Flood Risk Database (FRD) Technical Reference

November 2024

FEMA

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Requirements for the FEMA Risk Mapping, Assessment, and Planning (Risk MAP) Program are specified separately by statute, regulation, or FEMA policy (primarily the Standards for Flood Risk Analysis and Mapping). This document provides guidance to support the requirements and recommends approaches for effective and efficient implementation. Alternate approaches that comply with all requirements are acceptable.

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

Table of Revisions

Affected Section or Subsection	Date	Description
Section 1.2	November 2024	Updated to make 30-percent-annual-chance rasters optional deliverable components.
Section 5	November 2024	Cell size updated to 3 meters.
Entire document	May 2025	Reviewed and incorporated applicable language changes to align with administration directives as of January 31, 2025.

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1. Flood Risk Database

1.1. Overview

The Flood Risk Database (FRD) is the key product that will support all other flood risk products. It is a database of non-regulatory flood risk data which contains the digital data that can be used to prepare a Flood Risk Report (FRR) and Flood Risk Map (FRM), as well as other ancillary data generated during a Flood Risk Project. The FRD will be delivered as shapefiles, and optionally as a Geodatabase.

The FRD tables prefixed with "S_" have a spatial component associated with them. The tables that begin with "L_" are tabular (often referred to as a look-up or business tables); there is no direct spatial component included in these tables. The spatial tables (feature classes) also have a suffix describing the type of feature contained within the table. These include a) _Ar (for polygonal areal features), b) _Ln (for linear features) and c) _Pt (for point features).

Table 1 provides a list of tables included in the FRD. The listing is ordered with spatial tables (feature classes) first, followed by non-spatial (business) tables and lookup tables last.

Table 1: Flood Risk Database Tables

FRD Table Name	Table Type	Table Description
S_AOMI_Ar	Spatial	Areas of mitigation interest that contribute to flood losses or highlight flood issues and/or associated effects
S_Cr_Fac_Pt	Spatial	Location and attributes of critical facilities identified for modeled dam release or levee breaches scenarios in the Flood Risk Project
S_CSLF_Ar	Spatial	Changes Since Last FIRM (CSLF) polygons depicting areas of change between new and previous flood hazards
S_Dams_XS_Ln	Spatial	Location and attributes for cross sections used for dam inundation modeling in the Flood Risk Project
S_DS_Inundation_Ar	Spatial	Location and attributes for the downstream inundation areas of the dams studied in the Flood Risk Project
S_Easement_Ar	Spatial	Location and attributes for the easements associated with the dams studied in the Flood Risk Project
S_FRAC_Ar	Spatial	Census Block polygons with risk assessment loss results

FRD Table Name	Table Type	Table Description
S_FRAS_Pt	Spatial	Locations of structures used in site-specific risk analysis with risk assessment loss results
S_FRD_Proj_Ar	Spatial	Polygon representing the extents of the Flood Risk Project area
S_HUC_Ar	Spatial	Hydrologic Unit Code (HUC) boundaries in and adjacent to the Flood Risk Project area
S_Inc_Flood_Scen_Ar	Spatial	Polygons reflecting the additional areas of inundation associated with an increase to the base flood level
S_Levee_Ln	Spatial	Location and attributes for the levee as a line feature along the top of a levee
S_Lev_Breach_Pt	Spatial	Location and attributes for community-supplied levee breach and armored overtopping points
S_Lev_Elements_Pt	Spatial	Location and attributes for drainage and protection features along a levee
S_Lev_Freeboard_Ln	Spatial	Location and attributes for freeboard information associated with a levee scenario
S_Lev_Inundation_Ar	Spatial	Location and attributes for the inundation area associated with levee scenarios
S_Lev_Rating_Curve_Pt	Spatial	Location for points along a levee where a rating curve has been developed
S_PFD_Ar	Spatial	Spatial extent of the Federal Emergency Management Agency (FEMA) regulatory Primary Frontal Dune (PFD), delineated between the dune toe and heel
S_RM_Dams_Pt	Spatial	Location and attributes for dams studied in the Flood Risk Project
S_Simpl_Cst_Zone_Ar	Spatial	Polygons reflecting the relative level of wave hazard severity within the 1% annual-chance floodplain
S_US_Inundation_Ar	Spatial	Location and attributes for the upstream inundation areas of the dams studied in the Flood Risk Project
Images	Non-Spatial	Stores the custom images used in the Flood Risk Products
L_CSLF_Summary	Lookup	CSLF Summary table by community or partial community and project area

FRD Table Name	Table Type	Table Description
L_Dams_XS_MDL_Results	Lookup	Results by cross section from the model of the dam release scenarios for the dams studied in the Flood Risk Project
L_Dam_Scenario	Lookup	Scenario for each model dam release in the Flood Risk Project
L_Levee_Scenario	Lookup	Scenarios associated with levees in the Flood Risk Project
L_Lev_Rating_Curve	Lookup	Attributes used to develop a rating curve associated with rating curve points
L_Source_Cit	Lookup	Source citations for data sources used in the project; used to correlate with metadata

In addition to feature classes and tables stored as shapefiles and optionally in a geodatabase, several raster datasets will be delivered as part of each Flood Risk Project. These rasters and their naming convention are outlined in Section 4.0.

1.2. Flood Risk Database Table Deliverables by Task

Table 2 presents the Flood Risk Database tables that apply to specific components of a Flood Risk Project. The scope of a particular project could include several of these activities; therefore, all of the tables from each of the activities involved in the project will likely apply to that project.

The following Flood Risk Database tables are either R – Required or A – Required if Applicable, depending on the interim data development submittal requirements. A second code indicates whether it is an E – Enhanced or O – Optional Flood Risk Database item.

Table 2: FRD Submittal Table

FRD Table Name	Flood Risk Project	Changes Since Last FIRM	Flood Depth and Analysis Rasters	Flood Risk Assessment	AOMI		Coastal	Dams	Levees
S_AOMI_Ar					R				
S_Cr_Fac_Pt	A, E								
S_CSLF_Ar		R							
S_Dams_XS_Ln								A, E	

FRD Table Name	Flood Risk Project	Changes Since Last FIRM	Flood Depth and Analysis Rasters	Flood Risk Assessment	AOMI		Coastal	Dams	Levees
S_DS_Inundation_Ar								A, E	
S_Easement_Ar	A, E								
S_FRAC_Ar				R					
S_FRAS_Pt				A					
S_FRD_Proj_Ar	R								
S_HUC_Ar	O								
S_Inc_Flood_Scen_Ar	A, E						A, E		
S_Levee_Ln									A, E
S_Lev_Breach_Pt									A, E
S_Lev_Elements_Pt									A, E
S_Lev_Freeboard_Ln									A, E
S_Lev_Inundation_Ar									A, E
S_Lev_Rating_Curve_Pt									A, E
S_PFD_Ar							A, E		
S_RM_Dams_Pt								A, **E**	
S_Simpl_Cst_Zone_Ar							A, E		
S_US_Inundation_Ar								A, E	
Images						E			
L_CSLF_Summary		O							
L_Dams_XS_MDL_Results								A, E	
L_Dam_Scenario								A, E	
L_Levee_Scenario									A, E
L_Lev_Rating_Curve									A, E
L_Source_Cit	R	R	R	R	R		R	A	A

FRD Table Name	Flood Risk Project	Changes Since Last FIRM	Flood Depth and Analysis Rasters	Flood Risk Assessment	AOMI		Coastal	Dams	Levees
RASTERS									
Arrv_xxxxxxxx								A, E	
CstDpthxxxpct							R		
Depth_xxxxxx			R						
Dpth_xxxxxxxx								A, E	A, E
DVS_xxxxxxxx			A, E				A, E	A, E	A, E
FID_xxxxxxxx								A, E	
Pct30yrChance			O						
PctAnnChance			O						
Peak_xxxxxxxx								A, E	
Vel_xxxxxxxx			A, E				A, E	A, E	A, E
WSE_xxxxxx			R				R	A	A
WSE_Change			A, E						
RAdpth_xxxxxx			A, E				A, E	A, E	A, E

1.3. Data Accuracy and Integrity

All duplicate elements (i.e., features with coincident vertices and the same attributes) within the FRD should be removed. The data should also be horizontally controlled and referenced to the appropriate horizontal and vertical datums.

In the instances during which any data must be created (e.g., digitized from paper FIRM panels to create the prior Special Flood Hazard Area (SFHA) for CSLF) or adjusted (e.g., to correct for misalignment of SFHAs between county-wide FIRMs when merged for a HUC-8 watershed Flood Risk Project), the data should be created or adjusted according to FIRM Database Technical Reference requirements (e.g., edge matching, vertex spacing, coincident features, precise features, etc.).

2. Database Schema Properties

Table attribute structure defines the required fields and field properties. For a Geographic Information System (GIS) feature class or business table, field properties specify the type, field width and how the data is stored. Generally, these properties are identified as the field name, field type, field length, field precision and field scale. The field name is the unique term used to identify the table column (e.g., CEN_BLK_ID). The field type indicates the type of data that is stored in the table column. Common field types include text, date, float (i.e., a small fractional number), double (i.e., a large fractional number), short integer (i.e., a small integer number) and long integer (i.e., a large integer number). The following two sections describe these field properties as they pertain to the file geodatabase (fGDB) and shapefile (SHP) formats being delivered.

2.1. fGDB Field Properties

For the text field type in a fGDB, the user should specify the field length for each field based on the Field Properties listed in each feature class. The field length indicates the number of characters that may be stored in the table column (e.g., a text field that has a length of 100 may store no more than 100 alphanumeric characters). Since only the data type and length (for text fields) must be declared for the fGDB, the tables identifying the field properties will not include a specification for precision and scale.

For date and numeric field types in a fGDB, the length is the number of bytes required to store the data and is controlled internally by the software based on the data type and cannot be changed by the user. The precision and scale in a fGDB are not utilized and will show only as a 0 value.

2.2. SHP Field Properties

For the text field type in the SHP format, the user should specify the field length for each field based on Table 9. The field length indicates the number of characters that may be stored in the table column (e.g., a text field that has a length of 100 may store no more than 100 alphanumeric characters). Since only the data type and length (for text fields) must be declared for SHP format, the tables in this Technical Reference identifying the field properties will not include a specification for precision and scale. Domain-based fields shall contain the actual descriptive values, not the numeric or alphanumeric coded value.

For numeric field types in a SHP format, the field length is ignored. The precision defines the number of digits that can be stored in the field. The scale defines the number of digits to the right of the decimal place. For those data types that store fractional values (e.g., double and float), the user may define the precision and scale. For example, the number 3456.78 has a precision of 6 and a scale of 2. If the user opts to accept the default values of 0 for the precision and scale, any number of decimal places may be stored. For those data types that store integer values (e.g., short integer and long integer), the user may only define the precision since the field value may not be fractional. For compatibility with the fGDB format of the FRD, the precision and scale are not specified in the following table and feature class data dictionaries.

For the date field type in a SHP format, the length, precision and scale are inherent and cannot be specified by the user. Date fields in the SHP format are stored in the native date format.

2.3. Required and Optional Fields

In the table documentation in Section 3 each field name is followed by a letter code as follows:

- R – Required for all records
- A – Required if applicable to that particular spatial feature
- E – Required if that enhancement is part of the Statement of Work (SOW), Mapping Activity Statement (MAS) or Inter-Agency Agreement (IAA)
- O – Optional; the Mapping Partner determines if the data for this field are available.

Most FRD tables also have the following, required fields:

- HUC8_CODE that identifies the sub-basin for that feature
- CASE_NO that identifies the FEMA project with which each feature is associated
- VERSION_ID that stores the version of the FRD standard that was used to compile the data

2.4. Primary and Foreign Keys

Each FRD table and feature class has an OBJECTID field defined. This is a sequential number maintained internally in the geodatabase by Esri ArcGIS software. This OBJECTID field provides a mechanism for the software to uniquely access each record in the table. This field is required by the geodatabase schema.

Each FRD table and feature class also has a primary key defined that may be made up of one or more fields. This primary key is used to provide unique access to a record in the table. If the primary key is a single field, the field is usually suffixed with 'ID'. Where possible, these fields are designed to use identifications (IDs) that are known unique values. For example, in the S_FRAC_Ar feature class, the primary key is the CEN_BLK_ID field, which is the character string that is created by concatenating the State and County Federal Information Processing Standards (FIPS) codes, followed by the Census tract, block group and block numbers. Allowance has been made for future Censuses that may add an alphabetic suffix to the Census Block id.

In some cases, no 'natural' key field exists. For example, the S_AOMI_Ar feature class does not currently have any unique identifier assigned to it. In these cases, the Mapping Partner will sequentially assign a unique number to each feature in the feature class. In the S_AOMI_Ar example, the AOMI_ID field is populated with "1", "2", "3", etc., for each successive feature. The Mapping Partner may choose another numbering method provided it is logical, documented and consistently implemented, and results in a unique ID value for each record in the table.

In some cases, a single primary key field uniquely identifies each record. However, the use of two or more non-system fields may also be used to uniquely identify a record. For example, in the L_CSLF_Summary table, there are fields for the CSLFSUMMID, which is either the Community Identifier (CID) for the individual community records or the CASE_NO for the project total records. For each community, there are three records based on the LOCATION field, one each for SFHA, non-SFHA and Floodway. So, a combination of the CSLFSUMMID field and the LOCATION field will uniquely identify each record.

2.5. Null Values

Although the fGDB format supports "true" null values for data types, the SHP format does not. To provide consistency between the fGDB and SHP formats of the FRD standards, the following conventions for inserting pseudo null values into the tables is followed for both fGDB and SHP formats.

The value to use for non-populated data for each field that is required by the FRD technical specification or the SOW is as follows:

- Text: "NP"
- Numeric: -8888
- Date: 8/8/8888

The value to use for fields that are optional or required when applicable either by the FRD technical specification or the SOW is as follows:

- Text: Null (or "", the empty string)
- Numeric: -9999
- Date: 9/9/9999

For raster data, the value 'NODATA' should be used to represent the absence of data or null values. Generally, all areas outside the project area (i.e., the polygon in S_FRD_Proj_Ar) will be set to 'NODATA' in the depth and analysis rasters.

3. Tables and Feature Classes

Each of the feature classes and tables present in an FRD are described by the following:

- Overview – a short paragraph describing the table or feature class and its purpose
- Attribute Definitions – a description of each attribute
- Field Properties – the database schema for the table or feature class

- Relationships – a description of the relationships with other tables in the FRD, if applicable

In the field properties sections in the following table definitions, the key type column uses several abbreviations designating which fields are keys and what type they represent. These abbreviations are defined below:

- PK – Primary Key – This field is the internal primary key field used and maintained by ArcGIS software for all tables and feature classes registered in a geodatabase.
- UPK – User-defined Primary Key – This field(s) is the primary key to be used in accessing records in the table or feature class.
- FK – Foreign Key – This field is related to a UPK in another table.

3.1. Feature Class: S_AOMI_Ar – Areas of Mitigation Interest

This polygon feature class is intended to be used as a communication tool to direct users to areas and issues that warrant further investigation or research for possible mitigation. It is required to be populated when the Areas of Mitigation Interest (AoMI) dataset is produced.

This feature class contains one record for each AoMI type at a location on the FRM.

The S_AOMI_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
AOMI_ID	R	Area of Mitigation Interest Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this AoMI lies. If the AoMI point does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the AoMI lies. If the AoMI does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
AOMI_CLASS	R	Area of Mitigation Interest Class. This is the general class to which the AoMI belongs (e.g., Riverine, Coastal).

Field Name	R/A/E/O	Description
AOMI_TYP	R	Type of Mitigation Interest. This is the general type to which the AoMI belongs (e.g., Streamflow Constriction., uses D_AOMI_Typ).
AOMI_INFO	A	AoMI Information. This field provides the specific reasons this location is considered an AoMI. Comments explaining the relevance of this AOMI point. The size of this field provides the user space to supply more detail in a free form format regarding the relevance of this AoMI.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the AoMI point lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.

Field properties for the S_AOMI_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
AOMI_ID	UPK	R	Text	25		N/A
CID	FK	A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
AOMI_CLASS		R	Text	4		D_AOMI_Class
AOMI_TYP		R	Text	4		D_AOMI_Typ
AOMI_INFO		A	Text	1000		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.2. Feature Class: S_Cr_Fac_Pt – Critical Facilities

This point feature class includes locations of critical facilities that could be impacted by the upstream or downstream inundation areas associated with a dam or a levee or other areas affected by coastal or riverine flooding. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

This feature class should be clipped by S_FRD_Proj_Ar so that no features are present outside of the S_FRD_Proj_Ar polygon.

The S_Cr_Fac_Pt layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
CRITFAC_ID	R	Critical Facility Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
NAME	R	Name of Critical Facility.
CRIT_STAGE	R	The flood stage elevation at which damages occur at the facility. The datum for the critical stage shall be documented in the S_FRD_Proj_Ar. For the majority of cases, the datum should be NAVD88. Uses D_V_Datum domain.
RM_DAMS_ID	A	Risk Map Dams Identifier. Foreign Key to S_RM_Dams_Pt feature class.
LEVEE_ID	A	Foreign Key to Risk Map Levees (S_Levee_Ln feature class)
AOMI_ID	R	Area of Mitigation Interest Identifier. Foreign Key to the S_AOMI_Ar feature class.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this Critical Facility lies. If the Critical Facility point does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the Critical Facility lies. If the Critical Facility does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.

Field Name	R/A/E/O	Description
CF_DESCRIP	R	A brief description of why the facility is considered critical. Quantification of significance is highly encouraged. Examples include a primary hospital for a 3 county area, the only fire station for the community, a factory that employs 30% of the county's workforce.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the point representing the facility lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.

Field properties for the S_Cr_Fac_Pt layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
CRITFAC_ID	UPK	R	Text	25		N/A
NAME		R	Text	50		N/A
CRIT_STAGE		R	Double	Default	Default	N/A
RM_DAMS_ID	FK	A	Text	25		S_RM_Dams_Pt
LEVEE_ID	FK	A	Text	25		S_Levee_Ln
AOMI_ID	FK	R	Text	25		S_AOMI_Ar
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
CF_DESCRIP		R	Text	128		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.3. Feature Class: S_CSLF_Ar – Changes Since Last FIRM

This polygon feature class depicts the changes in spatial extents between the previous and newly revised FIRMs. It is required to be populated when the Changes Since Last FIRM dataset is produced. If the CSLF polygon spans FIRM panels that have different effective dates, then those polygons should be divided at the panel boundaries.

The feature class is also related to the L_Source_Cit table by the PRE_SRCCIT, NEW_SRCCIT and SOURCE_CIT fields to document the previous and current FIRM databases used to develop the CSLF.

The S_CSLF_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
CSLF_ID	R	CLSF Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
AREA_SF	R	Area of the change polygon, measured in square feet in the local projection.
PRE_ZONE	R	Previous Flood Zone Designation. This is the flood zone designation from the previous, effective FIRM. Uses D_Zone domain.
PRE_ZONEST	R	Previous Flood Zone Subtype Designation. This is the designation from the previous, effective FIRM. Uses D_ZoneSubtype domain.
PRE_SRCCIT	A	Source Citation for previous FIRM. This is a foreign key to the L_Source_Cit table.
NEW_ZONE	R	New Flood Zone Designation. This is the flood zone designation from the current project. Uses D_Zone domain.

Field Name	R/A/E/O	Description
NEW_ZONEST	R	New Flood Zone Subtype Designation. This is the flood zone designation from the current project. Uses D_ZoneSubtype domain.
NEW_SRCCIT	R	Source Citation for new FIRM. This is a foreign key to the L_Source_Cit table.
SFHACHG	A	SFHA Change. The type of SFHA change for each CSLF polygon based upon previous and new flood zones (i.e., does this polygon indicate an Increase/Decrease/Zero change in the SFHA). Uses D_Change domain.
FLDWYCHG	A	Floodway Change. The type of floodway change for each CSLF polygon based upon previous and new flood zones (i.e., does this polygon indicate an Increase/Decrease/Zero change in the floodway area). Uses D_Change domain.
NONSFHACHG	A	Non-SFHA Change. The type of non-SFHA change for each CSLF polygon based upon previous and new flood zones (i.e., does this polygon indicate an Increase/Decrease/Zero change in the non-SFHA area). Uses D_Change domain.
CHHACHG	A	Increase or decreases in the SFHA in coastal communities that have been newly added into, or removed from, the coastal high hazard areas (VE or V Zones). This field is not meant to capture changes in V zone elevations (e.g. VE10 to VE12, VE9 to VE8, etc.). Uses D_Change domain.
CHGSUMMRY	E	Other Changes. The description of other changes the Mapping Partner believes to have contributed to the results of the analysis. This is an enhanced field.
STRUCTURES	E	The estimated count of affected structures within the area of change. This is an enhanced field.
POPULATION	E	The estimated affected population within the area of change. This is an enhanced field.
CID	R	This is the six-digit CID assigned by FEMA in which this CSLF polygon lies. If the CSLF polygon does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the CSLF polygon feature lies. If a feature crosses a HUC-8 boundary, the field shall be populated with the HUC-8 value in which the majority of the feature lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.

Field Name	R/A/E/O	Description
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail. This field should be populated with the SOURCE_CIT for the current Flood Risk Project.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_CSLF_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
CSLF_ID	UPK	R	Text	25		N/A
AREA_SF		R	Double	Default	Default	N/A
PRE_ZONE		R	Text	4		D_Zone
PRE_ZONEST		R	Text	4		D_ZoneSubtype
PRE_SRCCIT	FK	A	Text	25		L_Source_Cit
NEW_ZONE		R	Text	4		D_Zone
NEW_ZONEST		R	Text	4		D_ZoneSubtype
NEW_SRCCIT	FK	R	Text	25		L_Source_Cit
SFHACHG		A	Text	1		D_Change
FLDWYCHG		A	Text	1		D_Change
NONSFHACHG		A	Text	1		D_Change
CHHACHG		A	Text	1		D_Change
CHGSUMMRY		E	Text	100		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
STRUCTURES		E	Long Integer	Default		N/A
POPULATION		E	Double	Default	Default	N/A
CID		R	Text	6		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.4. Feature Class: S_Dams_XS_Ln – Dam Cross Sections

This polyline feature class includes cross sections from the models of the dam release scenarios. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

This feature class is related to the L_Dams_XS_MDL_Results table using the DAMS_XS_ID field.

The S_Dams_XS_Ln layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
DAMS_XS_ID	R	Risk Map Dams Cross Section Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table. This identifier should match the identifiers from the S_XS feature class in the FIRM database. In the case of a model that was not previously incorporated in a Flood Insurance Study, the identifiers should match those in the original model.

Field Name	R/A/E/O	Description
RM_DAMS_ID	R	Risk Map Dams Identifier. Foreign Key to S_RM_Dams_Pt feature class.
STREAM_STA	R	Stream Station (in feet or miles) referenced in the S_XS feature class in the FIRM database. In the case of a model that was not previously incorporated in a Flood Insurance Study, the stream station should match those in the original model. The metadata should indicate which unit is being used as well as the origin of the stream stationing.
DS_DIST	R	The distance downstream (in feet or miles) from the toe of the dam referenced in RM_DAMS_ID to the cross section. The units used for DS_DIST should be the same as for STREAM_STA.
LEN_UNIT	R	Stream Station and downstream distance units using the D_Length_Unit domain.
STREAM_NM	R	Stream Name. The name used should match the stream name on the FIRM panel and in the DFIRM database.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the cross section line lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.

Field properties for the S_ Dams_XS_Ln layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
DAMS_XS_ID	UPK	R	Text	25		N/A
RM_DAMS_ID	FK	R	Text	25		S_RM_Dams_Pt

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
STREAM_STA		R	Double	Default	Default	N/A
DS_DIST		R	Double	Default	Default	N/A
LEN_UNIT		R	Text	4		D_Length_Units
STREAM_NM		R	Text	128		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A

3.5. Feature Class: S_DS_Inundation_Ar – Dam Downstream Inundation Areas

This polygon feature class contains flood inundation areas downstream of a dam for various release scenarios. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_DS_Inundation_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
DS_INUN_ID	R	Downstream Inundation Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
RM_DAMS_ID	R	Risk Map Dams Identifier. Foreign Key to S_RM_Dams_Pt feature class.

Field Name	R/A/E/O	Description
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this inundation area lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the inundation lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
SCENAR_ID	R	Scenario Identifier. Foreign Key to the L_Dam_Scenario table.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the inundation area lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_ DS_Inundation_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
DS_INUN_ID	UPK	R	Text	25		N/A
RM_DAMS_ID	FK	R	Text	25		S_RM_Dams_Pt
CID	FK	A	Text	6		N/A
POL_NAME1		A	Text	50		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
SCENAR_ID	FK	R	Text	25		L_Dam_Scenario
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.6. Feature Class: S_Easement_Ar – Dam Easements

This polygon feature class contains existing easement polygons (where available) that limit or restrict development near dams. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Easement_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
ESMT_ID	R	Easement Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
RM_DAMS_ID	R	Risk Map Dams Identifier. Foreign Key to S_RM_Dams_Pt feature class.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this easement lies. If the easement does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the easement lies. If the easement does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.

Field Name	R/A/E/O	Description
OWNER	R	Name of the property owner or easement grantor. The grantee is presumed to be the owner of the dam.
ESMT_DATE	R	Date the easement was acquired.
ESMT_TYPE	R	Nature of the restriction of the easement (drainage, flowage, conservation). Uses D_Esmt_Typ domain.
ESMT_PURPS	R	Description of the purpose for the easement by providing the event or elevation the easement is based on (e.g., 3.0' above the 1937 flood stage).
IMAGE	A	Scanned image of the plat or legal document used to convey the easement.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the easement lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_ Easement_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
ESMT_ID	UPK	R	Text	25		N/A
RM_DAMS_ID	FK	R	Text	25		S_RM_Dams_Pt
CID		A	Text	6		N/A

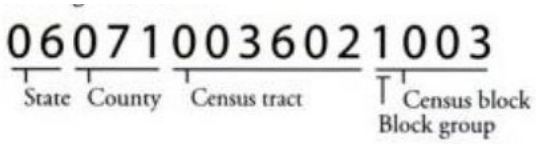
Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
POL_NAME1		A	Text	50		N/A
OWNER		R	Text	128		N/A
ESMT_DATE		R	Date	Default		N/A
ESMT_TYPE		R	Text	6		D_Esmt_Typ
ESMT_PURPS		R	Text	128		N/A
IMAGE		A	Blob	Default		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.7. Feature Class: S_FRAC_Ar – Flood Risk Assessment Results at the Census Block Level

This polygon feature class is the spatial foundation for all census block-based flood risk assessment data. All of the inventory and damage estimates for flood risk assessments performed at the Census Block are stored in this dataset. This feature class contains the spatial location of the Census Blocks for the project. The census block geometries shall be based on the version of Hazus used to perform the analysis, which should be documented in the metadata. This should include information on whether the census block type was homogenous or dasymetric (see Guidance for Flood Risk Analysis and Mapping: Flood Risk Assessments for more information). This feature class also stores the Asset Replacement Value, as well as the estimated flood risk assessment results for each block. This feature class is required to be populated when the Flood Risk Assessment dataset is produced.

The feature class should contain one record for each Census Block in or partially in the project area. Risk assessments results for the five standard flood events (10-, 4-, 2-, 1-, and 0.2-percent-annual-chance) are stored in this table when available. Risk assessment results for other flood events or scenarios can be added to S_FRAC_Ar, or saved in a supplemented FRD table which includes the CEN_BLK_ID field to allow database linking to the standard S_FRAC_Ar table.

The S_FRAC_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
CEN_BLK_ID	R	This field should be populated with the Census Block identifier. This identifier is based on the following format with an optional single alphabetic character suffix to accommodate the 2010 decennial Census: 
ARV_BG_TOT	R	Asset Replacement Value of Buildings of All Structure Types. Obtained from General Building Stock data, in whole dollars.
ARV_CN_TOT	R	Asset Replacement Value of Contents for All Structure Types. Obtained from General Building Stock data, in whole dollars.
HAZARD_TYP	R	Hazard Type. Indicates the Hazard Type for which the remaining fields apply. The valid values for this field are in the domain D_Hazard_Typ and include Riverine, Coastal, Levee, Dam, and Total.
SCENAR_ID	A	Levee or Dam Scenario Identification.
TOT_LOSS10	A	10% Chance Total Losses. For each Census Block, the estimate of the total value of all losses for the return period*.
BL_TOT10	A	10% Chance Total Building Losses. For each Census Block, the estimate of the total value of building losses for the return period.
CL_TOT10	A	10% Chance Total Contents Losses. For each Census Block, the estimate of the total value of content losses for the return period.
TOT_LOSS04	A	4% Chance Total Losses. For each Census Block, the estimate of the total value of all losses for the return period*.
BL_TOT04	A	4% Chance Total Building Losses. For each Census Block, the estimate of the total value of building losses for the return period.
CL_TOT04	A	4% Chance Total Contents Losses. For each Census Block, the estimate of the total value of content losses for the return period.

Field Name	R/A/E/O	Description
TOT_LOSS02	A	2% Chance Total Losses. For each Census Block, the estimate of the total value of all losses for the return period*.
BL_TOT02	A	2% Chance Total Building Losses. For each Census Block, the estimate of the total value of building losses for the return period.
CL_TOT02	A	2% Chance Total Contents Losses. For each Census Block, the estimate of the total value of content losses for the return period.
TOT_LOSS01	R	1% Chance Total Losses. For each Census Block, the estimate of the total value of all losses for the return period*.
BL_TOT01	R	1% Chance Total Building Losses. For each Census Block, the estimate of the total value of building losses for the return period.
CL_TOT01	R	1% Chance Total Contents Losses. For each Census Block, the estimate of the total value of content losses for the return period.
TOT_LSS0_2	A	0.2% Chance Total Losses. For each Census Block, the estimate of the total value of all losses for the return period*.
BL_TOT0_2	A	0.2% Chance Total Building Losses. For each Census Block, the estimate of the total value of building losses for the return period.
CL_TOT0_2	A	0.2% Chance Total Contents Losses. For each Census Block, the estimate of the total value of content losses for the return period.
TOT_LSSAAL	A	Average Annualized Total Losses. For each Census Block, the estimate of the total value of all losses for the return period*.
BL_TOTAAL	A	Average Annualized Total Building Losses. For each Census Block, the estimate of the total value of building losses for the return period.
CL_TOTAAL	A	Average Annualized Total Contents Losses. For each Census Block, the estimate of the total value of content losses for the return period.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the Census Block lies. If a Census Block crosses a HUC-8 boundary, the field shall be populated with the HUC-8 value in which the majority of the Census Block lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.

Field Name	R/A/E/O	Description
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

*Total Loss is the export of the Total Loss field from Hazus"

Field properties for the S_ FRAC_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
CEN_BLK_ID	UPK	R	Text	17		N/A
ARV_BG_TOT		R	Double	Default		N/A
ARV_CN_TOT		R	Double	Default		N/A
HAZARD_TYP		R	Text	4		D_Hazard_Typ
SCENAR_ID		A	Text	25		L_Levee_Scenario or L_Dam_Scenario
TOT_LOSS10		A	Double	Default	Default	N/A
BL_TOT10		A	Double	Default	Default	N/A
CL_TOT10		A	Double	Default	Default	N/A
TOT_LOSS04		A	Double	Default	Default	N/A
BL_TOT04		A	Double	Default	Default	N/A
CL_TOT04		A	Double	Default	Default	N/A
TOT_LOSS02		A	Double	Default	Default	N/A
BL_TOT02		A	Double	Default	Default	N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
CL_TOT02		A	Double	Default	Default	N/A
TOT_LOSS01		R	Double	Default	Default	N/A
BL_TOT01		R	Double	Default	Default	N/A
CL_TOT01		R	Double	Default	Default	N/A
TOT_LSS0_2		A	Double	Default	Default	N/A
BL_TOT0_2		A	Double	Default	Default	N/A
CL_TOT0_2		A	Double	Default	Default	N/A
TOT_LSSAAL		A	Double	Default	Default	N/A
BL_TOTAAL		A	Double	Default	Default	N/A
CL_TOTAAL		A	Double	Default	Default	N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.8. Feature Class: S_FRAS_Pt – Flood Risk Assessment Results at the Structure Level

This point feature class locates structures or buildings for which site- or location-specific risk assessments are performed. There is one record for each structure or building assessed. This feature class also stores the Asset Replacement Value, as well as the estimated flood risk assessment results for each structure/building. This feature class is required to be populated when flood risk assessments for a Flood Risk Project performed at the site-specific level.

This feature class provides the location, inventory and loss data where site-specific risk assessments were performed. Risk assessments results for the five standard flood events (10-, 4-, 2-, 1-, and 0.2-percent-annual-chance) are stored in this table when available. Risk assessment results for other flood events or scenarios can be added to S_FRAS_Pt, or saved in a supplemented FRD table which includes the FRAS_ID field to allow database linking to the standard S_FRAS_Pt table.

The S_FRAS_Pt layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
FRAS_ID	R	Structure/Building Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
CEN_BLK_ID	R	Census Block Identifier. See the CEN_BLK_ID field in the S_FRAC_Ar feature class for more detail.
OCCUP_TYP	R	Specific Occupancy Type from risk assessment analysis. Uses D_Occupancy_Typ for valid values.
ARV_BG	R	Asset Replacement Value of Building.
ARV_CN	R	Asset Replacement Value of Contents.
HAZARD_TYP	R	Hazard Type. Indicates the Hazard Type for which the remaining fields apply. The valid values for this field are in the domain D_Hazard_Typ and include Riverine, Coastal, Levee, Dam, and Total.
SCENAR_ID	A	Scenario Identification. Used for either dam scenario (L_Dam_Scenario) or levee scenario (L_Levee_Scenario).
BLD_LOSS10	A	10% Chance Building Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
CNT_LOSS10	A	10% Chance Contents Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
INV_LOSS10	A	10% Chance Inventory Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
BLD_LOSS04	A	4% Chance Building Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
CNT_LOSS04	A	4% Chance Contents Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.

Field Name	R/A/E/O	Description
INV_LOSS04	A	4% Chance Inventory Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
BLD_LOSS02	A	2% Chance Building Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
CNT_LOSS02	A	2% Chance Contents Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
INV_LOSS02	A	2% Chance Inventory Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
BLD_LOSS01	R	1% Chance Building Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
CNT_LOSS01	R	1% Chance Contents Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
INV_LOSS01	R	1% Chance Inventory Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
BLD_LSS0_2	A	0.2% Chance Building Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
CNT_LSS0_2	A	0.2% Chance Contents Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
INV_LSS0_2	A	0.2% Chance Inventory Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
BLD_LSSAAL	A	Average Annualized Building Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
CNT_LSSAAL	A	Average Annualized Contents Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.
INV_LSSAAL	A	Average Annualized Inventory Loss. Asset Value Loss to the nearest dollar for the Building for the combination of Hazard Type and Return Period.

Field Name	R/A/E/O	Description
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the point representing the facility lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.

Field properties for the S_FRAS_Pt layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
FRAS_ID	UPK	R	Text	25		N/A
CEN_BLK_ID	FK	R	Text	17		S_FRAC_Ar
OCCUP_TYP		R	Text	5		D_Occupancy_Typ
ARV_BG		R	Double	Default		N/A
ARV_CN		R	Double	Default		N/A
HAZARD_TYP		R	Text	4		D_Hazard_Typ
SCENAR_ID		A	Text	25		L_Levee Scenario or L_DamScenario
BLD_LOSS10		A	Double	Default		N/A
CNT_LOSS10		A	Double	Default		N/A
INV_LOSS10		A	Double	Default		N/A
BLD_LOSS04		A	Double	Default		N/A
CNT_LOSS04		A	Double	Default		N/A
INV_LOSS04		A	Double	Default		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
BLD_LOSS02		A	Double	Default		N/A
CNT_LOSS02		A	Double	Default		N/A
INV_LOSS02		A	Double	Default		N/A
BLD_LOSS01		R	Double	Default		N/A
CNT_LOSS01		R	Double	Default		N/A
INV_LOSS01		R	Double	Default		N/A
BLD_LSS0_2		A	Double	Default		N/A
CNT_LSS0_2		A	Double	Default		N/A
INV_LSS0_2		A	Double	Default		N/A
BLD_LSSAAL		A	Double	Default		N/A
CNT_LSSAAL		A	Double	Default		N/A
INV_LSSAAL		A	Double	Default		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.9. Feature Class: S_FRD_Proj_Ar – FRD Project Area

This polygon feature class represents the spatial 'footprint' of the project (or portion of the project if multiple suites of products are created for the project). It is required to be populated. The single polygon that 'best' represents the project area should be used. These features shall be multi-part polygons to support non-contiguous Physical Map Revision (PMR) project footprints.

This feature class is used to clip other feature classes delivered in the FRD.

The S_FRD_Proj_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description. The FEMA case number is an alphanumeric identifier assigned to this project which is generated by the MIP. An example of a FEMA case number for a Flood Risk Project is 06-03-0002S, which is of the format YY-RR-####A. The YY represent the last two digits of the year, the RR is the FEMA Region, #### is a sequential number, and A is an alphabetic suffix, which is usually S for studies. The case number shall be entered into the field in this format, including hyphens.
PROJ_NM	R	Project Name (e.g., Watershed, USA).
HAZUS_VER	R	Hazus Version. The version of Hazus used in the risk assessments (e.g., '3.2' or '4.0').
CENSUS	R	Year of Census data used (e.g., 2000, 2010, etc.) for the Hazus analysis.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the project lies. If the project area spans multiple HUCs (e.g., large coastal study), populate this field with 'MULTI'.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_FRD_Proj_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
SHAPE		R	Geometry	Default		N/A
CASE_NO	UPK	R	Text	12		N/A
PROJ_NM		R	Text	50		N/A
HAZUS_VER		R	Text	4		N/A
CENSUS		R	Text	4		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.10. Feature Class: S_HUC_Ar – Hydrologic Unit Code Boundaries

This polygon feature class depicts the watersheds in and around the project area. This feature class has sub-types by the level of hydrologic unit (i.e., 8, 10, 12 or 14) and using DIGITS as the sub-type field. It is required to be populated. The watershed boundaries delivered in this feature class should be based on the Watershed Boundary Dataset (WBD), which is a companion dataset to the National Hydrography Dataset (NHD). This is an optional feature class.

The S_HUC_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
HUC_CODE	R	HUC Identifier (Primary Key). This should be the HUC identifier assigned by WBD.
HUC_NAME	R	Name of basin / sub-basin from WBD.
DIGITS	R	Number of digits in HUC-Code (8, 10, 12, or 14).

Field Name	R/A/E/O	Description
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_HUC_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
HUC_CODE	UPK	R	Text	14		N/A
HUC_NAME		R	Text	80		N/A
DIGITS		R	Short Integer	Default		N/A
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.11. Feature Class: S_Inc_Flood_Scen_Ar – Increased Flooding Scenarios

This polygon feature class represents the additional areas that would be flooded by hypothetical increases of 1, 2 or 3 feet (or other user-defined values) above the base flood elevation level. This is

an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Inc_Flood_Scen_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
IFS_ID	R	Increased Flooding Scenarios Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which S_Inc_Flood_Scen_Ar lies.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which S_Inc_Flood_Scen_Ar lies.
RETURN_PER	R	Return Period. Indicates the return period for which the remaining fields apply. The valid values for this field are in the domain D_Event.
INCREASE	R	Increase in feet (1, 2, 3, etc.). The standard increments will be in whole feet, but fractional values are permissible (e.g., 1.5, 2.75, etc.) if specifically requested.
HUC8_CODE	A	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the coastal inundation area lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_Inc_Flood_Scen_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
IFS_ID	UPK	R	Text	25		N/A
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
RETURN_PER		R	Text	6		D_Event
INCREASE		R	Float	Default		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.12. Feature Class: S_Lev_Breach_Pt – Levee Community-Supplied Breach and Armored Overtopping Locations

This point feature class identifies specific high-risk location(s) for breaches or armored overtopping locations along the levee, as provided by the community. Types of breaches can include historic locations, overtopping locations and potential engineered breach locations. This dataset can also include Armored Overtopping locations where the levee crest is below the base flood elevation but is expected to withstand the overtopping without an erosive breach. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Lev_Breach_Pt layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.

Field Name	R/A/E/O	Description
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
BR_PT_ID	R	Levee Elements Points Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
LEVEE_ID	R	Foreign Key to Risk Map Levees
PT_TYP	R	Levee Elements Point Type. Uses D_Breach_Pt_Typ domain.
ORIGIN	R	Origin of the Data.
BR_DATE	A	Date of breach or overtopping (if historical).
BR_IN_WID	R	Initial width in feet of breach or overtopping.
BR_MAX_WID	R	Maximum width in feet of breach or overtopping.
BR_IN_HGT	R	Initial height in feet of breach or overtopping.
BR_MAX_HGT	R	Maximum height in feet of breach or overtopping.
BR_IN_TIME	R	Initial time in minutes of breach or overtopping.
BR_DEV_TIME	R	Time in minutes of development for breach or overtopping.
BR_MAX_TIME	R	Time in minutes to maximum breach or overtopping
SCENAR_ID	R	Levee Scenario Identifier (Link to L_Levee_Scenario)
DESCRIP	A	Additional Descriptive Information
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the levee breach point lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.

Field properties for the S_ Lev_Breach_Pt layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
BR_PT_ID	UPK	R	Text	25		N/A
LEVEE_ID	FK	R	Text	25		S_Levee_Ln
PT_TYP		R	Text	1		D_Breach_Pt_Typ
ORIGIN		R	Text	50		N/A
BR_DATE		A	Date	Default		N/A
BR_IN_WID		R	Double	Default	Default	N/A
BR_MAX_WID		R	Double	Default	Default	N/A
BR_IN_HGT		R	Double	Default	Default	N/A
BR_MAX_HGT		R	Double	Default	Default	N/A
BR_IN_TIME		R	Double	Default	Default	N/A
BR_DEV_TIME		R	Double	Default	Default	N/A
BR_MAX_TIME		R	Double	Default	Default	N/A
SCENAR_ID	FK	R	Text	25		L_Levee_Scenario
DESCRIP		A	Text	50		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.13. Feature Class: S_Lev_Elements_Pt – Levee Element Locations

This point feature class contains locations and information (such as capacity) for drainage and protection features along the levee. These include but are not limited to, pumps, gravity conduits, sleeves and closure structures. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Lev_Elements_Pt layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
LEV_PT_ID	R	Levee Elements Points Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
LEVEE_ID	R	Foreign Key to Risk Map Levees (S_Levee_Ln)
LEV_PT_TYP	R	Levee Elements Point Type. Uses D_Levee_Pt_Typ domain.
DESCRIP	A	Additional Descriptive Information
ORIGIN	A	Additional information on the origin of the data.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the point lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.

Field properties for the S_ Lev_Elements_Pt layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
LEV_PT_ID	UPK	R	Text	25		N/A
LEVEE_ID	FK	R	Text	25		S_Levee_Ln
LEV_PT_TYP		R	Text	5		D_Levee_Pt_Typ
DESCRIP		A	Text	50		N/A
ORIGIN		A	Text	50		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.14. Feature Class: S_Lev_Freeboard_Ln – Levee Freeboard

This polyline feature class contains freeboard information along the levee for different scenarios. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Lev_Freeboard_Ln layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
FREEBRD_ID	R	Freeboard identifier. Primary Key-Unique Identifier.
LEVEE_ID	R	Foreign Key to Risk Map Levees. (S_Levee_Ln)
SCENAR_ID	R	Levee Scenario Identifier (Link to L_Levee_Scenario)
FRB_VAL	R	Freeboard Range Associated with this Line Segment, Rounded to Nearest Foot, -1-0 shown as 0, 0-1 shown as 1, 1-2 shown as 2, 2-3 shown as 3
DESCRIP	A	Additional Descriptive Information
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the levee freeboard line lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.

Field Name	R/A/E/O	Description
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.

Field properties for the S_ Lev_Freeboard_Ln layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
FREEBRD_ID	UPK	R	Text	25		N/A
LEVEE_ID	FK	R	Text	25		S_Levee_Ln
SCENAR_ID	FK	R	Text	25		L_Levee_Scenario
FRB_VAL		R	Short Integer	Default		N/A
DESCRIP		A	Text	50		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A

3.15. Feature Class: S_Lev_Inundation_Ar – Levee Analysis Impact Area

This polygon feature class contains extents of flooding behind a levee for various scenarios such as different precipitation events. This includes the Levee Shadow event, which represents the extents of the impacted area behind a levee based on the levee crest elevation. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Lev_Inundation_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
LEV_INUN_ID	R	Levee inundation area identifier. Primary Key-Unique Identifier.
LEVEE_ID	R	Foreign Key to Risk Map Levees. (S_Levee_Ln)
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this inundation area lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the inundation lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
SCENAR_ID	R	Levee Scenario Identifier (Link to L_Levee_Scenario)
AREA_SF	R	Area of Inundation in Square Feet
AREA_SM	R	Area of Inundation in Square Miles
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the inundation area lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_ Lev_Inundation_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
LEV_INUN_ID	UPK	R	Text	25		N/A
LEVEE_ID	FK	R	Text	25		S_Levee_Ln
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
SCENAR_ID	FK	R	Text	25		L_Levee_Scenario
AREA_SF		R	Double	Default	Default	N/A
AREA_SM		R	Double	Default	Default	N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.16. Feature Class: S_Lev_Rating_Curve_Pt – Levee Rating Curve Locations

This point feature class contains locations along a levee where a rating curve has been developed. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Lev_Rating_Curve_Pt layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.

Field Name	R/A/E/O	Description
RATCURPTID	R	Rating curve point identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table. This is also the Foreign Key to the Levee Rating Curve Table.
LEVEE_ID	R	Foreign Key to Risk Map Levees. (S_Levee_Ln)
DESCRIP	A	Additional Descriptive Information
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the levee rating curve point lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.

Field properties for the S_ Lev_Rating_Curve_Pt layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
RATCURPTID	UPK	R	Text	25		N/A
LEVEE_ID	FK	R	Text	25		S_Levee_Ln
DESCRIP		A	Text	50		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.17. Feature Class: S_Levee_Ln – Levee Locations

This polyline feature class contains location and attributes for the levee as a line feature along the top of a levee. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Levee_Ln layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
LEVEE_ID	R	Levee Identifier. Primary Key-Unique Identifier.
NAME	R	Common Name of Levee
FEMA_LEV_ID	R	National Levee Database (NLD) Segment Identifier
AOMI_ID	R	Foreign Key to Area of Mitigation Interest (AoMI)
OWNER	R	Name of Owner, as Well as Builder and/or Designer if Applicable
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this inundation area lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the inundation lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
LENGTH_FT	R	Length of levee in feet as described in levee analysis
HEIGHT_FT	R	Average height of levee in feet as described in levee analysis
TOP_WIDTH	R	Average width at top of levee in feet as described in levee analysis
BOT_WIDTH	R	Average width at bottom of levee in feet as described in levee analysis
FREEBOARD	R	Design Freeboard in Feet
EAP	R	Existence of Emergency Action Plan (Uses D_TrueFalse domain)
EAP_ORG_NM	R	Name of Organization that Maintains the EAP

Field Name	R/A/E/O	Description
EAP_ORG_URL	R	URL of the Organization that Maintains the EAP
YEAR_BUILT	R	Year Levee was Built (YYYY)
CONST_TYPE	R	Construction Type (Uses D_Const_Typ domain)
DESCRIP	A	Additional Descriptive Information
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the levee lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.

Field properties for the S_ Levee_Ln layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
LEVEE_ID	UPK	R	Text	25		N/A
NAME		R	Text	128		N/A
FEMA_LEV_ID	FK	R	Text	25		N/A
AOMI_ID	FK	R	Text	25		S_AOMI_Ar
OWNER		R	Text	100		N/A
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
LENGTH_FT		R	Double	Default	Default	N/A
HEIGHT_FT		R	Double	Default	Default	N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
TOP_WIDTH		R	Double	Default	Default	N/A
BOT_WIDTH		R	Double	Default	Default	N/A
FREEBOARD		R	Double	Default	Default	N/A
EAP		R	Text	1		D_TrueFalse
EAP_ORG_NM		R	Text	128		N/A
EAP_ORG_URL		R	Text	50		N/A
YEAR_BUILT		R	Text	4		N/A
CONST_TYPE		R	Text	4		D_Const_Typ
DESCRIP		A	Text	50		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A

3.18. Feature Class: S_PFD_Ar – Dune Size and Location

This polygon feature class depicts the spatial extent of the FEMA regulatory PFD, delineated between the dune toe and heel. The creation of this dataset is only applicable in coastal areas where dunes are present. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_PFD_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.

Field Name	R/A/E/O	Description
PFD_ID	R	PFD Identifier. User-defined Primary Key/Unique Identifier. This field should be sequentially numbered for all records in the table.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this S_PFD_Ar lies.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the S_PFD_Ar lies.
TOPO_SRC	R	Source of the topographic data from which the PFD was delineated.
TOPO_DATE	R	Date of the topographic data source from which the PFD was delineated.
DELIN_DATE	R	Date of feature delineation.
PFD_TF	R	Part of the PFD (True or False). Uses D_TrueFalse domain.
DUNE_SIZE	R	Dune Size. This is the relative size of the dune, most commonly determined by the erosion analysis for the flood study. Valid values for this field are in the domain D_PFD_Size – SMALL, LARGE, or UNKNOWN .
HUC8_CODE	O	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the primary frontal dune erosion area lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_ PFD_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
PFD_ID	UPK	R	Text	25		N/A
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
TOPO_SRC		R	Text	100		N/A
TOPO_DATE		R	Date	Default		N/A
DELIN_DATE		R	Date	Default		N/A
PFD_TF		R	Text	1		D_TrueFalse
DUNE_SIZE		R	Text	4		D_PFD_Size
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.19. Feature Class: S_RM_Dams_Pt – Dam Locations

This point feature class identifies the dams within the Flood Risk Project area for which additional dam-related flood risk datasets have been developed. This is an enhanced feature class that is required to be populated when any of the other enhanced dam-related feature classes have been produced.

The S_RM_Dams_Pt layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.

Field Name	R/A/E/O	Description
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
RM_DAMS_ID	R	Risk Map Dams Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
NAME	R	Name most commonly used to reference the dam.
DESCRIP	R	Description of dam to be used in Flood Risk Report.
NID_ID	R	National Inventory of Dams Identifier. Foreign Key to the National Inventory of Dams database.
OWNER	R	Name of the dam owner, as well as builder and/or designer if applicable. For example if a municipality was the current owner/operator of a dam which was designed and constructed by the US Army Corps of Engineers (USACE), an appropriate entry to this field would be “City of Smallville / USACE”.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this dam lies. If the dam point does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the Dam lies. If the Dam does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
ST_FIPS	R	State FIPS code for the State where the dam is located (Uses D_State_FIPS domain)
HAZ_CLASS	R	Hazard classification (High, Significant, Low). Metadata must provide State definitions for each classification and how the State classifications were translated into the standardized classifications above. (Uses D_HAZ_Class domain)
YEAR_BUILT	R	Year in which the dam was constructed (YYYY).
CONST_TYPE	R	The type of construction of the dam (e.g., RCC, Earth Fill, etc.). (Uses D_Const_Typ domain)
LENGTH_FT	R	The length of the dam (measured in feet).
HEIGHT_FT	R	The height of the dam (measured in feet).
DRN_AR_SM	R	The drainage area (measured in square miles).
NORMSTORAF	R	The volume of water stored at normal pool (measured in acre-feet).

Field Name	R/A/E/O	Description
TODSTORAF	R	The total volume of water stored when pool is at the top of dam (measured in acre-feet).
TOD_ELEV	R	The top of dam elevation (measured in feet). The datum and units for the top of dam elevation shall be documented in the S_FRD_Proj_AR. For the majority of cases, the datum should be NAVD88. Uses D_V_Datum domain.
EAP	R	Existence of an Emergency Action Plan (T/F). Uses D_TrueFalse domain.
EAP_ORG_NM	A	The name of the organization where the EAP is maintained, if the field above is false, the organization name will be listed as Null.
EAP_ORG_URL	A	The internet URL for the organization where the EAP is maintained, if the field above is false, the organizations URL will be listed as Null.
DEFICIENCS	R	Existence of any known dam safety deficiencies (T/F). Uses D_TrueFalse domain.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the dam point lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.

Field properties for the S_ RM_Dams_Pt layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
RM_DAMS_ID	UPK	R	Text	25		N/A
NAME		R	Text	128		N/A
DESCRIP		R	Text	128		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
NID_ID	FK	R	Text	25		N/A
OWNER		R	Text	100		N/A
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
ST_FIPS		R	Text	2		D_State_FIPS
HAZ_CLASS		R	Text	4		D_HAZ_Class
YEAR_BUILT		R	Text	4		N/A
CONST_TYPE		R	Text	4		D_Const_Typ
LENGTH_FT		R	Double	Default	Default	N/A
HEIGHT_FT		R	Double	Default	Default	N/A
DRN_AR_SM		R	Double	Default	Default	N/A
NORMSTORAF		R	Double	Default	Default	N/A
TODSTORAF		R	Double	Default	Default	N/A
TOD_ELEV		R	Double	Default	Default	N/A
EAP		R	Text	1		D_TrueFalse
EAP_ORG_NM		A	Text	128		N/A
EAP_ORG_URL		A	Text	128		N/A
DEFICIENCS		R	Text	1		D_TrueFalse
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.20. Feature Class: S_Simple_Cst_Zone_Ar – Simplified Coastal Zones

This polygon feature class represents the relative level of wave action within the coastal 1-percent-annual-chance floodplain. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_Simpl_Cst_Zone_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.
SCZ_ID	R	Simplified Coastal Zones Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which S_Simpl_Cst_Zone_Ar lies.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which S_Simpl_Cst_Zone_Ar lies.
WAVE_HAZ	R	Wave Action Level. Indicates the relative level of wave action within the coastal 1% annual-chance floodplain. The valid values for this field are in the domain D_Wave_Haz: HIGH (areas designated as coastal high hazard areas – V or VE, including the primary frontal dune if present), MODERATE (Coastal A Zone areas with wave heights between 1.5 and 3 feet), and MINIMAL (A Zone areas with wave heights less than 1.5 feet).
BLDG_COUNT	O	Optional field that can be populated with a count of the number of buildings within each wave hazard feature polygon if a building footprint feature class exists.
HUC8_CODE	O	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the coastal inundation area lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_Simpl_Cst_Zone_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
SCZ_ID	UPK	R	Text	25		N/A
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
WAVE_HAZ		R	Text	4		D_Wave_Haz
BLDG_COUNT		O	Long Integer	Default		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.21. Feature Class: S_US_Inundation_Ar – Dam Upstream Inundation Areas

This polygon feature class contains flood inundation areas upstream of a dam for various scenarios. This is an enhanced feature class that is required to be populated when this dataset is specifically included as part of the Flood Risk Project scope.

The S_US_Inundation_Ar layer contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SHAPE	R	Shape Geometry Field. Internal field used by ArcGIS software to store the feature geometry.

Field Name	R/A/E/O	Description
US_INUN_ID	R	Upstream Inundation Identifier. User-defined Primary Key/Unique Identifier. This field should be sequentially numbered for all records in the table.
RM_DAMS_ID	R	Risk Map Dams Identifier. Foreign Key to S_RM_Dams_Pt feature class.
CID	A	Community Identification Number. This is the six-digit CID assigned by FEMA in which this inundation area lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
POL_NAME1	A	Political Area Name 1. This is the primary name of the community in which the inundation area lies. If the inundation area does not lie in an area covered by a FEMA community identifier, this field shall be populated with a null value.
SCENAR_ID	R	Scenario Identifier. Foreign Key to the L_Dam_Scenario table.
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the inundation area lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.
SHAPE_LENGTH	R	Internal field used by ArcGIS software to store the length of the feature's geometry.
SHAPE_AREA	R	Internal field used by ArcGIS software to store the area of the feature's geometry.

Field properties for the S_ US_Inundation_Ar layer are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SHAPE		R	Geometry	Default		N/A
US_INUN_ID	UPK	R	Text	25		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
RM_DAMS_ID	FK	R	Text	25		S_RM_Dams_Pt
CID		A	Text	6		N/A
POL_NAME1		A	Text	50		N/A
SCENAR_ID	FK	R	Text	25		L_Dam_Scenario
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit
SHAPE_LENGTH		R	Double	Default	Default	N/A
SHAPE_AREA		R	Double	Default	Default	N/A

3.22. Table: Images – Flood Risk Product Images

This table stores custom images in the FRD. This includes custom images that can be used in the production of a FRR or FRM, or to document specific items in the FRP. If an image is for a community, the CID field is populated. If it is not, it is assumed to be the optional FRM image. This is an enhanced table that can be populated if custom images have been added into the FRP.

The Images table contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
IMG_ID	R	FRP Image Identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
CID	R	Community Identification Number. This is the six-digit CID assigned by FEMA that this image pertains. For images in the project level custom text, use the FEMA Case Number to populate this field.
IMG_BINARY	A	Binary field containing the image. The image is stored in the fGDB as a managed raster, not a link to a location in the folder structure for the project.

Field Name	R/A/E/O	Description
IMG_CPTION	R	Caption placed on the image.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.

Field properties for the Images table are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
IMG_ID	UPK	R	Text	25		N/A
CID		R	Text	12		N/A
IMG_BINARY		R	Raster	N/A		N/A
IMG_CPTION		R	Text	50		N/A
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A

3.23. Table: L_CSLF_Summary – CSLF Community Summary Table

This table stores summary statistics of the CSLF analysis by Community, including the changes in area, population and number of buildings in the SFHA, non-SFHA, Floodway and Coastal High Hazard Areas (CHHA) (or V Zones). This table is optional but can be populated when the Changes Since Last FIRM dataset is produced.

The table contains up to four records for each community with a unique CID in the project area. The four records are for the SFHA, non-SFHA, floodway and coastal high hazard areas for each community. The table also contains up to four records (SFHA, non-SFHA, FLDWY and CHHA) for the project total summaries.

In creating the L_CSLF_Summary table, the Mapping Partner should aggregate the polygon attribute values (i.e., area, population and building counts) in the S_CSLF_Ar feature class by community (e.g., city, town, village or unincorporated portion of a county). If individual CSLF polygons extend outside the project boundary in S_FRD_Proj_Ar, only the portion within the project boundary should be

aggregated. The aggregated values should represent the totals for that portion of the community in the project area.

The L_CSLF_Summary table contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
CSLFSUMMID	R	CSLF Summary Identification Number. For the case of the community records in this table, this is the six-digit CID assigned by FEMA. For the case of the project summary record, the CSLFSUMMID should be populated with the FEMA Case Number in the same format as the CASE_NO field below.
POL_NAME1	R	Political Area Name 1. This is the primary name of the community. For the Project summary record (i.e., CSLFSUMMID = CASE_NO), the POL_NAME1 field should be populated with the project / watershed name (e.g., Watershed USA).
LOCATION	R	This field is the location for which the summary statistic is being totaled. Available coded values include SFHA, NONSFHA, FLDWY, and CHHA, which are controlled by the D_SFHA_FLDWY domain.
AREA_SM	R	Area in square miles. This field is populated with the area in square miles for the respective location (SFHA, NONSFHA, FLDWAY, or CHHA) for that community. The area shall be measured based on the local coordinate system used during data compilation. The result shall be expressed to the nearest 0.1 square mile.
AREA_INCR	R	Area Increase. This field is populated with the increase in area in square miles for the respective location (SFHA, NONSFHA, FLDWAY, or CHHA) since the last FIRM for that community. The area shall be measured based on the local coordinate system used during data compilation. The result shall be expressed to the nearest 0.1 square mile.
AREA_DECR	R	Area Decrease. This field is populated with the decrease in area in square miles for the respective location (SFHA, NONSFHA, FLDWAY, or CHHA) since the last FIRM for that community. The area shall be measured based on the local coordinate system used during data compilation. The result shall be expressed to the nearest 0.1 square mile. The value should include the negative sign indicating a decrease in area.

Field Name	R/A/E/O	Description
AREA_NET	R	Net Area. This field is populated with the net change in area in square miles for the respective location (SFHA, NONSFHA, FLDWAY, or CHHA) since the last FIRM for that community. The area shall be measured based on the local coordinate system used during data compilation. The result shall be expressed to the nearest 0.1 square mile. If applicable, the value should include the negative sign indicating a decrease in area.
POP_INCR	E	Population Increase. This field is populated with the increase in population for the respective location (SFHA, NONSFHA, FLDWY, CHHA) since the last FIRM for that community. This is an Enhanced field and shall be required if the enhanced option is designated in the MAS. This field is null for the project-level record.
POP_DECR	E	Population Decrease. This field is populated with the decrease in population for the respective location (SFHA, NONSFHA, FLDWY, or CHHA) since the last FIRM for that community. This is an Enhanced field. The value should include the negative sign indicating a decrease in population. This field is null for the project-level record.
POP_NET	E	Population Net Change. This field is populated with the net change in population for the respective location (SFHA, NONSFHA, FLDWY, or CHHA) since the last FIRM for that community. This is an Enhanced field. If applicable, the value should include the negative sign indicating a decrease in population. This field is null for the project-level record.
BLDG_INCR	E	Building Increase. This field is populated with the increase in the number of buildings for the respective location (SFHA, NONSFHA, FLDWY, or CHHA) since the last FIRM for that community. This is an Enhanced field. This field is null for the project-level record.
BLDG_DECR	E	Building Decrease. This field is populated with the decrease in the number of buildings for the respective location (SFHA, NONSFHA, FLDWY, or CHHA) since the last FIRM for that community. This is an Enhanced field. The value should include the negative sign indicating a decrease in affected buildings. This field is null for the project-level record.
BLDG_NET	E	Building Net Change. This field is populated with the net change in the number of buildings for the respective location (SFHA, NONSFHA, FLDWY, or CHHA) since the last FIRM for that community. This is an Enhanced field. If applicable, the value should include the negative sign indicating a decrease in affected buildings. This field is null for the project-level record.

Field Name	R/A/E/O	Description
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the community lies. If a community is in multiple HUC-8 sub-basins, the sub-basin in which the portion of the community being studied lies shall be used. If the portion of the community being studied is in multiple sub-basins, the sub-basin in which the greatest portion of the project area lies shall be used. For the project-level record (i.e., CSLFSUMMID = CASE_NO), this field should be populated with "NP".
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.

Field properties for the L_CSLF_Summary table are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
CSLFSUMMID	UPK	R	Text	12		N/A
POL_NAME1		R	Text	50		N/A
LOCATION	UPK	R	Text	7		D_SFHA_FLDWY
AREA_SM		R	Double	Default	Default	N/A
AREA_INCR		R	Double	Default	Default	N/A
AREA_DECR		R	Double	Default	Default	N/A
AREA_NET		R	Double	Default	Default	N/A
POP_INCR		E	Long Integer	Default		N/A
POP_DECR		E	Long Integer	Default		N/A
POP_NET		E	Long Integer	Default		N/A
BLDG_INCR		E	Long Integer	Default		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
BLDG_DECR		E	Long Integer	Default		N/A
BLDG_NET		E	Long Integer	Default		N/A
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A

3.24. Table: L_Dam_Scenario – Dam Scenario Definition Table

This table describes each scenario that has been modeled for a dam. It is an enhanced table that is required to be populated when any of the other enhanced dam-related feature classes or rasters have been produced. The scenario is defined as the unique combination of the domains defining the flooding event, release type and the condition of the reservoir at the time of the release. The following table illustrates some of the possible combinations that can be used to define a scenario.

Table 3: Dam Scenario Naming Standards

Event (D_Event)	Release Type (D_Release_Typ)	Reservoir Condition (D_Reservoir_Cond)
0_2pct – 0.2% annual-chance Event 01pct – 1% annual-chance Event 01plus – 1% plus Event 02pct – 2% annual-chance Event 04pct – 4% annual-chance Event 10pct – 10% annual-chance Event PMF – Probable Maximum Flood PMF14 – ¼ of Probable Maximum Flood PMF13 – ⅓ of Probable Maximum Flood PMF12 – ½ of Probable Maximum Flood PMF34 – ¾ of Probable Maximum Flood PMP – Probable Maximum Precipitation PMP14 – ¼ of Probable Maximum Precipitation PMP13 – ⅓ of Probable Maximum Precipitation PMP12 – ½ of Probable Maximum Precipitation PMP34 – ¾ of Probable Maximum Precipitation SUN – Sunny Day FOR – Flood of Record (to be described in L_Dam_Scenario and metadata)	Piping Overtop Gate Failure	Full Normal Pool Auxiliary Spillway Primary Spillway Without Dam

The L_Dam_Scenario table contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SCENAR_ID	R	Scenario Identification. Concatenation of Event, Release Type and Reservoir Condition or a unique identifier for non-standard scenarios.
EVENT	R	This is the precipitation event for which the upstream inundation area was developed. The D_Event domain from the riverine version of the FRD can be used with a few additions (e.g., PMP – Probable Maximum Precipitation, SUN – Sunny Day [no precipitation], FOR - Flood of Record). This field may be null for certain values in RSVR_COND.

Field Name	R/A/E/O	Description
RELEA_TYP	R	This is the release type for which the downstream inundation area was developed. This should be controlled by a domain. P – Piping, O – Overtop, and G – Gate Failure. This value would be null for upstream inundation scenarios. Uses the D_Release_Typ domain.
RSVR_COND	R	This is the reservoir condition under which the dam was assumed to be operating for the scenario modeled. Typical values for the reservoir condition are: F – Full, N – Normal Pool, A – Auxiliary Spillway, P – Primary Spillway, and W – Without Dam. Uses the D_Reservoir_Cond domain.
RSVR_ELEV	R	The pool elevation of the reservoir at the dam for the condition modeled. The datum and units of the reservoir elevation shall be documented in the S_FRD_Proj_Ar. For the majority of cases, the datum should be NAVD88. Uses D_V_Datum domain.
DESCRIP	A	Free form text field for providing additional descriptive information about the scenario (e.g., describe the flood of record).
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.

Field properties for the L_Dam_Scenario table are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SCENAR_ID	UPK	R	Text	25		N/A
EVENT		R	Text	6		D_Event
RELEA_TYP		R	Text	2		D_Release_Typ
RSVR_COND		R	Text	2		D_Reservoir_Cond
RSVR_ELEV		R	Double	Default	Default	N/A
DESCRIP		A	Text	50		N/A

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.25. Table: L_Dams_XS_MDL_Results – Dam Model Results by Cross Sections

This table contains the results by cross section from the model of the dam release scenarios. This dataset is related to the S_Dams_XS_Ln feature class by a relationship class. This is an enhanced table that is required to be populated when the S_Dams_XS_Ln feature class has been produced.

The L_Dams_XS_MDL_Results table contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
DAMS_XS_ID	R	Risk Map Dams Cross Section Identifier. Foreign Key to S_Dams_XS_Ln.
SCENAR_ID	R	Scenario Identification. Foreign Key to L_Dam_Scenario.
WSE	R	Water Surface Elevation of the scenario modeled. The datum and units for the WSE shall be documented in the S_FRD_Proj_Ar. For the majority of cases, the datum should be NAVD88. Uses D_V_Datum domain.
TIME_PK	A	Time to the peak of the dam release (measured in minutes, x.x).
TIME_ARV	A	Time to the arrival of the dam release (measured in minutes, x.x), when the water surface elevation raises 1.0’ above pre-scenario base flow.
TIME_DUR	A	Time of the duration of the flood wave (measured in minutes, x.x). From when the water surface elevation raises 1.0’ above pre-scenario base flow till it returns to within 1.0’ of pre-scenario base flow.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.

Field Name	R/A/E/O	Description
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.

Field properties for the L_Dams_XS_MDL_Results table are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
DAMS_XS_ID	UPK	R	Text	25		N/A
SCENAR_ID	FK	R	Text	25		L_Dam_Scenario
WSE		R	Double	Default	Default	N/A
TIME_PK		A	Double	Default	Default	N/A
TIME_ARV		A	Double	Default	Default	N/A
TIME_DUR		A	Double	Default	Default	N/A
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.26. Table: L_Lev_Rating_Curve – Levee Rating Curve Table

This table provides information for a rating curve associated with a rating curve point location. The rating curve may include information for a range of levee scenarios. This is an enhanced table that is required to be populated when the S_Lev_Rating_Curve_Pt feature class has been produced.

The L_Lev_Rating_Curve table contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.

Field Name	R/A/E/O	Description
RAT_CUR_ID	R	Rating curve identifier. User-defined Primary Key / Unique Identifier. This field should be sequentially numbered for all records in the table.
RATCURPTID	R	Associates the Rating Curve with the Location on the Levee System. Foreign Key to the S_Lev_Rating_Curve_Pt feature class.
WSEL_VAL	R	Water Surface Elevation (WSEL) value (ft.), x coordinate.
DIS_VAL	R	Discharge value (cfs), y coordinate.
SPC_TYP	R	Special identifier type to use to on rating curve graphic. Uses D_Levee_Event domain.
DESCRIP	A	Additional Descriptive Information
SCENAR_ID	R	Levee Scenario Identifier (Link to L_Levee_Scenario)
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the levee rating curve point lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in the S_FRD_Proj_Ar feature class for a more detailed description.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_Source_Cit. See field definition in L_Source_Cit for more detail.

Field properties for the L_Lev_Rating_Curve table are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
RAT_CUR_ID	UPK	R	Text	25		N/A
RATCURPTID	FK	R	Text	25		S_Lev_Rating_Curve_Pt
WSEL_VAL		R	Double	Default	Default	N/A
DIS_VAL		R	Double	Default	Default	N/A
SPC_TYP		R	Text	3		D_Levee_Event

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
DESCRIP		A	Text	50		N/A
SCENAR_ID	FK	R	Text	25		L_Levee_Scenario
HUC8_CODE	FK	R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT	FK	R	Text	25		L_Source_Cit

3.27. Table: L_Levee_Scenario – Levee Scenario Table

This table describes each scenario that has been modeled for the levee. It is an enhanced table that is required to be populated when any of the other enhanced levee-related feature classes or rasters have been produced. The scenario is defined as the unique combination of the domains defining the flooding event, levee accreditation status and the source of the flooding event. The following table illustrates the possible combinations that can be used to define a scenario. These scenarios are used to define the attribute for describing varying levee impact areas and raster naming conventions for depth, velocity, water surface elevation and depth and velocity severity grids.

Table 4: Levee Scenario Naming Standards

Event (D_Levee_Event)	Levee Accreditation Status (D_Levee_Accreditation)	Flood Hazard Source Type (D_Flooding_Source)
0_2 – 0.2% annual-chance Event 01 – 1% annual-chance Event 01P – 1% plus Event 02 – 2% annual-chance Event 04 – 4% annual-chance Event 10 – 10% annual-chance Event HIS – Historical Flood event LS – Levee Shadow (extents of impacted area behind a levee based on levee crest elevation) OVT – Overtop TOE – Levee Toe (wet side of levee) LC – Levee Crest LT – Landward Toe	A - Accredited P – Provisionally Accredited N - Non-Accredited	R - Riverine C - Coastal D - Dam O – Other

The L_Levee_Scenario table contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SCENAR_ID	R	Scenario Identification. Concatenation of Event, Levee Accreditation Status, and Flooding Source. For non-standard scenarios and multiple scenarios with the same identifier, a unique identifier should be used. Examples: 04AR, 01ND1, 01ND2, LSPC. Primary Key - Unique Identifier
EVENT	R	This is the event for which the levee analysis was developed. (Uses D_Levee_Event domain)
LEV_AC_TYP	R	Levee Accreditation Status (Uses D_Levee_Accreditation domain)
FLOOD_SRC	R	Flood Hazard Source Type (Uses D_Flooding_Source domain)
LEV_AN_TYP	R	Levee Analysis Type (Uses D_Levee_Analysis_Type domain)

Field Name	R/A/E/O	Description
DAM_SCE_ID	A	Dam Scenario Identifier (Link to L_Dam_Scenario). When a levee scenario is based on a dam scenario, this field will be populated to link the dam flood risk scenario datasets.
DESCRIP	A	Free form text field for providing additional descriptive information about the scenario (e.g., describe the flood of record).
HUC8_CODE	R	WBD 8-digit Hydrologic Unit Code for the sub-basin in which the levee lies.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.
SOURCE_CIT	R	Source Citation from L_SOURCE_CIT. See field definition in L_Source_Cit for more detail.

Field properties for the L_Levee_Scenario table are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SCENAR_ID	UPK	R	Text	25		N/A
EVENT		R	Text	3		D_Levee_Event
LEV_AC_TYP		R	Text	1		D_Levee_Accreditation
FLOOD_SRC		R	Text	1		D_Flooding_Source
LEV_AN_TYP		R	Text	3		D_Levee_Analysis_Type
DAM_SCE_ID		A	Text	25		L_Dam_Scenario
DESCRIP		A	Text	50		N/A
HUC8_CODE		R	Text	8		S_HUC_Ar
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A
SOURCE_CIT		R	Text	25		L_Source_Cit

3.28. Table: L_Source_Cit – Source Citations

This table should contain a record for each data source used (both vector and raster) and the FRD metadata file should also contain a corresponding Source Citation entry in the Lineage section under Data Quality. This table is required to be populated. Source Citation Type Abbreviations, followed by sequential numbers, should be used in creating the references. These citations provide a link to the metadata where the data sources are more fully described. These abbreviations are presented in the following table.

Table 5: Source Citation Type Abbreviations

Source Citation Type Abbreviations	Use
BASE	For all base map sources (includes roads, railroads, airports, hydrography).
FIRM	For features extracted from an existing FIRM database.
LOMC	For information derived from a Letter of Map Change (LOMC).
HAZUS	For features extracted from or developed during a Hazus assessment. Would typically be used for S_CenBlk_Ar.
FIS	For information taken from a previously published Flood Insurance Study (FIS) Report, including Floodway Data Tables and Flood Profiles.
STUDY	For information developed or acquired for the current Flood Risk Project. This abbreviation would typically be used for S_AOMI_Ar, S_CSLF_Ar, and S_FRD_Proj_Ar.

This table has an entry for each different data source used in the Flood Risk Project and is linked with all the feature classes to document the sources for the data.

The L_Source_Cit table contains the following elements:

Field Name	R/A/E/O	Description
OBJECTID	R	Object Identifier. Internal Primary Key used by ArcGIS software to provide unique access to each record.
SOURCE_CIT	R	Source Citation identifier used in the FIRM Database and in the FIRM metadata file. Source citations start with the type of source followed by sequential numbers, for example “BASE1”, “BASE2”, etc.

Field Name	R/A/E/O	Description
DFIRM_ID	R	Regulatory Product Identifier. For a single-jurisdiction Flood Risk Project, the value is composed of the 2-digit State FIPS code and the 4-digit FEMA CID code (e.g., 480001). For a countywide Flood Risk Project, the value is composed of the 2-digit State FIPS code, the 3-digit county FIPS code and the letter "C" (e.g., 48107C). Within each FIRM database, the DFIRM_ID value is identical.
CITATION	R	Citation Used in FIS Report text and Bibliography and References Table. A short and unique citation name (Author and Year) used within the FIS Report to reference this publication, such as "U.S. Census 2010."
PUBLISHER	R	Publisher Name Used in FIS Report Bibliography and References Table. This is the name of the publishing entity, for example FEMA, USGS, etc.
TITLE	R	Title of referenced publication or data Used in FIS Report Bibliography and References Table. Should include the volume number if applicable, for example National Flood Hazard Layer, Preliminary Flood Insurance Study – project name.
AUTHOR	A	Author/Editor Used in FIS Report Bibliography and References Table. This is the author or editor of the reference. Multiple authors may be listed in this field.
PUB_PLACE	A	Publication Place Used in FIS Report Bibliography and References Table. This is the place of publication (e.g., "Washington DC").
PUB_DATE	R	Publication Date Used in FIS Report Bibliography and References Table. This is the date of publication or date of issuance.
WEBLINK	A	Reference Web Address Used in FIS Report Bibliography and References Table. This is the web address for the reference, if applicable.
MEDIA	R	Media through which the source data were received.
CASE_NO	R	FEMA Case Number. See the CASE_NO field in S_FRD_Proj_Ar for more detail.
VERSION_ID	R	Version Identifier. Identifies the product version and relates the feature to standards according to which it was created.

Field properties for the L_Source_Cit table are as follows:

Field	Key Type	R/A/E/O	Type	Length/Precision	Scale (SHP Only)	Domain or Related Table
OBJECTID	PK	R	ObjectID	Default		N/A
SOURCE_CIT	UPK, FK	R	Text	25		S_HUC_Ar, S_FRD_Proj_Ar, S_CSLF_Ar, S_FRAC_Ar, S_AOMI_Ar, S_FRAS_Pt
DFIRM_ID	FK	R	Text	6		FRD_Study_Info
CITATION		R	Text	25		N/A
PUBLISHER		R	Text	254		N/A
TITLE		R	Text	254		N/A
AUTHOR		A	Text	254		N/A
PUB_PLACE		A	Text	100		N/A
PUB_DATE		R	Date	Default		N/A
WEBLINK		A	Text	128		N/A
MEDIA		R	Text	50		N/A
CASE_NO	FK	R	Text	12		S_FRD_Proj_Ar
VERSION_ID		R	Text	11		N/A

4. Raster Datasets

All depth and analysis rasters within the FRD shall be floating point with data rounded to the nearest tenth of a unit (i.e., 0.1 feet, 0.1 feet/second, or 0.1%) and shall have the same spatial reference, origin, resolution and rotation as one another.

Table 6 lists the names of the rasters that can be produced as part of a Flood Risk Project. Most raster datasets listed in this table include the “xxxxxx” nomenclature in their name. This is a placeholder that should be updated accordingly, depending on the scenario or flood event that the raster is depicting. For dam-related rasters, the L_Dam_Scenario table outlines the naming specifications that should be used to replace the “xxxxxx” in the naming convention, depending on the flood scenario depicted. Similarly, the L_Levee_Scenario table outlines the naming convention that should be used to replace the “xxxxxx” for levee-related rasters. The third column of this table

provides examples of how the "xxxxxx" placeholder is replaced, depending on the specific flood event or scenario for which the raster is being created.

Any raster used to depict a percent annual-chance flood event whose occurrence is less frequent than the 1-percent-annual-chance (e.g. 0.2-percent-annual-chance or 500-yr; 0.5-percent-annual-chance, or 200-yr; etc.) should replace the decimal point (".") with an underscore ("_") in its name (e.g. Depth_0_2pct, WSE_0_5pct, etc.)

Table 6: Flood Risk Database Rasters

FRD Raster Name	Raster Description	Units	"xxxxxx" Naming Requirement Examples (explanation)
Arrv_xxxxxxxx	Arrival time for the xxxxxxxx scenario dam release. This is an enhanced raster.	Minutes	▪ Arrv_SUNPN (Sunny day piping failure with reservoir at normal pool)
CstDpthxxxpct	Coastal flood depth for the xxx percent annual-chance flood event. This raster is required to be produced for coastal Flood Risk Projects.	Feet	▪ CstDpth01pct (1% annual-chance) ▪ CstDpth0_2pct (0.2% annual-chance)
Depth_xxxxxx	Flood Depth for the xxxxxx riverine flood event. This raster is required to be produced for riverine Flood Risk Projects.	Feet	▪ Depth_10pct (10% annual-chance) ▪ Depth_04pct (4% annual-chance) ▪ Depth_02pct (2% annual-chance) ▪ Depth_01pct (1% annual-chance) ▪ Depth_0_2pct (0.2% annual-chance) ▪ Depth_01plus (1% "plus") ▪ Depth_01minus (1% "minus")
Dpth_xxxxxxxx	Flood Depth for the xxxxxxxx dam release or levee scenario. This is an enhanced raster.	Feet	▪ Dpth_01pctPA (Dam release based on a piping failure from the 1% annual-chance flood, and the water surface in the reservoir at the auxiliary spillway) ▪ Dpth_01AC (1% annual-chance depth from a coastal flooding source for an accredited levee)
DVS_xxxxxxxx	Flood Depth and Velocity Severity (DVS) for the xxxxxxxx flood event or scenario. This is an enhanced raster.	$Feet^2$ / second	▪ DVS_01pct (1% annual-chance) ▪ DVS_FOR (Flood of Record for a dam) ▪ DVS_HISNR (Historical flood event from a riverine flooding source for a non-accredited levee)

FRD Raster Name	Raster Description	Units	"xxxxxx" Naming Requirement Examples (explanation)
FID_xxxxxxxx	Flood Inundation Duration – Time of the duration of the flood inundation of the xxxxxxxx scenario dam	Minutes	▪ FID_PMFOF (Dam release based on overtopping from the Probable Maximum Flood, with a full reservoir)
Pct30yrChance	Percent chance of flooding over a 30-year period. This raster is required to be produced for riverine Flood Risk Projects.	Percent	▪ Pct30yrChance
PctAnnChance	Percent annual-chance of flooding. This raster is required to be produced for riverine Flood Risk Projects.	Percent	▪ PctAnnChance
Peak_xxxxxxxx	Time for the peak of the xxxxxxxx scenario dam release to occur. This is an enhanced raster.	Minutes	▪ Peak_0_2pctPP (Dam release based on piping failure from the 0.2% annual-chance event, with the reservoir at the primary spillway)
RAdpth_xxxxxx	Composite flood depth grid used to perform the risk assessment for the xxxxxx event or scenario. This is an enhanced raster	Feet	▪ RAdpth_01pct (1% annual-chance) ▪ RAdpth_0_2pct (0.2% annual-chance)
Vel_xxxxxxxx	Velocity for the xxxxxxxx flood event or scenario. This is an enhanced raster.	Feet / second	▪ Vel_01pct (1% annual-chance) ▪ Vel_0_2OF (Dam release based on overtopping from the 0.2% annual-chance event, with a full reservoir) ▪ Vel_01PD (1% annual-chance velocity from a dam release for a provisionally accredited levee)

FRD Raster Name	Raster Description	Units	"xxxxxx" Naming Requirement Examples (explanation)
WSE_xxxxxx	Water Surface Elevation (WSE) for the xxxxxx flood event or scenario. This raster is required to be produced for riverine Flood Risk Projects.	Feet	▪ WSE_10pct (10% annual-chance) ▪ WSE_04pct (4% annual-chance) ▪ WSE_02pct (2% annual-chance) ▪ WSE_01pct (1% annual-chance) ▪ WSE_0_2pct (0.2% annual-chance) ▪ WSE_01plus (1% "plus") ▪ WSE_PMPOF (Dam release based on overtopping from the Probable Maximum Precipitation, with a full reservoir) ▪ WSE_01NR (1% annual-chance WSE from a riverine flooding source for a non-accredited levee)
WSE_Change	1% annual-chance WSE change since last FIRM. This is an enhanced raster.	Feet	N/A

5. Spatial Reference Systems

Delivered FRD vector datasets shall have the following spatial reference standards:

Coordinate System: Geographic (GCS)

- Spheroid
  - Name: GRS_1980
  - Semi major Axis: 6378137
  - Semi minor Axis: 6356752.3141403561
- Angular Unit
  - Name: Degree
  - Radians per unit: 0.017453292519943299
- Prime Meridian
  - Name: Greenwich
  - Longitude 00° 00' 00"

Horizontal Datum: NAD 83 (1986). This is the original NAD 83 realization.

Horizontal Units: Decimal Degrees (dd)

Vertical Datum: NAVD88
Vertical Units: Feet
Cluster Tolerance: 0.000000784415 dd
Spatial Resolution: 0.0000000784415 dd

Delivered FRD raster datasets shall have the following spatial reference standards:

Projection: Universal Transverse Mercator (UTM)
Zone: Single zone which best covers the project area
Horizontal Datum: NAD 83 (1986). This is the original NAD 83 realization.
Horizontal Units: Meters
Cell Size: no larger than 3m

Vertical Datum: NAVD88
Vertical Units: Feet

All elevation data, including water surface elevation rasters, shall reference the North American Vertical Datum of 1988 (NAVD88) with units of feet. The use of other datums or vertical units (e.g., the use of meters in areas such as Puerto Rico where Base Flood Elevations (BFEs) are expressed in meters) will require approval of the FEMA Project Officer.

Non-geodatabase formats shall maintain these spatial reference standards where allowable by file type and format.

6. Topology Rules

Spatial FRD feature classes are required to be submitted in SHP and DBF format but must conform to outlined topology rules. Spatial files in the fGDB should exist within one feature dataset. The feature dataset, FRD_Spatial_Layers, is required for the creation of topology. Non-spatial tables and rasters will exist outside of the FRD_Spatial_Layers feature dataset, as standalone business tables and rasters at the 'root' level inside the fGDB. The complete list of topology rules for FRD spatial layers are listed in Table 7.

Table 7: Topology Rules

Topology Class	Spatial Layer	Topology Rule
CSLF_Topology	S_CSLF_Ar	Must Be Larger Than Cluster Tolerance*
CSLF_Topology	S_CSLF_Ar	Must Not Overlap
CSLF_Topology	S_CSLF_Ar	Must Not Have Gaps

*Inherent for all polygon and polyline feature classes in each topology.

7. Relationship Classes

To enable easier and consistent use of the FRD, pre-defined relationships have been established between certain tables using what is known as a “relationship class.” The use of table relationship classes will allow Mapping Partners to create or update information stored in one table and simply “relate” that information to another table based on a common field. FRD relationship classes are built in the optional fGDB but may be useful for maintaining information shared between feature classes and tables that will be exported to SHP and DBF.

Table 8: FRD Relationship Classes

Relationship Class Name	Origin Table	Origin Field	Destination Table	Destination Field	Cardinality
AOMI_SourceCit	S_AOMI_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
CF_AOMI	S_Cr_Fac_Pt	AOMI_ID	S_AOMI_Ar	AOMI_ID	1:1
CF_SourceCit	S_Cr_Fac_Pt	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
CSLF_Pre_SourceCit	S_CSLF_Ar	PRE_SRCCIT	L_Source_Cit	SOURCE_CIT	1:1
CSLF_New_SourceCit	S_CSLF_Ar	NEW_SRCCIT	L_Source_Cit	SOURCE_CIT	1:1
CSLF_SourceCit	S_CSLF_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Inc_Flood_SourceCit	S_ Inc_Flood_Scen_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Simpl_Cst_Zone_SourceCit	S_Simpl_Cst_Zone_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
XS_SourceCit	S_Dams_XS_Ln	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Dams_XS_MDL	S_Dams_XS_Ln	DAMS_XS_ID	L_Dams_XS_MDL_Results	DAMS_XS_ID	1:M
DS_INUN_Dam_Scenario	S_DS_Inundation_Ar	SCENAR_ID	L_Dam_Scenario	SCENAR_ID	1:1
S_FRAC_Ar_SourceCit	S_FRAC_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
S_FRAS_Pt_SourceCit	S_FRAS_Pt	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
DS_INUN_SourceCit	S_DS_Inundation_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
ESMT_SourceCit	S_Easement_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
PFD_SourceCit	S_PFD_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Proj_SourceCit	S_FRD_Proj_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1

Relationship Class Name	Origin Table	Origin Field	Destination Table	Destination Field	Cardinality
HUC_SourceCit	S_HUC_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Levee_CF	S_Levee_Ln	LEVEE_ID	S_Cr_Fac_Pt	LEVEE_ID	1:M
Levee_INUN	S_Levee_Ln	LEVEE_ID	S_Lev_Inundation_Ar	LEVEE_ID	1:M
Levee_AOMI	S_Levee_Ln	AOMI_ID	S_AOMI_Ar	AOMI_ID	1:1
Levee_Elements	S_Levee_Ln	LEVEE_ID	S_Lev_Elements_Pt	LEVEE_ID	1:M
Levee_Breach	S_Levee_Ln	LEVEE_ID	S_Lev_Breach_Pt	LEVEE_ID	1:M
Levee_Rating_Curve	S_Levee_Ln	LEVEE_ID	S_Lev_Rating_Curve_Pt	LEVEE_ID	1:M
Levee_Freeboard	S_Levee_Ln	LEVEE_ID	S_Lev_Freeboard_Ln	LEVEE_ID	1:M
Levee_SourceCit	S_Levee_Ln	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
N/A[1]	S_Levee_Ln	FEMA_LEV_ID	Levee_Centerline (MLI)	LEVEE_ID	1:1
Elements_SourceCit	S_Lev_Elements_Pt	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Breach_Levee_Scenario	S_Lev_Breach_Pt	SCENAR_ID	L_Levee_Scenario	SCENAR_ID	1:1
Breach_SourceCit	S_Lev_Breach_Pt	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Freeboard_Levee_Scenario	S_Lev_Freeboard_Ln	SCENAR_ID	L_Levee_Scenario	SCENAR_ID	1:1
Freeboard_SourceCit	S_Lev_Freeboard_Ln	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Levee_INUN_Scenario	S_Lev_Inundation_Ar	SCENAR_ID	L_Levee_Scenario	SCENAR_ID	1:1
INUN_SourceCit	S_Lev_Inundation_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Levee_Pt_Rating_Curve	S_Lev_Rating_Curve_Pt	RATCURPTID	L_Lev_Rating_Curve	RATCURPTID	1:M

Relationship Class Name	Origin Table	Origin Field	Destination Table	Destination Field	Cardinality
RAT_Curve_SourceCit	S_Lev_Rating_Curve_Pt	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Dams_CF	S_RM_Dams_Pt	RM_DAMS_ID	S_Cr_Fac_Pt	RM_DAMS_ID	1:M
Dams_ESMT	S_RM_Dams_Pt	RM_DAMS_ID	S_Easement_Ar	RM_DAMS_ID	1:M
Dams_XS	S_RM_Dams_Pt	RM_DAMS_ID	S_Dams_XS_Ln	RM_DAMS_ID	M:M
Dams_DS_INUN	S_RM_Dams_Pt	RM_DAMS_ID	S_DS_Inundation_Ar	RM_DAMS_ID	1:M
Dams_US_INUN	S_RM_Dams_Pt	RM_DAMS_ID	S_US_Inundation_Ar	RM_DAMS_ID	1:M
Dams_SourceCit	S_RM_Dams_Pt	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
N/A[1]	S_RM_Dams_Pt	NID_ID	NID	NIDID	1:1
US_INUN_Dam_Scenario	S_US_Inundation_Ar	SCENAR_ID	L_Dam_Scenario	SCENAR_ID	1:1
US_INUN_SourceCit	S_US_Inundation_Ar	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Dam_Scenario_SourceCit	L_Dam_Scenario	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Levee_Scenario_Dam_Scenario	L_Levee_Scenario	DAM_SCE_ID	L_Dam_Scenario	SCENAR_ID	1:1
Results_Dam_Scenario	L_Dams_XS_MDL_Results	SCENAR_ID	L_Dam_Scenario	SCENAR_ID	1:1
Results_SourceCit	L_Dams_XS_MDL_Results	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
LEV_Rating_Curve_Levee_ Scenario	L_Lev_Rating_Curve	SCENAR_ID	L_Levee_Scenario	SCENAR_ID	1:M
LEV_Rating_Curve_SourceCit	L_Lev_Rating_Curve	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1
Levee_Scenario_SourceCit	L_Levee_Scenario	SOURCE_CIT	L_Source_Cit	SOURCE_CIT	1:1

8. Domains

The FRD fGDB uses geodatabase domains to provide standardized lists of acceptable values for some fields. Required SHP and DBF must use domain values instead of domain codes when exporting for submittal. Many of the domains in the FRD are shared with the FIRM and CNMS database designs. See the Domain Tables Technical Reference for details on the individual domains and the process for updating the domains.

Table 9: FRD Domains

Domain Name	Table	fGDB SHP Code Field	SHP Description Field Name	SHP Field Width
D_AOMI_Class	S_AOMI_Ar	AOMI_CLASS	D_AOMICLSS	30
D_AOMI_SourceCat	S_AOMI_Ar	AOMI_CAT	D_AOMICAT	30
D_AOMI_Typ	S_AOMI_Ar	AOMI_TYP	D_AOMITYP	60
D_Breach_Pt_Typ	S_Lev_Breach_Pt	PT_TYP	D_PT_TYP	63
D_Change	S_CSLF_Ar	SFHACHG	D_SFHACHG	12
D_Change	S_CSLF_Ar	FLDWYCHG	D_FLDWYCHG	12
D_Change	S_CSLF_Ar	NONSFHACHG	D_NONSFHA	12
D_Change	S_CSLF_Ar	CHHACHG	D_CHHACHG	12
D_Const_Typ	S_Levee_Ln	CONST_TYPE	D_CNST_TYP	30
D_Const_Typ	S_RM_Dams_Pt	CONST_TYP	D_CNST_TYP	30
D_PFD_Size	S_PFD_Ar	DUNE_SIZE	D_PFD_SIZE	20
D_Esmt_Typ	S_Easement_Ar	ESMT_TYP	D_ESMT_TYP	20
D_Event	L_Dam_Scenario	EVENT	D_EVENT	40
D_Event	S_Inc_Flood_Scen_Ar	RETURN_PER	D_RETRNPER	40
D_Flooding_Source	L_Levee_Scenario	FLOOD_SRC	D_FLD_SRC	20
D_HAZ_Class	S_RM_Dams_Pt	HAZ_CLASS	D_HAZ_CLAS	20
D_Length_Units	S_Dams_XS_Ln	LEN_UNIT	D_LEN_UNIT	16
D_Length_Units	S_FRD_Proj_Ar	V_UNITS	D_V_UNITS	16
D_Levee_Accredidation	L_Levee_Scenario	LEV_AC_TYP	D_LEVACTYP	30
D_Levee_Analysis_Type	L_Levee_Scenario	LEV_AN_TYP	D_LEVANTYP	30

Domain Name	Table	fGDB SHP Code Field	SHP Description Field Name	SHP Field Width
D_Levee_Event	L_Lev_Rating_Curve	SPC_TYP	D_SPC_TYP	30
D_Levee_Event	L_Levee_Scenario	EVENT	D_EVENT	30
D_Levee_Pt_Typ	S_Lev_Elements_Pt	LEV_PT_TYP	D_LEVPTTYP	25
D_Occupancy_Typ	S_FRAS_Pt	OCCUP_TYP	D_OCCUPTYP	40
D_Release_Typ	L_Dam_Scenario	RELEA_TYP	D_REL_TYP	20
D_Reservoir_Cond	L_Dam_Scenario	RSVR_COND	D_RSVR_CND	20
D_SFHA_FLDWY	L_CSLF_Summary	LOCATION	D_LOCATION	30
D_State_FIPS	S_RM_Dams_Pt	ST_FIPS	D_ST_FIPS	35
D_TrueFalse	S_Levee_Ln	EAP	D_EAP	10
D_TrueFalse	S_PFD_Ar	PFD_TF	D_PFD_TF	10
D_TrueFalse	S_RM_Dams_Pt	EAP	D_EAP	10
D_TrueFalse	S_RM_Dams_Pt	DEFICIENCS	D_DEFCNCS	10
D_Wave_Haz	S_Simpl_Cst_Zone_Ar	WAVE_HAZ	D_WAVE_HAZ	20
D_Zone	S_CSLF_Ar	PRE_ZONE	D_PRE_ZONE	17
D_Zone	S_CSLF_Ar	NEW_ZONE	D_NEW_ZONE	17
D_Zone_Subtype	S_CSLF_Ar	PRE_ZONEST	D_PREZONST	72
D_Zone_Subtype	S_CSLF_Ar	NEW_ZONEST	D_NEWZONST	72