

REGION 3

Reducing Risk in the Floodplain

Connecting the dots between community floodplain management, hazard mitigation planning, emergency management, land use, and water resource management.

VERSION 1 - JANUARY 2021

FEMA

1. Executive Summary

This document identifies potential partners, common challenges, and approaches for reducing flood risk. Floodplain administrators (FPAs), sometimes referred to as floodplain managers, and hazard mitigation planners can use it in their work. Others who support the health and welfare of their community will also find it helpful. This guide advises a broader approach to managing the floodplain because:

- Despite significant government investment, floods still devastate communities. They threaten health and safety, and destabilize economies.
- Continued development in flood-prone areas and changing climate conditions increase the challenges.
- Flooded structures may not be repaired or rebuilt in ways that decrease flood risk.
- You can build on existing best practices for floodplain management.
- Considering multiple factors can help you meet your community's needs.

Best practices in floodplain management include hazard mitigation and flood insurance programs. Others relate to long-range land use and community planning, economic development, and emergency management. This guide identifies best practices in three key areas:

DATA	The way you analyze and apply data to plans, policies, and practices can reduce costs and effort. Data help you find opportunities and apply for grants.
PARTNERSHIPS	Know and share the roles that will help your community succeed.
INTEGRATION	Link parallel initiatives to use limited resources more effectively.

The guide also provides:

- **Scenarios:** Welcome to the fictional community of Riverview! Through the use of scenarios, this section identifies opportunities to incorporate **Data**, **Partnerships**, and **Integration** in your own community.
- **Take Immediate Action:** This section focuses on opportunities you can act on to improve your community's floodplain management.
- **Funding Sources** and **Resources** directs you to additional support from federal and state partners.

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2. Laying the Foundation

Decreasing flood risk requires funds, time, and effort. Mitigation planners, FPAs, and others need to guide and limit development in or near the floodplain. This guide promotes an inclusive approach to reducing flood risk. Most communities already have a foundation for this work. It includes floodplain management and hazard mitigation planning. Here is some background on these related programs.

FLOODPLAIN MANAGEMENT

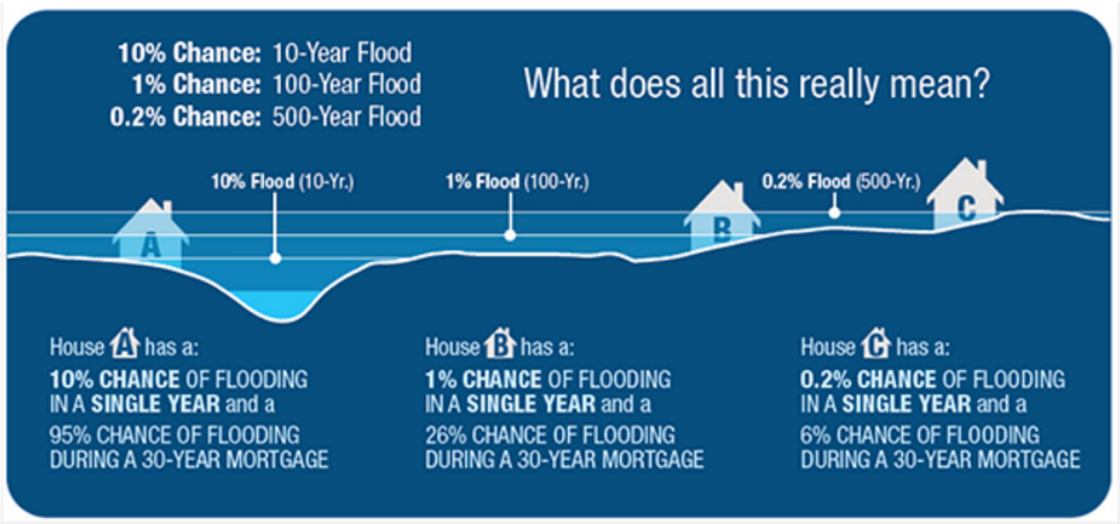
Definition: A community-based effort to prevent or reduce the impacts of flooding through:

- Flood Insurance – This tool provides financial relief to property owners after a flood. It is offered through the National Flood Insurance Program (NFIP). In some locations, private flood insurance is also available.
- Floodplain Mapping and Ordinances – Flood maps and ordinances guide development in and around the floodplain. Permitting, inspection, and enforcement make this work.

The National Flood Insurance Program

FEMA administers the NFIP. The program supports a network of private insurance companies. Homeowners, renters, and business owners in communities that participate in the NFIP are eligible. Flood insurance is required for any federally insured mortgage loan. Lenders usually require flood insurance for traditional mortgages also.

House	During Any Year	During 30-Year Mortgage
A	10% chance of flooding	95% chance of flooding
B	1% chance of flooding	26% chance of flooding
C	0.2% chance of flooding	6% chance of flooding



Did you know?

The NFIP requirements include:

1. Elevating new and substantially improved residential structures to the base flood level. FPAs generally encourage owners to build above the Base Flood Elevation (BFE).
2. Elevating or making watertight (dry floodproofing) new or substantially improved non-residential structures.
3. Limiting development in **floodways**. A floodway is the portion of the floodplain needed to carry the deeper and faster moving water.
4. Protecting buildings in coastal areas from the impacts of waves and storm surge.

Note: The NFIP also administers the Community Rating System (CRS) where enrolled communities can secure reductions in insurance premiums for their constituents by conducting floodplain management activities that go beyond minimum NFIP requirements.

Floodplain Mapping and Ordinances

Communities that participate in the NFIP must adopt and enforce a floodplain ordinance. This ordinance applies to Special Flood Hazard Areas (SFHAs). SFHAs are mapped on Flood Insurance Rate Maps (FIRMs). FEMA issues the FIRMs, which are adopted by local communities. Floodplain ordinances must limit development in the SFHA. They also define the process, such as how to apply for a variance. The floodplain ordinance adds to other requirements for zoning, land subdivision, and building codes. The NFIP also requires its communities to assign an FPA. FPAs oversee local floodplain management and enforce the ordinance.

FEMA and our state partners support safer, stronger, more resilient communities. To this end, we encourage them to adopt standards higher than the required NFIP minimums.



Substantial Damage/Substantial Improvements

In NFIP participating communities, certain rules apply when a structure is more than 50-percent damaged or improved (by cost). The owner must build in a way that complies with current building codes and ordinances. This applies even if the structure had been exempt from those rules before the damage or improvement. It also applies to damage from hazards other than floods, such as fires or high wind. The concept of Substantial Damage/Improvement (SD/SI) is central to a floodplain ordinance and an FPA's job. For communities with **pre-FIRM structures**, an SD/SI determination can be one of their strongest tools. It allows them to require owners of grandfathered structures to comply with NFIP minimums and other current standards.

Best practices for SD/SI provisions in floodplain ordinances include:

- Decide how the structure value will be determined, to reduce subjective judgements and prepare for potential appeals. For example, will you use tax assessed value or market value? How will you get the pre-damage and improvement estimates?
- Create a "cumulative clause." For instance, any structure modifications (improvements) totaling 50% of the structure's value over a set time period (e.g., 10 years) must meet the SD/SI threshold. How do you track improvements over time? How do you inform structure owners?
- Consider setting a lower threshold, perhaps 40% damage triggers the substantial damage designation.

Floodplain Administrator

The FPA sees that the community complies with minimum NFIP standards. They also manage the floodplain ordinance. This includes reviewing permit applications for development in the SFHA, enforcing any locally adopted higher standards, and making SD/SI determinations.



Floodplain Administrator
Responsible for community compliance with the NFIP, including permitting, inspections, and substantial damage determinations.

The FPA, especially for a CRS community, should also be involved in hazard mitigation planning development and implementation.

Another key role is to teach residents and local officials about flood risk. This helps the FPA establish and keep up a broad approach to floodplain management.

HAZARD MITIGATION PLANNING

Definition: A process to manage a community's natural hazards. The first step is to identify each hazard (not just flooding) and its level of risk to vulnerable community assets. The next is to figure out actions and strategies to reduce or remove the risks. Hazard Mitigation Plans (HMPs) should be objective, operational, and support community goals. If so, they can help break the disaster cycle. Planning should include the following elements:

- Public Involvement – request and consider input from diverse interests.
- Risk Assessment – identify all natural hazards that apply and quantify the related risks.
- Mitigation Strategy – state the community's approach to apply mitigation actions that are cost effective, technically feasible, environmentally sound, and related to community capabilities.

Hazard Mitigation Planner

The Hazard Mitigation Planner develops, maintains, and updates the HMP. Planners also help others take on the mitigation actions identified in the HMP. Like the FPA, the Hazard Mitigation Planner collects and shares flood hazard data. Doing so can encourage risk-based decision-making and mitigation actions.



Hazard Mitigation Planner
Responsible for developing, maintaining, and updating the HMP.

OTHER COMMUNITY PARTNERS INVOLVED IN FLOODPLAIN MANAGEMENT

Many other community officials can whelp reduce flood risk. The table below lists many of the people who can contribute to a floodplain management program. Titles may vary, and one person may fill multiple roles (e.g., the Fire Chief who is also the Emergency Manager).

Role	How does or could this role contribute to floodplain management?	How does or could this role contribute to hazard mitigation?
**Some roles do/can contribute towards floodplain management AND hazard mitigation.*		
 **Resident, Business Owner, and Property Owner**	• Carries flood insurance policies. • Encourages joining the CRS or increasing its rating. • Complies with local floodplain ordinance, and support higher standards.	• Mitigates risk as appropriate. • Supports mitigation for all hazard-prone properties, not just their own.
 **Elected Official***	• Boosts support among local officials. • Supports capital improvement requests. • Builds awareness of plans. • Informs people of flood risks (Public Information Officer).	
 **Emergency Manager**	• Responds to floods and other hazard events. • Provides information on floodplain ordinance.	• Collect data on closed roads, floods, dam/levee concerns, and Emergency Action Plans (EAPs) for HMPs. • Update Emergency Operating • Procedures (EOP). • Oversee work to update and maintain HMPs.

Role	How does or could this role contribute to floodplain management?	How does or could this role contribute to hazard mitigation?
 Community Planner*	• Considers the whole community for comprehensive/master plan. • Considers abilities, current needs, long-term needs, and opportunities. • Uses current flood risk data for planning and land use regulations.	
 Public Works/ Utilities Director*	• Manages flood control and stormwater systems and facilities. • Familiar with EOP, as well as EAPs for levees and dams. • Maintains frequent contact with residents, such as monthly bills, etc.	
 Community Engineer	• Assesses FIRM and Letters of Map Change. • Reviews Elevation Certificates, etc.	• Analyzes data for modeling and impacts. • Prepares benefit-to-cost information for actions.
 Economic Development Officer	• Studies effects of policies.	• Studies impact of mitigation actions on economic development opportunities. • Identify partnerships, solutions, and funding to assist with mitigation activities.
 Code Enforcement/ Inspection Officer	• Supports FPA efforts to enforce the Flood Ordinance. • Approves and permits for development • Supports SD/SI determinations.	• Collects risk data. • Collects data on areas under development.
 Flood Protection Authority	• Maintains and improves regional flood risk management systems.	• Provides risk assessment data. • Shares best practices from other communities.
 Watershed Groups/ Non-Profits*	• Provides funds to restore watershed and for flood risk mitigation.	

FEDERAL AND STATE PARTNERS

Federal Agencies

FEMA manages the NFIP and the hazard mitigation planning program. FEMA provides technical assistance and approves HMPs.

Many other agencies also manage programs related to flood risk mitigation. Some examples include:

- The U.S. Environmental Protection Agency (EPA);
- The National Oceanic and Atmospheric Administration (NOAA);
- The U.S. Fish and Wildlife Service (USFW);
- The Department of Housing and Urban Development (HUD);
- The U.S. Department of Transportation (USDOT); and
- The U.S. Army Corps of Engineers (USACE).

Communities may be able to reduce program costs or attract additional federal funding by combining mitigation strategies and infrastructure investments. Try to find projects that reduce flood risk while meeting other environmental goals. For example, the EPA's municipal stormwater program encourages the use of nature-based green infrastructure (GI). GI can retain stormwater onsite and reduce runoff volumes and rates. By finding strategies that use GI, communities can address the impacts of both flooding and stormwater. Also, they may attract funding from EPA programs. These include the Section 319 Nonpoint Source Management Program and the Clean Water State Revolving Fund program. See the section on Funding Sources for more information.

State Agencies

Each state has a designated NFIP Coordinator and State Hazard Mitigation Officer. These state staff provide training and technical assistance to communities. They coordinate efforts with other state agencies. In addition:

- For floodplain management, many states have adopted minimum floodplain management regulations. Many develop model ordinances for their constituent communities. They may also establish and fund their own floodplain management programs.
- States are responsible for hazard mitigation planning at the state level. With FEMA, they play a role in the review and approval of local HMP updates. States are also key in helping local communities apply for federal mitigation planning and project grants.



3. Building Capability

Being able to conduct a coherent floodplain management program is essential. This gives you the foundation for a broader approach to reducing flood risk. How do you use your community's resources effectively? How do you gain support for new activities? Well-trained staff can help. FPAs:

- Have different backgrounds and levels of experience.
- Stay in the position for varying lengths of time.
- May hold multiple positions and need to balance competing responsibilities.

Regardless of background, experience, tenure, or job situation, the FPA can always learn more. There are ways for FPAs to build their capability. They can also expand their knowledge to other community officials and staff.

FLOODPLAIN ADMINISTRATOR TRAINING

If you are an FPA looking to build your capability, consider these key topics.

1. **Administering the community's floodplain ordinance:**
   - How your floodplain management program relates to the NFIP.
   - The benefits for your community to either enroll in or improve the community's existing rating under the CRS.
   - How to pull relevant information from effective FIRMs and Flood Insurance Studies (FISs).
   - Using related flood risk information sources, such as FEMA's Risk MAP products.
   - Using FEMA's PIVOT system to find and extract flood insurance data.
   - Enforcement requirements and procedures, such as SD/SI determinations.

2. **Understanding and supporting other community regulatory and planning programs:**
   - Planning initiatives, including the HMP, Emergency Operations Plan, Comprehensive or Master Land Use Plan, and Capital Improvement Program.
   - Land development requirements (Zoning, Subdivision, and Stormwater Management Ordinances, etc.)

3. **Identifying best practices to:**
   - Address repeated flood losses.
   - Manage water quality and quantity.
   - Maintain or improve natural waterways, floodplains, and wetlands.
   - Find resources for recovery from floods.
   - Set higher standards for managing flood risk, inside and outside the SFHA.
   - Reduce flood risk for historic properties and cultural resources.
   - Perform other work relevant and unique to your community (e.g., coastal flooding, levee accreditation)

Note: See the "Resources" section at the end of this guide for ways to access information and identify training opportunities.

Training for Other Community Officials and Staff

Consider training for other staff from the community and public agencies. Let them know about the components of a comprehensive community floodplain management program. The benefits will include a greater understanding of the program and more sustained support.

4. A Comprehensive Approach to Managing the Floodplain

The subtitle of this guide mentions "connecting the dots" between floodplain management and parallel initiatives, like hazard mitigation planning. This approach to floodplain management is strongly recommended. To get there, you will need to get rid of any potential silos and collaborate with others. This section fleshes out this approach to managing the floodplain by looking at three components:

DATA

Finding information on flood risk. Compiling resources for reducing or removing risk.

PARTNERSHIPS

- Enlisting the support of local officials
- Cooperating with other public agencies,
- Informing residents about flood risks, and
- Saving resources by coordinating the operations of public and private partners.

INTEGRATION

Working together on parallel initiatives. Not duplicating efforts or missing opportunities.

DATA

Floodplain management is supported by data and information. A community's main sources for those data are:

- Community costs for flood losses
- Current estimates of potential flood losses
- Potential flood risk changes due to changing conditions
- Flood hazard mitigation
- Flood insurance





Community Costs for Flood Losses

Use community data to illustrate the full extent of flood costs to decision makers and public agency staff. Data should include all the community's costs due to flooding beyond the reimbursement-eligible expenses.

Examples include labor, equipment use, post-flood inspections, clean-up, and materials that Public Works used to respond to and recover from floods. These are costs that would not otherwise have been required.

Note: You may need to adjust community record-keeping tools and procedures. Do this to enable real-time capture of costs and to associate and compile costs from different sources for specific flood events.



Current Estimates of Potential Flood Losses

Use current estimates of potential flood losses within and near SFHAs to identify:

- The aggregate potential impacts on constituents. Decision makers and public agency staff can use this for HMPs and other planning tools.
- Specific flood risk. Residents, business owners, and property owners can use this to make informed decisions about their own risk and options for mitigation.

FEMA's **Hazus** program and other computer models can provide scenario-based loss estimate projections. Hazus uses Geographic Information Systems (GIS) technology. It estimates the physical, economic, and social impacts of earthquakes, hurricanes, floods and tsunamis. For flooding, Hazus uses FEMA's FIRMs and other **Risk MAP** products for hazard profile information. Unless you collect and provide more detailed data, it uses open-source default data sets for potentially vulnerable assets.

Note: Flood maps such as FIRMs use past climate and hydrology data to model potential flood impacts. The modeling results are only as good as the data on record. They may not completely reflect current or future flood risks.

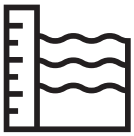
Your data can support multiple efforts.

You may need more detailed modeling results for an HMP flood risk assessment or a Benefit Cost Analysis (BCA). Federal and state mitigation project grant applications typically require BCAs. Consider collecting the following data for specific structures and assets of interest:

- Age of construction
- Building materials
- Project useful life
- Contents valuations
- Anticipated loss of function duration

Note: When state and local officials apply for FEMA grants for mitigation projects, the benefit cost ratio must be at least 1.00. Some projects of local importance may not meet these criteria. In addition, HMA funded projects are often awarded competitively, on a statewide or nationwide basis. Applications must satisfy applicable floodplain management, environmental, and historic preservation requirements. Other HMA grant programs include the pre-disaster Building Resistance Infrastructure and Communities (BRIC) and post-disaster Hazard Mitigation Grant Program (HMGP). Applicants must meet certain thresholds to have projects prioritized or receive funding. See "Funding Sources" near the end of this guide for more information on grant programs.

You may need demographic data on vulnerable constituents. This can help determine potential environmental justice issues. Historic or environmental designations for vulnerable assets can meet requirements for Environmental Planning and Historic Preservation (EHP) data.



Potential Changes to Flood Risk due to Changing Conditions

Projected flood risk changes due to changing conditions can indicate whether to expect higher losses in the future. These data can be used to update or revise requirements for new development in SFHAs. The process for modeling potential changes is similar to that used to determine current flood loss estimates. It just substitutes flood mapping with anticipated changes to flood zones.

Note: Projected changes in flood extents can be subjective. FPAs should work with the state and FEMA to determine sound assumptions on the extent of changes. See the "Resources" section at the end of this guide for federal and state agency contacts.



Flood Hazard Mitigation

You need data and information to identify and evaluate mitigation options to reduce or eliminate flood risk. These options may include:

- A range of mitigation measures that benefit residents, business owners, and property owners. These include regulations, "bricks and mortar" projects, and public outreach. Some are best for public agencies and others for individuals.
- Reducing risk can reduce the cost of flood insurance.
- Finding grants to help with mitigation measures through FEMA's Hazard Mitigation Assistance (HMA) programs. Local, state, and other federal programs also offer grants.



Flood Insurance

Flood insurance claims can provide some of the best information for identifying and communicating flood risk. Information on parameters that determine how much flood insurance will cost will also be important for discussions with uninsured or underinsured residents, businesses, or property owners.

FPAs should gather all available considering flood insurance related information including options may want to review:

- Lowest Floor Elevations.
- Active Policies.
- NFIP claims paid to select properties.
- Increased Cost of Compliance (ICC) provisions funding.

A Hazard Mitigation Planner can compare the number of structures in the floodplain to the number of policies. Communities with a lot of structures in the floodplain and few insurance policies may have more risk exposure.

Note: NFIP requirements change through FEMA updates and acts of Congress. Keep up-to-date on these changes so your program complies. Help local insurance agents use the most current information in discussions with the public.

PARTNERSHIPS



Building partnerships within the community will help in many ways.
It is very important to engage with key players in floodplain management.

Partnerships may involve one or more of the following:

- Residents, business owners, and property owners who are at risk for flood losses.
- Public agency staff members.
- The private sector, such as real estate and insurance agents.
- Decision makers (i.e., elected and appointed officials).

Residents, Business Owners, and Property Owners:

Protecting people is the point of floodplain management. Forming strong partnerships is vital for success.

You can assume all parties are interested in reducing flood loss. However, people who have become established in a community and have ties to local schools, places of worship, and employment, can be unwilling to move or relocate even if they face risks in their current situations. You will also face denial among community members, especially if there are no recent major flood event.

The FPA job is regulatory in nature. As a result, potential partners may have some concerns. In addition to identifying risk and regulatory issues, the FPA should be clear that decisions about addressing risk are the choice of the individuals. In some situations, the community will play a role in mitigation, but other options such as property acquisition require a willing property owner.

While it is necessary to focus on floodprone residents, don't ignore the rest of the community. The latter need to understand the importance of issues that only seem to affect a few people. Make the case using the best available data.

Public Agency Staff Members:

Cooperation between emergency management, public safety, community planning, code enforcement, engineering, and public works is vital due to the nature of flood hazard. Because of the demands on public agencies, people tend to "stay in their lane." Breaking down silos can lead to efficiency.

Engaging and sustaining involvement by representatives of lead agencies for different planning initiatives can be accomplished by establishing and supporting a **Community Resiliency Committee** that includes membership of the lead agencies for all overlapping planning initiatives.

Community Resiliency Committee
Helps engage and sustain involvement in floodplain management and hazard mitigation.

Note: Your issue could very well be someone else's issue with a different name. For example, stormwater can affect traffic flow, business losses, and water quality in addition to flooding. Committee meetings can include updates of each planning idea so that members can share information from their own efforts. Another aspect is to take advantage of resources within the public sector to do a range of activities without increasing costs for the community, in other words – share the load.

If there is a Code Enforcement Officer, you can train this person on the basics of both the building code and the floodplain ordinance. This increases awareness of how to proceed if there is a violation. Additionally, a Public Affairs or Information Officer can deliver information about flood risk and resources to the public.

Public-Private Partnerships:

Partnerships between the FPA and the private sector can include:

- A relationship that increases understanding of risk. This includes the aid of real estate and insurance agents, local associations, and other organizations (i.e. Chambers of Commerce, Red Cross, The Nature Conservancy, NAACP, Habitat for Humanity, National Congress of American Indians, et al) to assist with data and public outreach efforts.
- Improving resiliency and opportunities for recovery. For example, working with banks to administer low-interest loan programs for implementing hazard mitigation measures and disaster recovery.

With the private sector, partnerships should be mutually beneficial. If they are local businesses, they will have a long-term commitment and stake in the community that drives their interest and involvement.

Decision Makers:

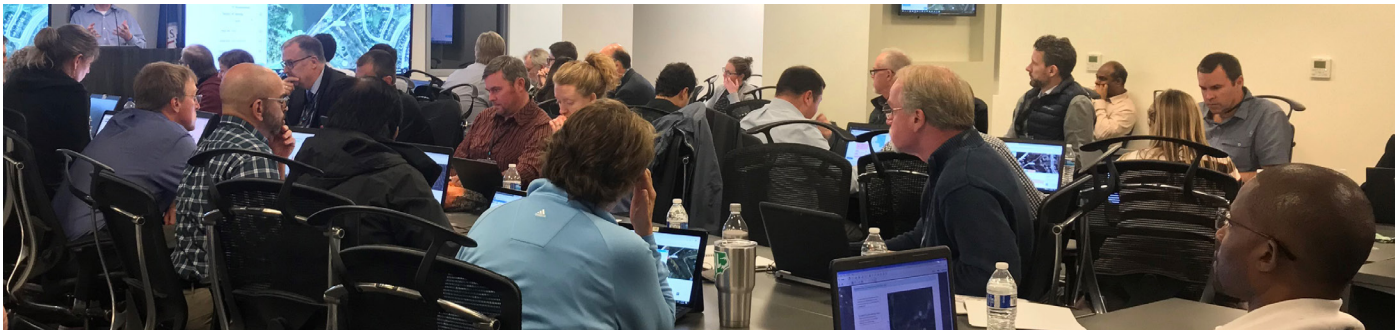
Local officials may need to resolve situations. These can include repetitive flood losses or floodplain management. Efforts that require community resources depend on them.

Local officials are committed to public safety as well as responsible use of resources. Elected officials have to balance many competing needs. These include the health and welfare of their constituents, maintaining a healthy economy, and providing opportunities for growth. These concerns are the same issues addressed through a floodplain management program.

It is important to decide who is best positioned to carry the message to local officials. Although the FPA may not have easy access to elected officials, it is wise to follow the chain-of-command. Keep the elected official's staff informed, as they are often the first person an official will turn to for updates.

It is important to know who persuades the decision makers. In many cases, peer-to-peer discussion can be the best way to make your point. In this case, you may be able to identify a champion among the community's elected officials. There may be an elected official with public safety or public works where floodplain management issues would be a natural fit. However, if officials are elected by geographic districts, it probably makes sense to identify the individual(s) for districts with the highest flood risk.

Build a case for floodplain management by focusing on costs and benefits. The benefits will be avoiding flood losses and disruptions. Here is where connecting dots often helps. Garner support for elevating a structure above the Base Flood Elevation (BFE) an elevation project by demonstrating how it will aid the property owner, support the tax base, employ people and reduce future damages.



INTEGRATION

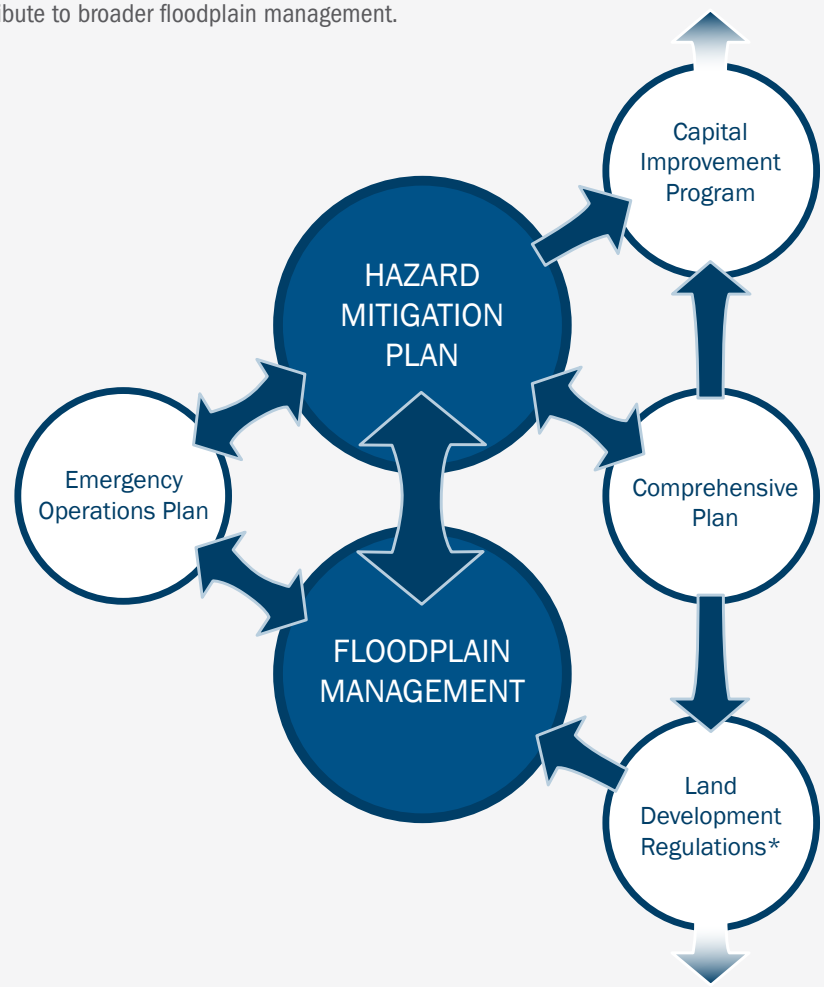
There are a number of plans that could contribute directly and indirectly to comprehensive floodplain management. Common examples include:

- Hazard Mitigation Plans (HMPs)
- Emergency Operations Plans (EOPs)
- Comprehensive (or Master) Land-use Plans and Land Development Regulations (LDRs)
- Economic Development Plans
- Capital Improvement Programs (CIPs)



Integration of Common Planning Initiatives

The diagram below shows some of the basic relationships between common planning initiatives and illustrates how integration can contribute to broader floodplain management.



*EXAMPLES OF *LAND DEVELOPMENT* REGULATIONS THAT ARE RELEVANT FOR FLOODPLAIN MANAGEMENT AND HAZARD MITIGATION INCLUDE:

- Zoning Ordinance
- Subdivision Ordinance, which may include distinct provisions for:
  - Stormwater management
  - Preservation of cultural and historic resources
  - Protection of environmental and/or natural resources
- Floodplain Ordinance
- Building/Property Maintenance Codes

Hazard Mitigation Plans

What: HMPs measure natural hazard risk and future losses. They identify projects that meet community goals. Communities must have an HMP to be eligible for FEMA's HMA grant programs. They must be updated every five years.

Who: HMPs are usually developed on a multi-jurisdictional basis, where multiple communities within an area embark on the HMP update as a joint effort. The process may be managed by various groups including:

- Regional Planning Commissions or Districts covering multiple counties. These are commonly used in Virginia and West Virginia.
- County Emergency Management Offices covering all municipalities within the county. These are typically used in Pennsylvania, Maryland and Delaware.
- Local/County Planning Departments; less common but examples can be found in Region 3.

Why: HMPs overlap with floodplain management by seeking to identify and reduce or eliminate the risk from flooding.

Emergency Operations Plans

What: EOPs identify roles for public agencies and non-governmental organizations (such as the American Red Cross). They mobilize resources and respond to emergencies.

Who: EOPs are usually created and maintained by Offices of Emergency Management (OEMs) at all levels of government and in certain private entities. In FEMA Region 3, much of the work is at the county level. If done well, the county OEMs will work with other public agencies as well as with relevant state and federal government agencies and their municipalities.

Why: EOPs address risks that cannot be mitigated. However, EOP planning efforts should:

- Align HMP flood risk assessment impacts and consequences for response and recovery operations in a consistent manner.
- Identify where mitigation efforts could improve the effectiveness of response operations. For example, consider a road used for emergency access to a floodprone area and evacuation that has potential flooding issues of its own. It should be identified as a priority for mitigation in the HMP.

Comprehensive/Master Land-Use Plan and Land Development Regulations

What: Comprehensive or Master Land-Use Plans and Land Development Regulations (LDRs) include regulations ranging from land-use goals to floodplain management. These documents protect public safety while pursuing growth and development. These documents should work to prohibit development in floodprone areas and/or find alternative sites for relocating residents.

Who: Comprehensive Plans and LDRs are usually developed by Planning /Zoning Departments. Each state has varying requirements and guidance for creating and maintaining land development controls. However, FEMA has specific requirements for floodplain ordinances. These documents may be managed by the FPA.

Why: Comprehensive Plans and LDRs are important to community floodplain management, especially when data are consistent with HMPs and EOPs. Clear data can lead Community Planners to limit the creation of new risk (e.g. prohibiting constructing homes in a flood-prone area). Comprehensive planning allows for buy-in for a floodplain ordinance above NFIP minimums.

Economic Development Plans

What: Economic Development Plans come in many forms. They range from formal documents approved by elected officials to coordinated activities of interested private parties. The former can be supported by a Comprehensive Plan and LDRs. The latter is not always an open or public process. However, like the LDRs, the intent should be realistic growth and development that does not create problems down the road. Also, like Comprehensive Plans, Economic Development Plans should assist with potential business relocations.

Who: Formal Economic Development Plans are developed at different levels of government. Those include Regional Planning Commissions and Districts as well as public agencies at county and/or local levels with economic development staff positions. Planning Department staff may include economic development as part of the planning process.

Why: Promotion of growth and development should be based on the same flood risk information available to other planning initiatives. They have similar goals of avoiding hazardous situations or creating new flood risk situations.

Capital Improvement Program

What: All public agencies have an operating budget and if tax revenue is sufficient, a long-term plan for implementing capital improvements to facilities, infrastructure, and other community assets.

Who: The Capital Improvement Program is typically done through the administrative offices, with input from other offices. Priorities are assigned based on input from staff as well as constituents.

Why: If a community has identified a mitigation measure that requires significant funding, it will need to be included as part of the CIP. Most federal and state grants include a "local match" requirement that must be included in the municipal budget as well.

Note: There are other planning initiatives that may include data sharing, partnerships, and integration opportunities. See the "Resources" section at the end of this guide to identify what may be relevant.

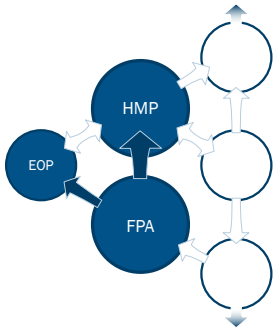
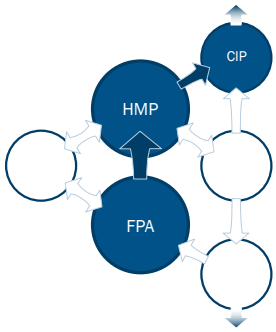
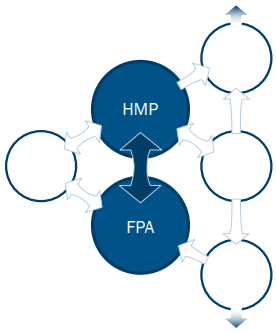
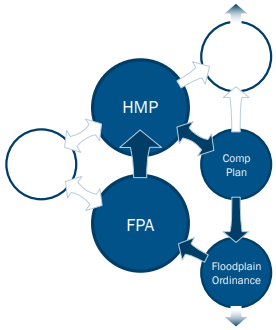
Stormwater Management Plans

A floodplain management program must confront the increase in flood flows caused by development. As forests, fields, and farms transition to impermeable surfaces like streets, rooftops and parking lots, more rain runs off at a faster rate. The rate of runoff in an urbanized area can increase fivefold or more. Changes in the drainage system compound this problem. Stormwater runoff travels faster on streets and in storm drains than it did under predevelopment conditions. As a result, flooding is more frequent. Stormwater management is the effort to reduce the effects of increased runoff.

In no way is the above list of plans ***fully*** comprehensive. You can click through the following list for more information on these additional plans:

- Environmental Protection Agency Watershed Plans
- Coastal Zone Management Plans
- Community Health Improvement Plan
- National Highway Traffic Safety Plans
- Community Development Plans (HUD)
- USDA Rural Development Planning

Returning to the graphic showing potential integration, consider the following four examples:

These relationships involve the flow of useful information. For example, the FPA may observe situations for other planning efforts. An at-risk property may have specific concerns for emergency operations and/or hazard mitigation. By communicating problems to the Emergency Management Coordinator, these issues can be addressed in: • The EOP for problems that cannot be readily mitigated. • The HMP for problems for mitigation measures.	
The FPA may also be aware of flooding problems that could be addressed through bricks and mortar projects such as upgrading a culvert or floodproofing for critical infrastructure. Communicating the situation to the Emergency Management Coordinator and the community's Hazard Mitigation Planning Team could result in the project being included as a mitigation action in the HMP. Then, the project would be forwarded for inclusion in the community's Capital Improvement Program. Even if the project is proposed for FEMA HMA grant funding, there still is a 25% non-federal or "local" share of the project costs that must be borne by the community.	
This flow of information should move in both directions. For example, the risk assessment results from the HMP should be available to the FPA. The FPA can communicate flood risk to the community.	
In other cases, these relationships form feedback loops. For example, the FPA recommends a higher standard in the community's LDRs and the Floodplain Ordinance as well as the HMP. The recommendation is based on potential future flood risk in areas near the SFHA due to climate change. The recommendation is included in the HMP as a mitigation measure and as a goal in the Comprehensive Plan. The goal then becomes an action by the community to revise the Floodplain Ordinance. This in turn becomes part of the FPA's responsibilities.	

Note: At first glance, this may appear more complicated than it might need to be. However, if all partners with a role in floodplain management are involved at the appropriate level in these planning efforts, this type of change can move through the system effectively. It can be done in a way that provides consistency throughout all the initiatives and documents. This will help with understanding the community's intent. It also forms a defensible position for the community if it is challenged.

5. Scenarios

This section contains eight scenarios about common challenges faced by communities and their FPAs.

These scenarios are based on the most commonly asked questions received by FPAs throughout Region 3. While based on real world examples, these scenarios are described for a fictional town of Riverview.

These scenarios are not a complete list of potential issues, but you will see common themes within the challenges and solutions.

This discussion illustrates the benefits of a comprehensive approach to floodplain management to reduce flood risk. The scenarios include:

- **Scenario 1:** Building Floodplain Management Capability
- **Scenario 2:** Maintaining and enhancing the Floodplain Management Program
- **Scenario 3:** Mitigating repetitive flood losses
- **Scenario 4:** Finding resources for flood mitigation and recovery
- **Scenario 5:** Improving Stormwater and Water Quantity Management
- **Scenario 6:** Improving Water Quality
- **Scenario 7:** Development is proposed in areas with potential flood risk outside the SFHA
- **Scenario 8:** Reducing Flood Risk for Historic Properties and Cultural Resources



SCENARIO 1: BUILDING FLOODPLAIN MANAGEMENT CAPABILITY

WHAT'S THE ISSUE?

Riverview is a medium-sized town founded in 1845 along the Old Muddy River. Building stock in the community mostly dates from 1850 to 1910. Currently, 40 percent of the incorporated area is mapped in the SFHA. Flooding is a problem for many people in Riverview.

Fortunately for Riverview, the NFIP supports recovery from periodic floods and keeping the community together. More than 50 percent of properties in the SFHA maintained flood insurance policies. Flood damage has not previously elevated to the level of substantial damage. However, over the last five years, Riverview experienced three moderate-to-severe floods. They were more frequent and extensive than previously seen. They caused repetitive and substantial damage and disruption for many properties.

In the past, the role of FPA was handled by the town's long time Code Enforcement Officer. The workload was relatively light. As flooding has increased, the demands placed on the FPA also increased. Unfortunately, the Code Enforcement Officer retired suddenly without an adequate transition. This occurred at about the same time as the most recent flood event. In the midst of increasing needs, a new FPA was appointed with little experience. This person now faces a range of problems. They include determining substantial damage from recent flood events and long-term management of flood risk.

WHAT CAN BE DONE?

DATA

The new FPA reviewed the capability assessment from the Riverview HMP to see if the community had experience with substantial damage determinations.

PARTNERSHIPS

The FPA also contacted the following for assistance with substantial damage determinations:

- The state NFIP Coordinator.
- FPAs in adjacent communities via the State's Floodplain Managers Association.

For long-term floodplain management needs, the FPA:

- Identified a "champion" among the Town Council members, who helped gain support of the Council. This established the need for floodplain management as a community-wide policy.
- Undertook an aggressive training process with state and FEMA resources. Attained Certified Floodplain Management status.
- Organized cross-training efforts to better understand floodplain management issues.

SCENARIO 2: MAINTAINING AND ENHANCING THE FLOODPLAIN MANAGEMENT PROGRAM

WHAT'S THE CHALLENGE?

Riverview is experiencing more flooding than in prior years. Floodplain management can help, but it requires a commitment of time and resources to comply with floodplain regulations. It also requires supporting developmenting proposal reviews, maintaining flood risk data, keeping abreast of flood insurance regulations, outreach to constituents, and contributing to long-term planning efforts for flood mitigation and land-use planning.

Unfortunately, Riverview is in the midst of long-term change. Local officials face increasing demands. The last large local employer recently closed. Riverview's budget was already strained before this closing and the ongoing pandemic. This will likely further reduce tax revenues for years to come and place additional limits on resources.

WHAT ARE THE CORE ISSUES?

Public agency staff, particularly in small communities, need to wear many hats. There is limited ability to focus on a particular task. Floodplain management requires a diversity of skills to address technical, political, and public relations issues.

WHAT CAN BE DONE?

PARTNERSHIPS

The Riverview Town Council worked with their department heads to promote team approaches to comprehensive floodplain management.

In addition, the FPA reached out to the regional Council of Governments (COG) for options to join with other local communities and share services to meet regulatory obligations. The COG aided a plan for similar communities in the region to share the cost of floodplain management enforcement.

INTEGRATION

The FPA recruited the assistance of public sector partners who had overlapping responsibilities. For example:

- The Public Information Officer was cross trained to deliver flood risk and mitigation information to the public. This reduces the burden on the FPA.
- The Public Works Department was also cross trained on compliance issues for the Floodplain Ordinance so potential violations could be reported back to the FPA for follow-up.



SCENARIO 3: MITIGATING REPETITIVE FLOOD LOSSES

WHAT'S THE ISSUE?

More flooding in Riverview leads to more repetitive loss properties. Some NFIP-insured properties have submitted claims above thresholds for **Repetitive Loss (RL)** and **Severe Repetitive Loss (SRL)** properties. There may also be floodprone properties without flood insurance. They may have few resources for recovery.

WHY IS THIS IMPORTANT?

The direct cost to Riverview is the continued need for emergency services. The indirect cost is lost economic activity and sales tax revenue from businesses that are off-line during recovery efforts and lost property taxes for abandoned properties. Hidden costs to the community include the disruption and stress placed on impacted residents and property owners with attendant mental and physical health consequences.

WHAT ARE THE CHALLENGES?

Local officials often have few resources to pursue mitigation efforts. In many cases, property values are too low for elevation or relocation projects using FEMA's HMA programs. In addition, voluntary acquisition and demolition under HMA is often not pursued because of the potential loss of tax revenue for the community and the displacement of long-time residents.

WHAT CAN BE DONE?

DATA	The FPA and other staff focused on the full cost to the community for repetitive flood losses.
PARTNERSHIPS	The Riverview Town Council held working sessions to assure those affected that a solution would be developed to mitigate risk while remaining in the community.
INTEGRATION	The Town Council tasked the FPA and other staff to share efforts between relevant community plans including: • The HMP, to quantify the risk and potential losses avoided as well as identify options. • Comprehensive Plan and Economic Development Plan, to identify sites for relocation from floodprone areas. • Capital Improvement Plan, to provide funding. • Watershed Management Plans and Natural Resource Planning could identify areas to increase stormwater management. These are planning efforts that could tell you what is contributing to increased flooding.

SCENARIO 4: FINDING RESOURCES FOR FLOOD MITIGATION AND RECOVERY

WHAT'S THE ISSUE?

Riverview is aggressively trying to decrease future flood risk, including repetitively flooded properties. However, mitigation efforts will take time and money to implement. Additionally, not all flood risk can be eliminated through mitigation. Flood risk may continue to increase due to climate change outpacing mitigation efforts.

WHY IS THIS IMPORTANT?

There are areas in Riverview that will continue to be vulnerable to flooding. Resources available to these community members for mitigation and recovery are quite varied. For homes experiencing repetitive flooding, previously affordable NFIP insurance policies are becoming more expensive. Private insurance or self-insurance is not a realistic option for most Riverview residents due to higher costs. As a result, their homes could be losing value. Attempts to sell may not be successful.

Properties located away from the river but still near the SFHA are now also facing increased flood risk. Flood insurance under the NFIP is only required where property owners have a federally backed mortgage within designated flood zones or per lender preferences. In these areas, property owners may be unaware of the risk and/or available resources.

WHAT CAN BE DONE?

DATA

As a complement to documenting flood risk and projected losses, the Riverview FPA and other staff worked to illustrate the costs and benefits of available mitigation options, as well as the cost and coverage of insurance:

- Preferred Risk Policies for properties outside the SFHA.
- Increased Cost of Compliance (ICC) coverage might be available to help rebuild after a flood. (This coverage only applies if the home needs to be brought up to the floodplain management code after being flooded.)
- Private flood insurance.

PARTNERSHIPS

The Riverview Town Council decided to:

- Support public agency staff by sharing information regarding resources for at-risk residents. Encourage participation in mitigation projects and/or purchase of flood insurance, as appropriate.
- Create a low interest loan pool to support property owners actively pursuing mitigation. Proceeds can be used to recover from flood events occurring before mitigation is complete. They can also be used as part or all of the non-federal (aka "local") match for FEMA HMA grants and to solicit cooperation from local banks to help administer the low-interest loan program.
- Engage local real estate brokers and mortgage lenders to identify the risk in different areas of the community as well as resources for potential property buyers.
- Call on nonprofit organizations that can offer construction services.
- Implement watershed management practices (green infrastructure) throughout the community to lessen the burden on the Muddy River.

SCENARIO 5: IMPROVING STORMWATER AND WATER QUANTITY MANAGEMENT

WHAT'S THE ISSUE?

Flooding occurs when the amount of stormwater running off the land exceeds the capacity of the receiving waterways, i.e., streams and rivers. At that point, the waterways overflow their banks and inundate the floodplain. If the rainfall amount is high enough, the floodwaters may also inundate areas adjacent to floodplain. However, in most suburban and urban areas, stormwater is conveyed to the receiving waterways in systems of drains and pipes.

Most communities have regulations requiring that new development manage stormwater runoff to control the stormwater leaving the developed area. Examples include Subdivision Ordinances or Stormwater Management Ordinance. The intent is to avoid flooding in downstream areas. The degree to which stormwater is managed successfully varies.

Some regulations and efforts take a comprehensive, watershed-based approach. This includes tracking how much stormwater is released from a development as well as the timing of these releases.

WHAT CAN BE DONE?

DATA

The Riverview FPA, with data from the HMP update, worked with the Town Engineer to document the flooding impacts of existing and future flooding under different stormwater management options. Those options include continuing current practices versus adopting a watershed-based approach.

PARTNERSHIPS

Based on the report of the FPA and Town Engineer, the Riverview Town Council agreed to reach out and work with:

- Property owners with development potential and developers in the community to gain support for proposed changes to Subdivision Ordinances.
- Neighboring communities within the Old Muddy River watershed who share common issues or may be needed for solutions requiring the participation of multiple jurisdictions.
- Universities, environmental organizations, landscape architects and government agencies are active in managing stormwater as a resource to offer other benefits such as ground water recharge, community gardens, grey water systems, etc.

INTEGRATION

The Town Council also directed the FPA and department heads to identify and incorporate comprehensive, watershed-based, and feasible solutions to stormwater management issues in other planning efforts and the Town's Subdivision Ordinances. This is consistent with Town Council discussions with property owners and neighboring communities. The Town Council has decided to turn the conversation into one of its assets by reaching out to restoration specialists such as U.S. Fish and Wildlife, Department of Interior Rivers Trails and Conservation Assistance, EPA, NOAA, and U.S. Forest Service.

SCENARIO 6: IMPROVING WATER QUALITY

WHAT'S THE ISSUE?

Many communities like Riverview face issues regarding water quality. Stormwater runoff from agricultural land use can introduce potential pollutants into receiving waterways. Those include animal waste, herbicides, and fertilizer residues. Urban stormwater runoff contains additional potential pollutants, including oil and fuel, road salts, and grit. These pollutants impact the appearance and potential beneficial use of the floodway and floodplain by the community.

Any of these potential pollutants can pose problems for communities traversed by the receiving waterways like the Old Muddy River. The impacts of these pollutants include:

- Direct hazards for public health and related negative impacts on community assets. related to water-based infrastructure, recreational facilities, and/or tourism
- Increased cost for drinking water treatment.
- Degradation of natural resources including wetlands and vegetated floodplains that provide a variety of beneficial uses, including reducing the amount of stormwater.

Since these impacts do not always cause direct damage to structures or facilities, water quality issues are not typically part of floodplain management or hazard mitigation. However, a comprehensive community floodplain management program that seeks to improve the overall resiliency of the community addresses water quality as well as water quantity.

WHAT CAN BE DONE?

DATA	Along with their work on supporting a watershed approach to water quantity, the Riverview FPA and town engineer were able to examine water quality issues as well as the root causes, not just the symptoms. Understanding the source of a potentially complex problem such as water quality will lead Riverview to a more robust solution.
PARTNERSHIPS	The FPA engaged other public agencies, the State University, and local environmental advocates to increase community ability to address water quality. The Riverview Town Council also discussed water quality and watershed-based stormwater management with property owners and developers as well as local communities within the Old Muddy River watershed.
INTEGRATION	The Town Council directed the FPA and department heads to include non-structural, nature-based water quality solutions to water quality issues in hazard mitigation planning as well as local and regional comprehensive planning efforts.

SCENARIO 7: DEVELOPMENT IS PROPOSED IN AREAS WITH POTENTIAL FLOOD RISK OUTSIDE THE SFHA

WHAT'S THE ISSUE?

The Planning Commission of Riverview received a plan for a new mixed-density residential housing development in an area near the Old Muddy River. The development is consistent with the community's Comprehensive Plan. It was initially well received as it included a range of housing choices, including affordable options. The proposed development is outside the SFHA on the town's FIRM. However, based on recent flooding events, the FPA raised concerns during the plan review process. Revisions to the community's HMP include assessments of the risk from flooding in areas near the SFHA. Studies show this development is at risk of periodic flooding and potential property damage. The developer is insisting on approval based on compliance with current land development regulations. The Planning Commission is hesitant to approve a development that could create risk for future residents and property owners.

WHY DOES THIS HAPPEN?

Local land development controls, such as floodplain ordinances, rely on flood zones shown on FIRMs to restrict or limit development activities in the SFHA and typically do not have provisions for restricting or managing development outside the SFHA. However, FIRMs are based on past development, climate, and hydrologic data. Due to changes in flood risk, FIRMs may not reflect all areas of future flood risk. In addition, updating FIRMs can be a labor-heavy, costly process.

WHAT CAN BE DONE?

DATA	The Riverview Planning Commission and FPA used data from the ongoing HMP update to identify mitigation measures that could be incorporated into the development plan to reduce the risk of future flood events.
PARTNERSHIPS	The Riverview Planning Commission and FPA worked with the developer to incorporate the identified mitigation measures. The Planning Commission agreed to allow increased density in the development to offset increased development costs. The Planning Commission also recommended the HMP update include adding higher standards in the town's Floodplain Ordinance. It also recommends exploring watershed-based mitigation measures to further reduce effects of flooding.
INTEGRATION	The Town Council delayed future development until the HMP was updated and integration of recommendations completed in the Comprehensive Plan and the Floodplain Ordinances were integrated for potential future flood risk. These provisions incorporated higher standards in the Floodplain Ordinance by adding freeboard to the effective BFEs. Doing so reflects expected flood risk over the life span of development. It also reflects improvements and a buffer outside the SFHA for high-water levels for future floods.

SCENARIO 8: REDUCING FLOOD RISK FOR HISTORIC PROPERTIES AND CULTURAL RESOURCES

WHAT'S THE ISSUE?

The effects of flooding can be wide-ranging—from human casualty to property damage to the disruption of activity. Often not considered, however, are the potentially devastating effects on historic properties and cultural resources. Historic buildings and structures, artwork, monuments, family heirlooms, and historic documents are often irreplaceable and may be lost forever if not considered as part of the mitigation planning process and floodplain management efforts. The loss of these resources is more painful as residents often rely on them to seek comfort after a disaster.

Historic properties and cultural resources are part of a community's sense of identity. In addition, these resources are also valuable economic assets that increase property values and attract businesses and tourists. Preservation often spurs economic development. For example, historic downtown renewal programs lead to growth in tourism.

Unfortunately, requirements related to substantially damaged properties do not always align with historic and cultural resource preservation. In the wake of a flood event that impacts historic properties and/or cultural resources, current regulations may limit options for preserving these assets.

WHAT CAN BE DONE?

DATA	The FPA gleaned relevant information from the HMP update to better understand the presence of and risk for historic and cultural resources.
PARTNERSHIPS	The FPA engaged other public agencies, the State University, and historic and cultural resource preservation advocates to help address issues with floodprone historic properties and cultural resources.
INTEGRATION	Historic preservation planning allows for the protection of historic properties and cultural resources before they are threatened with demolition or alteration. Hazard mitigation planning protects life and property from natural hazards. By integrating these two planning processes Riverview identified pre-disaster measures to reduce the risk of flooding. They also revised the Community's Floodplain Ordinance to account for historic properties and cultural resources.



6. Take Immediate Action

This guide reference ways you can reduce your community's risk and increase resiliency. The following is a "top hits" summary for where you might direct your initial efforts.

ACTION *These are the resources and tools already in place that you can continue building on.*	**WHY?** *These actions can directly impact your community's resilience.*	**HOW?** *Examples of ways to implement these actions.*
Promote Flood Awareness and Insurance Options	The more people that are covered under flood insurance, the more resilient your community will be. Even homes in moderate- to low-risk areas are at risk. They should take advantage of lower cost options.	Distribute outreach materials to increase awareness of flood hazards, flood insurance, and flood protection measures (including nature-based)about flood insurance.
Promote Higher Standards	By working with local officials to include higher standards for floodplain management in plans and ordinances, planners help build communities that can recover more quickly after a flood, optimize the balance between the built environment and open space, and provide safer, more resilient places to work and live.	Encourage new construction to be 1 or more feet above the BFE. (Freeboard) Create incentives to turn floodprone areas into open space. This can be done through property buy-outs and planning. Advocate for increasing green space versus rebuilding in the same location.
Join the Community Rating System (CRS)—or improve your rating	The CRS is an incentive program within the NFIP that encourages floodplain management activities that exceed the minimum NFIP program requirements. Flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions.	Form a Community Resilience Committee to plan and assess current and future actions that can be documented toward CRS classification. Points are awarded for: • Promoting flood insurance. • Maintaining Elevation Certificates. • Promoting higher standards. • Regulating stormwater.
Develop/Update your HMP Mitigation Strategy	The heart of the mitigation plan is the mitigation strategy. It serves to as the long-term blueprint for reduce losses. It describes how the community will accomplish the planning process.	Example goal: Minimize new development in hazard prone areas. Example action: Amend zoning ordinance to permit only open space within floodplains.

ACTION *These are the resources and tools already in place that you can continue building on.*	WHY? *These actions can directly impact your community's resilience.*	HOW? *Examples of ways to implement these actions.*
Standardize and Implement your municipality's Substantial Damage Determination Procedures	For many communities with pre-FIRM structures, the substantial damage determination is one of the strongest tools to get owners (previously grandfathered in) to comply with NFIP minimum and any higher standards required by the community.	Create a Substantial Damage Plan as part of your HMP's Mitigation Strategy. Include guidance on how the structure value will be determined. This reduces subjective judgments and prepares for potential appeals. Include a "cumulative clause" such that any improvements totaling 50% of the structure's value over a set time period (e.g., 10 years) will meet the SD/SI threshold.
Consider Environmental Planning & Historic Preservation in parallel planning efforts	The integrity of our natural and historic landscape is important to us all, and steps taken to strengthen or rebuild communities can have long-term environmental and cultural impacts.	There are more than 30 federal mandates—in addition to a number of state laws and codes—to ensure proper stewardship of historic properties and the environment. These regulations can be used to reduce risk.
Implement Nature-Based solutions in your planning initiatives	Nature-based solutions have many hazard mitigation benefits and can help a community meet its social, environmental, and economic goals.	Encourage rain gardens and permeable pavers when approving new parking lots or sidewalks.



7. Conclusion

Loss of life and property impacts everyone in a community. At the same time that flood risk is increasing, available resources for communities may be decreasing.

However, by sharing data, engaging as partners, and integrating planning efforts across floodplain management, hazard mitigation, emergency operations, community planning, budget programming, etc., communities can effectively manage flood risk for their residents, businesses, and property owners.

Whether you are an FPA, Hazard Mitigation Planner, or someone looking to learn more about floodplain management, thank you for taking the time to read this guide. We are all working towards the goal of reducing risk in the floodplain and making informed decisions on how to reduce that risk.

Also, remember, you are not alone. Please reach out to your county, state, and federal agencies and peer group colleagues for technical assistance to learn about the latest resources or share a best practice.

BEST PRACTICES FOR COMPREHENSIVE FLOODPLAIN MANAGEMENT

Use a common understanding of flood risk for all community floodplain management efforts. For example, HMP data on potential flood losses should inform long-term land use decisions as well as EOP-impacted area response and recovery scenarios.

Get residents, property owners, decision makers, and public agency staff to engage as full partners.

Sustain goals, objectives, and actions across all community planning initiatives.



8. Funding Sources

Local funding can address some flood mitigation issues. However, for additional funding, federal and state grant programs are available for pre- and post- disaster flood mitigation and recovery. These funds support critical recovery initiatives, innovative research, and many other programs. The following pre-disaster funding sources support proactive planning and implementation of risk reduction.

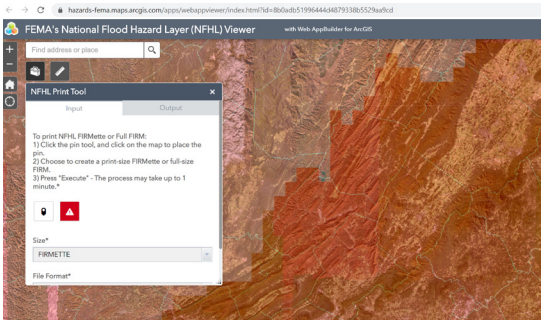
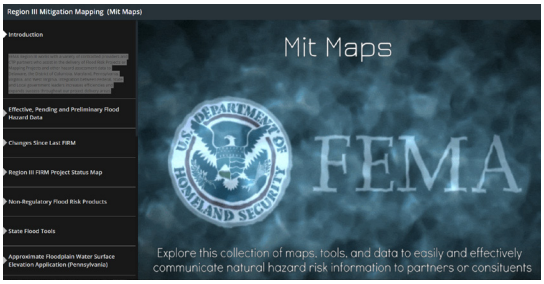
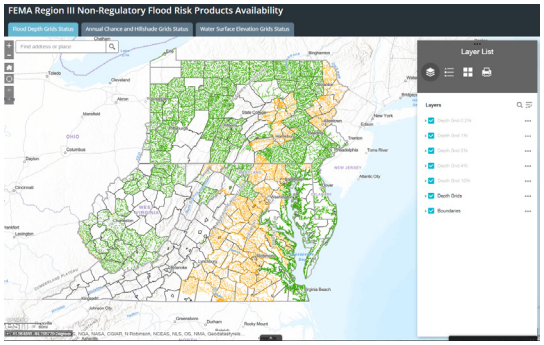
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EPA – Section 319	The Section 319 Nonpoint Source Management Program (Section 319) was established under the Clean Water Act. It helps address nonpoint source (NPS) pollution. Section 319 funds can be used for: • Technical assistance. • Financial assistance. • Education. • Training. • Technology transfer. • Demonstration projects. • Regulatory programs. Contact your state NPS Program Coordinator for more information.
FEMA Flood Mitigation Assistance Program (FMA)	A grant program for states, local communities, tribes, and territories to reduce or eliminate the risk of repetitive flood damage to NFIP-insured buildings. FEMA chooses recipients based on the applicant's ranking of the project and the eligibility and cost-effectiveness of the project.
FEMA Building Resilient Infrastructure and Communities (BRIC)–previously PDM--	A competitive grant program providing funding to states, local communities, tribes, and territories for mitigation projects. Guiding principles are: • Supporting communities through capability- and capacity-building. • Encouraging innovation. • Promoting partnerships. • Enabling large projects. • Maintaining flexibility. • Providing consistency.

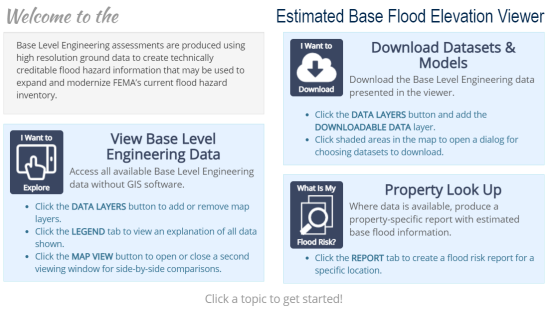
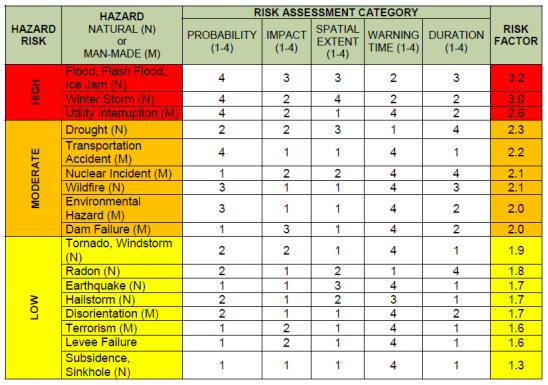
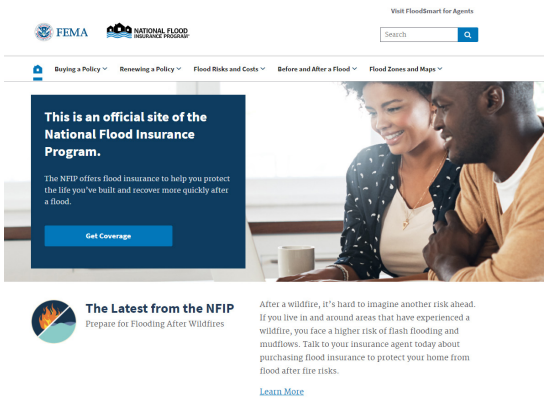
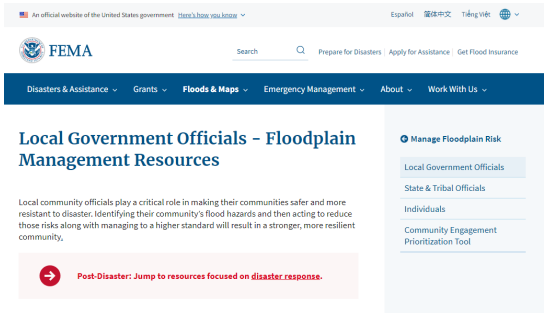
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FEMA Rehabilitation of High Hazard Potential Dams (HHPD)	Provides technical, planning, design, and construction grants to non-federal government organizations or nonprofits for high hazard potential dams.
FEMA Increased Cost of Compliance (ICC)	Flood insurance coverage that is a part of most NFIP policies. It provides up to $30,000 to help pay the costs of repairing a flood-damaged building to meet local requirements in SFHAs. ICC can be assigned to a community to help obtain additional federal grant funding.
FEMA Community Assistance Program – State Support Services Element (CAP-SSSE)	Helps states proactively identify, prevent, and resolve floodplain management issues before a flood event even occurs. CAP-SSSE ensures that NFIP goals are met. It builds floodplain management capability and shares state expertise.
FEMA Section 406 – Public Assistance Program	The 406 Program funds mitigation measures with the repair of the damaged facilities. It is limited to declared counties and eligible damaged facilities.
HUD Community Development Block Grant (CDBG)	Provides grants to develop viable urban communities by providing decent housing and a suitable living environment. It also expands economic opportunities for low- and moderate-income persons.
HUD CDBG-DR	HUD provides flexible grants to help cities, counties, and states recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. CDBG Disaster Recovery (CDBG-DR) assistance may fund a range of recovery activities. HUD can help communities that might not recover due to limited resources.
HUD CDBG-MIT	The CDBG Mitigation (CDBG-MIT) Program allows eligible grantees in areas impacted by recent disasters to mitigate risks and reduce future losses.

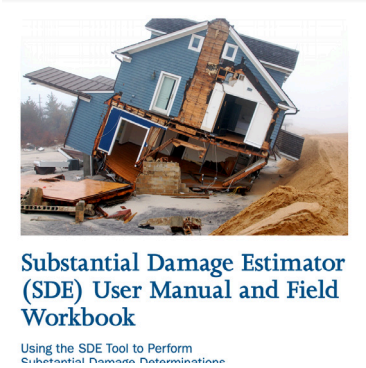
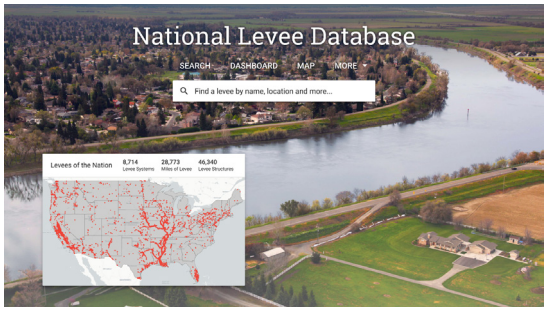
FEDERAL	
NOAA – Community Based Restoration Program	NOAA's Community-Based Restoration Program funds coastal and marine habitat restoration projects. The program supports projects that use a habitat-based approach to contribute to the recovery and conservation of protected resources, promote healthy ecosystems, and yield community and economic benefits.
USDA Rural Development Grants	U.S. Department of Agriculture's Rural Development provides loans, grants and loan guarantees to promotes economic development, community empowerment and recovery from disasters.
STATE	
State Department of the Environment	DEP programs in some states support a range of environmental improvement projects. For example, they can support nature-based solutions to improve or protect water, land, and air.
State Historic Preservation Offices/Historic Preservation Fund (HPF)	Since 1970, State and Tribal Historic Preservation Offices have received up to $56.4 million in annual matching grants through the HPF to assist their historic preservation activities. Funding can be used for part of the costs of surveys and comprehensive preservation studies necessary to preserve historic properties.
State Impact Fees	For example, Act 13/Impact Fee in Pennsylvania provides for the imposition of an unconventional gas well fee (also called an impact fee), and the distribution of those funds to local and state governments.
LOCAL	
Operational and In-Kind Labor	In-kind contributions are goods or services provided instead of cash for one of your project budget line-items. Both the revenue and the expense projections should reflect the in-kind contribution.
Capital Improvements	If a community has identified a flood mitigation measure that requires significant funding, it will need to be included as part of the community's CIP. Even if you pursue HMA or other grant funds, there is almost always a requirement for non-federal matching funds.

9. Resources

Even an experienced FPA can find this all a little daunting. The good news is that you are not alone. There are resources available from your state, FEMA Region 3, and your peers in the field. The following resources are linked for easy access. If you have questions or need help using any of these resources, you should contact your State NFIP Coordinator and/or State Hazard Mitigation Officer. They will be able to help you use these resources or find the appropriate resource for your needs.

Resource	Overview
	The National Flood Hazard Layer (NFHL) is a geospatial database that contains effective flood hazard data. You can use the information to better understand your flood risk and type of flooding. National Flood Hazard Layer
	FEMA Region 3 works with providers and CTP partners. They assist with Flood Risk Projects or Mapping Projects and other hazard assessment data. FEMA Region 3 Mitigation Mapping (Mit Maps)
	The FEMA Region 3 Non-Regulatory Products viewer displays flood risk data in the Region 3 states and the District of Columbia. This data should only be used as a planning tool and for visualization purposes. Data are not intended for regulatory purposes. FEMA Region 3 Non-Regulatory Flood Risk Products Availability

Resource	Overview
	These resources assist in the use of Base Level Engineering data to promote risk reduction and smart growth initiatives. These tools connect with BLE data on the Estimated Base Flood Elevation (estBFE) Viewer portal. Estimated Base Flood Elevation (estBFE) Viewer
	Mitigation plans identify the natural hazards and risks for a community. They are based on historical experience, and they estimate the potential for disasters as well as potential losses to life and property. The risk assessment process is a basis for the activities in the mitigation strategy. Your community's HMP Risk Assessment
	The official website of the NFIP Agents.FloodSmart.gov is for insurance professionals. There are also many good flood insurance outreach resources for community officials at Agents.FloodSmart.gov/Marketing/Resource-Library. FloodSmart.gov
	FEMA's website has resources for local government officials to manage the floodplain. FEMA.gov/Floodplain-Management

Resource	Overview
	FEMA developed the SDE tool to assist state and local officials in estimating substantial damage. The tool can be used to assess many forms of damage. Substantial Damage Estimator Tool
	The National Levee Database (NLD) documents levees in the United States. The NLD is maintained and published by the U.S. Army Corps of Engineers (USACE). National Levee Database
	The National Inventory of Dams (NID) contains records on dams in all 50 states, kept by the USACE. National Inventory of Dams
Local Planning Handbook	*Will be updated in early 2021
Association of State Floodplain Managers	ASFPM's mission is to promote education, policies and activities that mitigate current and future losses, costs and human suffering caused by flooding. In addition, ASFPM established the national certified floodplain manager (CFM) program in 1998 to create a baseline of professional knowledge and competencies in floodplain management. You can engage with ASFPM through state chapters. Association of State Floodplain Managers (ASFPM)

10. Glossary

Base Flood Elevation: The elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year.

FIRM: The Flood Insurance Rate Map is the official map of a community on which FEMA has delineated the Special Flood Hazard Areas (SFHAs), the Base Flood Elevations (BFEs) and the risk premium zones applicable to the community.

Floodway: A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Floodplain Administrator: The FPA is responsible for implementing the community's local floodplain ordinance and ensuring that the community is complying with minimum NFIP standards and enforcing any locally imposed higher standards.

Floodplain Ordinance: Once FEMA provides a community with the flood hazard information upon which floodplain management regulations are based, the community is required to adopt a floodplain ordinance that meets or exceeds the minimum NFIP requirements. The overriding purpose of the floodplain ordinance is to ensure that NFIP-participating communities take into account flood hazards, to the extent they are known, in all official actions relating to land management and use.

Hazus: Hazus uses Geographic Information Systems (GIS) technology to estimate physical, economic, and social impacts of disasters. It graphically illustrates the limits of identified high-risk locations due to earthquake, hurricane, flood and tsunami. Users can then visualize the spatial relationships between populations and other more permanently fixed geographic assets or resources for the specific hazard being modeled, a crucial function in the pre-disaster planning process. Hazus is used for mitigation and recovery, as well as preparedness and response.

Increased Cost of Compliance: Increased Cost of Compliance (ICC) coverage is one of several resources available for flood insurance policyholders who need additional help rebuilding after a flood. It provides up to $30,000 to help cover the increased cost of mitigation measures so the building is constructed in accordance with the latest floodplain management ordinances.

Mitigation: Includes activities to reduce the loss of life and property from natural disasters by avoiding or lessening the impact of a disaster and creating safer, more resilient communities.

Pre-FIRM Structure: A structure for which construction or substantial improvement occurred on or before December 31, 1974 or before the effective date of the first FIRM for a community. i.e., before detailed flood hazard data and flood elevations were available and usually before comprehensive regulations on floodplain regulation.

Repetitive Loss: FEMA designates as Repetitive Loss (RL), any NFIP-insured single family or multi-family residential building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A RL property may or may not be currently insured by the NFIP. Currently there are over 122,000 RL properties nationwide.

Risk MAP: FEMA is working with federal, state, tribal and local partners across the nation to identify flood risk and promote informed planning and development practices to help reduce that risk through the Risk Mapping, Assessment and Planning (Risk MAP) program. This program provides communities with flood information and tools they can use to enhance their mitigation plans and take action to better protect their citizens. Through more precise flood mapping products, risk assessment tools, and planning and outreach support, Risk MAP strengthens local ability to make informed decisions about reducing risk.

Severe Repetitive Loss: FEMA designates as Severe Repetitive Loss (SRL) any NFIP-insured single family or multi-family residential building:

- That has incurred flood-related damage for which four or more separate claims payments have been made, with the amount of each claim (including building and contents payments) exceeding $5,000, and with the cumulative amount of such claim's payments exceeding $20,000; or
- For which at least two separate claims payments (building payments only) have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the building. In both instances, at least two of the claims must be within 10 years of each other, and claims made within 10 days of each other will be counted as one claim. In determining SRL status, FEMA considers the loss history since 1978, or from the building's construction if it was built after 1978, regardless of any changes in the ownership of the building. The term "SRL property" refers to either an SRL building or the contents within an SRL building, or both.

Substantial Damage: Substantial damage applies to a structure in a Special Flood Hazard Area (SFHA) for which the total cost of repairs is 50 percent or more of the structure's value before the disaster occurred, regardless of the cause of damage.

