contains the following elements.

|           |   |
|-----------|---|
| VZONE_LID | Primary key for table lookup that links to the S_Cst_Ln table.  |
| VZONE_EXT | V Zone Extent. This is the predominating methodology that was used to determine the landward extent of the V Zone shown in the mapped flood hazard areas. |

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_VZone**

| Field     | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| VZONE_LID | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| VZONE_EXT | E   | text      | 40         |     |        |            | string         | 40    |     | character     | 40         | 40           |     | character | 40    |     |

## **Table: D\_Water\_Typ**

The D\_Water\_Typ table lists valid water feature types.

This is a modified Standard DFIRM Database domain table that includes Standard DFIRM Database domain values and Enhanced DFIRM Database domain values.

The D\_Water\_Typ table contains the following elements.

WATER\_LID            Primary key for table lookup that links to the S\_Profil\_Basln table, S\_Wtr\_Ar table, and the S\_Wtr\_Ln table.

WATER\_TYP           Surface Water Feature Type.

Table structure is shown below. Valid entries are shown in Section L.9.



**Table: D\_Water\_Typ**

| Field     | S/E   | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|-----------|-------|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|           |       | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| WATER_LID | S & E | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| WATER_TYP | S & E | text      | 40         |     |        |            | string         | 40    |     | character     | 40         | 40           |     | character | 40    |     |

## **Table: D\_Wave\_Mdl**

The D\_Wave\_Mdl table lists valid wave height models used during the coastal engineering analysis.

This is an Enhanced DFIRM Database table.

The D\_Wave\_Mdl table contains the following elements.

WAVEHT\_LID      Primary key for table lookup that links to the L\_Cst\_Model table.

WAVEHT\_MDL      Wave Height Model. This is the name or abbreviation of the wave height model that was used for the coastal engineering analysis. As the Federal Emergency Management Agency approves the use of new engineering models for use in developing FIRMs; this list can be expanded.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Wave\_Mdl**

| Field      | S/E | MS Access |            |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |            |              |     | MapInfo   |       |     |
|------------|-----|-----------|------------|-----|--------|------------|----------------|-------|-----|---------------|------------|--------------|-----|-----------|-------|-----|
|            |     | type      | field size | dec | format | input mask | type           | width | dec | type          | item width | output width | dec | type      | width | dec |
| WAVEHT_LID | E   | text      | 11         |     |        |            | string         | 11    |     | character     | 11         | 11           |     | character | 11    |     |
| WAVEHT_MDL | E   | text      | 25         |     |        |            | string         | 25    |     | character     | 25         | 25           |     | character | 25    |     |

## Table: D\_Zone

The D\_Zone table lists valid Flood Insurance Rate Map (FIRM) flood zones.

This is a Standard DFIRM Database table.

The D\_Zone table contains the following elements.

|          |  |
|----------|--|
| ZONE_LID | Primary key for table lookup that links to the S_Fld_Haz_Ar table.   |
| FLD_ZONE | Flood Zone. This is the flood insurance risk zone designation. These zones are used by the Federal Emergency Management Agency (FEMA) to designate Special Flood Hazard Areas (SFHAs) and for insurance rating purposes. Some older FEMA FIRMs were prepared in the Standard format that uses Zones B, C and numbered A and V zones. Newer FIRMs use the Map Initiatives format where the B corresponds to 0.2 PCT ANNUAL CHANCE FLOOD HAZARD; C corresponds to Zone X; numbered A zones (e.g., A1, A2, A3) correspond to Zone AE; and numbered V zones (e.g., V1, V2, V3) correspond to Zone VE. All Digital Flood Insurance Rate Maps (DFIRMs) should use the Map Initiatives zone designations. See Volume 1, Subsection 1.4.6.1.5 of these Guidelines for details on the flood insurance risk zones. (NOTE: The symbol '%' is a reserved symbol in most software packages so the word 'percent' was abbreviated as 'PCT'.) |

Where the 1-percent-annual-chance flood or the 0.2-percent-annual-chance flood is contained in a culvert or channel, a corresponding feature appears in the S\_Fld\_Haz\_Ar table only if an SFHA or 0.2-percent-annual-chance flood zone is shown on the FIRM in this area. In general, these culverts and channels are to be represented in the general structure table regardless of how the flood insurance risk zones are depicted. So, if these structures are shown on the FIRM as a dashed line passing through a Zone X, no corresponding flood insurance risk zone is shown in S\_Fld\_Haz\_Ar table in the DFIRM database. If a narrow SFHA or 0.2-percent-annual-chance flood zone is shown on the FIRM, then a narrow polygon must be included in the DFIRM database. If the width of this flood insurance risk zone is accurately known and represented in the spatial data, the normal flood insurance risk zone is applied. If the width of the flood insurance risk zone is not accurately known and represented because of scale limitations, then the zone is designated as 1-percent-annual-chance flood contained in channel or 0.2-percent-annual-chance flood contained in channel as appropriate.

Table structure is shown below. Valid entries are shown in Section L.9.

**Table: D\_Zone**

| Field    | S/E | MS Access |               |     |        |            | ESRI Shapefile |       |     | ESRI Coverage |               |                 |     | MapInfo   |       |     |
|----------|-----|-----------|---------------|-----|--------|------------|----------------|-------|-----|---------------|---------------|-----------------|-----|-----------|-------|-----|
|          |     | type      | field<br>size | dec | format | input mask | type           | width | dec | type          | item<br>width | output<br>width | dec | type      | width | dec |
| ZONE_LID | S   | text      | 11            |     |        |            | string         | 11    |     | character     | 11            | 11              |     | character | 11    |     |
| FLD_ZONE | S   | text      | 55            |     |        |            | string         | 55    |     | character     | 55            | 55              |     | character | 55    |     |