

Guidance for Flood Risk Analysis and Mapping

Project Planning

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February 2018



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. The guidance, context, and other information in this document is not required unless it is codified separately in the aforementioned statute, regulation, or policy. 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>), which presents the policy, related guidance, technical references, and other information about the guidelines and standards development process.

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Table of Revisions

Affected Section or Subsection	Date	Description
First Publication	February 2018	Initial version of new transformed guidance. The content was derived from the Guidelines and Specifications for Flood Hazard Mapping Partners, Procedure Memoranda, and/or Operating Guidance documents. It has been reorganized and is being published separately from the standards.

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1.0 Overview

The intent of this document is to provide FEMA Regional offices (the Regions) with guidance on effective practice for planning Risk Mapping, Assessment, and 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, 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).

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.



Figure 1: Risk MAP Project Lifecycle

In general, the FEMA Regional Offices 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 Regional Offices 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 will discuss 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 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 Congress should be considered.

1.3.1 Regional Metrics

Each FEMA Region is responsible for achieving certain metrics reflecting program progress. Each year the program sets metric targets communicated in the annual planning and funding guidance, issued from Headquarters 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, Regions must be cognizant of these budgets and work within them. In advance of the annual funding guidance from FEMA HQ, which communicates the distribution of final annual Regional funding allocations, 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 (CJ) report is part of the annual process in which the 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), are critical quantitative inputs to the development of a strong CJ. Amidst funding level fluctuations and program focus evolution, strong Regional project planning enables the Risk MAP program the opportunity to communicate outcomes more specifically for varying levels of Congressional investment.

2.0 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. There are many other factors and data considerations that 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 4 major categories: Risk, Need, Equity, and Data. Table 1 is not comprehensive since there are other factors that could be considered as well. Additional details are provided in sub-sections below.

Table 1: Flood Risk Study Prioritization Considerations

	Factor for Consideration	How Factor May Impact Project Selection Process
Risk	Total Population	Projects in areas with larger populations should address larger concentrations of risk exposure and may be considered higher priority.
	Population in SFHA	This factor refines population by focusing on known flood risk exposure and should increase project priority.
	Population Behind Levees	While a number of factors should be considered in prioritizing levee projects, larger population counts behind the levee may increase prioritization.
	Building Exposure	Higher built environment risk exposure should increase study prioritization.
	Flood Losses	Larger historical flood losses may indicate the need to better identify hazards and characterize risk.
	Disaster Declarations	More disaster declarations may represent larger risk exposure and require a Risk MAP project.
	Number of NFIP Policies	Projects that impact larger numbers of NFIP policyholders may be prioritized to improve risk characterization of NFIP portfolio.
Need	Existence of Flood Insurance Study	Areas without flood insurance study may be prioritized to provide understanding of the flood hazard.
	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.
	Mitigation Action Needs	Locations with unmet mitigation action needs may be prioritized for projects that support addressing the need.
	Percent urban area change over the last decade	Greater amounts of urban change increase likelihood that existing hazard analyses do not reflect current risks and need updated study, increasing project priority.
	CNMS UNKNOWN Mileage	Addressing larger gaps in an area's flood hazard data inventory may merit higher prioritization.
	CNMS UNVERIFIED Mileage	Larger quantities of flood hazard data that do not reflect the current risk should increase project priority.
	Population in UNKNOWN	Refining the inventory mileage count with estimates of population affected by flood hazard data quality issues should inform prioritization.
	Population in UNVERIFIED	Refining the inventory mileage count with estimates of population affected by flood hazard data quality issues should inform prioritization.
	CNMS Community Requests Mileage	A concentration of community requests may indicate the need to prioritize an area.
	UNKNOWN and UNVERIFIED approximate miles	Larger quantities of flood hazard data that do not reflect the current risk should increase project priority.
Number of Claims Outside SFHA	Larger quantities of flood hazard data that do not reflect the current risk should increase project priority.	

	Factor for Consideration	How Factor May Impact Project Selection Process
	Number of LOMAs	Large concentrations of LOMAs may indicate that flood hazard data does not reflect the current risk and could support increased project prioritization.
	Number of LOMRs	Large concentrations of LOMRs may indicate that flood hazard data does not reflect the current risk and could support increased project prioritization.
Equity	Percent Area Covered by Non-Digital Flood Data	Areas that do not have digital flood hazard information may merit higher prioritization.
	Existing Risk MAP Projects	Delivering Risk MAP projects to areas that have not had Risk MAP deployed should be higher priority.
	FEMA Investment	Areas that have not had FEMA investment should be prioritized higher over areas that have.
Data	Availability of local data that meets FEMA quality standards to leverage	Communities with quality data to contribute to the project should be considered higher priority project areas.
	Quality LiDAR Data Available	Areas with quality LiDAR data to contribute to the project should be considered higher priority project areas.

2.1.1 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: Areas known to be flood prone, but not yet identified as Special Flood Hazard Area (SFHA) on a regulatory FIRM.
- Tier 1: SFHA is not available in digital format.
- Tier 2: SFHA is available as a digital product, however the hazard data is not known to be model-backed.
- Tier 3: SFHA is available in digital format; model-backed, and consistent with high quality elevation data.

- Tier 4: SFHA is available in digital format; model-backed, and includes enhanced analyses such as future land use impacts to hydrology.

Regions' efforts to advance their inventory to Tier 3 or higher, should be considered in planning and prioritization level. For more information on CNMS, please refer to the [CNMS Technical Reference](#).

2.1.2 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 NFIP 60.3 regulations at the jurisdiction level, which 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.

2.1.3 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 Study may be further solidified.

2.1.4 US Interagency Elevation Inventory (USIEI)

The USIEI, which is a collaborative effort between United States Geological Survey (USGS) and National Oceanic & Atmospheric Administration (NOAA) (with contributions from other federal agencies), is a comprehensive, nationwide listing of known high-accuracy topographic and bathymetric data for the U.S. 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.

2.1.5 Extreme Events and Non-Stationarity

Hydrometeorological phenomena such as hurricanes, intense rainfall, river flows, 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 river flows that may lead to non-stationarity. Potential causes for non-stationarity in stream flow can be attributed to agricultural and urbanization activities within the watershed, stream flow regulation or infrastructure diversion to support human needs, as well as changes in snow melt and precipitation attributed to climate change. Non-stationarity in rainfall

or river flow 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 stream flow 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 Study. 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.

2.1.6 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 flood flow 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.

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 US 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 office 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 www.fema.gov/coastal-flood-risks-achieving-resilience-together. Additional resources related to levee analysis and mapping are available from the FEMA Levee Resources Library at 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. 63, Guidance for Stakeholder Engagement: Risk Awareness Phase](#), which is accessible through the [FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage](#)).

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.

3.0 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.

4.0 Stakeholder Engagement Considerations for Risk MAP Project Planning

A comprehensive guidance document addressing stakeholder engagement during the Project Planning Phase is available at FEMA Guidelines and Standards for Flood Risk Analysis and Mapping webpage (www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping). This section of the document will provide some context and considerations for stakeholder engagement activities during Risk MAP Project Planning.

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 the Stakeholder Engagement Guidance for Project Planning, 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 provides good 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 Regional Office, each watershed or study area under review, and each 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 FEMA Regional Offices 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 BW-12, as amended by HFIAA.
- 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 Regional Offices meet other Risk MAP metrics as they are identified.

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5.0 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 Headquarters and Regional offices 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 Headquarters regularly reviews program investments with respect to return on investment and progress towards program commitments and objectives. Using the program Life Cycle Cost Estimate (LCCE), FEMA Headquarters 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 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.

6.0 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.

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