Guidance for Flood Risk Analysis and Mapping

Physical Map Revision (PMR)

November 2022

FEMA

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Requirements for the Federal Emergency Management Agency (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 (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/library.

Table of Revisions

The following summary of changes details revisions to this document subsequent to its most recent version in December 2020

Affected Section or Subsection	*Date*	*Description*
Section 3.1, Section3.1.3, Section 3.2.4.1, Section 3.2.5, Section 4.1, Section 5.1.2, Section 5.2.1, Section 5.2.2, Section 5.3.2, Section 5.4.2, and Section 5.5.2	November 2022	Added countywide base information for Automated Map Production for the Index. Included clarification on projection matching effective countywide projection. Included clarification on floodway data table attributes needed for L_XS_Elev. Included change to incorporate all LOMRs into FIS, regardless of PMR footprint.

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1. Automated Map Production (AMP)

To support greater automation within the Risk MAP Program, FEMA has developed a tool within the Mapping Information Platform (MIP) called Automated Map Production (AMP). AMP automates FIRM panel creation, replacing previous practices of manual cartography. The goal of AMP is to eliminate the need for manual edits or adjustments to labels on the FIRM panels and FIRM index.

AMP reads the data in a submitted FIRM database and uses a series of cartographic algorithms, with established rules of hierarchy, to autogenerate FIRM panels and indexes that comply with FEMA requirements through all study stages (e.g., draft, preliminary, and final). However, AMP does not change the engineering analysis, alter the FIRM database (i.e., geodatabase; shapefiles) or generate the profile. AMP does not fix errors in the submitted FIRM database (e.g., topology). It will continue to be the responsibility of the FIRM database producer to perform quality assurance / quality control (QA/QC) to make sure the submitted data meets all Risk MAP standards. Producers are expected to visually review the auto generated AMP panels to determine if they meet expectations or require changes. If updates are needed, the producer is expected to edit the FIRM database and then resubmit to the MIP as usual to begin the process over, to include required DVT submittals.

Producers need to understand how AMP impacts the guidance in this and other Risk MAP guidance documents. While the mission of AMP is to replicate the FIRM panel and FIRM index requirements as known today, there are slight changes to the output panels that do not directly align with other published FEMA guidance. AMP panels have slight variations from what producers and users have seen since the beginning of Risk MAP. FEMA has developed a best practice document available here: https://hazards.fema.gov/femaportal/usercare/guidesAndDocs/Documents/AMP_Best_Practices.pdf. Because AMP will be enhanced through future agile development cycles, changes will likely occur more frequently than the annual Guidelines and Standards (G&S) cycle. Therefore, the best practice model will be the most efficient way to provide up-to-date information on changes. Future edits to this document will be made to align the information between this and the AMP best practice document.

2. Physical Map Revision Overview

The objective of the Physical Map Revision (PMR) is to update the regulatory flood hazard data and ensure that the most current and up-to-date flood hazard data, including all new studies and Letters of Map Revision (LOMRs), are incorporated into the National Flood Hazard Layer (NFHL). PMRs are processed by FEMA when a portion of a community's flood hazards need to be revised and updating the full countywide regulatory products is not necessary. As a result, the updated flood hazard data will be used to create revised Flood Insurance Rate Map (FIRM) panels and a PMR FIRM Database.

Outlined in this guidance document is the process that Mapping Partners should follow when preparing and submitting PMRs. The roles and responsible parties for each phase are listed and the details of each responsibility are listed sequentially. A graphical representation of multiple LOMR

scenarios and how to address each of them is provided in Section 3.0. A summary of the PMR scenarios is provided in Section 4.0.

3. PMR Process Overview

There are three phases of a typical PMR project life cycle, each with distinct roles and responsibilities: PMR Project Planning, PMR Study Production, and NFHL Processing.

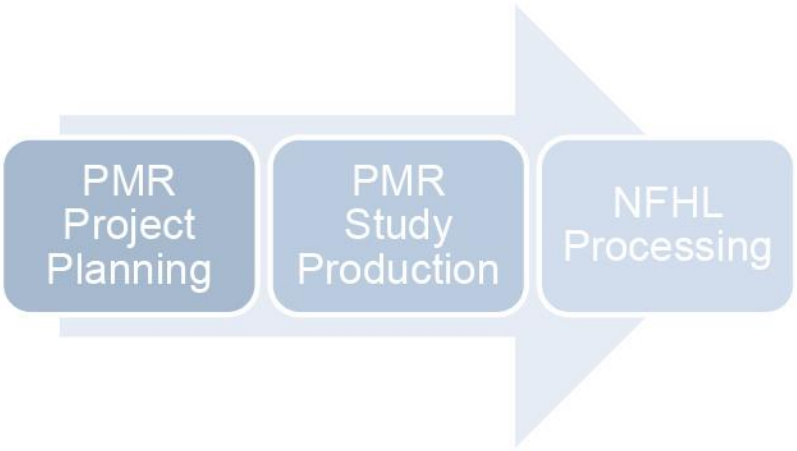

Figure 1: PMR Process

3.1. PMR Project Planning

PMR Project Planning is an initial phase of any PMR project and is the responsibility of the Regional Project Officer and the PMR Mapping Partner before creating the Mapping Activity Statement (MAS) or Scope of Work (SOW). They also need to verify that all the relevant steps to complete the PMR properly are included in the MAS. Some of the critical decisions that need to be made during this phase are detailed in the following subsections of PMR Project Planning. Cost and schedule should be reviewed for the incorporation of all LOMRs into the FIS for counties or communities that contain a high amount of effective LOMRs.

3.1.1. DEFINING THE PMR FOOTPRINT

The footprint of the PMR is defined as the boundary or boundaries of the FIRM panels affected by the PMR's study area, per Standard ID (SID) #551. The expected flood zone changes resulting from the PMR should be considered when defining the project. At this stage, the footprint is for planning purposes and can be revised after data development begins.

3.1.2. DECIDING ON THE FLOOD INSURANCE STUDY AND FIRM DATABASE FORMAT

Several PMR scenarios exist depending on the format of the existing Flood Insurance Study (FIS) Report and FIRM Database. The PMR Mapping Partner and Regional Project Officer will decide which scenario best fits the PMR at this stage. The decision made during this step regarding which PMR

scenario to follow will dictate future submission guidelines and requirements as well as the spatial extent of the PMR FIRM Database. Possible PMR scenarios are outlined in Section 4.0.

3.1.3. BASE MAP DETERMINATION

The base map used for the PMR should reflect the landscape or development changes that are being reflected in the PMR study. All existing base map standards, formats, and specifications found in FEMA's Guidelines and Standards are to be followed. For PMRs, base map features other than the political area only needs to be updated within the PMR footprint, unless using AMP. Water line and transportation features will need to be updated for the index to be produced in AMP. Updates to local data should be acquired from the local source if possible. Degrading of base map data should be avoided; use of base map data that are older or contain less information should be avoided. Per SID#308 the hydraulic structures should also be updated; however, hydraulic structures reflect the hydraulic models. Therefore, hydraulic structures should be updated based on the modeling rather than solely on the base map. For additional guidance on base map data and FIRM panel suffix incrementing please refer to the Base Map and FIRM Panel Layout Guidance document. If utilizing AMP, imagery is no longer required for the base map submittal.

3.2. PMR Study Production

PMR Study Production is the middle phase of any PMR project. The PMR Mapping Partner is responsible for all study production, Mapping Information Platform Data Capture Technical Reference submittals, post-preliminary processing, and risk assessment processes included in the MAS or SOW. LOMRs need to be continuously evaluated as discussed in Section 3.0, because the LOMR production team will continue to accept, evaluate, and process LOMR requests as they are received. For PMRs, all current guidelines and standards for the preparation of digital data should be followed. The study production phase tasks of a PMR project are detailed in the following subsections of PMR Study Production.

3.2.1. FLOOD STUDY ENGINEERING

This phase includes all hydrologic and hydraulic engineering performed within the PMR study area as defined within the MAS or SOW.

3.2.2. FLOODPLAIN DELINEATION

During the Floodplain Delineation phase, it may be necessary to revise the PMR footprint in cases where revised flood hazard data extend beyond or fall short of FIRM panels that were previously identified.

3.2.3. RECEIVE NFHL EXTRACT AND MERGE WITH PMR FOOTPRINT

The NFHL shall be the initial digital flood hazard mapping source of the PMR, per SID#363. If available, during the Flood Study Engineering stage of the PMR, the PMR Mapping Partner should

acquire data from the NFHL that cover the PMR's footprint. This is to ensure that the most recent flood hazard dataset, including all current LOMRs, is being used.

3.2.4. DATA DEVELOPMENT AND DATABASE

PMR FIRM Databases require the same care in data validation, integrity, and topology as full countywide FIRM production studies. Special care should be taken to maintain a node-to-node edgematch between flood hazard boundaries from the PMR and the NFHL. This applies to other mapped data as well and is not limited to flood hazards. Though Base Flood Elevations (BFEs) are not always required on 2011 or new specification panels, it is required to carry over any BFEs that are on adjacent panels so the BFEs in the NFHL do not end at a panel boundary. BFEs should only terminate at flood boundaries not panel boundaries. Please refer to the FIRM Database Guidance document for additional information about edgematching. Edgematching issues at the PMR footprint boundary within the community should be avoided. Make sure to expand your PMR footprint if necessary; changes made to data outside of the newly effective panels will not be incorporated into the NFHL.

In addition to edgematching the flood hazard boundaries, the FIRM Database has additional data and attributes that should be aligned, if possible. Changes to the Start IDs used by the Floodway Data Tables, FIS Report, and various tables within the FIRM Database should not change from the data pulled from the NFHL unless additions are being made. The source listed for all spatial data, if not updated from the data pulled from the NFHL, should retain the source citation information from the NFHL. Any sources within the NFHL not being completely replaced by the PMR should be included in the metadata to ensure that the metadata remains at a countywide scale. The PMR scenario chosen during PMR Project Planning will dictate the submission guidelines and requirements. Possible PMR scenarios are outlined in Section 4.0.

FIRM Database needs for areas outside the PMR study area

While the FIRM Database is usually submitted based on the PMR footprint, depending on the PMR scope the area within the PMR footprint but outside of the studied streams may not be fully updated. However, all data submitted should still be updated to meet current FIRM Database specifications in order to pass DFIRM Verification Tool (DVT) checks, standards, and quality reviews. DVT checks, standards, and quality reviews are not limited to the studied streams. Data from the NFHL for these areas should be reviewed for accuracy and completeness according to SID# 507 to ensure errors in the NFHL do not propagate onto the PMR panels. If errors are found, they should be corrected. These should be communicated with the region if they are severe enough to change the scope of the project. The S_Submittal_Info polygon for the floodplain mapping task, and/or hydraulics task should be used to define the area of revised streams. The S_FIRM_Pan should be submitted based on the PMR footprint; However, the index and the panel indicator on the FIRM panels should still be countywide. The political boundaries for the entire county should be updated within the FIRM Database regardless of whether the basemap task was funded and it should be updated for the entire county regardless of PMR footprint. If utilizing AMP, S_FIRM_Pan, S_Wtr_Ln, S_Trnsport_Ln

will be submitted for the entire county or communitywide study. The L_Source_Cit table should represent all sources listed within the countywide metadata.

The scenarios listed in Section 4.0 include guidance about possible exemptions on updating the database if not updating the FIS to the latest FIS Database Technical Reference. However, there are certain tables that should be provided if available for studies regardless of updating the FIS. These tables are L_Comm_Info, L_Comm_Revis, L_Cst_Tsct_Elev, L_Meetings, L_MT2_LOMR, L_Mtg_POC and L_XS_Elev for the 1% annual-chance event.

The profile baseline for streams being revised by the PMR should be updated to include calculated Z and M values to represent the station and the water surface elevation. At a minimum, these updates should include the entire portion of the updated stream that falls within the PMR footprint. These may need to extend outside of the PMR footprint due to the nature of the 3D line to keep Z values intact. For streams within the PMR footprint, but not being updated by the PMR, the null values in the 3D line from the NFHL are not required to be updated. Profile baselines without Z and M values, as well as other features for unrevised stream reaches, should retain the version ID from the NFHL.

Table 1 below details the fields within tables in the FIRM Database that may be exempt from population due to not updating the FIS.

Table 1: FIS Database Components

Table	Field	Table	Field
S_ALLUVIAL_FAN	METH_DESC	S_LEVEE	FREEBOARD
S_CST_TSCT_LN	WHAFIS_TF	S_LEVEE	PAL_DATE
S_DATUM_CONV_PT	QUAD_NM	S_LEVEE	LVDBASE_ID
S_DATUM_CONV_PT	QUAD_COR	S_LEVEE	OWNER
S_DATUM_CONV_PT	FROM_DATUM	S_LEVEE	LEN_UNIT
S_DATUM_CONV_PT	TO_DATUM	S_NODES	NODE_DESC
S_DATUM_CONV_PT	WTR_NM	S_SUBMITTAL_INFO	TOPO_SRC
S_DATUM_CONV_PT	CONVFACTOR	STUDY_INFO	LANDWD_VAL
S_DATUM_CONV_PT	LEN_UNIT	L_MANNINGSN	CHANNEL_N
S_GAGE	WTR_NM	L_MANNINGSN	OVERBANK_N
S_GAGE	DTA_ACCESS	L_XS_ELEV	FW_WIDTH
S_GAGE	GAGE_DESC	L_XS_ELEV	FW_WIDTHIN

Table	Field	Table	Field
S_GAGE	DRAIN_AREA	L_XS_ELEV	NE_WIDTH_L
S_GAGE	AREA_UNIT	L_XS_ELEV	NE_WIDTH_R
S_GEN_STRUCT	LOC_DESC	L_XS_ELEV	WSEL_WOFWY
S_HWM	WTR_NM	L_XS_ELEV	XS_AREA
S_HWM	LOC_DESC	L_XS_ELEV	AREA_UNIT
S_HWM	EVENT_DT	L_XS_ELEV	VELOCITY
S_HWM	ELEV	L_XS_ELEV	VEL_UNIT
S_HWM	LEN_UNIT	L_XS_ELEV	WSEL_FLDWY
S_HWM	V_DATUM	L_XS_ELEV	WSEL_INCRS
S_HWM	HWM_SOURCE	L_XS_ELEV	LEVEE_TF
S_HWM	APX_FREQ	L_XS_ELEV	LVSCENARIO
S_LEVEE	BANK_LOC	L_XS_ELEV	WSELREG_LL
S_LEVEE	USACE_LEV	L_XS_ELEV	WSELREG_RL
S_LEVEE	DISTRICT	L_XS_ELEV	FREEBRD_LL
S_LEVEE	PL84_99TF	L_XS_ELEV	FREEBRD_RL
S_LEVEE	CONST_DATE	L_XS_ELEV	CALC_WO_BW
S_LEVEE	DGN_FREQ		

The FIRM Database Technical Reference Table 2 contains a column that indicates if a table contains an FIS database component.

Version ID

The version ID for the PMR can be determined from the Risk MAP ID webpage. This is the version number that will be on the FIRM panel, FIS Report, and in records in the FIRM Database that are updated during the study. Attributes of features outside of the updated study streams do not need to have their Version ID updated, unless the Region has opted to have the database completely updated.

Create Revised FIS, FIRM Panels, and Preliminary Distribution

The PMR panels must be prepared using FEMA's latest standards found in the FIRM Panel Technical Reference of the Guidelines and Standards, regardless of the PMR scenario chosen. However, no changes to the representation of BFEs, cross sections, or other features are required on FIRM panels outside of the PMR study area, unless these areas were found to be incomplete or incorrect during the review of the data outside of the PMR study area. In all cases per SID #287, each revised FIRM panel affected by the PMR should get a new effective date and have its suffix advanced to the next letter. This includes advancing the suffix on the index of revised panels that are not printed. PMR FIRM panels should be created in the same projection to match the effective countywide projection.

The revised FIS should incorporate all the LOMRs within the county, including footnotes on floodway data tables and profile of the LOMR case number that was incorporated into the FIS, but not on the FIRM panels outside of the PMR footprint.

Footnote example: Cross-section data based on LOMR XX-XX-XXXXP not incorporated on FIRM, this also impacts the profile for these cross-sections.

This can be applied to the cross-section letter or individual attributes within a cross-section record.

Metadata created for a PMR should be submitted in countywide format at all times. The metadata should include all effective source information for data that have not been entirely replaced by the PMR study. This includes any changes to base map and study data that will not be replaced in the NFHL. However, the EADETCIT line in the overview section will need to list only the tables being submitted for the PMR for the DVT to be able to check the data.

3.2.5. LETTER OF FINAL DETERMINATION (LFD)

After the 30-day review period or 90-day appeal period, data will need to be prepared for the LFD. The PMR Mapping Partner is responsible for incorporating any effective LOMRs within the PMR project area during the PMR project's time frame up until 60 days before the LFD. LOMRs that are issued less than 60 days before the LFD but before the PMR project's effective date will be distributed by FEMA with a note for reissuance with the new effective date. The PMR scenario chosen during PMR Project Planning will dictate the submission guidelines and requirements. Possible PMR scenarios are outlined in Section 4.0.

3.3. NFHL Processing

NFHL Processing is the final phase of the PMR project. The Regional Flood Hazard Layer (rFHL) datasets serve as the staging environment for flood hazard updates before they are posted to the NFHL. It is the responsibility of the regional designee responsible for rFHL maintenance to receive the PMR FIRM Database, check for compliance to all standards, incorporate data into the rFHL, and submit to the Customer and Data Services provider for loading into the NFHL. The steps are detailed in the NFHL Guidance document.

4. LOMR Incorporation Timeline for PMRs

Four components of a PMR are highlighted in the following timeline: the NFHL dataset, the PMR FIRM Database, the FIRM/FIS, and LOMR datasets. The number shown in each circle along each study component's timeline represent sample LOMRs. The numbers on the "LOMR" line represent the timing of when each LOMR becomes effective, and the numbers along the other three lines (NFHL, PMR FIRM Database, and FIRM/FIS) represent the timing of when the LOMR is incorporated into each respective component (if applicable). The numbers on the timeline also correspond directly with the LOMR number's location on the sample map below. To use this schematic, identify the geographic location of a LOMR's number on the scenario map and then locate that LOMR number on the timelines to track that LOMR's incorporation status and relationship with the PMR. Unless otherwise noted, standard procedures should be followed.

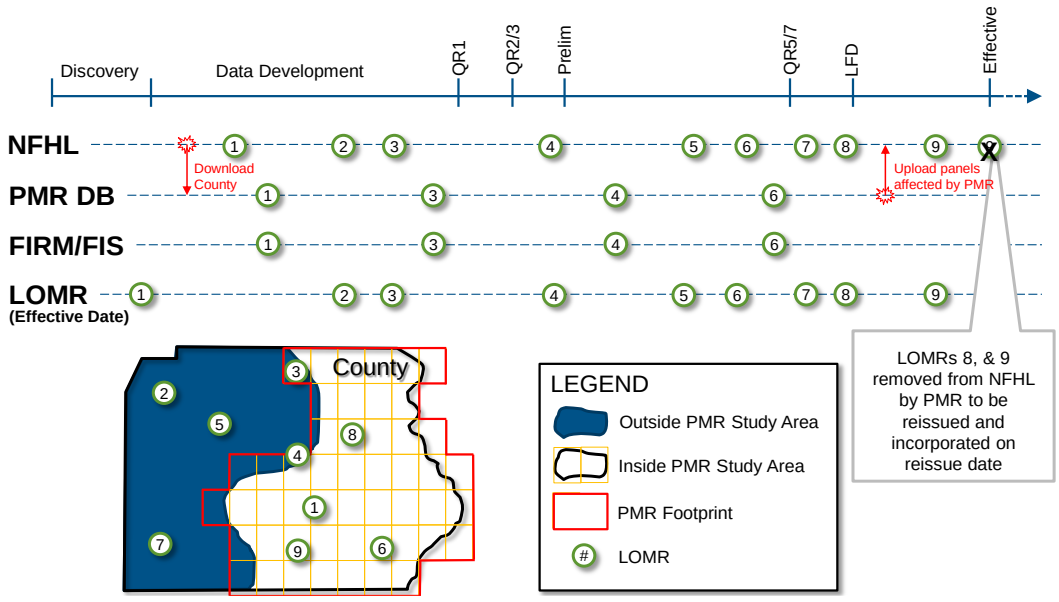

Figure 2: LOMR Incorporation Timeline for PMRs

4.1. Sample LOMR Scenarios

- LOMR 1 went effective during the Discovery phase. Due to a delay, the LOMR was not incorporated into the NFHL within 0 –10 days of its effective issuance. LOMR 1 was incorporated into the NFHL during the Data Development phase. LOMR 1 should be incorporated into the PMR FIRM Database and FIS by the PMR Mapping Partner.

- LOMR 2 is outside the PMR footprint and will be incorporated into the NFHL during normal NFHL maintenance. LOMR 2 should be incorporated into the FIS by the PMR Mapping Partner.

- LOMR 3 is on a flooding source outside of the PMR study area but is located within the PMR footprint. LOMR 3 also went effective during the Data Development phase. LOMR 3 was incorporated into the NFHL within 0 –10 days of its effective issuance. Even though LOMR 3 was

on a flooding source outside of the PMR study area, it falls within the PMR footprint and will be incorporated into the PMR FIRM Database and FIS by the PMR Mapping Partner.

- LOMR 4 is located on multiple panels where one panel is within the PMR footprint, and one is outside the PMR footprint. Since this LOMR went effective and was incorporated into the NFHL after the Data Development phase, the portion of the LOMR that falls within the PMR footprint should be incorporated into the PMR.

Note: If the entire LOMR can be included in the PMR without increasing the PMR panel count by more than 15%, then the PMR footprint shall be expanded to include all FIRM panels that the LOMR revised. This assumes that panels added to the PMR footprint do not also contain additional LOMRs that cross over into additional FIRM panels thereby exceeding the 15% threshold.

- The following are associated guidelines when the entire LOMR is not incorporated, because it falls partially outside the PMR footprint and would result in a larger than 15% increase in panel count if it were to be fully included:

    - The FIS Report should be updated to incorporate the entire LOMR including any revised profiles or related tables.

    - The Summary of Map Actions (SOMA) should show that only the LOMR panels within the PMR footprint have been incorporated.

    - The portion of the LOMR outside the PMR footprint will be reissued the day after the PMR goes effective. The reissued LOMR will only revise the unrevised FIRM panels outside the PMR footprint; it will not include any FIS Report elements (Profiles, tables, etc.) in consideration of the fact that the entire LOMR will be included in the accompanying FIS Report revision.

- LOMR 5 is outside the PMR footprint and will be incorporated into the NFHL during normal NFHL maintenance. LOMR 5 should be incorporated into the FIS by the PMR Mapping Partner.

- When it was incorporated into the NFHL, LOMR 6 was located within the PMR footprint. The PMR Mapping Partner is responsible for incorporating the LOMR into the PMR FIRM Database and FIS prior to submitting the PMR for Quality Review (QR) 5/7.

- LOMR 7 is outside the PMR footprint and will be incorporated into the NFHL during normal NFHL maintenance. The PMR Mapping Partner will not incorporate this LOMR into the PMR FIRM Database or the FIS. This is the case, because the LOMRs will be reissued with a new case number and effective date based on the FIS revision. The LOMR production team should include a note in the LOMR document about reissuance when issued within 60 days of LFD. LOMR production is typically held up between LFD and the effective date for communities with an ongoing PMR, but LOMRs can go effective during this time.

- LOMRs 8 and 9 are inside the PMR footprint but go effective between the onset of the PMR QR 5/7 submission and the LFD or effective date. These LOMRs will be incorporated into the NFHL during normal NFHL maintenance. The PMR Mapping Partner will not incorporate either of these LOMRs into the PMR FIRM Database and should list these LOMRs as superseded in the final SOMA. This is the case, because the LOMRs will be reissued with a new case number and effective date based on the PMR-revised panels. The LOMR production team should include a note in the LOMR document about reissuance when issued within 60 days of the LFD. LOMR production is typically held up between the LFD and the effective date for communities with an ongoing PMR, but LOMRs can go effective during this time. LOMR 9 demonstrates the process if a LOMR gets issued during this period of time. LOMRs 8 and 9 will then be replaced by the PMR study, reviewed by the Mapping Partner responsible for LOMR production and incorporated during normal NFHL maintenance when reissued.

- LOMRs 1, 3, a portion (or all) of 4, and 6 should be incorporated into the PMR FIRM Database by the PMR Mapping Partner. LOMRs 2, 5, and 7 are outside of the PMR footprint and will be incorporated during NFHL maintenance. LOMRs 8 and 9 are not incorporated into the PMR FIRM Database and will be incorporated during NFHL maintenance. LOMRs 8 and 9 will be removed from the NFHL when the PMR is incorporated, and they will be reissued by the LOMR production team and incorporated into the NFHL. The PMR Mapping Partner should notify the PTS MT-2 team for the region for any LOMRs that require reissuance.

LOMRs are typically incorporated into the NFHL within 0–10 days of their effective dates. It is best for PMR Mapping Partners to download county NFHL data from the Flood Map Service Center as late as possible during Data Development to avoid duplicating the LOMR incorporation efforts of the Regional designee responsible for the rFHL.

5. PMR Scenarios

During a PMR, revised FIRM panels will be submitted in the graphic layout as specified in the FIRM Panel Technical Reference. The NFHL for all digital communities has been converted to the 2013 schema defined in the FIRM Database Technical Reference. All PMR FIRM Database submissions will also be required to conform to this schema. It is preferred that the FIS Report be updated to the format defined by the FIS Report Technical Reference. FEMA recognizes there is not always enough benefit to justify the cost when small areas of a community or county are updated by a PMR. In these cases, it is up to the Regional Project Officer to determine how updates to the FIS Report will be scoped. Table 2 presents guidance for how the PMR study components should be prepared given different scenarios (see notes for specifics on scenarios).

Table 2: PMR Scenarios

Scenario	Existing NFHL Digital Data	Existing FIS Report	Update Scope Determination	Revised FIRM Database Requirements	Revised FIS Report Requirements	Revised FIRM Panel Requirements
1	August 2013 or newer schema	2003 Appendix J format	Do not update FIS Report to FIS Report Technical Reference format	FIRM Database Technical Reference	Remains in 2003 Appendix J format	Create using FIRM Panel Technical Reference
2	August 2013 or newer schema	2003 Appendix J format	Update FIS Report to FIS Report Technical Reference	Entire Database should be updated to FIRM Database Technical Reference schema regardless of PMR scope	Entire FIS Report updated to FIS Report Technical Reference	Create using FIRM Panel Technical Reference
3	August 2013 or newer schema	Procedure Memorandum 66 or FIS Report Technical Reference format	No format update requirements	FIRM Database Technical Reference	FIS Report Technical Reference	Create using FIRM Panel Technical Reference
4	No NFHL data	2003 Appendix J format	Do Not Update FIS Report to FIS Report Technical Reference format	FIRM Database Technical Reference	Remains in 2003 Appendix J format	Create using FIRM Panel Technical Reference
5	No NFHL data	2003 Appendix J format	Update FIS Report to FIS Report Technical Reference format	FIRM Database Technical Reference	Entire FIS Report updated to FIS Report Technical Reference format	Create using FIRM Panel Technical Reference

NOTES:

The NFHL was converted to the 2013 FIRM Database schema and deployed in June 2013. The following scenarios provide guidance on when to use the current specification versus the 2003 specification. In some very few cases, Mapping Partners may use the 2011 specification. The guidance for this is as follows:

- FEMA Regions should request that Mapping Partners deliver in the FIRM Database Technical Reference, FIRM Panel Technical Reference, or FIS Report Technical Reference format.
    - This is recommended for projects that were not started by the time the NFHL was converted (June 2013).
    - This is recommended when a Mapping Partner is scoped to produce products in conformance with the 2011 Appendix J, K, or L specifications but has not reached the Develop FIRM Database task, whenever possible.
    - It is strongly urged to update to the FIRM Database Technical Reference schema when a 2011 Appendix L FIRM Database has already gone preliminary, since the revisions from the 2011 Appendix L schema to the FIRM Database Technical Reference are quite minor. Details of the conversion needs can be found in the NFHL Guidance document.

FEMA Regions and Regional Service Centers should coordinate with Cooperating Technical Partners to get them access to the appropriate templates and guidance documents. These documents can be obtained from the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping website. The following pages provide five scenarios with associated guidance for the processing of the FIRM Database, FIS Report and FIRM panels.

5.1. PMR Scenario 1

Acquired data from the NFHL are in FIRM Database Technical Reference schema and the effective FIS Report and FIRM panels are in the 2003 Appendix J and K formats. The Regional decision on the PMR scope does not include updating the FIS Report to the FIS Report Technical Reference specifications because of a small PMR footprint or prioritizing cost over ease of use of the revised products.

5.1.1. FIRM DATABASE REQUIREMENTS FOR SCENARIO 1

The FIRM Database will remain in the FIRM Database Technical Reference format.

- FIS-only tables or fields will be populated with applicable <null> values.
- Submit data covering the PMR footprint only.

5.1.2. FIS REPORT REQUIREMENTS FOR SCENARIO 1

The FIS Report will remain in the 2003 Appendix J format.

- Add revisions to the FIS Report body and incorporate any previous Section 10.0 revisions. All LOMRs should be incorporated into the FIS floodway data tables and profiles.

- As outlined in SID# 501, an appendix (Appendix A) must be added at the back of the FIS Report to include the Notes to Users (Figure 2 in the FIS Report Technical Reference) and FIRM Legend (Figure 3 in the FIS Report Technical Reference) information.

- As outlined in SIDs#504 and #505, if the FIRM Index is not being updated to the format represented in the FIS Report Technical Reference, the Map Repositories table (Table 31 in the FIS Report) and Listing of National Flood Insurance Program (NFIP) Jurisdictions (Table 1 in the FIS Report) must also be included within this appendix.

5.1.3. FIRM PANEL REQUIREMENTS FOR SCENARIO 1

PMR footprint revised panels will be created using the FIRM Panel Technical Reference specifications.

- The revised FIRM Index may remain in the 2003 Appendix K format.

5.2. PMR Scenario 2

Acquired NFHL data are in the FIRM Database Technical Reference schema and the effective FIS Report and FIRM panels are in the 2003 Appendix J and K formats. The Regional decision on the PMR scope includes updating the FIRM Database and FIS Report to the FIRM Database Technical Reference schema and the FIS Report Technical Reference format to promote ease of future product use and revision.

5.2.1. FIRM DATABASE REQUIREMENTS FOR SCENARIO 2

The FIRM Database will remain in the FIRM Database Technical Reference schema.

- Data for FIS Report tables outside the PMR footprint may be incomplete if the tables were not part of the effective FIS Report. The exception to this will be for LOMRs, all LOMRs will be included in their entirety in the FIS Report.

- No data outside the PMR footprint are modified from the effective data. This should include LOMRs that have been incorporated into the NFHL.

- No LOMRs outside of the PMR footprint are shown as incorporated in the SOMAs. The LOMR data should be sewn into the FIRM Database but attributed as effective.

- Submit the countywide FIRM Database for any tables that are needed, or linked to any spatial features, to populate the countywide FIS using the FIRM Database.

    - Countywide tables include:

        - L_Comm_Info – confirm addresses within the L_Comm_Info table to create the map repository table.

- L_Comm_Revis
- L_Cst_Model- if applicable
- L_Cst_Struct- if applicable
- L_ManningsN
- L_Meetings and L_Mtg_POC – only current FIS study meetings are needed; this will append to the NFHL for any historic study meetings.
- L_MT2_LOMR
- L_Pol_FHBM- if applicable
- L_Source_Cit – countywide to match the countywide metadata, must include all references listed in FIS Tables 21 and 22.
- L_Summary_Discharges – Node information needs to be created for areas within the PMR study area; dummy nodes can be created in the center of the county or use the null value for the node ID for studies outside the PMR footprint.
- L_Summary_Elevations – for each mapped lake (not found within a profile baseline), a node should be created and attributed with a node type of reservoir.

- These tables should be clipped to the related features that fall within the PMR footprint. L_Cst_Tsct_Elev, L_Pan_Revis, L_Profil_Bkwtr_El, L_Profil_Label, L_Profil_Panel, L_XS_Elev and L_XS_Struct. All lettered cross-sections that fall within PMR panels should be populated with all floodway data table information in L_XS_Elev and the FIRM database and FIS should have a one-to-one consistency between them. Floodway data table attributes include floodway width, section area, mean velocity, 1% annual-chance flood water surface regulatory elevation, without floodway elevation, with floodway elevation, and elevation increase.

5.2.2. FIS REPORT REQUIREMENTS FOR SCENARIO 2

The revised FIS Report must be prepared in the FIS Report Technical Reference format.

- FIS Report tables will reflect the total incorporation of any LOMR that crosses the PMR footprint but was not completely included in the FIRM revision.
- LOMRs that fall entirely outside the PMR footprint will be included in the FIS Report floodway data tables and profiles.

- As shown in the example below, the Incorporated Letters of Map Change (LOMC) table (Table 26 in the FIS Report) will address LOMRs that cross the PMR footprint that are not included in their entirety in the FIRM revision.

Please note that while this table only includes LOMCs issued on the FIRM panels updated by this map revision, all other components within the FIS include all LOMRs issued prior to effective date.

Table 26: Incorporated Letters of Map Change

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
10-10-0012P	01-01-2010	Inundation River	1234C0234E 1234C0244D *
10-10-0014P	01-01-2005	North Fork Inundation River	1234C0234E

1.* Although a portion of LOMR 10-10-0012P falls within the scope of this map revision, panel 1234C0244D was not revised. Therefore, users must continue to refer to the annotated FIRM attachment for this LOMR for FIRM panel 1234C0244D.

Figure 3: FIS LOMR Information

- FIS Report tables will be populated for areas outside of the PMR footprint only for data in the existing FIS Report. As outlined in the FIS Report Technical Reference, the information needed to fully fill in some of the FIS Report table fields may be unknown, may be unavailable from the previous FIS Report, or simply may not be scoped to be populated. In these cases, it is acceptable to manually populate those table entries (or use a footnote) with a value of "Unknown," "Not Included," or "Not Provided."

- In the Community Map History table (Table 27 in the FIS Report), the "FIRM Revision Date" is not updated for communities outside of the PMR footprint.

- The Listing of NFIP Jurisdictions table (Table 1 of the FIS Report) will not reflect corporate limit changes outside of the PMR footprint unless updated political boundaries are made available

during the PMR process. If updated political boundaries are made available outside the PMR footprint they will be reflected on the FIRM Index and the Listing of NFIP Jurisdictions table.

5.2.3. FIRM PANEL REQUIREMENTS FOR SCENARIO 2

Revised panels will be made using FIRM Panel Technical Reference specifications.

- "See panels" will remain at existing map specifications.
- The FIRM Index is now included in the FIS Report using the FIS Report Technical Reference specifications.

5.3. PMR Scenario 3

Acquired data from the NFHL are in the FIRM Database Technical Reference schema and the effective FIS Report is in the FIS Report Technical Reference format.

5.3.1. FIRM DATABASE REQUIREMENTS FOR SCENARIO 3

Update the FIRM Database with PMR revisions.

- Submit only the revised section of the FIRM Database for the PMR footprint.

5.3.2. FIS REPORT REQUIREMENTS FOR SCENARIO 3

5.3.3. UPDATE THE FIS REPORT WITH PMR REVISIONS IN THE FIS REPORT TECHNICAL REFERENCE FORMAT. INCORPORATE ALL LOMRS INTO THE FIS FLOODWAY DATA TABLE AND PROFILES.FIRM PANEL REQUIREMENTS FOR SCENARIO 3

Revised panels will be made using FIRM Panel Technical Reference specifications.

5.4. PMR Scenario 4

No data are available from the NFHL and the effective FIS Report, and FIRM panels are in the 2003 Appendix J and K format. The Regional decision on the PMR scope does not include updating the FIS Report to the FIS Report Technical Reference specifications because of a small PMR footprint or prioritizing cost over ease of use of the revised products. It is still FEMA's preference that studies under this scenario be processed in countywide format and not as PMRs.

5.4.1. FIRM DATABASE REQUIREMENTS FOR SCENARIO 4

The FIRM Database will be prepared in the FIRM Database Technical Reference schema.

- The FIRM Database tables or fields that support FIS tables will be populated with applicable <null> values.
- Submit data covering the PMR footprint only.

5.4.2. FIS REPORT REQUIREMENTS FOR SCENARIO 4

The FIS Report will remain in the 2003 Appendix J format.

- Add revisions to the FIS body and incorporate any previous Section 10.0 revisions. All LOMRs should be incorporated into the FIS floodway data tables and profiles.
- As outlined in SID #501, an appendix (Appendix A) must be added at the back of the FIS Report to include the Notes to Users (Figure 2 in the FIS Report Technical Reference) and FIRM Legend (Figure 3 in the FIS Report Technical Reference) information.
- As outlined in SIDs #504 and #505, if the FIRM Index is not being updated to the format represented in the FIS Report Technical Reference, the Map Repositories table (Table 31 in the FIS Report) and Listing of NFIP Jurisdictions (Table 1 in the FIS Report) must also be included within this appendix.

5.4.3. FIRM PANEL REQUIREMENTS FOR SCENARIO 4

Revised panels will be made using FIRM Panel Technical Reference specifications.

- The FIRM Index may remain in the 2003 Appendix K format.

5.5. PMR Scenario 5

No data are available from the NFHL and the effective FIS Report and FIRM panels are in the 2003 Appendix J and K formats. The Regional decision on the PMR scope includes updating the FIS Report to the FIS Report Technical Reference format to promote ease of future product use and revision.

5.5.1. FIRM DATABASE REQUIREMENTS FOR SCENARIO 5

The FIRM Database will be prepared in the FIRM Database Technical Reference format.

- See the list of countywide versus PMR tables in Scenario 2 that will need to be populated for the entire county.
- Other FIS-only tables or fields will be populated with applicable <null> values.
- Typically for a non-digital county, the Mapping Partner's SOW would include converting the entire county to digital format, and it would not be scoped as a PMR; However, the Mapping Partner's SOW may be for submittal of a partial countywide FIRM database based on the PMR footprint.

5.5.2. FIS REPORT REQUIREMENTS FOR SCENARIO 5

The revised FIS Report must be converted to the FIS Report Technical Reference format.

- FIS tables will be populated for areas outside of the PMR footprint only for data in the existing FIS Report. As outlined in the FIS Report Technical Reference, the information needed to fully fill

in some of the FIS Report table fields may be unknown, may be unavailable from the previous FIS Report, or simply may not be scoped to be populated. In these cases, it is acceptable to manually populate those table entries (or use a footnote) with a value of "Unknown," "Not Included," or "Not Provided."

- Incorporate LOMR data into the FIS Report for LOMRs entirely for the entire county or community.
- As shown in Figure 2 in Scenario 2, the Incorporated Letters of Map Change table (Table 27 in the FIS Report) will address LOMRs that cross the PMR footprint that are not included in their entirety in the FIRM revision.
- "Most Recent FIRM" Date is not updated for communities outside of the PMR footprint.
- In the Community Map History table (Table 28 in the FIS Report) the "FIRM Revision Date" is not updated for communities outside of the PMR footprint.
- The Listing of NFIP Jurisdictions table (Table 1 of the FIS Report) will not reflect corporate limit changes outside of the PMR footprint unless updated political boundaries are made available during the PMR process. If updated political boundaries are made available outside the PMR footprint they will be reflected on the FIRM Index and the Listing of NFIP Jurisdictions table.
- The FIS Report/FIRM Index should be delivered to every community in the county regardless of the PMR footprint according to the FIS Guidance document.

5.5.3. FIRM PANEL REQUIREMENTS FOR SCENARIO 5

PMR footprint revised panels will be created using the FIRM Panel Technical Reference specifications.

- "See Panels" will remain in the existing map specifications.
- The FIRM Index is now included in the FIS Report using the FIS Report Technical Reference specifications.