

Recommended Integration Practices: Strengthening the Floodplain Management Plan Portions of the Local Mitigation Strategy

Florida Division of Emergency Management
and Florida Planning and Development Lab



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List of Acronyms

Base Flood Elevation (BFE)
Bureau of Mining and Minerals Regulation (BMMR)
Code of Federal Regulations (CFR)
Community Assistance Visit (CAV)
Community Rating System (CRS)
Comprehensive Emergency Management Plan (CEMP)
County Warning Area (CWA)
Critical Infrastructure Protection Program (CIPP)
Digital Flood Insurance Rate Map (dFIRM)
Emergency Operations Center (EOC)
Florida Department of Environmental Protection (FDEP)
Federal Emergency Management Agency (FEMA)
Flood Hazard Area (FHA)
Flood Insurance Rate Map (FIRM)
Flood Insurance Study (FIS)
Flood Mitigation Assistance (FMA)
Floodplain Management Plan (FMP)
Florida Division of Emergency Management (FDEM)
Florida HAZUS User Group (FLHUG)
Geographic Information Systems (GIS)
Hazards U.S. (HAZUS)
Individual Assistance Preliminary Damage Assessment (IA/PDA)
Insurance Services Office - Community Rating System (ISO-CRS)
Local Mitigation Strategy (LMS)
Long Range Transportation Plan (LRTP)
National Climatic Data Center (NCDC)
National Flood Insurance Program (NFIP)
National Inventory of Dams (NID)
National Oceanic and Atmospheric Administration (NOAA)
National Weather Service (NWS)
Non-governmental Organization (NGO)
Post-Disaster Redevelopment Plan (PDRP)
Preliminary Damage Assessment (PDA)

List of Acronyms (Continued)

Regional Planning Council (RPC)
Repetitive Loss Area Analysis (RLAA)
Sea, Lake and Overland Surges from Hurricanes (SLOSH)
South Florida Water Management District (SFWMD)
Special Flood Hazard Area (SFHA)
St. Johns River Water Management District (SJRWMD)
Substantial Damage Estimator (SDE)
Substantial Improvement /Substantial Damage (SI/SD)
Transportation Improvement Program (TIP)
US Army Corps of Engineers (USACE)
US Department of Housing and Urban Development (HUD)
US National Grid (USNG)
Water Management District (WMD)
Weather Forecast Office (WFO)

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Introduction

Flooding is a hazard that affects all 50 states. For over 200 years, the United States has recognized the catastrophic consequences of flooding. One of the most successful approaches to solving the impacts caused by flooding is to mitigate. Hazard mitigation is a sustainable effort that reduces or eliminates risk to people, damage to property, and ensures continuity of societal function following natural or human-caused disaster. Hazard mitigation measures reduce both reconstruction costs and the level of resources needed during, and in response to, future disasters.

This type of natural disaster has resulted in the passing and amending of countless legislative acts. Federal and state acts in effect today require the preparation of plans to mitigate threats from flooding and other disasters in exchange for federal monetary support. Two plans recognized nationally for their involvement with flood mitigation are the Floodplain Management Plan (FMP) and the Local Mitigation Strategy (LMS) plan. A FMP is a mitigation plan that specifically addresses flood hazards. It requires collaboration among local communities and the public in order to best profile the flood hazard and propose mitigation projects. It was once a stand-alone plan required for a community to qualify for funding under the Flood Mitigation Assistance (FMA) program. Participation in the FMA program is **voluntary**. However, when a community **chose** to participate in the program, the county's FMP had to meet both State and National Flood Insurance Program (NFIP) requirements to be eligible for the FMA funding.¹

“... [S]tructures built to NFIP floodplain management requirements experience, on average, 80 percent less damage through reduced frequency of inundation and severity of losses”

— Substantial Improvement/Substantial Damage Desk Reference, FEMA P-758, May 2010, p. 2-2

Recently, however, the Federal Emergency Management Agency (FEMA) has amended regulations regarding FMPs. Similar legislation was already in place requiring local communities to have an approved and adopted LMS plan to apply for any federal mitigation grant programs. In order for an LMS plan to be approved by FEMA it has to profile and analyze all natural hazards affecting the participating jurisdictions (including flood), as well as describe the planning process, opportunities for collaboration between jurisdictions and the public, and include a comprehensive mitigation project list. Like the FMP, participation in the LMS is voluntary but required to receive federal grant funding for mitigation. Completing an LMS plan after 2007, under the revised regulations, meant that a FMP no longer had to be completed if an LMS plan was in place.

In addition to the FMP and the LMS there was a third plan called the Community

Rating System (CRS) plan. Communities use this plan for enrollment in the CRS program. If a community enrolls in the program, citizens within that community are eligible for discounts on their flood insurance premiums based on points earned by the community for flood mitigation activities. The CRS operates on a scale of one to ten: one being the best possible score and resulting in a 45% decrease in flood insurance premiums. Communities not participating in the CRS program are rated as ten, with no premium discounts.

The FMP, LMS, and CRS plans have significant overlap in their requirements. FEMA recognized this, and on October 31, 2007, decided to allow jurisdictions to use their LMS plans as the FMP. In addition, communities that wished could make their LMS plan their CRS plan as well. This is FEMA's 3-in-1 Plan.

Since the release of FEMA's 3-in-1 planning guidance in 2007, all counties in Florida have exercised some degree of incorporating the new floodplain plan requirements into the LMS. However, there is significant room for improvement, especially considering that 80% of Florida's population lives or works near the coast² and that heightened flood risk may impact a significant proportion of Florida's population. The State of Florida and many of its communities aspire to achieve beyond the minimum. To a great extent they are successfully doing so based on the following data:

- 97% percent of Florida communities are NFIP participants³ and
- 44% of communities are participating in the CRS program, with discounts of at least 5% on annual premiums.⁴ This is well above the national average of 11% participation.

As of May 2010 a number of counties and communities in the state have attained a CRS rate class of five, the highest reached in the State of Florida (see Table 1). The State commends these counties and communities for their diligent and persistent efforts to increase the disaster resiliency of their jurisdiction.

Counties and Communities in Florida with a CRS Rate Class of 5			
Counties	Points	Communities	Points
Miami-Dade	2,799	North Miami, City	2,861
Hillsborough	2,703	Sanibel, City	2,734
Charlotte	2,664	Cape Coral, City	2,642
Bay	2,582	Anna Maria, City	2,562
Orange	2,570	Juno Beach, Town	2,502
Lee	2,505		
Sarasota	2,504		

Table 1: Counties and Communities in Florida with a CRS Rate Class of 5. Adapted from: State CRS Summary: Florida.

As of December 31, 2010, there are more than two million active flood insurance policies in the State of Florida. In the established tradition of the State of Florida and its counties to protect and serve their constituencies, the Florida Division of Emergency Management (FDEM) has partnered with Florida State University’s Department of Urban and Regional Planning to offer recommendations for strengthening the Local Mitigation Strategy plans, particularly with respect to the flood hazard. This document was prepared with the intention that all communities in the United States can accomplish any of the items described herein to strengthen their flood mitigation programs or accomplish better integration between all plans related to hazard mitigation. This guide provides information on additional material that might be added to a FMP or an LMS plan that would augment the minimum requirements of either plan. Further, it presents methods and guidance for the integration of these two plans to increase planning efficiency through a reduction in redundant planning efforts. To streamline this process, additional resources and types of data to incorporate in the plans have been proposed, methods for obtaining and updating data are recommended, and two alternatives to develop plans that are more comprehensive are described. It provides suggestions for communities that have pre-existing FMPs as well as suggestions for communities that have never developed an FMP and rely solely on the use of the LMS for FMP credit.

How to Use This Document

The intent of the suggestions in this document is to reinforce plans and programs, specifically related to the floodplain portions of the LMS. Therefore, while completing all suggestions is not necessary, doing as many as possible will assist in the development of the most comprehensive programs and plans.

The Florida Division of Emergency Management (FDEM) recognizes that while stand-alone FMPs may exist they are likely created and maintained in a department

other than the one responsible for the LMS. For the purposes of doing more with less, reducing redundancy, and creating stronger plans and programs, it is recommended that the different departments responsible for these types of plans work together. Building a bond and bridging communication gaps will help accomplish the tasks mentioned in this document and will ultimately benefit all citizens affected by flooding.

There are several different options for the integration of floodplain information proposed for use in this document.

- Counties **without** a current FMP or counties wishing to strengthen the current LMS with stronger floodplain elements should review the “Collecting Local Flood Data”, “Maintaining Local Flood Data”, and “Analyzing Local Flood Data” sections at the beginning of the document. FEMA recommends that counties go beyond the minimum requirements of the FMP and LMS by completing other elements mentioned in this document.
- Counties **with** or **without** an existing LMS plan can make improvements to their plan with minimal effort by completing part or all of the “Fundamental Strategies to Improve the FMP Portions of the LMS” section of this document.
- Counties **with** an existing stand-alone FMP looking to integrate this existing plan into the LMS should see the “Methods of Plan Integration” sections nested in Part II of the document.
- Counties **with** existing stand-alone FMPs looking to strengthen portions of their LMS while maintaining a separate FMP can implement any or all of the different methods listed in the “Collecting Local Flood Data”, “Maintaining Local Flood Data”, and “Analyzing Local Flood Data” sections in this document.

Part I: Strengthening the FMP Portions of the LMS Plan

Fundamental Strategies to Improve the FMP Portion of the LMS

Requirement §201.6(c)(3)(ii) of the 44 CFR mandates that communities demonstrate participation in and compliance with the NFIP in order to receive approval on their LMS. To best meet this criterion, it is recommended that the community list the following in their LMS plan:

- Date that the community began participating in the NFIP
- NFIP information including the number of policies and the number and amount of claims paid
- The date current maps took effect and of any floodplain studies conducted by the community

- Local program administrative components summary:
 - Office and position selected as the Floodplain Administrator
 - Identify all regulations in the ordinance that surpass the NFIP minimum requirements (often referred to as “higher standards”)
 - Date of most recent Community Assistance Visit (CAV) and any problems that were identified and how they were reconciled
 - If the community is a CRS participant, include
 1. CRS class and savings
 2. Activities that provided the greatest credit for the community
 3. Other activities conducted under the CRS
- List requirements of the floodplain management plan incorporated in other plans used by the community to direct development such as the zoning ordinance, comprehensive plan, etc.

In order to show FEMA how communities plan to remain in compliance with the NFIP and meet the requirements of the LMS, the community must also state what they plan to do in order to remain in compliance with the NFIP over the next 5 years. FEMA recommends that at a minimum, communities complete the following tasks to demonstrate compliance with the NFIP:

- Keep a copy and description of the current Flood Insurance Rate Maps (FIRM) and flood insurance studies (FIS) in a location accessible by the public
- Support local requests as appropriate for revisions to the maps
- Help with determination of local floodplains
- Keep an ongoing record of approved Letters of Map Change
- Impose the floodplain management ordinance by monitoring compliance and exercising amendatory action to correct violations
- Make community members aware of the availability and value of flood insurance
- Make community property owners aware of revisions to the dFIRM/FIRM that will influence their insurance rates
- Assist the community with insurance-related issues

Additional ways communities can improve their performance and strengthen their program include the following:

- Require identification of FIRM, date, zone, and BFE on permitting forms; create a checklist for reviewing building/development permit plans and for inspection in floodplains
- Occasionally have every plan reviewer and inspector attend valuable training and ensure that the Certified Floodplain Manager meets the continuing education requirements
- Host workshops and training for surveyors, insurance agents or developers

- Encourage staff members to get their Certified Floodplain Manager certification and to maintain it
- Keep current FEMA/NFIP information to distribute to homeowners that will assist them in determining ways to minimize flood damage
- Create handouts to distribute to permit applicants on certain topics relative to the community such as the proper installation of a manufactured home in flood hazard areas (FHAs) based on accepted U.S. Department of Housing and Urban Development (HUD) standards or suggestions on repairing/improving existing buildings
- Consider potential changes to the program. As possible changes are considered, the community should document this process. Even if the community does not adopt a potential change, they should note the process of its consideration, rejection, and reasoning.
 - Assess enhanced standards that minimize flood damage, particularly prohibiting the use of fill, setbacks, limiting the area of an enclosed structure, freeboard, prohibiting the production or storage of chemicals in SFHAs, and prohibiting the development of critical facilities in SFHAs.
- CRS communities should consider implementing additional CRS-eligible activities to supplement an existing activity or to employ a new activity.
- Communities that are not currently participating in the CRS, but considering doing so, can request assistance from an Insurance Services Office – Community Rating System (ISO-CRS) Specialist. (See Appendix H for a complete listing of ISO-CRS Specialists in Florida as of Spring 2011.)

Communities with a high standard of performance in the NFIP may decide that they do not need to alter their method of operation. In this instance, they should document how they currently function and state the fact that changes are not currently being considered.

Although it is not mandated, FEMA encourages communities to take their LMS plan a step further and fulfill the requirements of the Community Rating System (CRS). While the FMP allows communities to purchase flood insurance and the LMS plan allows communities to apply for funding, by expanding these plans to meet the CRS requirements the community could additionally qualify for a reduction in flood insurance premiums. The **Method 2: Integrated Planning** section of this document outlines the information needed in the LMS plan to meet some CRS criteria. The remainder of this document lists additional data that would further strengthen the LMS as it relates to flood mitigation planning.

Collecting Local Flood Data

To effectively prepare Local Mitigation Strategy (LMS) plans that mitigate against the potential impacts of flooding, data from past occurrences should be kept on record. Historical records will serve as a reference point for what has happened and where. Analysis of the historical records will provide project guidance, inform project prioritization practices, be necessary for grant applications. It will provide a context, both in time and space, for mitigation planning.

Available Flood Data

A good example for interested counties may be the “Historical Flood Events” section of Suwannee County’s LMS on pages 40-42 (approved in 2010).

Example of data Suwannee collected for the LMS:

- Historical Crest Elevations (in feet above Mean Sea Level)
- Peak Flows (in cubic feet per second) of Major Floods on the associated river

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SRWMD	Flood Stage	River Mile	Historical River Level Elevations (in feet above Mean Sea Level-NGVD 1929)											2004/2005	April 2009
			Low	Low Mo-Yr	April 1948	March 1959	Sept. 1964	April 1973	April 1984	Feb. 1986	March 1991	March 1998			
Suwannee River															
	77	171	49.49	May-07	85.19	83.14	84.36	88.56	85.36	80.67	79.79	84.73	84.01	(provisional)	76.40
	67	150	36.04	May-07	76.80*	72.30**	73.60*	78.91	74.38	69.78	68.45	72.14	71.30		67.64
	54	128	28.48	Jul-07	68.10	59.04	56.89	64.97	60.72	61.79	60.84	61.67	58.63		63.82
	50	113	21.12	Jun-02	61.46*	52.00**	-	58.90	53.55	54.36	53.52	54.07	50.55		54.95
	N/A	98	16.89	Jul-07	53.50*	44.33*	41.14*	49.44	46.54	46.30	45.40	47.09	43.83		46.80
	29	76	6.74	Jul-02	38.88	32.30	30.17	35.57	33.69	33.07	32.61	34.04	31.44		32.76
	N/A	57	3.82	Jun-02	31.03	24.80**	-	27.40**	26.28	23.20	22.92	25.12	22.12		22.34
	11	34	-1.08	Sep-99	21.79	15.35	14.96	18.03	16.53	15.10	14.91	16.84	14.14		14.23
	10	24	-1.09	Jan-08	16.00*	11.40	-	13.00*	12.65	11.00	10.91	12.41	10.42		10.46
	5.5	15	-0.71 ^L	Jan-08	10.80**	-	-	8.80**	-	-	8.02	8.61	6.90		7.20
Santa Fe River															
	N/A	49	48.42	Jul-07	67.34	64.99	71.14	63.90	62.63	61.73	63.24	66.43	64.74		-
	N/A	36	31.40	Jul-01	-	-	-	-	45.87	42.67	46.07	50.57	49.76		-
	N/A	18	20.92	Dec-07	34.98	31.21	36.20	31.12	30.29	27.98	27.90	33.01	30.41 ^P		26.60
	19	7	-	-	-	-	-	-	29.51	27.82	27.47	29.92	26.58		26.81
	21	2	5.61	Jun-02	34.19	31.17	27.11	-	29.14	27.55	27.33	29.54	26.34		26.85
Withlacoochee River															
			85.80	Jun-00	116.00	-	-	-	-	-	-	113.82	109.90		118.90
	79	22	53.26	Aug-02	85.85	-	82.28	82.31	83.41	85.41	84.04	83.38	78.27		88.50
Alapaha River															
	101	30	77.31	Oct-99	106.57	-	-	104.19	104.37	-	105.65	106.22	104.60		108.28
	N/A	20	61.27	Oct-06	-	-	-	-	89.20	90.06	-	-	89.44		94.00
Aucilla River															
	51.9	34	43.50	Jun-55	-	55.86	56.19	59.47	57.43	56.89	57.76	56.72	56.08		56.38

* Historical levels obtained from flood marks
 ** Estimated peak stages obtained from U.S. Army Corps of Engineers, 1974
 L Limit of gage
 Bold indicates historical peak

Updated 5/26/2009

Table 2: From Suwannee LMS: Historical Crest Elevations (in feet), Suwannee River in Suwannee County, Florida. Source: Suwannee County LMS pp. 42-43. Date: 10/01/2010

Location	Annual Peak Discharge (cfs)				
	1948	1928	1973	1984	1959
Near Bell	82,300	70,000*	54,200*	47,600*	40,200*
Near Branford	83,900	65,000*	54,700	42,200	34,100
Near Ellaville	95,300	73,000	77,000	46,000	45,200
Near White Springs	28,500	20,600	38,100	26,100	20,100

* - estimated values

Table 3: Historical Floods on the Suwannee River. Source: Suwannee County LMS p. 41. Date: 10/01/2010

Although much of the material presented is technical, (see Table 2 and Table 3) and some of the information appears incomplete, it is clear that the county is building its knowledge base and working to accumulate data pieces. In the future, these pieces could reveal more about the shape and form of flood problems in the county.

Counties benefit from having an extensive record of previous flooding occurrences. Not only does a good history of previous occurrences allow LMS developers to meet federal plan requirements but it also serves as a great resource. The information about damage that can be inflicted upon a community by floods is vital for future development and mitigation. Some of the information about these historic events is best stored locally. An accumulation of documented knowledge, particularly local knowledge about past events, will ultimately increase awareness within the community about challenges faced from flooding in the area and will quickly highlight the areas in need of mitigation. Historic knowledge of this kind can also assist in formulating a good “Benefit/Cost Analysis” for a mitigation grant application.

Digital storage, convenient formatting, and public access to documented events will generate action by individuals in the community and by professionals. In addition, there are outside sources where *historic* data about local flood events can be located – the National Climatic Data Center (NCDC), news reports, or information collected during any post disaster damage assessment by local officials are three examples.

National Climatic Data Center

This webpage <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms> is a useful one to look for “events” in the county (see Figure 1). The storm events database is a great tool but often lacks specific information about the impacts that occurred.

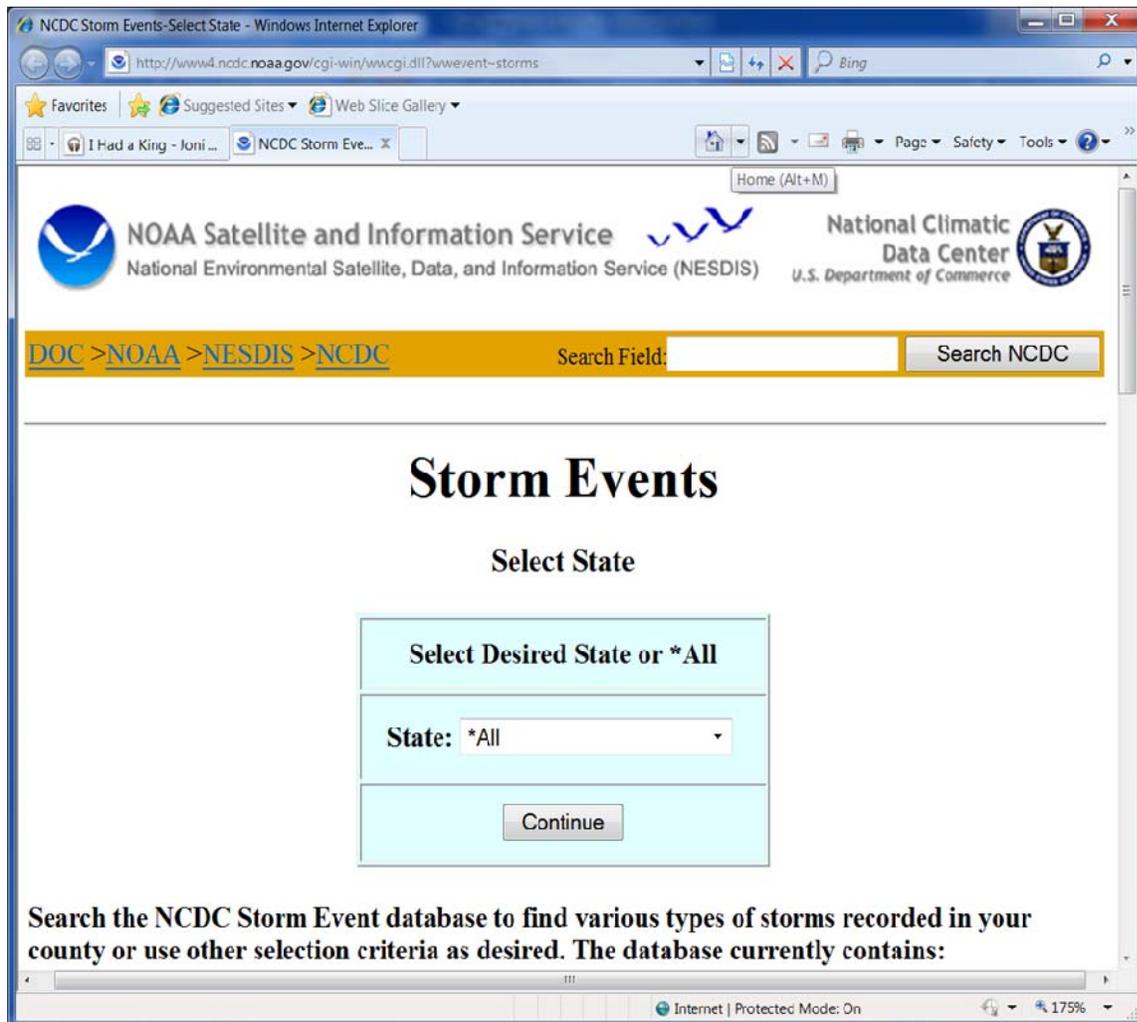


Figure 1: NCDC Storm Events. Source: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>

If the State of Florida is selected in the box and the user selects “Continue” the following screen (see Figure 2) will appear allowing the user to select the county and event type to further narrow the search. Once the county and event type are selected, users can either view the results by selecting the gray “List Storms” button or further refine the search by filling in additional search criteria boxes below.

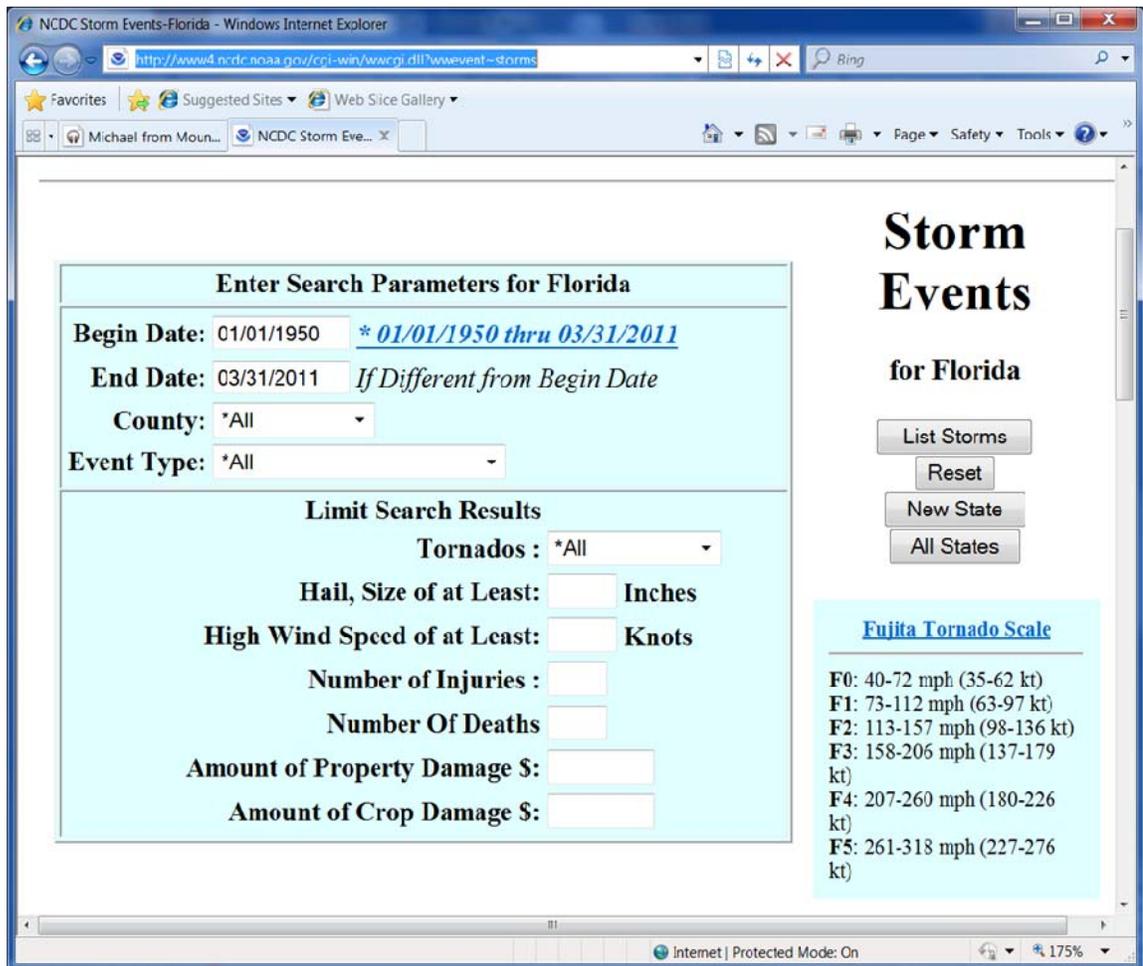


Figure 2: NCDC Storm Events County and Event Type. Source: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>

According to the NCDC, "the Storm Events Database is updated when the data becomes available to NCDC. The data is updated on a monthly basis and is usually 90 -120 days behind the current month."⁵

The types of events provided in the Storm Events Database that relate to flooding are the following:

- 1) Flood
- 2) Ocean & Lake Surf
- 3) Hurricane & Tropical Storm
- 4) Precipitation ("Heavy Rain")

An example of "Flood" in Alachua County is presented in Figure 3.

Query Results

19 FLOOD event(s) were reported in Alachua County, Florida between 01/01/1950 and 03/31/2011.

Click on *Location or County* to display Details.

Florida

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 Peninsular	09/15/1994	0000	Flooding	N/A	0	0	500K	0
2 Northeast Florida	10/11/1994	0000	Coastal Flood	N/A	0	0	5K	0
3 FLZ021>025 - 029>033 - 036>038 - 041 - 047	10/11/1994	0600	Flood	N/A	0	0	500K	0
4 FLZ036	03/30/1996	05:36 PM	Flood	N/A	0	0	10K	0
5 Gainesville	07/06/1996	02:00 PM	Flash Flood	N/A	0	0	500K	0
6 Gainesville	04/23/1997	07:43 AM	Flood	N/A	0	0	2K	0

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Figure 3: NCDL Query Results. Source: <http://www4.ncdc.noaa.gov/cgi-win/wwcqi.dll?wwevent~storms>

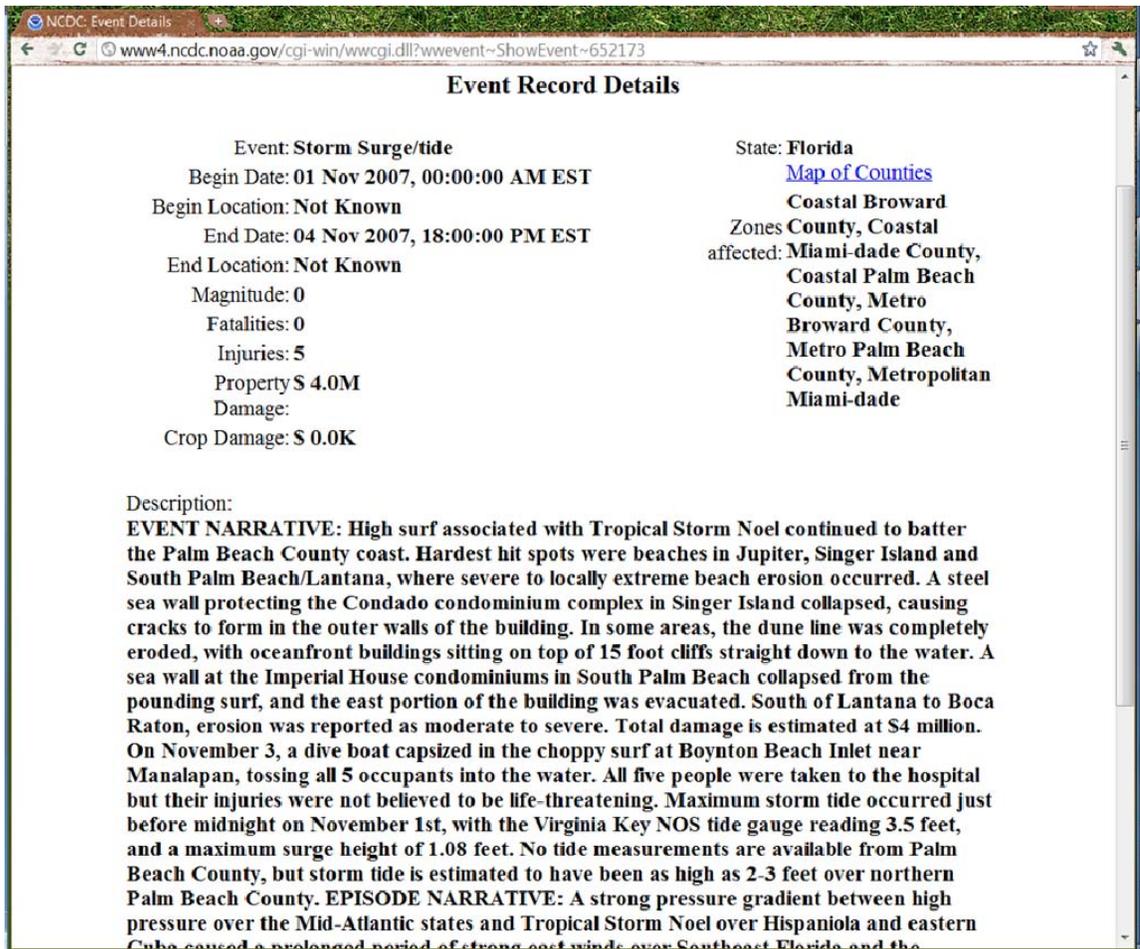
After clicking on the active link to an event under the “Location or County” column, additional information about that event is revealed. Sometimes the link will produce information from a news report, meteorological information, or perhaps a combination of both.

Data provided varies by the type of event and the same information is not included about each event

Helpful Hint:

Due to inconsistencies regarding what data is (or is not) included; consider initiating contact with the appropriate Weather Forecast Office (WFO). Access to particular data or information can be obtained if requested. The “Storm Data Preparer” is an individual who will work with the county to assist with difficulties.

(flood, flash flood, heavy rain, etc.). An Ocean & Lake Surf event example from Palm Beach County (Event #36) is shown (see Figure 4). This example illustrates what information is provided in these reports.



Event Record Details

Event: Storm Surge/tide	State: Florida
Begin Date: 01 Nov 2007, 00:00:00 AM EST	Map of Counties
Begin Location: Not Known	Coastal Broward
End Date: 04 Nov 2007, 18:00:00 PM EST	Zones County, Coastal
End Location: Not Known	affected: Miami-dade County,
Magnitude: 0	Coastal Palm Beach
Fatalities: 0	County, Metro
Injuries: 5	Broward County,
Property \$ 4.0M	Metro Palm Beach
Damage:	County, Metropolitan
Crop Damage: \$ 0.0K	Miami-dade

Description:

EVENT NARRATIVE: High surf associated with Tropical Storm Noel continued to batter the Palm Beach County coast. Hardest hit spots were beaches in Jupiter, Singer Island and South Palm Beach/Lantana, where severe to locally extreme beach erosion occurred. A steel sea wall protecting the Condado condominium complex in Singer Island collapsed, causing cracks to form in the outer walls of the building. In some areas, the dune line was completely eroded, with oceanfront buildings sitting on top of 15 foot cliffs straight down to the water. A sea wall at the Imperial House condominiums in South Palm Beach collapsed from the pounding surf, and the east portion of the building was evacuated. South of Lantana to Boca Raton, erosion was reported as moderate to severe. Total damage is estimated at \$4 million. On November 3, a dive boat capsized in the choppy surf at Boynton Beach Inlet near Manalapan, tossing all 5 occupants into the water. All five people were taken to the hospital but their injuries were not believed to be life-threatening. Maximum storm tide occurred just before midnight on November 1st, with the Virginia Key NOS tide gauge reading 3.5 feet, and a maximum surge height of 1.08 feet. No tide measurements are available from Palm Beach County, but storm tide is estimated to have been as high as 2-3 feet over northern Palm Beach County. **EPISODE NARRATIVE:** A strong pressure gradient between high pressure over the Mid-Atlantic states and Tropical Storm Noel over Hispaniola and eastern Cuba caused a prolonged period of strong east winds over Southeast Florida and the

Figure 4: NCDC Event Record. Source: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~ShowEvent~652173>

Information provided by NCDC can include:	What is not included in the NCDC material, but would perhaps be useful to have?
Injuries Property Damage Maximum Storm Tide Surge Height Date Some properties affected by the event	Images, Area Inundated by Major Floods, and Maps of the extent of historical floods relative to the base flood (FEMA 100-year floodplain) and current active channel Detailed local data

Table 4: Available data from NCDC

Numerous factors affect the extent of flood losses. Some of these factors are flood depth, flow velocity, flood duration, advance warning, sediment content, wave action, season, time between floods, type of structure, and the placement of contents.⁷ These factors are expressed and accounted for, when possible, by data that can be collected and stored digitally (see Table 5).

Event	
Extent	
Date	
Area Underwater	
Average Depth	
Duration of Flood	
Inches of Rainfall	
Sediment Content/Type	
Damages	
% Residential	
% Commercial	
% Infrastructure	
Location (Neighborhood)	
Neighborhood	
10-digit NGRS	
Latitude (decimal)	
Longitude (decimal)	

Table 5: Event Data Spreadsheet

Defining Data Requirements

An important recommendation is that local governments collect, submit, and most importantly maintain data about flooding events. Due to the time sensitive nature of emergency response, the data collected is often incomplete. In addition, the definition of flood is important. For floodplain management purposes, especially at the state and national level, the definition used for flood is:

- “1. A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties... from:

- a. Overflow of inland or tidal waters,
 - b. Unusual and rapid accumulation or runoff of surface waters from any source,
 - c. Mudflow.
2. Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined in 1.a. above.”⁶

This definition is important because it is the one used under NFIP in determining the implementation of policy (i.e. payment of insurance claims). As a word of caution, this definition is not uniformly applied throughout different agencies. Due to a variety of factors, many flooding events are not documented by the NCDC. It is for this exact reason that we recommend local governments collect, submit, and most importantly maintain data about local flooding events.

Contact the Local Weather Forecast Office (WFO) Webmaster

One recommendation for counties interested in building their flood history is to contact the associated WFO in their geographic area. The National Weather Service (NWS), through the National Oceanic and Atmospheric Administration (NOAA), keeps data that have the potential to improve the county’s ability to make scientifically informed decisions.

Recently, the state contacted a webmaster at each WFO via email and asked for increased web access to information about historic weather events. The response from nearly all was surprisingly positive. Many of the webmasters replied promptly. Each webmaster agreed that providing better access to data, particularly historic data for each county, could be accomplished. If a community is interested, the recommendation is to contact the webmaster at the appropriate WFO (See Appendix I).

Encourage Submission of Flood Data to the NWS

Leveraging available National Weather Service (NWS) and *National Oceanic and Atmospheric Administration* (NOAA) resources through the Storm Data Preparer system is a method that assists in conjunction with county data collection processes (See Maintaining Local Flood Data.)

Using the NWS as a collection and storage point for flood data is cost effective and allows NWS to assist local governments. Florida is divided into seven regions for storm data collection (see Figure 5). County Warning Areas (CWAs) is an alternative term for each region and one Weather Forecast Office center is responsible for each region. Citizens or county officials may submit flood data to the NWS Storm Data Preparer.⁸

Recommended Integration Practices: Strengthening the FMP Portions of the LMS
Florida Division of Emergency Management and Florida Planning and Development Lab

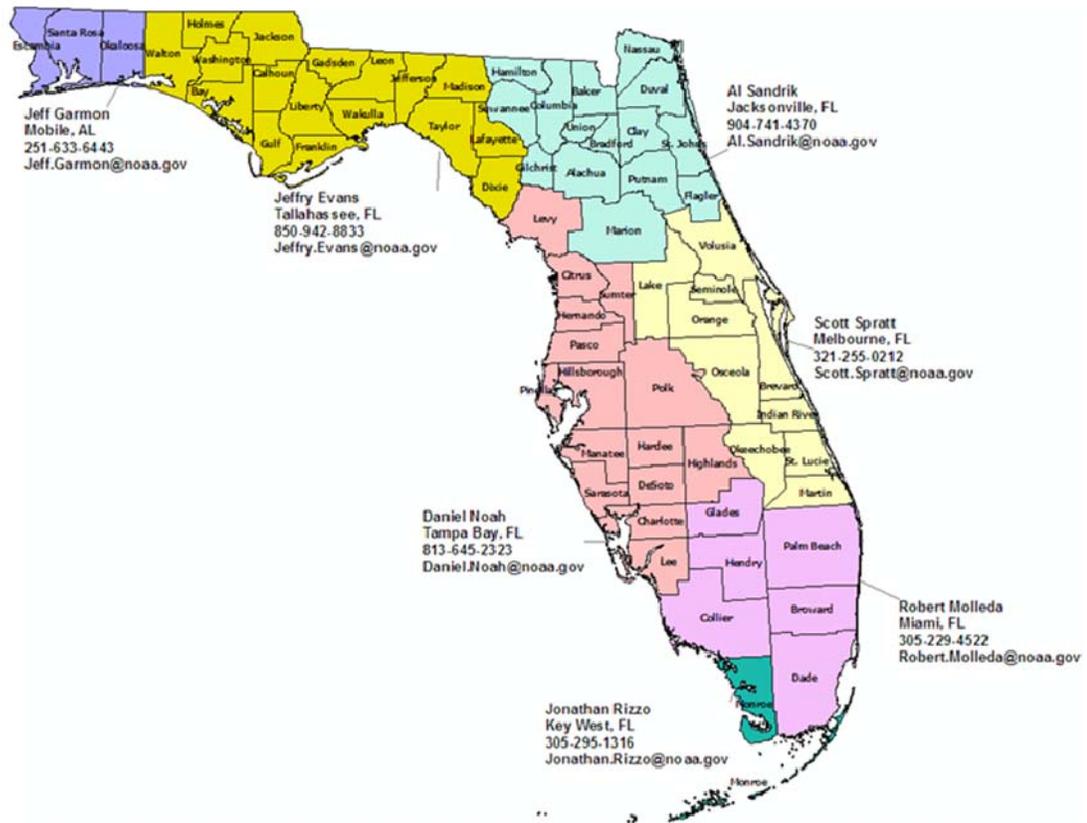


Figure 5: Weather Forecast Offices and the Storm Data Preparers.
Source: <http://www.weather.gov/stormready/stormmaps/fl-cwa.htm>

Storm Data Preparers allow multiple avenues for the submission of storm data including phone reports, internet reports (see Figure 6), collection from local media sources, and calls to local emergency dispatchers during or after a severe weather occurrence. These data are compiled and stored in the online NWS Storm Data Database where they may be accessed by anyone with an internet connection.

The screenshot shows the 'Submit a Storm Report' form on the NWS website for Melbourne, FL. The form is divided into several sections:

- Event Location:** Includes fields for Event Time (11:00 AM Eastern), Event Date (Jul 22, 2011), County (dropdown), and Location (7 NW Mytown).
- Event Type (Select all that apply):** A list of checkboxes for various weather events: Flood, Hail, High Wind Speed, Rip Currents, Tornado/Funnel Cloud, Wind Damage, and Heavy Rain. Each event has a corresponding dropdown menu for further details.
- Additional Details:** A text area for providing additional information (500 characters maximum) and a note about emailing information to the NWS.
- Contact Information:** Fields for Your Name, E-mail address, Phone number, and Observer Profile (dropdown).

At the bottom of the form, there are 'Reset Report' and 'Review Report' buttons, and a note: 'NOTE: If you have any questions about reporting weather and/or using this reporting form, please contact the [MLB Webmaster](#).'

Figure 6: NWS Storm Data Report. Source: <http://www.srh.noaa.gov/StormReport/SubmitReport.php?site=mlb>

By encouraging submission of flood data to the NWS, local governments can increase the size of their flood data sets. A large high-quality data set increases the ability of NWS and Water Management District (WMD) officials to identify potential flood issues and trends in regional and local flooding and enables planning with greater sensitivity and more finely tuned mitigation decisions. By providing NWS Storm Data Report

submission information to home and business owners located in or near floodplains, or potential flood problem areas, local governments can share responsibility for storm data collection with the citizenry, increase the size and specificity of their data sets, and provide better protection to their communities using the predictive power of better data and data analysis. Improved local data and analysis can lead to reduced vulnerability, impact, and flood extent estimates for catastrophic weather events and helps meet Title 44 in the Code of Federal Regulations (CFR) requirements:

- 201.6(c)(2)(i)- describe geographic area, previous occurrences, extent, and probability of flooding and
- 201.6(c)(2)(ii)- describe vulnerability, impact, and potential dollar losses of flooding on the jurisdiction.

“I am all for increased sharing of data between EMs and the NWS, via our storm reporting forms online or any other way we can get the information. The bottom line and of most importance to us is that we get the information from Emergency Managers.”

--Robert Molleda NWS

Maintaining Local Flood Data

The format of historical records needs to be accessible and comprehensible. It can be modified or updated as needed. In addition to historical flood data, any new or current data available should also be kept on record, along with any reports generated, indicating potential future impacts in flood-prone areas.

There are several means of storing flood data. Newspaper clippings categorized and arranged by date or severity of impact in a file drawer provides a simple and straightforward method, but these data also have the possibility of being incomplete and difficult to analyze. The articles will have to be read and the reader will have to think about trends represented in the articles without the assistance of analytic tools. Improving upon this technique, the county might highlight the pertinent data from those articles and enter it into a spreadsheet. Using this method provides data in a tabular format that can be quickly sorted and analyzed. County, community, and jurisdictional personnel may submit standardized flood reports to a centralized collection point where they are filed or entered into a spreadsheet.

A comparison of FEMA's repetitive loss records will also show how a particular flood event impacted insured structures in the community.

Critical Facilities List

Current Local Mitigation Strategy plans include vulnerability assessments for critical facilities and a quantification of potential losses. The type and number of buildings is addressed. This can be accomplished by creating a table that lists buildings and assets by category, the number of assets in the category, and the total dollar value of potential losses. Possible categories could include public buildings, privately owned critical buildings, bridges, electrical infrastructure, sewer infrastructure, etc. Critical facilities are “activities and facilities [where] even a slight chance of flooding is too great a threat.”⁹

This can be a daunting task for a small jurisdiction and may be subject to a high degree of error. One method for increasing the accuracy and usefulness of this required action involves data collection. The primary step is to assign data collection to the appropriate authority. Once the authority has begun data collection, record the data on one spreadsheet document for the LMS working group. Information to collect on each structure might include:

- name of structure,
- address,
- 10-digit US National Grid (USNG)
- grid location (NAD 83 Datum),
- latitude and longitude (decimal),
- parcel ID number,
- owner/responsible department,
- importance of structure/nature of criticality,
- hazard vulnerability rating for the structure (for each hazard in plan),
- planned mitigation actions, and
- desired risk rating after mitigation (see Table 6).

"Critical facilities:

- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic and/or water-reactive materials;
- Hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a flood;
- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for flood response activities before, during, and after a flood; and
- Public and private utility facilities that are vital to maintaining or restoring normal services to flooded areas before, during, and after a flood.”

— CRS Coordinators Manual, 130-2

Recommended Integration Practices: Strengthening the FMP Portions of the LMS
Florida Division of Emergency Management and Florida Planning and Development Lab

Name of Structure:									
Owner/Responsible Department:							Phone #:		
Nature of Importance/Criticality:							Email:		
Location:									
Address:-				10-digit USNG (NAD83 Datum)-					
				Lat/Long (decimal)-					
				Parcel ID Number-					
Flood: \$\$		Fire:		Wind:		Hurricane: (F) (W) (C.)			
Hazard:	Hazard Assessment	Pre-Mitigation Hazard Vulnerability	Mitigation Measure	Measure Priority (ranking from LMS projects list)	Post-Mitigation Hazard Vulnerability	Date Mitigation Achieved	Current Potential Loss	Acceptable Risk Level	
Flood	High	High	none		N/A	N/A	\$\$\$\$	Low	
Flood	High	High	Flood proofing		High	xx	\$\$\$\$	Low	
Flood	High	High	Elevation +1BFE		Med	xx	\$\$\$	Low	
Flood	High	High	Elevation +3BFE	5	Low	current	\$\$	Low	
Flood	High	High	Relocation		None	xx	0	Low	

Table 6: Critical Facility Record

While collecting information with this degree of detail will be time-consuming, once collected, the spreadsheet will provide a clear direction-setting framework with mid-term objectives that can be easily adapted to meet LMS plan requirements. Organizing data into a readily referenced, easy to read format, will also aid in the completion of grant applications and has the potential to quickly satisfy several LMS elements: 201.6(c)(3)(i), 201.6(c)(3)(ii), 201.6(c)(3)(iii), and 201.6(c)(3)(iv).

A structured all-hazard process applied to each critical facility helps relate projects to hazards, goals, objectives, and policies. Defined relationships alter the nature of the LMS plan by making it more dynamic. Comparisons of current risk assessment status to acceptable risk levels will also provide a metric for evaluating plan implementation and achievement of goals.

The Federal Emergency Management Agency’s (FEMA) Risk Assessment Database v.5 is another useful tool for conducting critical facilities/infrastructure risk analysis. The database is supported by an instructional web-based class “IS-395 FEMA Risk Assessment Database” available via the Emergency Management Institute, Independent Study website.¹⁰ This database provides a means of collecting facility data into a single database (see Figure 7). The database is complete with built-in report and summary information modules. It is a Microsoft Access based application and is customizable at the local level to reflect unique facility/infrastructure types or locally unique hazards.

The screenshot shows a web-based form titled "Create Assessment Facility Record". It is divided into several sections. The top section contains fields for "Facility Name:" (filled with "Hazardville Information Company"), "Org Name:" (filled with "HIC"), "Address1:", "Address2:", "City:", "St:" (a dropdown menu), and "Zip:". To the right of these fields is a "Default Facility Image:" dropdown menu and a "Facility Descriptive Text:" text area. A placeholder box on the right says "No Image Available". Below this is a tabbed interface with three tabs: "Assessments" (selected), "Building Specs", and "Available Documents". The "Assessments" tab contains fields for "Assessment Location:" (filled with "Hazardville, WV"), "Assessment Date:" (filled with "5/24/2010"), "Assessment Type:" (a dropdown menu filled with "Rapid Visual Screening"), and "Assessment Folder Name:". To the right of these are fields for "Entered By:", "Modified By:", "Enter Date:" (filled with "5/25/2010"), and "Modify Date:". At the bottom left is a "New Facility" button. At the bottom right is a "Close" button, which is highlighted with a red box. A callout box with a blue border and white background points to the "Close" button, containing the text: "Once you have completed all the fields, left click on **Close**." Below the form, there is a status bar with a "Required Field(s)" indicator and a "For Help, Press the F1 Key" message.

Figure 7: Critical Facility Database. Source: Screenshot from FEMA's "Risk Assessment Database" version 5.

Substantial Damage Estimator (SDE)

The federal government, through the National Flood Insurance Program (NFIP) implemented by FEMA, sets minimum floodplain management standards to be met by participating communities wanting to purchase flood insurance. To comply with the NFIP, new development occurring in areas designated as Special Flood Hazard Area (SFHA) by FEMA must adhere to the local flood damage prevention ordinance. In addition to new development, existing structures that are proposed to undergo substantial improvement or be repaired from substantial damage in a SFHA must be brought into compliance with current flood maps. A substantial improvement or repair from substantial damage (SI/SD) occurs when the cost of improvements or repairs to an existing structure is equal to or greater than 50% of the **fair market value** of the structure at the time of the improvement or immediately prior to the damage it sustained.¹¹

FEMA developed the Substantial Damage Estimator (SDE) software to record damage to both residential and non-residential structures in the event that a disaster damages a structure. This software is free and enables a knowledgeable local official to provide a fairly accurate cost estimate of the damage a structure sustained by recording their observations in the program. It is based on the regulatory requirements of the NFIP and while using this software is not required, FEMA has prepared the software to assist local officials tasked with this duty.¹²

Santa Rosa County maintains FEMA's Damage Estimator Database on a continual basis, allowing them immediate access to an incredible wealth of data for use in estimations of extent, impact, and vulnerability. While initially time consuming to enter the data, it provides a tremendous advantage in expediting the substantial damage estimate when time is of critical importance. (FEMA recommends that the estimate be completed within two weeks of the occurrence of a disaster.) It also simplifies the process of maintaining data, offers a prescribed method of estimating substantial damage, and provides practical and defensible building values and damage estimates. (For additional information see <http://www.fema.gov/library/viewRecord.do?id=4166>)

Damage Assessments

Damage assessment is defined as “the evaluation or determination of losses, harm and injuries to persons, property or the environment.”¹³ As part of the recovery phase of emergency management, representatives from the federal, state, and local governments as well as Non-governmental Organizations (NGOs) perform a variety of damage assessments. As part of that process an assortment of sheets or forms are completed.

The county's emergency manager often completes the initial damage assessment. For many events, this is the only action required. However, for larger storm events federal and state officials travel to the impacted area for a joint preliminary damage assessment. Preliminary damage assessment, defined by FEMA, is “a joint assessment used to determine the impact of an event's damage.”¹⁴ A joint preliminary damage assessment is designed to be a cooperative effort among federal, state, and local officials to verify the *impact* and *cost* of a disaster; and specifically whether those *costs/impacts* warrant federal assistance. Local individuals participating in the damage assessment have the responsibility for assisting, compiling, and completing damage assessment data. The focus during any preliminary damage assessment (PDA) is to determine the impact of an event's damage. The purpose of conducting a local damage assessment is multi-faceted, local assessments:

- determine the severity or magnitude of the event,
- to quantify the amount of homes and businesses impacted, and
- to determine whether local resources will be sufficient to effectively respond to and recover from the event.

In addition, each county in Florida has at least one person who participates in a mitigation assessment team according to procedures set forth in the county's Comprehensive Emergency Management Plan. The purpose of the mitigation assessment team is to identify areas impacted by the disaster and recommend mitigation projects to avoid future damages.

States often advise that local damage assessors focus on degrees of damage (i.e. Affected, Major, Minor, Destroyed, etc.) and habitability. In addition, for a flood event the state specifically endorses looking for a waterline or debris line, to determine the depth of flood waters. States also recommend certain roles and responsibilities for local officials during the preliminary damage assessment, such as:

- bring a list or map of areas/sites,
- coordinate the visitation of affected areas so that the greatest damaged locations are visited first and least damaged places are visited last,
- identify a place to meet,
- escort state and federal officials, and
- dedicate adequate staff.

Upon returning from a damage assessment the county official would be able to enter field data in a digital format. Keeping digital records allows for easier storage and referencing. If a county is interested in having access to additional data collected by a Florida Division of Emergency Management (FDEM) representative (particularly street address and flood depth collected during the Joint Preliminary Damage Assessment) to use when building a local database of historic flood events, that county can contact the Recovery Bureau of FDEM and request access to this information.

For the last three years FDEM has used a standardized format for collecting this information. FDEM stores the data in the Microsoft Excel format referred to as the Individual Assistance Preliminary Damage Assessment (IA/PDA) data template. The county will not be able to obtain access to this information the day after the joint PDA, but after the FDEM Recovery Bureau Chief's approval (which is usually not more than one day after the joint PDA) the Division of Emergency Management will provide this information to the county if requested.

There are a few clarification points that should be added. The state does not use a tape measure to measure flood depth, it is "eye balled" from the joint PDA vehicle or vessel. New technology will provide for better data collection, particularly for photos and location identification (NGRS 10-digit), in the near future. Over the long term, this method of data collection will be a primary resource for counties. It will enable extensive flood histories to be built. Proper data collection and storage will enable informed actions with respect to mitigation.

Record of Dams

It is important for counties to compile and maintain a record of county dams and certification/re-certification dates. Two different approaches/resources can accomplish this: *The Florida Dam Safety Office* and *The National Inventory of Dams*. The information they can provide includes, but is not limited to: record of all county dams and locations (both publicly and privately owned), classification of dam hazard potential,

inspection dates, certification/re-certification dates, and assistance in the demarcation of potential area(s) of impact as a result of failure/release.

The Florida Dam Safety Office

Contacting the Florida Dam Safety Office, through the Florida Department of Environmental Protection will lead to the most accurate information. The county emergency manager may already have a working relationship with the Florida Dam Safety Office, and if so, a discussion with the county emergency manager might be a great place start. If the county decides to contact the Florida Dam Safety Office, the contact information for the Program Administrator with the Technical section in the Bureau of Mining and Minerals Regulation (BMMR) can be found at <http://www.dep.state.fl.us/water/mines/damsafe.htm> or

Program Administrator
Florida Department of Environmental Protection Bureau of Mine Reclamation
2600 Blair Stone Road MS 3500
Tallahassee, FL 32399-2400
850/488-8217
Fax: 850/488-1254
Email: Owete.Owete@dep.state.fl.us or Tracy.Freiwald@dep.state.fl.us

Paying attention to the security restriction of data is important. Information from the Florida Dam Safety Office may have security restrictions and it is important to be aware of what information public documents can contain.

Accurate information will enable the county to compile and create maps showing potential areas of impact from failure/release, a list of structures for each dam area of inundation/impact, and an up-to-date record of all county dams with certification/re-certification dates. Awareness of the potential for dam failure could lead to increased coordination when updating educational and public safety materials. Appropriate response to existing hazards includes the incorporation of available knowledge into the Local Mitigation Strategy. More importantly, the information will enable expanded analysis and time-appropriate action.

The National Inventory of Dams

The United States Congress first authorized the US Army Corps of Engineers to inventory dams in the United States with the National Dam Inspection Act of 1972 (P.L. 99-662). By 1975, the Corps published the first *National Inventory of Dams*, also known as NID. Over time, the Corps has established close working relationships with the FEMA and with state regulatory offices. These collaborations enable the Corps to obtain the accurate and complete data.

The contents of NID are accessible to all counties; however, they require the

user to create a password and username and that they maintain some material in a secure place. If requested to do so, recipients must destroy, remove or delete NID data within fifteen days. All of this is written clearly in the NID non-disclosure agreement.

The person who manages the database, Rebecca Ragon with the U.S. Army, can be contacted at: Rebecca.Ragon@usace.army.mil. According to Mrs. Ragon, each of Florida's counties should be able to access to the database. However, the NID database contains material that cannot be publicly accessible. Specifically, the hazard potential classification of the dams and the condition assessment are for government use only. All content can be sorted by each component (listed below); therefore, a county can easily locate all of the dams in the county from the inventory.

The US Army Corps of Engineers provides access to the *National Inventory of Dams* through the webpage <http://www.usace.army.mil/Library/Maps/Pages/NationalInventoryofDams.aspx>

The inventory of dams includes the following data: National Inventory of Dams Content	
Dam Name	Maximum Storage (Acre-Feet)
Other Dam Name(s)	Normal Storage (Acre-Feet)
Dam Former Name	Surface Area (Acres)
State or Federal Agency ID	Drainage Area (Square Miles)
NID ID	Downstream Hazard Potential*
Longitude	Emergency Action Plan
Latitude	Inspection Date
Section, Township, Range Location	Inspection Frequency
County	State Regulated Dam
River or Stream	State Regulatory Agency
Nearest City/Town	Spillway Type
Distance to Nearest Downstream City/Town (Miles)	Spillway Width
Owner Name	Outlet Gates
Owner Type	Volume of Dam (Cubic Yards)
Dam Designer	Number of Locks
Non-Federal Dam on Federal Property	Length of Locks (Feet)
Dam Type	Lock Width
Number Separate Structures	Other Structure ID
Condition Assessment*	Condition Assessment Detail
Condition Assessment Date	State Regulatory Agency
Core	Federal Agency Involvement in Funding
Foundation	Federal Agency Involvement in Design
Purposes	Federal Agency Involvement in Construction
Year Completed	Federal Agency Involvement in Regulatory
Year Modified	Federal Agency Involvement in Inspection
Dam Length (Feet)	Federal Agency Involvement in Operation
Dam Height (Feet)	Federal Agency Involvement in Operation
Structural Height (Feet)	Federal Agency Owner
Hydraulic Height (Feet)	Federal Agency Involvement - Other
Maximum Discharge (Cubic Feet Per Second)	

***Restricted to Government use only**

Table 7: Data Included in the Inventory of Dams.

Source: <http://geo.usace.army.mil/pgis/f?p=397:1:3420525583117837>

Analyzing Local Flood Data

Many county LMS plan flood sections present numerous maps identifying key information such as repetitive loss properties, flood zones, or hurricane storm surge zones. Counties also have access to the FEMA digital flood insurance rate maps (dFIRMs). These maps provide excellent data and can be a good starting point for flood hazard mitigation planning. However, many LMS plans lack a thorough analysis of flood vulnerability. Although county project lists indicate that they are aware of their susceptibility, there is often minimal documentation in the mitigation plan of impact analysis in the geographic context. Creating and maintaining a comprehensive record of this information is especially imperative in making future land use, planning and mitigation decisions.

To effectively analyze flood data collected from sources such as FEMA, flood data should be overlaid with county-specific data such population density, the location of critical facilities, etc. (see Table 8). This county-specific data is available from Geographic Information Systems (GIS) data. Programs such as Hazards U.S. (HAZUS) or Sea, Lake and Overland Surges from Hurricanes (SLOSH) can also generate maps that will identify the impacts on an area from various disasters.

Improved Data Presentation Utilizing GIS, HAZUS, and SLOSH

The following data interactions are suggestions for analyzing the data and creating useful information implemented in planning (see Table 8). Because LMS and flood-plain management plans directly assess flood damage, it is important to note that flood data is the main data source utilized. All the other data suggestions, combined with flood data, create the resultant map. For example, population data overlaid with flood data can produce evacuation requirement analyses, general flood risk assessments, or shelter use potential. Note that this is not an exhaustive list; some suggestions may not be applicable to every circumstance. Similarly, there might be additional data sources that might be useful to a community.

Data Set	+	Data Set	Overall Product
Flood Data (hurricane inundation zone, dFIRM, Dam Failure Impact Area)		Population Density	Evacuation analysis, General Flood Risk Assessment, Shelter Use Potential and Capacity Requirement Determination
		Property Value	Budgeting, Flood Mitigation, Special districting, Impact Assessment
		Critical Facilities (Hospitals, Jails, EOCs, Government Offices, Sewage lift stations, Power substations, Buried lines)	Mitigation Project Identification, Project prioritization
		Population Density with evacuation routes	Evacuation constraints, Shelter capacity, Potentially isolated populations/critical facilities
		Hazardous Materials	Risk assessment maps for hazardous material sites located within the floodplain, potential spill maps if leakage occurs in the event of a flood

Table 8: Proposed Data Interactions

GIS software uses a map overlay technique to show simple geographic hazard interactions. To achieve this, display two or more data sets on the same map. The relationship between the sets of data is beneficial in answering mitigation questions. For example, which structures in the community need to be mitigated or how should mitigation measures be prioritized? Using a multi-layer mapping approach can help planning personnel visualize how a flood might impact the community and which areas should be made high priorities for mitigation activities.

The resultant maps will help present data in a way that is especially useful for training new personnel or educating the public. Viewing hazards with other map data allows emergency management officials, policymakers, and community members to see the lives, property, and environmental values that are at a high risk from a potential emergency or disaster. This overall linkage of people, processes, and information is situational awareness. This awareness allows emergency managers to formulate mitigation, response, and possible recovery needs for the community as a whole.¹⁵

Using GIS for Repetitive Loss Properties

Currently LMS plans are required to discuss NFIP insured structures that have been repetitively damaged by floods. Elements required to be discussed are the type and number of structures as well as their vulnerability to the flood hazards. LMS plans typically meet this requirement by including a table that lists all participating jurisdictions, the number of properties and type of repetitive loss structure (i.e. residential, commercial, industrial). Under the Privacy Act of 2004 (5 U.S.C.552a), large fines can be levied for the release of names or specific addresses of repetitive loss properties. However, this does not prohibit jurisdictions from mapping repetitive loss properties. In order to include repetitive loss property maps into a public document, the maps must be drawn at a scale so that a member of the public cannot explicitly tell which house is the repetitive loss property. By exploring repetitive loss properties using GIS, communities can identify locations where repetitive loss properties are in high concentrations and can choose to focus mitigation outreach and projects in those areas. An example of a repetitive loss map that could be included in the LMS and used for the purposes of geographic analysis can be seen below in Figure 8. To acquire the most recent repetitive loss data, contact the state floodplain manager: Floods@em.myflorida.com or (850) 413-9960.

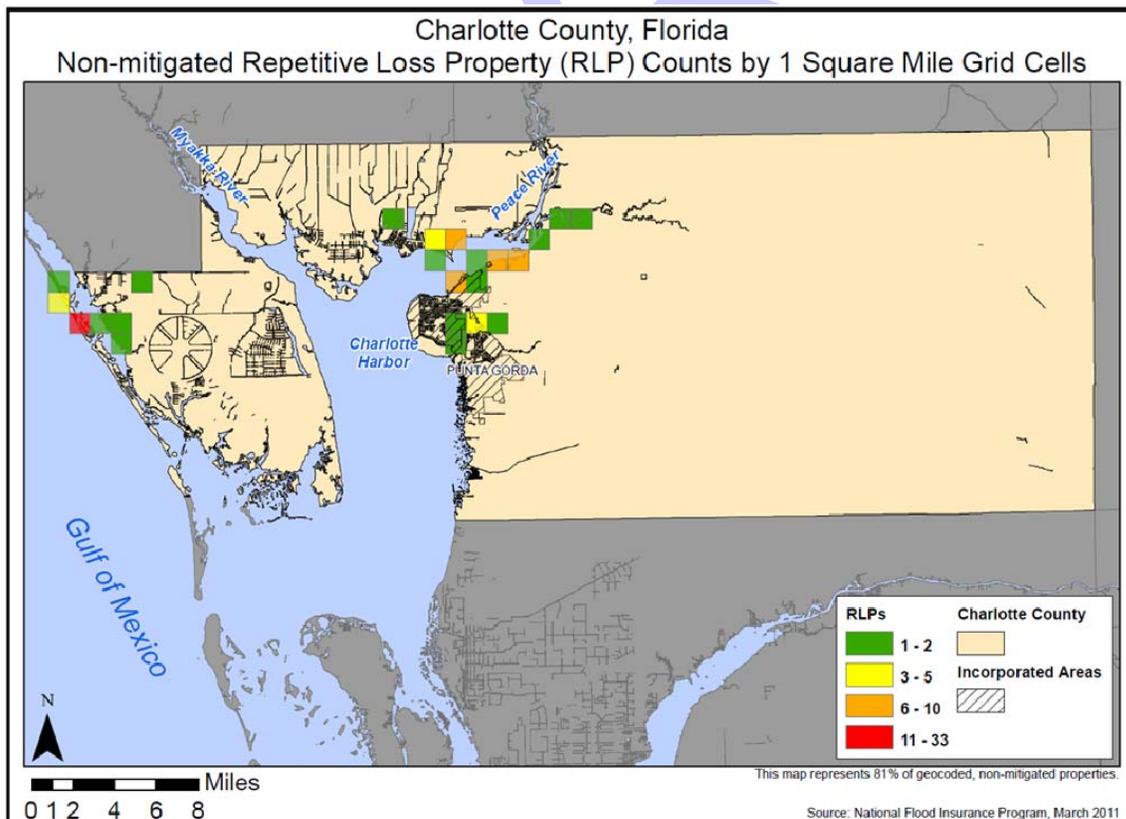


Figure 8: Example Repetitive Loss Map, Charlotte County, Florida.

HAZUS

“HAZUS is a nationally applicable standard methodology that contains models for estimating potential losses from [hazards].”¹⁶ This methodology utilizes GIS “to estimate physical, economic, and social impacts of disasters.”¹⁷ It assists users in visualizing “the spatial relationships between populations and other more permanently fixed geographic assets.”¹⁸ HAZUS is important in multiple ways and can be utilized in every phase of the emergency management process. Floodplain and emergency managers, public officials, and other stakeholders who have the shared responsibility of community protection from floods are the intended users of this program, however, anybody with access to and extensive knowledge of ArcGIS can make use of the program. Users can download further instructions as well as order the most recent version of HAZUS on FEMA’s website at http://www.fema.gov/plan/prevent/hazus/hz_resources.shtm. Please note that knowledge of and access to the ArcGIS program is necessary to use the HAZUS software.

Within the State of Florida, there is a group that provides HAZUS support called the Florida HAZUS User Group (FLHUG). This group is a forum where local and state emergency managers get together with FEMA to communicate, coordinate, and collaborate on important projects, data development and support with the use of HAZUS across the state. For additional information, see <http://flhug.hazus.org/>.

While HAZUS is a very comprehensive model, it does not have the capacity to produce storm surge modeling. The *National Oceanic and Atmospheric Administration* (NOAA) has a tool, SLOSH, which produces independently and simplified estimates of storm surge. HAZUS models now have the ability to utilize this tool for potential storm surge impacts. The model estimates storm surge heights and winds by taking into account pressure, size, forward speed, track, and wind data extracted from the National Hurricane Center.

Importance of Collaboration

Dialogue and a proper understanding of the roles and responsibilities within the wide variety of organizations, agencies, and professionals associated with flooding are crucially important. In particular, three different groups will be discussed in the following section: Water Management Districts (WMDs), Regional Planning Councils (RPCs), and the National Weather Service’s Weather Forecast Offices (WFOs).

Water Management Districts

There are five Water Management Districts in the state of Florida. (See Appendix H for a map.) Created in 1972 by the Water Resources Act, each district is unique. Their roles include: involvement in educating the public about water conservation,

setting rules for water use, conducting research, collecting data, buying and managing land, restoring and protecting water above and below the ground, and preserving natural areas.¹⁹

One annual briefing concerning how the ecosystem actually works is a great place to start. For example, each water management district manages a unique environmental system, often comprised of multiple interrelated systems. The South Florida Water Management District (SFWMD) is unique in that the system is entirely managed and controlled “from Orlando to the Florida Bay.”²⁰

For more information, visit <http://www.dep.state.fl.us/secretary/watman/>

Regional Planning Councils

There are eleven Regional Planning Councils (RPCs) in Florida. (For a full list of RPCs in Florida and a map, see Appendix J.) RPCs are regional entities recognized by the State of Florida. Their purpose is the following:

- To support their regions by planning and coordinating intergovernmental solutions to growth-related problems,
- To protect regional resources,
- To promote economic development and provide technical assistance to local governments, and
- To meet the needs of communities across the region.²¹

The role of RPCs in floodplain management and in the creation of LMS and FMP plans is not well defined. Primarily, the RPCs provide technical assistance by creating documents, such as the Strategic Regional Policy Plan, and the Regional Directory. Each of these documents can serve as resources when creating the LMS and FMP plans.

County Coalition

Regional coordination is a vital aspect to improving mitigation and flood management plans. While counties have clear boundaries, many environmental hazards do not, which accentuates the importance of regional cooperation. An example of regional coordination in Florida can be seen with the County Coalition, a partnership between several southern counties. It provides proof that county relationships can be built and strengthened through regular meetings and with the assistance of external resources.

This County Coalition involves the central and southern Florida counties of Glades, Hendry, Highlands, Lee, Martin, Okeechobee, Osceola, Palm Beach and St. Lucie Counties. The main purpose of this group is to provide advice to the United States Army Corps of Engineers and the South Florida Water Management District on issues concerning the management of Lake Okeechobee, the St. Lucie and

Caloosahatchee estuaries, and Lake Lagoon. Some examples of guidance the Coalition recommends include water releases, project implementation, and dike improvements.

While this group does not complete tangible projects, it provides a forum for discussion for projects that can be completed in each county. The coalition meets quarterly, providing a frequent, regular schedule and forum for which regional water resource issues can be discussed. The forum also provides a structured way for counties to network with the US Army Corps of Engineers, the SFWMD and Florida Department of Environmental Protection (FDEP) on a consistent basis. The established relationships can assist counties in utilizing resources that might not be known otherwise.

Flood Subcommittee

One critically important step in successful collaboration is to identify individuals who are available and willing to help. Perhaps there are people or agencies who can (and will) complete pieces of the plan or plan research and analysis. Many counties struggle with limitations of resources: staff, time, and money and therefore working together when possible might ease the burden of a daunting task. Communities may already have a flood mitigation task force, but if not, consider the creation of a separate flood subgroup/subcommittee as a part of the LMS working group.

One individual could serve as the head of the subcommittee or the “flood chair”. This person would organize meetings, define roles and responsibilities, and report subcommittee decisions to the LMS working group. The flood chair could be the only person from the flood subcommittee who is a member of the LMS working group. The sub-group could address several topics including:

- update the risk assessment,
- discuss recent trends,
- reassess hazard ratings,

“A planning committee is strongly recommended. By involving those who will be most affected by the planning, the community will get a more realistic product that will have a much better chance of being adopted and implemented. Community departments that should be represented on the committee include:

- **Building department/code enforcement**
- **Engineering**
- **Land use planning/zoning**
- **Public works**
- **Emergency management/public safety**
- **Public information**
- **Environmental protection/public health**
- **Parks/recreation”**

— CRS Coordinator’s Manual, p. 510-6

- update data about flood occurrences from the past year,
- review of flood ordinances and the potential impact of new development, and
- discuss/identify projects needed to address potential/existing vulnerabilities.

The major role of the subcommittee is to incorporate, recommend, and update the flood risk assessment, vulnerability analysis, and any floodplain management practices into the LMS. The primary reason for addressing the flood section through a subcommittee is to efficiently manage, debate and present facts and assumptions to the LMS working group. Additional benefits of a subcommittee are represented through both technical and interpersonal communication. For example, the smaller group setting can focus work and encourage efficient use of time. The smaller group provides an opportunity to build stronger working relationships. In Miami-Dade for example, subcommittees are formed as needed to streamline the working group's activities and serving on a subcommittee may act in lieu of attendance at a LMS meeting.

Potential members of this committee would include a representative from the planning department (zoning/building/development) familiar with the existing flood ordinance, the floodplain manager, and a representative from public works. In addition, interested citizens representing the business community or homeowners' associations would also be welcome but in a clearly defined role. Other agency experts may be invited to present information to the working group. These individuals may act in an advisory capacity as it appears unlikely that they will have the amount of time available to commit to full working group membership. In fact, discussions with a particular water management district clarified this exact point: they do not have time to attend all quarterly working group meetings for each associated county.

The water management districts can make an important contribution to the working group or flood sub-committee as technical advisors. For example, the St. Johns River Water Management District (SJRWMD) manages a program called "flood credit assistance" that "...provide[s] documentation on as many [CRS] credits as possible to local governments. The Community Rating System (CRS) credits can result in flood insurance premium reductions of up to 45%."²² The South Florida Water Management District provides flood credit assistance as well. Consultation with the Water Management District could increase regional awareness and result in a stronger LMS plan and savings to the communities and citizens.

When preparing for each flood subcommittee meeting, it is imperative to provide materials that will save time, avoid confusion, and streamline clarity. Please note this list of materials is not exhaustive and can change depending on the specific needs of each county. Here are some items to consider:

- Having a **GIS enabled computer** is important so that attendees of the meeting are able to visualize spatial relationships, potential project locations, and

specific information related to zoning, future land use, existing ordinance, proposed ordinance, properties, or structures.

- The community's **current flood ordinance** is a vital piece to bring to the meeting so that members understand the boundaries to what is/is not allowed and prohibited in the community.
- The **existing zoning code** is useful in a similar way as the flood ordinance. It informs attendees on the current state of affairs.
- The current **list of prioritized mitigation projects** (in combination with flood-specific mitigation projects) is another document that would be useful to bring. This list is important because it outlines the projects the community has chosen to include in the LMS document; these projects are eligible to receive mitigation funding. Understanding where flood projects fit in the priority of this list can be useful, especially for the flood chair when comparing compatibility with and competition for limited resources to be applied to flood priority projects.

The conceptual five-year calendar (see Figure 9) is roughly based upon a series of conversations conducted with Collier County's CRS Coordinator, Robert Wiley. Their county's meeting schedule enabled frequent updates and revisions to the LMS. The suggested times for the subcommittee meeting are based solely on the dates associated with the particular hazard. Plan the planning cycle around known competing demands for personnel of interest and use the review of policies and plans inherent to the planning cycle to increase personnel plan familiarity prior to danger periods:

- Floods -- the suggested month is before the annual highest rainfall months of June – September;
- Wildfire -- the suggested month of the subcommittee meeting is before the worst months for fire: January – July;
- Hurricane -- the suggested month of the subcommittee meeting is before the hurricane season: June – November.

Continuous planning enables the LMS working group to remain abreast of changes in their communities that impact the LMS plan. The LMS working group could monitor implementation and record suggestions for changes in the plan to be considered during the next planning cycle.

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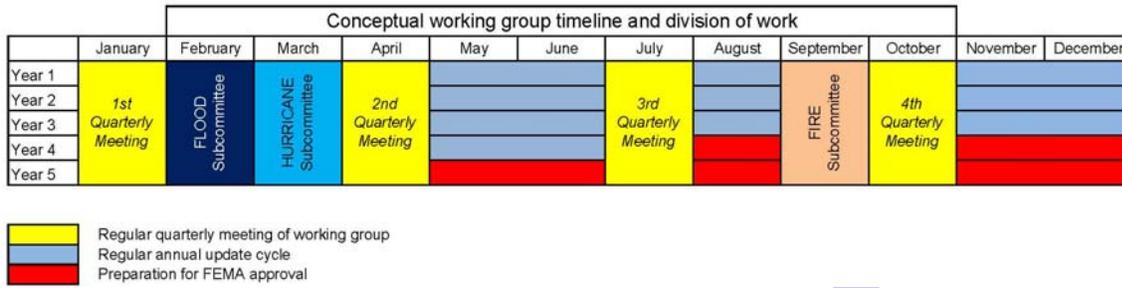


Figure 9: Conceptual Working Group Meeting Schedule.

Regular quarterly meetings would continue as normal. However, the materials discussed in subcommittee meeting could be presented to the group by the head of each subgroup. This process should enable significant time savings. Specifically, the flood chair might present a summary of relevant materials on which a consensus has already been achieved during flood subcommittee meetings. By dividing some of the LMS committee’s business, points of internal flood coordination that have no impact on other hazard planning can be streamlined and completed in the absence of the full LMS committee, saving time for all involved.

Part II: Integrating a Stand-alone Floodplain Management Plan into the Local Mitigation Strategy

Methods of Plan Integration

Two methods for plan integration will be discussed that may be beneficial to counties, communities, and jurisdictions. The different options are based on the depth to which communities, and jurisdictions wish to integrate plans. Cross-referencing is one option for plan integration. This option provides integration with minimal duplication and preserves the independence of both plans and their planning processes. The second method of integration described is a complete integration of the Community Rating System (CRS) plan and the Local Mitigation Strategy (LMS) into a single document. The same process can also be used to integrate a stand-alone Flood Mitigation Plan (FMP) into the LMS. Although these options are geared towards the integration of the CRS/FMP and the LMS, the following methods can be applied to the integration of other plans. The described methods each have their own strengths and weaknesses as well as varied degree of integration and each may present planning participants with different levels of political complexity.

Method 1: Integration by Cross-Referencing

Comprehensive plan cross-referencing is one method for plan integration. The purpose of a cross-reference is to bring important information located in another document to the attention of the reader. A properly executed cross-reference should briefly summarize the material being referenced followed by a document name, section or chapter number, and edition number or year published so that the reader may locate the referenced document for a more complete discussion of the information being referenced. In some cases, planners could also provide web links to the referenced documents. Cross-referencing has the benefit of making the connections between county, community, and jurisdictional documents explicit and works best when both documents cross-reference each other. The importance of mutual cross-referencing is best illustrated during plan maintenance when changes to one plan have cascading effects on content and cross-references in other plans. This is the reason for cross-referencing by section or chapter number versus page number. The explicit cross-references also assist planners during conduct of regular business by highlighting plan linkages and lessening the probability of plan changes being made that conflict with other planning documents. Cross-referencing is an explicit means of satisfying 44 Code of Federal Regulations (CFR) requirement 201.6(b)(3): describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. Cross-referencing

also helps meet requirement 201.6(c)(4)(ii):

Identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan.

Include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (e.g. risk assessment) into other planning mechanisms.

Explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g. risk assessment) into other planning mechanisms, when appropriate.

Plans Important to the LMS Process

In developing flood mitigation plans several other plans should be considered that may influence the mitigation plan. These plans are listed below followed by a brief description regarding what each plan entails and how it might be significant in the development of the mitigation plan.

- **CEMPs** or Comprehensive Emergency Management Plans – an operations plan outlining how the state or local community will respond to emergencies and disasters. These plans describe the various types of emergencies that can occur and the organizational structure of the emergency management program. The plan establishes direction and control of the program and coordination between municipality, county, state, and federal agencies, and outlines actions necessary under the four phases of emergency management (preparedness, response, recovery, and mitigation).

All counties, except those that are part of an inter-jurisdictional emergency management agreement, are required to have a CEMP under state law. Because CEMPs cover all communities within a given county, municipalities do not have to prepare their own, although some choose to do so.

- **Comprehensive Plans** – policy plans designed to guide land use decisions, growth, and development. They include five-year capital improvement plans. In 2005, the Department of Community Affairs advocated the incorporation of hazard mitigation principles from the Local Mitigation Strategy plan into each county's Comprehensive Plan. The relationship between the mitigation plan and the Comprehensive Plan is integral. The risk assessment portion of the LMS identifies hazards and risks confronting the community. This information is then used to determine and prioritize mitigation actions that can be implemented to minimize destruction and loss from hazards. The findings from this assessment are vital as the county renders land use decisions and determines how they should best grow and develop in the future. By incorporating information from the hazard vulnerability and risk assessment, the county can prevent any unnecessary damage and loss to its properties.

- **CIPP** or Critical Infrastructure Protection Program – develops a plan to protect the resources and infrastructure of an area that are vital to its ability to function on a daily basis. This plan is analogous to the LMS in that it identifies the critical facilities in a community. It should be consulted when preparing a mitigation plan to ensure that all vulnerable facilities and infrastructure are protected in the event of a disaster.
- **PDRPs** or Post-Disaster Redevelopment Plans – mixed plans that include both an operations for recovery as well as policies for the reconstruction process following a disaster.

Some focus on policies for post-disaster recovery and reconstruction, which often are covered in the comprehensive plan as part of the coastal management element. (There is substantial overlap of important data and analysis from this element.) Others are predominantly post-disaster operations and overlap substantially with the “Recovery Annex” of the CEMP. Some are mixed, devoted to both recovery operations and policies for guiding recovery decisions.

PDRPs have the greatest utility in implementing hazard mitigation initiatives during redevelopment and reconstruction. By guiding action and decision-making during the disaster recovery period, these plans provide a vital link between mitigation and development. Coastal communities are currently required to include an objective in the coastal management element stating the intention to prepare a PDRP. In Florida, the PDRP is only required for coastal communities.

The PDRP distinguishes between two types of action: a) immediate repair and clean up actions needed to protect public health and safety and b) long term repair and redevelopment activities. The plan addresses the removal, relocation, or structural modification of damaged infrastructure. In addition, these plans may limit redevelopment in areas of repeated damage. Thus, the PDRP relies heavily on information presented in the floodplain management plan (FMP), LMS, and Community Rating System (CRS), plan and should integrate information from these documents into redevelopment plans.

- **L RTPs** or Long Range Transportation Plans – capital plans for transportation infrastructure. These plans use a time horizon of 20+ years to guide investment of public funds in multi-modal transportation facilities and are updated every five years. Plans provide the context for the region’s Transportation Improvement Program (TIP), which is a short-range capital improvement program for implementing highway, transit, and bikeway projects. Similar to the Comprehensive Plan, the LRTP relies heavily on the plausible location for potential disasters and the impacts of past disasters to locate areas that need improvement in future plans as well as areas that should be avoided for future projects if they are prone to flooding or other disasters.

- **Strategic Regional Policy Plan** – is a document that provides a “holistic, comprehensive approach to building a region from the identification of its largest physical environmental features to the arrangement of the block, street, and buildings of the smallest increment of built environment.”²³ Specifically, one of the purposes of the document is to outline goals and policies that address emergency preparedness problems and needs of the regions, which might be useful for those creating a FMP or LMS plan.
- **Regional Directory** – contains up-to-date contact information for many individuals and agencies, with the benefit of a specific focus from the associated region. The South Florida RPC updated its document as recently as March 2011. The Northeast Florida RPC and the North Central Florida RPC both have this document and it is easy to locate on the webpage. This document would be useful to locate the correct contact person when creating or updating local plans.

(Note: While this list is not exclusive, it does provide a starting point for counties to obtain additional pertinent information to incorporate in their integrated LMS/FMP.)

Method 2: Integrated Planning

Integrating the Community Rating System (CRS) plan with the Local Mitigation Strategy (LMS) plan creates a single unified plan. The integrated plan provides greater benefit from a single product and eliminates the need for two separate documents, updated on two separate planning cycles while causing people to meet two separate times on potentially similar information. Having one plan will make the community eligible for both a reduction in flood insurance premiums while still allowing communities access to federal mitigation funding.

“It is recommended that the local planner review all of these [CRS and LMS] 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.”

— CRS Coordinator’s Manual, p. 510-4

The CRS coordinator’s manual outlines a ten-step planning process under Section 510 that must be met to receive the maximum amount of credit possible for having a plan. Alternatively, following the completion of an abbreviated five-step process, communities that conduct a Repetitive Loss Area Analysis (RLAA) may receive partial credit as opposed to the maximum amount for completing all 10 steps. The maximum amount of points awarded for a RLAA is fifty (50) points; as opposed to a possible 294 points for a floodplain management plan (CRS Section 510) that adheres to the ten-step process.

The purpose of this integrated planning process is to assess the similarities and differences between the two plans and illustrate how both can be integrated into one plan, meeting the requirements of both the CRS and LMS. To accomplish this, a series of figures and tables have been developed to provide guidance.

The figures and tables below (labeled “Integrated Plan Development” and “Integrated Plan”) depict an integrated planning process, in a step-by-step format, that combines both the CRS and LMS requirements. The images illustrate how the planning process has been adapted from the two plans and the tables outline the requirements included in the integrated plan to meet the criteria for both the CRS and LMS plans.

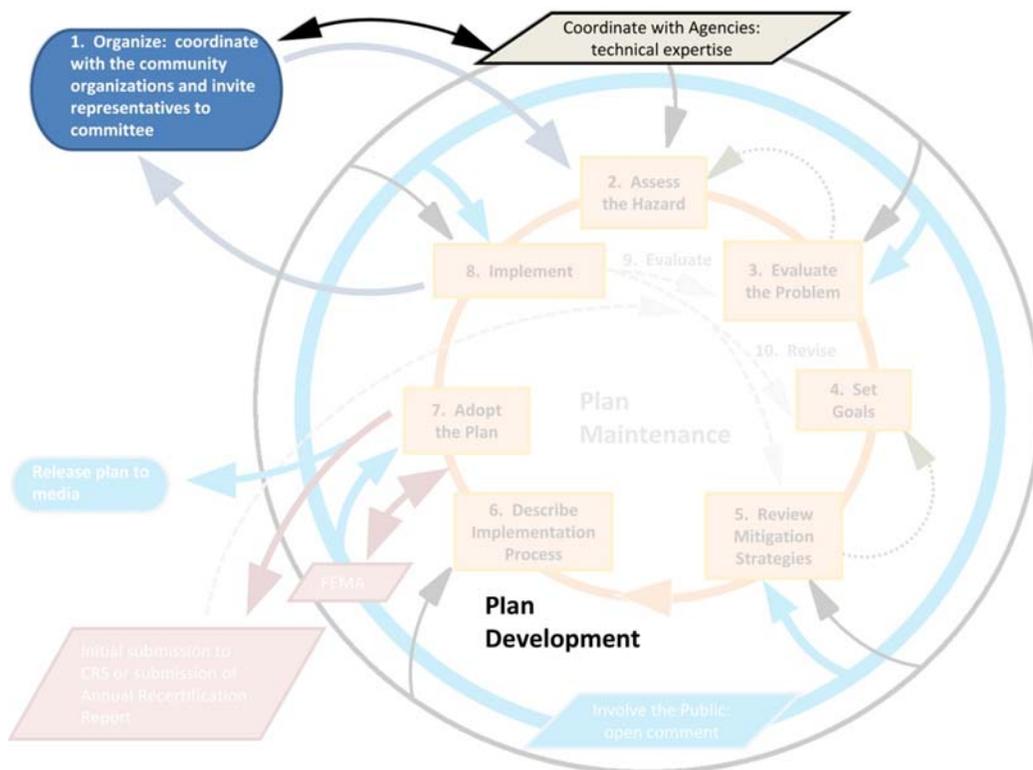


Figure 10: Integrated Plan Development Step 1 – Organize

Step 1: Organize

The first step in the integrated process is to organize (see Figure 10). This step is conceived as the “planning to plan” step. During this step the planning committee organizes to

- determine their purpose and define members’ roles and responsibilities,
- analyze the problem,
- determine areas of expertise outside the committee that need to be included and when that should occur,
- determine how and when to involve the public,
- review and analyze the existing plan in preparation to update it, and
- collect necessary documents and information such as *digital Flood Insurance Rate Maps* (dFIRMs), critical facility lists, inundation maps, and current and future land use maps.

This step should include a written description of how the process was planned, how the committee is organized, and how the public will be involved. Table 9 illustrates

Planning process comparison:

	LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps
Phase I - Planning Process	201.6(c)(1)	4a. Provide a narrative description of the planning process followed during plan preparation	1. Organize	(1c) If the planning process/committee is formally created or recognized by action of the community's governing board (2 points).	1. Organize
	201.6(c)(1)	4b. Indicate who was involved in the current planning process and how		(1a) If the process is led by a professional planner (2 points).	
				(1b) If the process is conducted through a committee composed of staff from community departments responsible for implementing the plan (6 points).	
	201.6(c)(1)	4f. Document how each section of the plan was reviewed and analyzed as part of the update process			

Table 9: Integrated Plan Step 1 – Organize.

which criteria from the CRS and LMS plans are met in this first step. The steps listed in **all** tables below have been adapted from the CRS coordinator’s manual and the LMS Crosswalk in the *Local Multi-Hazard Mitigation Guidance* prepared by FEMA, July 1, 2008.

Table 10 on the following pages depicts the involvement of the community and technical expertise throughout the planning process and what the committee should document to meet the CRS and LMS criteria. Note, these steps are listed as steps 2 and 3 in the CRS process, however, in the integrated process they are interjected as needed by the committee and not given a formal step number.

In the corresponding figures, the outer blue ring represents the public involvement and suggests steps where their input might be considered beneficial. The committee may determine that public involvement is necessary in other steps of the planning process. Similarly, the outer black ring represents the input from technical experts. Again, it is the committee’s responsibility to determine which technical experts’ input is needed and when. It is very possible that at one meeting input from the Water Management District is imperative while at another meeting input from both the Engineering Department and Water Management District is necessary. What is important to note is that while technical expertise will be needed throughout the process, the

presence and input from every technical expert will likely not be necessary at every meeting. For example, if the committee meets to discuss ways to mitigate flooding on a highly used section of a major highway running through downtown, it would be important to have engineers there but not someone whose expertise is in recreating habitats for threatened or endangered species. The committee should determine in the first planning process step when input from various experts and the community will be appropriate.



Planning process comparison:

	LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps
Phase I- Planning Process	201.6(b)(1)	4c. Indicate how the public was involved during each stage of planning process	2. Involve the public	(2) The process must include an opportunity for public comment during drafting and before plan approval.	Embedded in steps 1-10.
				(2a) If 50% of the planning committee in step 1 is comprised of members of the public and those members are involved in steps 4-9 (e.g. one meeting per step with public member involvement) (40 points).	
				(2b) If one or more public information meeting is held in affected area at beginning of process to obtain public input on natural hazards, problems, and possible solutions. (At least one of the meetings must be separate of item a)(15 points).	
				(2c) For holding at least one public meeting to obtain input on draft plan at the end of the planning process and no later than 2 weeks prior to plan submittal to community governing board (15 points).	
				(2d) If questionnaires are distributed to at least 90% of floodplain residents asking the public for information on natural hazards, problems, and possible solutions (5 points).	
				(2e) 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 points).	

Table 10: Integrated Plan—Involving the Public and Technical Experts.

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Planning process comparison:

LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps	
			(2f) If other public information activities are implemented to explain the planning process and encourage input to the planner or planning committee (5 points).		
Phase I- Planning Process	201.6(b)(2)	4d. Discuss coordination with: neighboring communities, agencies, businesses, academia, nonprofits, and other parties involved in planning process	3. Coordinate	(3b) Neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests are given an opportunity to be involved in the planning process (1 point).	Incorporated in step 1 or embedded in steps 1-10.
				(3e) If the coordination effort includes holding 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 (10	
				(3f) Sending the draft plan to the agencies and organizations contacted under (b),(c),(d),(e) and asking them to comment by a certain date (3 points).	
	201.6(b)(3)	4e. Describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information		(3a) Describe the review of existing studies, reports, and technical information and of the community's needs, goals, and plans for the area (3 points).	
	201.6(a)(3)	3a. Describe how each jurisdiction participated			
	201.6(a)(3)	3b. Identify all jurisdictions as: new, continuing, or no longer participating			

Table 10 (Continued): Integrated Plan—Involving the Public and Technical Experts.

			(3c) If neighboring communities, the state NFIP coordinator, the state water resources agency, the county and state emergency management agency, the FEMA regional office, and (where appropriate) the state's coastal zone management agency are contacted at the beginning of the planning process to see if they are doing anything that may affect the community's program and to see how they can support the community's efforts (4 points).
			(3d) If the governmental and non-governmental organizations, such as the National Weather Service, Red Cross, home builders association, and environmental groups are contacted at the beginning of the planning process to see if they are doing anything that may affect the community's program and to see how they can support the community's efforts (4 points).

Table 10 (Continued): Integrated Plan—Involving the Public and Technical Experts.

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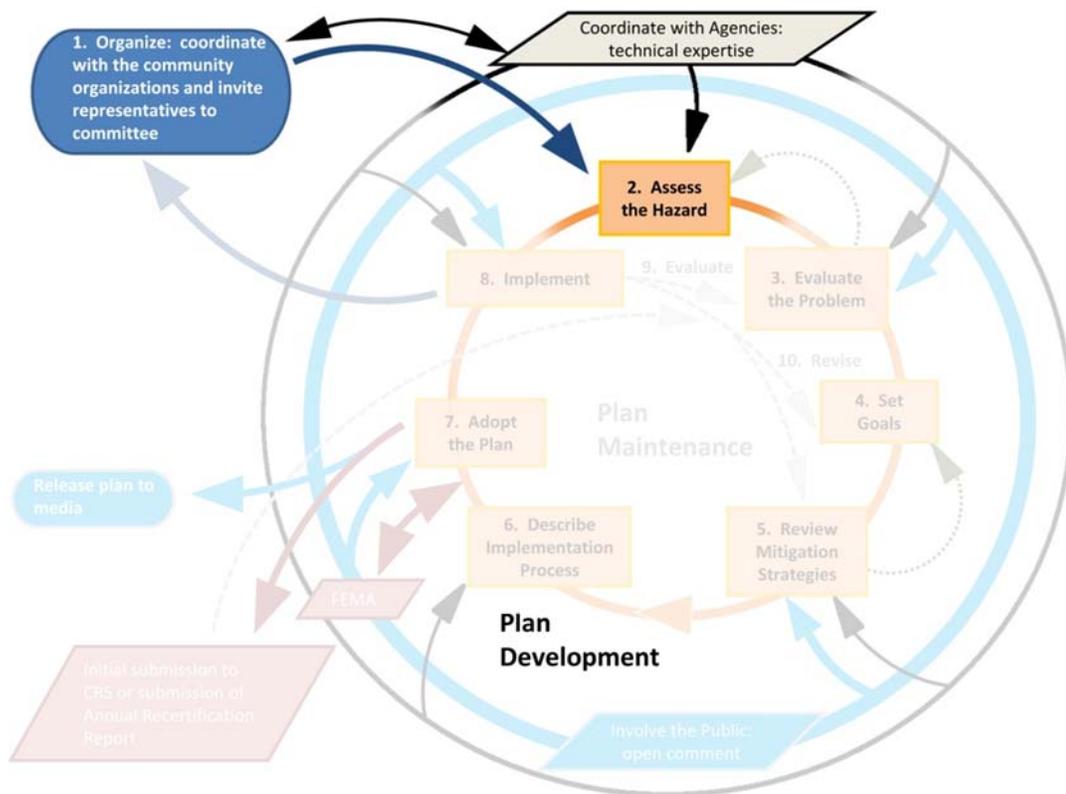


Figure 11: Integrated Plan Development Step 2 – Assess the Hazard

Step 2: Assess the Hazard

The second step in the integrated planning process is to assess the hazard. Assessing the hazard is more than a brainstorming session about possible hazards. The assessment should identify the specific geographic places where the hazard occurs within the planning area and describe the hazards' extent, history, and probability, as well as the jurisdiction's vulnerability to the hazard. Greater specificity regarding hazard data allows the planning jurisdictions to identify possible hazard impacts with greater precision. Hazard, current land use, future land use, and critical facility overlays or other method of sharing and visualizing these data are essential to the thorough assessment of the hazards and possible hazard interactions. Input from technical experts may be required during this step to accurately and thoroughly identify potential hazards (see Figure 11). Table 11 outlines the information required in the plan to meet the CRS and LMS criteria. (Note that in Table 11, step 4 of the CRS process is now step 2 in the integrated process because CRS steps 2 and 3 have been interjected throughout the integrated planning process.)

Planning process comparison:

	LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps
Phase II- Risk Assessment	201.6(c)(2)(i)	5a. Describe all natural hazards that affect the jurisdiction	4. Assess the hazard	<p>(4a) For including an assessment of the flood hazard in the plan. If the community is a Category B or C repetitive loss community, this step must cover all of its repetitive loss areas. The assessment MUST include at least one of the following: (1). a map of the known flood hazards. "Known flood hazards" means the floodplain shown on the Flood Insurance Rate Map (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 points); (2). a description of known flood hazards, including source of water, depth of flooding, velocities, and warning time (5 points); (3). a discussion of past floods (5 points).</p> <p>(4b) If the plan includes a map, description of the magnitude or severity, history, and the 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 (5 points).</p>	2. Assess the Hazard
	201.6(c)(2)(i)	6a. Identify the geographic area affected by each natural hazard			
	201.6(c)(2)(i)	6b. Identify the extent (magnitude or severity) of each natural hazard			
	201.6(c)(2)(i)	6c. Describe previous occurrences of each hazard			
	201.6(c)(2)(i)	6d. Include the probability of future occurrences of each hazard			

Table 11: Integrated Plan Step 2 – Assess the Hazard.

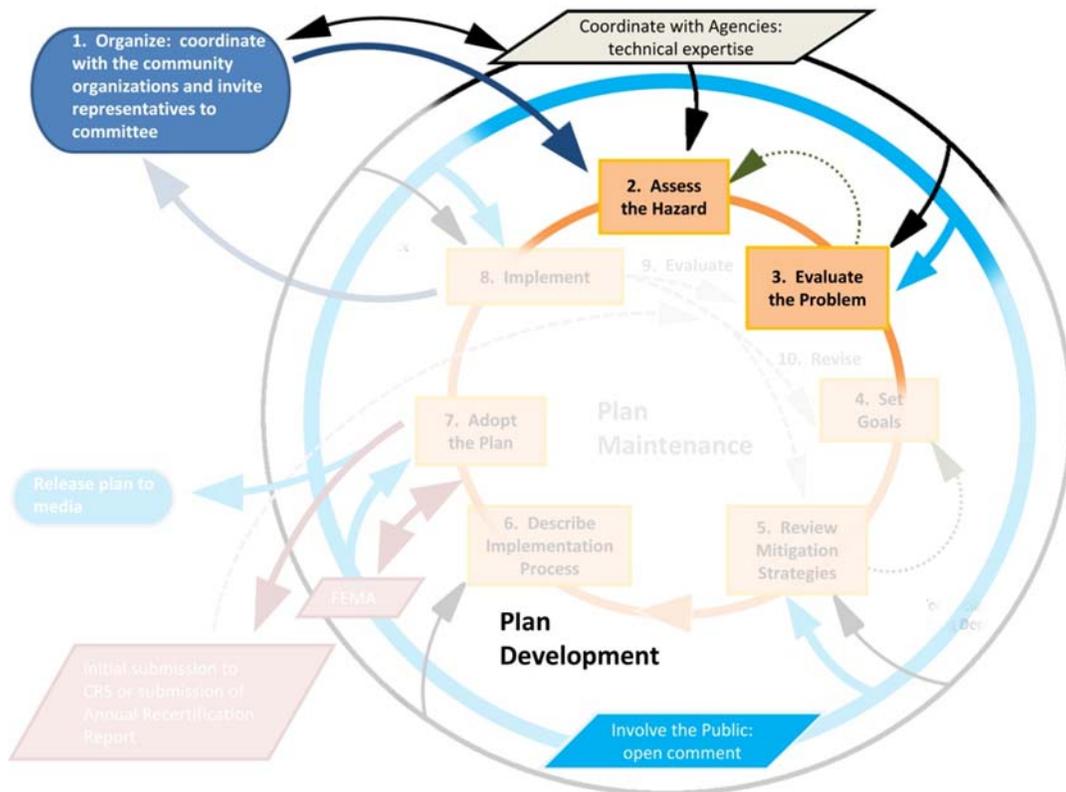


Figure 12: Integrated Plan Development Step 3 – Evaluate the Problem

Step 3: Evaluate the Problem

The hazard assessment process (Step 2 of the integrated plan) is designed to provide jurisdictions with the basic information required to complete the next step in the process: evaluate the problem. During the evaluation of the problem, the hazards are considered within the broader context of the planning area and the risk that the hazard poses to populations and area is determined. An evaluation of the problem should detail each hazard's impacts and may include its effect on life, safety, health, need for warning and evacuation procedures, critical infrastructure and facilities, and the community's economy and tax base. The evaluation of the problem should lead to an assessment of hazard risk that is specific to the planning area and reflects the contextual differences within the planning area. As the problem is evaluated, it may be necessary to reassess the hazard, depicted by the dotted green arrow from Step 3 to Step 2. It may be useful to include input from the community during this step as well as input from technical experts (see Figure 12). The public may provide useful information about problems identified in their neighborhoods that have not yet been recognized by the committee or experts. Table 12 outlines the information required in the plan to meet the CRS and LMS criteria.

Recommended Integration Practices: Strengthening the FMP Portions of the LMS
Florida Division of Emergency Management and Florida Planning and Development Lab

Planning process comparison:

	LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps
Phase II- Risk Assessment	201.6(c)(2)(ii)	7a. Overall summary description of jurisdiction's vulnerability to each hazard	5. Assess the problem	(5a) The plan includes an overall summary of the jurisdiction's vulnerability to each hazard identified in the hazard assessment (step 4) and the impact on the community (2 points).	3. Evaluate the Problem
	201.6(c)(2)(ii)	7b. Impact of each hazard on the jurisdiction		(5b) If the plan includes a description of the impact that the hazards identified in the hazard assessment (step 4) have on: (1). Life, safety, and health and the need for procedures for warning and evacuating residents and visitors (5 points); (2). critical facilities and infrastructure (5 points); (3). the community's economy and tax base (5 points).	
	201.6(c)(2)(ii)	8a. Describe flood vulnerability in terms of type and number of buildings located in the identified hazard areas		(5c) For including the number and types of buildings subject to the hazards identified in the hazard assessment (5 points).	
	201.6(c)(2)(ii)	9a. Describe flood vulnerability in terms of type and number of existing buildings, infrastructure, and critical facilities located in identified hazard areas			
	201.6(c)(2)(ii)	9b. Describe flood vulnerability in terms of type and number of future buildings, infrastructure, and critical facilities located in identified hazard areas			
	201.6(c)(2)(ii)	10a. Estimate potential dollar losses to vulnerable structures		(5d) 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 or an estimate of potential dollar losses to vulnerable structures (4 points).	
	201.6(c)(2)(ii)	10b. Describe the methodology used to prepare the estimate			
	201.6(c)(2)(ii)	11a. Describe land-uses and development trends			

Table 12: Integrated Plan Step 3 – Evaluate the Problem.

	201.6(c)(2)(iii)	12a. Include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks			
				(5e) 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 (4 points).	
				(5f) If the plan includes a description of development, redevelopment, and population trends and a discussion of what the future brings for development and redevelopment in the community, the watershed, and natural resource areas (5 points).	

Table 12 (Continued): Integrated Plan Step 3 – Evaluate the Problem.

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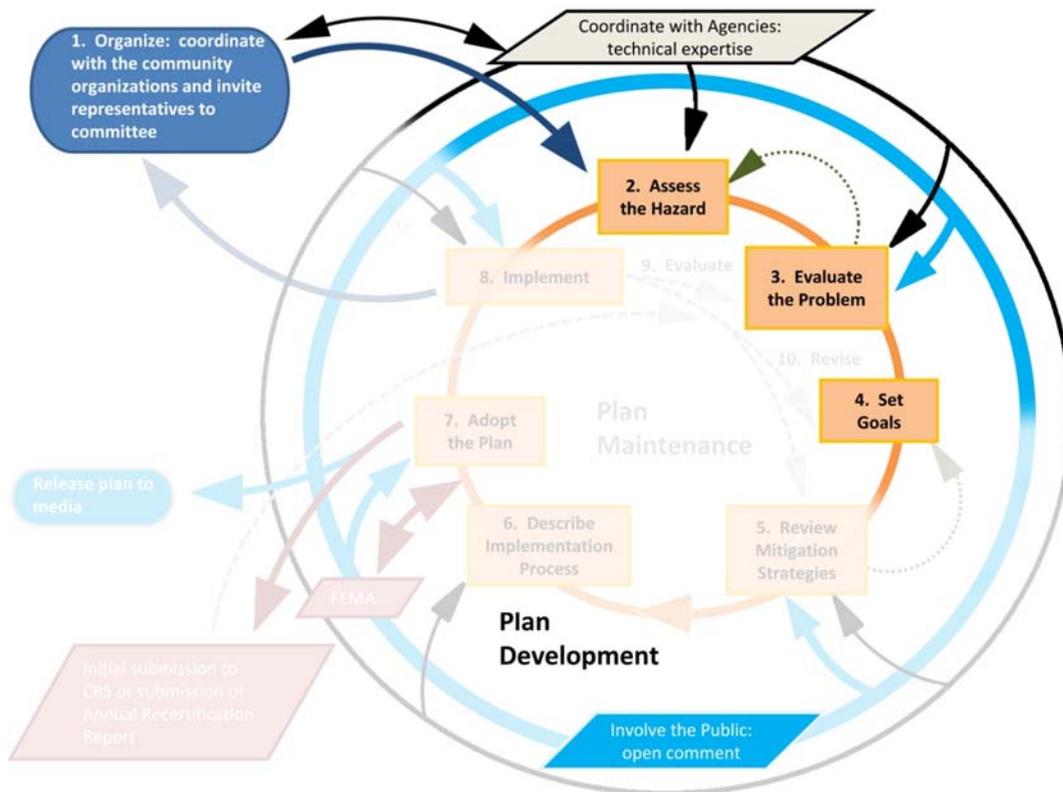


Figure 13: Integrated Plan Development Step 4 – Set Goals

Step 4: Set Goals

A thorough understanding of the planning area’s hazard risks enables the planning committee to set goals. Goals should be oriented toward the long-term and focused on reducing the community’s vulnerability to identified hazard risks. Community goals should relate to their evaluation of potential problems. Those problems should then be checked against the list of goals to ensure that the goals are comprehensive and appropriate. Table 13 outlines the information required in the plan to meet the CRS and LMS criteria.

Recommended Integration Practices: Strengthening the FMP Portions of the LMS
Florida Division of Emergency Management and Florida Planning and Development Lab

Planning process comparison:

	LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps
Phase III- Mitigation Strategy	201.6(c)(3)(i)	13a. Describe or include mitigation goals to reduce or avoid long-term vulnerabilities to identified hazards	6. Set goals	(6) The plan includes a statement of the goals of the community's floodplain management or hazard mitigation program (2 points).	4. Set Goals

Table 13: Integrated Plan Step 4 – Set Goals.

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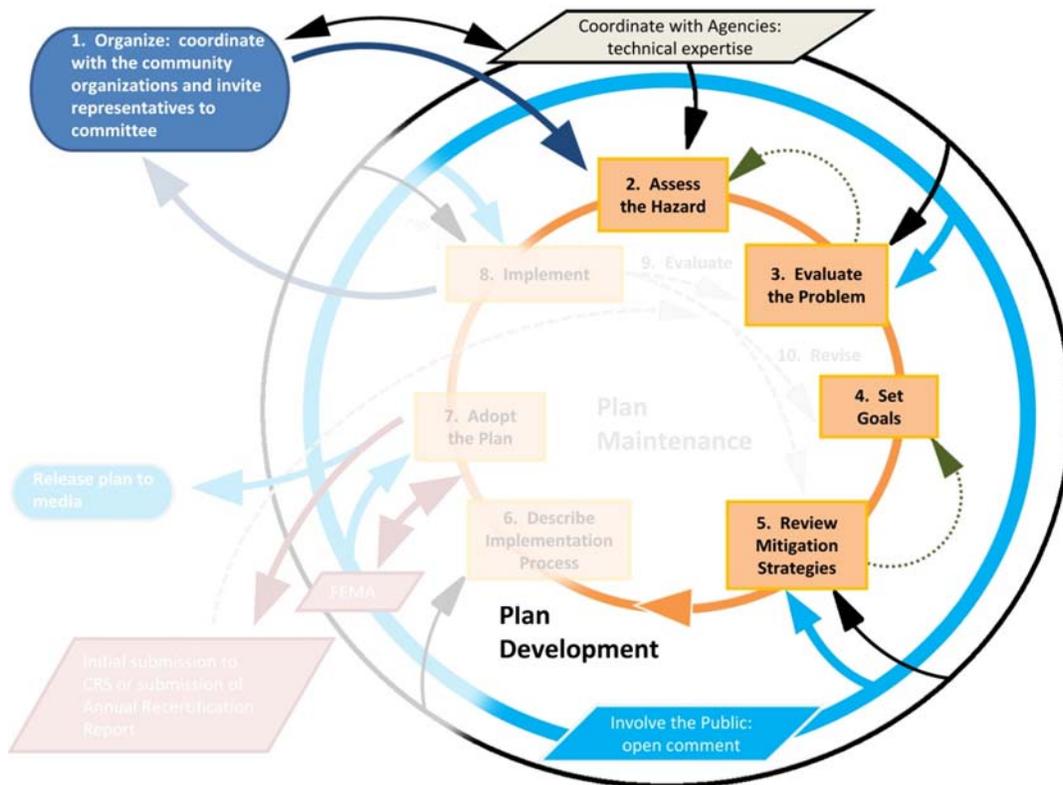


Figure 14: Integrated Plan Development Step 5 – Review Mitigation Strategies

Step 5: Review Mitigation Strategies

The review of mitigation strategies is undertaken for all hazards identified in the plan and should be a comprehensive review of possible mitigation actions and projects. According to the Insurance Services Office – Community Rating System (ISO-CRS), this step frequently gives communities difficulty. Within the context of the Floodplain Management Plan, this step should be a detailed account of **all** mitigation strategies considered. The plan must also include the community’s reasons for adopting **or denying** the strategy considered. Possible activities may include zoning, storm water management, building codes, preservation of open space, property protection activities such as acquisition, retrofitting, wetlands protection, emergency services like sandbagging and warning systems, structural projects such as channels and reservoirs, and/or public outreach or education campaigns. In addition to the review of mitigation strategies, this step includes a description of National Flood Insurance Program (NFIP) participation and the prioritization of community mitigation actions, typically presented as a prioritized mitigation project list in the LMS. Table 14 outlines the information required in the plan to meet the CRS and LMS criteria.

Recommended Integration Practices: Strengthening the FMP Portions of the LMS
Florida Division of Emergency Management and Florida Planning and Development Lab

Planning process comparison:

	LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps
Phase III- Mitigation Strategy	201.6(c)(3)(ii)	14a. Identify a comprehensive range of specific mitigation actions and projects for each hazard	7. Review possible activities	(7) The plan must describe those activities that were considered and note why they were not recommended. If an activity is currently being implemented, the plan must note whether it should be modified. (7a) If the plan reviews preventive activities, such as zoning, stormwater management regulations, building codes, and preservation of open space and the effectiveness of current regulatory and preventive standards and programs (5 points). (7b) If the plan reviews property protection activities, such as acquisition, retrofitting, and flood insurance (5 points). (7c) If the plan reviews activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection (5 points); (7d) If the plan reviews emergency services activities, such as warning and sandbagging (5 points); (7e) If the plan reviews structural projects, such as reservoirs and channel modifications (5 points); (7f) If the plan reviews public information activities, such as outreach projects and environmental education programs (5 points).	5. Review Mitigation Strategies
	201.6(c)(3)(ii)	14b. Identify actions and projects that reduce hazard effects on new buildings and infrastructure			
	201.6(c)(3)(ii)	14c. Identify actions and projects that reduce hazard effects on existing buildings and infrastructure			
	201.6(c)(3)(ii)	15a. Describe the jurisdictions' participation in NFIP			
	201.6(c)(3)(ii)	15b. Identify, analyze, and prioritize actions related to continued compliance with NFIP			

Table 14: Integrated Plan Step 5 – Review Mitigation Strategies.

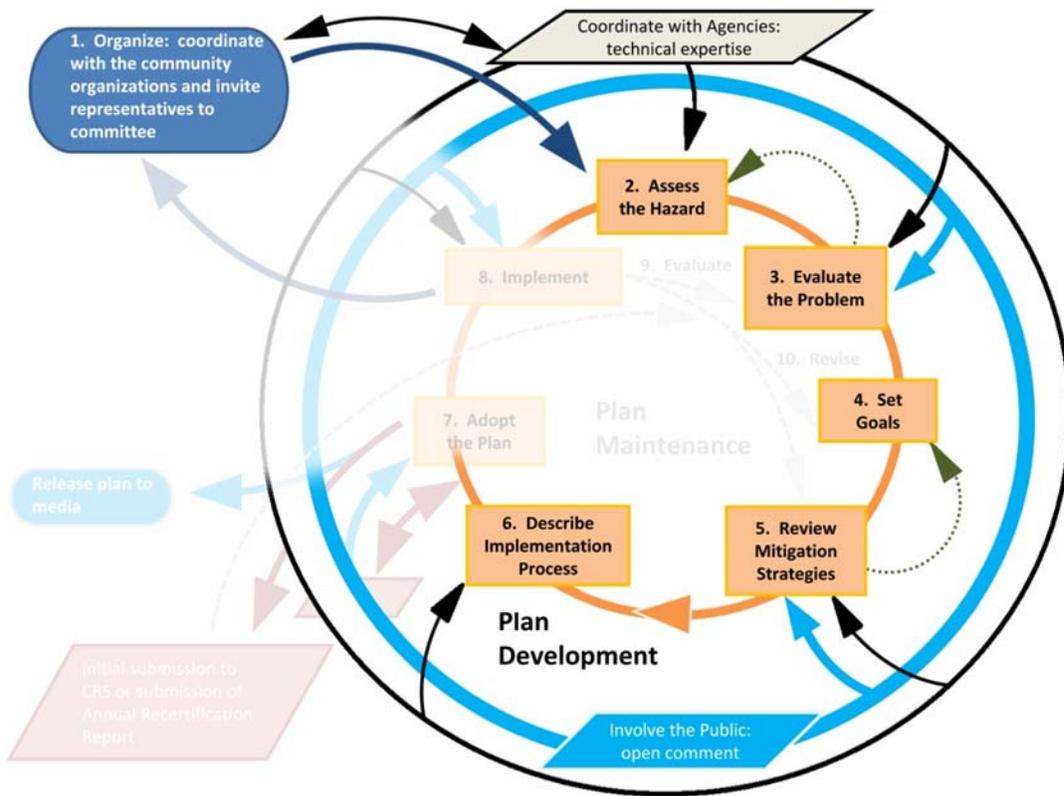


Figure 15: Integrated Plan Development Step 6 – Describe Implementation Process

Step 6: Describe Implementation Process

The identification of mitigation strategies does not complete the planning cycle. The plan must describe the implementation process. Planners should include the responsible department, existing and potential financial resources, and timeframes for action completion as part of their description of implementation and program administration. The plan should describe the roles and responsibilities of the agencies, authorities, or individuals implementing the plan and establish benchmarks and metrics for the evaluation of implementation. If the plan is part of an ongoing process, previous progress should be reviewed and described relevant to the previous cycles goals and activities lists. Changes to the goals or activities made subsequent to this review should be described. Table 15 outlines the information required in the plan to meet the CRS and LMS criteria.

Planning process comparison:

LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps	
Phase III- Mitigation Strategy	201.6(c)(3)(iii)	16a. Describe how mitigation actions are prioritized	8. Draft an action plan	(8) For each recommendation, the action plan must identify who does what, when it will be done, and how it will be financed. The actions must be prioritized and include a review of the benefits of the proposed projects and their associated costs. A multi-hazard mitigation plan must identify actions that address both existing and new infrastructure and buildings (70 points, based on number of categories included from 7 and inclusion of post-disaster mitigation policies and procedures, recommendations from a Habitat Conservation Plan, and action items other than outreach for mitigating other natural hazards).	6. Draft the Plan
	201.6(c)(3)(iii)	16b. Describe how mitigation actions will be implemented, and administered. Include: responsible department, existing and potential resources, and timeframe to complete action			
	201.6(c)(3)(iii)	16c. Use cost-benefit review to prioritize projects and maximize benefits			
	201.6(c)(3)(iii)	16d. Identify completed, deleted, or deferred mitigation actions as a benchmark for progress. If no progress, indicate why.			
	201.6(c)(3)(iv)	17a. Identify action items for each jurisdiction and each hazard listed.			
	201.6(c)(3)(iv)	17b. Identify completed, deleted, or deferred mitigation actions as a benchmark for progress. If no progress, indicate why.			

Table 15: Integrated Plan Step 6 – Describe Implementation Process.

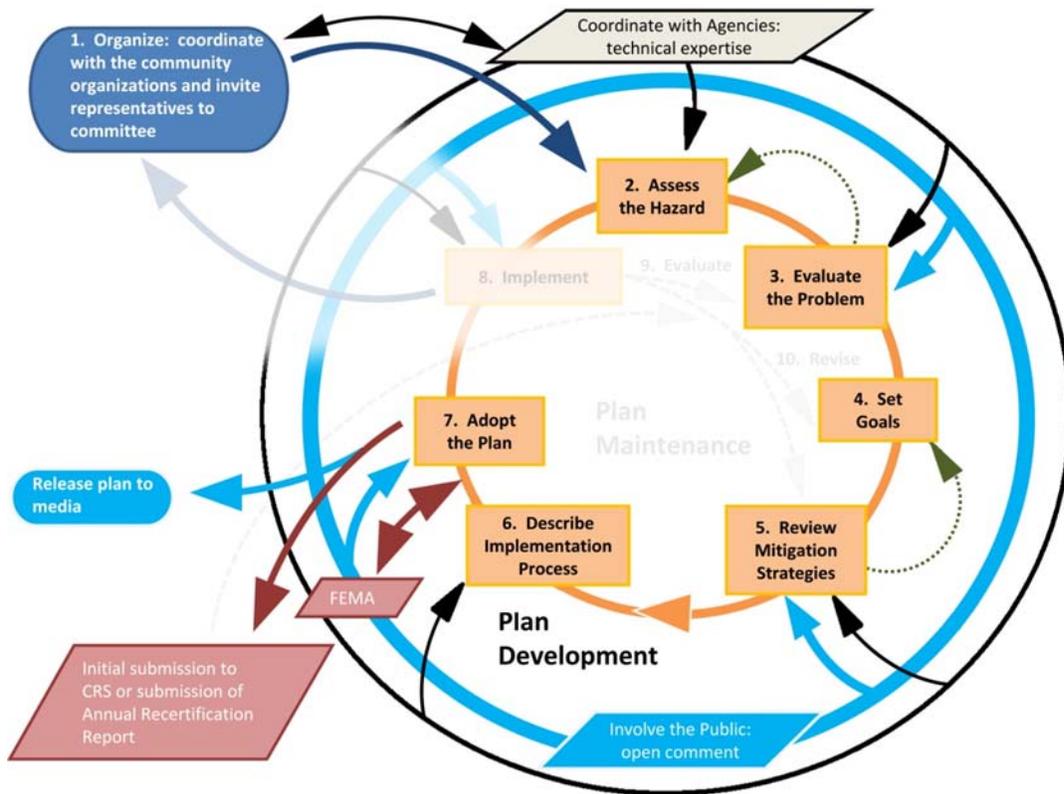


Figure 16: Integrated Plan Development Step 7 – Adopt the Plan

Step 7: Adopt the Plan

Once the planners have completed the written plan, they must finalize the plan through the plan adoption process. This process varies from one community to another, but there are common steps: The plan will be sent to the Florida Division of Emergency Management (FDEM) for review and verification that the plan meets all state and federal requirements under 44 CFR 201.6. After the plan is checked for FEMA compliance by the state, it is sent to the appropriate FEMA region for review and approval where it will be “approved pending adoption” after successfully passing the review. The CRS process requires that the plan be announced to the public 2 weeks prior to the vote for adoption, which is similar to the LMS process. Finally, the plan is adopted and proof of adoption is amended to the plan and shared with FEMA and CRS. Table 16 outlines the information required in the plan to meet the CRS and LMS criteria.

Planning process comparison:

	LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps
Phase IV- Plan Maintenance	201.6(c)(5)	1a . Local governing body must adopt plan.	9 . Adopt the plan	(9) The plan and later amendments are adopted by the communities governing body (2 points).	7. Adopt the Plan
	201.6(c)(5)	1b . Include supporting documentation (resolution)			
	201.6(c)(5)	2a . List all jurisdictions represented by the plan.			
	201.6(c)(5)	2b . Each jurisdiction must adopt plan			
	201.6(c)(5)	2c . Include supporting documentation (resolution)			

Table 16: Integrated Plan Step 7 – Adopt the Plan.

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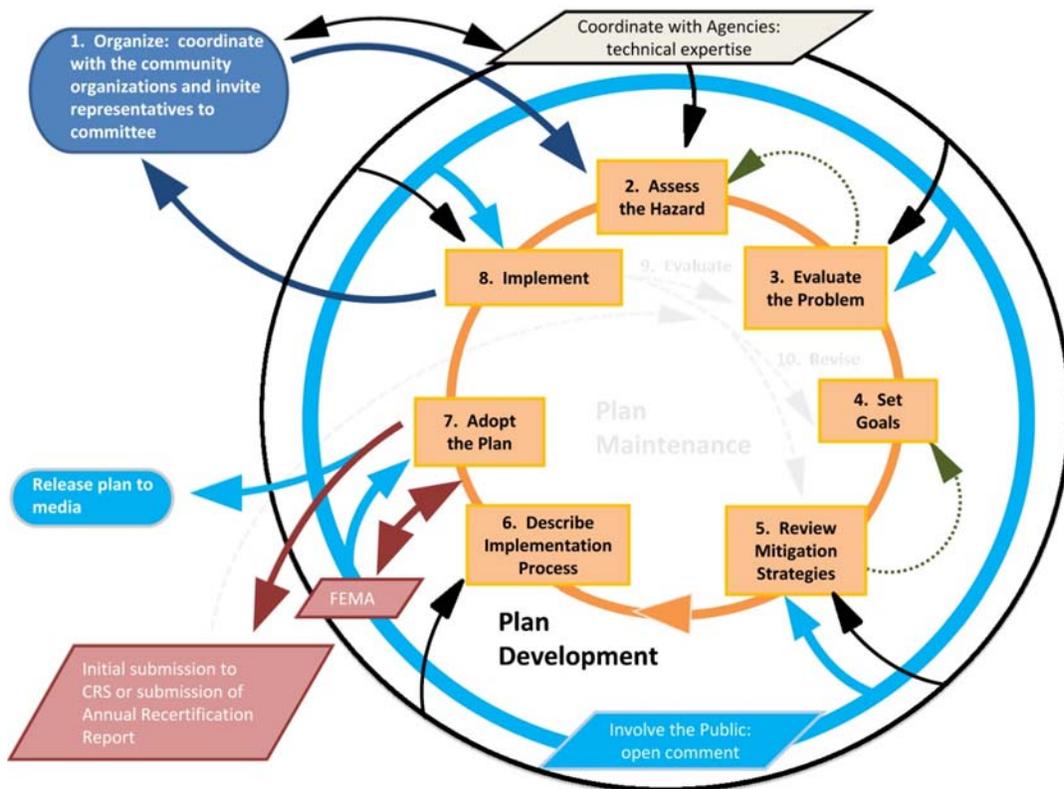


Figure 17: Integrated Plan Development Step 8 – Implement

Step 8: Implement

Upon formal adoption, the appropriate authorities/agencies implement the approved plan.

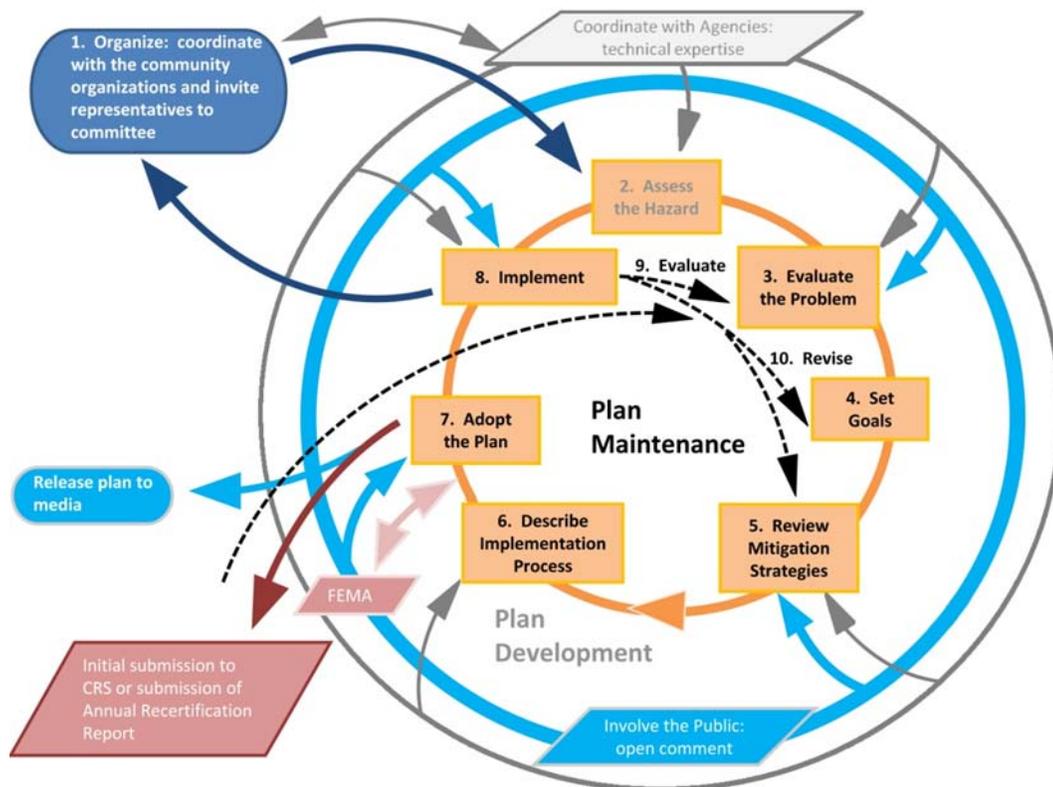


Figure 18: Integrated Plan Development Steps 9 & 10 – Evaluate and Revise

Steps 9 & 10: Evaluate and Revise

The planning team should not be disbanded during implementation. It is at this time that the committee should begin maintaining the plan. The team may continue to meet in order to further its long-term planning objectives and to implement monitoring objectives. Steps 9 and 10 are illustrated in the integrated planning process (see Figure 18) by the black dashed arrows labeled evaluate and revise. These steps reflect the necessity for continuous mitigation planning to adapt to changing circumstances, environments, and knowledge. This may include a newly identified hazard, an alteration of political circumstance or climate, or newly published technical or scientific knowledge. Evaluation and revision include attention to the incorporation of mitigation principals into other government plans and actions. Once the plan is evaluated and the goals and strategies are revised, it continues through the integrated planning process, resuming at Step 6. CRS receives the Annual Recertification Report and the plan is then implemented or the maintenance process starts over (see Figure 18). Table 17 outlines the information required for Steps 8-10 to meet the CRS and LMS criteria.

Recommended Integration Practices: Strengthening the FMP Portions of the LMS
Florida Division of Emergency Management and Florida Planning and Development Lab

Planning process comparison:

LMS (44 CFR)	LMS Crosswalk	CRS	CRS Process*	Integrated Steps	
Phase IV - Plan Maintenance	201.6(c)(4)(i)	18a. Describe the method and schedule for monitoring the plan including the responsible department	10. Implement, evaluate, revise	(10a) The community has procedures for monitoring implementation, reviewing progress, and recommending revisions to the plan in an annual evaluation report. The report must be submitted to the governing body, released to the media, and made available to the public (2 points). (10b) If the evaluation report is prepared by the same planning committee that prepared the plan (step 2) 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 13 points).	8. Implement
	201.6(c)(4)(i)	18b. Describe the method and schedule for evaluating the plan including the responsible department			9. Evaluate
	201.6(c)(4)(i)	18c. Describe the method and schedule for updating the plan within the five-year planning cycle			10. Revise
	201.6(c)(4)(ii)	19a. Identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan			
	201.6(c)(4)(ii)	19b. Describe the process by which local government will incorporate the mitigation strategy and other information contained in the plan (e.g. risk assessment) into other planning mechanisms, where appropriate			
	201.6(c)(4)(ii)	19c. Explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g. risk assessment) into other planning mechanisms, where appropriate			
	201.6(c)(4)(iii)	20a. Explain how continued public participation will be obtained.			
			Embedded in steps 8, 9, and 10.		

* Excerpted from CRS Coordinators Manual, Section 510 Floodplain Management Planning (2006).
Bolded sections are CRS FMP requirements.

Table 17: Integrated Plan Steps 9 & 10 – Evaluate and Revise.

It is important to keep in mind throughout the planning process new findings or results from public outreach that may alter earlier plans or goals of the planning process.

Conclusion

The purpose of this document is to provide guidance to counties in Florida wishing to strengthen the floodplain management plan (FMP) portions of their Local Mitigation Strategy (LMS) plan. Part I of this report lists additional activities and documentation counties can provide to enhance their plan. Part II examines methods of integrating the requirements of the FMP, LMS, and Community Rating System (CRS) into a single document to increase planning efficiency through a reduction in redundant planning efforts. The recommendations included are applicable to all counties in the state. If counties have questions or would like additional assistance in meeting the recommendations outlined here, they are encouraged to contact state mitigation planners at the following e-mail address: dem-shmpat@em.myflorida.com.

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Endnotes

- ¹ *Local Multi-Hazard Mitigation Planning Guidance*, FEMA, p.12
- ² Retrieved from <http://www.floridadisaster.org/mitigation/nfip/index.htm>
- ³ *Ibid.*
- ⁴ State CRS Summary: Florida, January 2011
- ⁵ Retrieved from <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- ⁶ 44CFR part 61, appendix A(1)II, Definitions A.1
- ⁷ *Florida Floodplain Management: Public Sector Responsibilities and Intergovernmental Coordination in Land Use and Water Resource Decision Making*, deHaven-Smith & Paterson, pp. 15-16
- ⁸ Retrieved from <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- ⁹ Retrieved from http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/critical_facility.shtm
- ¹⁰ Retrieved from <http://www.training.fema.gov/IS/crslst.asp>
- ¹¹ *Substantial Damage Estimator (SDE) User's Manual and Workbook*, P-784, FEMA
- ¹² *Ibid.*
- ¹³ Retrieved from <http://www.eionet.europa.eu/gemet/concept?cp=12898&langcode=tr&ns=1>
- ¹⁴ Retrieved from http://www.fema.gov/government/grant/pa/pr_pda.shtm
- ¹⁵ ESRI whitepaper, 2000
- ¹⁶ Retrieved from <http://www.fema.gov/plan/prevent/hazus/>
- ¹⁷ *Ibid.*
- ¹⁸ *Ibid.*
- ¹⁹ Retrieved from <http://www.sjrwm.com/about/index.html>
- ²⁰ Conversation with Susan Sylvester, SFWMD
- ²¹ This definition was modified from the mission statements from each of the Florida RPCs.
- ²² Retrieved from <http://www.sjrwm.com/localgovernments/index.html>
- ²³ Retrieved from <http://www.tcrpc.org/publications/srpp.html>

Appendix A: Resource Identification

Published Resources include: (these can be considered for integration, cross-referencing, etc.)

Comprehensive plans

- Capital Improvements Elements
- Coastal Elements

Land Development Regulations (LDRs) / Land Development Codes (LDCs)

- Extract pertinent codes and their “adequacy”
- Some counties have parsed the LDR/LDC among members to extract “mitigation type” codes

Emergency operations plans (Comprehensive Emergency Management Plans)

Any existing/up-to-date Flood Insurance Study (FIS)

Post-disaster redevelopment plans (PDRPs)

Growth Management Plan

Long Range Transportation Plan (LRTP)

Floodplain Management Plan / Flood Mitigation Plan (FMP)

- Many jurisdictions have completed FMP
- Few counties have completed FMP

FEMA publications

Organizational Resources include: (Groups of individuals who can be engaged)

Water Management Districts (contract for vulnerability analysis, i.e. Collier)

The Division of Emergency Management

Florida Universities

Regional Planning Councils (see Appendix J)

The Florida Floodplain Managers Association

The Florida Emergency Preparedness Association

National Weather Service

Appendix B: Internet Resources

National Weather Service River Forecast Center – Southeast RFC:

<http://www.srh.noaa.gov/serfc/?n=dammap>

<http://www.srh.noaa.gov/serfc/index.php>

<http://www.srh.noaa.gov/serfc/>

NOAA's National Weather Service:

http://www.weather.gov/os/water/high_water/

http://www.weather.gov/os/water/high_water/hw-map.shtml

National Flood Insurance Program (NFIP):

<http://www.floodsmart.gov/floodsmart/>

<http://www.floodsmart.gov/toolkits/>

http://www.floodsmart.gov/floodsmart/pages/media_resources.jsp

Glossary from NFIP:

http://www.floodsmart.gov/floodsmart/pages/glossary_A-I.jsp

http://www.floodsmart.gov/floodsmart/pages/glossary_J-R.jsp

http://www.floodsmart.gov/floodsmart/pages/glossary_S-Z.jsp

Glossary from SFWMD:

<http://www.sfwmd.gov/portal/page/portal/levelthree/water%20managers%20glossary>

National Inventory of Dams:

<http://geo.usace.army.mil/pgis/f?p=397:12:2880880371845165>

Catalog of Federal Domestic Assistance:

<https://www.cfda.gov/>

U.S. General Services Administration:

<http://www.gsa.gov/portal/content/101097>

Appendix C: A History of LMS, FMP, and CRS

Local Mitigation Strategy (LMS) Plan

A Local Mitigation Strategy (LMS) Plan is a required plan that communities develop to identify initiatives that reduce the impact of hazards that a jurisdiction is subject to. The plan identifies structures that are vulnerable to these disasters and develops a plan to minimize the impacts from each of those hazards. In addition, a FEMA-approved LMS plan is required for a community to be eligible for federal and state mitigation grants. Specifically, to remain in eligible for HMGP funding, the LMS must be updated, approved, and adopted every five years.¹

According to 44 CFR §201.6 the LMS requires jurisdictions to incorporate the following five elements in the mitigation planning document:

1. A record of the planning process used in creating the plan,
2. A risk assessment that substantiates the recommended strategies to alleviate threats from specific disasters,
3. A mitigation strategy explaining how the jurisdiction plans to minimize the threats posed by various disasters,
4. The process the jurisdiction plans to follow to maintain the plan, and
5. Documentation showing that the plan was adopted by the jurisdiction.

The fundamental entity responsible for developing and approving the LMS plan on a national scale has been the Federal Emergency Management Agency (FEMA).

Policies

Two critical pieces of legislation in the development of the LMS Plan are the Robert T. Stafford Relief and Emergency Assistance Act (Stafford Act) of 1988, and the Disaster Mitigation Act of 2000 (DMA2000). The Stafford Act evolved from a series of Disaster Relief Acts that were passed between 1950 and 1974. In 1988, the Disaster Relief Act of 1974 was amended and renamed the Robert T. Stafford Relief and Emergency Assistance Act (Stafford Act). This established a process that enabled state and local governments to receive physical and financial assistance through FEMA. It also restricted the president's disaster declaration to the occurrence of a natural disaster. In the event of a disaster, FEMA was responsible for organizing government-wide relief efforts. By the end of the twentieth century, the need for state, local, and tribal jurisdictions to coordinate mitigation planning and implementation efforts became apparent and the Disaster Mitigation Act of 2000 revised the Stafford Act.²

The Disaster Mitigation Act mandated that entities adopt a mitigation plan approved by FEMA in order to be eligible for federal mitigation grant assistance. It further stipulated that a state mitigation plan be maintained as a provision of disaster assistance, required that local mitigation plans be established, and allowed a maximum of seven percent of Hazard Mitigation Grant Program (HMGP) funds be accessible to the state to be utilized in developing state, local, and tribal mitigation plans. Counties must update each LMS plan every five years to remain compliant with the Disaster Mitigation

Mitigation Act of 2000.³

The Code of Federal Regulations (CFR), Title 44, Part 201 was developed to provide information on the policies and procedures for mitigation planning. In summary, the Stafford Act authorizes funds for the grant programs and entities with an LMS are eligible to apply for the following: the Flood Mitigation Assistance (FMA) Program, HMGP, Pre-Disaster Mitigation (PDM) program, and Severe Repetitive Loss (SRL) program. This meant that the flood management plan (FMP) was no longer necessary to acquire grant money – the LMS was now the compulsory plan. The LMS was revised to require properties that were repeatedly damaged due to floods, and in communities that were NFIP insured, address these properties in their risk assessment and mitigation strategy (parts of the LMS plan). Another requirement was that NFIP communities incorporate a strategy in their LMS plan outlining compliance with the NFIP.⁴

Floodplain Management Plans

Floodplain management plans (FMP) have been developed for a variety of reasons. Currently, the primary motivation appears to be the Community Rating System (CRS). However, the overarching policy for floodplain management, The National Flood Insurance Program (NFIP) defines the term in its legislation as “a decision-making process that aims to achieve the wise use of the nation's floodplains. Wise use means both reduced flood losses and protection of the natural resources and function of floodplains.”⁵ The United States Army Corps of Engineers defines floodplain management as “the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to, emergency preparedness plans, flood control work, and floodplain management regulations.”⁶ Integrating both these definitions, it can be assumed that floodplain management involves a decision-making process, along with programs to provide preventative flood control measures within a community.

In order to be eligible for project funds under the FMA program, communities are required to have a mitigation plan that addresses flood hazards. This requirement can be met with a strong flood section within the LMS plan.

Evolution of Floodplain Management Plans and Policy

The Flood Control Acts of 1928 and 1936 served as precursors to contemporary floodplain management. The Acts both initiated the role of the United States Army Corps of Engineers in flood control. Executive Order 11988 under Jimmy Carter, created in 1977 further required the Corps to help communities initiate projects, which avoid adverse impacts, associated with floodplain usage.

The Flood Control Act of 1960 mandated that communities requesting the Corp’s flood control assistance would have to create a FMP that described what steps the localities were taking to prevent flood disaster in the future, along with what areas had higher flood risks. The National Flood Insurance Act passed eight years later, created the National Flood Insurance Program (NFIP). The program’s primary goal was to lower flood insurance premiums by transferring the costs of private property flood

losses from the taxpayers to original floodplain property owner. In other words, the program attempts to guide development away from flood hazard areas through requirements that new buildings be constructed in ways that minimize flood damage. One of the ways that the act attempts to achieve its federal flood mitigation goals is by mandating the creation of a Unified Floodplain Management Plan. This Unified Plan is important because it “sets a conceptual framework for managing the Nation’s floodplains to achieve the dual goals of reducing the loss of life and property cause by floods and protecting and restoring the natural resources of floodplains.”⁷

FMP Oversight

Local communities were further mandated to create a flood management plan (FMP) in accordance with the Code of Federal Regulations, 44 CFR 60.3 in order to have access to federal flood damage funding and insurance incentives through the NFIP. This Act also authorized the oversight of these programs to the Federal Insurance Administration, within the Department of Housing and Urban Development (HUD).

FMP Challenges

The most difficult aspect in understanding the history of floodplain management plans is that there is no singular concept of oversight, definition, and criteria of floodplain management. This lack of consistency has caused confusion in many communities. For example, there are different standards and criteria for the plans, which is perplexing for all parties involved.

FMP guidelines under NFIP

As mentioned previously, the floodplain management guidelines to qualify for NFIP funding are outlined in the Code of Federal Regulations, 44 CFR 60.3. These requirements are solely to receive incentives from the NFIP, and do not include any additional requirements that the State or Local government mandates. These guidelines also do not utilize the Community Rating System (CRS) requirements, which include additional steps to receive points for insurance premium reductions. With that being said, 44 CFR 60.3 provides requirements such that local government must permit construction and assure that additional steps are taken if new development occurs in a flood-prone area.

Community Rating System

The Community Rating System (CRS) program was implemented in 1990 and is still being utilized today. The purpose of this program is to recognize and encourage community floodplain management activities that exceed the NFIP’s requirements. It is based on several levels/ranks that are quantified through a point system. Because the NFIP was not accumulating obtaining as much county participation as expected, the purpose of the CRS program is meant to encourage floodplain management activities that exceed the minimum NFIP standards. The CRS system does this by providing incentives through reducing flood insurance premium rates. The CRS program requires points to be attained in order to qualify for each of the 10 classes. The highest class is one (1), provides the community with the most reduction in insurance premiums,

whereas class ten (10) does not receive any incentives.

In summary, floodplain management plans are required by NFIP in order for communities to be eligible for: USACE assistance, NFIP insurance, and FMA grants. USACE defines the requirements of the floodplain management plan in Policy Guidance Letter no. 52, encl 2. NFIP requirements are defined similarly but are differentiated into basic requirements similar to those of USACE and the more advanced requirements of the NFIP CRS program. The FMP requirements with respect to FMA grant assistance have been modified by FEMA, per their 3 in 1 guidance, to allow eligibility if communities meet the basic NFIP FMP requirements. Most communities in Florida would qualify for membership in CRS if they applied. Similarly, the CRS planning process is closely aligned with the LMS process and a few modifications would likely result in FMP CRS credit under section 510 for the communities willing to make the extra effort.

Endnotes:

¹ *Local Multi-Hazard Mitigation Planning Guidance*, FEMA, 2008, July 1

² *The Stafford Act and Priorities for Reform*, Moss, M., Schellhamer, C., & Berman, D. A., 2009

³ Retrieved from <http://www.floridadisaster.org/Mitigation/Local/Index.htm>

⁴ *Local Multi-Hazard Mitigation Planning Guidance*, FEMA, 2008, July 1

⁵ Retrieved from http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/floodplain_management.shtm

⁶ Retrieved from http://www.dcr.virginia.gov/dam_safety_and_floodplains/fpregs.shtml

⁷ *President's Letter to Congress*, 1995, retrieved from <http://www.fema.gov/hazard/flood/pubs/lib100.shtm>

Appendix D: Policy Guidance Letter (PGL) No. 52

CECW-A/CECW-P

8 Dec 1997

MEMORANDUM FOR MAJOR SUBORDINATE COMMANDS AND DISTRICT COMMANDS

SUBJECT: Policy Guidance Letter (PGL) No. 52, Flood Plain Management Plans

- 1. Purpose.** This guidance letter provides policy on Section 202 (c), Flood Plain Management Plans, of the Water Resources Development Act (WRDA) of 1996. The Act language is provided for your information as enclosure 1.
- 2. Background.** Section 202 (c) amends Section 402 of WRDA 86 to provide that before the construction of any project for local flood damage reduction or hurricane or storm damage reduction that involves assistance from the Secretary of the Army, the non-Federal interest must agree to participate in and comply with applicable Federal flood plain management and flood insurance programs. It also amends this provision to require non-Federal interests to prepare a flood plain management plan designed to reduce the impacts of future flood events in the project area within one year of signing a project cooperation agreement and to implement the plan not later than one year after completion of construction of the project.
- 3. Applicability.** This guidance applies to any flood damage reduction or hurricane or storm damage reduction project or separable element thereof, including projects developed under Section 103, Section 205 and Section 208 of the Continuing Authorities Program, for which the Secretary and the non-Federal interest enter into a project cooperation agreement after 12 October 1996. Guidance for the preparation of flood plain management plans (FPMP) by non-Federal sponsors are provided in enclosure 2.
- 4. Policy.** It is our policy to promote prudent flood plain management at the non-Federal level by encouraging a non-Federal sponsor to develop its FPMP during the preparation of the feasibility study. A non-Federal sponsor's FPMP should implement measures, practices, and policies to reduce loss of life, injuries, damages to property and facilities, public expenditures, and other adverse impacts associated with flooding, and to preserve and enhance natural flood plain values and should also address measures which will help preserve levels of protection provided by the Corps flood damage reduction or hurricane or storm damage reduction project.

5. Procedures.

a. Notification: As with other project requirements, the potential non-Federal interest should be notified prior to the initiation of the reconnaissance study phase of the requirement to prepare and implement a FPMP pursuant to Section 202 (c) of WRDA 96.

b. Preparation of FPMP by Non-Federal Interests during the Feasibility Study: To ensure compatibility with the Corps project, the non-Federal interest should be encouraged to prepare its plan concurrently with the preparation of the feasibility study. This will ensure that the FPMP preparation and feasibility study plan formulation processes are compatible. In fact, much of the effort and information needed to support the preparation of a flood plain management plan by the non-Federal sponsor can be developed as part of the feasibility study in accordance with Principles and Guidelines and existing Corps planning guidance. This guidance requires that the inherent characteristics of the flood plain be described and determined. These characteristics include, but are not limited to: a description of the flood hazard; a description and delineation of the floodway and natural storage areas; a description of the natural and beneficial values including potential recreation areas, open space, wetlands and wildlife preserves; and, an identification of other physical attributes. In addition, the hydrologic and hydraulic data, and flood damage data, as well as other technical data, developed as part of the feasibility study are also crucial information necessary for the preparation of a FPMP.

During the formulation of a project for flood damage reduction or hurricane and storm damage reduction, both structural and non-structural alternatives or a mix of alternatives must be considered. As the Federal project evolves during the planning process and the “with project” condition is defined, those measures deemed outside of the scope of the Federal project can be identified as potential components of the non-Federal FPMP which must be designed to reduce the impacts of future flood events in the project area. This FPMP can include such things as land use regulations, redevelopment and relocation policies, disaster preparedness, flood proofing, levees, flood forecasting and warning systems, flood plain information, channelization, flood plain acquisition and easements, on-site detention of flood waters by protection of natural storage areas, and the preservation and restoration of the natural resources and functions of the floodplain. Further, the concurrent preparation of the FPMP by the non-Federal sponsor during the feasibility study provides the sponsor an opportunity to use the public involvement process to obtain public input for the development of its FPMP. Information that is developed as part of the feasibility study will be cost shared 50/50 and must be described in the Project Study Plan.

c. Preparation of FPMP by Non-Federal Interests after Feasibility Study is Completed: A non-Federal sponsor may elect not to pursue development of a FPMP while the feasibility study is ongoing. Any information that was developed as part of the study may be given to the local sponsor for its use. However, any additional assistance from the Corps after the feasibility study is completed will be provided at 100% non-Federal cost.

d. FEMA Accepted FPMP's. The guidance detailed in enclosure 2 closely follows the procedures for preparation and implementation of a FPMP for credit under FEMA's Community Rating System (CRS) of the National Flood Insurance Program (NFIP). A FPMP which has been prepared and adopted by the non-Federal interest, and has been accepted by FEMA as meeting the latest Flood Plain Management Planning credit criteria under the CRS of the NFIP may exceed the basic FEMA requirements and may comply with the requirements of 202 (c). However, the non-Federal interests should insure that the FEMA accepted FPMP does comply with the guidance in enclosure 2, is valid given the impact of the proposed project and includes consideration to preservation and enhancement of natural flood plain values. If the FEMA accepted FPMP does not meet these criteria, additional planning will be necessary.

e. Adoption of FPMP. The requirement for preparation of an FPMP can be considered met after the appropriate governing body (or bodies) has formally adopted a plan to reduce the impacts of future flood events.

f. Implementation of FPMP. Implementation of the FPMP is a local responsibility and is not included in the project cost.

g. Agreements. The requirement for the preparation and implementation of a FPMP pursuant to Section 202 (c) of WRDA 96 must be highlighted in the "Federal and State Laws" Article of the Feasibility Cost Sharing Agreement, the PED Agreement and the Project Cooperation Agreement signed by the non-Federal sponsor.

6. Implementation. This guidance letter is effective immediately.

FOR THE COMMANDER:

/s/

Encls

RUSSELL L. FUHRMAN

Major General, USA

Director of Civil Works

SECTION 202 (c) OF WRDA 1996
FLOOD PLAIN MANAGEMENT PLANS

(Enclosure 1)

c) Floodplain Management Plans.

(1) In general. --Section 402 of such Act (33 U.S.C. 701b-12; 100 Stat. 4133) is amended to read as follows:

SEC. 402. FLOODPLAIN MANAGEMENT REQUIREMENTS.

a) Compliance With Floodplain Management and Insurance Programs. --Before construction of any project for local flood protection, or any project for hurricane or storm damage reduction, that involves Federal assistance from the Secretary, the non-Federal interest shall agree to participate in and comply with applicable Federal floodplain management and flood insurance programs.

b) Flood Plain Management Plans. --Within 1 year after the date of signing a project cooperation agreement for construction of a project to which subsection a) applies, the non-Federal interest shall prepare a flood plain management plan designed to reduce the impacts of future flood events in the project area. Such plan shall be implemented by the non-Federal interest not later than 1 year after completion of construction of the project.

c) Guidelines. --

(1) In general. --Within 6 months after the date of the enactment of this subsection, the Secretary shall develop guidelines for preparation of floodplain management plans by non-Federal interests under subsection b). Such guidelines shall address potential measures, practices, and policies to reduce loss of life, injuries, damages to property and facilities, public expenditures, and other adverse impacts associated with flooding and to preserve and enhance natural floodplain values.

(2) Limitation on statutory construction. --Nothing on this subsection shall be construed to confer any regulatory authority upon the Secretary or the Director of the Federal Emergency Management Agency.

d) Technical Support. --The Secretary may provide technical support to a non-Federal interest for a project to which subsection a) applies for the development and implementation of plans prepared under subsection b).

(2) Applicability. --The amendment made by paragraph (1) shall apply to any project or separable element thereof with respect to which the Secretary and the non-Federal interest have not entered into a project cooperation agreement on or before the date of the enactment of this Act.

CECW-PF 7

November 1997

**GUIDANCE ON THE DEVELOPMENT OF
FLOOD PLAIN MANAGEMENT PLANS**

(Enclosure 2)

1. This document provides guidance on the development of flood plain management plans in accordance with Section 202 (c) of WRDA 1996. Included in this document are (1) general concepts describing the goals and objectives of flood plain management plans and strategies and tools for achieving those goals and objectives; (2) specific guidance describing the requirements for the non-Federal interest to comply with Section 202 (c); and (3) references providing additional resources to assist the non-Federal interest in the preparation of the flood plain management plan.
2. In general, a Flood Plain Management Plan (FPMP) attempts to lessen the damaging effects of floods and/or storm surges, maintain and enhance natural flood-plain values, and make effective use of water and related land resources within the flood plain. A FPMP attempts to balance benefits obtainable from use of the flood plain with potential losses arising from such use. The comprehensive nature of such a plan stresses consideration of the full range of structural and non-structural measures potentially useful in achieving its objectives. The concepts contained in this guidance were developed to closely follow the 1994 Unified National Program for Floodplain Management and to ensure compatibility with the National Flood Insurance Program's Community Rating System.
3. Specifically, Section 202 (c) of WRDA 96 requires that the non-Federal interest shall prepare a flood plain management plan designed to reduce the impacts of future flooding in the project area. The FPMP should be based on post-project flood plain conditions. The primary focus of the FPMP should be to address potential measures, practices and policies which will reduce the impacts of future residual flooding, help preserve levels of protection provided by the Corps project and preserve and enhance natural flood plain values. In addition, the FPMP should address the risk of future flood damages to structures within the post-project flood plain and internal drainage issues related to Corps levee/floodwall projects. Since actions within the flood plain upstream and downstream from the project area can affect the performance of the Corps project, the FPMP developed by the non-Federal sponsor should not be limited to addressing measures solely within the immediate project boundaries.

4. An effective FPMP should result in continuing consideration of the flood hazard in the use of land and water resources in the flood plain and provide benefits to all government levels and the public, including:

- a. Reducing loss of life, injury and hardship due to floods;
- b. Reducing flood damages;
- c. Reducing public expenditures for construction of additional flood damage reduction measures, emergency response actions, and post-disaster assistance; and,
- d. Preserving and enhancing natural flood plain values for fish and wildlife habitat along with their attendant benefits of groundwater recharge, moderation of floods, water quality improvement, and reduced erosion and sedimentation.

5. The following process should be followed and documented to ensure that development and implementation of the Flood Plain Management Plan (FPMP) involves the appropriate stakeholders and addresses the appropriate needs of the local community.

- a. There should be an identified non-Federal planner, or a planning committee established by the non-Federal interest, responsible for overall accomplishment of the FPMP.
- b. There should be active public involvement throughout the FPMP development process. This should include coordination with other local, regional, state, and federal agencies and non-governmental groups.
- c. Problems associated with the flood and/or storm surge hazard should be assessed.
Other problems and needs such as water quality, water supply, recreation, and environmental concerns, should also be addressed during this process.
- d. Based on the problems and needs identified through the Corps study and the above process, goals should be set and an action plan developed to meet those goals.
- e. The action plan is a blueprint for implementation of the FPMP. The FPMP must be implemented not later than one year after completion of construction of the Federal project.

6. The four main strategies and their related tools which should be considered, and which may be included as elements of the FPMP are:

- a. modify human susceptibility to flood damage and disruption, with
 - 1) land use regulations, such as a regulatory floodway designation which is more restrictive than NFIP regulatory floodway criteria of 1-foot rise in the 100-year flood elevation.
 - 2) public development & redevelopment policies, such as “no net increase in runoff” requirements for new development within its jurisdiction and/or first floor elevation requirements for new development within the post-project flood plain that exceed the NFIP requirements.

- 3) flood warning systems, including detailed response plans for the post-project flood plain which provides adequate warning and response to prevent loss of life and reduce flood damages to contents of structures.
 - 4) flood damage reduction measures such as floodproofing of structures in the post-project flood plain and/or permanent relocation of structures from the postproject flood plain.
 - b. modify the impact of flooding, with
 - 1) information and education
 - 2) flood insurance
 - 3) tax adjustments
 - 4) emergency relief
 - 5) post-flood recovery
 - c. preserve and restore the natural resources and functions of flood plains, such as
 - 1) wetlands protection or restoration
 - 2) erosion and sediment control
 - 3) water quality enhancement
 - 4) enhancement of recreation and educational opportunities
 - 5) preservation of cultural resources
 - d. modify flooding, with
 - 1) dams and reservoirs
 - 2) levees, dikes, and floodwalls
 - 3) channel alterations, diversions, and bypasses
 - 4) bridge modifications
 - 5) pumping stations
 - 6) onsite detention
7. There is no “standard” FPMP. In addition, in most cases, no single strategy will be sufficient; rather, a combination of strategies and tools will most likely be needed to further reduce the residual risks to acceptable levels. By selecting the best mix of these strategies, decision makers can tailor the FPMP to the characteristics of a specific flood plain and to the needs of its constituents. The combination must be based on what is available, practicable, affordable, and likely to be successful for the flood plain in question, keeping in mind the dual purposes of flood plain management: reducing loss of life, disruption, and damages; and preserving and restoring natural resources and functions.

8. The FPMP should contain (1) documentation of the process used to develop the FPMP, including records of meetings and public involvement activities, (2) a listing of the goals and objectives, (3) a listing of the strategies and tools considered and reasons for inclusion or rejection, and (4) a detailed action plan for implementation of the activities selected for inclusion in the FPMP. Also, as a minimum, the FPMP prepared and implemented by the non-Federal interests must include the following activities:

- a. The non-Federal interest must maintain and provide public access to the most current flood hazard maps and related information.
- b. On an annual basis, the non-Federal interest must provide information to owners and residents of flood prone property within its jurisdiction concerning the residual flood risk and availability of flood insurance.

9. REFERENCES.

a. The following is a list of publications which provide additional information on the concepts of flood plain management and development of flood plain management plans. In addition to the publications listed below, many states have published guidebooks for community flood plain management and flood damage mitigation.

(1) *Addressing Your Community's Flood Problems, A Guide for Elected Officials*, Association of State Floodplain Managers, 1997.

(2) *Using Multi-Objective Management to Reduce Flood Losses in Your Watershed*, Association of State Floodplain Managers, 1996.

(3) *Community Rating System Coordinator's Manual, Activity 510 (Flood Plain Management Planning)*, Federal Emergency Management Agency, 1996.

(4) *Protecting Floodplain Resources - A Guidebook for Communities*, Federal Interagency Floodplain Management Task Force, September 1995.

(5) *A Unified National Program for Floodplain Management*, Federal Interagency Floodplain Management Task Force, 1994.

(6) *Measures to Reduce Flood Damage*, U.S. Army Corps of Engineers Hydrologic Engineering Center, March 1990.

(7) *Flood Plain Management Handbook*, United States Water Resources Council, September 1981 (U.S. Government Printing Office).

(8) *A Process For Community Flood Plain Management*, U.S. Department of the Interior, April 1980.

DRAFT

Appendix E: FEMA Region IV Contact

FEMA REGION IV—Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
Address: 3003 Chamblee Tucker Rd.
Atlanta, GA 30341
Phone: (770) 220-5400
Fax: (770) 220-5440

DRAFT

Appendix F: Santa Rosa County Habitability and RSDE Worksheet

Santa Rosa County - HABITABILITY AND RSDE WORKSHEET

TRACKING NUMBER _____ LAT _____ LONG _____
 SUBDIVISION _____ PARCEL NUMBER _____
 OWNERS NAME: FIRST _____ LAST _____
 BUILDING ADDRESS _____
 CITY _____ STATE _____ ZIP _____
 MAILING ADDRESS _____ PHONE: _____
 CITY _____ STATE _____ ZIP _____

OCCUPANCY TYPE					
RESIDENTIAL	_____	COMMERCIAL	_____	MULTI-FAMILY	_____
MBH	_____				
FRAME	_____	METAL	_____	MASONRY	_____
LENGTH X WIDTH	_____				
BUILDING VALUE:	_____	SOURCE:	_____	JURISDICTION	_____
APPRaiser	_____				
DATE OF CONSTRUCTION			DATE OF DAMAGE		
DEPTH OF FLOODING	_____	BP#	_____	DATUM	_____
FFe	_____				
CAUSE OF DAMAGE:	FLOOD	FIRE	FIRE & WIND	WIND	FLOOD & WIND
BUILDING QUALITY	LOW	FAIR	AVERAGE	GOOD	VERY GOOD
EXCELLENT					
TYPE	1 STY	1 1/2 STY	2 STY	< 2 STY	2 STY BI-LEVEL SPLIT LEVEL
PERCENTAGE OF DAMAGE FIELD ESTIMATE					
_____ %	FOUNDATION	_____ %	HARDWARE		
_____ %	SUPERSTRUCTURE	_____ %	CABINETS/COUNTERTOPS		
_____ %	ROOFING	_____ %	FLOOR COVERINGS		
_____ %	INSULATION	_____ %	PLUMBING		
_____ %	EXTERIOR FINISH	_____ %	ELECTRICAL		
_____ %	INTERIOR FINISH	_____ %	BUILT IN APPLIANCES		
_____ %	DOORS, WINDOWS AND SHUTTERS	_____ %	HVAC		
_____ %	FINISH TRIM	_____ %	PAINTING		

DAMAGE CATEGORIES		
WATER DAMAGE ONLY	_____	MINOR STRUCTURAL
MAJOR STRUCTURAL	_____	
PARTIALLY COLLAPSED	_____	OFF FOUNDATION
DESTROYED/COLLAPSED	_____	

UTILITIES		
SHOULD WATER REMAIN OFF?	YES	NO
SHOULD ELECTRICITY REMAIN OFF?	YES	NO
SHOULD GAS REMAIN OFF?	YES	NO

HABITABILITY		
HABITABLE	_____	UNHABITABLE
HABITABLE W/REPAIRS	_____	

FLOOD INFORMATION			
MAP & PANEL	_____	DATE	_____
ZONE	_____	BFE	_____

INSPECTOR DATA	
NAME	_____
DATE	_____

DATE ENTERED INTO RSDE:	_____	BY:	_____
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Developed for use with the Residential Substantial Damage Estimator Program

NOTES AND COMMENTS

 Engineers evaluation.
INSURANCE PAPERWORK

Appendix G: Content from January – April NFIP/CRS Update

The NFIP/CRS Update is “...produced in alternate months. It is distributed electronically, at no cost, to local and state officials, consultants, and others who want to be on the mailing list. Communities are encouraged to copy and/or circulate the *NFIP/CRS Update* and to reprint its articles in their own local, state, or regional newsletters. No special permission is needed.”

CRS Users Groups

There are county-wide users groups in Palm Beach, Broward, Miami-Dade, and Pinellas counties, Florida. The 3 individuals listed below understand and have explained to NFIP/CRS how Palm Beach, Broward and Miami-Dade counties organized informal committees of CRS Coordinators and others interested in floodplain management:

- Kathy Sweeney (Boynton Beach), Leonard Vialpando (Broward County), and Marlen Martell (Sunny Isles Beach) and (Board of Directors Florida Floodplain Managers Association).

All 3 counties’ “Users Group” were formed from unique origins, but all three share common procedures:

- None of the groups has dues or a formal set of rules. There are no officers, other than a chair or two or three co-chairs, depending on the level of interest of the individuals. These leaders handle the agenda, meeting notices, and minutes.
- They have regular monthly meetings. Palm Beach County meets from 10 A.M. to noon, allowing members to stick around for lunch if they want, or to get back to work. This group meets twice a month during the Spring Expo preparations.
- Because the three counties adjoin each other, they send notices of their meetings to each other. The groups are sending their mailing list to ISO to ensure that everyone is getting the NFIP/CRS Update.
- Meetings may be at a County office or rotated among interested communities. Sometimes someone brings refreshments.
- A typical agenda is to spend the meeting on one CRS activity or element or a related floodplain management topic, such as HAZUS. The speaker may be someone who has a lot of experience in the activity, or the meeting may be a general discussion of everyone’s experiences with the subject.
- The participants have gotten to know each other better. When a severe storm hit the area last December they were better able to help each other.
- When possible, Sue Hopfensperger, ISO-CRS Specialist for Southeast Florida, attends the meeting, allowing her to talk to as many as 20 of her communities at a time. When she is not present and CRS questions arise, they are sent to her

and the answers are distributed to all the members. One of the groups sends its minutes to Sue before they are sent out to make sure the information is correct.

- In the summer, Sue spoke on the annual recertification procedures. She noted that the recertifications she received were much better than those of previous years.
- On two occasions, ISO has been able to send a technical reviewer to help with technical activities. In January 2010, ISO piloted a five-hour workshop on mapping and mitigating repetitive loss properties. Sixty-five people from all three counties attended.
- Several non-CRS communities have attended meetings to learn about the CRS and the subject matter on the agenda. Two communities have joined because of this and more new applications are in the mill.
- There are no CRS credits for the organizations or for attending the meetings. However, the information learned has helped communities improve their activities. Sue reports that 18 member communities have improved their CRS classes since the committees started.
- There are no continuing education credits for Certified Floodplain Managers for attending the meetings, but participants at the repetitive loss workshop did receive five CECs.

In 2008, Broward County's LMS committee was working on updating its multi-hazard mitigation plan. Representatives from some CRS communities noted that there were ways the county could receive more CRS credit for its work. A subcommittee was formed to focus on these concerns.

The Miami-Dade County "Floodplain Round Table Discussion group" started as a CRS organization. Organizers Marlen Martell and Mike Gambino (Miami Gardens) sent a notice to city managers and CRS Coordinators of all the communities in the County, inviting them to the first meeting of a CRS users group in April of 2009. Seventeen communities were represented at the first meeting.

The consensus, as stated by Marlen Martel, appeared to be that county user groups have helped; especially by "tackling each activity piece by piece with your peers who have dealt with it is much simpler than reading the CRS Coordinator's Manual." The user groups did not result in communities simply 'copying each other'. In contrast, participants learn about activities and how neighbors are implementing them; then they tailor these practices to fit their own needs.

If a community is interested in forming a CRS users group, NFIP/CRS/ISO recommends contacting the ISO-CRS Specialist.

Appendix H: List of ISO-CRS Specialists for Florida

List of Community Rating System / Insurance Services Office Specialists for Florida:

Lori Lehr, CFM

3441 Pittman Road
Dover, FL 33527
Phone: 813-441-4934
Cell: 813-215-8074
E-mail: llehr@iso.com

Heidi Liles, CFM

284 W. Sabal Palm Place
Longwood, FL 32779
Ph/Fax: 407-774-7494
Cell: 407-619-5656
E-mail: hliles@iso.com

Sue Hopfensperger, CFM

95175 Plum Loop
Fernandina Beach, FL 32034-7228
Phone/Cell: 904-415-1692
E-mail: shopfensperger@iso.com

Planning Technical Coordinator. Contact info:

Sherry Harper, AICP, CFM

2382 Susan Drive
Crestview, FL 32536
Phone: 850-682-1998
Cell: 850-902-5075
E-mail: sharper@iso.com

Appendix I: Weather Forecast Offices in the State of Florida

The National Weather Service (NWS) through the National Oceanic and Atmospheric Administration (NOAA) maintains 6 Weather Forecast Offices (WFOs) in the State of Florida:

Tallahassee (counties: Washington, Walton, Wakulla, Taylor, Madison, Liberty, Leon, Lafayette, Jefferson, Jackson, Holmes, Gulf, Gadsden, Franklin, Dixie, Calhoun, Bay)
sr-tae.webmaster@noaa.gov (Web Master's Email Address)

Melbourne (counties: Brevard, Indian River, Lake, Martin, Okeechobee, Orange, Osceola, St. Lucie, Seminole, Volusia)
sr-mlb.webmaster@noaa.gov (Web Master's Email Address)

Miami (counties: Broward, Collier, Glades, Henry, Miami-Dade, Monroe (mainland portion), Palm Beach)
sr-mfl.webmaster@noaa.gov (Web Master's Email Address)

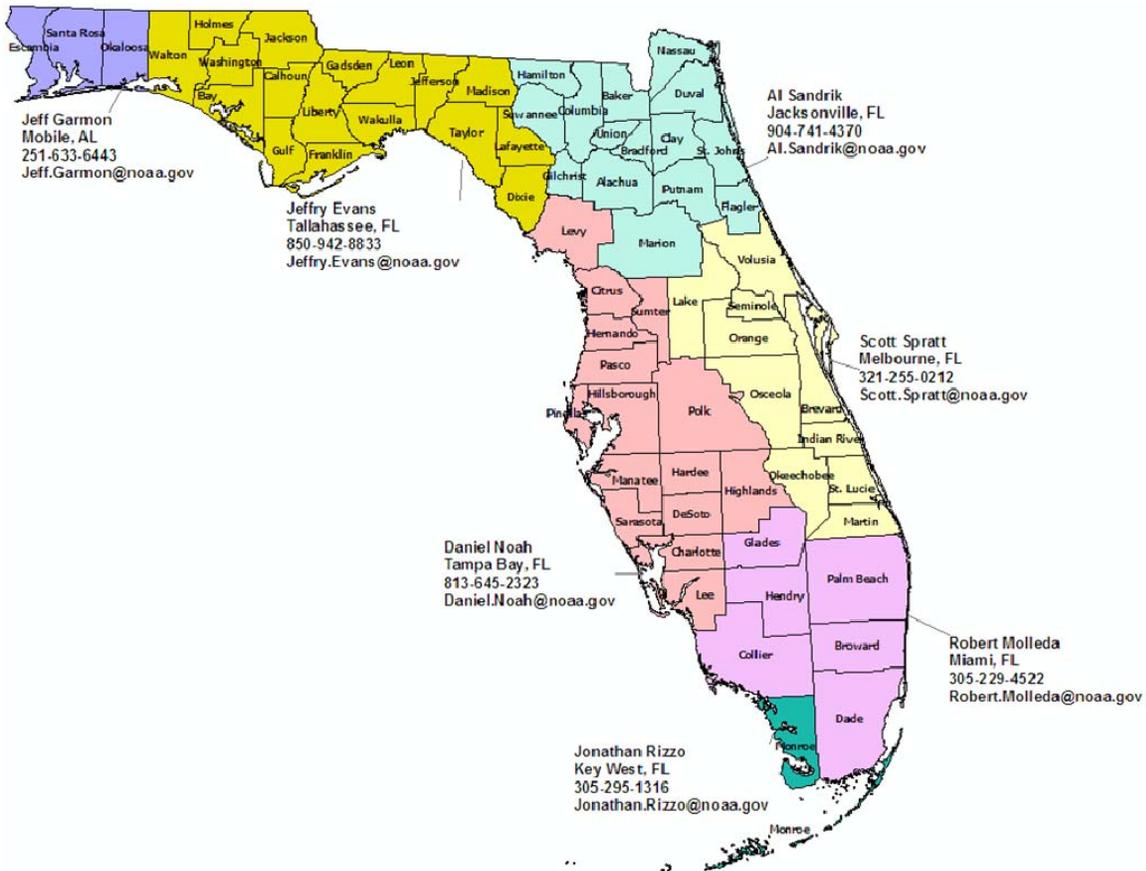
Key West (counties: N/A; responsible for the Florida Keys, extending from Key West to Ocean Reef [upper Key Largo])
sr-key.webmaster@noaa.gov (Web Master's Email Address)

Tampa Bay area (counties: Charlotte, Citrus, DeSoto, Hardee, Hernando, Highlands, Hillsborough, Lee, Levy, Manatee, Pasco, Pinellas, Polk, Sarasota, Sumter)
sr-tbw.webmaster@noaa.gov (Web Master's Email Address)

Jacksonville (counties: Alachua, Baker, Bradford, Clay, Columbia, Duval, Flagler, Gilchrist, Hamilton, Marion, Nassau, Putnam, St. Johns, Suwannee, Union)
sr-jax.webmaster@noaa.gov (Web Master's Email Address)

A map is provided on the next page.

Recommended Integration Practices: Strengthening the FMP Portions of the LMS
Florida Division of Emergency Management and Florida Planning and Development Lab



Source: <http://www.stormready.noaa.gov/stormmaps/fl-cwa.htm>

Appendix J: Florida Regional Planning Councils

The eleven RPCs and counties nested under each are listed below:

West Florida: Escambia, Santa Rosa, Okaloosa, Walton, Holmes, Washington, and Bay

Apalachee: Jackson, Calhoun, Gulf, Liberty, Gadsden, Franklin, Wakulla, Leon, Jefferson

North Central Florida: Madison, Taylor, Hamilton, Suwannee, Lafayette, Dixie, Gilchrist, Columbia, Union, Bradford, Alachua

Northeast Florida: Nassau, Baker, Duval, Clay, St. Johns, Putnam, Flagler

Withlacoochee: Levy, Marion, Citrus, Sumter, Hernando

East Central Florida: Volusia, Lake, Seminole, Orange, Osceola, Brevard

Central Florida: Polk, Hardee, Okeechobee, De Soto, Highlands

Tampa Bay: Pasco, Hillsborough, Pinellas, Manatee

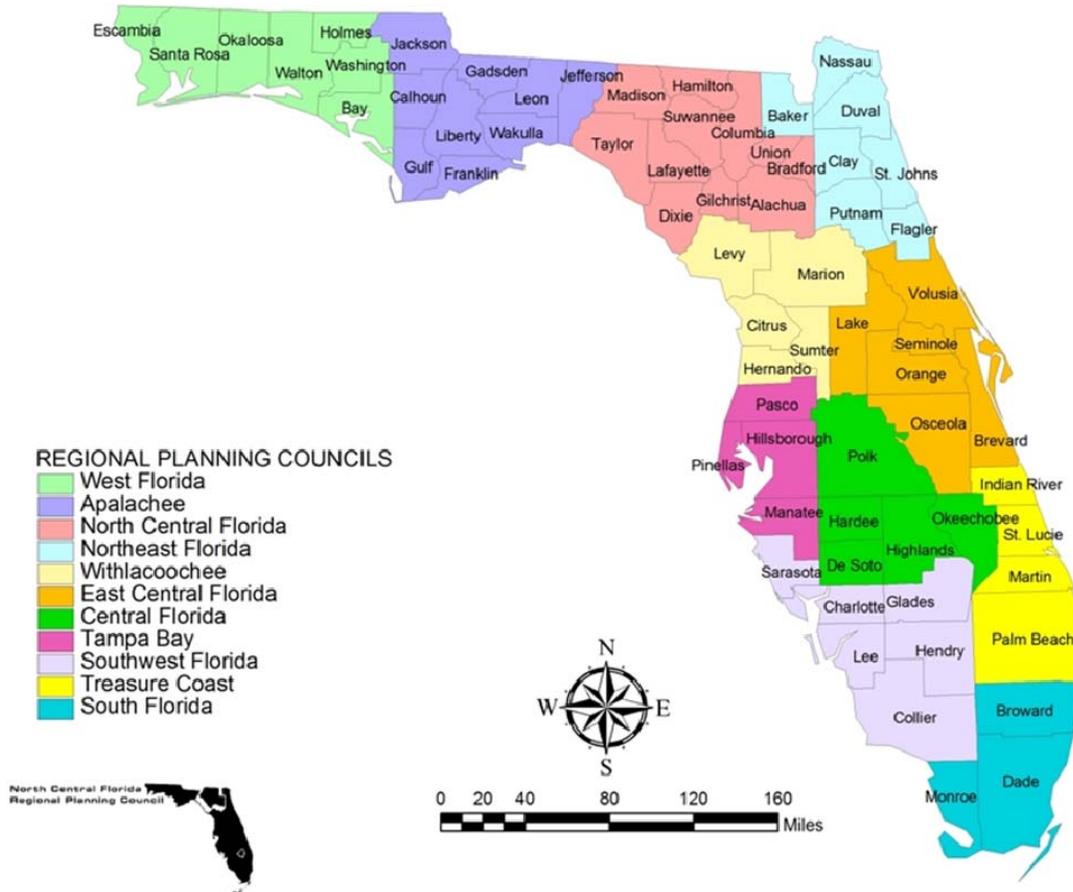
Southwest Florida: Sarasota, Charlotte, Glades, Lee, Hendry, Collier

Treasure Coast: Indian River, St. Lucie, Martin, Palm Beach

South Florida: Broward, Monroe, Miami-Dade

A map is provided on the next page.

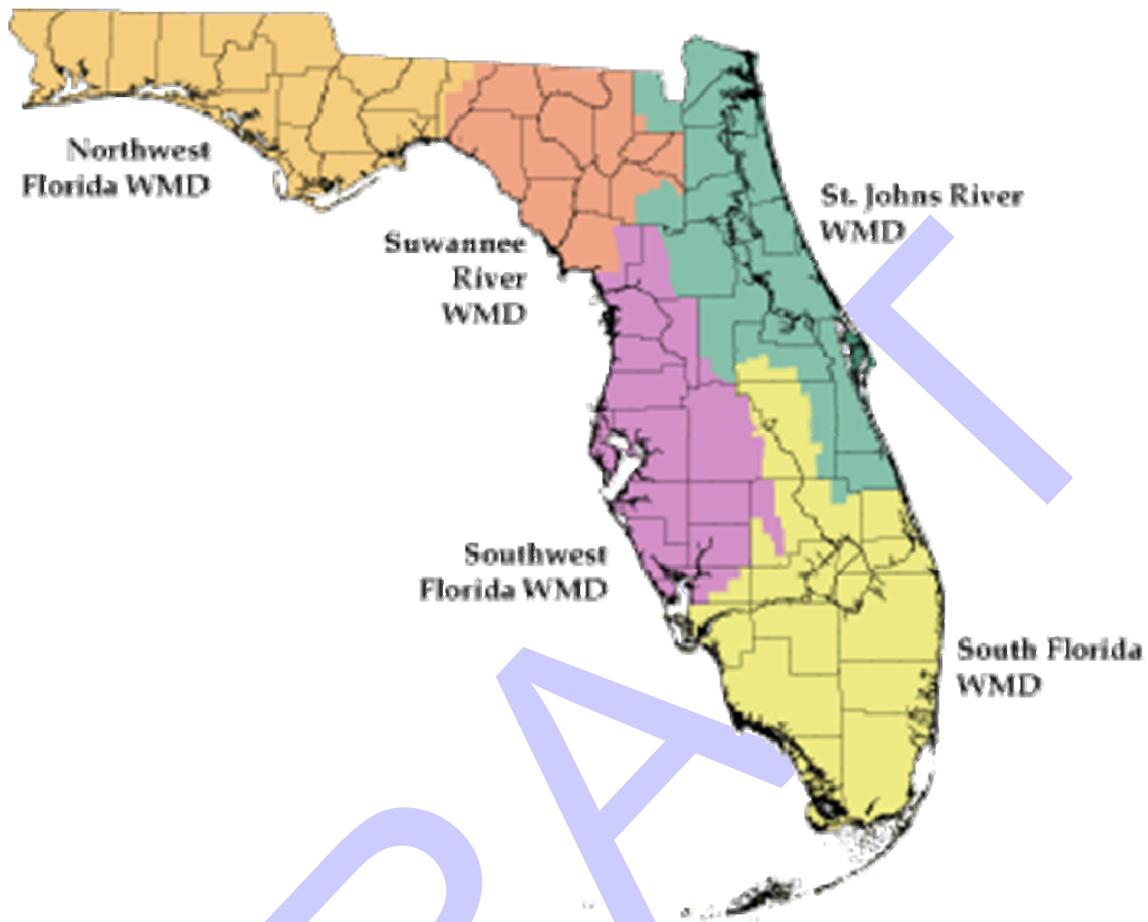
Florida Regional Planning Councils



Source: <http://www.ncfrpc.org/state.html>

Appendix K: Map and Contact information for the Water Management Districts

WMD	JURISDICTION	OFFICE
<u>Northwest Florida WMD</u>	Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson (western half), Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton, & Washington	81 Water Management Drive Havana, FL 32333 850/539-5999
<u>Suwannee River WMD</u>	Columbia, Dixie, Gilchrist, Hamilton, Lafayette, Madison, Suwannee, Taylor, Union and portions of Alachua, Baker, Bradford, Jefferson & Levy	9225 CR 49 Live Oak, FL 32060 386/362-1001
<u>St. Johns River WMD</u>	Brevard, Clay, Duval, Flagler, Indian River, Nassau, Seminole, St. Johns, Volusia, and portions of Alachua, Baker, Bradford, Lake, Marion, Okeechobee, Orange, Osceola & Putnam	P.O. Box 1429 Palatka, FL 32178-1429 386/329-4500
<u>Southwest Florida WMD</u>	Citrus, DeSoto, Hardee, Hernando, Hillsborough, Manatee, Pasco, Pinellas, Sarasota, Sumter, and portions of Charlotte, Highlands, Lake, Levy, Marion & Polk	2379 Broad Street Brooksville, FL 34604-6899 352/796-7211
<u>South Florida WMD</u>	Broward, Collier, Dade, Glades, Hendry, Lee, Martin, Monroe, Palm Beach, St. Lucie, and portions of Charlotte, Highlands, Okeechobee, Orange, Osceola & Polk	3301 GunClub Road West Palm Beach, FL 33406 561/686-8800
SOURCE:	http://www.dep.state.fl.us/secretary/watman/ (Last updated: June 18, 2008)	



Appendix L: Local Mitigation Plan Review (July 1, 2008)

LOCAL MITIGATION PLAN REVIEW CROSSWALK

INSTRUCTIONS FOR USING THE PLAN REVIEW CROSSWALK FOR REVIEW OF LOCAL MITIGATION PLANS

Attached is a Plan Review Crosswalk based on the *Local Multi-Hazard Mitigation Planning Guidance*, published by FEMA in June, 2008. This Plan Review Crosswalk is consistent with the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by Section 322 of the Disaster Mitigation Act of 2000 (P.L. 106-390), the National Flood Insurance Act of 1968, as amended by the National Flood Insurance Reform Act of 2004 (P.L. 108-264) and 44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning, inclusive of all amendments through October 31, 2007.

SCORING SYSTEM

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer’s comments must be provided.
S – Satisfactory: The plan meets the minimum for the requirement. Reviewer’s comments are encouraged, but not required.

Each requirement includes separate elements. All elements of a requirement must be rated “Satisfactory” in order for the requirement to be fulfilled and receive a summary score of “Satisfactory.” A “Needs Improvement” score on elements shaded in gray (recommended but not required) will not preclude the plan from passing.

When reviewing single jurisdiction plans, reviewers may want to put an N/A in the boxes for multi-jurisdictional plan requirements. When reviewing multi-jurisdictional plans, however, all elements apply. States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements. Optional matrices for assisting in the review of sections on profiling hazards, assessing vulnerability, and identifying and analyzing mitigation actions are found at the end of the Plan Review Crosswalk.

The example below illustrates how to fill in the Plan Review Crosswalk.:

Element	Location in the Plan (section or annex and page #)	Reviewer’s Comments	SCORE	
			N	S
Assessing Vulnerability: Overview Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.				
A. Does the new or updated plan include an overall summary description of the jurisdiction’s vulnerability to each hazard?	Section II, pp. 4-10	The plan describes the types of assets that are located within geographically defined hazard areas as well as those that would be affected by winter storms.		<input type="checkbox"/>
B. Does the new or updated plan address the impact of each hazard on the jurisdiction?	Section II, pp. 10-20	The plan does not address the impact of two of the five hazards addressed in the plan. Required Revisions: • Include a description of the impact of floods and earthquakes on the assets. Recommended Revisions: This information can be presented in terms of dollar value or percentages of damage.	<input type="checkbox"/>	
SUMMARY SCORE				<input type="checkbox"/>

LOCAL MITIGATION PLAN REVIEW CROSSWALK

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a "Needs Improvement" score.

Prerequisite(s) (Check Applicable Box)	NOT MET	MET
1. Adoption by the Local Governing Body: §201.6(c)(1) OR	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Multi-jurisdictional Plan Adoption: §201.6(c)(5) AND	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Multi-jurisdictional Planning Participation: §201.6(a)(3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planning Process	N	S
4. Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Risk Assessment	N	S
5. Identifying Hazards: §201.6(c)(2)(i)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Profiling Hazards: §201.6(c)(2)(ii)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Assessing Vulnerability: Overview: §201.6(c)(2)(iii)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Assessing Vulnerability: Addressing Repetitive Loss Properties: §201.6(c)(2)(iv)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Assessing Vulnerability: Identifying Structures, Infrastructure, and Critical Facilities: §201.6(c)(2)(v)(b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(v)(c)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(v)(d)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Multi-jurisdictional Risk Assessment: §201.6(c)(2)(vi)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

*States that have additional requirements can add them in the appropriate sections of the Local Multi-Hazard Mitigation Planning Guidance or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. *Reviewer's comments must be provided.*

S – Satisfactory: The plan meets the minimum for the requirement. *Reviewer's comments are encouraged, but not required.*

Mitigation Strategy	N	S
13. Local Hazard Mitigation Goals: §201.6(c)(3)(i)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14. Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. Identification and Analysis of Mitigation Actions: NFIP Compliance: §201.6(c)(3)(iii)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16. Implementation of Mitigation Actions: §201.6(c)(3)(iv)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17. Multi-jurisdictional Mitigation Actions: §201.6(c)(3)(v)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Plan Maintenance Process	N	S
18. Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19. Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20. Continued Public Involvement: §201.6(c)(4)(iii)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Additional State Requirements*	N	S
Insert State Requirement	<input type="checkbox"/>	<input type="checkbox"/>
Insert State Requirement	<input type="checkbox"/>	<input type="checkbox"/>
Insert State Requirement	<input type="checkbox"/>	<input type="checkbox"/>

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED

See Reviewer's Comments

PLAN APPROVED

LOCAL MITIGATION PLAN REVIEW CROSSWALK

Local Mitigation Plan Review and Approval Status

Jurisdiction:	Title of Plan:	Date of Plan:
Local Point of Contact:	Address:	
Title:		
Agency:		
Phone Number:	E-Mail:	

State Reviewer:	Title:	Date:
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FEMA Reviewer:	Title:	Date:
Date Received in FEMA Region [Insert #]		
Plan Not Approved		
Plan Approved		
Date Approved		

Jurisdiction:	NFIP Status*			CRS Class
	Y	N	N/A	
1.				
2.				
3.				
4.				
5. [ATTACH PAGE(S) WITH ADDITIONAL JURISDICTIONS]				

* Notes: Y = Participating N = Not Participating N/A = Not Mapped

LOCAL MITIGATION PLAN REVIEW CROSSWALK

PREREQUISITE(S)

1. Adoption by the Local Governing Body

Requirement §201.6(c)(6): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Has the local governing body adopted new or updated plan?				
B. Is supporting documentation, such as a resolution, included?				
SUMMARY SCORE				

2. Multi-Jurisdictional Plan Adoption

Requirement §201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan **must** document that it has been formally adopted.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the new or updated plan indicate the specific jurisdictions represented in the plan?				
B. For each jurisdiction, has the local governing body adopted the new or updated plan?				
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?				
SUMMARY SCORE				

3. Multi-Jurisdictional Planning Participation

Requirement §201.6(a)(3): Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process ... Statewide plans will not be accepted as multi-jurisdictional plans.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the new or updated plan describe how each jurisdiction participated in the plan's development?				
B. Does the updated plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

PLANNING PROCESS: §201.6(b): *An open public involvement process is essential to the development of an effective plan.*

4. Documentation of the Planning Process

Requirement §201.6(b): *In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*

- (1) *An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*
- (2) *An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and*
- (3) *Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.*

Requirement §201.6(c)(1): *[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the plan provide a narrative description of the process followed to prepare the new or updated plan?				
B. Does the new or updated plan indicate who was involved in the current planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)				
C. Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)				
D. Does the new or updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?				
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?				
F. Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

RISK ASSESSMENT: §201.6(c)(2): *The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

5. Identifying Hazards

Requirement §201.6(c)(2)(f): *[The risk assessment shall include a] description of the type ... of all natural hazards that can affect the jurisdiction.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include a description of the types of all natural hazards that affect the jurisdiction?				
SUMMARY SCORE				

6. Profiling Hazards

Requirement §201.6(c)(2)(f): *[The risk assessment shall include a] description of the ... location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the risk assessment identify the location (i.e., geographic area affected) of each natural hazard addressed in the new or updated plan?				
B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the new or updated plan?				
C. Does the plan provide information on previous occurrences of each hazard addressed in the new or updated plan?				
D. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the new or updated plan?				
SUMMARY SCORE				



LOCAL MITIGATION PLAN REVIEW CROSSWALK

7. Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?				
B. Does the new or updated plan address the impact of each hazard on the jurisdiction?				
SUMMARY SCORE				

8. Assessing Vulnerability: Addressing Repetitive Loss Properties

Requirement §201.6(c)(2)(ii): [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged floods.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?		Note: This requirement becomes effective for all local plans approved after October 1, 2008.		
SUMMARY SCORE				

9. Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area ...

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?		Note: A "Needs improvement" score on this requirement will not preclude the plan from passing.		
B. Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?		Note: A "Needs improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

10. Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): *[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan estimate potential dollar losses to vulnerable structures?		Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
B. Does the new or updated plan describe the methodology used to prepare the estimate?		Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

11. Assessing Vulnerability: Analyzing Development Trends

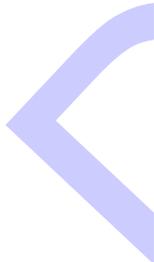
Requirement §201.6(c)(2)(ii)(C): *[The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe land uses and development trends?		Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.		
SUMMARY SCORE				

12. Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): *For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?				
SUMMARY SCORE				



LOCAL MITIGATION PLAN REVIEW CROSSWALK

MITIGATION STRATEGY: §201.6(c)(3): *The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.*

13. Local Hazard Mitigation Goals

Requirement §201.6(c)(3)(f): *[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?				
SUMMARY SCORE				

14. Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): *[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?				
B. Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?				
C. Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?				
SUMMARY SCORE				



LOCAL MITIGATION PLAN REVIEW CROSSWALK

15. Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance

Requirement: §201.6(c)(3)(ii): [The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe the jurisdiction (s) participation in the NFIP?		Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.		
B. Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?		Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.		
SUMMARY SCORE				

16. Implementation of Mitigation Actions

Requirement: §201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(i) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?)				
B. Does the new or updated mitigation strategy address how the actions will be implemented and administered, including the responsible department, existing and potential resources and the timeframe to complete each action?				
C. Does the new or updated prioritization process include an emphasis on the use of a cost-benefit review to maximize benefits?				
D. Does the updated plan identify the completed, deferred or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

17. Multi-Jurisdictional Mitigation Actions

Requirement §201.6(c)(3)(iv): For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan include identifiable action items for each jurisdiction requesting FEMA approval of the plan?				
B. Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?				
SUMMARY SCORE				

PLAN MAINTENANCE PROCESS

18. Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): [The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe the method and schedule for monitoring the plan, including the responsible department?				
B. Does the new or updated plan describe the method and schedule for evaluating the plan, including how, when and by whom (i.e. the responsible department)?				
C. Does the new or updated plan describe the method and schedule for updating the plan within the five-year cycle?				
SUMMARY SCORE				

LOCAL MITIGATION PLAN REVIEW CROSSWALK

19. Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): [The plan shall 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.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?				
B. Does the new or updated plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?				
C. Does the updated plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?				
SUMMARY SCORE				

Continued Public Involvement

Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan explain how continued public participation will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)				
SUMMARY SCORE				



Appendix M: CRS 10 Step Mitigation Planning Process

