



# Guidance for Flood Risk Analysis and Mapping

Project Planning

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 (<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

The following summary of changes details revisions to this document subsequent to its most recent version in November 2019.

Affected Section or Subsection	Date	Description
Section 2.1	Nov. 2022	Guidance added for the Flood Mapping Needs Explorer, in support of the new SID 647 requiring its use for watershed-based evaluation and prioritization of study areas.  Additional factors incorporated in Table 1 for flood risk study prioritization considerations. Descriptions refined for improved consistency in how factors may impact project selection process. CNMS maturity tier index descriptions were also refined in Section 2.1.2.
All sections	Nov. 2022	Various minor style updates for improved consistency and clarity, including implementation of the current template and use of the lower-case capitalization of “lidar.”

## Table of Contents

<b>1. Overview .....</b>	<b>1</b>
1.1. Project Planning Overview .....	1
1.2. Program Planning Overview .....	2
1.3. Drivers of Program Planning and General Timeframes .....	3
<b>2. Considerations for Risk MAP Project Planning.....</b>	<b>4</b>
2.1. Understanding Community Hazard Exposure and Data Needs.....	4
2.2. Ongoing Regional Initiatives and Projects Considerations .....	10
2.3. Geographic Considerations .....	10
<b>3. Record and Reporting Systems.....</b>	<b>12</b>
3.1. Project Planning and Purchasing Portal (P4).....	12
3.2. 3D Elevation Program (3DEP) Collaboration Site.....	13
<b>4. Stakeholder Engagement Considerations for Risk MAP Project Planning.....</b>	<b>13</b>
4.1. Project Planning Stakeholders .....	14
<b>5. Project Alignment with Program Planning.....</b>	<b>15</b>
<b>6. Project Lifecycle and Resilience.....</b>	<b>16</b>

## List of Figures

Figure 1: Risk MAP Project Lifecycle.....	1
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## List of Tables

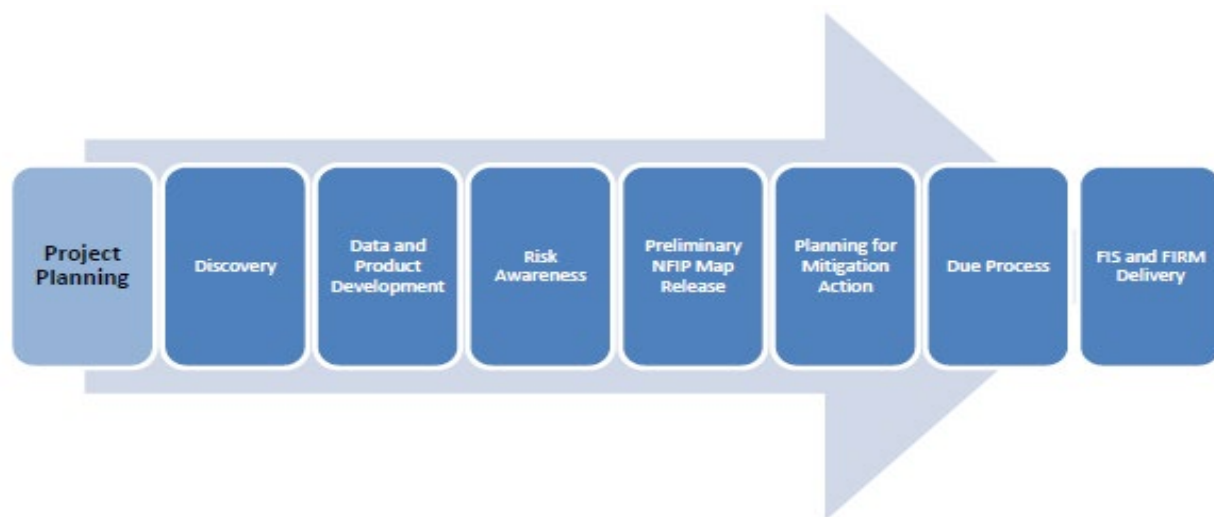
Table 1: Flood Risk Study Prioritization Considerations.....	4
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# 1. Overview

The intent of this document is to provide FEMA Regional offices (the Regions) with guidance on effective practice for planning Risk MAP program projects. As part of its Risk MAP program, FEMA works with federal, state, tribal and local partners across the nation to identify flood risk and promote informed planning and development practices to help reduce flood risk. Risk MAP provides high quality maps, information, and tools to better assess flooding risks as well as planning and outreach support to help communities take action to reduce (or mitigate) flood risk. Each Risk MAP project should be tailored to the needs and capabilities of each affected community and may involve different steps, products, and services.

## 1.1. Project Planning Overview

As shown in Figure 1, the Project Planning Phase is the first phase in the Risk MAP lifecycle and it directly precedes Key Decision Point 0 (KDP 0), which documents the regional decision to initiate a Flood Risk Project or group of Flood Risk Projects and captures the rationale for this decision. KDP 0 documentation explains the reason that a project was selected over others and includes information that led to the project being identified, such as state multi-year plans, community engagement outcomes, results of Base Level Engineering (BLE), availability of quality Light Detection and Ranging (lidar) data, and/or Coordinated Needs Management Strategy (CNMS) data. The objectives of the Project Planning Phase are to prioritize watersheds/project areas for review and to develop project budget estimates. Therefore, this phase primarily includes FEMA-only activities, with minimal Risk MAP provider participation. The primary audiences for this guidance document are staff from the 10 FEMA Regional Offices and FEMA Headquarters (HQ).



**Figure 1: Risk MAP Project Lifecycle**

Project Planning is an annual exercise conducted to prioritize project areas and to develop budget estimates for (1) conducting the Discovery process (2) developing and delivering of Risk MAP program projects for areas that have already undergone the Discovery process or (3) executing community-initiated map changes.

In general, the FEMA Regions make decisions during the Project Planning Phase based on input obtained by engaging with internal and external stakeholders (see Section 4.0), prioritization data, guidance from FEMA HQ, multi-year plans, annual Regional budget estimates, metric targets, other resources, and their own experience. Coordinating and confirming planned activities for the ensuing 18 to 24 months by engaging with key stakeholders at the local, regional, state level, as well as other federal agencies, before finalizing investment decisions is vital to maximizing awareness, leveraging opportunities, and optimizing return on investment.

## **1.2. Program Planning Overview**

Leading up to the Project Planning phase of the Risk MAP lifecycle, a set of processes are carried out that are collectively referred to as Program Planning, and includes: defining program priorities, multi-year planning, annual sequencing, and purchasing. Multi-year planning is the process by which the FEMA Regions estimate where and when they want to perform potential projects in future fiscal years, based on priorities. Annual sequencing is the process by which Regions plan specific projects and support needs that will be funded in the current fiscal year. Purchasing is the process by which Regions allocate or approve funding towards the specific projects sequenced for the current fiscal year. These processes are the components that lead to investments in products and services focused on achieving the priorities of the agency and the Risk MAP vision.

As part of program planning, FEMA Regions must develop and select individual Risk MAP projects that are aligned with and meet overarching Program objectives. There are a range of Risk MAP project types that Regions may choose to initiate. For example, to make progress towards deploying projects that deliver quality data, FEMA Regions should consider how to annually initiate the appropriate quantities of flood hazard data updates to balance inventory decline with available resources and critical framework data (e.g., high quality lidar data). Other example project types include levee hazard mapping, coastal risk assessment, or mitigation planning technical support. A top-down assessment of projects to be initiated could then be coupled with community coordination efforts to build a portfolio of potential projects. This portfolio then forms the basis of a multi-year plan, which assists the Region in ensuring an adequate pipeline of potential projects to inform annual sequencing and project purchase/execution.

Section 3 of this document discusses how project planning should interface with program planning processes to achieve efficiency and effectiveness throughout the Risk MAP program process.



### **1.3. Drivers of Program Planning and General Timeframes**

Determining when to select and initiate a project depends on analyzing the Region's program planning processes including multi-year planning, purchasing, and change management. FEMA program planning processes were established to create efficiency and effectiveness in the Risk MAP program. Regional staff should collaborate with program managers during the early stages of project planning to provide program managers time for project consideration into the short-term and long-term investments in the Regional Risk MAP program. See Section 5 of this document for more information on program planning.

In addition to an analysis of need and available data, the project prioritization process would benefit from considering other factors that could influence a decision to propose initiation of a Risk MAP project. Factors such as awareness of other compatible initiatives and projects, Regional goals for program metrics, Regional annual study budgets, and national goals and targets set by the U.S. Congress should be considered.

#### **1.3.1. REGIONAL METRICS**

Each FEMA Region is responsible for achieving certain metrics reflecting program progress. Each year, FEMA HQ sets metric targets, which are communicated in the annual planning and funding guidance to the regions. Each region should review its portfolio of planned projects to identify how metric targets should inform annual sequencing and multi-year project planning.

#### **1.3.2. REGIONAL BUDGETS**

Each FEMA Region has an annual budget allocation that enables projects to be purchased/executed. During the project evaluation and selection process, the FEMA Regions must be cognizant of these budgets and work within them. In advance of the annual planning and funding guidance from FEMA HQ the regions will need to make assumptions regarding available resources for the given year, which will inform the region's list of projects for annual sequencing.

#### **1.3.3. FEMA HQ CONGRESSIONAL JUSTIFICATION AND TARGETS**

The Congressional Justification report is part of the annual process in which the federal government determines the budget for the fiscal year two years out from the current one, and solicits FEMA's justification for their budget request. To support this budget request, program measure returns are forecasted.

Regions' development of a robust project portfolio, and updating the appropriate systems of record (see Section 3.0 of this document), are critical quantitative inputs to the development of a strong Congressional Justification. Amidst funding level fluctuations and program focus evolution, strong Regional project planning enables FEMA HQ to communicate outcomes more specifically for varying levels of Congressional investment.



## 2. Considerations for Risk MAP Project Planning

Hazards and the ability to assess risk continues to evolve. Likewise, as communities better understand the risks they face from natural hazards, they are likely to benefit from a different set of products and services from FEMA. For example, a community whose hazard data is not digital will require a different type of engagement than a community who has undertaken extensive, independent hazard risk assessments of their built environment. When considering which Risk MAP projects should be prioritized in a given fiscal year, it is essential to understand the wide range and variety of input parameters that can inform the decision process (e.g., the current exposure to flood risks and hazards for any given area) and the availability of quality data upon which a project would be based.

### 2.1. Understanding Community Hazard Exposure and Data Needs

All watersheds and coastal floodplains experience a unique level of exposure to flood hazards and associated risks, and all are evolving at a different pace with respect to development pressures and associated population growth. A variety of tools and datasets exist that allow an informed analysis focused on prioritization of Flood Risk Projects. Just knowing the age of a flood risk study is not enough to inform the project prioritization and planning process. Many other factors and data considerations should be evaluated to enable informed decisions to be made on project selection. Table 1 provides a sampling of these factors. These factors, when aggregated at a geographic level, can structure the project planning and prioritization process into four major categories: Risk, Need, Equity, and Data. Table 1 is not comprehensive; other factors could be considered as well. Additional details are provided in subsections below.

**Table 1: Flood Risk Study Prioritization Considerations**

Type	Factor for Consideration	How Factor May Impact Project Selection Process
Risk	Total Population	Projects in areas with bigger populations will have larger concentrations of risk exposure and may be considered higher priority.
Risk	Population Growth	Projected annual population growth rates can identify potential increases in population counts where land use may not reflect future flood risk, which may result in increased prioritization to update or initiate new studies.
Risk	Population in SFHA	This factor refines population considerations in flood hazard analyses by identifying larger population counts in areas with known flood risk exposure and may increase project priority.
Risk	Population Behind Levees	While a number of factors should be considered in prioritizing levee projects, larger population counts behind the levee could increase flood risk exposure and may increase prioritization.
Risk	Building Exposure	A high density of exposed buildings vulnerable to flood hazards could lead to higher concentrations of flood risk exposure and may increase project prioritization.

Risk	Exposed Structures Along Unmapped Miles	A high density of exposed structures vulnerable to flood hazards in areas along unmapped miles have undetermined flood risk, which may increase project prioritization.
Risk	National Risk Index (NRI)	The NRI scores the relative amount of natural disaster-related risk based on numerous socioeconomic factors including expected annual loss, social vulnerability, and community resilience. Areas with higher NRI risk indices for riverine and coastal flooding hazards indicate higher concentrations of consequence-enhancing flood risk, which may increase project prioritization.
Risk	Flood Losses	Larger historical flood losses may indicate higher concentrations of consequence-enhancing risk exposure, which may merit a project priority to better identify flood hazards and characterize risk.
Risk	Flood-Related Disaster Declarations	Greater flood-related disaster declarations may represent higher concentrations of flood risk exposure and may increase project prioritization.
Risk	Number of NFIP Policies	Projects that impact larger numbers of NFIP policyholders may be prioritized to improve risk characterization of NFIP portfolio.
Risk	Percent urban area change over the last decade	Areas where existing flood hazard analyses do not reflect current risks and have a greater probability of increased urban land use change may need updated studies, which may increase project prioritization.
Need	Existence of Flood Insurance Study	Areas without a Flood Insurance Study may be prioritized to provide understanding of the flood hazard(s).
Need	Hazard Mitigation Plan Status	Areas with no hazard mitigation plan, or long expired mitigation plans may receive increased priority as these areas may not have key inputs needed to understand risk and take action.
Need	Mitigation Action Needs	Locations with unmet mitigation action needs may be prioritized for projects that support addressing the need.
Need	CNMS UNKNOWN Mileage	Addressing larger gaps in an area's flood hazard data inventory may merit higher prioritization.
Need	CNMS UNVERIFIED Mileage	Larger quantities of flood hazard data that do not reflect the current risk should increase project priority.
Need	CNMS Community Requests Mileage	A higher concentration of community requests may indicate the need to prioritize a project area.
Need	Population in UNKNOWN Mileage	Refining the inventory mileage count with estimates of population affected by undetermined flood hazard data quality issues should inform prioritization.
Need	Population in UNVERIFIED Mileage	Refining the inventory mileage count with estimates of population affected by deficient flood hazard data should inform prioritization.

Need	Unmapped Miles by HUC	Higher concentrations of unmapped miles within a HUC watershed area may indicate a lack of flood hazard data available to understand and characterize flood risk, which could increase project prioritization.
Need	Length of streams with insufficient or no longer maintained models	Higher concentrations of mapped miles within a HUC watershed area that have insufficient or no longer maintained models may indicate that flood hazard data do not reflect current flood risk and could increase project prioritization.
Need	Length of streams where FIRM models are no longer accepted and not being studied	Higher concentrations of mapped miles within a HUC watershed area where FIRM models are no longer accepted and aren't being studied may indicate that flood hazard data do not reflect current risk and could increase project prioritization.
Need	Length of streams with effective 2D modeling	Lower concentrations of mapped miles within a HUC watershed area that have effective 2-Dimensional (2D) modeling may indicate the need to prioritize an area to study.
Need	Number of Claims Outside SFHA	Larger quantities of claims outside the SFHA should increase project priority.
Need	Number of LOMAs	Higher concentrations of LOMAs may indicate that flood hazard data does not reflect the current risk and could support increased project prioritization.
Need	Number of LOMRs	Higher concentrations of LOMRs may indicate that flood hazard data do not reflect the current risk and could support increased project prioritization.
Need	Counties with Paper Maps	Paper maps with no digital data cannot be displayed on FEMA's National Flood Hazard Layer for flood risk awareness and may result in increased project prioritization.
Equity	Percent Area Covered by Non-Digital Flood Data	Areas that do not have digital flood hazard information may merit higher project prioritization.
Equity	Existing Risk MAP Projects	Delivering Risk MAP projects to areas that have not had Risk MAP deployed should be higher priority.
Equity	FEMA Investment	Areas that have not had FEMA investment should be prioritized higher over areas that have FEMA investment.
Equity	NRI Social Vulnerability	A higher score for the social vulnerability risk factor of the NRI may indicate greater consequence-enhancing impacts of flood hazards that may indicate the need to prioritize a project area.
Equity	NRI Community Resilience	A lower score for the community resilience risk factor of the NRI may indicate greater consequence reduction impacts of flood hazards that may indicate the need to prioritize a project area.
Equity	[Beta] Climate and Economic Justice Screening Tool	Communities classified as "disadvantaged" based on a number of socioeconomic and health-related factors may merit increased project prioritization.

Data	Availability of local data that meets FEMA quality standards to leverage	Communities with quality local data to contribute to the project should be considered higher priority project areas.
Data	Quality Lidar Data Available	Areas with newer/greater quality lidar that could statistically change modeling results should be considered higher priority project areas.
Data	National Levee Database	The location of levees across the United States can inform the need for project prioritization in areas impacted by flooding.
Data	Total Housing Units	A larger number of housing units in a given area could increase project prioritization.
Data	Projected Land Cover 2050	Projected land cover in the year 2050 can indicate changes in population counts, land use, and other environmental stressors that can increase flood risk and project prioritization.
Data	USA Federal Lands	Federal land coverage may indicate areas that do not need project prioritization as these are areas administered by the Federal Government.

### 2.1.1. FLOOD MAPPING NEEDS EXPLORER INFORMATION

The FEMA Flood Mapping Needs Explorer information must be used as one of the factors for watershed-based evaluation and prioritization of study areas for Flood Risk Projects. The explorer aligns with SID 647 and supports the mapping program's transition to more interactive decision support resources for informed project selection. Inputs to the explorer consist of geospatial datasets that are updated by FEMA and its stakeholders according to a variety of schedules, which range from weekly to yearly. The Flood Mapping Needs Explorer Applied Approaches document will provide users with a tutorial overview, list of datasets, and description of features and functionality. The applied approaches document will guide stakeholders on approaches for using the explorer with other programmatic resources and decision criteria and will serve as a resource when scoping Flood Risk Projects.

The Flood Mapping Needs Explorer can be accessed using the following link:

<https://fema.maps.arcgis.com/apps/instant/interactivelegend/index.html?appid=899a036bea6d407fbc400bc802cd0a6a%20>.

### 2.1.2. COORDINATED NEEDS MANAGEMENT STRATEGY (CNMS)

CNMS is a critical source for understanding community hazard exposure and data needs. It functions as both a geospatial representation of FEMA's national flood hazard data inventory (hazard exposure) as well as a repository for information about inventory quality (data needs). Beyond the key indication of inventory quality at a flooding source level, CNMS provides insight on why current analyses may be deficient in terms of climatological, physiological, or methodological criteria. CNMS tracks the lifecycle of flood hazard identification studies from initiation and issuance to revalidation and obsolescence. It also stores mapping needs identified by community members or other stakeholders.

As a project prioritization tool, CNMS provides focus on areas needing investment to ensure that an accurate depiction of the risk is reflected in published flood hazard data. CNMS study records are also used to calculate the New, Valid, or Updated Engineering (NVUE) metric - a key metric for the Risk MAP program. Regional contribution to the NVUE metric should be considered in planning and prioritizing projects.

In addition to the NVUE measure, the stream mile inventory is also tracked through a maturity tier index. An attribute within the CNMS database, the 5 tiers characterize the maturity of the flood hazard data product:

- Tier 0: Known to be flood-prone (i.e., draining greater than one square mile) but not yet identified as SFHA on a regulatory FIRM.
- Tier 1: SFHA is not available in digital format.
- Tier 2: SFHA is available as a digital product, but not known to be model-backed.
- Tier 3: SFHA is available as a digital product, is model-backed, but may not be consistent with high-quality elevation data (uses elevation data that are inferior to USGS Quality Level (QL) 2 equivalence or better).
- Tier 4: SFHA is available as a digital product, is model-backed, and is consistent with high-quality elevation data (USGS Quality Level (QL) 2 equivalence or better). This tier should serve as meeting all current Risk MAP technical requirements.
- Tier 5: SFHA is available as a digital product and includes enhanced analyses such as future land use or future climate-informed analyses.

Regions' efforts to advance their inventory to Tier 4 or higher, should be considered in planning and prioritization level. For more information on CNMS, please refer to the [CNMS Technical Reference](#).

### **2.1.3. COMMUNITY INFORMATION SYSTEM (CIS)**

FEMA's CIS is a system that stores community information on Community Assistance Contacts (CACs) and Community Assistance Visits (CAVs). CACs and CAVs are two methods FEMA uses to identify community floodplain management program deficiencies and violations. FEMA then uses this information to provide technical assistance to resolve these issues, which may inform FEMA's understanding of the community's needs and how a Risk MAP project may address those needs. CIS also contains valuable information regarding the level of adoption of the National Flood Insurance Program (NFIP) regulations cited in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Section 60.3 (44 CFR 60.3) at the jurisdiction level. This information could provide insight into how evolved the community is relative to the NFIP in general and opportunities that may exist to help them mature further into the program through initiation of a new Risk MAP project.

#### **2.1.4. POPULATION GROWTH/LAND USE**

Two key considerations in ranking areas for potential study or restudy are population growth pressures and land use. As urbanization increases and an area experiences a rise in impervious surfaces, a commensurate increase in flood hazards may be reasonably expected, thereby warranting consideration of a new or revised flood hazard study to be conducted to reflect the associated increase in flood hazards and flood risks more accurately. For this reason, percent urban change of the last decade is an insightful data point to consider in the project planning process. In addition, with population growth comes an expected increase in flood related losses due to increased building exposure. As the population in an area increases, the case for initiating a new Flood Risk Project may be further solidified.

#### **2.1.5. US INTERAGENCY ELEVATION INVENTORY (USIEI)**

The USIEI, which is a collaborative effort between U.S. Geological Survey (USGS) and National Oceanic and Atmospheric Administration (NOAA) (with contributions from other federal agencies), is a comprehensive, nationwide listing of known high-accuracy topographic and bathymetric data for the United States and its territories. As such, it is a good source for elevation data and determining if elevation data already exists for a location. The absence of adequate elevation data in USIEI is a reliable indication that new elevation data will likely be required for a Flood Risk Project, enabling the appropriate project planning, timing, and prioritization to take place.

#### **2.1.6. EXTREME EVENTS AND NON-STATIONARITY**

Hydrometeorological phenomena such as hurricanes, intense rainfall, riverflows, and associated flooding vary widely in magnitude and occurrence in different geographies and also from year to year. While there is natural variability, it is important to detect any additional variability such as historic trends in rainfall and riverflows that may lead to non-stationarity. Potential causes for non-stationarity in streamflow can be attributed to agricultural and urbanization activities within the watershed, streamflow regulation or infrastructure diversion to support human needs, as well as changes in snowmelt and precipitation attributed to climate change. Non-stationarity in rainfall or riverflow records leads to situations where currently applied statistical approaches become unsuitable for establishing frequency of those parameters.

Currently, stationarity is assumed in identifying and quantifying extreme events that form the basis for water resources planning, design, management, and operation. Frequent rainfall and discharge is integral in determining the floodplain extents for a flood hazard study. Therefore, identifying non-stationarity signals in rainfall and streamflow records would raise questions about the reliability of flood hazard studies developed under the assumption of stationarity, and would signal the need for initiation of a new or revised Flood Risk Project. Statistical tests and tools are available to identify historic trends in instantaneous peak flow and rain gauge records (<https://www.iwr.usace.army.mil/Portals>, or <https://www.fhwa.dot.gov/engineering/hydraulics/>).

At the project planning level, detection of non-stationarity can be used in conjunction with CNMS and other data sources to assess whether current flood hazard information may be under-representing

the risk. Areas with a strong non-stationarity signal, and large population exposure, may merit higher project prioritization.

#### **2.1.7. DATA GAPS AND LEVERAGE OPPORTUNITIES**

Another consideration in prioritizing projects is the availability of quality data. Such data can increase community acceptance of the project, defray project costs, and improve study quality. For Risk MAP projects, available data may include recent, high-quality lidar data, existing Hazus analyses, or newly updated USGS floodflow regression equations. Identifying these data as available may influence timing and prioritization of a project.

For example, an estimate of how much of the given study area, and how much of the existing SFHA has quality lidar coverage would be a helpful basis of comparison for projects that are otherwise equally suited for execution. In addition, when assessing the inventory of available data, other projects being executed by local, state and federal entities that could be leveraged for purposes of addressing the community's hazard identification, risk assessment or mitigation planning support is essential. It is critical that a complete inventory of available data and data that could be leveraged from other entities be evaluated before making any decisions to proceed with proposing a new or revised Flood Risk Study. This inventory should emerge from engagement with stakeholders, as discussed in Section 4 of this document.

### **2.2. Ongoing Regional Initiatives and Projects Considerations**

A final consideration in project prioritization and selection is the ability to seek synergy from ongoing projects and initiatives within the subject area of interest. FEMA Regional engineers must have a good understanding of ongoing projects and initiatives that could impact, inform, or contribute to Risk MAP project. An example would be collaborating with the U.S. Army Corps of Engineers (USACE) during their execution of a levee construction project. Knowing the status of USACE projects and those of other water resources planning and development agencies, should impact timing and prioritization of Risk MAP projects. Starting a project without knowing that 6 months later a levee project would be initiated could result in an outdated Flood Risk Project shortly after its completion.

### **2.3. Geographic Considerations**

#### **2.3.1. COASTAL AND LEVEE CONSIDERATIONS**

All newly initiated Risk MAP projects should be watershed-based, with the exception of coastal projects and small-scale projects, usually related to levee accreditation status. Coastal projects and levee projects may have longer timelines than Risk MAP projects for watersheds, separate prioritization protocols, widely varying stakeholder audiences, as well as other differences. For example, levee projects require the formation of a Local Levee Partnership Team that includes a diverse group of stakeholders.



Regional staff may need to refer to separate guidance related to coastal projects and levee projects that is provided on the FEMA website. Additional resources related to coastal analyses and mapping are available from <https://www.fema.gov/flood-maps/coastal>. Additional resources related to levee analysis and mapping are available from the FEMA Levee Resources Library at <https://www.fema.gov/fema-levee-resources-library>.

### **2.3.2. TRIBAL CONSIDERATIONS**

When tribal lands are included in a watershed or larger geographic area, consultation with tribal entities is initiated by the Regional Office Tribal Liaison. Only the FEMA Regional Office Tribal Liaison or other approved Regional Office staff members are to work directly with federally recognized tribes and tribal entities.

The affected tribal entities should be consulted as to whether they want to be included in other planned engagement efforts and Risk MAP meetings or if separate engagement efforts or meetings with them would be more appropriate. This will depend on established working relationships between the Regional Office Tribal Liaisons and the tribal entities within each Region, as well as other factors. For instance, if a tribal entity participates in a multijurisdictional hazard mitigation plan, it might be appropriate for them to participate in a Resilience Meeting for a Flood Risk Project. (For information on Resilience Meetings, see Guidance Document No. 103, [Guidance for Stakeholder Engagement: Preliminary Production Process](#), and Guidance Document No. 104, [Guidance for Stakeholder Engagement: Post-Preliminary Due Process](#).)

Even if the FEMA Regional Office determines that a tribe does not have the land use authority needed to implement the requirements of the NFIP, the Discovery process within a Risk Map project lifecycle can be an opportunity to provide the tribe with information about the NFIP and other mitigation programs, such as the benefit of developing hazard mitigation plans. During Discovery, a final determination can be made on whether the tribe meets the NFIP definition of a community and whether it should be included in a potential Flood Risk Project.

When appropriate during the Project Planning Phase, tribal entities may need to be considered as external stakeholders, and the Regional Office may need to consider the potential impacts that the additional engagement will have on project budget considerations. Within this document, the term “communities” includes tribes/tribal entities that have chosen to participate actively in a Risk MAP project.

### **2.3.3. LEVEL OF STUDY CONSIDERATIONS**

The level of effort expended in developing a flood hazard analysis is generally related to the complexity of the flood hazard type (e.g., riverine split flows, levees, alluvial fans), the study methodology, the cost and time of acquiring necessary input data (e.g., lidar, bathymetry, survey) and the type of study that may exist. Typically, the effective study will act as the baseline for the level of detail for a future study. When performing Project Planning, engaging Project Stakeholders, and determining the level of study needed for a given project area, a new or revised study must at least be of the same level as represented on the effective study per the requirements of SID 5.

Additionally, any new study should be accomplished using the most basic study method that is appropriate based on the risk and need of the Project Area.

For example, if FEMA has already published Base Flood Elevations (BFEs), it should continue to do so. If an area has a regulatory floodway, the regulatory floodway should not be eliminated.

Furthermore, if the current effective study is based on a full hydrologic and hydraulic (H&H) analysis including survey, with output on the FIRMs being Zone AE with floodway, the new or revised study does not necessarily have to be performed using a full H&H analysis including survey; however, the output on the new FIRMs must at least include Zone AE with floodway. This could be accomplished using an automated engineering technique such as BLE. Choosing the appropriate hydraulic analysis option for the BLE study would allow for the appropriate level of technical information in creating a detailed-level study with a floodway that meets FEMA's hydrologic requirements. Full information on the BLE hydraulic analysis options and subsequent application to the FIRM is discussed in FEMA Guidance Document No. 99, [Guidance for Flood Risk Analysis and Mapping: Base Level Engineering \(BLE\) Analyses and Mapping](#). Guidance Document No. 99 is accessible through the FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage.

Special situations should be discussed in consultation with the FEMA Project Officer.

### **3. Record and Reporting Systems**

As discussed in the above sections, a robust project planning and prioritization process involves extensive stakeholder engagement and data collection. The results of this work must be captured in the appropriate systems of record used for reporting to maximize accessibility/visibility and provide documentation of a transparent, data-driven, and defensible project selection approach.

#### **3.1. Project Planning and Purchasing Portal (P4)**

FEMA's P4 is the official system of record for documenting program planning process outputs; it provides a platform for the Regions to plan project investments on a multi-year basis, sequence projects to be funded annually and develop the required paperwork for annual obligation of funds. P4 enables FEMA to accurately capture scope and quantity details and estimate approximate costs and associated program measure contributions for Risk MAP investments throughout the project planning process. It also provides a single point for data entry during project planning processes and enables Regions to better build on their efforts during the project planning lifecycle. P4 is FEMA's authoritative data source and system of record for the Risk MAP deployment program measure and acts as a data source for supporting CNMS, which, as noted above, is a key tool for the project prioritization and planning process.

The P4 tool allows for progressive elaboration of project plans as they move through the program planning process from multi-year planning, to annual sequencing, to purchasing, as summarized below.

- Multi-Year Planning Level of Detail in P4 equates to documenting high level scope items and quantities planned to be purchased, referred to in P4 as Primary Scope Items and associated quantities (e.g., Riverine).
- As time progresses and Regions approach Annual Sequencing, more scope details are known and the level of confidence is improved, therefore Annual Sequencing Level of Detail equates to documenting more refined scope items and quantities planned to be purchased referred to in P4 as Secondary Scope Items and associated quantities (e.g., Hydraulic Analyses).
- As time further progresses and Regions approach Purchasing where they will allocate or approve funds for the current fiscal year, Regions will define scope details sufficiently to fund the project. Therefore, Purchase Level of Detail in P4 equates to documenting detailed scope items and quantities referred to in P4 as Tertiary Scope Items and associated quantities (e.g., AE Study: 1D Unsteady).

As this process occurs each year, the cost estimates will become more refined based on past purchased information year-to-year.

### **3.2. 3D Elevation Program (3DEP) Collaboration Site**

The United States 3DEP and the Interagency Working Group on Ocean and Coastal Mapping have established a system to share information about areas of interest, proposed and planned elevation projects. FEMA Regions should use the NOAA sponsored Seasketch site: U.S. Federal Mapping Coordination, A Collaboration Site for Federal and Partner Mapping Data Acquisition to identify areas where they need or would like to acquire elevation data. This can occur during project planning to identify potential partners at the federal, state or local level, as well as other 3DEP stakeholders.

## **4. Stakeholder Engagement Considerations for Risk MAP Project Planning**

Comprehensive guidance documents for addressing stakeholder engagement during the Project Planning Phase are available on FEMA's Guidelines and Standards for Flood Risk Analysis and Mapping webpage. For more information, the FEMA Regions should refer to Guidance Document No. 105, [Guidance for Stakeholder Engagement: Introduction and Key Terms](#), and Guidance Document No. 102, [Guidance for Stakeholder Engagement: Project Planning and Discovery Process](#). This section of the document will provide some context and considerations for stakeholder engagement activities during Risk MAP Project Planning.

FEMA Regions must strike a balance between ensuring that stakeholder priorities, activities, and input are considered during project planning while recognizing that resources for this phase are constrained.

Fundamentally, stakeholder engagement activities that FEMA Regional Offices undertake should yield:

- Hazard identification, risk assessment, mitigation planning, and associated data development efforts by federal, state, and local government entities, tribal entities, and private-sector organizations that may compliment Risk MAP efforts.
- Understanding state preferences and priorities for Risk MAP project scopes and prioritization schedules.
- Developing plans and estimates on how FEMA's Risk MAP investment may be used to identify, communicate, and/or reduce risk in a targeted location.
- Maximizing awareness, leveraging opportunities, and return on investment.

## **4.1. Project Planning Stakeholders**

Engagement with both internal and external stakeholders is strongly encouraged and is necessary to achieve success during the Project Planning Phase. While much more thoroughly discussed in Guidance Document No. 105, Introduction and Key Terms and Guidance Document No. 102, Project Planning and Discovery Process, partners to consider engaging include:

- FEMA - Internal Partners and Programs
- FEMA - Federal Insurance and Mitigation Administration offices
- FEMA - Office of the Flood Insurance Advocate
- Other Federal Agencies
- State Partners
- Local Partners and Jurisdictions within the Watershed
- Academic Institutions
- Professional Associations and Non-Governmental Organizations

Each of these potential partners will provide different types of input to the Project Planning process. The Stakeholder Engagement guidance documents provide useful information on the types of information a Region may expect to obtain from each of these partners.

### **4.1.1. OUTCOMES FROM STAKEHOLDER ENGAGEMENT EFFORT**

Stakeholder engagement during the Project Planning Phase should be flexible and scalable, and it will not look the same in all areas, as each FEMA Region, each watershed or study area under review, and each Project Stakeholder engaged will vary. For these reasons, it is not feasible to compile a comprehensive list of all possible data and information that may be collected, reviewed, or leveraged through stakeholder engagement and coordination activities during this phase. However,

successful stakeholder engagement during the Project Planning Phase should result in the following outcomes:

- Clearer understanding of which Risk MAP project activities a watershed or other geographic area may benefit from most.
- Clearer understanding of state preferences and priorities for Risk MAP project scopes and prioritization schedules.
- Strengthened relationships, a sense of partnership, and shared objectives between FEMA and community officials.
- Information that the FEMA Regions can use to prioritize project areas for Discovery or for Risk MAP projects and to develop project plans and budget estimates.
- Elimination of duplication of effort among federal, state, and regional entities.
- Better compliance with the requirements of Section 216 of the Biggert-Waters Flood Insurance Reform Act of 2012, as amended by the Homeowner Flood Insurance Affordability Act.
- Plans and estimates on how the FEMA Risk MAP investment may be used to identify, communicate, or reduce risk in a targeted area.
- Information that may help the FEMA Regions meet other Risk MAP metrics as they are identified.

## 5. Project Alignment with Program Planning

As mentioned earlier, the Risk MAP program is responsible for deploying flood hazard mapping, outreach and mitigation technical assistance projects that deliver quality data, increase public awareness of flood risk and influence communities to take action to reduce their risk. To achieve these objectives, FEMA HQ and FEMA Regions must be efficient and effective in their planning, purchasing and reporting processes of all projects to ensure that investments are focused in the appropriate directions with the correct products and services delivered.

An integral component of project planning is determining how projects up for consideration fit into each FEMA Regional project portfolio. The Regions evaluate projects based on how they align with the program's short-term and long-term goals and investments. Evaluation considerations include: current fiscal year plans; multi-year plans; program budgets; Cooperating Technical Partner capacity and capability, refinements, and modifications to planned investments; and alignment with Risk Map program performance metrics.

Similar to the Regional examination of their projects in the Regional portfolio, FEMA HQ regularly reviews program investments with respect to return on investment and progress towards program commitments and objectives. Using the program Life Cycle Cost Estimate, FEMA HQ works to ensure

that Regional allocations translate into the delivery of the needed products and services, at a community level, that will advance Risk MAP program strategies.

FEMA Regional Project Managers should work with Regional Risk MAP program leadership to determine if and how projects can achieve these Regional objectives and metrics. This determination requires developing rolling wave plans that are flexible to varying levels of program funding. Developing a robust portfolio of potential projects and evaluating them regularly to assess their readiness for implementation based on funding, program metric targets, and data availability are fundamental to a rigorous project planning business process.

## **6. Project Lifecycle and Resilience**

Planning, prioritizing, and initiating a Risk MAP project ideally represents a significant component of FEMA's efforts to support community resilience. The lifecycle of a project, starting with project planning, should be viewed as one point in time in the community's work to understand its risks, identify risk mitigation strategies, and implement those strategies. As the community moves through these steps, the Risk MAP program may need to deliver different products, services, or support that would help improve the community's risk management capability and capacity. Project planning efforts must connect to community values and character since true resilience begins with protecting those key elements of the community fabric.

Project planning can serve as the beginning of community resilience discussions or reinvigorate previous resilience efforts. Community needs will evolve as growth, land use, data, and technology change, rendering it necessary to update hazard identification or risk assessment information. Community concepts of resilience may also evolve as they better understand local hazards and discuss risk reduction strategies. As such, project planning offers FEMA Regions a great opportunity to build lasting partnerships with communities on the path to resilience.