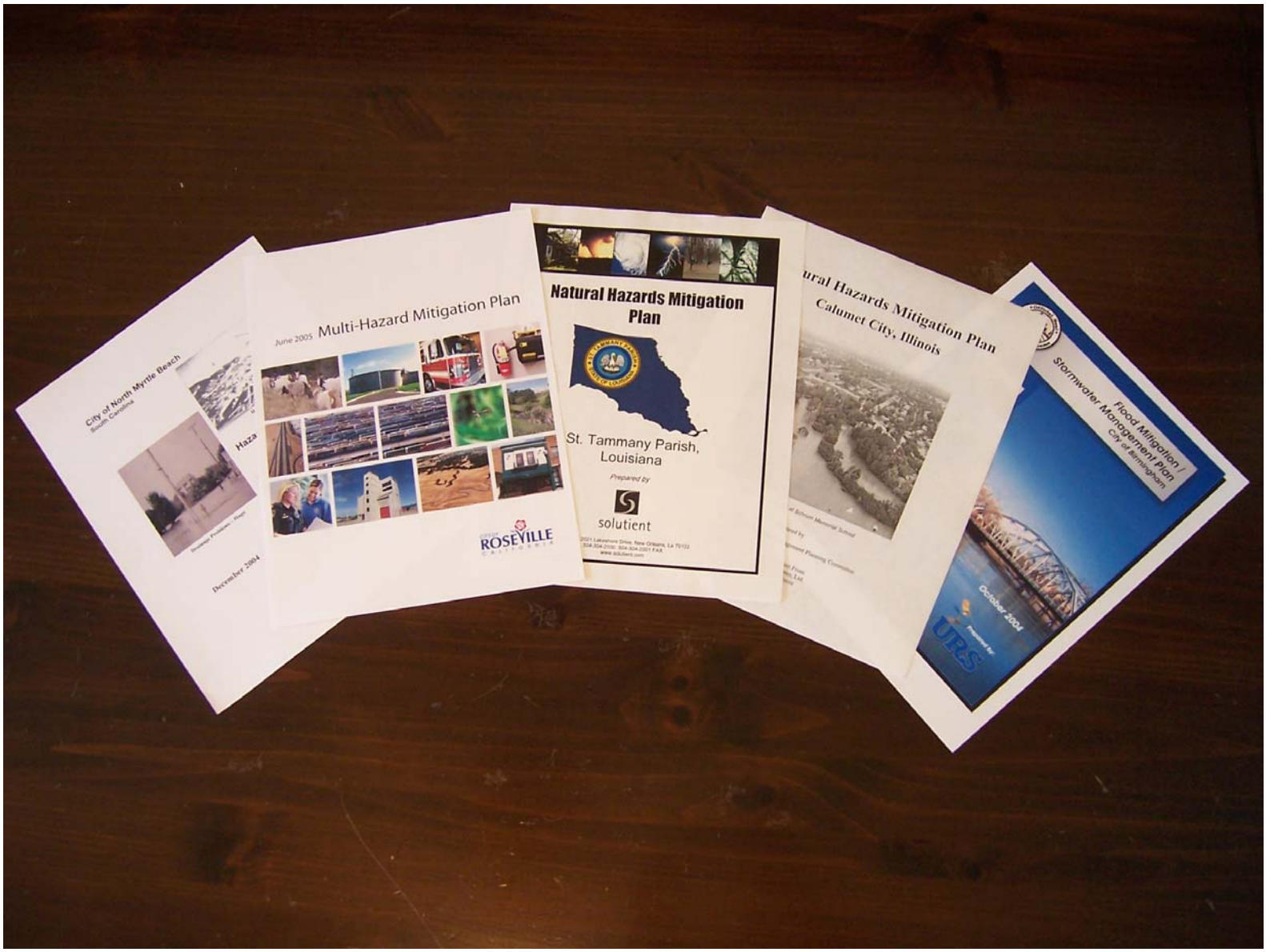

National Flood Insurance Program
Community Rating System

Example Plans

September 2007

FEMA

Note on this 2007 edition: The first section of this document has been updated to incorporate the changes to CRS Activity 510 (Floodplain Management Planning) that were issued in the 2006 *CRS Coordinator's Manual* and the 2007 revisions to the *Manual*.

This edition of *Example Plans* emphasizes how to prepare a plan that will qualify for CRS credit and the planning prerequisite for receiving mitigation funds from the Federal Emergency Management Agency. It does not include any plans. Instead, it shows how five communities that have prepared floodplain management or hazard mitigation plans addressed different aspects of the planning process.

The actual plans from the five communities can be reviewed on the CRS Resource Center website (http://training.fema.gov/EMIWeb/CRS/ − go to "Resources" and use control-F to find the community's name or the title of the plan). This allows readers to see the plans' maps and illustrations in color and to download the sections in which they are interested. The plans are in Adobe .pdf format. Adobe's Acrobat Reader can be downloaded at no cost at www.adobe.com, see "Get Adobe Reader."

A community interested in applying for flood insurance premium credits through the Community Rating System (CRS) should obtain the *CRS Application*. The *CRS Coordinator's Manual* provides a more detailed explanation of the credit criteria. These and other publications on the CRS are available at no cost from

Flood Publications
NFIP/CRS
P.O. Box 501016
Indianapolis, IN 46250-1016
(317) 848-2898
Fax: (317) 848-3578
NFIPCRS@iso.com

They can also be viewed and downloaded from the CRS Resource Center website
http://training.fema.gov/EMIWeb/CRS/ (go to "Resources")

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The following communities provided their plans as examples for this publication. Their cooperation is appreciated:

Birmingham, Alabama
Calumet City, Illinois
North Myrtle Beach, South Carolina
Roseville, California
St. Tammany Parish, Louisiana

Example Plans

Throughout this guidebook, examples from local floodplain management or mitigation plans are used. These examples come from the following communities, all of which developed and adopted their plans during the period 2003 – 2006. These plans are available to review on FEMA's CRS website, http://training.fema.gov/EMIWeb/CRS/ (go to "Resources" and use control-F to find the community's name or the title of the plan).

✓ **Birmingham, Alabama** *Flood Mitigation/Stormwater Management Plan* CRS credit: 224

Location: Central Alabama Population: 240,000

Hazards addressed: The plan focuses on local flash flooding from creeks and drainage problems. The City also participated in a county-wide multi-hazard planning effort.

A watershed based plan for a CRS Class 6 city. It looks at both the mapped floodplain and local drainage problems.

✓ **Calumet City, Illinois** *Natural Hazards Mitigation Plan* CRS credit: 255

Location: Chicago suburb Population: 45,000

Hazards addressed: Overbank flooding, local drainage, sewer backup, repetitive losses, tornadoes, winter storms, severe storms, earthquakes, extreme heat.

This community with a significant flood problem had done a floodplain management plan in 1999. As part of its five year update, the community addressed non-flood problems and converted the flood plan to a multi-hazard plan.

✓ **North Myrtle Beach, South Carolina** *Hazard Mitigation Plan* CRS credit: 254

Location: Coastal South Carolina Population: 11,000

Hazards addressed: Hurricanes, tropical storms, floods, Nor'easters, thunderstorm/lightning, wildfire, extreme heat, tornadoes/waterspouts, winter storms, drought, earthquake

CRS Class 7 coastal community with 3 repetitive loss areas.

✓ **Roseville, California** *Multi-Hazard Mitigation Plan* CRS credit: 255

Location: Sacramento suburb Population: 95,000

Hazards addressed: Drought, earthquakes, floods, landslides, human-caused hazards, human health hazards, severe weather, wildfire

A detailed plan that involved a planning steering committee, a separate technical subcommittee, and a large number of committee meetings. Roseville is the country's only Class 1 community.

✓ **St. Tammany Parish, Louisiana** *Natural Hazards Mitigation Plan* CRS credit: 231

Location: Southeastern Louisiana Population: 200,000

Hazards addressed: Tropical storms, flooding, tornadoes, wildfires, drought, fog, earthquakes, hailstorms, land failure, winter storm, dam failure, levee failure, termites

A parish-wide plan that includes four small towns in the parish. The plan was completed before Hurricane Katrina, but having it greatly facilitated receiving hazard mitigation funds after Katrina. It is being updated to account for recent developments. The parish is a CRS Class 9, but the plan provided enough points to move up a class.

Introduction

The CRS

The Community Rating System (CRS) is a part of the National Flood Insurance Program (NFIP). When communities go beyond the NFIP's minimum standards for floodplain management, the CRS can provide discounts of up to 45% off flood insurance premiums for residents of those communities.

Communities apply for a CRS classification and are given credit points that reflect the impact of their activities on reducing flood losses, insurance rating, and promoting the awareness of flood insurance. A community applies using the *CRS Application*. CRS credit criteria, scoring, and documentation requirements are explained in the *CRS Coordinator's Manual*. Copies of these publications are available free from the office listed inside the front cover of this publication. The Insurance Services Office's ISO/CRS Specialist reviews the community's program and verifies the CRS credit.

Comprehensive planning can help a community address all its problems more effectively. Accordingly, the CRS encourages and provides credit for preparing, adopting, implementing, evaluating, and updating a comprehensive floodplain management plan. The CRS does not specify what activities a plan must recommend. Instead, the CRS credits plans that have been prepared according to the standard planning process.

The CRS credit for following the floodplain management planning process is provided under Activity 510 (Floodplain Management Planning) as described in the *Coordinator's Manual*. This document, *Example Plans*, expands on Activity 510 and provides guidance on the planning process. It includes references for more information and identifies local plans that illustrate various components of the CRS credit for planning.

Other Programs

Although this publication focuses on CRS credits for a floodplain management plan, there are other programs that require or credit similar plans. In addition to the CRS, the guidelines in this publication will also help meet the planning criteria of the U.S. Army Corps of Engineers' floodplain management plan requirement for new projects and the Federal Emergency Management Agency's (FEMA's) mitigation grant programs (hereinafter called "FEMA mitigation plans"):

- A mitigation plan is a prerequisite for the Federal Emergency Management Agency's (FEMA's) Hazard Mitigation Grant Program funds (see 44 *CFR* 201.6, published February 26, 2002);
- A mitigation plan is a prerequisite for FEMA's Pre-disaster Mitigation Program funds; and
- A mitigation plan is a prerequisite for FEMA's Flood Mitigation Assistance Program funds.

For additional information on these grants and their planning requirements, see the mitigation planning guidance at www.fema.gov/plan/mitplanning

This document provides summary information about the other mitigation plans. It is recommended that you review all of these planning programs' guidelines to ensure that the planning effort will meet all of their criteria. With proper planning, one plan document can fulfill several programs' requirements.

Why plan?

Many communities conduct only one or two activities to deal with a hazard. Some rely entirely on building codes for earthquake or tornado risks. Others think acquisition of hazard-prone areas is the only solution. All communities in the NFIP regulate new development to make sure flood problems do not get worse, but they may not be doing much more.

Conflicts in Mitigation Programs

Sometimes, when several different mitigation activities are undertaken, they are not coordinated or they may even conflict with each other. Here are some examples:

- ✓ Real estate developers are promoting new subdivisions in the floodplain while the planning and zoning office is discouraging development there.
- ✓ Floodplain regulations require new buildings to be elevated, but the rules have no special provisions for protecting elevated buildings from swaying during an earthquake or damage from high winds.
- ✓ The public works department straightens ditches and lines them with concrete to make them more efficient, while neighborhood and environmental groups want greenways and natural vegetative approaches to bank stabilization.
- ✓ Property owners view a swamp as a place to be filled in so it can be farmed or built on without realizing the wetland's role in absorbing flood water and providing habitat.
- ✓ Residents and businesses complain that not enough is being done to protect them, but they are not aware of the things that they can do to protect themselves or how they can contribute to community and neighborhood efforts.

Most communities do not implement as many hazard mitigation activities as they could. On the other hand, communities do implement other programs that have an impact on hazards or mitigation, and often these programs are not coordinated (see box).

Every community faces different hazards. You may face life-threatening flash floods or highly destructive hurricanes while another community may be subject to earthquakes or slow-moving flood waters from overflowing rivers. Similarly, every community has different resources and interests to bring to bear on its problems. Because there are many ways to deal with natural hazards and many agencies that can help, there is no one solution or cookbook for managing or mitigating their effects.

Planning is one of the best ways to correct these shortcomings and produce a program of activities that will best tackle the impact of hazards and meet other needs. A well-prepared plan will do the following for you and your community:

- Ensure that all possible activities are reviewed and implemented so that the local problem is addressed by the most appropriate and efficient solutions;
- Ensure that activities are coordinated with each other and with other community goals and activities, preventing conflicts and reducing the costs of implementing each individual activity;
- Coordinate local activities with federal, state, and regional programs;

- Educate residents on the hazards, loss reduction measures, and natural and beneficial functions of their floodplains;
- Build public and political support for mitigation projects;
- Fulfill planning requirements for obtaining state or federal assistance; and
- Facilitate implementation of floodplain management and mitigation activities through an action plan that has specific tasks, staff assignments, and deadlines.

The Product

A well-prepared plan will guide your activities so that they are implemented more economically and in ways more attuned to the needs and objectives of your community and its residents. When implemented, a well-prepared plan will result in

- Reduced flood losses;
- Reduced exposure to other hazards;
- Improved protection of the floodplain's natural and beneficial functions;
- More efficient use of public and private resources; and
- A constituency that supports hazard mitigation activities.

Why Did They Plan?

North Myrtle Beach: "Planning is the key to making mitigation a proactive process and pre-disaster planning is an essential element in building an effective mitigation program. Mitigation plans emphasize actions taken before a disaster happens to reduce or prevent future damages. Preparing a plan to reduce the impact of a disaster before it occurs can provide a community with a number of benefits:

- Saves lives and property …
- Achieves Multiple Objectives…
- Saves Money: The community will experience cost savings by not having to provide emergency services, rescue operations, or recovery measures to areas that are dangerous to people in the event of a hazard. They will also avoid costly repairs or replacement of buildings and infrastructure that would have [occurred had] mitigation measures not been taken.
- Facilitates post-disaster funding…

− North Myrtle Beach's plan, pages 1-1 − 1-2

Roseville: The Disaster Mitigation Act of 2000…required state and local governments to develop hazard mitigation plans as a condition for federal grant assistance. Prior to 2000, federal legislation provided funding for disaster relief, recovery, and some hazard mitigation planning. The DMA improves upon the planning process by emphasizing the importance of community planning for disasters before they occur.

Using this initiative as a foundation for proactive planning, the City of Roseville developed this hazard mitigation plan in an effort to reduce future loss of life and property resulting from disasters. It is impossible to predict exactly when and where these disasters will occur or the extent to which they will impact the City. However, with careful planning and collaboration among public agencies, stakeholders, and citizens, it is possible to minimize losses that can occur from disasters.

− Roseville's plan, page 1-1

The Planning Process

Floodplain management or hazard mitigation plans can come in a variety of formats and organizational styles. However, the format and organization of a plan is not what is important.

> "Planning is essential."
>
> —Dwight D. Eisenhower

General Eisenhower's simple phrase says it all. It is not the resulting paper document, but rather the PROCESS of planning that is important. The planning process provides a framework within which planners, local officials, residents, engineers, technical experts, stakeholders, and others can work out the details and reach consensus on what should be done. It includes getting input from everyone who has relevant information, everyone who is affected, and everyone who will participate in the implementation of the plan. The process works for all types of plans, such as comprehensive plans, land use plans, capital improvement plans, neighborhood redevelopment plans, mitigation plans, and floodplain management plans.

Because each community is different, each plan will be different. CRS credit is not based on the activities a plan recommends, but rather on the process that is used to prepare the plan. It recognizes that you have followed the planning process to select the best measures for your community and its hazards.

State Requirements

Many states and regional agencies have developed their own, often more locally appropriate, planning procedures. In some cases, certain steps must be followed to comply with state law. Check with your state planning agency, emergency management agency's hazard mitigation officer, or State NFIP Coordinator to get guidance, assistance, and information on state requirements.

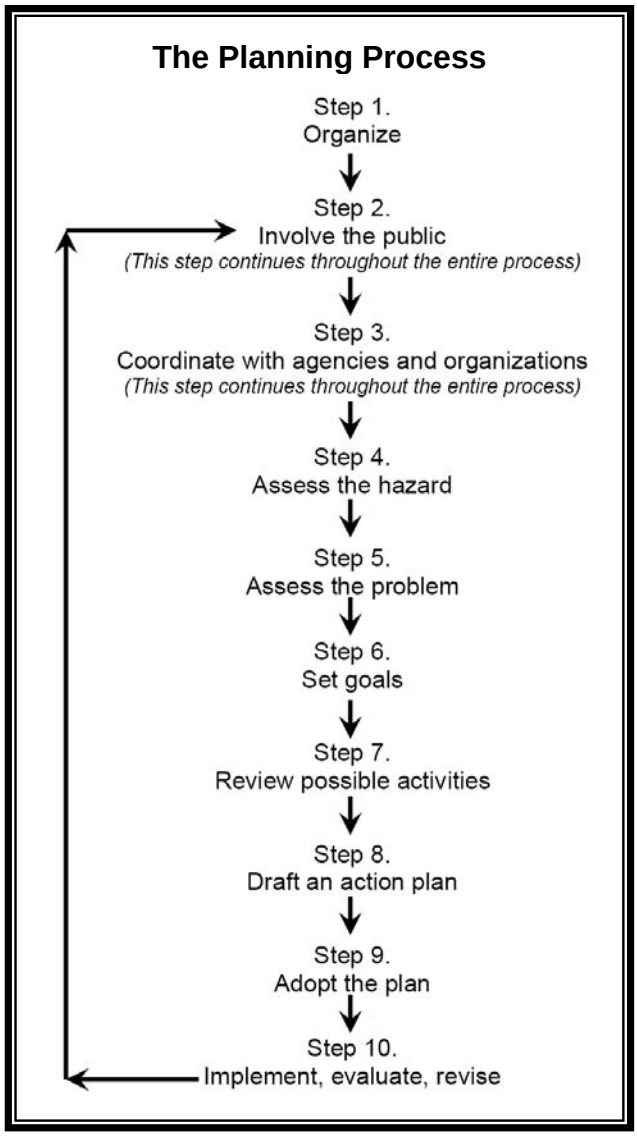
Comprehensive Plan

You should consider whether mitigation planning should be incorporated into your community's comprehensive planning process. On one hand, if it is not part of a comprehensive plan, you may be able to avoid some constraints and formalities (such as the legal process required for public hearings). On the other, you may want to trade flexibility and informality for the status and legal authority your plan will have if it is part of a comprehensive plan. In either case, your floodplain management or mitigation planning needs to be coordinated with other planning efforts.

The 10 Steps

CRS credit is based on a 10-step planning process. The 10 steps are simply an expansion on the classic planning approach of gathering information, setting goals, reviewing alternatives, and deciding what to do. FOR CRS CREDIT, YOU MUST SHOW HOW YOUR PLANNING PROCESS INCLUDES EACH OF THESE 10 STEPS.

The 10 steps follow in chronological order, as shown in the flow chart in the box. However, steps 2 and 3 are best implemented throughout the entire process.



The Requirements

The table on the next page relates the CRS' 10 steps to the four essential parts of FEMA's mitigation planning regulations. The FEMA regulations and the CRS both require that the planning process include each step.

These programs' minimum requirements are highlighted for each of the 10 CRS steps. It is important to note that these programs encourage plans that EXCEED the minimum requirements—you'll have a better local plan and receive more CRS points.

NOTE: *There may be additional requirements under state planning laws and/or additional criteria set by the state agency that administers FEMA planning programs. Check with your state planning agency, emergency management agency's hazard mitigation officer, or State NFIP Coordinator.*

Variations

The 10 steps work, but an experienced planner or an office with a large staff can and should improve on this basic approach. More data, more sophisticated materials, and a more formal decision-making process can be helpful, especially in larger communities. However, the CRS and FEMA planning programs will need to see how your work met their planning process requirements.

A plan by another name, such as a post-flood hazard mitigation plan or watershed management plan, can receive CRS credit and meet FEMA's mitigation plan requirement, if it was prepared in accordance with the 10 step planning process.

FEMA Planning Guidance			
Mitigation Planning Regulations (44 *CFR* 201.6)	**CRS Steps**	**Max Pts**	**How-To Guides ***
Organize resources			*Getting Organized (FEMA 386-1)*
201.6(c)(1)	1. Organize	10	
201.6(b)(1)	2. Involve the public	85	
201.6(b)(2) & (3)	3. Coordinate	25	
Assess risks			*Understanding Your Risks (FEMA 386-2)*
201.6(c)(2)(i)	4. Assess the hazard	20	
201.6(c)(2)(ii) & (iii)	5. Assess the problem	35	
Develop the mitigation plan			*Developing a Mitigation Plan (FEMA 386-3)*
201.6(c)(3)(i)	6. Set goals	2	
201.6(c)(3)(ii)	7. Review possible activities	30	
201.6(c)(3)(iii)	8. Draft an action plan	70	
Implement & monitor progress			*Bringing the Plan to Life (FEMA 386-4)*
201.6(c)(5)	9. Adopt the plan	2	
201.6(c)(4)	10. Implement, evaluate, revise	15	
	Total	294	

* The How-to Guides are a series of mitigation planning guidebooks published as *State and Local Mitigation Planning How-to Guides,* FEMA 386-1 – 8. See Appendix A for ordering information.

Documentation

The plan document does not need to be organized according to the 10 steps. However, the community must submit the plan with its submittal for CRS credit and identify where these steps were covered. Steps 1, 4, 5, 6, 7, 8, and 10 must appear in the plan document. The other three steps can be in the plan document or they may be explained in a separate memo from the community or the plan's author.

Ordinances

Don't confuse a plan with an ordinance. An ordinance sets standards for land development and other activities. In most cases, it requires a permit before an action is undertaken and has penalties for violations. A plan gives guidance for a variety of activities, but generally does not have penalties for violations. It should include a review of land development standards and procedures, but it should also cover a much broader range of activities.

Multi-jurisdictional Plans

A coordinated plan covering adjacent communities is encouraged. For example, watershed-wide planning is recognized as the most effective way to deal with flooding on smaller streams. This publication notes special requirements for ensuring that a multi-jurisdictional plan will benefit the community seeking CRS credit or FEMA approval of its plan.

Step 1. Organize.

The planning process will succeed only if the right people and agencies are involved. The first of the 10 steps is to organize your effort. Key decisions are made that will guide the rest of the effort. You will need to answer the following questions at the outset:

- Who will coordinate the process?
- Who else will be involved?
- How much time will be needed?

The Planner

The person responsible for the planning process is called "the planner" in this publication. Selecting that person is crucial to the planning process. The appointed planner should be officially designated as having the authority to develop the plan. He or she would be responsible for completing the plan on time, ensuring its adoption, and perhaps monitoring its implementation. The planner is also a facilitator at committee meetings.

It is vital to select one person to be the "planner," i.e., the person responsible for ensuring that the plan is prepared and that the proper process is followed.

− *Roseville Steering Committee meeting*

In many communities, this role is filled by someone in the planning department. In smaller communities, it could be the emergency manager, a council member, or the chair of the citizens' planning committee. Although a consultant may provide valuable guidance, the person held responsible should be a local employee or resident.

Whoever is put in charge must have an open mind about the variety of possible mitigation measures. Different professionals will bring their own preferences to the process. For example, planning implemented by engineers often favors structural flood control measures, while plans prepared by emergency managers may be biased toward warning and response activities. Similarly, land use planners may orient a mitigation plan toward regulatory or land use measures.

The planner should be officially designated with the authority to develop the plan. A council resolution or a memo from the city manager or mayor is useful, because one of your biggest challenges will be getting other departments to devote some attention to your task.

Who got it done?

While professional planners and consultants were used for the legwork, each community had a different approach to assigning responsibility for their planning process.

- ✓ Birmingham − Department of Planning, Engineering, and Permits
- ✓ Calumet City − Department of Inspectional Services
- ✓ North Myrtle Beach − Chief Building Official
- ✓ Roseville − Planning and Development Department
- ✓ St. Tammany Parish − Deputy Director of Emergency Preparedness for Planning

Other Staff

The staff members who are likely to be responsible for helping implement the plan should be involved in the planning process for four reasons.

- They know the technical details of the measures you will be considering (i.e., they know how to make the mitigation measures work).
- They know what is currently being done or planned to be done by the community and other agencies.
- They will be responsible for implementing some of the plan's recommendations. You need to make sure they can do what is recommended.
- They need to WANT to implement what is recommended. The best designed program will die if the responsible staff are indifferent or opposed to it. Get them involved early and make the plan THEIR plan, too.

Offices Involved in Mitigation

- ✓ Planning/community development
- ✓ Engineer
- ✓ Emergency manager
- ✓ Public information/community relations
- ✓ Public safety/police/fire
- ✓ Public works/streets/highways
- ✓ Building/zoning/code enforcement
- ✓ Parks/recreation

Therefore, key staff from ALL affected departments should participate in the planning process. Which members to involve depends on your organization and the mitigation measures that will likely be reviewed and/or selected during the planning process. At the start, you should review the list in the box. Invite individuals who would be constructive participants.

The Planning Committee

It is strongly recommended that the mitigation planning process be conducted by a committee representing the different offices involved. A planning committee can

- Be an effective forum for matching the technical requirements of a program to the community's situation;
- Give the participants a feeling of "ownership" of the plan and its recommendations, which helps build public support for it; and
- Form a constituency that will have a stake in ensuring that the plan is implemented.

The best type of committee also has residents and stakeholders on it. This is discussed under step 2, along with ideas for the committee meetings.

CRS Credit for Step 1

(Maximum credit: 10 points). The plan document must discuss how it was prepared, who was involved in the planning process, and how the public was involved during the planning process. [REQUIRED by the CRS and FEMA mitigation planning criteria (44 *CFR* 201.6(c)(1))]

NOTE: *To receive CRS planning credit, the planning process must receive some credit under each of the 10 steps. If the plan preparation process includes all "*REQUIRED*" items, the plan will qualify under both CRS and FEMA's mitigation plan criteria. However, if the planning includes* ONLY *those items, it will not receive very many points under the CRS.*

The credit points for this step are the total of the following:

2, if the planning process is under the supervision or direction of a professional planner. A "professional planner" may be a community employee, consultant, or an advisor from a state agency or regional planning agency. He or she does not have to be a member of the American Institute of Certified Planners (AICP). Someone with an urban planning degree or land use planning or community development experience may be a professional planner. However, the CRS may not recognize a building official, engineer, or other non-planner as a professional planner.

6, if the planning process is conducted through a committee composed of staff from those community departments that will be implementing the majority of the plan's recommendations.

2, if the planning process and/or the committee are formally created or recognized by action of the community's governing board. This can be a motion that is passed and reflected in the minutes. However, a preferred method is a formal resolution that designates who is responsible for preparing the plan and specifies a completion deadline. If a committee with representatives from the public is used, the resolution should identify the members, who acts as chair, and how staff support is provided. The resolution adopted by St. Tammany Parish is on the next two pages. North Myrtle Beach's resolution is in Appendix A of its plan.

When a multi-jurisdictional plan is prepared, each community seeking CRS credit or recognition for a FEMA mitigation plan must have at least one representative on the planning committee.

Step 1. Organize. **Planning Checklist**

__ Brush up on CRS credit and FEMA mitigation planning criteria.
__ Determine who the "planner" will be.
__ Identify other offices/staff to involve.
__ Set timetable for the 10 steps.
__ Draft the resolution creating the planning committee.
__ Submit for adoption.
__ Include in the plan how it was prepared, who was involved, and how the public was involved. [REQUIRED]

St. Tammany Parish Council Resolution Creating the Planning Process

Whereas St. Tammany Parish is subject to tropical storms, hurricanes, flooding, tornadoes, and other natural hazards that can damage property, close businesses, disrupt traffic, and present a public health and safety hazard; and

Whereas funding support from the Louisiana Office of Emergency Preparedness has been obtained to help prepare a natural hazards mitigation plan for the Parish; and

Whereas a useful and effective plan requires the participation and support of different public and private agencies and organizations that are impacted by natural hazards and/or that can help mitigate the impacts; and

Whereas several Federal programs require that the Parish have an adopted hazard mitigation plan to qualify for their benefits;

Now, therefore, be it resolved that:

1. The St. Tammany Parish Mitigation Planning Committee is hereby established as a temporary advisory body to this Council.

2. The Mitigation Planning Committee shall be composed of representatives from:

   a. The following Parish offices:

      1) Emergency Preparedness
      2) Community Facilities
      3) Engineering
      4) Environmental Services
      5) Fire Services
      6) Government Access Channel/Public Information
      7) Management Information Systems
      8) Permits & Regulatory
      9) Planning
      10) Public Works

   b. Those municipalities that pass a resolution of interest in participating and that send a representative to attend the regular meetings of the Committee.

   c. Representatives of other interested agencies, organizations and associations appointed by the Parish President to represent the stakeholders in hazard mitigation and the general public.

3. _____ are hereby appointed to serve as the Co-Chairs of the Mitigation Planning Committee.

St. Tammany Parish Council Resolution Creating the Planning Process

4. The Mitigation Planning Committee is charged with the following:

    a. Collect data on the natural hazards facing the Parish;

    b. Assess the impact of those hazards on people, property and public services;

    c. Review the programs and activities currently undertaken by the Parish, participating municipalities, State and Federal agencies, and the private sector to mitigate the impact of the hazards;

    d. Identify new activities or changes in current programs that will better reduce the Parish's vulnerability to those hazards;

    e. Prepare a hazard mitigation plan for the Parish that recommends appropriate measures;

    f. Submit the recommended plan to this Council and the participating municipalities for adoption; and

    g. Keep the public informed of its deliberations and recommendations.

5. The Mitigation Planning Committee shall complete its work by February 2003. At that time, it is expected that the Committee will be disbanded. The Committee should deliberate the advantages and disadvantages of a permanent organization to coordinate mitigation activities in the Parish and include its recommendation in the hazard mitigation plan.

6. Members of the public and interested organizations are encouraged to:

    a. Attend Mitigation Planning Committee meetings;

    b. Monitor the activities of the Committee on the Parish's website; and

    c. Attend the public meeting that will be scheduled to review the recommended plan.

7. The Offices of Emergency Preparedness and Management Information Systems shall provide staff support for the Committee's work.

ADOPTED this the 4th day of September 2003

/signed/ _____
Clerk

APPROVED this the 4th day of September 2003

/signed _____
Parish President

Step 2. Involve the public.

Who to Involve

As noted in step 1, the planning process will succeed only if the right people are involved. Three groups make for a successful program:

- Staff from offices responsible for implementing the plan,
- Residents and owners of businesses from the affected areas, and
- Community stakeholders

Staff involvement was covered in Step 1. **Affected residents and businesses** include

- Occupants (homeowners and renters) of floodplains and other hazardous areas,
- Owners or managers of businesses impacted by the hazards,
- Managers/operators of critical facilities,
- Recent disaster victims, and
- Representatives of homeowner or neighborhood organizations.

Planning Hint

"The most important partners to assist in the plan development are already within your community: local government officials, community planning and design professionals, business leaders, civic and volunteer groups, emergency services personnel, and interested residents. Consider selecting candidates who have the trust and respect of others, and ensure representation form each major interest group in the community. …Ensuring that your team has an equitable and diverse representation will enhance your planning efforts and help build support for mitigation."

– Planning for a Sustainable Future, p. 17

Community stakeholders are not necessarily directly impacted by the hazards, but do have a stake in what happens to the community. They should include

- The Chamber of Commerce, business leaders;
- Civic groups;
- Schools and non-profit organizations;
- Major employers;
- Land developers, real estate agents, lenders, and others who affect the future development of the community; and
- "Friends of the _____ River," and environmental organizations.

Why to Involve Them

These people have their own concerns, and hazard mitigation is probably not one of them. Do not view them as trouble makers or dead weight, but as people who can help you design and support an effective program. There are some real advantages to involving them.

- They provide more local knowledge of past occurrences.
- They will help design a program that better fits their needs.
- They will help strengthen resident and business support for the program.

- They will help prevent misunderstandings.
- They can help share the workload.
- They can provide political support.

Floodplain residents can provide some of the data you will need, such as historical high water marks and flood damage information. Residents and businesses have first-hand experience of what happens during a disaster and what people need after one. Stakeholders can tell you what is feasible in the community and what other public and private activities can support mitigation efforts.

A planning committee offers a forum to collect, discuss and debate mitigation issues.

− *St. Tammany Parish Committee meeting*

As with staff, involving the public and stakeholders in this effort involves them in the whole process and helps them to become concerned about the outcome, something that will pay off when it is time to submit the plan for adoption and implementation.

Who did they involve?

Because each community has a different reason to initiate the planning process, each will draw on different constituencies. The larger communities, like Birmingham, had larger planning committees. One key factor in planning committee membership was ensuring that at least half represented residents, businesses and other stakeholders.

- ✓ Birmingham − The Plan was developed under the oversight and guidance of a nine member Technical Advisory Board with representatives from planning, engineering, permits, public works, community development, and the Mayor's office of Economic Development. An 81 Stakeholder Committee was also established. It included the Technical Advisory Board, 40 representatives from neighborhood associations, 10 representatives from floodprone businesses, two from the development industry, 16 other departments and local, state, and Federal agencies, 3 from river-oriented organizations and one from the Chamber of Commerce.
- ✓ Calumet City − The City Council has seven aldermen. Each alderman selected one constituent from his or her ward to serve as a public representative on the Floodplain Management Committee. Five other members were from City departments.
- ✓ North Myrtle Beach − The Mitigation Planning Committee was composed of three City staff members and five non-City representatives, four of whom were floodplain residents. The non-City representatives included Board members of the Chamber of Commerce, people in the real estate business, a developer, and a property manager.
- ✓ Roseville − A 13 member Steering Committee included three citizens (two from the Roseville Coalition of Neighborhood Associations), two city staff members (planning and emergency management), and 10 stakeholders from local businesses and school districts. Six of the stakeholders had jobs related to safety or emergency management.
- ✓ St. Tammany Parish − The Hazard Mitigation Planning Committee had 23 members. Eight were from Parish departments and seven were from the municipalities (even though three municipalities had grants to prepare their own plans). Others were from homeowners associations, the school district, the 2025 parish long range planning effort, and the Parish's Local Emergency Planning Committee.

How to Involve Them

You can involve these groups and their representatives in a variety of ways.

- They can serve on or send a representative to the planning committee.
- You can invite them to those meetings that address the issues that are most important to them.
- You can distribute a questionnaire to gather their input and give guidance to the planning committee. Roseville's Survey is summarized below. North Myrtle Beach and Calumet City also sent questionnaires to residents.
- You can conduct a workshop, open house, "waterfront day," or a demonstration project to attract public attention and raise the attendees' level of awareness and interest.
- They can be kept abreast of what's going on through a newsletter or presentations at their own meetings.
- They can surf through a website, reviewing the minutes of meetings and background materials and post their comments to the planners (see the box on St. Tammany Parish's website on the next page).
- They may want to just have a chance to review the draft plan.

The level of people's involvement depends on how much time they have available and how much the issues affect them. One of the most important things is that they are invited to participate and that they are offered a chance to have a say in your planning work.

Remember, involvement doesn't mean that these people just sit on a committee or that they are expected to always support what the chair proposes. A good leader or facilitator will make sure everyone is heard. You need them to make sure that the plan's proposals will be acceptable to these constituencies.

Roseville's Survey

A hazard mitigation survey questionnaire asked 25 quantifiable questions about perception of risk, knowledge of mitigation, and support of City programs. The questionnaire also asked several demographic questions to help analyze trends. Survey results were used by the steering committee as a guide when establishing goals, objectives, and mitigation strategies.

A city resource known as the On-line Citizens Advisory Panel (OCAP) was used to e-mail the survey to Roseville residents. The OCAP is a panel of 2,400 households in the City that are e-mailed surveys periodically on current Roseville issues. The OCAP responses are tabulated by an independent consulting firm that reports the results in the aggregate so that no individual is identified. Both quantifiable and qualitative responses are received. The Multi-Hazard Mitigation Survey was e-mailed to approximately one-third of the total members or 740 households. The survey was completed and returned by 437 recipients, which represents a 58 percent return rate.

Where do you seek information about hazard mitigation?

Please rate the degree to which you use - or would use - each information source below to help you keep your family and home safe from natural and human-caused disasters.

USE THIS 1-5 SCALE FOR EACH SERVICE:
1 = DEFINITELY WOULD NOT USE
5 = DEFINITELY WOULD USE
N/A = NOT APPLICABLE OR DON'T KNOW

1 < Definitely Would NOT Use Definitely Would Use > 5

− Roseville's Plan, pages 3-1 − 3-2. The Survey instrument and the results are in Appendix B of the Plan.

St. Tammany Parish's Website

St. Tammany Parish developed a website to publicize its planning work. The site provided background information on the planning process, the schedule of planning committee meetings, and links to other sites with information on mitigation ideas for property owners.

The site included a questionnaire (see below) that encouraged readers to complete and e-mail to the planners by hitting a "send" button. There turned out to be few submittals, something that other web-based planning questionnaires have also found.

St. Tammany Parish
Natural Hazards Planning

- Hazards Planning Home
- Committee Information
- Meetings Schedule
- Public Input
- More Information
- Links

Background

St. Tammany Parish is subject to natural hazards that threaten life and health and have caused extensive property damage. Since Hurricane Betsy in 1965, the Parish has been declared a disaster area by the President 13 times. As noted by Parish President Kevin Davis, "While these hazards are acts of nature, the impacts on residents, public facilities, businesses, and private property can be diminished through hazard mitigation planning".

The effort is being led by the Parish's Office of Emergency Preparedness. It is being coordinated by a Hazard Mitigation Planning Committee, created by the St. Tammany Parish Council. The Committee's members include representatives of Parish offices, interested municipalities,property owner associations, and public organizations.

The committee will review a variety of mitigation measures, organized under five general strategies:

St. Tammany Parish, Louisiana
Natural Hazards Planning Questionnaire

Please use this form to tell us about your experiences with natural hazards and your suggestions for hazard mitigation activities the Parish could undertake. Please use a separate form for each incident.

In what community did the incident occur? _____

In what Zip code did the incident occur? _____

Type of hazard (check one)

☐ Tropical Storms/Hurricanes	☐ Drought	☐ Land Failure
☐ Riverine Flooding	☐ Fog	☐ Severe Winter
☐ Local Drainage Problems	☐ Earthquake	☐ Dam Failure
☐ Tornadoes	☐ Hailstorm	☐ Levee Failure
☐ Wildfires		

– *St. Tammany Parish Plan, Appendix A.*

The Chair

The planning committee chair can be the key to a successful planning process. The head of the planning committee should be chosen for his or her ability to get people to work together and get things done.

The planner or other staff member provides technical and administrative support, such as taking minutes and sending out meeting notices. Together, the planner and the chair should form a working team and coordinate before each meeting. When an outside consultant does much of the planning work, coordination with the chair is vital to ensure that the product will be useful and acceptable locally.

Who chaired?

- ✓ Birmingham and Calumet City did not have chairs. There were no local controversies to warrant Robert's Rules of Order, so the planners ran the meetings.
- ✓ North Myrtle Beach's committee chair was a floodplain resident and member of the Chamber of Commerce.
- ✓ Roseville selected a member of the Community Emergency Response Team (CERT).
- ✓ St. Tammany Parish chose Co-chairs, the chair of the Local Emergency Planning Committee and the chair of a parish long-term planning effort ("New Directions 2025").

Meetings

At the first committee meeting, you should establish a planning timetable. Depending on deadlines, time constraints, and staff time available, committee meetings can be held once or twice a month. Meetings should be scheduled to include as many people as often as possible.

One threat to the planning process is that it starts to drag and become a bore. Nine months of monthly meetings with nothing to show but a draft piece of paper can discourage many committee members. It is important to maintain momentum throughout the process.

Field trips are very educational and allow committee members to see the problems and examples of solutions first hand. Destinations may include floodproofing sites, reservoirs, emergency operating centers, restored wetlands, and similar locations to give the members a first-hand view of how the mitigation measures work (see photo, page 18). Such field trips often change the minds of those skeptical about some of the potential measures. They also serve to break up the monotony of continual meetings.

North Myrtle Beach's Planning Committee Schedule (2004)

April 1	Organize, Orientation to Planning Process, Public Involvement Options
April 14	Planning Process, Hazard Assessment, Public Survey
May 12	Public Meeting held by the Committee
May 26	Review Public Comments, Hazard Problems Evaluation, Identification of Potential Mitigation Measures including Higher Regulatory Standards
June 16	Public Meeting on Potential Mitigation Measures
June 30	Review Draft Plan – Property Protection, Preventive Measures
July 7	Update on Survey Results and Review Draft Plan – Emergency Services, Structural Projects
Aug. 11	Review Draft Plan – Natural Resource Protection and Action Plan
Sept. 8	Final Overall Plan Review Before Sending Plan to City Council
Sept. 27	City Council Workshop with Mitigation Planning Committee
Oct. 25	City Council Workshop with Mitigation Planning Committee
Dec 6	Plan adopted by the City Council

– *North Myrtle Beach's plan, page 1-5*

Suggestions for the First Meeting

An excellent way to start the first planning committee meeting is with an overview of the planning process. The Association of State Floodplain Managers has prepared a planning kit. It consists of reference materials, masters for handouts, and a two-part video that explains the 10-step process to the general public and is meant to be shown at the first meeting of a planning committee. See Appendix A to order "Flood Mitigation Planning—The First Steps."

The following is a possible agenda *[with notes for the chair]*

1. Introductions *[members should introduce themselves, their backgrounds, who they represent, and what their major mitigation interests are]*

2. Background on the planning project *[why the committee was organized, objectives]*

3. Video on "Flood Mitigation Planning"

4. Planning step 1—Organize
   a. Committee's role
   b. Planner's role *[who's the prime contact, number to call]*
   c. Staff support
   d. Meeting location *[what's convenient for everyone?]*
   e. Meeting schedule *[what time is convenient for everyone?]*
   f. Meeting rules *[consensus vs. voting, public comments, dress, bring materials]*

5. Planning step 2 – Public involvement options *[which ones should be done?]*
   a. Questionnaire
   b. Public meeting(s)
   c. Cable TV and website notices
   d. Targeted organizations *[should there be special meetings with any group?]*
   e. Newsletter
   f. Other methods to encourage input

6. Planning step 3 – Agency and organization coordination
   a. Government agencies *[what agencies should be contacted?]*
   b. Private organizations *[what organizations should be contacted?]*

7. Planning steps 4 and 5 – Hazard assessment and problem evaluation
   a. Hazards *[what hazards should the project cover?]*
   b. Data sources *[review what the planner will use, what do members know?]*
   c. Field data collection *[building surveys, etc., see letter on page 15]*
   d. Maps *[GIS support, flood insurance maps]*
   e. Planning area boundaries *[watershed wide? target area? whole community?]*

8. Next meeting *[time and location]*

9. Assignments *[who is going to do what between now and the next meeting]*

10. Adjourn

Later Duties

The planning committee should not be disbanded when the plan is adopted by the governing board. The plan should give the committee assignments, such as developing some recommendations in more detail, helping on the design and implementation of some projects, monitoring the community's progress in implementing the action plan, and recommending revisions to the plan.

For CRS credit, a written progress report must be prepared each year, a duty for which the planning committee is well suited, because committee members wrote the plan and have a stake in seeing it implemented. This is discussed on page 59 and in Appendix C.

CRS Credit for Step 2

(Maximum credit: 72 points). The credit for this step is the total of the following points based on how the community involves the public in the planning process. The planning process must include an opportunity for the public to comment on the plan during the drafting stage and before plan approval [REQUIRED BY THE CRS]. The term "public" includes residents, businesses, property owners, and tenants in the floodplain and other known hazard areas as well as other stakeholders in the community, such as business leaders, civic groups, academia, non-profit organizations, and major employers.

The credit for this step is the total of the following points based on how the community involves the public during the planning process.

40, if the planning process is conducted through a planning committee that includes members of the public. If this is the same planning committee credited under step 1, at least one half of the members must be representatives of the public, including residents, businesses, or property owners from the floodprone areas. The committee must hold a sufficient number of meetings that involve the members in planning steps 4 through 9 (e.g., at least one meeting on each step).

Calumet City's planning committee took a field trip to see local floodproofed homes and this flood control structure.

15, if one or more public meetings are held in the affected area(s) at the beginning of the planning process to obtain public input on hazards, problems, and possible solutions.

15, for holding at least one public meeting to obtain input on the draft plan. The meeting must be at the end of the planning process, at least two weeks before submittal of the recommended plan to the community's governing body.

ⓘ Planning Hint

The intent of the public meetings is to go out to the people to gather input. It is recommended that some of these meetings be held in the affected neighborhoods. At a minimum, they need to be separate from regular meetings of the planning committee or your governing body.

The notices of the public meetings should be in the form of letters to floodplain residents, a notice sent to all residents, or a newspaper article or advertisement. **An inconspicuous legal notice appearing in the classified section of the newspaper is not sufficient for CRS credit.**

For multi-jurisdictional plans, you'll need to reach the public in all participating communities.

Public can comment on parish hazard mitigation plan

SLIDELL — St. Tammany Parish Natural Hazards Mitigation Planning Committee has announced the results of its Natural Hazards Mitigation Plan.

This six month effort reviewed the major hazards to which the parish is exposed, including tropical storms, floods, tornadoes, earthquakes, fog, and winter storms.

The committee evaluated a variety of measures that can reduce exposure to the dangers and damage posed by the hazards, and selected 17 action items recommended for implementation by the Parish and participating municipal governments. Participating municipal governments are Covington., Mandeville, Folsom, Slidell, Abita Springs, Sun and Pearl River.

The resulting plan, including an executive summary, is available for review on the Parish's website, www.stpgov.org. Click 'Department & Agencies' from the home page and follow link to 'Hazardous Mitigation Planning Committee.'

A public meeting will be held at 6 p.m., this Wednesday, March 31 in the Council Chambers at the St. Tammany Parish

SEE PLAN, PAGE 3A

– St. Tammany Parish Plan, page A-8

5, if questionnaires are distributed asking the public for information on the hazards they face, the problems, and possible solutions. The questionnaires must be distributed to at least 90% of the floodplain residents. For example, they could be included as a page in a newsletter or other outreach project, such as those credited under CRS Activity 330 (Outreach Projects).

5, if written comments and recommendations are solicited from neighborhood advisory groups, homeowners' associations, parent-teacher organizations, the Chamber of Commerce, or similar organizations that represent the public in the affected area(s).

5, if other public information activities are implemented to explain the planning process and encourage input to the planner or planning committee.

Step 2. Involve the public.

Planning Checklist

__ Meet with your community's public involvement/public relations staff.
__ Identify members of the public to serve on the planning committee.
__ Identify stakeholders to serve on the planning committee.
__ Identify the committee chair.
__ Hold first committee meeting.
__ Decide on/draft a questionnaire to residents.
__ Determine whether to have a workshop, open house, booth at a festival, or other special public involvement activity.
__ Draft newsletter article(s) and news release(s).
__ Implement at least one activity that invites the public to comment during the planning process. [REQUIRED]
__ Identify groups that need presentations or special attention.
__ Publicize and hold at least one public meeting after step 8.
__ [Multi-jurisdictional plans: publicize among all jurisdictions wanting CRS credit or FEMA mitigation plan recognition].

Step 3. Coordinate.

Plans and Studies

Community development and floodplain management goals may be mutually supportive or they may conflict. For example, if the community wants more recreational opportunities, clearing out the floodplain to provide a scenic waterfront park may be most appropriate. Conversely, if the floodplain includes the downtown, the plan should probably recommend measures other than removing the community's economic base.

Therefore, the first things you need to coordinate with are your community's other plans, studies and reports. These should include:

- Comprehensive plans,
- Land use plans,
- Emergency response plans,
- Flood control studies,
- Watershed plans,
- Special area plans, such as a downtown or waterfront redevelopment plan.

ⓘ Planning Hint

Both the CRS and FEMA mitigation planning criteria require your plan to include a "review and incorporation, if appropriate, of existing plans, studies, reports, and technical information."

In most cases, plans are reviewed in the section on preventive measures, and flood studies and technical information are summarized in the hazard analysis or flood control sections.

You'll need to note where you met this requirement on the CRS Activity Worksheet (see Appendix B)and/or the FEMA plan review crosswalk.

You need to coordinate with government agencies and private organizations for two reasons. First, they may be implementing or planning to implement activities that can affect flood damage, the hazards, or other local interests and concerns. You need to make sure that your efforts are not going to be in conflict with a government program or duplicate the efforts of another organization.

The second reason to involve outside agencies and organizations is to see if they can help. Help may be in the form of hazard data, technical information on various measures, guidance on regulatory requirements, advice and assistance in the planning effort, implementation of a recommended measure, and/or financial assistance to help you implement a recommended measure.

Agencies to Contact

At a minimum, your planning initiative should include contacting the planning or engineering offices in the cities, villages, towns, and county governments in the watershed. Find out who is the most appropriate local official(s) for flood-related matters. Talk to them and find out their level of interest in flooding issues and what they are already doing.

Other flood-related agencies and organizations to contact include

- Regional or metropolitan water, sewer, or sanitary districts;

- Your state's natural resources or water resources agency, coastal zone management agency, and planning or local government affairs office;
- Your state and county emergency management agency;
- Your state environmental protection agency;
- The U.S. Department of Agriculture agencies that work with watershed property owners (e.g., the Natural Resources Conservation Service and the Cooperative Extension Service);
- Your district office of the U.S. Army Corps of Engineers;
- The FEMA Regional Office;
- The National Weather Service;
- The U.S. Geological Survey;
- The U.S. Fish and Wildlife Service;
- The soil and water conservation district;
- The county emergency management agency; and
- Local watershed councils or associations.

Your State NFIP Coordinator can identify other floodplain management agencies to contact. You should contact non-flood agencies and organizations that have their own interests in the future of the floodplain, such as historic preservation, economic development, and recreation groups. A plan with multiple objectives has a much greater chance of success than one concerned only with flooding (see *Using Multi-Objective Management to Reduce Flood Losses in Your Watershed* in Appendix A. References).

Organizations to Contact

The organizations listed below either conduct mitigation programs or represent the various publics you want to involve.

- Your local chapter of the American Red Cross;
- The Chamber of Commerce, manufacturers' association, and other business groups;
- Parent-teacher and church organizations that have strong neighborhood ties;
- Universities, community colleges, museums, and other scientific organizations;
- Water-oriented or watchdog groups, like Friends of the _____ River;

How They Coordinated

✓ Birmingham relied primarily on its Stakeholder Committee which included representatives from 24 agencies and organizations (pages 1-6 – 1-7)

The four other communities sent letters to agencies and organizations and adjoining municipalities and parishes. In addition to the usual groups, they identified special organizations for coordination:

✓ Calumet City – a golf course and the Veterans of Foreign Wars (because they own large riverfront properties).

✓ North Myrtle Beach – a non-profit beach rescue squad, the South Carolina Sea Grant, and the University of South Carolina's Hazards Research Lab.

✓ Roseville – In addition to the initial contact, the City e-mailed its meeting announcements, agendas, and minutes to the agencies and organizations throughout the planning process,

✓ St. Tammany Parish – the Lake Pontchartrain Basin Foundation and NASA (a large employer in the area).

- The Izaak Walton League, the Sierra Club, and other environmental organizations;
- The League of Women Voters and other civic groups;
- The Conservation Foundation, land trusts, and others interested in preserving floodplain or watershed open space; and
- Organizations of boaters, fishers, scouts, hunters, and other floodplain visitors.

The public representatives on your planning committee can help identify appropriate organizations (see item 6 in the example agenda on page 17). The list can be long. At a minimum, contact these groups and tell them the planning schedule; they may want to participate somewhere along the line.

Helpers

Help in organizing and conducting planning may be available from a local, regional, or state planning agency or a private organization. The National Park Service's Rivers, Trails and Conservation Assistance Program provides staff support for local planning efforts under certain conditions. If they can't help throughout the planning effort, they may be able to help with some tricky stuff, such as providing a facilitator for an all-day community input workshop.

Another source of assistance is a private consultant. Planning and engineering firms often have personnel skilled in the various mitigation measures and the planning process.

CRS Credit for Step 3

(Maximum credit: 18 points) Other agencies and organizations must be contacted to see if they are doing anything that may affect the community's program and to see if they could support the community's efforts. Examples of "other agencies and organizations" include neighboring communities; local, regional, state, and federal agencies; and businesses, academia, and other private and non-profit organizations affected by the hazards or involved in hazard mitigation or floodplain management.

The credit is the total of the following points. TO RECEIVE CREDIT FOR THIS STEP, THE COORDINATION MUST INCLUDE THE FIRST TWO ITEMS.

3, if the planning includes a review of existing studies, reports, and technical information and of the community's needs, goals, and plans for the area. (REQUIRED)

1, if you contact the following agencies and organizations and invite them to be involved in the planning process (REQUIRED):

- Neighboring communities;
- Local and regional agencies involved in hazard mitigation activities;
- Agencies that have the authority to regulate development; and
- Businesses, academia, and other private and non-profit interests.

4, if you contact the following agencies and organizations at the beginning of the planning process to see if they are doing anything that may affect your program and to see how they can support your efforts:

- The state NFIP Coordinator;
- The state water resources agency;
- The county and state emergency management agency;
- The FEMA Regional Office; and
- The state's coastal zone management agency (where appropriate).

4, if you contact the following agencies and organizations at the beginning of the planning process to see if they are doing anything that may affect your program and to see how they can support your efforts:

- The National Weather Service;
- The Red Cross;
- Association of homebuilders or developers; and
- Environmental groups.

10, if you hold meetings with representatives of the other agencies and organizations to review common problems, development policies, mitigation strategies, inconsistencies, and conflicts in policies, plans, programs, and regulations. The meetings need only be held with those agencies that have the most impact on the community's problem. (Some agencies may be so important that their representatives should be invited to sit on the planning committee.)

3, if you send the draft action plan to the above agencies and organizations contacted and ask them to comment by a certain date.

Multi-jurisdictional plans (e.g., watershed plans) may be accepted for CRS credit or recognition as FEMA mitigation plan as long as each jurisdiction has participated in the process and has officially adopted the plan, which must include projects specific to each community. State-wide plans are not accepted as multi-jurisdictional plans.

Step 3. Coordinate. **Planning Checklist**

__ Identify, collect, and review existing studies, plans, and reports that address natural hazards and your communities needs and goals
__ Identify the offices in neighboring communities that should be contacted.
__ Identify agencies that should be contacted.
__ Identify organizations that should be contacted.
__ Make sure your list of agencies and organizations include those that must be invited for CRS credit
__ Determine which can be sent a notice and which deserve a face-to-face meeting.
__ Distribute the notice that you are preparing the plan and ask if they are doing anything that may affect your program and/or support your efforts.
__ Meet with appropriate offices, agencies, and organizations.
__ After step 8: send a draft of the plan to appropriate offices, agencies and organizations.

Step 4. Assess the hazard.

From the CRS perspective, the major hazard to be addressed is flooding. However, the CRS has always encouraged a multi-hazard approach because it is a more efficient way of dealing with all natural disasters that may affect your community. Besides, if you want your product to qualify as a FEMA mitigation plan, you must address all potential natural hazards.

In step 4, the planner and planning committee need to look at data on the hazard, i.e., what can Mother Nature send your way? Your community could be exposed to a wide variety of potential hazards. Start with

- Your emergency operations plan,
- Your state's hazard mitigation plan, and
- Staff and committee members knowledgeable about past problems

This will give you a preliminary list of your area's hazards. Then collect details on them.

Planning Hint

"Communities face a number of barriers to implementing hazard reduction measures. Two major obstacles are the public's misunderstanding of risk and the fact that most people do not want to believe that their community will ever experience a disaster, much less experience another if they've already been through one. The best way to deal with these issues is to educate your community and build a consensus about its vulnerability to natural hazards."

– *Planning for a Sustainable Future , p. 19*

More detailed guidance on assessing your hazards can be found in *Understanding Your Risks—Identifying Hazards and Estimating Losses*, FEMA 386-2. Step 4 coincides with that book's sections 1 and 2, "Identify hazards" and "Profile hazard events."

Flooding

First, identify your areas of concern. Do you need to look at one neighborhood, repetitive loss areas, the whole city, or every flood problem in the watershed? A common pitfall is focusing on the site of the last flood. Although this area may evoke the most interest, look at the POTENTIAL for flood problems.

The base flood: Most planning programs start with the base flood. This is a statistical concept that considers both the severity of a flood and the likelihood of it occurring. Your community's Flood Insurance Rate Map (FIRM) shows the base floodplain as the A and V Zones. It is also called the Special Flood Hazard Area.

While the FIRM is the best place to start, yours may be 10 or 20 years old, so it's good to check that you have the latest version. They're listed in FEMA's Community Status Book at www.fema.gov/fema/csb.shtm

Also, see if there have been any physical changes that could have affected flooding since the FIRM was made, such as new bridges, channel work, or substantial watershed development.

Higher floods: In some cases, you should consider a higher protection level than the base flood. For example, if your community suffered a flood that was higher than the mapped base flood, you should consider the higher flood. (The highest flood recorded is called the flood of record.)

Critical facilities: Critical facilities, such as a hospital, fire station, power substation, or hazardous materials storage yard, should be protected from the 500-year flood or the flood of record, whichever is higher. Most FIRMs show the 500-year floodplain.

Some critical facilities, like this power substation, appear to be located without consideration of the flood or other hazard.

Small flood problems: Most available studies map the base floodplain for larger bodies of water. However, if people get wet, they consider it flooding and they'll want you to address it. Therefore, this step should review flooding from small ditches, flooding in depressional areas, and sanitary or storm sewer backup that isn't shown on your FIRM or covered in existing engineering studies.

Local experience is often the best source of flood hazard data for smaller watersheds and drainage problems. Here are some sources that can help you map problem areas:

- Public works records,
- Staff knowledge,
- The resident questionnaire discussed in step 2,
- Flood insurance claims, and
- Planning Committee members.

Other flood data: In addition to the area affected and the flood height, the following information can help you get a handle on your flood problem:

- Area and map of the watershed;
- Historical floods;
- Areas repetitively flooded (FEMA can provide insurance claims data on this);
- Velocities;
- Amount of warning time;
- How long the area will stay underwater ("duration");
- Sediment, debris, and pollutants in the flood waters; and
- Whether there are any flood control projects underway.

Little Calumet River Stages
Cottage Grove Avenue Gage

Stage	Elevation	Event
26.5	601.5	500-year flood
23.0	598.0	100-year flood
22.0	597.0	50-year flood
20.8	595.5	11/27/90
20.2	595.2	6/14/81
20.1	595.1	7/14/57
20.0	595.0	7/20/96
19.6	594.6	12/3/82
19.4	594.4	10-year flood
19.2	594.2	4/6/47
19.1	594.1	2/21/97
18.6	593.6	6/2/89
18.2	593.3	10/10/54
17.9	592.9	2/24/85
17.7	592.7	12/27/65

Calumet City's plan included data from gage records, the Flood Insurance Study, and historical records, all summarized in this graphic.

– Calumet City plan, page 2-5

Sources of flood hazard information:

- Area and map of the watershed;
- The references listed in your Flood Insurance Study;
- State NFIP Coordinator;
- State natural or water resources agency;
- Regional planning, sanitary, drainage, or water management districts;
- County emergency manager;
- County or state highway or transportation department;
- U.S. Army Corps of Engineers;
- U.S. Department of Agriculture's Natural Resources Conservation Service, usually co-located with your local soil and water conservation district (check the government listings in the phone book for your county seat); and
- A local university's geography, engineering, or natural sciences department or library.

ⓘ Planning Hint

Work with the data you have—you're not designing a reservoir, you are looking into how flooding affects your community. Too often, the planning process gets delayed while waiting for more data because the planner wants a highly detailed problem description.

Flood Data Websites

Because there is so much local data on flooding, national websites may not be as useful as for other hazards. However, data on local stream gauges can be obtained through the National Weather Service (www.nws.noaa.gov/ahps) and the U.S. Geological Survey (http://waterdata.usgs.gov/nwis/). See also Appendix B in *Understanding Your Risks* for a host of website references.

Other hazards: A good plan should integrate consideration of other hazards besides flooding. If you want your plan to qualify under FEMA's mitigation planning criteria, it must assess all natural hazards to which your community is exposed. You will need to include information on previous occurrences and the probability of future events. The plan could also look at "technological" hazards, such as releases from chemical plants and hazardous materials spills.

Here's a list of natural hazards that should be checked:

- Alluvial fan flooding[1]
- Avalanche
- Closed basin lakes[1]
- Coastal erosion[1]
- Coastal storm[2]
- Dam failure
- Drought
- Earthquake[2]
- Expansive soils
- Extreme heat
- Flood[2]
- Hail
- Hurricane[2]
- Ice jams[1]
- Land subsidence[1]
- Landslide[2]
- Levee failure
- Mudflows[1]
- Tornado[2]
- Tsunami[1,2]
- Uncertain flow paths[1]
- Volcano
- Wildfire[2]
- Windstorm
- Winter/ice storm

1. More information on these hazards can be found in CRS special hazards booklets that can be ordered from the office listed on the inside front cover of this publication.
2. More information on these hazards can be found in *Understanding Your Risks—Identifying Hazards and Estimating Losses*, FEMA 386-2.

CRS Credit for Step 4

(Maximum credit: 20 points). The credit for this step is the total of the following points based on what the community includes in its assessment of the hazard. The hazard assessment needs to describe the local hazard and not be a broad or generic discussion of the hazard in general. Because the most important readers are elected officials and the public, the descriptions of the hazards should be in lay terms. TO RECEIVE CRS CREDIT FOR THIS STEP, THE PLAN MUST INCLUDE THE FIRST ITEM, THE FLOOD HAZARD ASSESSMENT. TO QUALIFY AS A FEMA MITIGATION PLAN, THE ASSESSMENT MUST INCLUDE BOTH ITEMS, AN ASSESSMENT OF THE FLOOD AND OTHER NATURAL HAZARDS.

For including an assessment of the flood hazard in the plan. If your community has one or more repetitive loss properties, this step must cover all of your repetitive loss areas (REQUIRED). The assessment must include at least one of the following items:

5, A map of the known flood hazards. "Known flood hazards" means the floodplain shown on the FIRM, repetitive loss areas, areas not mapped on the FIRM that have flooded in the past, and surface flooding identified in existing studies. No new studies need to be conducted for this assessment.

5, a description of the known flood hazards, including source of water, depth of flooding, velocities, and warning time.

5, a discussion of past floods.

The community's planning may address only some of its floodplain, such as a problem stream, a lakeshore, or a repetitive loss area. The ISO/CRS Specialist will adjust the credit points if not all of the community's flood problems are covered in the plan.

5, if the plan includes a map, description of the magnitude or severity, history, and probability of future events for other natural hazards, such as erosion, tsunamis, earthquakes, and hurricanes. The plan should include all natural hazards that affect the community. At a minimum, it should include those hazards identified by the state's hazard mitigation plan.

Multi-jurisdictional plans must analyze each jurisdiction's risks where they vary from the risks facing the entire planning area (FEMA mitigation planning criteria (44 *CFR* 201.6(c)(2)(iii))).

Step 4. Assess the hazard. **Planning Checklist**

__ Write a master list of all hazards faced by your community.
__ Check that your FIRM still accurately depicts the base and 500-year floodplains.
__ Map additional areas subject to flooding and drainage problems.
__ Record other available flood data, such as velocities and warning time.
__ Collect available data on the other hazards.
__ Summarize the hazard data with maps, descriptions, and historical experiences for Committee review and to form the basis of the plan's section on the hazards. [REQUIRED]

Step 5. Assess the problem.

The previous step assessed the hazard. You determined where the water goes and what other hazards your community faces. But a flood hazard area may or may not have flood PROBLEMS. A floodplain or a steep slope is only a problem area if human development gets in the way of the natural processes of flooding and settling.

In step 5, the planner and planning committee members collect and summarize data on what is vulnerable to damage from the hazards. Data on the hazard, such as flood depths and wind speeds, don't mean much unless we know how people and property are affected.

> More detailed guidance on assessing the problem can be found in *Understanding Your Risks—Identifying Hazards and Estimating Losses*, FEMA 386-2. Step 5 coincides with that book's sections 3, "Inventory assets" and 4, "Estimate losses."
>
> NOAA's Coastal Services Center offers guidance and a tutorial on a vulnerability analysis technique for coastal hazards. It can be found at www.csc.noaa.gov/products/nchaz/startup.htm.

The Flood Problem

The impact of flooding on a community can be measured in a variety of ways. You should review what past and predicted floods do to the people, property, and economy of your community.

Impact on health and safety: This should be one of your prime concerns. Find out how many people have been killed in past floods. Where were they? For example, if they were killed in automobiles, your plan should include recommendations for public information activities aimed at drivers.

Floods can bring a variety of health problems: disease and pollutants in the water; mold, mildew, and sediment left by the flood; and psychological impacts on flood victims. Comprehensive data on health problems will probably not be available, but there should be sufficient historical accounts (newspaper articles, after action reports, etc.) to provide an indication of the types and extent of the problem.

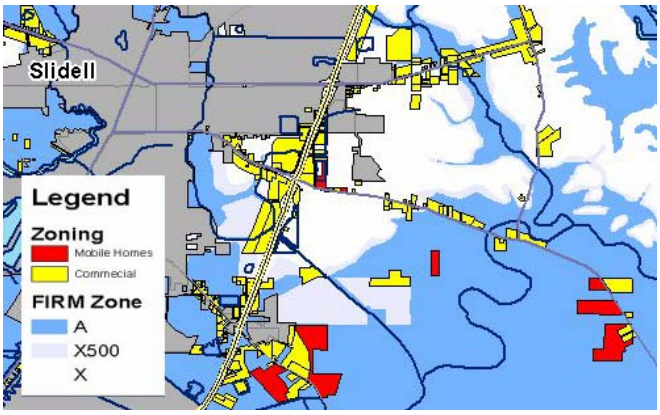
Buildings: Because the National Flood Insurance Program insures buildings, the impact of flooding on buildings is a prime concern of the CRS. A count of the number of buildings affected by each type of flooding informs planners of the magnitude of the problem. The building count should be done by use or type of building because flooding affects different types differently. For example, a commercial or industrial building is likely to suffer more dollar damage than a house and have a bigger impact on the community if it has to close because of flooding or flood damage.

Similarly, a building with a basement will be hit harder by shallow flooding and sewer backup than will a building on a crawl space. An historic site may deserve more attention than other properties because of its special value to the community.

The number and types of buildings affected can be obtained by a review of GIS layers, aerial photos or a windshield survey. The amount of time and resources available dictates how much data can be collected. At a minimum, you should obtain a total count of the residential and non-residential structures affected by each type of flooding.

Building damage: An assessment of predicted or actual building damage is another useful type of information. It may be readily available from the following sources:

- Flood control studies often include the elevations of buildings and developed estimates of their average annual dollar damage.
- Post-flood, after-action, or damage assessment reports may include damage data.
- Flood insurance claims records will have data on insured buildings that were flooded. Communities in the Community Rating System receive a CD each year with data on historic flood insurance claims. ***NOTE:*** *Use of flood insurance claim data is subject to the Privacy Act, which prohibits public release of the names of policy holders and the amount of the claim payment. Averages or totals and maps showing AREAS where claims have been paid can be made public.*
- The HAZUS-MH flood analysis (see next page) can yield valuable information about the potential for flood damage and loss. Before running the analysis, the building/structure inventory data bases in HAZUS-MH should be reviewed and, if possible, augmented with local input.
- Estimates may be sufficient for larger communities that may find it difficult and time consuming to locate every floodprone building.



Excerpt from the GIS map that St. Tammany Parish used to estimate property exposure to hazards

– St. Tammany Parish plan, page 3-3

St. Tammany Parish Damage Estimates

Table 3-9 Costs from a 5-year Storm

	Minor Damage		Moderate Damage		Major Damage		Total
Property	**Count**	**Cost**	**Count**	**Cost**	**Count**	**Cost**	**Cost**
Water/wastewater							
Water plants	2	$50,000	1	$540,000	0	$0	$590,000
Wastewater plants	2	$50,000	1	$540,000	0	$0	$590,000
Shelters	5	$750,000	3	$7,200,000	0	$0	$7,950,000
Other structures							
Single family	4460	$27,652,000	2230	$206,052,000	0	$0	$233,704,000
Mobile homes	817	$1,388,900	409	$10,797,600	0	$0	$12,186,500
Multi-family	50	$1,000,000	25	$9,600,000	0	$0	$10,600,000
Businesses	202	$4,646,000	101	$35,552,000	0	$0	$40,198,000
Government	50	$750,000	25	$6,350,000	0	$0	$7,100,000
Total							$379,591,500

St. Tammany Parish's plan has a table like this for each of the 13 hazards reviewed.

– St. Tammany Parish plan, page 3-17

HAZUS-MH − A Risk Assessment Tool

HAZUS-MH is a software program that contains models for estimating potential losses from earthquakes, floods, and hurricane winds. It can be of great assistance in the step 5 vulnerability assessment.

HAZUS-MH uses geographic information system (GIS) software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of hurricane winds, floods, and earthquakes on populations. HAZUS-MH can also provide real-time data to support response and recovery after a natural disaster.

The utility and accuracy of the output depends on the amount of additional information provided by the local planner. HAZUS-MH provides for three levels of analysis.

- A Level 1 analysis yields a rough estimate based on the nationwide database and can be a good way to begin the risk assessment process and prioritize high-risk areas.
- A Level 2 analysis requires the input of additional or refined data and hazard maps that will produce more accurate risk and loss estimates. Assistance from local emergency management personnel, city planners, GIS professionals, and others may be necessary for this level of analysis.
- A Level 3 analysis yields the most accurate estimate of loss and typically requires the involvement of technical experts such as structural and geotechnical engineers who can modify loss parameters based on the specific conditions of a community. This level analysis will allow users to supply their own techniques to study special conditions, such as dam breaks and tsunamis.

HAZUS-MH includes a Building Inventory Tool that allows users to import building data and is most useful when handling large datasets (over 100,000 records), such as tax assessor records.

The HAZUS-MH Flood Model is capable of assessing riverine and coastal flooding. It estimates potential damage to all classes of buildings, essential facilities, transportation and utility lifelines, vehicles, and agricultural crops. The model addresses building debris generation and shelter requirements. Direct losses are estimated based on physical damage to structures, contents, and building interiors. The effects of flood warning are taken into account, as are flow velocity effects. HAZUS-MH includes the Flood Information Tool (FIT), which allows users to prepare local flood hazard and other pertinent data (such as FIRMs and DFIRMs) for use in the HAZUS-MH Flood Model.

The HAZUS-MH Hurricane Wind Model gives users in the Atlantic and Gulf Coast regions and Hawaii the ability to estimate potential damage and loss to residential, commercial, and industrial buildings. It also allows users to estimate direct economic loss, post-storm shelter needs and building debris.

The HAZUS-MH Earthquake Model provides loss estimates of damage and loss to buildings, essential facilities, transportation and utility lifelines, and population based on scenario or probabilistic earthquakes. The model addresses debris generation, fire-following, casualties, and shelter requirements. Direct losses are estimated based on physical damage to structures, contents, inventory, and building interiors.

HAZUS-MH can perform multi-hazard analysis by accessing the average annualized loss and probabilistic results from the hurricane wind, flood, and earthquake models and combining them to provide integrated multi-hazard reports and graphs. HAZUS-MH contains a third-party model integration capability that provides access and operational capability to a range of human-made and technological hazard models (nuclear and conventional blast, and radiological, chemical, and biological incidents) that will supplement the natural hazard loss estimation capability (hurricane wind, flood, and earthquake) in HAZUS-MH.

Copies of HAZUS-MH are available at no charge from the FEMA Distribution Center. Users can request that a 60-day trial/evaluation copy of ESRI's ArcGIS software be sent with HAZUS-MH. Users should be familiar with operating GIS software. HAZUS training is available at FEMA's Emergency Management Institute and elsewhere. More information is at www.fema.gov/plan/prevent/hazus

How did they look at buildings?

- ✓ Birmingham used a round number of 5,000 as an estimate of the number of floodprone buildings, but refined the numbers where the data, such as insurance claims, were available. (page 2-11)
- ✓ Calumet City conducted a windshield survey when it prepared its first floodplain management plan in 1999. It counted 2,092 buildings in the mapped floodplain. Its 2005 plan noted "There has been little new construction the floodplain since the survey, so the general findings are still valid." (page 2-7)
- ✓ North Myrtle Beach had 71 map sheets in its GIS system that showed buildings, land use, and tax value. These were used to count buildings by type and value for each flood zone. (page 2-17)
- ✓ Roseville created a Flood Inventory Database which includes data such as building value, permit history, and flood loss history. The City's plan summarizes the data in the table to the right. (page 9-13)
- ✓ St. Tammany Parish's planners counted buildings by type using GIS layers and then developed damage estimates which were refined after discussions with planning committee members. The estimates accounted for type of use, level of damage from different disaster scenarios, physical damage to the structure and the cost of downtime. See St. Tammany Parish's plan, Section 3.2. Damage Calculations for details.

TABLE 9.4
SUMMARY OF STRUCTURES AT RISK

	Roseville Regulatory Floodplain	FEMA SFHA
Area of Floodplain (acres)	1,493.43	1,098.08
Residential Buildings	135	126
Non-residential Buildings	12	12
Total Buildings	147	138
DOF less than 1 foot*	41	50
DOF 1 to 3 feet*	67	64
DOF greater than 3 feet*	39	24
Lowest Floor Elevated	87	89

NOTE:
* Depth of Flooding (DOF) is the difference between the BFE or Regulatory Flood Elevation (RFE) and the elevation of the lowest grade adjacent to a structure.

However, if time and resources permit, you should consider collecting data on each lot to determine appropriate property protection measures. An alternative approach is to work with estimated or aggregate building data and identify areas, such as repetitive loss areas, for closer investigation. The plan could recommend that building-by-building area analyses (which are also credited by the CRS) be conducted in the next year or two after the plan is adopted.

Repetitive losses: FEMA programs, especially the CRS, are particularly concerned about repetitive losses—two or more flood insurance claims for more than $1,000 for the same structure over a 10-year period. Such buildings represent fewer than 2% of the nation's flood insurance policy base, but over 35% of claims payments.

You can get a list of your community's repetitive losses from 1978 to the present from your FEMA Regional Office or State NFIP Coordinator. (If your community currently participates in the CRS, it receives that information on a CD every year.) Many communities have found this information to be useful. Developing mitigation responses to repetitive loss problems is required by the CRS and may also help your community compete for FEMA funds.

Use of Flood Insurance Data

Flood insurance data on individual properties are subject to the Privacy Act. Information such as the names of people and addresses of properties that have received flood insurance claims and the amounts of such claims may not be released to the public. Such information should be marked "For internal use only. Protected by the Privacy Act of 1974." Generic information, such as total claim payments for an area or data not connected to a particular property may be made public.

Other facilities: Flooding impacts more than buildings. The problem assessment should review the following items, too:

- Roads, bridges, and transportation facilities that may be damaged or closed;
- Critical facilities (e.g., emergency operations centers, hospitals, day care centers, senior citizen housing, and schools) that may be damaged or isolated;
- Other infrastructure, such as water and sewage treatment plants, that could become inoperable due to a flood;
- Business centers and major employers;
- Features or landmarks important to your community;
- Flood protection measures in effect or under construction; and
- What happened in past floods.

Economic impact: Experience has shown that struggling businesses often close for good after a flood. What will a flood do to your downtown? To your major employers? Can your community treasury pay for another flood fight? What did past floods do? These are the kinds of questions to ask to determine the impact of flooding on your economy.

You may be able to put a dollar value on the economic impact or find a study that did. If so, you may be surprised at the figure. One community's planners found a Corps of Engineers' report that had calculated the cost of closing flooded bridges to be $383,000 per day. That cost is borne by everyone, not just floodplain residents, an important fact when seeking support for the plan's recommendations.

What problems did they find?

Each of the five communities discussed the impact of flooding on buildings and the economy.

- ✓ Birmingham – identified 12 neighborhoods as "clusters of hotspots, repetitive loss properties, and/or large areas of identified flooding" which helped focus the planning effort. (page 3-1)
- ✓ Calumet City – extrapolated from historical claims data to conclude that a 100-year flood would cause $40 million in damage to the 1,978 single family homes in the City's floodplain. (page 2-8).
- ✓ North Myrtle Beach – 20% of the buildings in the City are in the mapped floodplain. Most are subject to wave and debris problems caused by coastal storms. (page 2-17)
- ✓ Roseville – used HAZUS-MH to determine that the 100-year flood would displace an estimated 2,992 people and create up to 189,079 ton of debris. (page 9-19)
- ✓ St. Tammany Parish calculated dollar losses from different hazard scenarios, as illustrated on pages 29 and 31 of this publication.

Natural features: Comprehensive floodplain management planning should also review the unique natural features, natural areas, and other environmental and aesthetic attributes that may be present in the floodplain. Protecting and preserving these natural and beneficial floodplain functions yield flood protection benefits and also help integrate floodplain management efforts with other community goals.

Natural features that protect property from flooding include lakes, ponds, wetlands, barrier islands, sand dunes, and beaches. Your data collection effort should identify parks, open space, and greenways that could benefit when adjacent natural areas are preserved. What would happen if you lost these features? One Chicago suburban study

found that if the existing natural depressional areas in the watershed were developed (even with stormwater detention facilities), downstream flood heights would increase several feet. The resulting mitigation plan identified these vacant areas as prime candidates for acquisition.

The future: A final topic that should be addressed is the future. Your problem definition should review expected changes to the watershed and floodplain, especially the development potential of vacant land. It should also note the trends for redeveloping floodprone areas and possible development constraints, such as a land use plan, zoning, or ownership.

Take a look at the watershed. Is there a lot of land that is expected to be developed? If so, the runoff into your community will likely increase and, if not managed, the frequency and height of flooding could increase as well. Will areas of natural or cultural importance be redeveloped?

Other Hazards

Similar reviews are needed for the impact of the other hazards identified in step 4. Again, *Understanding Your Risks* is the best place to go. It provides a detailed approach to inventorying the exposure and estimating the cost of a disaster. The references and resources listed in Appendix A can help with the problem evaluation.

If you have the computer resources, the FEMA program HAZUS can provide an initial inventory of key facilities and data for earthquake, flood, and wind damage (see box, page 30).

Summarizing

With a lot of data on different hazards and their impact on people, buildings, infrastructure, the economy, etc., it may be hard for the committee (and even the planners) to see the big picture. A summary helps. One way to do this is to use a tabular format, like the ones for St. Tammany Parish on the next page.

This type of table can be prepared at a committee meeting. The input is based on the data collected, but many of the statements in the boxes are subjective. A more exacting technique that converts expected losses to dollars is explained in *Understanding Your Risks.* Using dollars makes comparisons more objective, but may miss impacts that are harder to measure, such as pollution and threats to life.

ⓘ Planning Hint

A summary doesn't need to go overboard with numbers and details for a community-wide plan. The objective is to give the committee a framework to think in, e.g., to get away from concentrating on the last disaster or the "everyday" occurrences of drainage problems and storms.

St. Tammany Parish Hazard Impact Summaries

These two tables appear at the end of Chapter 3 Vulnerability in the St. Tammany Parish *Natural Hazards Mitigation Plan*. The Parish planners estimated property damage for each occurrence and multiplied the figures times the estimated chance of occurrence to produce average annual damage for each type of hazard. There is also a narrative summary and a third table for economic impacts of the hazards. Another set of tables was prepared for each of the four municipalities participating in the county-wide planning effort.

Table 3-16 Property Damage Summary

Hazard	Property Damage from Single Occurrence	Annual Chance	Average Annual Damage
Tropical storm	$215,569,033	0.8300	$178,922,297
Category 2 hurricane	$464,225,400	0.0526	$24,418,256
Category 5 hurricane	$7,624,137,600	0.0055	$41,932,757
5-year stormwater flood	$379,591,500	0.2000	$75,918,300
100-year flood	$2,129,837,350	0.0100	$21,298,374
Tornadoes	$300,000	1.0000	$300,000
Wildfires	$61,875	1.0000	$61,875
Drought	$25,333	0.0500	$1,267
Fog	$400,000	1.0000	$400,000
Earthquake	$754,916	0.0100	$7,549
Hailstorm	$6,793,524	0.1600	$1,086,964
Land failure	$100,000	1.0000	$100,000
Severe winter	$7,260,162	0.0500	$363,008
Dam failure	$25,000	0.0100	$250
Levee failure	$118,575,000	0.0050	$592,875
Termites	$17,500,000	1.0000	$17,500,000
Total			$362,903,772

Table 3-17 Summary of the Impact on People

Hazard	Life Safety		Mental Health		Annual Chance	People Score
Tropical storm	Low	10	Low	2.5	0.8300	10.38
Category 2 hurricane	Mod	40	Mod	10	0.0526	2.63
Category 5 hurricane	High	100	High	25	0.0055	0.69
5-year stormwater flood	Nil	1	Low	2.5	0.2000	0.35
100-year flood	Mod	40	Mod	10	0.0100	0.50
Tornadoes	Low	10	Low	2.5	1.0000	12.50
Wildfires	Low	10	Low	2.5	1.0000	12.50
Drought	Nil	1	Nil	1	0.0500	0.10
Fog	Mod	40	Nil	1	1.0000	41.00
Earthquake	Low	10	Low	2.5	0.0100	0.13
Hailstorm	Nil	1	Nil	1	0.1600	0.32
Land failure	Nil	0	Nil	0	1.0000	0.00
Severe winter	Nil	1	Nil	1	0.0500	0.10
Dam failure	Low	10	Low	2.5	0.0100	0.13
Levee failure	Low	10	Mod	10	0.0050	0.10
Termites	Low	10	Low	2.5	1.0000	12.50

St. Tammany Parish Hazard Impact Summaries

In addition to the two tables on the previous page (and a third similar one on economic costs that is not included here, the Parish's vulnerability discussion ends with a short narrative:

3.16.4 Conclusions The three tables and the earlier facts and figures in this chapter help prioritize the relative severity of the natural hazards on property and people in St. Tammany Parish. The Committee concluded the following:

1. Tropical storms (including hurricanes) and flooding are by far the most severe hazards facing St. Tammany Parish in terms of property damage. Termites and hailstorms are the next most severe.
2. Fog is the most severe hazard facing St. Tammany Parish in terms of the threat to lives, safety and mental health. Other, more frequent, hazards, such as tornadoes, wildfires, termites and tropical storms are also important.
3. Tropical storms (including hurricanes) and flooding have the greatest overall impact on the area's economy. Termites are an added cost of living in the area.
4. Some types of property and areas are more vulnerable than others. Special emphasis should be placed on protecting manufactured homes and repeatedly flooded properties.

CRS Credit for Step 5

(Maximum credit: 35 points) The credit for this step is the total of the following points based on what is included in the assessment of the vulnerability of the community to the hazards identified in the previous hazard assessment step. TO RECEIVE CREDIT FOR THIS STEP, THE ASSESSMENT MUST INCLUDE THE FIRST ITEM AND MUST EVALUATE THE HAZARD DATA IN LIGHT OF THE IMPACT ON THE COMMUNITY. Simply listing data, such as the names of the critical facilities or the number of flood insurance claims, will not suffice for credit.

2, if the plan includes an overall summary of each hazard identified in the hazard assessment (step 4) and its impact on the community. [REQUIRED by the CRS and FEMA mitigation planning criteria (44 *CFR* 201.6(c)(2)(ii))]

5, if the plan includes a description of the impact that the hazards identified in the hazard assessment (step 4) have on life, safety, and health, and the need and procedures for warning and evacuating residents and visitors.

5, if the plan includes a description of the impact that the hazards identified in the hazard assessment have on critical facilities and infrastructure. An estimate of the potential dollar losses to vulnerable facilities is recommended for FEMA mitigation plans.

5, if the plan includes a summary of the impact of each hazard on the community's economy and tax base.

5, for including the number and types of buildings subject to the hazards identified in the hazard assessment. An estimate of the potential dollar losses to vulnerable buildings is recommended for FEMA mitigation plans.

4, if the assessment includes a review of all properties that have received flood insurance claims (in addition to the repetitive loss properties) or an estimate of the potential dollar losses to vulnerable structures. *CRS communities receive this data on a CD every year. Non-CRS communities should contact their FEMA Regional office or state Flood Insurance Coordinator.* ***NOTE:*** *Use of flood insurance claim data is subject to the Privacy Act, which prohibits public release of the names of policy holders and the amount of the claim payment. However, averages, totals, etc. and maps showing AREAS where claims have been paid can be made public.*

4, if the plan describes areas that provide natural and beneficial functions, such as wetlands, riparian areas, sensitive areas, and habitat for rare or endangered species.

5, if the plan includes a description of development, redevelopment, and population trends and a discussion of what the future is likely to bring for development and redevelopment in the community, the watershed, and natural resource areas.

When a multi-jurisdictional plan is prepared, the critical facilities, building counts, and similar data must be presented for each community seeking CRS credit or FEMA mitigation plan recognition.

Step 5. Assess the problem. **Planning Checklist**

__ Review and summarize the impact of EACH hazard on

- Health and safety
- Warning and evacuation procedures
- Critical facilities
- Utilities and other infrastructure
- Local economy and tax base.
- Buildings
- Repetitive loss areas
- Roads, bridges, and transportation facilities
- Business centers and major employers
- Features/landmarks important to your community
- Natural features and sensitive areas

__ Review what will happen to future development and what that development will do to the hazard.

__ Prepare an overall summary of the impacts. [REQUIRED]

Step 6. Set goals.

Up to this point, your planning work has been relatively noncontroversial, consisting of talking to agencies and organizations and collecting and recording facts. Now comes the tough part—getting people to agree on what should be done. There should be agreement in the community (represented by the committee) as to the purpose of the whole project. A clear definition of goals at this point assures that your planning moves in a productive direction.

Community goals and other potentially controversial issues may have been resolved in previous efforts that prepared other community plans. Even so, those involved in your planning process need to identify and clarify their concerns so you can reach agreement on the wording of your floodplain management or mitigation planning goals.

Which direction?

There is a choice at this step. You can limit your work to reacting to your hazards and identifying mitigation goals, such as "protect lives during a hurricane," "reduce the potential for flood damage to existing buildings," and "prevent construction of any more buildings in the floodway." Such goals are appropriate and in line with the minimum credit criteria for the CRS.

Your second choice is to look at how the floodplain, watershed and other hazards affect your community. Many planners now promote a "vision" step in the planning process in which people review how they'd like their community to look in the future. What should your floodplain look like 20, 50, or 100 years from now? Is your vision of the floodplain limited to how well buildings are protected, or should you discuss the best use of this sensitive area?

Is your vision simply of an area free from danger or damage, or can you take advantage of the attention currently being given to hazards, coordinate it with other goals, and outline a way to develop a better community? If so, you may have some additional goals or vision statements, such as "have a river clean enough for swimming and fishing," "preserve all wetlands and natural storage areas in the watershed," "have a waterfront that attracts people," or "eliminate all substandard housing in the area." Why not use the planning process to meet more than one objective for your community?

Sustainable Communities

"Sustainable" means meeting the needs of the present without compromising the ability of future generations to meet their own needs. FEMA notes, "The extent to which your community manages to achieve a sustainable future largely depends upon how well you integrate the concepts and principles of sustainable development, including disaster resistance, into your decision-making process."

Why think small? As long as you are discussing what your community should do about the natural hazards it faces, why not consider its environmental, economic, and social health and its long term prospects?

For more information on sustainability, see FEMA's *Planning for a Sustainable Future* and the Natural Hazards Center's *Holistic Disaster Recovery—Ideas for Building Local Sustainability after a Natural Disaster.*

Reaching Consensus

It is often easy to reach agreement on overall goals, but it is not unusual to take a long time to reach consensus on specific objectives related to particular areas or individual properties. However, doing so is time well spent and vital to gaining cooperation from all affected parties.

Make your goals read as positive statements, something people can work for, not negative statements about the community. Where possible, settle on goals that support more than one interest, e.g., "Implement erosion reduction measures to sustain farmland, improve water quality, and reduce sedimentation in stream channels."

ⓘ Planning Hint

Goals don't have to be too detailed. It's not so important at this stage to decide if a specific ordinance should be revised. It's more important to get a sense of direction —is the community (i.e., the committee) concerned about development? If so, an appropriate goal might be "ensure that new buildings will be protected from flooding, earthquakes, hail, and windstorms."

ⓘ Planning Hint

An experienced facilitator can be very helpful. As a neutral outsider, he or she can be trusted by everyone to give all interests a chance to be heard.

Facilitators also know many exercises and other ways to identify common concerns and work out differences. They are skilled at separating issues and interests from discussions of people and positions. They can build an atmosphere in which give and take is easier and more productive.

Generally, consensus means something everyone can live with. You should strive for unanimous support or at least agreement that no one will oppose a goal statement. Short of that, you have to judge if you must settle for a decision by majority vote.

After working with the committee, you probably will have a good feel about whether agreeing on goal statements will be difficult. If it does not appear to be too divisive, try a simple exercise, like the one described on the next page.

If this approach doesn't work, you have two options: either don't go for detailed statements and instead just get consensus on the general goals, or invite a facilitator to help you move through a formal process of consensus building.

CRS Credit for Step 6

(Maximum credit: 2 points). The points for this step are provided if the plan has a statement of the goals of the community's floodplain management or hazard mitigation program. [REQUIRED by the CRS and FEMA mitigation planning criteria (44 *CFR* 201.6(c)(3)(i))]

Step 6. Set goals. **Planning Checklist**

__ Discuss possible goals and directions with the committee chair.
__ Decide whether to limit goals to hazard mitigation or "think big" and relate the activity to other community concerns and/or sustainability.
__ Determine if exercises and/or a facilitator should be used.
__ Set goals in a committee meeting.
__ Revise them at later meetings as members reflect on them.

How Calumet City Set Goals

The Planning Committee conducted an exercise to outline its goals for this multi-hazard mitigation plan. Each member was given a handout, asking "What would you most like to see in Calumet City's future?" Committee members wrote down their top five choices on a Post-it card. Each member then posted them on the wall and explained their choices. The cards were then organized by similar topics.

There was a good amount of consistency in the members' topics. The handout has 22 possible statements, but the members' nominations included fewer than half of them. Several of them were not listed in the handout.

Planning Committee goals exercise

A second exercise was then conducted. Each member was given another handout, asking "What should be the goals of our mitigation program?" Again, Committee members wrote down their top five choices on a Post-it card. Each member then posted them on the wall and explained their choices. The cards were then organized by similar topics. The resulting goals are listed in alphabetical order:

- Make sure development does not make things worse
- Maximize the use of State and Federal funds
- Protect forests, open spaces and wetlands
- Protect homes
- Protect lives and public health
- Protect public services, critical facilities and utilities
- Protect repetitively flooded areas
- Protect schools

The exercise revealed important information to guide the planning effort, both in what was selected from the handout and what was not selected from the handout. For example, members stressed protecting lives, homes, and public services, even though improving the economy was an important part of their vision for the future.

Based on the 1999 floodplain management plan's goals and the 2005 goal setting exercise, the following goals statements were adopted by the Planning Committee:

1. Protect the people of Calumet City, their homes and their health, from the dangers of natural hazards.
2. Place a priority on protecting public services, including critical facilities, utilities and schools.
3. Inform residents and businesses about the hazards they face and the ways they can protect themselves and their properties from those hazards.
4. Protect open space, wetlands and natural areas for the public to enjoy and to prevent inappropriate development in hazardous areas.

– Calumet City plan, Chapter 3

Step 7. Review possible activities.

Many different measures can be used to mitigate the impacts of hazards as well as to meet other objectives. Many are inexpensive and easy to do, and some are probably already being done. The entire planning process is meaningless unless ALL possible alternatives are examined. It is important to think beyond the traditional approaches of flood control, acquisition, and regulation of land use.

What to Review

The CRS encourages a review of six general mitigation strategies:

- Preventive activities that keep problems from getting worse;
- Property protection activities that address individual buildings;
- Natural resource protection activities;
- Emergency services measures taken before, during, and after an occurrence;
- Structural projects that control the hazard; and
- Public information activities that advise property owners and others.

These six strategies and measures to implement them are reviewed on pages 43 − 48. No measure should be discarded until you are sure you understand what is involved. Questions about technical aspects or agency programs should be handled as part of your coordination with other agencies and organizations.

How to Review

Don't eliminate anything until each item has been considered carefully. Determine whether and how a measure is now being implemented and then identify needed changes. A summary and suggested changes should then be reviewed with the planning committee.

Conduct a systematic review of each measure. Discard a measure only after you answer "no" to the following questions.

- Is the measure technically appropriate for the hazard(s)?
- Does it support any of your goals and objectives?
- Do its benefits equal or exceed its cost?
- Is it affordable?
- Do you know where the money will come from?
- How long will it take to implement?
- Will it comply with all local, state, and federal regulations?
- Does it have a beneficial or neutral impact on the environment?

You may want to formalize the selection process and document how you decided to recommend or exclude some activities, especially if they're controversial.

Funding

Money is often the most important issue in reviewing alternatives. Many of the measures will require additional expenditures. This is another instance in which other agencies and organizations can be of great assistance. There are literally hundreds of public and private programs that can help fund worthy projects. The main federal and state agencies are listed in Appendix F of the *CRS Coordinator's Manual*. Be sure to check out all the prerequisites and rules for outside funding.

Some projects can be funded by several different parties, each of which is interested in one or more objectives. Often, agencies and organizations can fund only part of a project, but they favor those projects that have other sources of funding. In other words, they prefer to support multi-objective projects, and this is where coordination with other community goals and objectives can pay off.

Don't forget local sources of funding. Businesses and organizations will frequently support projects that benefit their customers, employees, or members, or that provide a public relations benefit. Many projects provide direct benefits to different groups, such as an acquisition project that creates more parking space for businesses.

ⓘ Planning Hint

In some cases, recommendations cannot be made—such as when a large and expensive structural project is being considered. Your may conclude that a major project needs more study, so that would be your plan's recommendation.

For example, Huntsville, Alabama's planning committee was ready to recommend implementation of a stormwater utility fee. When public reaction against a "new tax" arose, the committee opted to recommend that the City "prepare a description of the benefits, costs, and operational aspects of a stormwater utility." This prevented one issue from keeping the whole plan from being adopted.

Where did their money come from?

Most of the recommendations in the five communities' plans were to be implemented with "staff time" or operating budgets. Here's where they sought funding for big ticket items.

- ✓ Birmingham − The major projects were acquisition of floodprone buildings, totaling over $10 million. Most of the funding would come from FEMA grants and the Corps of Engineers. Planning and flood modeling would require several million each year, to be paid by City funds.
- ✓ Calumet City − A mitigation rebate program was recommended, to be funded by an annual appropriation of $30,000, the same amount that had been spent in recent years for a sewer backup protection rebate program.
- ✓ North Myrtle Beach − Most projects would be funded by the City's General Fund, permit fees, or grants. A project that benefits the beaches would be paid by a tax on hotel rooms and other accommodations.
- ✓ Roseville − Funding sources include general funds, utility fees, the capital improvements program, and grants. Maintenance of the storm drain system is funded by the gas tax. Several projects are proposed to be funded by impact fees and agreements with developers.
- ✓ St. Tammany Parish − The most expensive project was an annual budget of $900,000 for watershed modeling and flood control projects. A separate action item recommended investigating a stormwater utility fee or other "dependable source of funds."

Finally, don't forget in-kind services, which can be an excellent alternative to cash. Instead of paying for park maintenance, why not have a service organization maintain the area with volunteers? Often, in-kind services can be counted toward the local share needed to match other sources of funding.

Benefits and Costs

Questions about the value of benefits gain significance as the cost goes up. In these cases, you may need an additional, more detailed analysis before you can recommend something. Your plan could recommend conducting a benefit-cost analysis before deciding on a project or you could condition your recommendation on the availability of funding.

If you want FEMA funding for an acquisition or retrofitting project, you will have to document that the benefits exceed the costs. FEMA mitigation planning regulations require a "cost-benefit review" of major projects, such as acquisition, retrofitting, and flood control projects (44 *CFR* 201.6(c)(3)(iii)) when deciding priorities.

Two references on comparing benefits and costs are the Corps's *Flood Proofing—How to Evaluate Your Options* and FEMA's computer software *Benefit/Cost Analysis of Hazard Mitigation Projects*. The latter is not only helpful, but also is used by FEMA to determine if a project should be funded under several of its programs.

Balanced Program

One of the greatest advantages of the 10-step planning approach is that it promotes balance in tackling flooding and other community problems. It should not be considered an excuse to justify someone's favorite project. Nor should you put all your eggs in one basket, such as a major structural project, and then wait years for it to be built. The odds are good that a flood will occur before such a big project is finished.

ⓘ Planning Hint

Your first priority should be to develop a plan that meets your community's needs, not one designed just to obtain funds or meet the requirements of a state or federal agency. This can be difficult, because some grant programs encourage certain measures.

For example, after a flood there is a push to develop a mitigation plan because one is required to receive acquisition funding. With only one goal in mind, such plans tend to focus on acquiring the worst-hit areas to the detriment of addressing other opportunities and other hazards.

Although most attention is usually focused on reducing losses to existing development, dealing with future development and preserving natural areas pays off in the long run and prevents small problems from becoming bigger ones.

A balanced program with measures from each of the six mitigation strategies will help protect existing development, manage new development, and protect natural and beneficial floodplain functions. Also, the CRS provides more points if more than one or two of the six mitigation strategies are recommended.

Reviewing Preventive Measures

These are activities that are designed to keep problems from getting worse. Talk to the building, zoning, planning, and/or code enforcement offices. Ask the following questions.

Planning

- Does the community have a comprehensive plan? If so, is it current?
- Does the plan discuss flooding or other hazards?
- Is there any relation between the proposed land uses and the floodplain, steep slopes, drainage problems, or other hazardous areas?
- Does the plan recommend keeping floodprone areas as open space or low density development? **CRS–430LD**

Zoning **CRS–430LD**

- Does the community have a zoning ordinance? If so, is it current?
- Are there any special zoning provisions for the floodplain and other hazardous areas, such as low densities or special development requirements?

Open space preservation **CRS–420**

- Are there areas of open space in the floodplain and other hazardous areas?
- Who owns them? Are they likely to remain as open space?

Subdivision regulations **CRS–430LD**

- Are there any special provisions for hazards in the subdivision regulations?

Building codes

- Has the community adopted the International series of building codes?
- Should the community's Building Code Effectiveness Grading Schedule classification be improved? (Check with your ISO/CRS Specialist for the BCEGS points. See Calumet City's plan, page 4-7, for an example.) **CRS–430**

Floodplain development regulations

- Do the community's regulations meet the current state and FEMA requirements? (Check with your State NFIP Coordinator or FEMA Regional Office.)
- Do the regulations have standards more restrictive than the state and FEMA minimum requirements? **CRS–430, 430LD**
- Does your community have any Certified Floodplain Managers? **CRS–430**
- How well are the regulations being enforced? Check with your State NFIP Coordinator or FEMA Regional Office to see if there has been a recent Community Assistance Visit which would have recommendations on how administration of your floodplain management regulations could be improved.

Stormwater management **CRS–450**

- Is there a likelihood of development in the upstream watershed(s)?
- Are there regulations that require developments to retain excess runoff on site?
- Do other communities in the upstream watershed(s) have similar regulations?

In all cases

- When were the regulations last updated?
- Do the staff recommend any changes to the regulatory standards or administrative or enforcement procedures?

CRS–### = Community Rating System credit is provided for this activity. See the appropriate section in the *CRS Coordinator's Manual* for more information.

Reviewing Property Protection

These activities are usually undertaken by property owners on a building-by-building or parcel basis. There are five common approaches to protect existing buildings.

- **Relocating** the building out of harm's way; **CRS–520**
- **Acquiring** and clearing the property; **CRS–520**
- **Elevating** the building above flood levels; **CRS–530**
- **Barriers** between the property and the hazard (e.g., low floodwalls, firebreaks, and sewer backup valves); and **CRS–530**
- **Retrofitting** a building to strengthen it (e.g., tying walls to the foundation to protect from wind and earthquake forces and the effects of buoyancy during a flood, adding insulation to protect against extreme heat and cold, and installing roofing that is hail resistant and fireproof). **CRS–530**

When reviewing these measures, find out if properties in the community have been protected by any of these methods. This is a good item for the questionnaire discussed in step 2 and for a planning committee field trip. Showing that there are local examples can help convince committee members that retrofitting is a viable option, especially if the projects have been tested by a flood or other disaster after they were installed. Below are two examples of this.

Local floodwall example from Calumet City's Plan (page 5-4

St. Tammany Parish house elevated with FEMA funding support (page 5-4)

Insurance: Insurance doesn't prevent damage, but does protect the property owner's finances and greatly facilitates reconstruction. The CRS is particularly interested in flood insurance. Data on the number of policies, by FIRM zone, are available from your FEMA Regional Office. Find out:

- How many flood insurance policies are held by residents?
- Should there be greater participation?
- What other kinds of insurance should be recommended (e.g., earthquake endorsements and sewer backup riders to homeowners policies)?

CRS–### = Community Rating System credit is provided for this activity. See the appropriate section in the *CRS Coordinator's Manual* for more information.

Reviewing Natural Resource Protection Activities

These work to preserve or restore natural areas or the natural functions of floodplain and watershed areas. Talk to parks, recreation, or conservation agencies or organizations. Here are some questions to ask:

Wetland protection

- Are any wetlands located in the floodplain or other hazardous areas? If so, what is their classification? What is their functional value?
- Are there wetlands or depressional areas that provide stormwater retention?
- Are there any state or local regulations that will protect those wetlands from development? **CRS–430**

Habitat protection **CRS–510**

- Do any threatened or endangered species exist in the area?
- Did the step 5 inventory identify habitat or natural areas deserving protection?

Erosion and sedimentation control **CRS–450**

- What practices are being used to prevent erosion and control sediment?
- Are they effective? Are they well enforced?

Best management practices (BMPs) **CRS–450**

- Are there state or regional requirements or guidelines for best management practices to protect water quality or natural areas?
- Are any being implemented in the community? Are they effective?

Stream dumping **CRS–540**

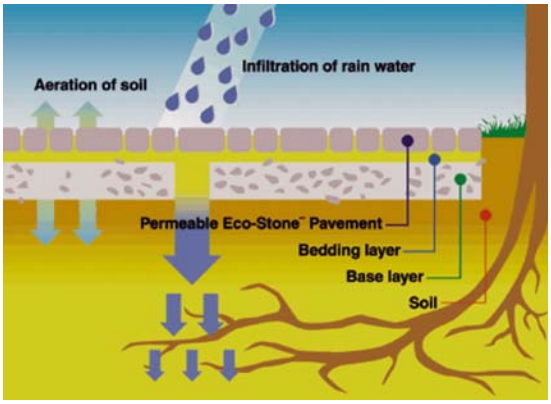
- Are there regulations prohibiting dumping debris in watercourses?
- Are they effective? Are they well enforced?

Coastal barrier protection

- Are there state requirements or guidelines for protecting coastal barriers?
- Does the community have any designated undeveloped coastal barriers or other protected areas? (Such areas are shown on the FIRM.)
- Are owners in those areas aware of the restrictions on flood insurance and federal assistance? (These restrictions are explained in Activity 320 of the *Coordinator's Manual*.) **CRS–330**

Calumet City's plan identified where wetlands were located. Some of them were too small to be subject to Corps of Engineers protection, so the plan recommended strengthening the City's wetland protection standards.

– *Calumet City, Chapter 6*



Birmingham's plan reviewed best management practices for the urban area, including an explanation of pervious pavement.

– *Birmingham plan, page 8-10*

CRS–### = Community Rating System credit is provided for this activity. See the appropriate section in the *CRS Coordinator's Manual* for more information.

Reviewing Emergency Services Measures

These measures are implemented just before, during, or soon after an emergency or disaster to minimize the impact on people and property. Ask your community emergency manager the following questions.

Hazard warning CRS–610

- Is there a system to provide early warning of impending floods, storms, and other hazards?
- Are there any warning arrangements with upstream dams? CRS–630
- How is the warning disseminated to the public?
- Are there any provisions for notifying schools, critical facilities, etc.?
- Has the system worked during past emergencies?

Emergency response CRS–610

- Does the community or county have a written and adopted emergency response or operations plan?
- Does it address floods by identifying specific actions to take at different predicted flood levels?
- Has the plan worked during past emergencies?
- Is there a process to critique the plan after an emergency? Have the recommendations been implemented?

Critical facilities protection CRS–610

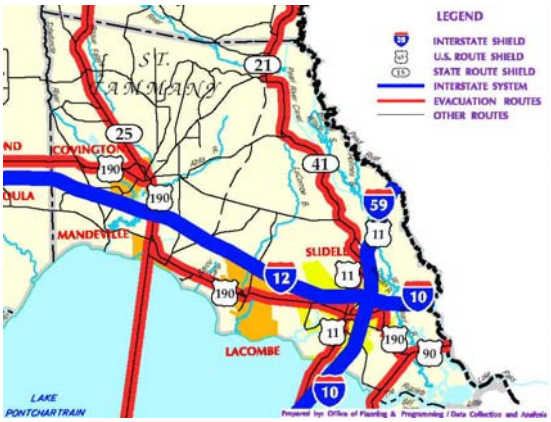
- Are affected critical facilities identified in step 5?
- Does the emergency manager have a current list of contacts and phone numbers?
- Do the critical facilities have their own emergency response plans for the hazards they are exposed to?
- Have those plans been used during past emergencies? Did they work?

Health and safety maintenance

- Does the emergency response/operations plan have provisions for the security of affected areas?
- Does the plan have provisions for cleanup and special precautions for each type of hazard (e.g., draining standing water after a flood, cautioning about aftershocks after an earthquake or about successive tsunami waves)?

Post-disaster mitigation CRS–510

- Does the community have procedures for inspecting damaged properties before they are reoccupied?
- Are there procedures for identifying mitigation opportunities and funding sources before damage is repaired?



St. Tammany Parish's planning committee was very concerned about the need for evacuees from New Orleans to go through the Parish to get to safety. The Plan placed a priority on traffic control during an evacuation. As it turned out, the Parish managed the traffic flow very well during Hurricane Katrina.

– *St. Tammany Parish plan, page 7-11*

CRS–### = Community Rating System credit is provided for this activity. See the appropriate section in the *CRS Coordinator's Manual* for more information.

Reviewing Structural Projects

The objective of this strategy is to modify or control the hazard itself. The most common structural measures are flood control projects that keep flood waters away from an area through one of the following methods:

- **Reservoirs** and retention or detention basins that store excess waters; **CRS–530**
- **Levees and floodwalls** that place barriers between the source of flooding and the damage-prone properties; **CRS–620**
- **Channel modifications** that widen, straighten, or remove bridge and culvert restrictions so the channel can convey more water or carry it faster; and **CRS–530**
- **Diversions** that redirect high flows to another location. **CRS–530**

Talk to the local engineers and public works staff and ask

- Are any in place in the area?
- Have they worked well?
- Are there any locations that would be appropriate for a structural project?

ⓘ Planning Hint

While many committee members will want a project to "stop" flooding, they should be aware of the shortcomings of structural flood control projects.

- ✓ They are expensive, sometimes requiring capital bond issues and/or cost sharing with state or federal agencies.
- ✓ They disturb the land and disrupt natural water flows, often destroying habitat.
- ✓ They are built to a certain flood protection level that can be exceeded by a larger flood, causing extensive damage.
- ✓ They can send flood waters to others.
- ✓ They can create a false sense of security when people protected by a structure believe that no flood can ever reach them.
- ✓ They require regular maintenance to ensure that they continue to provide their design protection level.

Dune and beach maintenance **CRS–540**

- Does the community have a dune or beach maintenance program?
- Does it meet state coastal management requirements?

Channel maintenance **CRS–540**

- Would keeping streams, ditches, and storage basins clear reduce flooding from smaller storms?
- Does the community have a program to inspect and clean the drainage system?

St. Tammany Parish's plan was closely coordinated with an ongoing effort to model and map all of the Parish's watersheds (page 8-7) to do the following:

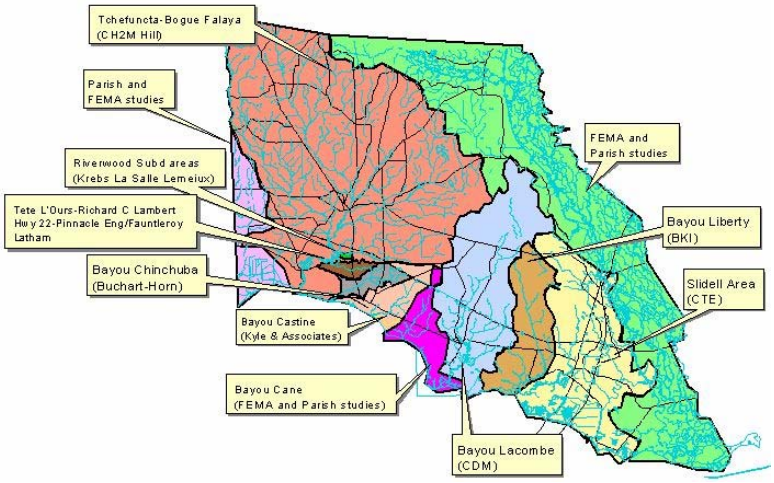
— Update floodplain maps,

— Determine the impact of alternative flood control projects,

— Revise floodplain maps, after projects are constructed,

— Determine the impact of new developments on flows, and

— Design a flood warning system



CRS–### = Community Rating System credit is provided for this activity. See the appropriate section in the *CRS Coordinator's Manual* for more information.

Reviewing Public Information Activities

Programs to advise property owners, potential property owners, and visitors can help save lives and protect property. Talk to staff and the public information office.

Map information CRS–320

- What is available on local maps, including the FIRM and the GIS?
- Can anyone get access to the maps?
- Is the staff willing to respond to inquiries about hazard information that is available from these maps?
- Is there a willingness to publicize this as a public service?

Outreach projects CRS–330

- Does the community send hazard and hazard protection information to residents (e.g., via newsletter or in utility bills)? If not, is it willing to do so?
- Does the community have a website that could include such information?
- Are there opportunities to set up displays or booths at community activities?
- What other organizations conduct outreach programs?

Library CRS–350

- Is the local public library willing to stock publications on hazard protection?
- Is there an interest in preparing a locally-pertinent handbook on protecting a property from flooding or other hazards? CRS–330

Website CRS–350

- Does the community have a website that can provide flood protection information and links to sites (such as FEMA's) with more information?
- Is there a website for a nearby stream gage that allows residents to see real time river levels and Weather Service predictions of flooding? (see www.nws.noaa.gov/ahps/ and http://waterdata.usgs.gov/nwis/.

Technical assistance CRS–360

- Do staff members make site visits to help residents understand drainage, land movement, erosion, flooding, or other problems on their properties?
- Is the staff willing to meet with people and advise them about retrofitting and other property protection measures?
- Is there a willingness to publicize this as a public service?

Birmingham, Calumet City, and St. Tammany Parish incorporated the extra steps needed for their plans' discussion of public information activities to qualify as public information program strategies. This provides an additional 100 points of CRS credit under Activity 330 (Outreach Projects) in Section 331.c.2 of the *CRS Coordinator's Manual*. North Myrtle Beach recommended that such a strategy be prepared as an action item.

Real estate disclosure CRS–340

- Are there any state or local laws requiring notices of a hazard on a property?
- What are the local practices for disclosing a hazard at the time of sale of a property?

Environmental education

- Are there any school, park, or civic organization programs to educate people about wetlands, habitats, and other areas that deserve protection?

CRS–### = Community Rating System credit is provided for this activity. See the appropriate section in the *CRS Coordinator's Manual* for more information.

CRS Credit for Step 7

(Maximum credit: 30 points) The plan must describe those activities that were considered and note why they were or were not recommended (e.g., they were not cost-effective or they did not support the community's goals). [REQUIRED by the CRS and FEMA mitigation planning criteria (44 *CFR* 201.6(c)(3)(ii))]

If an activity is currently being implemented, the plan must note whether it should be modified. The discussion of each activity needs to be detailed enough to be useful to the lay reader.

The credit for this step is the total of the following points based on which floodplain management or hazard mitigation activities are reviewed in the plan.

5, if the plan reviews preventive activities;

5, if the plan reviews property protection activities;

5, if the plan reviews activities to protect the natural and beneficial functions of the floodplain;

5, if the plan reviews emergency services activities;

5, if the plan reviews structural projects;

5, if the plan reviews public information activities.

The CRS credit points encourage communities to strive for a balanced program, selecting measures from more than one mitigation strategy. In every case, communities should implement preventive activities to keep their problems from getting worse.

What Did They Review?

All five communities got the full 30 points for reviewing possible activities in all six mitigation strategies. While each community looked at the full range of activities, some spent more time on certain local concerns.

- ✓ Birmingham − As part of a stormwater management plan, there was extra attention to natural resource protection.
- ✓ Calumet City − As a built up community, the committee focused on loss reduction strategies, such as flood control, property protection, and public information.
- ✓ North Myrtle Beach − By far, the largest chapter was devoted to prevention measures as Chapter 4 reviewed a wide range of regulatory tools.
- ✓ Roseville − The plan looked at from three to nine different activities under each of the six strategies.
- ✓ St. Tammany Parish − Because it addressed 13 different natural hazards, the plan looked at many different preventive approaches.

Step 7. Review possible activities.

Planning Checklist

__ Use the questions on the preceding six pages as checklists for your review of the mitigation strategies and measures that are appropriate for your community.
__ Discuss them with the planning committee.
__ Draw preliminary conclusions and recommendations.
__ Draft appropriate sections of the plan for committee review.

Step 8. Draft an action plan.

Only after assessing the problem, setting goals, and reviewing all the possible mitigation strategies and measures can you begin to select the most appropriate actions to be recommended.

The action plan is typically the last section of the floodplain management or mitigation plan. It should be a list of projects and project assignments—the more specific, the better. It should include

- What will be done,
- Who is responsible,
- When it will be done, and
- How it will be financed.

The plan document can be in most any format. Most of the five example plans have an introductory chapter that describes how the plan was prepared. After the introduction, there is a section on the hazard and problem description, followed by the review of the alternative measures that were considered, and ending with the action plan.

Once the committee agrees to the action plan and the entire plan document, prepare an executive summary. This will help committee members, elected officials, and the public see the big picture.

ⓘ Planning Hint

At the end of the discussion on each of the six strategies in step 7, the planner and the committee should make some general conclusions and recommendations. An example would be "New buildings should be protected to a level higher than the base flood elevation shown on the FIRM."

In step 8, that general recommendation is converted to an action item, coordinated with other sections' recommendations. An example would be "The Building Official will submit a draft ordinance revision to require two feet of freeboard for new buildings by May 1, 2007."

ⓘ **Another hint:** It can be very helpful to include some visible but inexpensive projects that can be implemented quickly. This reassures the public and the planning committee that something is being done. Examples are a stream cleanup project, distribution of public information materials, or a CRS application or modification.

Circulate

The draft plan should be made available for review by the residents, businesses and other departments and agencies that will be affected, interested organizations, state and federal agencies, and neighboring communities. Here are some recommended activities.

- Post the draft plan on the community's website and publicize that it's there.
- Arrange for one or more public meetings and tell residents how they can respond if they cannot make one of the public meetings.
- Provide copies to the press, library, city hall, courthouse, and other public locations where people can either pick up their own copy or read one there (this is where a short executive summary can come in handy).
- Publicize the public meeting(s) and the fact that the draft is available for review.
- Send the draft plan to the other agencies identified in step 3, with a request for comments by the time of the public meeting.

Elected officials will act more favorably on a plan that has support from interested or affected organizations. If planning committee members were selected to represent particular organizations, those organizations could pass a resolution or otherwise officially support the plan. In big cities and counties, you may need to circulate the plan for approval from various department heads before it goes to the governing board.

A plan that needs to meet FEMA mitigation planning criteria or receive CRS credit should be sent to the appropriate approving office with a request for a review to ensure that it will meet the credit criteria. Check with your ISO/CRS Specialist to get a "CRS courtesy review" of your draft.

FEMA Mitigation Planning Considerations

Here are some additional things to consider when preparing your action items and the final plan document in order to ensure that you will qualify for FEMA mitigation funding subject to FEMA mitigation planning rules:

- In addition to who does what, when it will be done, and how it will be financed, your action plan should identify which action items are the most important. You should explain how you determined priorities and include a discussion of how you weighed the benefits of the proposed projects with their associated costs. If there are no data available, a formal benefit/cost analysis is not mandatory.

- To qualify as a multi-hazard mitigation plan, the plan must include a "process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate" (44 *CFR* 201.6(c)(4)(ii)). The action items relating to preventive activities should clarify how this is done.

- The action items should describe the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle (44 *CFR* 201.6(c)(4)(i)). This should also include a discussion of how the community will continue public participation in the plan maintenance process (44 *CFR* 201.6(c)(4)(iii)).

- When a multi-jurisdictional plan is prepared, the action items need to reference which jurisdictions are affected (44 *CFR* 201.6(c)(3)(iv)).

- A multi-jurisdictional plan must have action items from at least two of the six categories that directly benefit each community seeking CRS credit. For approval as a FEMA mitigation plan, there must be at least one action item per community.

- A copy of the resolution to adopt the plan is useful to show exactly what the governing board will vote on. Often, the resolution will create a mitigation committee, identify priority action items, establish progress reporting requirements, etc., in addition to adopting the plan. See the planning hint on page 56. The resolution must be submitted with the plan for FEMA or CRS review.

CRS Credit for Step 8

(Maximum credit: 70 points). The credit for this step is based on what is included in the action plan. For each recommendation, the action plan must identify who does what, when it will be done, how it will be financed and how the actions will be prioritized, implemented, and administered [REQUIRED] (44 *CFR* 201.6(c)(3)(iii)). A multi-hazard mitigation plan must identify actions that address both existing and new infrastructure and buildings (44 *CFR* 201.6(c)(3)(ii)).

Up to 45 points are provided if the action plan includes recommendations for activities from the mitigation strategies reviewed in step 7, Review possible activities:

10 points if the action plan includes recommendations from 2 of the 6 strategies,

20 points if the action plan includes recommendations from 3 of the 6 strategies,

30 points if the action plan includes recommendations from 4 of the 6 strategies, OR

45 points if the action plan includes recommendations from 5 of the 6 strategies.

Credit is provided for a recommendation on floodplain regulations, provided it recommends a regulatory standard that exceeds the minimum requirements of the NFIP. If the plan calls for acquiring properties, there must be a discussion of how the project(s) will be managed and how the land will be reused.

10 additional points are provided if the action plan establishes post-disaster mitigation policies and procedures (see page 54).

10 additional points are provided if the action plan's recommended natural resource protection activities include recommendations from a regional habitat conservation plan (see page 54).

5 additional points are provided if the plan includes action items (other than public information activities) to mitigate the effects of the other natural hazards identified in the step 4 hazard assessment.

The actions must be prioritized. When prioritizing mitigation actions, the planners need to consider the benefits that would result from the mitigation actions and projects versus the cost of those actions. Note that this is not a requirement for a cost-benefit analysis for every action item. However, an economic evaluation is essential for selecting one or more actions from among many competing ones. See how three communities did this in the box on the next page.

There is no requirement that the plan identify expensive projects, acquisition of large areas, or massive structural flood control facilities. The plan should recommend only those activities that the community knows will be implemented, either through its own resources or assured outside support.

As noted on pages 43–48, many of the floodplain management or mitigation activities could receive their own CRS credit once they are implemented. This can help assure that activities will be initiated and implemented over the years.

How They Prioritized

Roseville: The planning team and steering committee developed a prioritization methodology for its action plan that met the needs of the City while at the same time meeting the FEMA mitigation planning criteria. The mitigation strategies identified in the Section 18.5 were prioritized according to the criteria defined below.

- **High Priority:** A project that meets multiple plan objectives, benefits exceed cost, has funding secured under existing programs or authorizations, or is grant-eligible, and can be completed in 1 to 5 years (short-term project) once project is funded
- **Medium Priority:** A project that meets at least one plan objective, benefits exceed costs, funding has not been secured and would require a special funding authorization under existing programs, grant eligibility is questionable, and can be completed in 1 to 5 years once project is funded
- **Low Priority:** A project that will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, and project is not grant-eligible and/or timeline for completion is considered long-term (5 to 10 years)

It should be noted that these priority definitions are considered to be dynamic and can change from one category to another based on changes to a parameter such as availability of funding. For example, a project might be assigned a medium priority because of the uncertainty of a funding source. This priority could be changed to high once a funding source has been identified such as a grant. The prioritization schedule for this plan will be reviewed and updated as needed annually through the plan maintenance strategy described in Part 5 of this plan.

− Roseville plan, page 18-6

North Myrtle Beach: The planners used a more subjective approach based on four factors:

- The value of the property loss reduction benefit likely to be achieved by the activity,
- The potential economic recovery benefit,
- The cost of implementing the activity, and
- The level of public support.

− North Myrtle Beach plan, page 11-1

Calumet City: Also used a subjective approach, but with four different factors:

- Which hazards presented the greatest threats,
- Measures that are appropriate for the threat,
- The relative costs and benefits, and
- Whether the project is affordable.

− Calumet City plan, pages 10-1 − 10-2

Step 8. Draft an action plan.

Planning Checklist

__ Draft the action plan, showing who does what, when each action item will be done, and how it will be financed. [REQUIRED]
__ Establish criteria for prioritizing the action items. [REQUIRED]
__ Assemble the complete plan document.
__ Review them with the planning committee.
__ Revise as needed and circulate for public and agency review.
__ Complete activity worksheets, AW-510-1 − 510-3 (see Appendix B), and send the draft to your ISO/CRS Specialist for a courtesy review to determine CRS credit.
__ Send the draft and a completed crosswalk to the state hazard mitigation office for a courtesy review to determine if the plan meets all mitigation funding criteria.
__ Schedule the public meeting.

Post-disaster Mitigation

The period immediately after a disaster can be very trying, but it offers a unique opportunity for hazard mitigation. There will be a great deal of public interest in mitigating the impact of a reoccurrence, areas will be ripe for redevelopment, and there may well be disaster assistance funds to finance mitigation projects. The more prepared a community is beforehand, the better.

The best time to get ready for this window of opportunity is before a disaster, when you prepare your floodplain management or mitigation plan. It pays to walk through the "what if" of a disaster and sort out priorities, policy issues, and procedures in your planning process. Things to consider include

- Damage assessment,
- Permit and inspection procedures,
- Enforcement of NFIP substantial damage requirements,
- Retrofitting structures during repair and reconstruction,
- Advising the public about the requirements, procedures, and opportunities
- Identification of properties that should be acquired and cleared,
- Needed staff support, and
- Financial assistance.

Post-disaster Mitigation Planning Pays Off

As a repetitive loss community, Arnold, Missouri, prepared its floodplain management plan in 1991 in order to get into the CRS. The plan identified a need to purchase some damage-prone properties in the Meramec River floodway and develop a greenway along the riverfront. There were no funds available for this action item, but the plan instructed staff to stop reconstruction of these buildings after a flood (or other disaster) until funding sources were checked and an acquisition project was reviewed with the owners.

In fact, such activities were implemented less than two years later, after the 1993 Midwest Floods. Arnold received the needed funding and now has a greenway. The city was recognized by FEMA as one of the best-prepared communities for mitigation funding.

Habitat Conservation Plan

Ten points of CRS credit are provided if the action plan's recommended natural resource protection activities include recommendations from a regional habitat conservation plan. Up to 15 additional points for adopting a regional habitat conservation plan are also provided under Section 511.b of the *Coordinator's Manual*.

A regional habitat conservation plan explains and recommends actions to protect rare, threatened, or endangered aquatic or riparian species. The plan must identify:

- The species in need of protection,
- The impact of new development on their habitat,
- Alternative actions that could be taken to protect that habitat,
- What actions are recommended to protect that habitat and why they were selected from the alternatives, and
- How the recommendations will be funded.

The plan must have been adopted by the community's governing board and the community must show that it is being implemented.

Step 9. Adopt the plan.

It always helps to get support from the public and other entities. Steps 2 and 3 discuss circulating the draft for review by the public and other agencies and organizations.

The culmination of the review process is usually a public meeting. Review comments should be submitted at or before that meeting. It is typically chaired by the planning committee chair. A record of favorable comments and public support is important when submitting the plan to the governing board. After the meeting, the planning committee should make appropriate changes to the plan and recommend it for adoption.

CRS Credit for Step 9

(Maximum credit: 2 points) The 2 credit points for this step are provided if the plan is officially adopted by the community's governing body.

As noted in step 2(c), 15 points are provided for holding a public meeting at the end of the planning process, at least two weeks before submittal of the recommended plan to the governing body. See the planning hint on page 19 for more on the public meeting requirement.

The plan must be an official plan of the community, not an internal staff proposal. Adoption must be in the form of a resolution, ordinance, or other official act of the governing body.

When a multi-jurisdictional plan is prepared, it must be adopted by the governing board of each community seeking CRS credit. [REQUIRED under the CRS and FEMA mitigation planning criteria (44 *CFR* 201.6(c)(5))]

How did they do it?

When their plans were completed, Calumet City and St. Tammany Parish posted their draft plans on their websites. News releases and other publicity announced the public meeting and the website information. Other agencies and organizations were sent the executive summaries and were advised that they could check the website or ask for a copy of the full plans.

Roseville, Calumet City, and St. Tammany Parish sent their draft plans to the Insurance Services Office for a courtesy review before they were submitted to their councils for adoption.

Resolutions to adopt the plan can be found in three of the example plans:

- ✓ Birmingham – page 10-49
- ✓ North Myrtle Beach – 12-1
- ✓ St. Tammany Parish – 10-14

ⓘ Planning Hint

After passage by the governing board, prepare a final copy of the plan. The word "draft" should not appear on it. The cover or title page should show that it was officially adopted and include the date of adoption. FEMA wants to review an official plan, not a draft.

Step 10. Implement, evaluate, and revise.

Adoption by the governing board is not the last step in the planning process. Monitoring and follow up are needed to ensure that the action plan is implemented.

Implementation

The key to successful implementation is that the people responsible for the recommendations understand what is expected of them and are willing to work toward their implementation. Thus, it is helpful to have people likely to be involved in implementation—like representatives of local departments and other agencies—participate in the planning process. The plan should clearly identify a person (or position) responsible for each recommendation.

It is also helpful to associate the recommendations with the plans and activities of the implementing agency or organization. For example, people responsible for recommendations could have the duties included in their job descriptions or performance plans. A timeline for implementation and monitoring can be helpful, especially for multi-year projects.

Monitoring

No plan is perfect. As implementation proceeds, flaws will be discovered and changes needed. Your plan should have a formal process to measure progress, assess how things are proceeding, and recommend changes.

Those responsible for implementing the various recommendations probably have many other jobs to do. A monitoring system helps ensure that they don't forget their assignments or fall behind on them. This can be in the form of a checklist maintained by the person designated as responsible for the plan, or a more formal reporting system to a higher authority.

ⓘ Planning Hint

The resolution that adopts the plan should clearly state who is responsible for implementation and require monitoring and progress reporting. The action plans for all five communities recommended creating a standing committee to do this. The standing committee members were drawn from the planning committee.

See the following plans for the draft resolutions to do this:

- ✓ Birmingham – page 10-49
- ✓ North Myrtle Beach – 12-1
- ✓ St. Tammany Parish – 10-14

Evaluation

Even with full implementation, the plan should be evaluated in light of progress and changed conditions. Your planning committee should meet periodically to review progress and submit its recommendations to the agencies and organizations responsible for implementation. It can also take advantage of opportunities provided by disasters, extra end-of-the-year money, or heightened public interest due to a disaster elsewhere. Such events may present the opportunity to implement a stalled recommendation, revise the plan, or effect other major changes. See also the recertification requirements on page 59 and Appendix C.

Revisions

The plan should include procedures for making changes. See language in the adopting resolutions noted in the box above.

CRS Credit for Step 10

(Maximum credit: 15 points) The credit for this step is the total of the following points based on how the community monitors and evaluates its plan.

2, if the community has procedures for monitoring implementation, reviewing progress, and recommending revisions to the plan in an annual evaluation report. [REQUIRED by FEMA mitigation planning criteria (44 *CFR* 201.6(c)(4))] The report must be submitted to the governing body, released to the media and made available to the public. [REQUIRED by the CRS] FEMA mitigation planning criteria also require a discussion of how the community will continue public participation in the plan maintenance process (44 *CFR* 201.6(c) (4)(iii)).

13 if the evaluation report is prepared by the same committee that prepared the plan and that is credited in step 2(a), or by a successor committee with a similar membership that was created to replace the planning committee and charged with monitoring and evaluating implementation of the plan.

To maintain this credit, the community must

- Submit a copy of its annual evaluation report with its annual recertification, and
- Update the plan at least every five years.

These last two requirements are discussed further on page 59.

Changes should be made in the action plan when opportunities arise to add new activities or complete some items ahead of schedule. The plan should also be revised if it is found that some activities cannot be completed according to the action plan. The revisions must be adopted by the governing body.

Monitoring in North Myrtle Beach

Chapter 13 of North Myrtle Beach's plan notes that "The primary issue that monitoring and evaluation should address is whether the City's vulnerability has decreased as a result of the plan. Where vulnerability has decreased, the City should determine why and consider implementing successful mitigation measures in other locations." To help the Mitigation Planning Committee do this, the plan identifies milestones and evaluation measures for each action item. Here is an excerpt:

Action Item	Description	Milestones	Evaluation Measures
Prevention Measures (continued)			
Adopt Addition and Cumulative Substantial Improvement Rules	Clarify building addition rules and adopt rules to track building improvements over the life of the structure.	Date of Adoption	Number of buildings achieving better property protection at an accelerated rate.
Draft Wildfire Mitigation Plan	The plan will examine the wildfire risks and recommend mitigation techniques.	Plan Completion Date	Measure how the mitigation measures affect wildfire losses to buildings.

Documentation

To receive CRS credit, the plan and related documentation must be provided to the ISO/CRS Specialist. The items described below will be needed.

a. The activity worksheets (for CRS credit) or plan review crosswalk (for FEMA mitigation plan credit) that identifies the page or section number where each credited item is located in the plan. The activity worksheets for Roseville are in Appendix B.

b. A copy of the floodplain management or hazard mitigation plan. The documentation must show where the 10 credited steps appear (see the worksheet in Appendix B). While some of the steps can be explained in a separate memo, the following must appear in the plan document:

   - Step 1: a description of the plan preparation process,
   - Step 4: the hazard assessment,
   - Step 5: the problem assessment,
   - Step 6: goals of the floodplain management or hazard mitigation program,
   - Step 7: the review of possible activities,
   - Step 8: the action plan, and
   - Step 10: how the plan will be periodically evaluated and revised.

c. Documentation showing how the public was involved in preparing or reviewing the plan, including

   - A list of members of the planning committee and their affiliation.
   - A copy of the notice(s) advising residents about the meeting(s) held pursuant to steps 2 and 9, and
   - A record of those meetings. This could be minutes, a memo for the record, or a list of the issues raised by those who attended.

   The notice of the public input meeting(s) should be in the form of letters to floodplain residents, a notice sent to all residents, or a newspaper article or advertisement. An inconspicuous legal notice in the classified section of the newspaper will not be sufficient for CRS credit. If very few residents are affected, as may be the case for planning that addresses only a repetitive loss area, a written record that the residents were called would be sufficient documentation.

d. Copies of correspondence, meeting notes, or other materials that document the coordination with other municipalities, agencies, and organizations credited under Step 3.

e. A copy of the resolution adopting the plan. When a multi-jurisdictional plan is prepared, it must be adopted by the governing board of each community seeking CRS credit. Each community seeking CRS or FEMA mitigation plan recognition must submit a copy of its adopting resolution.

Annual Recertification

Each year, a CRS community must submit its annual CRS recertification to FEMA and its ISO/CRS Specialist. This submittal must include an annual report that evaluates progress toward implementing the action plan. The objective of the annual evaluation report is to ensure that there is a continuing and responsive planning process. It is required for the community to continue to receive CRS credit for its floodplain management planning.

The report must include the following:

- A description of how the evaluation report was prepared and how it is submitted to the governing body, released to the media, and made available to the public.
- How the reader can obtain a copy of the original plan;
- A review of each recommendation in the action plan, including a statement on how much was accomplished during the previous year;
- A discussion of why any objectives were not reached or why implementation is behind schedule; and
- Recommendations for new projects or revised objectives.

The submittal must include other documentation to demonstrate that the evaluation report was submitted to the governing body, released to the media, made available to the public, and/or prepared by the same planning committee that prepared the plan.

ⓘ Planning Hint

The annual evaluation report can simply list the status of progress toward each recommended project in the action plan. Examples of how this can be done are provided for Calumet City and Roseville in Appendix C.

Five-year Update

CRS credit is for floodplain management PLANNING, not for producing a document. Therefore, an update to the plan must be prepared at least every five years. [REQUIRED by the CRS and FEMA mitigation planning criteria (44 *CFR* 201.6(c)(4)(i))] The five-year plan update will be scored according to the *Coordinator's Manual* currently in effect, not the version used when the community originally applied.

The update must include the following steps. An annual evaluation that includes these steps may qualify as the five-year update.

1. Steps 1 and 2: If the original planning process included a committee, then in order to keep the credit provided under step 1, item (b) or step 2, item (a), the update must be conducted by a committee that meets the criteria identified in those steps.

2. Step 2: If the original planning process received credit for the final public meeting credited under step 2, item (c), then in order to keep this credit the community must also conduct a public meeting that reviews and receives comments on the draft update.

3. Step 3, item (a): The update must include a review of new studies, reports, and technical information and of the community's needs, goals, and plans for the area that have been published since the plan was prepared.

4. Steps 4 and 5: The hazard and problem assessments must be reviewed and brought up to date. The assessments must account for:

   - new floodplain or hazard mapping,
   - annexation of floodprone areas,
   - additional repetitive loss properties,
   - increased development in the floodplain or watershed,
   - new flood control projects,
   - lack of maintenance of flood control projects,
   - major floods or other disasters that occurred since the plan was adopted, and
   - any other change in flooding conditions and/or development exposed to flooding or the other hazards covered in the plan.

5. Step 8: The action plan must be revised to account for projects that have been completed, dropped, or changed, and for changes in the hazard and problem assessments, as appropriate.

6. Step 9: The update must be adopted by the community's governing board.

Calumet City's Update

In 1999, Calumet City adopted a *Floodplain Management Plan* that explored many ways to protect properties and organized its flood protection activities under a single, coordinated program. That plan set four goals and identified 23 action items that would help prevent or reduce flood losses. The *Floodplain Management Plan* was prepared following the CRS planning process. In 2000, the City entered the CRS.

Five years later, the City was faced with preparing an update. It decided to prepare a multi-hazard mitigation plan to meet three objectives:

- Review the goals and activities implemented pursuant to the 1999 *Floodplain Management Plan* and determine if they are still pertinent or should be revised.
- Prepare the five-year update required for continued credit under the Community Rating System.
- Convert the 1999 *Floodplain Management Plan* into a natural hazards mitigation plan to qualify the City for FEMA mitigation funding.

The 1999 floodplain management plan created a standing Floodplain Management Committee which had been meeting twice a year. The Committee was charged with preparing the multi-hazard update. Approximately 1/3 of its members had been on the 1999 Committee.

Because of the need to look at all natural hazards, the full 10-step planning process was followed. Flooding remained the primary concern and most of the 1999 data and findings were still pertinent, greatly reducing the planning workload.

Appendix A − References

Many states have prepared their own mitigation planning guidance. Contact your state's emergency management or NFIP coordinating office for this information. Note that they may not include the new criteria from the 2006 *CRS Coordinator's Manual (with* 2007 revisions) or the latest FEMA mitigation planning requirements.

Unless otherwise noted, these references are available free by calling FEMA publications at 1-800-480-2520 or faxing to (301) 362-5335.

FEMA has a series of detailed "how-to" guides for mitigation planning, which can be found at www.fema.gov/plan/mitplanning/planning_resources.shtm. They include

- *Getting Started: Building Support for Mitigation Planning* (FEMA 386-1)
- *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA 386-2)
- *Developing a Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies* (FEMA 386-3)
- *Bringing the Plan to Life: Implementing the Hazard Mitigation Plan* (FEMA 386-4)
- *Using Benefit-Cost Review In Mitigation Planning* (FEMA 386-5)
- *Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning* (FEMA 386-6)
- *Integrating Manmade Hazards into Mitigation Planning* (FEMA 386-7)
- *Multi-jurisdictional Approaches to Mitigation Planning* (FEMA 386-8)

Multi-Hazard Mitigation Planning Guidance (2007), also known as the "Blue Book." This document provides specific guidance on plan development and plan review based directly on FEMA's mitigation planning regulations. Plan review crosswalks are included. Currently, it is only available on FEMA's website www.fema.gov/plan/mitplanning

Multi-Hazard Identification and Risk Assessment, FEMA. 1997. This is a good introduction to identifying and assessing the full range of natural hazards affecting a given area. It is appropriate if your plan will include non-flood hazards (as all plans should). It can be downloaded from www.fema.gov/library/viewRecord.do?id=2214

National Flood Insurance Program/Community Rating System Coordinator's Manual, FEMA, 2006 (with 2007 revisions). The manual contains detailed information about CRS requirements and credits for a variety of floodplain management activities. To order, see the inside front cover of this document or download it from the CRS Resource Center, http://training.fema.gov/EMIWeb/CRS/ (go to "Resources").

Planning for a Sustainable Future: the Link Between Hazard Mitigation and Livability, FEMA 364. A short illustrated overview of the principles involved. This booklet includes a list of federal technical assistance and funding sources. It can be downloaded from www.fema.gov/library/viewRecord.do?id=1541.

Flood Mitigation Planning—The First Steps, Association of State Floodplain Managers, 2001. This is a floodplain management planning kit. It consists of reference materials, masters for handouts, and a two-part video that explains the 10-step process to the general public. It is designed to be shown at the first meeting of a planning committee. Order through the ASFPM website, www.floods.org, under publications ("community flood mitigation training video") or call (608) 274-0123.

Addressing Your Community's Flood Problems: A Guide for Elected Officials, Association of State Floodplain Managers, 1996. This booklet provides a good explanation of why planning is needed, along with recommendations and first-person testimonials. It is excellent background reading for elected officials. Order through the ASFPM website, www.floods.org, under publications or call (608) 274-0123. Or download it for free from www.floods.org/PDF/Addressing_Communitys_Flood_Problems.pdf

Habitat Protection Planning—Where the Wild Things Are, American Planning Association, PAS Report No. 470/471. To order, call the American Planning Association at (312) 786-6344 or check www.planning.org/APAStore/Search/Default.aspx?p=2396

Holistic Disaster Recovery—Ideas for Building Local Sustainability after a Natural Disaster, Natural Hazards Research and Applications Information Center, University of Colorado, 2001. Download from www.colorado.edu/hazards/holistic_recovery/.

A Multi-Objective Planning Process for Mitigating Natural Hazards, FEMA and National Park Service, 1995. This guide is an easy-to-read description of an alternative approach to public involvement in mitigation planning. It includes many examples and materials for conducting an intensive workshop.

Planning for Post-Disaster Recovery and Reconstruction, American Planning Association and Federal Emergency Management Agency, PAS Report No. 483/484, 1998. This report describes steps in the process of community planning for post disaster recovery and reconstruction for all hazards. It contains planning and administrative tools that can be used to facilitate recovery that integrates mitigation and other planning goals, and includes a model ordinance. To order, call APA at (312) 786-6344 or check www.planning.org/apastore/Search/Default.aspx?p=2406.

Reducing Losses in High Risk Flood Hazard Areas—A Guidebook for Local Officials, FEMA-116, 1987. www.fema.gov/library/viewRecord.do?id=1508

Using Multi-Objective Management to Reduce Flood Losses in Your Watershed, Association of State Floodplain Managers and the U.S. Environmental Protection Agency, 1996. This publication reviews the 10-step planning process and coordination of a hazard mitigation plan with other community goals and objectives. It includes examples, references, and lists of sources of assistance. Order through the ASFPM website, www.floods.org, under publications or call (608) 274-0123. Or download it for free from www.floods.org/PDF/Using_MOM_in_Watershed.pdf

Appendix B − Example Activity Worksheets

Activity worksheets are used to calculate the CRS credit for an activity. They are usually completed by the ISO/CRS Specialist. The following pages show how the fictitious city of Planton's plan would be scored and where each of the 10 steps and credited items appear in that plan.

Providing the ISO/CRS Specialist with a completes activity worksheet is one of the CRS documentation requirements. The worksheet also provides a good checklist during the planning process to ensure that your plan will receive credit.

Blank worksheets are found in *CRS Activity Worksheets*, which can be ordered from ISO (see inside front cover) or downloaded from FEMA's website, http://training.fema.gov/EMIWeb/CRS/ (look under "Resources")

OMB No.1660-0022
Expires June 30, 2010

Community : Planton, ST

510 FLOODPLAIN MANAGEMENT PLANNING

511.a Floodplain Management Planning (FMP)

Credit Points: *Enter the section or page number in the plan where each credited item can be found.*

CRS Step	Section/Page	Item Score	Step Total
1. Organize to prepare the plan.			
a. Supervision or direction of a professional planner (2)	Page 1-2	2	
b. Planning committee of department staff (6)	Page 1-2	6	
c. Process formally created by the community's governing board (2)	Appendix A	2	10
2. Involve the public.			
a. Planning process conducted through a planning committee (40)	Page 1-2	40	
b. Public meetings held at the beginning of the planning process (15)			
c. Public meeting held on draft plan (15)	Page 1-4	15	
d. Questionnaires ask the public for information (5)			
e. Recommendations are solicited from advisory groups, etc. (5)	Page 1-4	5	
f. Other public information activities to encourage input (5)	Page 1-3	5	65
3. Coordinate with other agencies.			
a. Review of existing studies and plans (REQUIRED) (3)	Page 3-1, Chapters 4, 6	3	
b. Invited neighboring communities and other agencies (REQUIRED) (1)	Page 1-4 – 1-5	1	
c. Contacted communities and NFIP and EM agencies (4)	Page 1-4 – 1-5	4	
d. NWS, ARC and others are asked how they can help community (4)	Page 1-4 – 1-5	4	
e. Meetings are held with agencies on mitigation strategies (10)			
f. Draft action plan sent to agencies for comments (3)	Page 1-4 – 1-5	3	15
4. Assess the hazard.			
a. Plan includes an assessment of the flood hazard (REQUIRED) with:			
(1) A map of known flood hazards (5)	p. 2-7	5	
(2) A description of known flood hazard (5)	Sections 2.1 – 2.5	5	
(3) A discussion of past floods (5)	Sections 2.1, 2.2	5	
b. The plan describes other natural hazards (REQUIRED FOR DMA) (5)	Sections 2.6 – 2.12	5	20

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Community : *Planton, ST*

CRS Step	Section/Page	Score	Total
5. Assess the problem.			
a. Summary of each hazard identified in the hazard assessment and their community impact (REQUIRED) (2)	Chapter 2, page 2-45	2	
b. Description of the impact of the hazards on:			
(1) Life, safety, health, procedures for warning and evacuation (5)	Section 2.6, 7.2, 7.4	5	
(2) Critical facilities and infrastructure (5)	Section 2.10	5	
(3) The community's economy and tax base (5)			
c. Number and types of buildings subject to the hazards (5)	Section 2.7	5	
d. Review of all flood insurance claims (4)	Section 2.8	4	
e. Natural and beneficial functions (4)			
f. Development, redevelopment, and population trends (5)	Sections 1.3, 6.1	5	26
6. Set goals. (REQUIRED) (2)	Chapter 3	2	2
7. Review possible activities.			
a. Preventive activities (5)	Chapter 6	5	
b. Property protection activities (5)	Chapter 5	5	
c. Natural resource protection activities (5)			
d. Emergency services activities (5)	Chapter 7	5	
e. Structural projects (5)	Chapter 4	5	
f. Public information activities (5)	Chapter 8	5	25
8. Draft an action plan. Actions must be prioritized (REQUIRED)			
a. Recommendations for activities from two of the six categories (10)			
b. Recommendations for activities from three of the six categories (20)			
c. Recommendations for activities from four of the six categories (30)			
d. Recommendations for activities from five of the six categories (45)	Chapter 9, Table 9-1	45	
e. Post-disaster mitigation policies and procedures (10)			
f. Recommendations from Habitat Conservation Plan (10)			
g. Action items for mitigation of other hazards (5)	Chapter 9, Table 9-1	5	50

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CRS Step	Section/Page	Score	Total
9. Adopt the plan. (2)	Appendix D	2	2
10. Implement, evaluate and revise.			
a. Procedures to monitor and recommend revisions (REQUIRED) (2)	Pages 9-14 – 9-15, Appendix B	2	
b. Same planning committee or successor committee that qualifies under Section 511.a.2(a) does the evaluation (13)	Pages 9-14 – 9-15, Appendix B	13	15
Add the totals for steps 1 through 10 above:		FMP=	230

514 Credit Documentation:

✓ a. FMP: The completed CRS activity worksheet (AW-510-1–510-3) or the mitigation plan review crosswalk.

✓ b. A copy of the floodplain management plan, hazard mitigation plan, and/or Habitat Conservation Plan.

✓ c. Documentation showing how the public was involved in preparing or reviewing the plan, including a copy of the notice(s) advising residents about the public meeting(s) held pursuant to steps 2(b) and (c), and a record of the meeting(s). – *See Chapter 1 and Appendix B.*

✓ d. Copies of correspondence, meeting notes, or other materials that document the coordination with other municipalities, agencies, and organizations credited under Sections 511.a.3(b) – (f). – *See Appendix C*

✓ e. Documentation showing that the plan was adopted by the community's governing board. – *See Appendix D*

The following will be needed at the annual recertification:

___ g. An annual report on evaluating progress toward implementing the action plan's objectives.

The following will be needed at least every five years:

___ h. An update to the floodplain management or hazard mitigation plan.

Activity Worksheet AW-510-3 Edition: July 2007

Appendix C − Example Annual Reports

As a condition of continued credit under Activity 510 for floodplain management plan*ning*, a community must prepare a report each year on plan implementation. The objective of the annual report is to ensure that there is a continuing and responsive planning process.

The report must include the following:

- A description of how the evaluation report was prepared and how it is submitted to the governing body, released to the media, and made available to the public.
- How the reader can obtain a copy of the original plan;
- A review of each recommendation in the action plan, including a statement on how much was accomplished during the previous year;
- A discussion of why any objectives were not reached or why implementation is behind schedule; and
- Recommendations for new projects or revised objectives.

The report must be submitted to the community's governing body, released to the media, and made available to the public. It is typically prepared by the same planning committee that prepared the plan and monitors progress during the year.

The next five pages are the first five pages from Calumet City's 2006 annual report on its 2005 *Mitigation Plan*, the successor to its 1999 *Floodplain Management Plan*. Starting on page 3 of the report, each action item in the *Natural Hazards Mitigation Plan* is summarized and the responsible office and original deadline are listed. There follows a report on the status of implementing the action item. In some cases, new recommendations are proposed.

Pages 73 – 74 have excerpts from Roseville's 2006 annual report. The City uses a tabular approach to report the status and identifies recommended changes in blue ink.

The full reports for both cities can be found in the Example Plans pages on the CRS Resource Center website (http://training.fema.gov/EMIWeb/CRS/ − go to "Resources" and use control-F to find "Calumet City" or "Roseville").

CITY OF CALUMET CITY ILLINOIS
DEPARTMENT OF INSPECTIONAL SERVICES

MICHELLE MARKIEWICZ QUALKINBUSH
MAYOR

JAMES P. BANASIAK
Chief/Director

PAUL A. KOWALCZYK
Commissioner

687 Wentworth Avenue
Phone: (708) 891-8120
Fax: (708) 891-8117

Calumet City, Illinois 60409

MEMORANDUM

To: Mayor and City Council
From: Jim Banasiak
Subject: Hazard Mitigation Plan Status Report
Date: September 12, 2006

Resolution 05–37 adopted the City's 2005 *Natural Hazards Mitigation Plan*. Action item 1 calls for the Floodplain Management Committee to monitor implementation of the *Plan* and report on progress and recommended changes to the City Council on the anniversary of its adoption. This memo is the report for 2006.

THE PLAN

The *Plan* explores all possible ways to protect people and properties from a variety of natural hazards, the most important being flooding. It has 10 chapters which review the City's problems, set goals, explore six general strategies for mitigating damage from natural hazards, and recommends an action plan for reaching the goals. There are four general goals:

1. Protect the people of Calumet City, their homes and their health, from the dangers of natural hazards.
2. Place a priority on protecting public services, including critical facilities, utilities and schools.
3. Inform residents and businesses about the hazards they face and the ways they can protect themselves and their properties from those hazards.
4. Protect open space, wetlands and natural areas for the public to enjoy and to prevent inappropriate development in hazardous areas.

The culmination of the Calumet City *Natural Hazards Mitigation Plan* is the series of 14 action items presented in Chapter 10. An agency is responsible for each one and has been given a deadline. The action items are listed in the table on the next page.

This Status Report was prepared by the Floodplain Management Committee, which is charged with monitoring progress in Action Item 1. Copies of the *Plan* and this Status Report have been provided to the media and are available for review at City Hall, 204 Pulaski Road, Calumet City, Illinois 60409. The Plan is also on the City's website at www.calumetcity.org/mitigation.html.

Action Items, Goals, and Recommendations

	Goal 1. Protect people, homes and health	Goal 2. Protect public services an d utilities	Goal 3. Inform residents and businesses	Goal 4. Protect natural areas	Chapter – Recommendation	Deadline
10.2. Program Action Items						
1. Floodplain Management Committee	X	X	X	X		Annual report
2. Program Reviews	X	X			4-1, 4-2	December 2005
3. Floodplain Regulations	X	X		X	4-1, 6-1	After FEMA CAV
4. Mobile Home Regulations	X				4-3	December 2005
5. Mitigation Audits	X	X	X		5-2	July 2006
6. Mitigation Rebates	X				5-3	Ongoing
7. Urban Forestry	X	X	X	X	6-2	After FY06 budget
8. Flood Response Plan	X	X			7-1, 7-2	After new FIRM
9. Critical Facilities Response Plans	X	X			7-3	July 2006
10. Levee Evaluation	X	X			8-1	After new FIRM
11. Drainage System Maintenance	X	X		X	8-2, 8-3, 8-4	July 2006
10.3. Public Information Action Items						
12. Flood Insurance Rate Map	X	X	X		7-1, 8-1, 9-1	Ongoing
13. Outreach Projects	X	X	X	X	5-1, 5-4, 6-3, 7-4, 8-5, 9-2, 9-3, 9-4	Ongoing
14. Special Public Information Projects	X		X	X	4-4, 5-1, 9-5, 9-6	Annual report

This table relates the 14 action items to the 4 goals of this *Plan* and the action items to the recommendations at the end of Chapters 4 – 9. For example action item 2, Program Reviews, supports recommendations 1 and 2 at the end of Chapter 4. It is scheduled to be initiated by December 2005.

ACTION ITEM PROGRESS

The *Plan* recommends 14 action items in Section 10.2 and 10.3. They are generally listed in the same order as the mitigation topics that are discussed in Chapters 4 − 9. Many of the activities receive credit under the Community Rating System (CRS). Their implementation is needed for residents to continue to receive the CRS flood insurance premium reductions.

In this section, each action item in the *Natural Hazards Mitigation Plan* is summarized and the responsible office and original deadline are listed. There follows a report on the status of implementing the action item. In some cases, new recommendations are proposed by the Committee. Acceptance of this report by the City Council is deemed to be acceptance of these recommendations.

1. Floodplain Management Committee: The Floodplain Management Committee will continue its work as a permanent advisory body to the City Council. It will:

- Act as a forum for hazard mitigation issues,
- Disseminate hazard mitigation ideas and activities to all participants,
- Review proposed changes to ordinances and mitigation programs,
- Monitor implementation of this *Plan*, and
- Report on progress and recommended changes to the City Council.

Responsible office: Staff support for the Committee will be provided by the Department of Inspectional Services.

Deadline: The progress reports are due on the anniversary of the date the *Plan* is adopted.

Status: On September 12, 2006, the committee held its first meeting after adoption of the Plan. This memo is the annual progress report for 2006.

2. Program Reviews: The Department of Inspectional Services will undergo three reviews of its hazard mitigation activities over the next few years:

- A review of the City's classification under the Building Code Effectiveness Grading Schedule (BCEGS),
- A community assistance visit (CAV) by FEMA, and
- The cycle verification visit for the Community Rating System .

Each of these visits will evaluate regulatory language and procedures followed to manage new construction, building additions and improvements, and development in the floodplain. The results of the reviews are to be reported to the Floodplain Management Committee. The Department will also provide its conclusions and recommendations for changes based on the reviews.

Responsible office: Department of Inspectional Services

Deadline: Request the BCEGS visit by December 2005. The timing of other two visits are set by FEMA.

Status: The City received a new BCEGS rating after the *Natural Hazards Mitigation Plan* was completed in 2005. The table below modifies the table on page 4-7 of the *Plan*. It compares the scores from the 2001 BCEGS review with the ones from the 2005 review. The total score for the City went up from 69.88 to 70.51 points.

The increased points are enough for the City to improve from a 5/5 to a 4/4. This will result in better homeowner insurance rates for new construction and more points under the CRS. The *Hazard Mitigation Plan* noted staff training and experience as the weakest part of the City's code enforcement program. The table below shows improvements in these areas.

Calumet City's BCEGS Scores				
Code Activity	**2001 Score**	**Percent of max**	**2005 Score**	**Percent of max**
(2) Administration of codes				
Adopted code and zoning provisions	16.00	100%	15.35	90%
Staff training/certification/education/experience	11.92	36%	14.18	45%
Administration and enforcement policies/procedures	2.85	63%	3.69	61%
Plan review				
Staff level and experience	6.42	61%	8.18	78%
Procedures	12.0	96%	10.50	84%
Field inspection				
Staff level and experience	11.94	99%	11.21	93%
Procedures	8.75	80%	7.40	67%

The CRS cycle verification visit was also held after the *Plan* was completed in 2005. The City kept its CRS rating of a class 6. The next regularly scheduled CRS visit will be in 2010. The CAV has not yet been scheduled by FEMA.

Recommendation: The CRS scoring should be reviewed after the new Little Calumet River Flood Insurance Rate Maps are published. The review will also need to reflect the changes in the 2006 *CRS Coordinator's Manual*.

3. Floodplain Regulations: The Floodplain Management Committee will review changes in the floodplain and stormwater management ordinances proposed by FEMA after its program review and will consider revising the wetlands jurisdiction with input from the Department of Inspectional Services. Recommendations will be made to the City Council for adoption.

Responsible office: Floodplain Management Committee, Department of Inspectional Services

Deadline: Within six months of FEMA's community assistance visit.

Status: The CAV has not been scheduled due to heavy workloads at the FEMA Regional Office (including response to Gulf Coast hurricanes).

4. Mobile Home Regulations: The Department of Inspectional Services will draft appropriate procedures and possibly new regulatory language to give staff clear authority over mobile home installation and mobile home and mobile home park maintenance.

Responsible office: Department of Inspectional Services

Deadline: December 2005

Status: Ordinance 05-32 sets responsibilities for mobile home maintenance. It also establishes an inspection program whereby the Department will look at all mobile homes and parks on a biannual basis. Whenever a mobile home is sold, the seller must apply to the Department for a point of sale certificate of compliance that shows the structure meets all current codes and is in good shape.

Since the ordinance was passed, the City has been sued over point of sale inspections. A Federal court order has stopped the inspections until the suit is settled.

Recommendation: Assuming the court rules in the City's favor, in 2007, the Department should advise the Committee on how well the new ordinance is working and whether any changes are needed.

5. Mitigation Audits: The Department of Inspectional Services will visit selected properties, conduct a review of the hazards they are exposed to, and recommend appropriate property protection measures. Short reports will be provided to the property owners. The priority properties to be reviewed are (in order):

- Buildings in the repetitive loss area (this is the fourth area listed in the plan at Burnham and the Little Cal, the only rep loss area remaining exposed to repetitive flooding),
- City owned properties, and
- Interested critical facilities.

Responsible office: Department of Inspectional Services, with support from the floodplain management consultant.

Deadline: Review the repetitive loss area by July 2006. Critique and revise the procedures before visiting other sites.

Status: Not yet begun.

Excerpt from Roseville's 2006 Annual Report

TABLE PR-2.
ACTION PLAN MATRIX

Action Identifier	Action taken Yes/No	Initiative Description	Time Line	Priority	Status
F-14	No	Analyze alternative improvements to the Cirby/Linda/Dry Creek flood control project that may be cost effective in the flood-prone areas of Roseville: • Dry Creek from Darling Way to Riverside Avenue • Area on Dry Creek upstream of Folsom Road in the Columbia Avenue/Marilyn Avenue/Bonita Street area • Linda Creek near Champion Oaks Drive/Samoa Way/Hurst Way area • Cirby Creek in the Trimble Way/Zien Court area	Long - term	Low	Updated and more detailed flood modeling we prepared for the Darling/ Riverside area to help in analyzing alternatives. No other actions towards the completion of this initiative were completed during the reporting period. This will continue to be a long-tem initiative with a low priority pending funding.
F-15	No	Replace the Huntington Drive/Cirby Creek culvert with a bridge to protect Queens Court/Huntington Drive area. Public Works Department oversees this project.	Short-term	High	No actions towards the completion of this initiative were completed during the reporting period. This will continue to be a short-term initiative with a high priority pending funding.
F-16	No	Divert the main drainage storm drain system down Crestmont Avenue to Cirby Way and then into Dry Creek so that the existing system will not exceed capacity. If system capacity is exceeded, the intersection on Cirby Way and Crestmont Avenue and nearby homes will flood during major flood events.	Short-term	High	Plans have been prepared for the improvements. NOI for a 2005 PDM grant was sent to the State. This project will be included in the City's Capital Improvement Program within the next five years meaning funding will be allocated to complete the storm drain system improvements. Priority and time line for this project remain unchanged.
F-17	Yes	Continue to promote and sponsor programs to buy out, relocate, and flood-proof existing flood-prone structures within Roseville.	Short-term	High	During the reporting period, the City has initiated a proposed acquisition of 2 repetitive loss properties on Champion Oaks Dr. The City has applied for grant funding under the Flood Mitigation Assistance Grant program, and completion of this project is pending award of the grant. The City will continue to pursue the acquisition of target properties with a high priority.
F-18	Yes	Set back and raise the sewer ponds levees at the Dry Creek Sewer Plant so raw sewage will not enter Dry Creek.	Short-term, ongoing	High	Plans, specifications., and environmental permits are being prepared.
F-19	No	Replace existing wood flood wall along Dry Creek that protects the City's Main Library and Public Safety Building because wood wall allows flood water to leak through, and	Long-term	High *(Change to*	No actions towards the completion of this initiative were completed during the reporting period. This will continue to be a long-tern initiative. Priority should be changed to

TABLE PR-2.
ACTION PLAN MATRIX

Action Identifier	Action taken Yes/No	Initiative Description	Time Line	Priority	Status
		constant pumping is required.		***medium, pending funding)***	medium, pending funding.
F-20	No	Manage beaver dam sites for flood control protection and habitat restoration after dam removal. One primary issue is impacts to floodwater capacity of creeks. Part of the desired comprehensive approach to beaver management includes establishment of quantitative and qualitative "carrying capacity," including acre-feet of flood capacity lost. Implement a standard monitoring and reporting process to track beaver dam locations, population, and impacts. Gain regulatory approval for beaver management techniques such as biological control and habitat manipulation using the most benign options first.	Short-term	Medium	Freeboard standards for building in areas where beaver dam could affect flood levels have been increased. No other actions were taken on this during this reporting period. ***This action provides mitigation for multiple hazards, primarily mitigating possible impacts of human health hazards associated with West Nile Virus. This initiative should be moved to the "Multiple Hazards" matrix as initiative # MH-11.***
F-21	No	Perform a scenario-based dam failure analysis to determine the probable impact of flooding within Roseville if western levees on Folsom Reservoir fail. These levees are considered a part of the entire dam system that creates Folsom Reservoir and are an integral part of a dam failure analysis. This study would generate an inundation area map.	Long-term	Low	The City did apply for a PDM grant for this initiative during the reporting period. The grant application was denied by OES, and deferred to future grant opportunities that will fund a complete planning effort, such as an update to the RMHMP. The time line and priority for this project will remain unchanged.
F-22	Yes	Once dam failure analysis is complete, create a dam failure element for the City's emergency response plan.	Long-term	Low	No Dam failure analysis was completed during the reporting period; therefore this task was not completed. However, the City did amend its emergency operations plan to include a dam failure component to meet CRS classification prerequisites. This component would be updated once initiative #fF-22 is completed. Priority and timeline for this project will remain unchanged.
F-23	No	Develop a comprehensive interpretive sign program, including trial and open space preserve signage, at road crossings. Create creek corridor trail maps and coordinate with local schools and public stewardship events to increase public awareness of the need to preserve, restore, and proactively manage open space corridors and provide a	Short-term	High	No actions towards the completion of this initiative were completed during the reporting period. This will continue to be a short-tern initiative with a high priority pending funding.