

City of Cape May



Cape May County, New Jersey

Floodplain Management Plan

September 10, 2009



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Prepared For:

**City of Cape May
643 Washington Street
Cape May, NJ 08204**

Members of the Floodplain Management Plan Committee:

Lisa Taylor, Chairperson.....	CRS Coordinator
William Callahan.....	Construction Official
John Queehan.....	Code Enforcement
Mary Rothwell.....	Zoning Officer/Board Administrator
Jerome Inderwies, Jr.....	Chief, Fire Department
Robert Smith.....	Supt. of Public Works, OEM Coordinator
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Table of Contents

Members of the Floodplain Management Plan Committee.....	I
Table of Contents	II
1. Introduction.....	1
Purpose.....	1
National Flood Insurance Program.....	1
Community Rating System	2
2. Cape May Background.....	3
Regional Location.....	3
Natural Features.....	5
Population and Development Trends.....	7
3. Floodplain Management Planning and Strategies.....	8
Phase I – Planning Process.....	8
Phase II – Risk Assessment.....	11
Description of Flood Area and Flood Hazards.....	12
History of Past Hazards & Review of State Hazard Mitigation Plan.....	13
Vulnerability Assessment.....	14
Phase III – Mitigation Strategy.....	16
Goals.....	16
Review of Possible Activities & Action Plan.....	18
Phase IV – Plan Maintenance.....	29
4. References.....	30
5. Appendix.....	31

1. Introduction

Purpose

This plan has been prepared as the City of Cape May's Floodplain Management Plan. This plan has been prepared to create a comprehensive strategy for implementing technically feasible flood mitigation activities for the City. The objectives of the floodplain management plan will:

- Provide a comprehensive review of possible activities and mitigation measures so that the most appropriate solutions are used to address the hazards identified.
- Ensure that the recommended activities meet the goals and objectives of the community, do not create conflicts with other activities, and are coordinated with all to reduce the costs of implementing individual activities.
- Create easily accessible information to educate residents about the hazards, loss reduction measures, and the natural and beneficial functions of floodplains.
- Build public and political support for projects that prevent new problems, reduce losses, and protect the natural and beneficial functions of floodplains.
- Build a constituency that desires to see the plan's recommendations implemented.

National Flood Insurance Program

The Mitigation Directorate, which is a part of the Federal Emergency Management Agency (FEMA), controls the National Flood Insurance Program (NFIP). The NFIP is divided into three parts: Flood Insurance, Floodplain Management, and Flood Hazard Mapping.

To minimize future flood damage, numerous communities across the United States are participating in the NFIP by adopting and enforcing floodplain management ordinances. In exchange for their efforts, federally backed flood insurance is made available to homeowners, renters, and business owners in these communities. Participation is not required for members of the community.

The cost of repairing damage to buildings caused by floods is increasing. To lower this cost, flood insurance was designed as an alternative to disaster assistance. Through the efforts of communities implementing floodplain management requirements and property owners buying flood insurance, the cost of flood damage is reduced by almost \$1 billion dollars a year. Also, buildings constructed in compliance with NFIP requirements have significantly less damage in floods than building that are not built in compliance.

The NFIP maps the United States' floodplains and flood hazards which creates awareness, provides data for floodplain management programs, and rates new construction for flood insurance.

Community Rating System (CRS)

In 2001, FEMA promulgated hazard mitigation planning regulations pursuant to the Disaster Mitigation Act of 2000 (44 *CFR* 201.6). A 10-step CRS process has been adopted by FEMA to be consistent with those regulations, which identify four essential parts to mitigation planning. The four phases include the planning process, risk assessment, mitigation strategy and plan maintenance.

The Community Rating System (CRS) is a mechanism that provides credit for preparing, adopting, implementing, evaluating, and updating a comprehensive floodplain management plan. FEMA also requires preparation of a multi-hazard mitigation plan as a prerequisite for mitigation funding. The CRS and FEMA only recognize plans that have been prepared according to the standard planning process explained in FEMA regulations. However, CRS and FEMA do not specify or require what activities must be recommended or implemented.

Another benefit is that a plan developed consistent with CRS requirements can also fulfill the mitigation planning prerequisite for a grant from FEMA's Flood Mitigation Assistance (FMA) Program and Hazard Mitigation Grant Program (HMGP), which also provides funds to communities to help prepare such plans if they address the full range of natural hazards affecting the community. Based on CRS documents, The U.S. Army Corps of Engineers also has a new floodplain management planning requirement and municipalities receiving funding from the Corps for flood protection projects are required to prepare a floodplain management plan following procedures similar to this activity's 10-step process. The Corps guidance Letter No. 52 specifically states that CRS plans may be sufficient for that requirement.

This plan was prepared to be compliant with 44 *CFR* 201.6 Disaster Mitigation Act Planning Regulations and with 44 *CFR* §78.5-Floodplain Management Plan.

2. City of Cape May Background

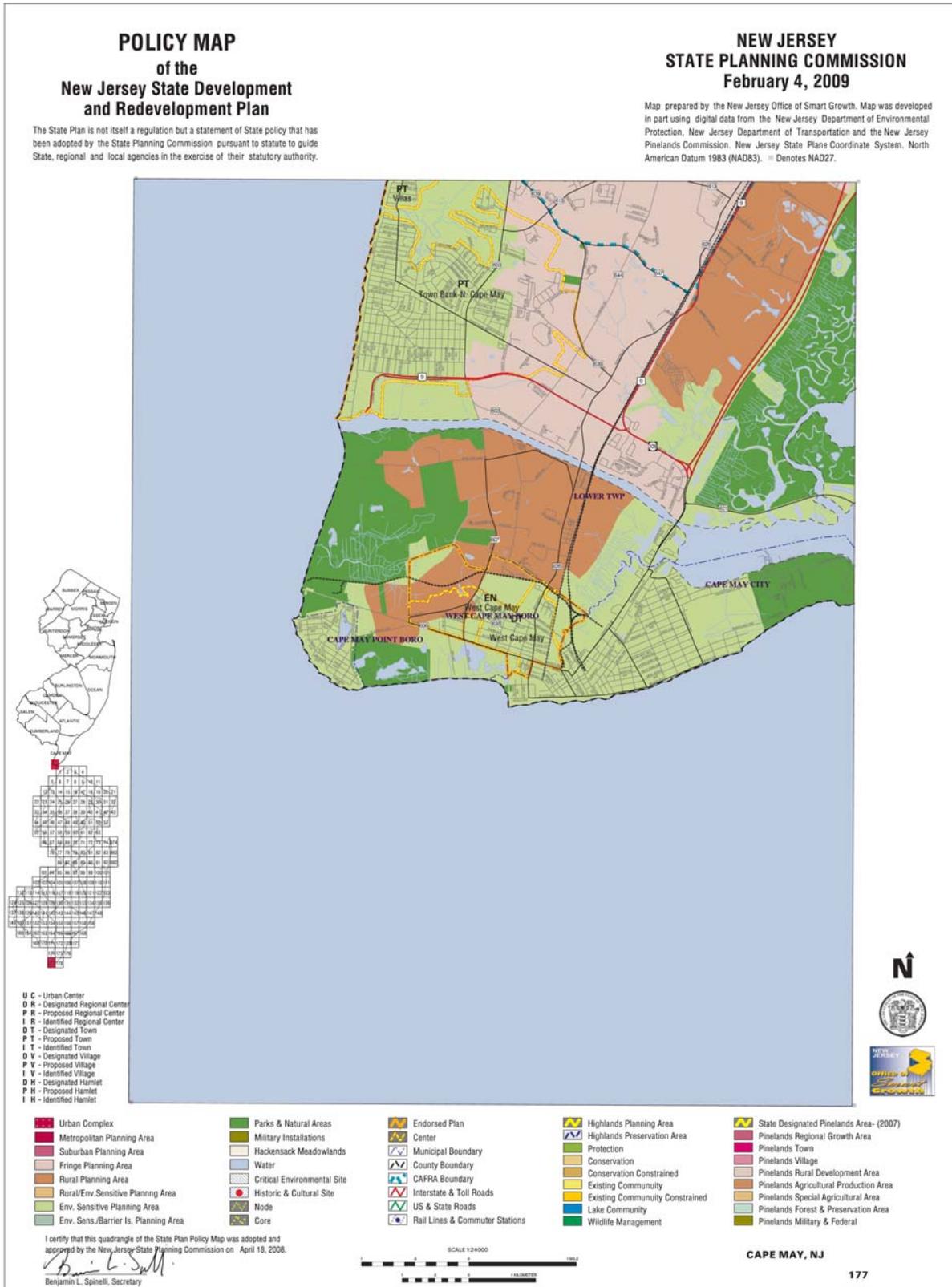
The City recently adopted its Master Plan Reexamination in March 2009. The following is a summary of Cape May's Background description as it pertains to flood plain planning derived from the Reexamination document:

Regional Location

The City of Cape May is a 2.2 square mile community located at the southern end of New Jersey and Cape May County. It is approximately 50 miles south of Atlantic City, 80 miles southeast of Philadelphia and 150 miles south of New York City.

Cape May is separated from the New Jersey mainland by Cape May Harbor and the Cape Canal, which is part of the Intracoastal Waterway. This island is shared by the City of Cape May, the Boroughs of West Cape May and Cape May Point, and a portion of Lower Township. Cape May City shares municipal borders with the Borough of West Cape May and Lower Township. The eastern end of the city is occupied by a U.S. Coast Guard base, which occupies approximately 20% of the land area in the City. Cape May's regional location is shown on Map 1.

As described in the City's 2009 Master Plan Reexamination, Cape May's southern shoreline is formed by wide, white sand beaches that border the Atlantic Ocean and the City is influenced by sensitive environmental features. Wetlands occur throughout all sections of the city and limit development on vacant lands, particularly near Cape May Harbor in the east end. Protection of fragile dunes is essential to protection of the valuable beach resources. Similar to many beach communities in southern New Jersey, Cape May is generally low lying with a high point approximately 14 feet above sea level.



Map 1 – Policy Map of the New Jersey State Redevelopment Plan

Natural Features

Cape May is designated in the New Jersey State Development and Redevelopment Plan as an Environmentally Sensitive Planning Area (PA5), which is apparent on Map 2 – Natural Features. The vast majority of land in Cape May is environmentally constrained by floodplain, wetlands or both. These environmentally sensitive lands, and the wildlife habitats that they support, are very much a part of what makes Cape May an attractive area to live and vacation.

Floodplain

The low-lying barrier island is, not surprisingly, located almost entirely in the one hundred year floodplain. Zoning regulations require that the lowest floor level of any building be not less than ten and one-half feet above mean sea level to minimize property damage.

Wetlands

Wetlands not only store water and help to control runoff and flooding, they support numerous wildlife habitats, some of them threatened or endangered species. A substantial portion of the eastern half of Cape May is preserved wetlands. There is great concern regarding the potential development of these wetlands in Cape May. This is the last concentration of undeveloped land in Cape May. Much of this land is zoned residential and only the state's wetland protection policies have so far prevented development.

The Cape May Environmental Commission has advocated a proactive policy regarding wetlands. They have suggested acquisition of all environmentally sensitive wetlands within the City Limits, and the protection of the east Cape May wetlands will go a long way towards advancing that goal.

Beaches

Cape May's beaches are vital to both the environmental and physical protection of the City, as well as being one of its most valuable economic resources. The beaches are the first line of protection from storms approaching from the sea. Like all coastal communities, Cape May recognizes the fragility of dunes and has invested heavily in beach replenishment projects in cooperation with the U.S. Army Corps of Engineers. It has also adopted special land use controls designed to limit further encroachments along the beach strand.



Map 2 – Natural Features (Source: 2003 Master Plan)

Population and Development Trends

Population

According to the 2000 Census, the City of Cape May lost 634 persons in its population between 1990 and 2000, more than a 13% decline. According to the 2009 Master Plan Reexamination, Cape May's decline in population is a continuation of a trend that began in the 1980's. The 1970 population of 4,392 grew more than 10% in 1980 to 4,853. Between 1980 and 1990, however, the population declined nearly 4% to 4,668. The 2000 population of 4,034 brings the population to more than 8% below the 1970 population. It is estimated that the 2008 population figure is 3,800. The population decrease trend appears consistent through 2009.

These declines do not reflect any lessening of Cape May's viability. To the contrary, real estate in Cape May remains desirable and vacancy rates are low. Few new homes are being built (other than the redevelopment of existing residential lots.) The decline probably reflects the increasing number of residential properties that are used as second homes.

Housing

Cape May has 4,064 housing units according to the 2000 Census. Of these units 1,821, or 45%, are occupied units, 2,089 housing units (51.4%) are for seasonal use. The remaining units are considered vacant. Comparing these figures with the 1990 Census, there were 4,052 housing units, 1,868 of which were occupied (46%), and 1,121 (27.7%) were considered for seasonal use.

Commercial Development

The economy of the City of Cape May is tourist based, relying on the business of visitors frequenting the various bed & breakfasts, hotels, and complementary restaurants, taverns, and shopping services. Even though it is seen as a year-round resort, summer is the busiest tourist season as the City of Cape May is a beachfront community. Out of all of the state's seashore towns, Cape May receives the largest number of visitors after Atlantic City. The City of Cape May is secondarily a fishing based economy and is home to a Coast Guard Base.

3. Floodplain Management Planning and Strategies

Phase I - Planning Process

Polistina & Associates, LLC has assisted the City in preparing the plan. The planning process is under the supervision of a professional planner. Craig R. Hurless is a licensed professional planner (License No. 005646) in the State of New Jersey.

The planning process has been conducted through a committee established by Resolution 151-07-2009 adopted by the City of Cape May Council. (See Appendix). Half of the committee's members are public officials and the other half are from the public. The following are members of the Committee:

City Representatives

Lisa Taylor, Chairperson	CRS Coordinator
William Callahan	Construction Official
John Queehan	Code Enforcement
Mary Rothwell	Zoning Officer/Planning & Zoning Board Administrator
Jerome Inderwies, Jr.	Chief, Fire Department
Robert Smith	Supt. of Public Works, OEM Coordinator

Public Representatives

Charlotte Todd
Sandra Maloney
Barbara Weigand
Larry Reed
Eleanor O'Donoghue
Nancy Granick

The resolution also specified a completion deadline of October 1, 2009. Staff support has been provided by Edie Kopcitz and Linda Loughlin of the City's Construction Office.

The planning process has been conducted through a committee comprised of staff from the City's Construction and Zoning Office, Code Enforcement, Planning Board and Zoning Board representatives, Fire Department and Office of Emergency Management, and Public Works. These departments will be responsible for implementing the majority of the planning recommendations.

The planning process was conducted through a 12 member planning committee that included 6 members of the public. Public representatives on the committee have backgrounds in commercial business, flood insurance, and knowledge of past flooding and are property owners within the City's flood prone areas.

Three advertised meetings were held during the planning process. The following is a summary for the meeting dates held and general agenda topics discussed:

- August 6, 2009 – Introduction, organization, discussion of key steps of the planning process, general flood issues in Cape May and public input.
- August 20, 2009 – Discussion to assess the hazard, assess problems, set goals, review possible activities and draft an action plan. Presentation of an initial draft plan and requirements. Public comment was also invited.
- September 10, 2009 – Review draft plan, public comment period and recommend plan for adoption.

All meetings were publicly advertised in the City's official newspaper and public comment was invited for all meetings. Notice was also posted on the City's website (See Appendix for website notice.) Three public informational meetings were combined with the three committee meetings so that public input could be obtained throughout the planning process.

The Draft Plan was reviewed at the last public meeting held on September 10, 2009 to obtain input on the draft plan. The meeting was held two weeks before submittal of the recommended plan to the community's governing body for adoption.

As part of the planning process, a review of existing studies, reports, and technical information and of the community's needs, goals, and plans for the area. A complete listing of resources is provided in the Appendix. This review included, but was not limited to, the following reports:

- Master Plan, City of Cape May, Cape May County, NJ, March 2003
- City of Cape May, Cape May County, New Jersey, Master Plan Reexamination, dated February 27, 2009, revised March 13, 2009
- City of Cape May, Cape May County, New Jersey, Housing Element & Fair Share Plan, December 2008
- Zoning Map, City of Cape May dated March 18, 2005 and revised August 12, 2005
- Code of the City of Cape May, Last Supplement December 15, 2008
- City of Cape May, Land Development Regulations, November 6, 2000
- City of Cape May CRS Repetitive Loss Plan (adopted 1999)
- The Vision Plan for the City of Cape May, NJ, October 2007
- The City of Cape May Beach Management Plan, March 2008

Notice to the following groups, commissions, municipalities, and agencies were sent by mail soliciting written comments and invitation to attend the public meeting held September 10, 2009:

- City of Cape May County Planning Board
- City of Cape May Environmental Commission
- City of Cape May Historic Preservation Commission
- U.S. Army Corps of Engineers, Philadelphia District
- United States Coast Guard
- FEMA CRS Specialist and Program Coordinator
- NJDEP – NFIP State Coordinator

- NJ Office of Emergency Management
- New Jersey Coastal Management Program – NJDEP
- FEMA Region II, Federal Emergency Management Office
- Township of Lower
- Borough of West Cape May
- Cape May County Planning Department
- Cape May County OEM
- Chamber of Commerce of Greater Cape May

The complete mailing list and sample letter has been included in the Appendix.

Phase II – Risk Assessment

The 1999 CRS Repetitive Loss Plan identified four areas generally affected by flooding. These areas are identified as follows:

- 1) Beachfront properties located along Beach Avenue (Area 1)
- 2) “Frog Hollow” area (Area 2)
- 3) South Cape May area (Area 3)
- 4) Harbor District area (Area 4)

Based on current data, these areas continue to be affected by flooding. No new areas of flooding have been encountered.

A map of the known flood hazard areas 1-4 identified above, FEMA Flood Insurance Rate Map (FIRM) and Repetitive Loss Area Mapping has also been included in the Appendix.

Description of Flood Area and Flood Hazards

Beachfront properties – Area 1

Properties located along the beachfront are in close proximity to Beach Avenue which runs along the entire developed beachfront of the City. These properties consist of both residences and businesses. Properties in this area are susceptible to flooding caused by high tides, coastal storms including northeasters and hurricanes and accumulated rainfall runoff coupled with events that do not allow for positive discharges. Repetitive loss properties along the beachfront and Beach Avenue generally suffer first floor and basement flooding. A major factor in these repetitive losses is that most of these properties have structures that were built prior to establishment of a base flood elevation requirement which is in effect currently. Typical elevations in this area range from 9’ – 12’ above sea level. Flooding has occurred to depths of 1’-2’ or greater. Businesses that have been identified as repetitive loss sites include la Mer Motor Inn, The Grand Hotel, The Capri Hotel, and The Montreal Hotel.



Portion of Cape May Seawall in Area 1.

Frog Hollow – Area 2

Frog Hollow is a developed area in a low-lying area west of Madison Avenue. Development in this area is comprised of single family and duplex type homes. Frog Hollow repetitive loss properties generally suffer first floor and basement flooding from runoff associated with storms and/or coupled with events that prevent positive discharges (i.e. high tides, storm surges, etc.). A major factor in these repetitive losses is that most of these properties have structures that were built prior to establishment of a base flood elevation requirement. Frog Hollow is an area of development in the City with the lowest overall elevation and relies on City and County storm pump stations for runoff discharges. Depth of flooding ranges from 1' – 3'.

South Cape May – Area 3

South Cape May is located on the point of Cape May and is a low-lying area consisting of mostly wetlands, bound by the West Cape May border, Beach Drive, and West Perry Street. Cape Island Creek historically flowed through this area and has since been replaced by a county storm system that flows into existing Cape Island Creek. This area has experienced repetitive losses because many of the properties in this area were also built before a base flood elevation was established. Properties in this area are also susceptible to flooding caused by high tides, coastal storms including northeasters and hurricanes and accumulated rainfall runoff coupled with

events that do not allow for positive discharges. Typical elevations in this area range from 9' – 12' above sea level. Flooding has occurred to depths of 1'-2' or greater.

Harbor District – Area 4

The properties in the Harbor District were built before a base flood elevation was established so this area also experienced repetitive losses. High tides during coastal storms and the lack of elevation contributes to the cause of floods. Yacht Avenue right-of-way is frequently flooded during these events. Depth of water exceeds 1-2' over roadways during flood events.



Photo of Harbor District area.

History of Past Hazards & Review of State Hazard Mitigation Plan

The 2007 State Hazard Mitigation Plan was reviewed to evaluate potential hazards and probabilities. An inventory of natural hazards specific to the City and Cape May County has been provided in the Appendix that includes descriptions of State and County emergency declarations and recent NJ disasters provided in the 2007 State Hazard Mitigation Plan. Past hazard events have included hurricanes, winter storms and blizzards, and major northeaster storms.

Vulnerability Assessment

Repetitive-Loss Structures

Mapping of repetitive loss structures and individual flood hazard areas has been provided in the Appendix. The Appendix also contains a list of repetitive loss structures. All repetitive loss structures are within the four hazard areas.

Vulnerable Areas within Cape May

Cape May's beaches, dunes and seawall provide the City with its primary defense against flooding. The City's shoreline is continuously changing and often experiences rapid erosion. The principle cause of the lack of sand is believed to be due to impacts from the jetty at Cape May Inlet. Although, beach fill operations are performed every two years by the US Army Corps of Engineers and beach/dune stabilization maintenance are performed continuously by the City, Cape May remains susceptible to rapid erosion of non-structural shoreline protection that may occur. Breaching of the initial protection may ultimately lead to failure of structural seawall protection and flooding of low lying areas along the beachfront.

The City is located primarily within the one-hundred year floodplain. Coastal storms including hurricanes and northeasters have primarily been responsible for flooding prior to the initial placement of sand from the beach fill operation started in 1993. Low lying areas of South Cape May and beachfront areas as well as Frog Hollow were frequently inundated by floodwater and structures along Beach Avenue were subjected to direct wave action as the beach protection measures were breached. Beach fill operations have helped prevent this situation but this type of flooding remains a concern.

Back bay flooding occurs adjacent to Cape May Harbor and Cape Island Creek. Developed areas impacted include properties along Yacht Avenue, Venice Street, Elmira Street, Congress Street and Grant Street. When severe events occur, vehicular traffic could be impeded at Washington Street and Elmira Street which are both critical emergency roadways.

Critical Facilities

It is important that critical facilities remain operational and that access is not eliminated when a storm occurs. There are several designated critical facilities within the City of Cape May: the Cape May Office of Emergency Management, the US Coast Guard Training Center, the Cape May City Police Department, the Cape May City Fire Department, Cape May Fire and Rescue, Cape May City Elementary, and Our Lady Star of the Sea. The following facilities should also be designated as critical facilities: the Reverse Osmosis Water Treatment Facility and City Hall.

The City Hall complex on Washington Street contains the Cape May City Fire Department, Cape May Fire and Rescue, the Cape May Office of Emergency Management, the Cape May City Police Department, and the Reverse Osmosis Water Treatment Facility. The complex is located mostly in Flood Zone C with a small portion located in Flood Zone B. Zone C designates areas of minimal flooding while Zone B is subject to 100-year flooding with depths of less than one foot.

The US Coast Guard Training Center in Cape May is the nation's only Coast Guard Recruit Training Center. It is located on Pennsylvania Avenue.

Cape May City Elementary and Our Lady Star of the Sea are both located on Lafayette Street. The elementary school is designated Flood Zones B and C, while Our Lady Star of the Sea is in Flood C or an area of minimal flooding.

Evacuation Procedures

Cape May County has a Hurricane Evacuation Plan in place to provide guidance for the development and operation of an evacuation program while the threat of a hurricane or flooding is imminent. The plan also ensures completion of required emergency actions. The main purpose is to evacuate low lying coastal areas in the County especially before there are tropical storm force winds (39 mph). The municipality of Cape May City is responsible for local evacuation and ensuring that traffic moves onto the major evacuation routes. The New Jersey State Police and the New Jersey Department of Transportation are responsible for coordinating traffic on the major evacuation routes. The plan lists the northbound lanes of the Garden State Parkway, US Route 9, State Highway Route 47, and State Highway Route 50, and the westbound lanes of State Highway Route 49 as major evacuation routes. State Highway Route 47 Reverse Lane Strategy may also be used, where the southbound lane of the highway is reversed to accommodate additional traffic leaving Cape May County, thus creating two northbound lanes.

Phase III – Mitigation Strategy

Goals

The Floodplain Management Plan Committee discussed possible goals during the August 20, 2009 meeting. As a result of this discussion, a proposed goal list was created. Each member of the committee was asked to provide goals and comment on each goal. The final list of goals by category is as follows:

Zoning & Other Regulatory Controls

- Continue to enforce Flood Damage Prevention Code and Building Codes. Evaluation of current standards should be made to verify that regulations are adequate.
- Ensure compliance with stormwater management regulations.
- Evaluation of current regulatory programs and standards to determine effectiveness.

Structural Projects

- Ensure continuation of beach nourishment project to protect the dune and beach system from erosion and flood hazards.
- Ensure dune stabilization and maintenance is continued.
- Maintain existing flood prevention infrastructure including pump stations, bulkheads, seawalls and stormwater collection systems.
- Upgrade roadways to deter flooding when road improvements are proposed.
- Seek funding from State and Federal sources to facilitate improvements.

Damage Prevention & Property Protection

- Ensure zoning & construction controls are implemented and/or enforced for new development applications to protect properties from flooding.
- Plan future infrastructure improvements consistent with the structural projects identified above so that potential damage is minimized.
- Strive for acquisition of environmentally sensitive areas subject to flooding to limit new development in flood prone areas.
- Encourage Flood Insurance participation within the city.
- Ensure publicly owned buildings are adequately protected against the 100-year flood.
- Maximize the points available under the CRS program to obtain Federal flood insurance rate reductions and make flood insurance more affordable, thus making flood insurance more readily available to property owners.

Natural and Beneficial Functions of the Floodplain

- Preserve floodplain and environmentally critical areas
- Protect open space and maintain dunes and wetlands
- Attempt to acquire available lands, if feasible.

Emergency Services

- Ensure Warning System provides adequate notification.
- Provide adequate emergency response services and direct people to safe shelters.
- Ensure Critical facilities are not interrupted by flooding
- Provide for continued coordination with State, County and adjoining municipalities to provide safe and efficient evacuation.

Public Information

- Provide Flood Awareness Education & Publications
- Ensure property owners and visitors are aware of potential hazards of flooding
- Ensure property owners and potential owners are aware of availability and benefits of Federal Flood Insurance
- Ensure citizens are made aware of how to protect themselves and property from flooding and that Federal/state grant monies available to elevate their structures.
- Maintain accurate public information system with maps/info.
- Provide flood information for distribution to Real Estate Professionals.
- Provide flood and Emergency information and maintain it on City's Website

Review of Possible Activities & Action Plan

During the planning process, all possible activities that were considered were reviewed and details why they were or were not recommended have been provided. These projects have been determined to address the goals listed in the previous section. Some possible activities were considered but determined not to be feasible.

The action plan includes flood-related recommendations for activities discussed in the previous planning phases. The action plan has been prepared to identify the recommendations, their priority, time line for completion, benefits, costs and who will be responsible to perform the action.

This floodplain management plan does not identify expensive or massive structural flood control projects. The plan only recommends activities that the community can be assured will be implemented through its own resources. It is understood that the City's financial resources are limited and that outside funding support may be necessary. It is also recognized that outside funding support may not be readily available.

The action plan has been prepared with the understanding that actions must be affordable, implementable, and permitted by local, state, and federal regulations. The actions have been prioritized as follows:

Immediate Priority indicates actions have been determined to be of immediate and utmost importance in protecting the city from flood damages. The project meets multiple objectives and benefits exceed costs.

Secondary Priority indicates actions are deemed necessary but are not critical in providing flood damages. The project meets the goals and objectives, is cost effective, but is secondary in importance to immediate priorities. Secondary priority projects may become immediate priority projects as immediate priority projects are completed and funding becomes available.

Continual Priority indicates actions are required on an ongoing or annual basis to be effective. Costs associated with this type of project are generally not high.

Review of Current Flood Damage Prevention Activities

Elevation Certificates

The City of Cape May's Office of Construction/Zoning and Inspections requires FEMA Elevation Certificates prior to the issuance of a Certificate of Occupancy for all new construction and re-construction, and maintains these documents in each construction permit file. As of December 9, 1992, duplicate copies of the Elevation Certificates are maintained in a separate file in that office which is available for public inspection. Also, a computer log of all Elevation Certificates on file is kept and updated through the ISO Community Rating System Flood Elevation Certificate Software program. A revised elevation certificate form is available which

requires photos of the property. Elevation Certificates are now required at the start of all new construction for the flood elevation height for installation of all plumbing and heating equipment.

This activity has been effective and shall remain as an activity to ensure compliance with regulations and codes. The Construction office and CRS Coordinator shall remain responsible for this activity and funding shall be addressed as permitted by building permit fees. (Continual Priority.)

Map Determination

The City of Cape May Construction Office staff provides verbal and written map determinations for anyone requesting verification of the location of a parcel of property within the flood hazard areas. A separate log is kept for all inquiries. The community panel number of the Flood Insurance Rate Map (FIRM) is also given to the public for insurance information.

This activity has been utilized by the public and shall remain as an activity to promote education and assist interested parties in obtaining flood insurance. The Construction office and CRS Coordinator shall remain responsible for this activity and funding shall be addressed as currently provided. (Continual Priority.)

Outreach Projects

The City of Cape May distributes information with the annual tax/utility bills regarding flood hazard areas, flood warning systems, flood safety, flood insurance protection measures, flood plain requirements and drainage system maintenance. This includes the availability of additional information and publications located at the city library and construction office. The emergency management coordinator and CRS coordinator meet once a month to discuss public awareness measures in regard to on-going projects and public notification of evacuation procedures in the event of flooding. The City of Cape May along with the County of Cape May have updated an evacuation route in case of a hurricane or flooding.

This activity has been utilized by the public and shall remain as an activity to promote education. It is recommended to expand this program consistent with other recommendations contained in this document to maximize information available to the public. The Construction Office and CRS Coordinator shall remain responsible for this activity and funding shall be addressed as currently provided. (Continual Priority.)

Flood Protection Library

The City of Cape May library has established a collection of books and publications which are available for the public. Items include the Flood Insurance Rate Map (FIRM) for the City of Cape May and information about flood insurance, coastal construction, hurricane safety, and flood hazard mitigation. Many residents and prospective property owners have used this service. The City of Cape May continues to make these publications available to the public both in the library and construction office. The property owners have found this information helpful both for new construction and substantial renovations.

This activity has been utilized by the public and shall remain as an activity to promote education. It is recommended to expand this program consistent with other recommendations contained in this document to maximize information available to the public. The Construction office and CRS Coordinator shall remain responsible for this activity and funding shall be addressed as currently provided. (Continual Priority.)

Flood Protection Assistance

The City of Cape May's Construction Office provides property owners with guidance and assistance for elevations on file. The Construction Official and Building Inspector also perform inspections on site and the Construction Office provides property owners with guidance. Annual notification to all property owners provides up to date flood information, and has been very successful in educating the public. Citizens have become more aware of flood proofing procedures through outreach mailings and information from the Construction Department.

This activity has been utilized by the public and shall remain as an activity to promote education and assist interested parties in obtaining flood insurance. The Construction Official, and CRS Coordinator shall remain responsible for this activity and funding shall be addressed as currently provided. (Continual Priority.)

Open Space Preservation

The area of the regulatory flood plain in the City of Cape May is 3,246.75 acres with 324.55 acres located in the V-Zone and 2,922.20 acres on the A-Zone. The V-Zone includes all beach and dune area along the Atlantic Ocean. Municipally owned open space in other area totals 42.65 acres. The City of Cape May has adopted the Master Plan Reexamination in 2009 which provides regulations for preserving open space. Implementation of open space preservation continues.

This activity has been effective in restricting development within flood prone areas and City acquisition remains a priority as resources become available. This activity shall remain as an activity in the plan. The City's governing body shall remain responsible for this activity and funding shall be addressed as available through city funding or grants or other available resources. (Continual Priority.)

Higher Regulatory Standards

The City of Cape May has complied with the Flood Plain Management Ordinance for elevation requirements and has therefore filed for Credit for this activity attributable to the State of New Jersey's 20% regulation.

This activity has been effective and shall remain in the plan. No further action required.

Stormwater Management

The City of Cape May, through the Soil Erosion Control Act, CHP.251 PL1975, reviews the development applications and regulates storm water management. RSIS standards are implemented. The City of Cape May has a storm water management ordinance in effect. Developing properties must submit a storm water plan that is reviewed by the Board Engineer and other jurisdictional agencies.

This activity has been effective in ensuring development that provides stormwater improvements that enhance the control of stormwater discharges. This activity shall remain as an activity in the plan. The Planning Board and Zoning Board shall be responsible for compliance with all regulations during the application review and approval process. No funding is required as the reviews are funded by application fees and escrows. (Continual Priority.)

Drainage System Maintenance

The City of Cape May's Public Works Department maintains storm drains twice a year in the spring and the fall. Additionally, the City of Cape May will make the public aware of regulations that prohibit dumping into storm drains. Construction sites are also regulated by State regulations administered by Cape Atlantic Soil District. All storm drains were marked with tags to make the public aware of the importance on not dumping debris into the drains. Storm drains are cleaned more often than twice a year, when needed. A log is kept to document the storm drainage system cleaning. Drains are cleared of debris such as leaves. Cape Atlantic Soil regulates the construction sites by state regulations. Certificates of Occupancy cannot be obtained without compliance.

This activity shall remain as an activity in the plan. The City of Cape May's Public Works Department shall remain responsible for drainage system maintenance and funding is provided under operating budget. (Continual Priority.)

Dam Safety

The State of New Jersey Dam Safety Program meets or exceeds FEMA requirements.

This activity shall remain as an activity in the plan. No further action required.

Flood Plain Management

The City of Cape May has amended the Flood Plain Management Ordinance to comply with current regulations. Current development in this area is not prohibited but must conform to the current regulations. The current Flood Plain Management Ordinance is in effect and has been amended over the years to comply with all current regulations.

The repetitive loss areas in the City of Cape May are located within areas that are regulated by the New Jersey Department of Environmental Protection. The City of Cape May's Flood Plain Management Ordinance contains additional development constraints for these areas. Development in the repetitive loss areas are subject to the following terms of the ordinance:

- a) All new construction must comply with the base flood elevation of 10.5 feet; and

- b) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure;
- c) All heating and air-conditioning must be located above the base flood elevations; and
- d) New residential construction and commercial construction or substantial improvements shall have the lowest floor elevated to or above the base flood elevation.

The City of Cape May's Flood Plain Ordinance also provides methods of reducing flood losses. The following methods are used:

- a) Restrict or prohibit uses, which are dangerous to health, safety and property due to water or erosion or in flood heights or velocities;
- b) Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- c) Control the alteration of natural flood plains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters;
- d) Control filling, grading, dredging and other development which may increase flood damage; and
- e) Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

Enforcement of the Flood Plain Management Ordinance shall remain an activity in the plan and remain the responsibility of the Construction Official, Planning Board and Zoning Board as jurisdictionally appropriate. Effectiveness of regulations should be evaluated moving forward. (Continual Priority.)

Beachfill Project

The City of Cape May has a 50-year contract commitment from the Federal Government to maintain the entire City of Cape May beachfront at least until the year 2040. The beach restoration helps protect properties in the city from flooding due to coastal storms. According to the City of Cape May Beach Management Plan, the US Army Corps of Engineers is currently 16 years into the construction phase of a 50-year beach nourishment program that includes all of Cape May City west of the Cape May Inlet. Initial nourishment of City beaches under the Corps program took place in 1993. Routine renourishment is scheduled approximately every 2 years.

This activity has been effective in ensuring beach and dune protection measures are in place to protect the City from flooding. This activity shall remain as an activity in the plan. Responsibility of this program shall remain with City Council to ensure compliance with the City of Cape May Beach Management Plan and continuation of the program provided by the US Army Corps of Engineers. (Both Immediate Priority and Continual Priority.)

Emergency Management

The Emergency management coordinator and team consisting of elected officials, community groups, police, fire, public works, media, environmental groups, and hospital staff have quarterly

meetings, along with Cape May County Emergency management teams to plan and discuss procedures for emergency evacuations. Drills are also performed each year. Emergency Management Coordinators from the City of Cape May, along with the County of Cape May have meetings with citizens and public officials to set a plan in place for evacuation. The City of Cape May along with local and county officials has developed a new evacuation route in 2006.

This activity has been effective in ensuring emergency procedures are in place to protect the citizens from disasters. This activity shall remain as an activity in the plan. Additional notification and communication measures are recommended as detailed in this section.

The City's OEM Coordinator shall remain responsible for this activity and funding shall be addressed as currently provided. (Continual Priority.)

Review of Possible Flood Damage Prevention Activities

In addition to the current activities recommended to continue, the following activities were reviewed to evaluate effectiveness and determine inclusion in the plan:

Zoning & Other Regulatory Controls

- *Minimum building elevations* – Continue to enforce minimum building elevations required by the City Code through the Construction Departments review of building permits. Evaluation of minimum required building elevation should be completed to determine if current standard is adequate or if higher elevation is necessary. (Continual Priority.)
- *Stormwater management regulations* – The Planning and Zoning Boards through application review shall continue to require and enforce current local and state regulated stormwater regulations on all development within the City. (Continual Priority.)
- *Building codes* – Continued enforcement of codes remains a priority for all construction on both new and existing structures. The Construction Official shall remain responsible. (Continual Priority.)
- *Preservation of open space* – Preservation of Environmental Sensitive Lands / Floodplain/Wetlands shall be encouraged and it is recognized as a goal of the City's Master Plan. The Planning and Zoning Boards through application review shall ensure regulations are enforced. The Environmental Commission shall be consulted for recommendations. (Continual Priority.)
- *Monitoring of effectiveness of current regulatory and preventive standards and programs.* – Evaluation of current programs and standards shall occur on an annual basis and shall be reviewed by the Floodplain Committee and the City's CRS Coordinator. (Continual Priority.)

Structural Projects

- *Beach nourishment, dune stabilization and maintenance.* – This project is essential in protection of the City from coastal flooding and shall remain a priority activity as indicated in the previous section detailing current activities. Dune enhancement with dune grass plantings and dune fence maintenance should be completed on an annual basis. Volunteer groups such as schools, civic groups, etc. with the public works department have been involved in performing this work in the past. Dune grass plantings should consider species with thickness over height to preserve views. (Immediate and Continual Priority.)
- *Bulkheads* – Two timber crib groins approximately 100’ in length are located parallel to the shore line at Jackson Street and Gurney Street beaches. Deterioration has occurred and replacement or repair should occur on an as-needed basis. (Immediate Priority.)
- *Groins* – Nine stone groins that range in length from 150’ to 786’ installed along the shoreline that serve as a seawall to block erosion and flooding. These are located at the following beach street ends: Howard Street, Jefferson Street, Queen Street, Madison Avenue, Between Madison and Philadelphia Avenues, Philadelphia Avenue, Reading Avenue, Between Reading and Trenton Avenues and Trenton Avenue. Deterioration has occurred and replacement or repair should occur on an as-needed basis. (Immediate Priority.)
- *Seawalls* – Seawalls consisting of bulkheads and groins identified above run on the ocean side (south) of Beach Avenue. Construction is both concrete and stone combination, concrete, and wood. Structural evaluation of existing seawall and evaluation to provide a more comprehensive seawall to protect the entire beachfront should be completed. Construction or supplementation of seawall should be made based on study recommendations.

The portion of the seawall that extends from Madison Avenue to Wilmington and New Jersey Avenues is of specific concern and should be surveyed, repaired and elevated. The seawall located between Baltimore Avenue to Wilmington Avenue is frequently breached by astronomical high tides and minor weather events causing street flooding and filling of storm system with sand.

The secondary timber seawall that extends midblock from Madison Avenue and Philadelphia Avenue to Wilmington Avenue is in disrepair and exhibits major structural failure. Replacement of the timber seawall with a continuous reinforced concrete wall is recommended. (Immediate Priority.)

- *Geotubes* – Prior to beach nourishment programs being started in the 1990’s, approximately 10 geo-tubes were placed between the street ends of Stockton Place and Gurney Street behind Convention Hall to reduce loss of sand from around the

pilings of the structure. Maintenance of geotubes should be performed on an ongoing basis for any geotubes remaining after new Convention Hall construction. (Secondary Priority.)

- *Elevation of roadways* – Several roadways are subject to flooding due to existing low elevation. These include Yacht Avenue and Elmira Street. When street paving improvements are proposed, design should include raising street elevations and improving stormwater collection systems. (Secondary Priority.)
- *Stormwater pumping facilities.* – Pumping facilities have been constructed to alleviate flooding in the beachfront and Frog Hollow area. Pump stations are located at Benton Avenue, Venice Avenue (City operated) and Madison Avenue and Grant Street (County operated). Continued maintenance is required. These systems are pump systems requiring electrical power. In the event of power loss, backup power generators should be provided to ensure continued pumping. (Immediate Priority.)
- *Stormwater outfall pipes.* – Outfall pipes are located at the following street ends along the beach:
 - Wilmington Avenue (48” County)
 - Baltimore Avenue (48” County)
 - Brooklyn Avenue (36” County)
 - Pittsburgh Avenue (48” County)
 - Trenton Avenue (48” County)
 - Reading Avenue (48” County)
 - Philadelphia Avenue (30” County)
 - Madison Avenue (30” County Pumping Facility Outfall)
 - Queen Street (Twin 30”, 16” City pumping Facility Outfall)
 - Grant Street (36” County Pumping Facility)

Outfalls are subject to erosion and damage from the surf and are maintenance intensive. Maintenance should continue on an ongoing basis. Possible elimination or reduction in number of outfalls should be studied and completed if feasible. Outfall retro fitting with duck-bills/flapper valves to prevent seawater backing into outfalls is recommended. (Immediate Priority.)

- *Funding of structural projects.* Project completion is often limited by the City’s available funding. Application for applicable state and federal grants should occur on an annual basis. (Continual Priority.)

Damage Prevention & Property Protection

- *Zoning & Construction Controls.* - Continue to maintain and enforce zoning & construction controls including stormwater runoff controls for new development applications, minimum building elevations for new development and all other flood related codes to protect property from flooding. The Construction Official, Planning

and Zoning Boards shall continue to ensure compliance with all applicable regulations. (Continual Priority.)

- *Infrastructure Planning.* - Plan all future infrastructure improvements consistent with the structural projects identified above so that potential damage is minimized. The City Council and Engineer shall ensure all infrastructure is planned to limit flood damage. (Secondary Priority.)
- *Flood Insurance Participation.* - Encourage Flood Insurance participation within the city through education and efforts to reduce flood insurance costs through the CRS process. (Continual Priority.)
- *Private Land Acquisition.* - Acquisition of private developed lands was considered and was determined not feasible due to the high cost of land within the City.
- *Retrofitting.* - Retrofitting for private property subject to flooding is dependant on private owner participation and is not likely achievable by City resources.
- *Hazard Vulnerability Assessment.* - It is recommended to conduct a Hazard Vulnerability Assessment to identify potential retrofitting and structural mitigation actions. Recommendation is subject to available funding. (Secondary Priority.)
- *Repetitive Loss Survey.* - It is recommended to perform repetitive loss surveys and analysis to derive specific flood prevention measures for structures subject to repetitive flooding. Recommendation is subject to available funding. (Secondary Priority.)

Natural and Beneficial Functions of the Floodplain

- *Floodplain Preservation.* - The City Council should seek to preserve open space, the floodplain and environmentally critical areas where opportunities are available and funding allows. (Secondary Priority.)
- *Consistency with Environmental Resource Plan and Masterplan.* - All flood related activities should be completed consistent with the Environmental Resource Inventory Plan, Cape May City, NJ, 2007 and Master Plan Reexamination, February 2009. (Continual Priority.)

Emergency Services

- *Warning Systems.* - Ensure Warning System provides adequate notification. Five flood warning sirens are located at Wilmington and New Jersey Avenues, Texas Avenue, Reading and New York Avenues, Benton Avenue stormwater pumping facility, and Grant and North Streets. This provides an early warning to alert

residents of forecasted flooding. The City should consider warning system improvements by implementing a reverse 911 emergency communication system for use in potential hazard situations. (Immediate Priority.)

- *Critical Facilities.* - Existing primary critical facilities are not located in areas that are generally interrupted by flooding. Any new critical facility locations should be located in areas not likely to be flooded. (Continual Priority.)
- *Coordination with other Jurisdictional Agencies.* - It is recommended that coordination with State & County & adjoining municipalities to provide safe and efficient evacuation shall be continued. This plan should also be submitted to Cape May County to coordinate this plan with Cape May County's ongoing preparation of the County's Hazard Mitigation Plan. Revisions to this plan may be appropriate in the future to provide consistency with the county Hazard Mitigation Plan. (Immediate and Continual Priority.)

Public Information

- *Flood Awareness Education .* - The City should continue to provide Flood Awareness Education & Publications. (Continual Priority.)
- *Public Information .* - The City should continue to update and maintain public information system with maps and information. This information should; Ensure citizens are made aware of how to protect themselves and property from flooding and that Federal/state grant monies available to elevate their structures; Ensure property owners and potential owners are aware of availability and benefits of Federal Flood Insurance; Ensure property owners and visitors are aware of potential hazards of flooding. Provide Flood information packets for distribution to Real Estate Professionals. Radio station PSAs should also be considered as a means for public information. (Continual Priority.)
- *City Website.* - Provide and maintain all Flood and Emergency information on the City's Website. Flood questionnaires should be provided on the website for continual public input. Currently, no flood information is provided and the City should utilize the website to enhance public access to flood information. (Continual Priority)

Post Disaster Plan.

In the event of a disaster, post-disaster mitigation strategies have been provided. Cape May City is most susceptible to flood type disasters generated by hurricanes or like storms. It can be expected that all four critical areas identified in this report will have severe flooding. Most severe damage would likely be at properties closest to the beachfront due to storm surge and damage from velocity driven wave action once the dune and sea wall protection is breached.

Storm surge damage would likely occur along the harbor area. Flooding from rainfall runoff would occur at low lying areas including Frog Hollow as high tides and storm surge would prevent positive discharge of runoff. Damage from other possible hazards including coastal storms, and blizzards is anticipated to have similar damage characteristics to hurricanes.

If substantially damaged, there are no alternate areas which buildings or infrastructure could be relocated or areas from which rebuilding could be eliminated as all these areas are centrally located within the City, provide areas essential for flood defense and are critical to the City in general. Should severe damage be incurred, re-establishment of adequate flood control measures should be a priority. Reconstruction of structures should occur thereafter. As many of the City's buildings were built prior to flood elevation requirements, it is anticipated that these would be most substantially damaged. Rebuilding should occur at current code standards if substantially damaged.

Responsibilities for post-disaster mitigation procedures including public information, code enforcement, planning, and other efforts that encourage, mandate, and/or fund loss reduction activities shall be in accordance with the responsible parties identifies in this plan for the various projects.

Phase IV – Plan Maintenance

Adoption of the Plan

The plan was adopted by the Committee on September 10, 2009 and forwarded to Council for adoption.

Implementation and Evaluation

The recommendations in this plan should be implemented as per the implementation schedule as funding and resources become available. It may be necessary to skip recommendations to provide flexibility in the plan and accommodate funding or grants scheduling. As implementation proceeds, not only can hazard conditions change but also goals and objectives may change. Necessary revisions may be warranted and changes will be required.

The community must provide its annual evaluation report with its recertification each year and update the plan at least every five years.

The community must evaluate and update the implementation plan as follows:

The City's CRS Monitor shall be responsible for monitoring the plan. The Flood Plain Management Committee and Planning Committee shall meet at least once per year to aid the CRS Monitor to prepare the evaluation report to accompany the annual recertification materials.

The plan will be evaluated by the Committee on an annual basis to evaluate changes to hazard conditions, goals and objectives, progress made toward objectives and identify any changes or revisions to the plan that are necessary.

Membership of the Committee may change, but must be appointed by the governing body. Membership composition should provide for at least 50% of the committee are public members.

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

Failure to submit the evaluation report with the annual recertification will result in loss of the planning credit.

4. References

The following documents and websites have been reviewed and utilized in the preparation of this plan:

- Master Plan, City of Cape May, Cape May County, NJ, March 2003
- City of Cape May, Cape May County, New Jersey, Master Plan Reexamination, dated February 27, 2009, revised March 13, 2009
- City of Cape May, Cape May County, New Jersey, Housing Element & Fair Share Plan, December 2008
- Zoning Map, City of Cape May dated March 18, 2005 and revised August 12, 2005
- Code of the City of Cape May, Last Supplement December 15, 2008
- City of Cape May, Land Development Regulations, November 6, 2000
- City of Cape May CRS Repetitive Loss Plan (adopted 1999)
- The Vision Plan for the City of Cape May, NJ, October 2007
- The City of Cape May Beach Management Plan, March 2008
- Environmental Resource Inventory Mapping for Cape May, New Jersey, 2007
- Cape May County Hurricane Evacuation Plan -
<http://www.capemaycountygov.net/Cit-e-Access/webpage>
- <http://capemaycountyims.net/>
- <http://www.erh.noaa.gov/phi/tide/capema.pdf>
- <http://www.fema.gov/about/programs/nfip/index.shtm>
- <http://www.nationalgeomatca.com>
- State of New Jersey 2007 Hazard Mitigation Plan

5. Appendix

- Appendix 1. Resolution No. 151-07-2009
- Appendix 2. Floodplain Management Committee Public Meeting Notice – August 6, 2009
(Website & Official Newspaper)
- Appendix 3. Floodplain Management Committee Public Meeting Notice – August 20, 2009
(Website & Official Newspaper)
- Appendix 4. Floodplain Management Committee Public Meeting Notice – September 10, 2009
(Website & Official Newspaper)
- Appendix 5. Meeting Agenda – August 6, 2009
- Appendix 6. Meeting Agenda – August 20, 2009
- Appendix 7. Meeting Agenda – September 10, 2009
- Appendix 8. Notification and Request for comments and recommendations letter, August 21, 2009
- Appendix 9. Mailing List
- Appendix 10. Descriptions of Recent NJ Disasters, 2007 State of NJ Hazard Mitigation Plan
- Appendix 11. New Jersey Declarations, 1955-2005, 2007 State of NJ Hazard Mitigation Plan
- Appendix 12. List of Locations of Repetitive Loss Structures in City of Cape May,
<http://www.nationalgeomatrica.com>
- Appendix 13. Map – Area 1- Beachfront Area, Repetitive Loss Properties
- Appendix 14. Map – Area 2- Frog Hollow Area, Repetitive Loss Properties
- Appendix 15. Map – Area 3- South Cape May Area, Repetitive Loss Properties
- Appendix 16. Map – Area 4- Harbor District Area, Repetitive Loss Properties
- Appendix 17. New Jersey Hurricane Evacuation Study Draft Storm Surge Map, Cape May County, NJ – Army Corps of Engineers, June '06 Draft.
- Appendix 18. City of Cape May City, New Jersey FIRM Map Panel 345288 0001E