

Flood Risk Study Engineering Library Data Guide

Draft – May 10, 2017

Table of Contents

INTRODUCTION	1
Types of Changes	1
Removals of specific structures or properties from the floodplain	2
Revision or Letter of Map Revision.....	2
Flood Study	2
General Information.....	3
Data Stored in the FRiSEL	3
Finding Data	5
Typical Data Sets	8
Meeting Notes	9
Field Surveys.....	9
Topographic Data	10
Base Map	10
Supporting Artifacts	10
Floodplain Mapping Data	10
Coastal Analysis	11
Alluvial Fans	11
Redelineation	11
Hydrology	11
Hydraulics.....	12
Draft Flood Insurance Rate Map	13
Floodplain Boundary Standards Overview	13
Preliminary Regulatory Products	13
Appeals	14
Final Regulatory Products	14
Technical Support Data Notebook	15
Flood Elevation Determination Docket Files.....	15

FEMA's Flood Risk Study Engineering Library Documentation

INTRODUCTION

The Federal Emergency Management Agency (FEMA) works with state and local governments to analyze flood hazards and flood risk and publishes flood maps and flood insurance studies. Local governments adopt FEMA flood maps as the basis for local building codes to help reduce the impact of floods on buildings in high hazard flood areas. The process of analyzing flood hazards requires coordination with local governments, collection of extensive data about the area to be mapped, and complex engineering analysis. FEMA standards require mapping partners to assemble Technical Support Data Notebooks (TSDNs) to fully document this process for each flood mapping project. The TSDNs are documentation of the scientific and technical basis for the published flood maps. These TSDNs are then archived in FEMA's Flood Risk Study Engineering Library (FRiSEL).

The FRiSEL is an online search portal on FEMA's Mapping Information Platform (MIP) that can be used to access TSDN data associated with FEMA flood risk mapping projects. The goal is to provide transparency for the technical basis of FEMA flood maps, give access to data needed to request map revisions from FEMA, support professionals who need access to the existing FEMA flood hazard analyses to design buildings or infrastructure in hazard areas, and to provide access to other technical professionals who may benefit from the data or analyses compiled by FEMA.

Users of the FRiSEL should be aware that the content of the system for any given project is complex and highly technical. The TSDN material is developed and organized to allow knowledgeable technical experts to understand the work performed and reproduce the analysis for a particular project. Users without experience with FEMA flood risk projects, survey and mapping knowledge, and water resources engineering expertise are likely to have great difficulty understanding the TSDN data.

This document summarizes the types of data and analysis that are accessible and may be available to be viewed or downloaded through FRiSEL. It is important to remember that data production requirements have changed over time and that all data were submitted according to the standards at the time of production.

FEMA's Engineering Library often has several versions of analyses for a location because of revisions to the flood maps over time. Users of the FRiSEL are responsible for confirming they have the correct version of the data they are seeking.

Not all the materials in FEMA's Engineering Library are accessible to the public through the FRiSEL. Users can obtain assistance from the FEMA library staff to obtain access to [FEMA's entire engineering library](#) at MIPHelp@riskmapcds.com.

TYPES OF CHANGES

Because the flood hazard risk for a community can change over time due to natural or man-made reasons, and because all maps have practical limitations on precision, there are three methods for changing Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies

(FIS). The methods are (from smallest to largest based on relative scope) an amendment, a revision, or a flood study. A brief overview of each method is presented below.

Each type of change has specific data needs that are captured and preserved in the FRiSEL. **Typically the data for each type of changes is stored separately in the FRiSEL and it is the responsibility of users to locate all the relevant data and ensure that it matches the current regulatory information.** Frequently this requires users to collect and integrate data from several flood studies, revisions, and LOMAs to fully describe the current effective flood hazard information. The following sections detail the data collected for processing the three types of change to a community's FIRM. In general, the more complex the level of review, the more data required, collected, and archived.

Removals of specific structures or properties from the floodplain

The spatial reach of a Letter of Map Amendment (LOMA), and Letter of Map Revision Based on Fill (LOMR-F) is generally small, typically limited to one structure, property, or group of structures, or properties in close proximity to one another. LOMAs and LOMR-Fs do not result in a change to the FIRM that the subject property appears on, but rather results in a letter describing the specific structure or property that is removed from the floodplain. These removals are accomplished by using specific spatial, elevation, legal address, and other data to demonstrate the relationship of the structure/property to the Special Flood Hazard Area (SFHA).

Revision or Letter of Map Revision

A Revision or Letter of Map Revision (LOMR) is a modification to an effective FIRM or Flood Boundary and Floodway Map (FBFM), or both. LOMRs are generally based on changes that affect the hydrologic or hydraulic characteristics of a flooding source or better scientific or technical data than was available originally. These revisions, may result, as applicable, in the modification of the existing regulatory floodway, the effective Base Flood Elevation (BFE), or the SFHA. The change to the community's flood mapping can be quite extensive and result in changes to portions of one or more FIRM/FBFM panels. The LOMR officially revises the FIRM or FBFM, sometimes revises the FIS, and, when appropriate, includes a description of the modifications. The LOMR is generally accompanied by an annotated copy of the affected portions of the FIRM, FBFM, and FIS.¹

Flood Study

Flood Studies are initiated by FEMA or by a State or local government in cooperation with FEMA. A Study is a full or partial revision of all or some of a community's flood hazards based on new or revised data for areas impacted by a stream, watershed, coastal analysis, or other potential flooding source. The resulting changes may include updated hydrologic and hydraulic analyses, more accurate topographic data, a new base map, and other data.

¹ Federal Emergency Management Agency. "Letter of Map Revision." (April, 27, 2016). <https://www.fema.gov/letter-map-revision>.

When a new flood study is completed, the FIS document is re-issued and all FIRM panels affected by the new information, including the Map Index, are revised to reflect the new flood hazard data, the new effective date, and other changes.²

More recent flood studies are usually called flood risk projects under the Risk MAP program where the study process produces additional flood risk products such as depth of flooding and estimates of potential financial impacts of flooding. Flood studies are referred to as re-studies when the areas has been mapped previously and the purpose of the project is to update the older flood hazard information.

Additional information on these subjects may be found by visiting FEMA's [website](#).

GENERAL INFORMATION

In general, the scientific and technical data that make up basis of the flood hazard information is available for download, but project correspondence, internal reviews, and some administrative documentation is not available to the public. Also, older data may be restricted, especially files and map actions completed before 2006.

Public access to engineering data in the FRiSEL is only available once a flood study and the associated FIRM and FIS text updates are finalized. For access to the engineering data during the public review period, stakeholders should coordinate with the FEMA Regional Office.

Detailed instructions for using the FRiSEL are available online in the [FRiSEL User Guide](#).³

Assistance for the public to access FEMA's library is always available. Access to older data that is not available through FRiSEL and assistance from the professional staff that manages the FRiSEL to ensure that the most recent data is used may be found by contacting the FEMA Map Information eXchange (FMIX) via email at FEMAMapSpecialist@riskmapcds.com, by phone at 1-877-336-2627, or by using the FMIX's live chat service found on the FMIX's website at https://www.floodmaps.fema.gov/fhm/fmx_main.html. Fees are charged for assistance from the library staff.

Data Stored in the FRiSEL

There is a considerable amount of data stored in the FRiSEL for each map action that is initiated with the intent to change the flood hazard data shown on the FEMA flood map. Note that the FRiSEL also contains information for actions that have been denied, dropped, incomplete, or resulted in a violation. While some of these outcomes mean the action did not modify the effective flood hazard data, the backup data may still be of use in future map actions. Table 1 provides information on the categories of data that may be available for each map action type.

² North Carolina Cooperating Technical State Floodplain Mapping Program. "Restudy Manual, Version 2." (August 24, 2007). http://www.ncfloodmaps.com/pubdocs/ncfmp_restudy_manual_version2_8-27-07.pdf.

³ The *FRiSEL User Guide* is located at https://hazards.fema.gov/femaportal/wps/PA_MIPSearchEngine/help/Flood%20Risk%20Study%20Engineering%20Library%20User%20Guide.pdf.

Table 1: Types of Data Available from the FRISEL

TYPE OF DATA	STUDY	REVISION	LOMA/LOMR-F
Alluvial Fan Analysis	X		
Appeals	X		
Base Map	X		
Coastal Analysis	X		
Correspondence	X	X	
FIRM DB "Draft" ⁴	X		
Floodplain Boundary Standards (FBS) Reports	X		
Flood Elevation Determination Docket (FEDD) File	X	X	
Field Survey	X		
Hydraulic (Studies)	X	X	
Hydrologic (Studies)	X	X	
Letter of Final Determination (LFD) – Prepare Docket	X		
Perform IQA ⁵ – Base Map	X		
Perform IQA – Develop DFIRM Database	X		
Perform IQA – Develop Hydraulic Data	X		
Perform IQA – Develop Hydrologic Data	X		
Perform IQA – Develop Topographic Data	X		
Perform IQA – Perform Alluvial Fan Analysis	X		
Perform IQA – Perform Coastal Analysis	X		
Perform IQA – Perform Field Study	X		
Perform IQA – Perform Floodplain Mapping	X		
Preliminary DFIRM	X		
Preliminary FIS	X		
QR3 National DFIRM – Final (Quality Review)	X		
QR3 National DFIRM – Prelim	X		
Redelineation	X		
Supporting Artifacts	X	X	X
Topographic	X		
TSDN	X		
216-AD (Additional Data Letter)			X
Cover Letter		X	X
Correspondence/Data			X
ESA Documentation		X	X
Final Determination		X	X
Final Letter			X
116 Letter (Final Letter for LOMR)		X	
316 – PMR (Physical Map Revision)		X	
Annotations		X	
Best Available Data Letters		X	
Review Notes		X	
Special Response Letter		X	
Violation Letter		X	
Work Maps		X	
316 Letter		X	

⁴ FIRM – Flood Insurance Rate Map DB - Database

⁵ IQA – Independence Quality Assurance

FINDING DATA

With nearly 50 years of ongoing and continuous changes to the flood mapping produced for the Nation's communities, the FRiSEL, in conjunction with the FEMA Engineering Library, has a long history of tracking and archiving the changes to the various mapping platforms that the National Flood Insurance Program (NFIP) has used since the first flood hazard maps were created in the early 1970s.

Users should be aware that many locations have multiple models, studies, mapping, FIS revisions, appeal⁶ information, unincorporated (i.e., never used) calculations, and superseded data. It is the responsibility of the user to determine if data used in earlier studies or revisions remain valid. It is recommended that users run a duplicate effective model and confirm that it matches the current effective information.

Attention must also be given to the fluid nature of corporate boundaries in the United States. Communities may incorporate, consolidate, or annex adjacent territory; disincorporate or share responsibilities for an extra-judicial area; and any number of other municipal behaviors. Therefore, users should be aware of the jurisdictional history of the site in question to ensure an accurate search for all pertinent data.

Furthermore, over the years, FEMA has fundamentally changed the way it studies the flood risk of an area. When the Federal government began publishing flood risk hazard mapping, every incorporated jurisdiction (i.e., village, town, township, city, county, parish, etc.) had its own flood map and /or flood study. Countywide mapping, which collected all the jurisdictions of a county or parish into one set of published documents, began in the 1990s, and today FEMA's emphasis is on watershed mapping which may encompass all or part of multiple counties. Therefore, data, while generally tagged for each impacted community, may not be represented by current geographical boundaries. Therefore, a detailed search of adjacent communities (even across state boundaries) may be necessary to ensure a complete sweep of potential information that may be archived in the FRiSEL.

With 56 states and territories, over 3,000 counties (and equivalents), and 22,000 NFIP communities, the FRiSEL holds an enormous amount of studies, documents, mapping, and other information.

Accessing this information is generally straightforward, but understanding how to "retrieve" data from the FRiSEL can be very helpful.

Navigating to the "Tools and Links" and then the "Search Engineering Data" tabs on the MIP will bring the user to the FRiSEL Search page. There are several important "keywords" that will assist the user in finding the information in question. Typical keywords can be the name of the jurisdiction, case number, flooding source, address, or other identifying characteristic of the data.

⁶ Appeals are defined "as requests for changes to proposed BFEs and/or base flood depths". "Appeals, Revisions, and Amendments to National Flood Insurance Program Maps. A Guide for Community Officials." (December 2009). https://www.fema.gov/media-library-data/20130726-1727-25045-4766/mitdiv12_guide_cofficials_dec09.pdf

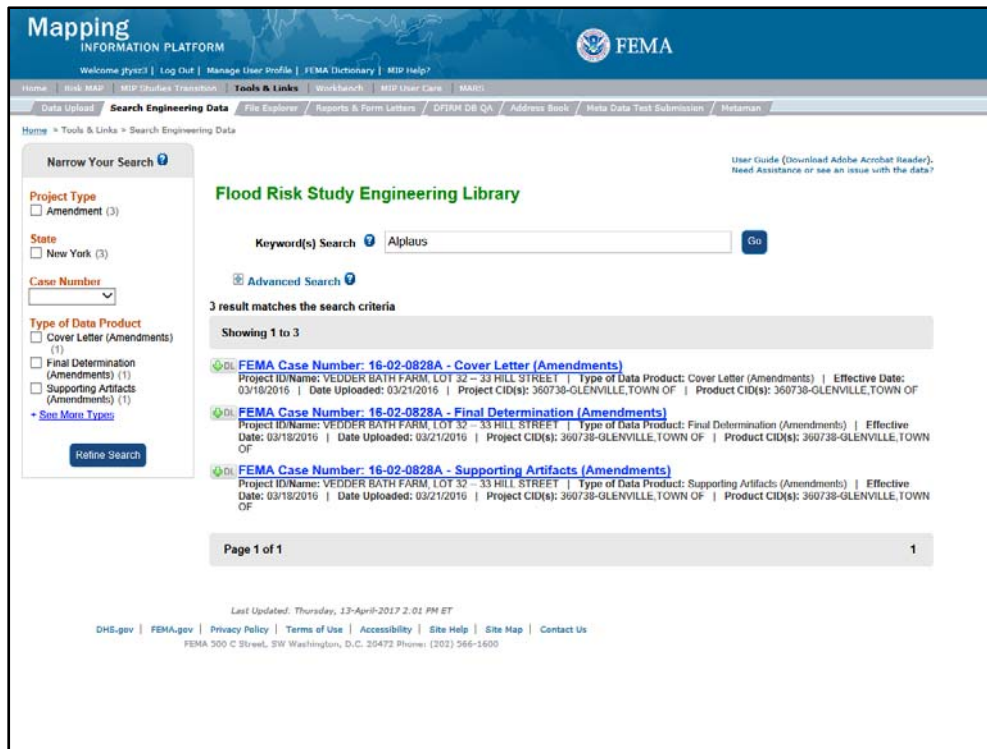


Figure 1: FRiSEL Search Results for "Alplaus".

Figure 1 shows that using the name of a specific geographical feature ("Alplaus") narrowed the potential results from the hundreds of thousands of files in the FRiSEL to three. However, in many cases there are not keywords such as addresses or uncommon place names that will narrow the search to a manageable degree. This issue can come up when the user is looking for data that is logically filed under keywords common to American geography such as "county", "Mill Creek", "Jackson", or the like. This problem can be especially acute if the user is looking for a broad range of information and having a case number is not enough.

To find more representative data to the location of interest, using the "Narrow Your Search" options box found on the upper left hand corner of the home page of the FRiSEL is effective for pruning the number of potential "hits".

Using various combinations of the series of dropdown checklists found in the "Narrow Your Search" box (project type, state, case number, type of data product, etc.) may result in a more focused return of products, easing any subsequent research.

Figure 2 shows the location of the "Narrow Your Search" box and the results of the tightened inquiry. Each of the data set descriptions will provide suggested types of data product to select during searches.

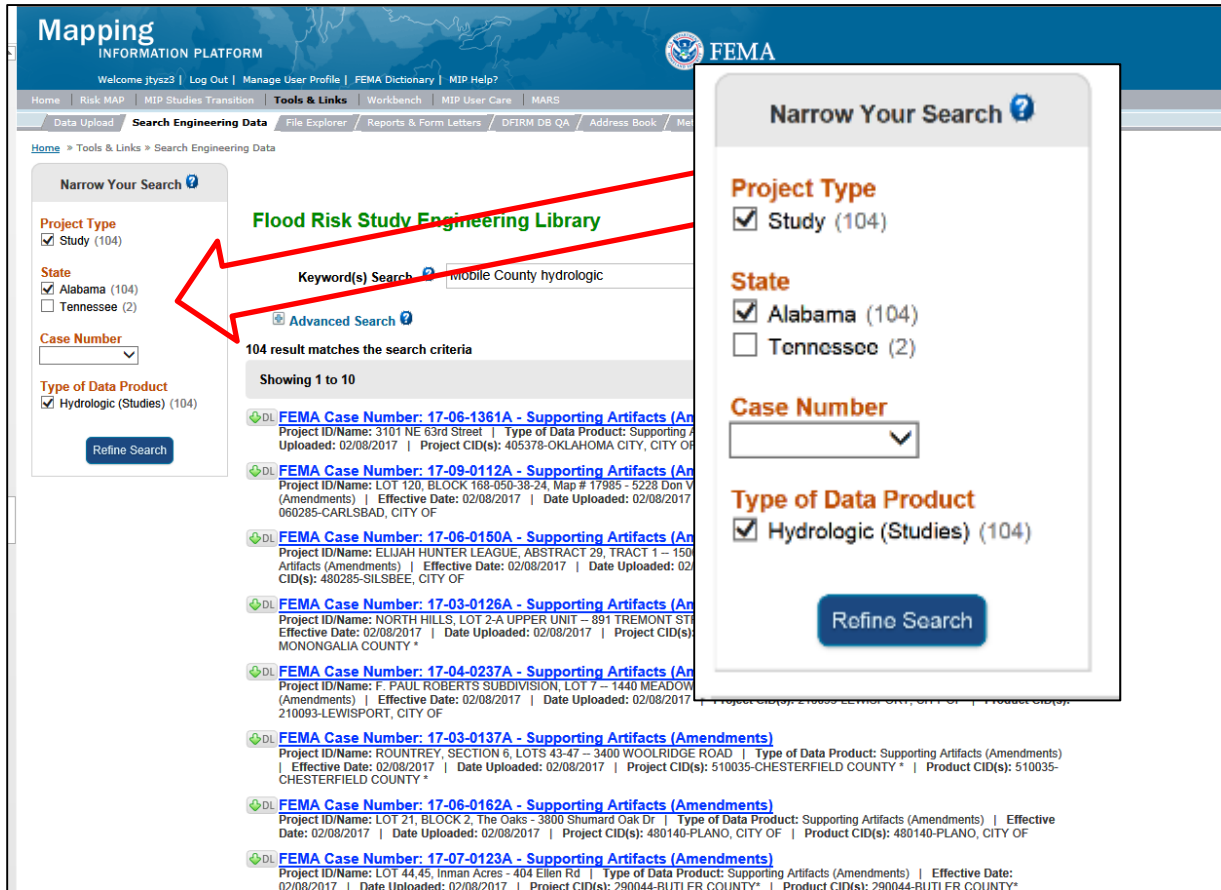


Figure 2: Search Results of Using the "Narrow Your Search" Function

It is important to emphasize several additional points about the FRiSEL's data:

- Some data may not be available to download but may show up in the search.
- At times, changes to flood mapping may supersede, some, but not all of a previous study, revision, or other map action.

For example, study data with a more recent study date than the effective LOMR may not necessarily be more accurate than the effective LOMR simply because of the newer study date. Individuals reviewing data from the FRiSEL, or any other source, should take care to examine the accuracy of all new study data as it relates to effective mapping products before superseding any effective map or revision. FEMA will supersede an effective map only where new study, revision, or amendment data is determined to be more accurate than the information used for the currently effective map. Please refer to the [Guidance for Flood Risk Analysis and Mapping LOMR Incorporation](https://www.fema.gov/media-library/assets/documents/34953)⁷ for all required accuracy standards for topographic, engineering/modeling, base map, and floodplain mapping data.

⁷ The LOMR Incorporation Guidance is located at: <https://www.fema.gov/media-library/assets/documents/34953>.

If users are not able to locate the information that they need from the FRiSEL for the area in question, users may contact FEMA's library at the points noted in "General Information" section of this document.

TYPICAL DATA SETS

As outlined in Table 1 above, many types of data are collected for various projects. This section provides greater detail of the characteristics of much (but not all) of the data found in the FRiSEL and FEMA Library. Again, it should be noted that due to changing requirements (e.g., Discovery meetings) and scopes of study, not all of the listed items are available for all communities that have been through a flood study, revision, or LOMC action on flood risk hazard maps prepared by FEMA.

In addition, information from other Federal agencies, FEMA, State, local governments, tribal agencies, public officials, and private firms may have contributed current and historic flood-related data including hydrology, infrastructure, hydraulics, land use, and other maps or documentation to various files in FEMA's repositories. This information may exist and provide pertinent information, but due to time and resource restraints, may not have yet been digitally cataloged. Many of these items are stored in FEMA's Engineering Library.

Table 2 provides a general overview of the products available within each data set described below. As explained above, the completeness of a particular data set may vary based on the age of the data and the standards in place at the time.

Table 2: Data Sets and Data Product Search

DATA PRODUCT SEARCH	TSDN	Conduct Scoping Meeting	Correspondence	Scoping	Field Survey	Topographic Data	Base Map	Supporting Artifacts	Floodplain Mapping	Coastal Analysis	Alluvial Fan Analysis	Hydrologic Modeling	Hydraulic Modeling	DFIRM Database Draft"	FBS Reports	Preliminary DFIRM	Prelim. QR3 National DFIRM	FEDD File	Appeals	Final DFIRM
DATA SET																				
Alluvial Fans	X										X									
Appeals																		X	X	
Base Map	X						X													
Coastal Analysis	X									X										
Draft FIRM													X							
Field Surveys	X				X															
Final Regulatory Products																				X
Flood Elevation Determination Docket Files																		X		
Floodplain Boundary Standards Overview	X														X					
Floodplain Mapping Data	X								X											
Hydraulics	X											X								
Hydrology	X										X									
Meeting Notes	X	X	X	X																
Preliminary Regulatory Products	X															X	X			
Redelineation	X								X											
Supporting Artifacts	X							X												
Technical Support Data Notebook	X																			
Topographic Data						X														

Meeting Notes

FEMA, State, and local leaders hold Discovery and other meetings with the community to review the analysis of flood risk data, identify and address concerns, and inform residents of the status of the potential or ongoing project. If a FIRM is needed, a “Kick Off” meeting marks the official start of risk identification and assessment for the project area. FEMA community meeting notes are kept in the backup data files in FRiSEL. *Type of Data Product Search: Conduct Scoping Meeting (Studies), Correspondence (Studies), Correspondence (Revisions), Correspondence/Data (Amendments), Scoping (Studies), TSDN (Studies).*

Field Surveys

Field survey data stored on FRiSEL consist of information on the evaluation of structures (bridges, dams, dikes, etc.) and/or establish cross section or transect placement along flooding sources. The field survey data help support the hydraulic and hydrologic tasks used to model the updated floodplains and can consist of sketches, survey data, survey field notebooks,

shapefiles, reports, and photos. The data can be found in the FRiSEL survey folder. *Type of Data Product Search: Field Survey (Studies), TSDN (Studies).*

Topographic Data

Topographic data stored on FRiSEL typically include newly purchased LiDAR data, existing (gathered) topographic data, and processed topographic data. Topographic data are stored in directories organized by whether the data are the original source data or the final processed data. Within those folders, the data are organized into sub-folders based on the type of data being submitted (e.g., point cloud, breaklines, digital elevation model, hydro-flattened or enforced, Triangulated Irregular Network, contours, etc., as applicable). See the [Elevation Guidance](#)⁸ document for information about elevation data types, elevation data accuracy standards and reporting, and elevation data acquisition. *Type of Data Product Search: Topographic (Studies).*

Base Map

Base map data comprises best available information that has been used by study contractors and leveraged from one or a combination of many sources, including but not limited to, FEMA; other Federal, State, or local government agencies; project stakeholders; and data clearinghouses. It is compiled during the early stages of a countywide, watershed, or physical map revision FIRM project. Base map data can include shapefiles (political boundaries, hydrographic features, parks, Federal boundaries, and transportation features) aerial imagery, metadata, and other documents. Please see the [Base Map Guidance](#)⁹ document for more information. *Type of Data Product Search: Base Map (Studies), TSDN (Studies).*

Supporting Artifacts

Supporting artifacts are the additional files and documentation used during the Discovery and Data Development tasks for Flood Risk Projects. Each of the Discovery and Data Development task folders contain a “Supplemental_Data” folder to capture these supporting artifacts. Examples of supporting artifacts include as-built drawings, survey notebooks, and documentation of high water marks. In general, supporting artifacts are all files and documents necessary to recreate or validate the results of the Flood Risk Project that are not otherwise captured within the task submittal folder structure. *Type of Data Product Search: Supporting Artifacts (Amendments), Supporting Artifacts (Revisions), Supporting Artifacts (Studies), TSDN (Studies).*

Floodplain Mapping Data

Floodplain mapping data are planimetric, or horizontal, representations of the results generated by revised hydrologic and hydraulic analyses. This includes spatial data (i.e., floodplain information, political boundaries, transportation features) prepared as described by the [FIRM](#)

⁸ The Elevation Guidance document is located at: <https://www.fema.gov/media-library/assets/documents/34953>.

⁹ The Base Map and FIRM Panel Layout document is located at: <https://www.fema.gov/media-library/assets/documents/34953>.

[Database Technical Reference](#)¹⁰ and draft FIS reports prepared as described by the [FIS Report Technical Reference](#).¹¹ Due to other influences, such as backwater, the data may not match exactly with the model results. Coverage of this data is limited to the revised flooding sources and does not include effective information for unrevised areas. This data can be found under the “Spatial_Files” folder, and can be used to revise the FIRM database, FIS Report, and FIRMs for all affected communities. *Type of Data Product Search: Floodplain Mapping (Studies), TSDN (Studies)*.

Coastal Analysis

Coastal analysis involves creating multiple complex models in the attempt to predict the behavior of wave action in coastal areas and consider various shoreline characteristics (beach erosion, berms, dunes, bluffs, cliffs, etc.) in the event of the 1-percent-annual-chance flood hazard. The data consist of coastal models and spatial data (transects, transect baselines, structures, etc.), as well as reports compiled by the study contractor. Please see the guidance for [Coastal Analysis](#)¹² for more information on coastal considerations. *Type of Data Product Search: Coastal Analysis (Studies), TSDN (Studies)*.

Alluvial Fans

Alluvial fan flooding originates at the alluvial fan’s apex and is characterized by high-velocity flows, active processes of erosion, sediment transport and deposition, and unpredictable flow paths. The data can include model analyses, project narratives, digital data, and metadata, and may analyze geomorphology, soil science, hydrology, and hydraulics. For further guidance, please reference the [Alluvial Fan Guidance](#).¹³ *Type of Data Product Search: Alluvial Fan Analysis (Studies), TSDN (Studies)*.

Redelineation

Redelineation is conducted during floodplain mapping to represent the results of the unrevised effective hydraulic analysis and display it on new or improved topographic and/or base map data. This includes spatial data prepared as required by the aforementioned [FIRM Database Technical Report](#) and draft FIS reports prepared as required by the [FIS Report Technical Reference](#). Coverage of this data is limited to the revised delineation and does not include effective information for unrevised areas. These data are used to revise the FIRM database, FIS Report, and FIRMs for all affected communities. *Type of Data Product Search: Floodplain Mapping (Studies), TSDN (Studies)*.

Hydrology

Hydrologic analysis determines the discharge-frequency relationships along the flooding source using a computer-based model. FEMA keeps a list of acceptable hydrologic models (some

¹⁰ The FIRM Database Technical Reference is located at: <https://www.fema.gov/media-library/assets/documents/34519>.

¹¹ The FIS Report Technical Reference is located at: <https://www.fema.gov/media-library/assets/documents/34519>.

¹² Coastal General Study Considerations Guidance is located at: <https://www.fema.gov/media-library/assets/documents/34953>.

¹³ Alluvial Fans Guidance is located at: <https://www.fema.gov/media-library/assets/documents/34953>.

based on location) on its website at: <https://www.fema.gov/hydrologic-models-meeting-minimum-requirement-national-flood-insurance-program>.

Hydrologic analyses can be divided into three types:

- Rainfall/runoff models,
- Regression equations, and
- Stream gage analyses.

Hydrology data, which is stored on the MIP, typically include the following directory structure and file contents: General, Correspondence, Simulations, and Supplemental Data. The models can be found in the “Simulations” folders. The “Supplemental_Data” folder contains database files and/or spatial files such as data and analyses for stream and rainfall gages and computations for regional regression equations such as output from the U.S. Geological Survey’s PeakFQ, NFF, or NSS computer programs (native format). *Type of Data Product Search: Hydrologic (Studies), Modeling Hydrology (Revisions), TSDN (Studies)*.

Important Note: As previously mentioned in the Finding Data section, there may be multiple models stored for any given location. To confirm that the right model has been identified, it is necessary to match the model results to the current effective information.

Hydraulics

Hydraulic analysis is performed to determine elevations associated with the water surface of each flood frequency studied and the extent to which the floodwaters for those events inundate otherwise dry land.

Flood frequencies studied are typically multi-profile and can include 10-year (10-percent-annual-chance), 50-year (2-percent-annual-chance), 100-year (1-percent-annual-chance), and 500-year (0.2-percent-annual-chance). In addition to the above profiles, some of the models will have 25-year (4-percent-annual-chance) and 1-percent-plus profiles.

A floodway is a portion of a floodplain that must be reserved (undeveloped) to pass the base flood without causing increases over a designated height (maximum of 1.0 foot). If an effective floodway has been designated, a new study will also have a floodway plan along with the multi-profile plan.

The list of acceptable hydraulic models may also be found on FEMA’s website at: <https://www.fema.gov/hydraulic-numerical-models-meeting-minimum-requirement-national-flood-insurance-program>.

Hydraulic data, which is stored on the MIP, typically include the following directory structure and file contents: General, Correspondence, Simulations, Profiles, Floodway Data Tables, Supplemental Data, and Spatial Files. The model files can be found in the “Simulations” folders. *Type of Data Product Search: Hydraulic (Studies), Modeling Hydraulics (Revisions), TSDN (Studies)*.

Important Note: As previously mentioned in the Finding Data section, there may be multiple models stored for any given location. To confirm that the right model has been identified, it is necessary to match the model results to the current effective information.

Draft Flood Insurance Rate Map

Before releasing a Preliminary FIRM, a draft FIRM is prepared. Draft FIRM data can be organized in a personal geodatabase or a file geodatabase composed of the base map data, floodplain data, and various tables. This spatial data can also be provided in shapefile format. FRiSEL stores the draft FIRM data temporarily; however, this information is superseded by the final FIRM data once the study becomes effective. *Type of Data Product Search: DFIRM DB 'Draft' (Studies)*.

Floodplain Boundary Standards Overview

The Floodplain Boundary Standards audit is designed to compare the proposed spatial floodplain boundary delineations (1-percent-annual-chance flood hazard water surface elevation) with the ground elevations (LiDAR, IFSAR, contour data) to calculate the variance between the two. The audit on FRiSEL should consist of Floodplain Boundary Standard audit points and a compliance form quantifying a pass or fail score. *Type of Data Product Search: FBS Reports (Studies), TSDN (Studies)*.

Preliminary Regulatory Products

Preliminary regulatory flood data include the FIRM geodatabase spatial files, FIRM images in PDF format, the FIS Report in PDF format, and the Summary of Map Actions (SOMA) documents. Public access to preliminary data during the public review period is provided through the Map Service Center and [FEMA's Preliminary Data Search Tool](#)¹⁴. Public access to flood study data is only available after the FIRM and FIS have been finalized. Following the publication of the effective flood risk products, any preliminary data available through the FRiSEL will have been superseded by the final effective data and should therefore be used for reference only.

- **Preliminary FIRM Panel PDF Files** – These are the preliminary map panels for a community on which FEMA has delineated the boundaries of the SFHA and base flood elevation (where determined), and the risk premium zones applicable to the community. See the [FIRM Panel Guidance document](#)¹⁵ for detailed information regarding FIRM panel mapping specifications.
- **Preliminary FIRM Database** – This is the preliminary geographic information system (GIS) data used in the FIRM production process, as well as tabular information in the FIS Report. The FIRM Database provides a standard, systematic method for FEMA to distribute comprehensive details of flood hazard mapping studies to the public and others in digital format. For a technical description of the individual spatial files and tables included in the FIRM geodatabase, please see the [FIRM Database Technical Reference](#).
- **Preliminary FIS** – This is a compilation and presentation of flood hazard data for specific watercourses, lakes, and coastal flood hazard areas within a community. When a flood study is completed for the NFIP, the information is assembled into an FIS Report. The FIS Report contains detailed information including all associated data tables,

¹⁴ The Preliminary Data Search Tools is located at: <https://hazards.fema.gov/femaportal/prelimdownload/>

¹⁵ FIRM Graphic Guidance is located at: <https://www.fema.gov/media-library/assets/documents/34953>.

figures, and flood profiles to document the Flood Risk Project(s)/Flood Study(ies). For more information regarding the content and format of the report, see the [Flood Insurance Study Report Guidance](#) document.

- **SOMA** – This is a FEMA-generated list delivered to the community that summarizes the LOMAs, LOMA-Fs, and LOMRs that are, or will be, affected by the physical update of the effective FIRM that results from the performance of a flood risk study.

Type of Data Product Search: Preliminary DFIRM (Studies), Preliminary QR3 National DFIRM – Prelim (Studies).

Appeals

Following the release of the preliminary FIRM and FIS, communities can provide new technical data to FEMA to appeal flood hazard information presented on the preliminary FIRM. This data can include appeal resolution, engineering models, shapefiles, reports, and other documents. For more information, see [Appeals, Revisions, and Amendments to National Flood Insurance Program Maps: A Guide for Community Officials](#)¹⁶. *Type of Data Product Search: Appeals (Studies), FEED File (Revisions), FEED File (Studies), TSDN (Studies).*

Final Regulatory Products

After all appeals are resolved, FEMA informs community officials through a [Letter of Final Determination](#) (LFD) that a new FIRM and FIS Report will become effective at the end of a 6-month period. Once the new effective FIRM takes effect, the FIRM and FIS are available through [FEMA's Flood Map Service Center \(MSC\)](#) and will affect floodplain development requirements and/or flood insurance rates. Below is a summary of Final Regulatory Products that are usually available once a study reaches completion. Other items often in the final package include the Final SOMA, official LFDs, Revalidation Letters, the Final TSDN, and all other study-related materials.

- **Effective FIRM** – This is the official map of a community on which FEMA has delineated the boundaries of the SFHA, the base flood elevation (where determined), and the risk premium zones applicable to the community. See the [FIRM Panel Guidance](#) document for detailed information regarding FIRM panel mapping specifications.
- **Effective FIRM Database** – The FIRM Database stores the digital GIS data used in the FIRM production process, as well as tabular information in the FIS Report. The FIRM Database provides a standard, systematic method for FEMA to distribute comprehensive details of flood hazard mapping studies to the public and others in digital format. For a technical description of the individual spatial files and tables included in the FIRM geodatabase, please see the [FIRM Database Technical Reference](#).
- **Effective FIS** – The Effective FIS is a compilation and presentation of flood hazard data for specific watercourses, lakes, and coastal flood hazard areas within a community. When a flood study is completed for the NFIP, the information is assembled into an FIS Report. The FIS Report contains detailed information about the study, including

¹⁶ Appeal, Revisions, and Amendments to NFIP is located at: <https://www.fema.gov/media-library/assets/documents/17930>

flood elevation data in flood profiles and data tables. For more information regarding the content and format of the report, see the [Flood Insurance Study Report Guidance](#) document.

- **Orthophotos** – These are digital orthoimagery files used as base maps for the FIRMs (if not previously submitted and stored with the base map submittal files).
- **MXD files** – These are the source FIRM panel and FIRM index map documents.

Type of Data Product Search: Final DFIRM (Studies).

Technical Support Data Notebook

The TSDN is developed throughout the duration of the project and submitted to the MIP in multiple packages, generally corresponding to the various project phases. It contains all of the essential data for a community, for which FEMA published a flood hazard map and revisions to that flood hazard map in accordance with FEMA [Standard ID \(SID\) 187](#). This ensures that data duplication is minimized, and through the TSDN checklist, the data developed for the project are documented in a standard format with locations noted, enabling a faster search and retrieval of both technical and administrative data associated with the project. The [FRiSEL User Guide](#) provides step-by-step instructions on how to conduct keyword and advanced data searches. The User Guide also describes how to narrow search results so users searching for a study's TSDN can narrow their keyword search based on Type of Data Product (TSDN). Additionally, FRiSEL staff are available to answer any questions users may have regarding the TSDN and how to navigate the TSDN checklist to locate study data.

The TSDN contains the following records that are not uploaded through one of the typical data capture points, such as Base Map, Modeling Hydraulics, Topographic, etc.:

- A project narrative and the TSDN checklist. The TSDN checklist provides the location of the data on the MIP where all essential engineering and due process documentation can be found in accordance with Part 67.3 of the NFIP regulations and as required under FEMA [SID 397](#).
- All of the quality review records for the lifecycle of the project in accordance with FEMA [SID 508](#).

Type of Data Product Search: TSDN (Studies).

Flood Elevation Determination Docket Files

The FEDD file (one PDF file per community), a component of the TSDN, is maintained by FEMA and includes all correspondence between FEMA and the community concerning a flood study (reports of meetings held among FEMA representatives, community representatives, the State NFIP Coordinator, private citizens, community contractors, or other interested parties; relevant publications, newspaper notices, LFD, FIS Report, etc.). A complete FEDD file includes all correspondence related to due process. Certain items are prepared by the mapping partner, and others are prepared by FEMA or its designee. Users should review the Post-Preliminary Deliverables Guidance document for details about FEDD file responsibilities and contents. Per the Data Capture Technical Reference, the FEDD file must be submitted as one PDF file per community. Files should be listed in chronological order. For a countywide study, this means

multiple FEDD files will need to be submitted. *Type of Data Product Search: FEDD File (Revisions), FEDD File (Studies).*