

# Cape May County Multi-Jurisdictional All Hazards Mitigation Plan

## Volume II

April 2010 with  
October 2010 Revisions



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CAPE MAY COUNTY  
MULTI-JURISDICTIONAL  
ALL HAZARDS MITIGATION PLAN

VOLUME II

APRIL 2010 with  
OCTOBER 2010 REVISIONS

*Prepared For:*

Cape May County Department of Engineering and Public Works  
and  
Cape May County Department of Planning

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## SECTION 8: PLANNING PARTNERSHIP

### BACKGROUND

Section 201.6.a(4) of Chapter 44 of the Code of Federal Regulations (44CFR) states: “Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.” The Federal Emergency Management Agency (FEMA) and New Jersey Office of Emergency Management (NJOEM) both encourage multi-jurisdictional planning. Therefore, in the preparation of the Cape May County Hazard Mitigation Plan (HMP), a Planning Partnership was formed to pursue grant funding for the plan and to meet requirements of the federal Disaster Mitigation Act of 2000 (DMA) for as many eligible local governments in Cape May County as possible.

The DMA defines a local government as follows: “Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.”

### THE PLANNING PARTNERSHIP

#### Initial Solicitation and Letters of Intent

Cape May County solicited the participation of all cities, townships and boroughs in the County at the commencement of this project. Cities, Townships and Boroughs interested signed a “Letter of Intent” and/or a resolution committing their participation and resources to the development of the Cape May County Multi-Jurisdictional All Hazards Mitigation Plan (Table 8-1).

Table 8-1. Participating Municipalities in Cape May County

Municipalities	
Borough of Avalon	City of Sea Isle City
City of Cape May	Borough of Stone Harbor
Borough of Cape May Point	Township of Upper
Township of Dennis	Borough of West Cape May
Township of Lower	Borough of West Wildwood
Township of Middle	City of Wildwood
City of North Wildwood	Borough of Wildwood Crest
City of Ocean City	Borough of Woodbine

#### Planning Partner Expectations

The Planning Committee agreed to the following list of expectations:

- Establish Plan development goals;
- Establish a timeline for completion of the Plan;
- Ensure that the Plan meets the requirements of DMA 2000 and FEMA and NJOEM guidance;

- Solicit and encourage the participation of regional agencies, a range of stakeholders, and citizens in the Plan development process;
- Assist in gathering information for inclusion in the Plan, including the use of previously developed reports and data;
- Organize and oversee the public involvement process;
- Develop, revise, adopt, and maintain the Plan.

### Jurisdiction Annex Templates

Jurisdictional annex templates were created to help the Planning Committee prepare their jurisdiction-specific annexes and ensure all criteria of Section 201.6 of 44CFR would be met, based on the partners' capabilities and mode of operation. The template and detailed instructions were designed to lead each partner through a series of steps that would generate the DMA-required elements that are specific for each partner. The designated point-of-contact for each participating jurisdiction, as well as the County, was asked to complete the template using the detailed instructions, guidance from the consultant and technical assistance provided at the jurisdictional annex workshop (discussed below). The templates and their instructions can be found in Appendix G.

### Workshop

Jurisdictional annex workshops were held the week of September 21, 2009 for the Mitigation Planning Committee. Attendance at this workshop was considered mandatory for plan participants. At the workshop, an overview was provided for each section in the annex. The workshop was designed to be instructional, but also allow for open discussion and questions. In addition, personalized technical assistance was available and provided to each jurisdiction, if needed. Topics discussed during this session included:

- DMA 2000 overview
- Jurisdictional Annex Templates Tools
- Jurisdictional Annex Template
  - Overview
  - Risk ranking
  - Cost/benefit review

The Planning Committee was led through an exercise to rank risk for the County as a whole. This was a collaborative effort by all workshop attendees. Concurrently, each committee member was asked to rank each risk specifically for its jurisdiction, based on probability of occurrence and estimates of potential dollar losses to structures vulnerable to the hazard. Maps illustrating hazard areas and tables estimating exposure and losses were provided to each jurisdiction as a tool, in addition to the risk assessment, to complete this exercise.

### Benefit/Cost Review

Each jurisdiction's annex includes an action plan of prioritized initiatives to mitigate natural hazards. Section 201.6.c.3iii of 44 CFR requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a cost/benefit review of the proposed projects and their associated costs. As part of jurisdiction annex template completion, the Planning Committee was asked to weigh the estimated benefits of a project versus the estimated costs to establish a parameter to be used

in the prioritization of a project. The details of this benefit/cost review are provided in Section 6 of this Plan.

### **Completion of the Planning Process**

All participating municipalities in the County completed the planning and annex-preparation process. Completed jurisdictional annexes are presented in Section 9. Any non-participating local government within the Cape May County planning area can “dock” to this plan in the future by following the linkage procedures defined in Appendix I.

## **SECTION 9: JURISDICTIONAL ANNEXES**

Section 201.6.a(4) of Chapter 44 of the Code of Federal Regulations (44CFR) states: “Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.” One component of each participating jurisdiction’s involvement in the planning process of this HMP was to prepare an annex that focuses specifically on the natural hazards facing their community and the mitigation actions they propose to reduce their exposure and losses to these hazards. Each annex outlines the following information for their community: natural hazard event history, risk ranking, capabilities (capability assessment) and mitigation actions specific to that jurisdiction.

## 9.1 COUNTY OF CAPE MAY

This section presents the jurisdictional annex for Cape May County.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
Frank McCall - Director Emergency Management Communications Center – DN 308 30 W. Mechanic Street Cape May Court House, New Jersey 08210 (609) 463-6570 <a href="mailto:mccall@co.cape-may.nj.us">mccall@co.cape-may.nj.us</a>	Dale Foster Director of Public Works / County Engineer Administration Building 4 Moore Road Cape May Court House, NJ 08210-1654 (609) 465-1035 <a href="mailto:countyengineer@co.cape-may.nj.us">countyengineer@co.cape-may.nj.us</a>

### B.) COUNTY PROFILE

Please refer to Section 4, Volume I of this Plan for details on Cape May County's population, location, climate, history, growth and development.

### C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE COUNTY

Please refer to the Previous Occurrences and Losses section within the hazard profiles located in Section 5.4, Volume I.

### D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard Type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$10,057,754,627 Max: \$11,609,394,508	Frequent	54	High
2	Flood	\$6,664,838,000	Frequent	48	High
3	Severe Storm	\$1,695,663,507	Frequent	36	Medium
4	Severe Winter Storm	\$154,308,360	Frequent	27	Medium
5	Tsunami	Not available	Rare	18	Low
6	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification.

**E.1) Legal and Regulatory Capability**

Regulatory Tools (Codes, Ordinances, Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code					State and IBC
2) Zoning Ordinance					Municipal Level
3) Subdivision Ordinance					Municipal Level
4) NFIP Flood Damage Prevention Ordinance					N/A
5) Growth Management					Generally Municipal Level
6) Floodplain Management / Basin Plan					Municipal Level
7) Stormwater Management Plan/Ordinance					Municipal Level (County has S/W plan/permit for the Crest Haven Complex)
8) Comprehensive Plan / Master Plan/ General Plan					Comprehensive Plan, 2002
9) Capital Improvements Plan					An annual plan, but could be longer (e.g. 5 years)
10) Site Plan Review Requirements					County and Local
11) Open Space Plan					Planning
12) Shoreline Management or Protection Plan					
13) Economic Development Plan					Planning
14) Emergency Response Plan					Emergency Management
15) Post Disaster Recovery Plan					Emergency Management
16) Post Disaster Recovery Ordinance					
17) Real Estate Disclosure req.					None
18) Other [Special Purpose Ordinances (i.e., critical or sensitive					

Regulatory Tools (Codes, Ordinances, Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
areas)]					

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Planning Department, Engineering Department
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Engineering Department
3) Planners or engineers with an understanding of natural hazards	Y	Planning Department, Engineering Department
4) NFIP Floodplain Administrator	N/A	N/A
5) Surveyor(s)	Y	Engineering Department and Contracted
6) Personnel skilled or trained in "GIS" applications	Y	Planning Department
7) Scientist familiar with natural hazards in Cape May County.	Y	Emergency Management, Engineering, Planning
8) Emergency Manager	Y	Emergency Management
9) Grant Writer(s)	Y	Emergency Management, Engineering, Planning
10) Staff with expertise or training in benefit/cost analysis	Y	Emergency Management, Engineering

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community development Block Grants (CDBG)	Yes, used in the past
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Through MUAs
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	No
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	N/A

**E.4) Community Classifications**

<b>Program</b>	<b>Classification</b>	<b>Date Classified</b>
Community Rating System (CRS)	N/A	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	N/A	N/A
Public Protection	N/A	N/A
Storm Ready	NP	NP
Firewise	NP	NP

N/A = Not applicable. NP = Not Participating. - = Unavailable.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## E.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMC-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
CMC-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF

**SECTION 9.1: COUNTY OF CAPE MAY**

Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	determined to be a viable option, consider implementation of that action based on available funding.								
CMC-2	Promote municipal participation in incentive-based programs such as CRS. Specifically, within the first year of Plan adoption, request FEMA to conduct a community informational workshop on the Community Rating System at a central location provided by the County. The County shall promote this workshop through established groups and forums including the Cape May County Emergency Management Coordinators, the Cape May County Chapter of the New Jersey League of Municipalities, and the ongoing Cape May County Hazard Mitigation Planning Committee.								
	See description above	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	CMC Engineering and Emergency Management	Low - Medium	Local Budget	Short (year 1) – county level promotion of CRS has been ongoing
CMC-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	CMC (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
CMC-4	Promote the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	CMC Engineering and Emergency Management	Low - Medium	County Budget	Ongoing
CMC-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	County OEM and NJOEM	Low - Medium	County Budget	Ongoing
CMC-6	Create/enhance/maintain mutual aid agreements with	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7,	CMC	Low - Medium	County Budget	Ongoing



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	neighboring Counties, law enforcement, municipal public works and County public works departments.				4-8, 6-1, 6-2, 6-3				
CMC-7 (TL-14)	Replace three (3) bridges and elevate 2.7 miles of County Route 621 in Lower Township. This project is currently in the scoping phase.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High (est. ~300M)	TIGER (economic stimulus funding) and other Federal funding sources	Longterm DOF
CMC-8 (TL-15 and WCM-12)	Elevate ~1.5 miles of CR-606 (Sunset Boulevard) through the South Cape May Meadows (Lower and WCM).	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	Various, incl. federal grant funding	Longterm DOF (lower priority project – area is not as floodprone as many other areas)
CMC-9 (TM-18)	Intersection of State Route 47 and the Garden State Parkway (Middle Township) – Elevate Route 47 roadway and ramps, which will require elevation of the Parkway bridge overpass	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	State DOT and NJ Turnpike Authority	High	State, Tolls	Longterm (not currently under active consideration by State)
CMC-10 (CW-10)	Elevate State Route 47 from George Redding Bridge to Susquehanna Avenue (Wildwood).	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	State DOT	High	State	Longterm
CMC-11 (WW-12)	Address flooding on Glenwood Avenue (CR-	Existing	Coastal Storms,	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	Various, incl.	Longterm DOF



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	614) through West Wildwood		Flooding, Severe Storms			with municipal support		federal grant funding	
CMC-12 (TM-19)	Intersection of State Route 147 and the Garden State Parkway (Middle Township) – Elevate Route 147 roadway and ramps, which will require elevation of the Parkway bridge overpass	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	State DOT and NJ Turnpike Authority	High	State and NJTPA	Longterm
CMC-13	Elevate tie-in section of State Route 147 into North Wildwood	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	State DOT	High	State	Longterm
CMC-14 (SH-16)	Elevate Stone Harbor Boulevard (CR-657) from the Parkway into Stone Harbor proper. This will require elevating one residential property on 96 <sup>th</sup> Street (part of CR-657) and potentially others. 96 <sup>th</sup> Street was elevated in 2008 to the extent possible in consideration of existing home elevations.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	TBD	Longterm DOF
CMC-15	Elevate Courthouse-South Dennis Road (CR-657) through the swamps (evacuation route)	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	TBD	Longterm DOF
CMC-16	Identify and rectify	Existing	Coastal	1, 3, 4	1-1, 1-4, 3-3,	State DOT	High	NJDOT,	Longterm



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
(TD-14)	cause of flooding at the intersection of State Route 47 and the newly completed bridge over Dennis Creek. Both improved drainage design and elevation in and near the intersection may be needed.		Storms, Flooding, Severe Storms		4-2, 4-10			Municipal, and HMA grants where applicable	DOF
CMC-17 (TM-23 and TL-16)	Elevate CR-603 through Lower and Middle Township through Fishing Creek Swamp.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	TBD	Longterm DOF
CMC-18 (CCM-8)	Install shoreline protection for CR-640 (entrance to Coast Guard Base) along the Cape May Harbor in the City of Cape May. County has met with ACOE and NJDEP on this previously.	Existing	Coastal Storms, Coastal Erosion	1, 3, 4, 5, 6	1-1, 3-3, 4-7, 4-10, 5-4, 6-2	County Engineering and ACOE	High	ACOE, State	Longterm DOF
CMC-19 (Wildwoods)	Upgrade stormwater drainage system along CR-621 and arterials in the Wildwoods (Wildwood Crest, Wildwood and North Wildwood). These are inadequate to even a 2-year storm.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipalities	High	TBD	Longterm DOF
CMC-20 (TM-20)	As an interim project prior to implementation of CMC-21 below, elevate the Avalon Boulevard northbound onramp to the GSP	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with NJTPA	High (because funding is not identified) but project	TBD	Longterm DOF



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	(chronic problem area and critical for evacuation)						is relatively low cost – Priority is HIGH		
CMC-21 (TM-21)	Intersection of Avalon Boulevard and the Garden State Parkway (Middle Township) – Elevate Avalon Boulevard roadway and ramps, which will first require elevation of the Parkway bridge overpass.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with NJTPA	High	TBD	Longterm DOF
CMC-22 (TM-24, BA-40)	Elevate Avalon Boulevard from Parkway into Avalon proper (~2.5 miles).	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	TBD	Longterm DOF
CMC-23 (TD-21)	Elevate Sea Isle Boulevard (CR-601) from the Parkway to the Sea Isle bridge. This project is currently in the State Transportation Improvement Plan (TIP) for construction over the next two years, and is currently in the preliminary engineering phase.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	TBD	State and Federal Funding	Ongoing (est. completion in 2013)
CMC-24 (TD-15)	Intersection of Sea Isle Boulevard (CR-601) and the Garden State Parkway (Dennis Township) – Elevate Sea Isle Boulevard	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with NJTPA	High	TBD	Longterm DOF



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	roadway and ramps, which will first require elevation of the Parkway bridge overpass								
CMC-25 (SIC-12)	Elevate JFK Boulevard (CR-625) into Sea Isle City (no funding source currently for project, but is in design phase), and upgrade stormwater system. This project is in the NJ TIP. This project will require elevation of one or more commercial properties along JFK Boulevard.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipality	High (\$2M identified for JFK in 2014, trying to move this up as City has a street-scaping project upcoming	TBD	Longterm DOF
CMC-26 (SH-10a, Avalon)	Upgrade stormwater system on CR-619 through Stone Harbor and Avalon. Seven stormwater pump stations were installed along CR-619 from Avalon Boulevard to 19 <sup>th</sup> Street (Avalon business district) to address flooding in this area.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipalities	High	FEMA HMA grant programs, local match	Longterm DOF
CMC-27 (SIC-13)	Install bulkheads along back bay in Sea Isle City in locations (large areas) that are not protected. This includes both public and private property.	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe Storms	1, 3, 4, 5, 6	1-1, 3-3, 4-2, 4-7, 4-10, 5-4, 6-3	Municipal, with County and property owner support	High	TBD	Longterm DOF
CMC-28 (SIC-8, TU-	Install permanent protection to CR-619,	Existing	Coastal Storms,	1, 3, 4, 5, 6	1-1, 1-4, 3-3, 4-2, 4-7, 4-	County and ACOE, with	High	Federal grants	Longterm DOF



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
13)	from the Whale Beach area in Sea Isle City to the Strathmere section of Upper Township, to replace the existing GeoTube installed in the late 1990s. The GeoTube is beyond its design life.		Coastal Erosion, Flooding, Severe Storms		10, 5-4, 6-2	municipal support		with local match	
CMC-29 (TU-14, OC)	Upgrade exiting revetment wall (needs to be extended to the south and existing sections upgraded) and provide additional road protection to CR-619 in Strathmere to Ocean City, and elevate sections of road as needed.	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-7, 4-10	County Engineering	High	Federal grants with local match	Longterm DOF
CMC-30 (TU-15)	Intersection of Roosevelt Boulevard (CR-623) and the Garden State Parkway (Upper Township) – Roosevelt Boulevard Elevate roadway and ramps, which will first require elevation of the Parkway bridge overpass.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	NJTPA, County Engineering	High	HMA grants with local match	Longterm DOF
CMC-31 (TU-16)	Elevate Roosevelt Boulevard (CR-623) from the Parkway into Ocean City proper.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	HMA grants with local match	Longterm DOF
CMC-32 (CCM-12)	Install backup power to two stormwater pump stations at Madison	Existing	Coastal Storms, Flooding,	1, 3, 4, 6	1-1, 3-3, 3-4, 4-7, 4-8, 6-1, 6-2	County Engineering with City of	M (not high \$ cost)	TBD	Longterm DOF



**SECTION 9.1: COUNTY OF CAPE MAY**

Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Avenue and Grant Avenue in Cape May City. Work with the City to properly site the generator, which could be co-managed with the City to provide backup power for their station on Queen Street and Benton Avenue.		Severe Storms			Cape May			
CMC-33 (TU-17)	Elevate Tuckahoe Road (CR-636) from Butter Road to CR-610. A conceptual design for this project is available.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipal support	High	HMA grants with local match	Longterm DOF
CMC-34 (TU-18)	Work with the State DOT to address vulnerabilities on SR-50 along Cedar Swamp Creek.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-4, 3-3, 4-2, 4-10, 6-3	State DOT with County and municipal support	High	TBD	Longterm DOF
CMC-35 (TU-19)	Develop an engineering solution for severe flooding problems along CR-650 and Hope Corson Road (CR-671).	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipal support	\$1.5 MM (High)	HMA grants with local match	Short
CMC-36 (OC-14)	Upgrade storm drainage in Ocean City, which are currently not designed to handle a 25-year storm event.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipal support	High	HMA and federal programs with local match	Longterm DOF
CMC-37 (OC-15)	Elevate Bay Avenue (CR-659) in floodprone areas (33 <sup>rd</sup> to 28 <sup>th</sup> , 20 <sup>th</sup> to 18 <sup>th</sup> , 9 <sup>th</sup> to 2 <sup>nd</sup> ). This is an evacuation route, and was generally impassable during the recent (Sept. 2009) Nor'Easter.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipal support	High	HMA and federal programs with local match	Longterm DOF



**SECTION 9.1: COUNTY OF CAPE MAY**

Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMC-38	Retrofit or replace county communications towers (Paris Grant Program towers), which are currently rated for winds less than Cat1 strength. These towers are used for emergency communications as well as electronic document archiving (COOP/COG).	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3, 4	1-1, 3-3, 3-4, 4-2, 4-3, 4-7	County Engineering and Emergency Management	High	TBD	Longterm DOF
CMC-39	Work with Verizon and other wireless tower owners to assess their vulnerability to wind damage.	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3, 4, 6	1-1, 1-3, 3-2, 3-3, 3-4, 4-2, 4-3, 4-7, 4-8, 4-9, 6-1, 6-3	County Emergency Management with facility owners	L-M	TBD	Longterm DOF
CMC-40	Assess vulnerability of communications equipment located on water towers, and address as necessary	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3, 4, 6	1-1, 1-3, 3-2, 3-3, 3-4, 4-2, 4-3, 4-7, 4-8, 4-9, 6-1, 6-3	County Emergency Management with facility owners	M	TBD	Longterm DOF
CMC-41 (TU-21, Woodbine)	Identify proper locations for and install water draw (siphon) stations to increase fire-fighting capabilities.	N/A	Wildfire	1, 3, 4, 6	1-1, 1-11, 3-3, 4-6, 4-7, 4-8, 6-1, 6-3	County Fire and OEM with support from local fire and OEM	M-H	DHS grants; County and Local funding	Longterm
CMC-42 (TD-22)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Court House-South Dennis Road (CR657) near Beaver Dam Road in Dennis Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 1-5, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term



**SECTION 9.1: COUNTY OF CAPE MAY**

Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMC-43 (TM-25)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along the entire length of Shunpike Road (CR620) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-44 (TL-17)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Fishing Creek/Academy Road (CR639) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-45 (TD-23)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Woodbine-Ocean View Road (CR550) in Dennis Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 1-5, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-46 (TL-18)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Tabernacle Road (CR647) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-47 (TD-24)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Fidler Road (CR638) in	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Dennis Township								
CMC-48 (VW-13)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Webster Avenue (CR638) in the Village of Woodbine	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-49 (TL-19)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Shunpike Road (CR644) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-50 (TM-26)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Satt Boulevard (CR626) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-51 (TM-27)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Railroad Avenue (CR626) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-52 (TL-20)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Seashore Road (CR626) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMC-53 (TM-28)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Dias Creek Road (CR612) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-54 (TM-29)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Indian Trail Road (CR618) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 1-5, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-55 (TM-30)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Goshen-Swainton Road (CR646) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-56 (TD-25)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Corsons Tavern Road (CR628) in Dennis Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	M	County and Local Funding	Short-term
CMC-57 (CCM-23)	Upgrade stormwater drains and outfalls along Beach Drive (CR603) in Cape May City	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-6, 4-10	County Engineering with municipal support	H	HMA Grants, County and Local Funding	Short-term
CMC-58 (WCM-13)	Develop a stormwater master plan for West Cape May	Existing	Coastal Storms, Severe Storms, Flooding	1, 4	1-1, 1-6, 4-1, 4-6	County Engineering/ Planning with municipal support	L	County and Local Funding	Short-term



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMC-59	Support Municipalities in either the development of update of local stormwater master plans	Existing	Coastal Storms, Severe Storms, Flooding	1, 4	1-1, 1-6, 4-1, 4-6	County Engineering/ Planning with municipal support	L	County and Local Funding	Short-term
CMC-60 (VA-41)	Install shore protection along Ocean Drive (CR619) at Townsends Inlet in Avalon	Existing	Coastal Storms, Severe Storms, Coastal Erosion	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	County Engineering with municipal support	H	HMA Grants, County and Local Funding	Short-term
CMC-61 (OC-31 and TU-22)	Install shore protection along Ocean Drive (CR619) at Corsons Inlet in Upper Township and Ocean City	Existing	Coastal Storms, Severe Storms, Coastal Erosion	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	County Engineering with municipal support	H	HMA Grants, County and Local Funding	Short-term
CMC-62 (TM-31)	Install shore/roadway protection along Ocean Drive (CR619) in Middle Township	Existing	Coastal Storms, Severe Storms, Coastal Erosion	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	County Engineering with municipal support	H	HMA Grants, County and Local Funding	Short-term
CMC-63 (TM-32)	Construction of storm drain pipe to minimize flooding on Goshen Road (CR615) from Johnson Lane to Church Street in Middle Township	New & Existing	Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-4, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	L	HMA Grants, County and Local Funding	In Progress, Short-term
CMC-64 (TM-33)	Construction of storm sewer system to alleviate flooding on Court House – South Dennis Road (CR657) from Village Drive to College Drive in Middle Township	New & Existing	Flooding, Severe Storms	1, 3, 4, 6	1-1, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	L	HMA Grants, County and Local Funding	In Progress, Short-term



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMC-65 (TU-23)	Construction of storm sewer system to alleviate flooding on Dennisville – Petersburg Road (CR610) from White Pine Lane to Old Tuckahoe Road in Upper Township	New & Existing	Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	L	HMA Grants, County and Local Funding	In Progress, Short-term
CMC-66 (TU-24)	Construction of additional storm sewer infiltration system to minimize flooding on Hope Corson Road (CR671) from Route NJ 50 to Stagecoach Road in Upper Township	New & Existing	Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	L	HMA Grants, County and Local Funding	In Progress, Short-term
CMC-67 (WCM-13)	Construction of storm drain pipe to minimize flooding on Bayshore Road (CR607) from Fifth Avenue to railroad crossing in West Cape May	New & Existing	Flooding, Coastal Storms, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	L	HMA Grants, County and Local Funding	In Progress, Short-term
CMC-68 (VA-42)	Emergency construction to stabilize Ocean Drive (CR619) near Townsends Inlet in Avalon	New & Existing	Flooding, Coastal Storms, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	L	HMA Grants, County and Local Funding	In Progress, Short-term
CMC-69	Through the resources and established forum of the Cape May County Fire Chiefs Association working in partnership with the New Jersey Division of Fire Safety and the New Jersey State Forest Fire Service (Firewise Community Liaison), work with those communities with significant wildfire risk to identify and implement wildfire mitigation activities, programs and initiatives, including community participation in the NFPA “Firewise” program								
	See description above	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	County Fire Coordinator	L	Existing Budgets	Short – much of this is ongoing



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Initiative #	Mitigation Initiative	Applies to new or existing structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMC-70	<p>Within the first year of Plan adoption, request FEMA to conduct a Repetitive Loss/Severe Repetitive Loss mitigation workshop at a central location provided by the County. This program should address the specific interests and concerns of the RL/SRL communities in the County which includes:</p> <ul style="list-style-type: none"> <li>Gaining a better understanding of the Severe Repetitive Loss mitigation grant program, including the procedural requirements of a RL/SRL community under this program;</li> <li>Understanding how RL/SRL communities can enhance their efforts to encourage and support property owners to mitigate their properties,</li> <li>Understanding how RL/SRL communities can best leverage existing studies (e.g. the FEMA Region II Repetitive Loss Studies) to target specific properties for mitigation, and</li> <li>Learning what resources are available to conduct/complete Repetitive Loss Area Analyses, and gather critical data (e.g. structure elevations) to screen and move properties through the applicable mitigation grant programs.</li> </ul> <p>The County shall promote this workshop through established groups and forums including the Cape May County Emergency Management Coordinators, the Cape May County Chapter of the New Jersey League of Municipalities, and the ongoing Cape May County Hazard Mitigation Planning Committee. Further, the County shall continue to conduct meetings as needed with the Cape May RL/SRL communities with the support of NJOEM to assist communities as they work to address their RL/RSL properties.</p>								
	See description above	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	County Hazard Mitigation Coordinator	L	Existing Budgets	Short (year 1)
CMC-71	<p>Within the first year of plan implementation, identify order of magnitude costs for the large number of county-sponsored infrastructure mitigation projects identified in the County annex, and identify the mitigation benefits associated with each of these initiatives. An updated project prioritization for county-sponsored projects shall be provided as part of the 1st year annual review and update. Further, work with members of the ongoing mitigation planning committee and project implementation leads to complete a similar effort for local initiatives identified in each community's annex.</p>								
	See description above	N/A	All Hazards	All Goals	All Objectives	County Engineer working with local project leads	M	Existing Budgets	Short (year 1)

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the County has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	CMC-3, CMC-71	CMC-18, CMC-28, 29, 71	CMC-3, 71	CMC-18, CMC-28, 71	CMC-5, CMC-6, 71	CMC-18, CMC-27 to -29, CMC-60 to -62, 71
Coastal Storm	CMC-3, CMC-34, CMC-71	CMC-1a, CMC-1b, CMC-7 to -26, CMC-28 to -40, CMC-60 to CMC-62, CMC-67 and -68, 70, 71	CMC-3, CMC-58 and -59, 70, 71	CMC-18, CMC-28, 71	CMC-5, CMC-6, CMC-38 to -40, 71	CMC-18, CMC-27 to -29, CMC-57, CMC-60 to -62, CMC-67 and -68, 71
Flood	CMC-2 to -4, CMC-34, CMC-71	CMC-1a, CMC-1b, CMC-2, CMC-4, CMC-7 to -26, CMC-28 to -37, CMC-42 to -57, CMC-63 to CMC-68, 70, 71	CMC-2 to -4, CMC-58 and -59, 70, 71	CMC-2, CMC-4, CMC-18, CMC-28, 71	CMC-5, CMC-6, CMC-42, CMC-45, CMC-54, 71	CMC-18, CMC-27 to -29, CMC-57, CMC-60 to -68, 71
Severe Storm	CMC-3, CMC-34, CMC-71	CMC-1a, CMC-1b, CMC-7 to -26, CMC-28 to -40, CMC-42 to -57, CMC-60 to CMC-68, 70, 71	CMC-3, CMC-58 and -59, 70, 71	CMC-18, CMC-28, 71	CMC-5, CMC-6, CMC-38 to -40, CMC-42, CMC-45, CMC-54, CMC-63, 71	CMC-18, CMC-27 to -29, CMC-57, CMC-60 to -68, 71
Severe Winter Storm	CMC-3, CMC-71	CMC-38 to -40, 71	CMC-3, 71	71	CMC-5, CMC-6, CMC-38 to -40, 71	71
Tsunami	CMC-3, CMC-71	CMC-28, CMC-29, 71	CMC-3, 71	CMC-28, 71	CMC-5, CMC-6, 71	CMC-27 to -29, 71
Wildfire	CMC-3, CMC-69, CMC-71	CMC-69, 71	CMC-3, CMC-69, 71	CMC-69, 71	CMC-5, CMC-6, CMC-41, 71	CMC-41, 71

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

5. **Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
CMC-1a	8	H	H	Y	Y	N	M-H*
CMC-1b	8	H	H	Y	Y	N	M-H*
CMC-2	9	M	L	Y	N	Y	H
CMC-3	All	M	M	Y	N (Yes for 5 year update)	N	M
CMC-4	14	H	L	Y	N	Y	H
CMC-5	13	M	L	Y	N	Y	M
CMC-6	13	M	L	Y	N	Y	M
CMC-7	5	H	H	Y	Y	N	M
CMC-8	5	H	H	Y	Y	N	L
CMC-9	5	H	H	Y	Y	N	M
CMC-10	5	H	H	Y	Y	N	M
CMC-11	5	H	H	Y	Y	N	M
CMC-12	5	H	H	Y	Y	N	M
CMC-13	5	H	H	Y	Y	N	M
CMC-14	5	H	H	Y	Y	N	M
CMC-15	5	H	H	Y	Y	N	M
CMC-16	5	H	H	Y	Y	N	M
CMC-17	5	H	H	Y	Y	N	M
CMC-18	6	H	H	Y	Y	N	M-H
CMC-19	5	H	H	Y	Y	N	M
CMC-20	5	H	M	Y	Y	N	H
CMC-21	5	H	H	Y	Y	N	M
CMC-22	5	H	H	Y	Y	N	M
CMC-23	5	H	M	Y	Y	Y	H
CMC-24	5	H	H	Y	Y	N	M
CMC-25	5	H	M	Y	Y	N	M-H
CMC-26	5	H	H	Y	Y	N	M
CMC-27	7	H	H	Y	Y	N	M
CMC-28	8	H	H	Y	Y	N	M
CMC-29	6	H	H	Y	Y	N	M
CMC-30	5	H	H	Y	Y	N	M

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Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
CMC-31	5	H	H	Y	Y	N	M
CMC-32	7	H	M	Y	TBD	N	H
CMC-33	5	H	H	Y	Y	N	M
CMC-34	6	H	H	Y	Y	N	M
CMC-35	5	H	H	Y	Y	N	M
CMC-36	5	H	H	Y	Y	N	M
CMC-37	5	H	H	Y	Y	N	M
CMC-38	6	M	H	N	Y (DHS, not mitigation)	N	L-M
CMC-39	12	M	L-M	Y	N	Y	H
CMC-40	12	M	L-M	Y	N	TBD	M
CMC-41	8	M	M-H	N	Y (DHS, not mitigation)	N	L-M
CMC-42	10	H	M	Y	Y	Y	H
CMC-43	7	H	M	Y	Y	Y	H
CMC-44	7	H	M	Y	Y	Y	H
CMC-45	10	H	M	Y	Y	Y	H
CMC-46	7	H	M	Y	Y	Y	H
CMC-47	7	H	M	Y	Y	Y	H
CMC-48	7	H	M	Y	Y	Y	H
CMC-49	7	H	M	Y	Y	Y	H
CMC-50	7	H	M	Y	Y	Y	H
CMC-51	7	H	M	Y	Y	Y	H
CMC-52	7	H	M	Y	Y	Y	H
CMC-53	7	H	M	Y	Y	Y	H
CMC-54	10	H	M	Y	Y	Y	H
CMC-55	7	H	M	Y	Y	Y	H
CMC-56	7	H	M	Y	Y	Y	H
CMC-57	6	H	H	Y	Y	N	H
CMC-58	4	M	L	Y	N	Y	H
CMC-59	4	M	L	Y	N	Y	H
CMC-60	5	H	H	Y	Y	N	H
CMC-61	5	H	H	Y	Y	N	H
CMC-62	5	H	H	Y	Y	N	H
CMC-63	9	H	L	Y	Y	Y	H
CMC-64	5	H	L	Y	Y	Y	H



Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits equal or exceed Costs? (Y or N)	Is project Grant eligible? (Y or N)	Can Project be funded under existing programs/budgets? (Y or N)	Priority (High, Med., Low)
CMC-65	6	H	L	Y	Y	Y	H
CMC-66	6	H	L	Y	Y	Y	H
CMC-67	6	H	L	Y	Y	Y	H
CMC-68	6	H	L	Y	Y	Y	H
CMC-69	14	M	L	Y	N	Y	H
CMC-70	8	M	L	Y	N	Y	H
CMC-71	All	M	L-M	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

None at this time.



**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for Cape May County to illustrate the probable areas impacted within the County. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the County has significant exposure. Additional county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.

## 9.2 BOROUGH OF AVALON

This section presents the jurisdictional annex for the Borough of Avalon.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
Harry DeButts/Office of Emergency Management, Deputy Coordinator 3100 Dune Drive, Avalon, NJ 08202 (609) 967-5925 <a href="mailto:harrydebutts@yahoo.com">harrydebutts@yahoo.com</a>	Kevin Scarpa/Chief, Avalon Emergency Medical Services 3100 Dune Drive, Avalon, NJ 08202 (609) 780-7938 <a href="mailto:kevinscarpa@comcast.net">kevinscarpa@comcast.net</a>

### B.) BOROUGH PROFILE

#### *Population*

2,093 (estimated 2008 Residential Population, Cape May County Planning Dept.)

35,245 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

The Borough of Avalon is along the southeastern border of Cape May County. It is bounded on the north by the Township of Dennis, north and west by the Township of Middle, on the east by the Atlantic Ocean, and on the southwest by the Borough of Stone Harbor. The Borough lies on the Seven Mile Island, a 7 ½ mile long barrier island along Cape May County's Atlantic coastline. The Borough is also part of the Ocean City Metropolitan Statistical Area. Avalon Boulevard connects the Garden State Parkway and U.S. 9 to the oceanfront.

According to the U.S. Census Bureau, the borough has a total area of 4.9 square miles (12.7 km<sup>2</sup>), with 4.2 square miles (10.9 km<sup>2</sup>) of it land and 0.7 square miles (1.7 km<sup>2</sup>) of it (13.70-percent) water.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

The Borough was formerly known as Seven Mile Beach (present day Avalon and Stone Harbor). The area was served as a cattle range and was also used for its plentiful timber. In April 1887, the Seven Mile Beach Company was formed. As early as 1893, Avalon was advertised as a resort town. With this rapid development, homes and businesses were erected and much of the area was graded and cut, making the island mostly flat.

By the early 1900s, the Leaming Railroad Bridge was constructed, allowing train connections into the town. This increased the traffic from nearby Philadelphia, Pennsylvania. Around 1944 the West Jersey and Seashore railroad lines merged with the Reading Railroad. This effectively ended the era of travel by train to the island. A hurricane took several streets and Avalon now has a north end beginning at 7th street. Currently the most widely used method of transportation to and from Avalon is by car or boat; however, buses run on a regular schedule all over the shore towns.

On January 4, 1890, the 197-ton Commonwealth ship sank, which was en route from New York City to Philadelphia with a cargo of molasses, coffee, tobacco, tea, coconut oil, and camphor. Straying from its course in rough weather, the Commonwealth ran aground in Townsend's Inlet near the Borough of Avalon.

Avalon was incorporated as a borough by an act of the New Jersey Legislature on April 18, 1892, from portions of Middle Township, based on the results of a referendum held two days earlier. The borough was reincorporated on March 6, 1896, and again on May 4, 1897. Another portion of Middle Township was annexed in 1910. On December 27, 1941, portions of Avalon were ceded to Stone Harbor (Snyders, 1969).

***Governing Body Format***

The Borough of Avalon is governed under the Faulkner Act (Mayor-Council) system of municipal government by a mayor and a five-member Borough Council. Members of the Borough Council are elected in non-partisan elections to four-year terms on a staggered basis, with one or two seats coming up for election each year (Rutgers University, 2005).

***Growth/Development Trends***

According to the Borough, the Town of Avalon is essentially built out. No significant development or redevelopment has been identified at this time.

Indicators of potential development in Cape May County include Vacant Developable, Residential Sub-dividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Borough of Avalon**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Borough of Avalon	0	0	0	0	0	0	0	0	4	0.9	137	23.4	141	24.3

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



***Past, Ongoing and Potential Mitigation Activities:***

The following was excerpted from the 2008 FMP update listing both ongoing and completed activities listed in their Action Plan, and new or proposed activities:

*Preventative*

1. The Borough continues to conduct the following preventative programs and activities:
  - a. Monitoring and surveying of the beaches
  - b. Enforcement of the Stormwater Management Ordinances
  - c. Pursuit of opportunities to preserve open space
  - d. Enforcement of building codes and continual re-evaluation of ordinances for potential positive amendments
  - e. Regular beach and dune maintenance activities
2. To minimize flooding, in February 2008 the Borough adopted an ordinance (27:7.3.u) requiring that all roof runoff from new construction be recharged to the ground through direct connection to subsurface stone trenches.

*Property Protection*

1. The Avalon Construction Office continues to provide informational materials to homeowners, builders, and realtors regarding floodplain management.
2. The Borough continues to implement the Repetitive Loss Reduction Plan.
3. The Borough continues to pursue available funding opportunities to address repetitive loss properties and/or mitigate the impact of flooding.
4. The Borough continues to require one-foot freeboard for new construction, i.e. finished floor elevation of all new construction is required to be one foot above base flood elevation.

*Natural Resources Protection*

The Borough continues to conduct the following Natural Resources Protection programs and activities:

1. Annual dune grass planting, utilizing volunteers from local civic groups and schools
2. Protection of the high dunes
3. Stream scouring program
4. Illicit connection program
5. Pesticide reduction program

*Emergency Services*

The Borough is proceeding with the following activities related to Emergency Services:

1. Flood Warning System
  - a. Initiated planning efforts for the expansion of the Borough's existing emergency warning system to include additional sirens to increase coverage and improve effectiveness.
  - b. Established Reverse 911 system.
  - c. Installed additional signs to supplement existing emergency alert system on Borough's AM radio station. In 2008 an additional emergency alert sign was placed along Avalon Boulevard east of the Gravens Thorofare Bridge.

2. Flood response system.
  - a. Continuing to pursue preparation of pre-disaster bid documents for contract with disaster recovery contractor for debris removal.
  - b. Continuing to pursue preparation of pre-disaster contracts for providing home and family services for emergency personnel during disaster.
  - c. In 2008 Avalon updated their Emergency Operating Plan.
  - d. Cape May County recently awarded a contract for the development of a Multi-Jurisdictional All Hazards Mitigation Plan in accordance with FEMA requirements. Avalon intends to actively participate in this process.

### *Structural Projects*

1. In 2008 the Borough authorized the design of the installation of tide check valves and various stormwater system improvements in the 21st Street and 25th Street island areas. This project is scheduled to be completed in the winter of 2009/2010.
2. In early summer 2008, the Borough, in partnership with the State of New Jersey, completed a beach renourishment project consisting of pumping approximately 225,000 CY of beach-quality sand from the designated borrow area in Townsends Inlet. The project was completed in June 2008. The project provided protection to the public and private properties in the vicinity of the beach between 9th Street and 18th Street, after severe erosion from multiple storm events had left the dune system, stone revetment, and timber oceanfront bulkhead vulnerable to storm damage.
3. In the spring of 2009, the U.S. Army Corps of Engineers completed a beach renourishment project consisting of trucking beach-quality sand from a nearby gravel pit to repairs extensive erosion of the Borough's north-end beaches. A total of 117,000 cubic yards of sand was delivered to the beach under the project. Immediately following the Army Corps project, the Borough conducted their own project utilizing the same method and sand source, delivering approximately 47,000 cubic yards of sand.
4. In 2009, Cape May County completed the reconstruction of Ocean Drive in Avalon, including stormwater system upgrades. The stormwater improvements under this project included additional inlets, replacement of undersized pipe, and improvements to gutter grades. These improvements will contribute to reducing flooding along Ocean Drive.
5. In 2009, Avalon completed the reconstruction of the 8<sup>th</sup> Street bulkhead, which raised the bulkhead to an elevation of 7.5' (NGVD 1929). This will provide a significant reduction in flooding at an important transportation route, since the overtopping of the previous bulkhead during high tidal events flooded the intersection of 8th Street and Ocean Drive near the vital connection to Sea Isle City via the Townsends Inlet Bridge. The Borough also plans to replace a deteriorated bulkhead at 5th Avenue immediately north of 20th Street. This project will also reduce flooding in a low-lying area prone to flooding. The project is scheduled to be completed in the winter of 2009/2010.
6. In 2008 the Borough authorized a major evaluation of the existing stormwater outfall system, bulkheads, and public piers. The study will include: evaluating the condition of these structures; prioritizing deficiencies according to condition, importance, and threat to public safety; and recommendations for systematic upgrades. The study is anticipated to be completed in the winter of 2009/2010.
7. In August 2007 the Borough conducted a workshop with leading authorities on beach erosion to discuss the Borough's options on protecting the north-end beaches from storm and erosive forces. Attendees included representatives from the U.S. Army Corps of Engineers, New Jersey Department of

Environmental Protection, Hatch Mott MacDonald, and experts from various colleges and universities. It was agreed that the State would authorize a study of the problem by Stevens Institute of Technology/Davidson Laboratories through the New Jersey Coastal Protection Technical Assistance Program (NJCPTAS).

8. The Borough recently completed major additions to the Public Safety Building, including significant expansions and upgrades to the Emergency Operations Center. Improvements include: upgrades to meet FEMA standards including elevation to 11', updating of radio equipment, and an emergency generator set at 15'.

9. The replacement of private bulkheads throughout the Borough to the required elevation of 7.5' provides increased flood protection on an ongoing basis. In 2009, the Avalon Construction Office issued 28 new bulkhead construction permits.

## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE BOROUGH

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March, 1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January, 1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane (Dennis)	Not applicable	August, 1999	\$700,000 (Borough of Avalon)
Hurricane Floyd	EM-3148	September, 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February, 2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Storm (7" rainfall)	Not applicable	July 30, 2005	TBD
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 139  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 49

Source: FEMA Region 2 as of December 2009

## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$753,782,000 Max: \$907,641,697	Frequent	54	High
1	Flood	\$531,470,000	Frequent	54	High
2	Severe Storm	\$153,859,697	Frequent	36	Medium
3	Severe Winter Storm	\$9,679,180	Frequent	27	Medium
4	Tsunami	Not available	Rare	18	Low
5	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is the combination wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

## E.1) Legal and Regulatory Capability

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	N	Y	Y	Y	NJ Edition of IBC 2006; 1-26-84
2) Zoning Ordinance	Y	Y	Y	Y	Ch. 27; Adopted 3-11-09
3) Subdivision Ordinance	Y	Y	N	N	Ch. 26; Adopted 1-30-79
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Flood Control, Ch. 19; 2-14-78
5) Growth Management	Y	Y	N	Y	Master Plan, 10-9-07
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	CRS FMP – Update expected January 2009, reviewed Sept. 2008
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Part of Zoning
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Master Plan, 10-9-07
9) Capital Improvements Plan	Y	N	N	N	Budget Capital 3 Year Plan 2009 Capital Improvement Plan
10) Site Plan Review Requirements	Y	N	Y	N	Ch. 26; Adopted 1-30-79
11) Open Space Plan	N	N	Y	N	Master Plan, 10-9-07
12) Shoreline Management or Protection Plan	Y	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	
14) Emergency Response Plan	N	Y	Y	N	EOP 4-30-08
15) Post Disaster Recovery Plan	N	N	N	N	EOP 4-30-08
16) Post Disaster Recovery Ordinance	N	Y	Y	N	EOP 4-30-08
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	Habitat Beach Master Plan, 5-1-09

**E.2) Administrative and Technical Capability**

<b>Staff/ Personnel Resources</b>	<b>Available (Y or N)</b>	<b>Department/ Agency/Position</b>
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Hatch Mott and MacDonald Engineering
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Hatch Mott and MacDonald Engineering
3) Planners or engineers with an understanding of natural hazards	Y	Hatch Mott and MacDonald Engineering; Brian Reynolds
4) NFIP Floodplain Administrator	Y	Salvatore J. DeSimone, CFM
5) Surveyor(s)	Y	Hatch Mott and MacDonald Engineering
6) Personnel skilled or trained in "GIS" applications	N	
7) Scientist familiar with natural hazards in the Borough of Avalon.	Y	Brian Reynolds
8) Emergency Manager	Y	Mayor Pagliughi
9) Grant Writer(s)	Y	Triad Associates
10) Staff with expertise or training in benefit/cost analysis	Y	Triad Associates

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	No
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	

E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	6 (current)	10-1-1996*
Building Code Effectiveness Grading Schedule (BCEGS)	---	---
Public Protection	---	---
Storm Ready	Participating	1999
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To Be Determined

\* Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Below is a table indicating the Borough’s participation and points earned in the CRS program to date.

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the Borough of Avalon
300	310	Elevation Certificates	162	71
300	320	Map Information	140	140
300	330	Outreach Projects	380	200
300	340	Hazard Disclosure	81	10
300	350	Flood Protection Information	102	56
300	360	Flood Protection Assistance	71	71
400	410	Additional Flood Data	1,346	0

## SECTION 9.2: BOROUGH OF AVALON

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the Borough of Avalon
400	420	Open Space Preservation	900	483
400	430	Higher Regulatory Standards	2,740	171
400	440	Flood Data Maintenance	239	165
400	450	Stormwater Management	670	37
500	510	Floodplain Management Planning	359	103
500	520	Acquisition and Relocation	3,200	0
500	530	Flood Protection	2,800	34
500	540	Drainage System Maintenance	330	280
600	610	Flood Warning Program	255	155
600	620	Levee Safety	900	0
600	630	Dam Safety	175	67
		<b>Total Points to Date</b>		<b>2,043</b>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
BA-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
BA-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF

**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	of that action based on available funding.								
BA-2	Continue active participation in CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	Borough	Low - Medium	Local Budget	Short
BA-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Borough (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
BA-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
BA-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
BA-6	Create/enhance/maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
BA-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
BA-8	Upgrade stormwater	N/A	Coastal	1, 3, 4	1-1, 3-3, 3-4,	County	High	County	Long-term



**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	system on CR-619 through Stone Harbor and Avalon. Seven stormwater pump stations were installed along CR-619 from Avalon Boulevard to 19th Street (Avalon business district) to address flooding in this area. Approximately 5 additional pump stations are needed.		Storms, Flooding		4-7	Engineering with municipalities	(~\$300K per station)	and Local, grant funding where applicable	DOF
BA-9	Address overwash of the seawall on Ocean Drive (CR-619) at north end approaching town's inlet bridge (e.g. and extended seawall)	N/A	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 1-5, 1-6, 3-3, 4-2, 4-6	County Engineering with municipal support	High	TBD	Longterm DOF
BA-10 (CMC-38)	Upgrade exiting revetment wall (needs to be extended to the south and existing sections upgraded) or elevate the seawall itself and provide additional road protection to CR-619 in Strathmere to Ocean City, and elevate sections of road as needed.	N/A	Coastal Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 3-3, 4-2, 4-11, 6-2	County Engineering with municipal support	High	TBD	Longterm DOF
BA-11	Elevate back-bay street and bulkheads	Existing	Coastal Storms, Flooding	1, 4	1-1, 1-4, 1-9, 1-10, 4-2	Local and property owners	High	Local and property owners	Longterm DOF
BA-12	Continue public outreach efforts to inform residents to install flood vents (retrofit )	Existing	Coastal Storms, Severe Storms, Flooding	1, 2, 6	1-1, 2-1, 2-2, 2-4, 6-3	Construction Office	Low	Town Budget	Ongoing
BA-13	Continue to monitor and	N/A	Coastal	1, 3, 5	1-1, 3-4, 5-1,	Borough and	Low-	Town	Ongoing



**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	survey the beaches. This provides critical information providing the basis for decisions regarding beach re-nourishment and long-term analysis of littoral processes.		Storms, Coastal Erosion		5-2, 5-3, 5-4	Stockton College Coastal Research Center	Medium	Budget	
BA-14	Continue to enforce Stormwater Management Ordinances	N/A	Coastal Storms, Severe Storms, Flooding	1, 3	1-1, 1-3, 1-7, 3-4	Construction Office	Low	Town Budget	Ongoing
BA-15	Continue to pursue opportunities to preserve open space	N/A	Coastal Storms, Severe Storms, Flooding	1, 5	1-7, 1-11, 5-1, 5-2, 5-3, 5-4, 5-5	Construction Office	Low	Town Budget	Ongoing
BA-16	Continue to enforce building codes and re-evaluate ordinances for potential positive amendments	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 3, 4	1-1, 1-2, 1-3, 1-4, 1-7, 1-8, 1-9, 2-4, 3-2, 4-9	Construction Office	Low	Town Budget	Ongoing
BA-17	Continue to conduct regular beach and dune maintenance activities	N/A	Coastal Storms, Coastal Erosion	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	Construction Office	Medium - High	Town Budget; federal and State grants	Ongoing
BA-18	Continue to enforce the February 2008 adopted ordinance (27:7.3.u) requiring that all roof runoff from new construction be recharged to the ground through direct connection to subsurface stone trenches to further mitigate flooding.	N/A	Coastal Storms, Severe Storms, Flooding	1, 2	1-7, 1-8, 1-9, 2-4	Construction Office	Low	Town Budget	Ongoing



**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
BA-19	Continue outreach efforts to provide informational materials to homeowners, builders, and realtors regarding floodplain management.	N/A	Coastal Storms, Severe Storms, Flooding	2, 5, 6	2-1, 2-2, 2-4, 2-5, 5-1, 5-2, 6-2, 6-3	Construction Office	Low	Town Budget	Ongoing
BA-20	Continue to implement the 'Repetitive Loss Reduction Plan.' Avalon has been removing about 12 properties annually from the Repetitive Loss list.	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 4	1-2, 1-7, 1-9, 1-10, 1-11, 2-4, 4-1	Construction Office	High	Town Budget, property owners, and HMA grants	Ongoing
BA-21	Continue to pursue available funding opportunities to address repetitive loss properties and/or mitigate the impact of flooding (see BA-1a and BA-1b).	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Construction Office	High	Town Budget, property owners, and HMA grants	Ongoing
BA-22	Continue to require one-foot freeboard for new construction, i.e. finished floor elevation of all new construction is required to be one foot above base flood elevation.	N/A	Coastal Storms, Severe Storms, Flooding	1, 4	1-1, 1-2, 1-7, 1-9, 4-1	Construction Office	Low	Town Budget	Ongoing
BA-23	Continue to utilize volunteers from local civic groups and schools and plant dune grass annually	N/A	Coastal Storms, Severe Storms, Flooding	2, 5, 6	2-2, 5-1, 5-2, 5-3, 5-5, 6-3	Construction Office with local schools and civic groups	Low	Town Budget	Ongoing
BA-24	Continue to protect the high dunes	N/A	Coastal Storms, Severe Storms, Flooding	1, 5	1-1, 5-1, 5-2, 5-3	Construction Office	High	Town Budget, HMA grants	Ongoing
BA-25	Continue stream scouring and illicit	N/A	Coastal Storms,	1, 3, 6	1-1, 1-5, 1-7, 3-4, 6-2	Construction Office	Low	Town Budget	Ongoing



**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	connection programs, per the Town's Stormwater Management		Severe Storms, Flooding						
BA-26	Continue to pursue preparation of pre-disaster bid documents for contract with disaster recovery contractor for debris removal.	N/A	Coastal Storms, Severe Storms, Severe Winter Storms, Tsunami	1, 4	1-5, 1-7, 1-11, 4-6, 4-7	Emergency Management, Engineering	Low	Town Budget	Ongoing
BA-27	Continue to pursue preparation of pre-disaster contracts for providing home and family services for emergency personnel during disaster.	N/A	All Hazards	1, 4	1-7, 1-11, 4-1, 4-6, 4-7	Emergency Management, Engineering	Low	Town Budget	Ongoing
BA-28	Complete the installation of tide check valves and various stormwater system improvements in the 21st Street and 25th Street island areas	N/A	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-11, 3-3, 3-4, 4-1	Engineering and DPW	High	Municipal and HMA grants	Ongoing (going out for bid Fall 2009)
BA-29	Replace a deteriorated bulkhead at 5th Avenue immediately north of 20th Street. This project will also reduce flooding in a low-lying area prone to flooding.	N/A	Coastal Storms, Coastal Erosion, Flooding	1, 4	1-1, 1-4, 1-9, 1-10, 4-2	Engineering and DPW	~\$80K	Municipal budget	Ongoing (going out for bid Fall 2009)
BA-30	Conduct a State-authorized study to protect the north-end beaches from storm and erosive forces [Stevens Institute of Technology / Davidson Laboratories through the New Jersey Coastal Protection	N/A	Coastal Erosion	1, 5, 6	1-1, 1-5, 1-7, 1-8, 5-1, 5-2, 6-2	NJDEP – Bureau of Coastal Engineering with Stevens Institute and Davidson Laboratories	Medium	State	TBD



**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Technical Assistance Program (NJCPAS)].								
BA-31	Repair, maintain and, as needed, increase the height of bulkheads to a minimum of 7.5' per local ordinance. Currently the Borough plans to replace a deteriorated bulkhead at 5th Avenue immediately north of 20th Street. This project will also reduce flooding in a low-lying area prone to flooding. The project is scheduled to be completed in the winter of 2009/2010	Existing	Coastal Storms, Coastal Erosion, Flooding	1, 3	1-1, 1-3, 1-7, 3-2, 2-2	Engineering with property owners	High	Municipal, property owners and HMA grants where applicable	Ongoing
BA-32	Install bulkheads throughout the Borough where needed, particularly at street ends.	N/A	Coastal Storms, Coastal Erosion, Flooding	1, 4	1-1, 1-4, 1-9, 1-10, 4-2	Engineering and DPW	High - Depends on number	Municipal budget	DOF
BA-33	Install SCADA systems on stormwater pump stations to alert operators of problems (22 <sup>nd</sup> and 11 <sup>th</sup> street are high priority pump stations)	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 3-3, 3-4, 4-3, 4-7	Engineering with New Jersey American Water Company	High	Municipal, and HMA grants where applicable	Longterm DOF
BA-34	Study the feasibility of providing backup power to 22 <sup>nd</sup> and 11 <sup>th</sup> Street pump stations	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 3-3, 3-4, 4-7	Engineering with New Jersey American Water Company	High	Municipal, and HMA grants where applicable	Longterm DOF
BA-35	Increase the capacity of stormwater system where needed	Existing	Coastal Storms, Severe	1, 3, 4	1-1, 3-3, 3-4, 4-3, 4-7	Engineering with New Jersey	High	Municipal, and HMA grants	Longterm DOF



**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
			Storms, Flooding			American Water Company		where applicable	
BA-36	Develop and institute and ID card program to control re-entry into the Town major disasters requiring evacuation	N/A	Coastal Storms, Severe Storm, Flood, Tsunami	3, 4, 6	3-3, 4-6, 4-7, 6-2, 6-3	Town	Medium	Municipal	Longterm (low priority)
BA-37	Replace a deteriorated bulkhead at 5th Avenue immediately north of 24th Street. This project will also reduce flooding in a low-lying area prone to flooding.	N/A	Coastal Storms, Coastal Erosion, Flooding	1, 3, 4	1-1, 1-4, 1-9, 1-10, 3-4, 4-2	Engineering and DPW	~\$100K	Municipal budget	Anticipate bids to be received in 2010.
BA-38	Replace a deteriorated bulkhead at 34 <sup>th</sup> Street immediately west of Ocean Drive. This project will also reduce flooding in a low-lying area prone to flooding.	N/A	Coastal Storms, Coastal Erosion, Flooding	1, 3, 4	1-1, 1-4, 1-9, 1-10, 3-4, 4-2	Engineering and DPW	~\$100K	Municipal budget	Anticipate bids to be received in 2010.
BA-39	Replace a deteriorated bulkhead at 72 <sup>nd</sup> Street immediately north of Ocean Drive. This project will also reduce flooding in a low-lying area prone to flooding.	N/A	Coastal Storms, Coastal Erosion, Flooding	1, 3, 4	1-1, 1-4, 1-9, 1-10, 3-4, 4-2	Engineering and DPW	~\$100K	Municipal budget	Anticipate bids to be received in 2010.
BA-40 (CMC-22, TM-24)	Support the elevation of Avalon Boulevard from Parkway into Avalon proper (~2.5 miles).	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	TBD	Longterm DOF
BA-41 (CMC-60)	Install shore protection along Ocean Drive (CR619) at Townsends Inlet in Avalon	Existing	Coastal Storms, Severe Storms, Coastal Erosion	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	County Engineering with municipal support	High	HMA Grants, County and Local Funding	Short-term



Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
BA-42 (CMC-68)	Emergency construction to stabilize Ocean Drive (CR619) near Townsends Inlet in Avalon	New & Existing	Flooding, Coastal Storms, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Low	HMA Grants, County and Local Funding	In Progress, Short-term

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?

## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Borough has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	BA-3, BA-5, BA-6, BA-7, BA-13, BA-27, BA-30	BA-7, BA-41 and -42	BA-3, BA-7	BA-7	BA-5, BA-7	BA-7, BA-41 and -42
Coastal Storm	BA-3, BA-5, BA-6, BA-7, BA-13 to 18, BA-22, BA-23, BA-25 to 27, BA-33, BA-34	BA-1a, BA-1b, BA-7, BA-8 to 12, BA-20, BA-21, BA-28, BA-29, BA-31, BA-32, BA-35, BA-41 and -42	BA-3, BA-7, BA-12, BA-19	BA-7, BA-15, BA-23, BA-24	BA-5, BA-7, BA-33, BA-36	BA-7, BA-9, BA-11, BA-28, BA-29, BA-31, BA-32, BA-37 to 39, BA-41 and -42
Flood	BA-2, BA-3, BA-5, BA-6, BA-7, BA-14 to 18, BA-22, BA-23, BA-25 to 27, BA-33, BA-34	BA-1a, BA-1b, BA-2, BA-4, BA-7, BA-8 to 12, BA-20, BA-21, BA-28, BA-29, BA-31, BA-32, BA-35	BA-2, BA-3, BA-4, BA-7, BA-12, BA-19	BA-2, BA-4, BA-7, BA-15, BA-23, BA-24	BA-5, BA-7, BA-33, BA-36	BA-7, BA-10, BA-11, BA-28, BA-29, BA-31, BA-32, BA-37 to 39
Severe Storm	BA-3, BA-5, BA-6, BA-7, BA-14 to 18, BA-22, BA-23, BA-25 to 27, BA-33, BA-34	BA-1a, BA-1b, BA-7, BA-12, BA-20, BA-21, BA-28, BA-29, BA-31, BA-32, BA-35, BA-41 and -42	BA-3, BA-7, BA-12, BA-19	BA-7, BA-15, BA-23, BA-24	BA-5, BA-7, BA-33, BA-36	BA-7, BA-28, BA-29, BA-31, BA-32, BA-37 to 39, BA-41 and -42
Severe Winter Storm	BA-3, BA-5, BA-6, BA-7, BA-26, BA-27	BA-7	BA-3, BA-7	BA-7	BA-5, BA-7	BA-7
Tsunami	BA-3, BA-5, BA-6, BA-7, BA-26, BA-27	BA-7	BA-3, BA-7	BA-7	BA-5, BA-7, BA-36	BA-7
Wildfire	BA-3, BA-5, BA-6, BA-7, BA-27	BA-7	BA-3, BA-7	BA-7	BA-5, BA-7	BA-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

4. **Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. **Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
BA-1a	8	H	H	Y	Y	N	M-H*
BA-1b	8	H	H	Y	Y	N	M-H*
BA-2	9	M	L	Y	N	Y	H
BA-3	All	M	M	Y	N (Yes for 5 year update)	N	M
BA-4	14	H	L	Y	N	Y	H
BA-5	13	M	L	Y	N	Y	M
BA-6	13	M	L	Y	N	Y	M
BA-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
BA-8	4	H	H	Y	Y	Y (partial)	M
BA-9	7	H	H	Y	TBD	TBD	M
BA-10	6	H	H	Y	TBD	TBD	M
BA-11	5	H	H	Y	Y	TBD	M
BA-12	5	M	L	Y	N	Y	H
BA-13	6	H-M	M-L	Y	N	Y	H
BA-14	4	M	L	Y	N	Y	H
BA-15	7	M	L	Y	N	Y	H
BA-16	10	H	L	Y	N	Y	H
BA-17	6	H	M-H	Y	Y	Y (partial)	H
BA-18	4	M	L	Y	N	Y	H
BA-19	8	L	L	Y	N	Y	H
BA-20	7	H	H	Y	Y	Y (partial)	H
BA-21	8	H	H	Y	Y	Y (partial)	H
BA-22	5	H	L	Y	N	Y	H

**SECTION 9.2: BOROUGH OF AVALON**

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
BA-23	6	M	L	Y	N	Y	H
BA-24	4	H	H	Y	Y	Y (partial)	H
BA-25	5	M	L	Y	N	Y	H
BA-26	5	L	L	Y	N	Y	H
BA-27	5	L	L	Y	N	Y	H
BA-28	5	H	H	Y	Y	Y (partial)	H
BA-29	5	H	M	Y	Y	Y	H
BA-30	7	M	M	Y	TBD	N	DOF
BA-31	5	H	H	Y	Y	Y (partial)	DOF
BA-32	5	H	H	Y	Y	Y (depending on number)	DOF
BA-33	5	H	H	Y	Y	Y (partial)	DOF
BA-34	4	H	H	Y	Y	Y (partial)	DOF
BA-35	5	H	H	Y	Y	Y (partial)	DOF
BA-36	5	M	M	Y	N	Y	DOF
BA-37	6	H	M	Y	Y	Y	H
BA-38	6	H	M	Y	Y	Y	H
BA-39	6	H	M	Y	Y	Y	H
BA-40	5	H	H	Y	Y	N	DOF
BA-41	5	H	H	Y	Y	N	H
BA-42	6	H	L	Y	Y	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes. DOF = Depending on Funding.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

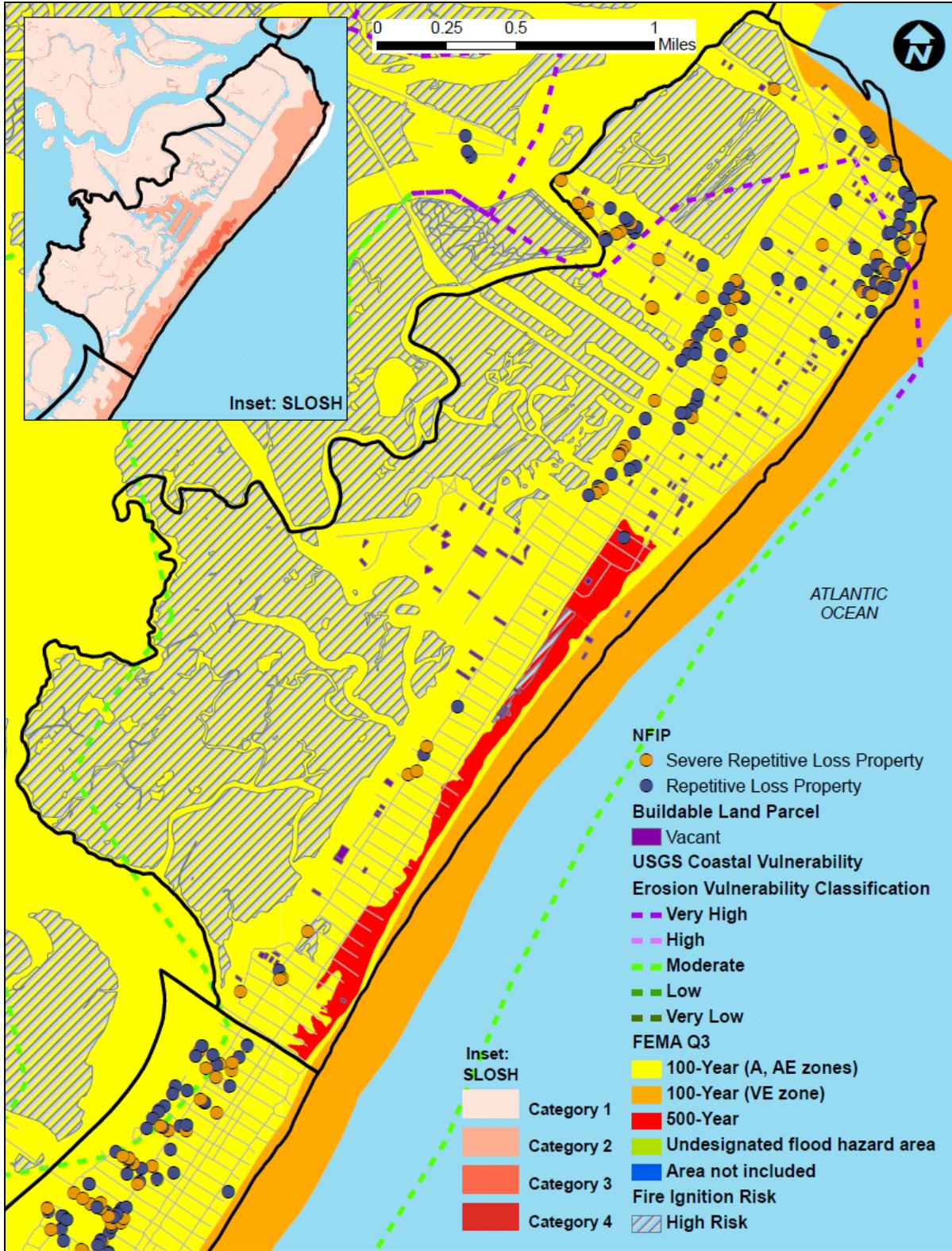
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Borough of Avalon to illustrate the probable areas impacted within the Borough. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of Avalon has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

## 9.3 CITY OF CAPE MAY

This section presents the jurisdictional annex for the City of Cape May.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
Robert H. Smith, Superintendent of DPW 643 Washington Street, Cape May, N.J. 08204 (609) 884-9570 <a href="mailto:rsmith@capemaycity.com">rsmith@capemaycity.com</a>	Carl Behrens, Chief Water Treatment Plant Operator/Supervisor 643 Washington Street, Cape May, N.J. 08204 (609) 884-9577 <a href="mailto:desal@capemaycity.com">desal@capemaycity.com</a>

### B.) CITY PROFILE

#### *Population*

3,686 (estimated 2008 Residential Population, Cape May County Planning Dept.)

45,958 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

Cape May is a city at the southern tip of Cape May Peninsula in Cape May County, New Jersey, where the Delaware Bay meets the Atlantic Ocean. It is bounded on the north by the Township of Lower, on the east by portions of the Township of Lower and the Borough of Wildwood Crest, on the south by the Atlantic Ocean, and on the west by the Borough of West Cape May, the Township of Lower, the Borough of Cape May Point and the Delaware Bay. It is part of the Ocean City Metropolitan Statistical Area.

The Cape May-Lewes Ferry provides transportation across the Delaware Bay to Lewes, Delaware. Cape May Harbor, which borders Lower Township and nearby Wildwood Crest allows fishing vessels to enter from the Atlantic Ocean.

According to the U.S. Census Bureau, the city has a total area of 2.8 square miles (7.3 km<sup>2</sup>), with 2.5 square miles (6.4 km<sup>2</sup>) of it land and 0.3 square miles (0.8 km<sup>2</sup>) of it (11.43-percent) water. Cape May is generally low-lying and its highest point is at 14 feet above sea level, at Washington and Jackson Streets.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F.

Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

### ***Brief History***

What is now Cape May was originally formed as the borough of Cape Island by an Act of the New Jersey Legislature on March 8, 1848, from portions of the Township of Lower. It was reincorporated as Cape Island city on March 10, 1851, and finally became Cape May city as of March 9, 1869 (Snyder, 1969). The County's first resort, Cape May City (Cape Island until 1869) was known as a resort destination since 1800, but experienced considerable growth during this period. Cape May City was a thriving seaside community, attracting many politicians and many wealthy plantation owners. Huge hotels were built, some accommodating as many as 2,000 guests. There were gambling casinos and horse racing on the beach.

A great fire in 1878 destroyed most of the city, but wealthy vacationers did not abandon their vacation site. Nearly all the buildings in Cape May were built during this 'Victorian Age'.

The earlier part of the twentieth century did not see enormous growth for the City of Cape May. Vacation was not a priority during the two great wars and during the great depression for Americans. The First World War resulted in the Navy acquiring a Cape May Hotel as a hospital and an army base. During the Second World War an enemy aircraft lookout tower and an antisubmarine surveillance station were built – and they are still standing today. Also built during the war was the Cape May Canal between 1942 and 1943 (Visit New Jersey Shore, 2009).

Two major hurricanes swept through the City, in 1944 and 1962, causing major destruction throughout the city. However, the city was rebuilt again and the extension of the Garden State Parkway into Cape May City, the advent of the ferry to Delaware and the 1976 designation of the City as a National Historic Landmark City have led to a great resort town (Ditmire, 1999).

### ***Governing Body Format***

Effective July 1, 2004, the City of Cape May switched to a Council-Manager form of government under the Faulkner Act. The government consists of a Mayor and a Borough Council comprising four council members, with all positions elected at large in partisan elections. A Mayor is elected directly by the voters to a four-year term of office. The Borough Council is elected to serve four-year terms on a staggered basis, with three seats coming up for election and then the mayor and the fourth seat two years later (Rutgers University, 2005).

### ***Growth/Development Trends***

The vast majority of land not developed 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 and are also important for environmental tourism, such as birding. Where much of these lands are unable to be developed due to State development regulations, Cape May should strive to acquire lands that are developable in environmentally sensitive areas to preserve these lands from development and enable those to be used for passive recreation areas.

Much of the City is located within the one hundred year floodplain as delineated by the Federal Emergency Management Agency mapping. Zoning regulations require that the lowest floor of any

building be not less than ten and one-half feet above mean sea level to minimize property damage. The City will continue to enforce flood protection standards for development and implement flood protection / mitigation projects as funding allows.

The City recognizes the importance of protecting natural resources. Current regulations preserve soils and existing vegetation and require the replacement of vegetation that is removed when land is developed. Cape May has a landscaping ordinance that requires up to 60% of a lot be left in vegetation and tree replacement for larger trees that are removed. Participation by the Environmental Commission and Shade Tree Commission in land development reviews has ensured compliance with the regulation and should continue.

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. It is estimated that the 2008 population figure is 3,800. The population decrease trend appears consistent through 2008. 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. 51.4% of Cape May's homes were designated for seasonal use in the 2000 Census. This is an increase of 968 seasonal homes since 1990, when seasonal homes accounted for 27.7% of the housing stock.

The projections for the City of Cape May by Cape May County show slightly less than 4% increases every five years to achieve a population of 4,692 by the year 2020. This is a 16.3% increase over the course of twenty years. The apparent discrepancy between this forecast and recent trends is based on the countywide trends towards suburbanization and increased birthrates. It is possible that a number of the new seasonal homeowners are purchasing homes in anticipation of future use as a retirement home. Cape May was cited recently by a national magazine as one of the ten best places in America to retire, a fact that has already been discovered by a number of local residents. 28.4% of Cape May City residents are age 65 or older, as compared with 20.2% of the total County population.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the City of Cape May**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
City of Cape May	0	0	0	0	0	0	0	0	7	3.3	68	18.9	75	22.2

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



***Specific Hazard Vulnerabilities Identified in the City of Cape May***

The City'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 City of Cape May's shoreline is continuously changing and it frequently experiences rapid erosion. The principal cause of the lack of sand in our area and the subsequent erosion is due to the jetty at Cape May Inlet. Although beach fill re-nourishment is performed every two years by the U.S. Army Corps of Engineers and dune stabilization maintenance is exercised on a year-round basis by the City of Cape May, this non-structural shoreline protection can be lost in a severe storm rendering the low lying developed areas subject to damage and flooding.

Most of Cape May is located in the 100-year floodplain. The results of coastal storms, Nor'Easters and hurricanes that have caused damage and flooding prior to the 1993 initial emplacement of pumped sand along our beaches most accurately identified our hazardous areas and problems. The low lying areas of East Cape May as well as an approximately 20 block area in the center of town known as Frog Hollow and the continuous two blocks of commercial and residential properties directly along the beach front were frequently inundated with floodwater. Those structures in the first block, along Beach Avenue were at times subjected to direct wave action. Back-bay flooding occurs in several well developed areas, those being Yacht Avenue, Venice and Elmira Streets, and areas on Congress and Grant Streets. The back-bay flooding when severe precludes vehicular traffic at two of our critical entrance/exit emergency roadways, Washington Street and Elmira Street.

***Past, Ongoing and Potential Mitigation Activities***

The following identifies both ongoing and completed mitigation activities/projects in the City of Cape May, including those excerpted from the city's FMP Action Plan:

The City of Cape May participates in the NFIP Community Rating System (CRS) and continues to work to improve their CRS rating through various CRS activities.

**Beach Nourishment (Cape May Inlet to Lower Township)****Initial Construction**

(1) Phase I - Beachfill - USCG Training Center

DACW61-C-0004

Quantity: 465,000 cy

Extended 1 storm sewer outfall

Completed August 1989

(2) Phase II Groin Extension - Cape May City of Cape May

DACW61-89-C-0060

Extended 2 existing groins at Baltimore & Trenton Avenues

Completed July 1990 (3) Phase III - Beachfill Cape May City of Cape May

DACV/61-90-C-0114

Quantity: 900,000 cy

\*Although a non-Fed responsibility, 16 outfalls extended by COE at State request as part of Phase III.

Completed July 1991

**Periodic Nourishment / Monitoring**

(Estimated periodic nourishment - 360,000 cy every 2 years beginning in FY 1992)

(1) 1st Cycle of Periodic Nourishment



DACW61-92-C-0082  
Quantity: 415,000 cy  
Completed April 1993

(2) Storm Rehabilitation  
DACW61-93-C-0033  
Quantity: 300,000 cy  
Completed September I 993

(3) 2nd Cycle of Periodic Nourishment\  
DACW6i-94-C-0082  
Quantity: 330,000 cy  
Completed March 1995

(4) 3rd Cycle of Periodic Nourishment  
DACW61-96-C-0048  
Quantity: 366,000 cy  
Completed January 1997

(5) 4th Cycle of Periodic Nourishment  
DACW6I-99-C-0023  
Quantity: 400,000 cy  
Completed October 1999

(6) 5th Cycle of Periodic Nourishment  
DACW61-02-C-0050  
Quantity: 267,000 cy  
Completed March 2003

(7) 6th Cycle of Periodic Nourishment  
W912BU-04-C-0019  
Quantity: 290,145 cy  
Completed November 2004

(8) 7th Cycle of Periodic Nourishment  
W912BU-06-C-0017  
Quantity: 190,000 cy  
Completed February 2007

(9) 8th Cycle of Periodic Nourishment  
W912BU-08-C-0048  
W912BU-09-C-0009  
Quantity: 315,427 Tons (233,650 cy if assume 1.35 tons per cy)  
Completed February 2009

**Bulkheads** - The are two timber crib groins approximately 100' in length installed parallel to the shore line located at the Jackson Street and Gurney Street beaches.

**Groins** - There are nine stone groins that range from 150'to 786' in length installed along the shoreline to block the erosion. They are located at the following street ends: Baltimore Avenue, Trenton Avenue,

Philadelphia Avenue, Queen Street, Gurney Street, Jackson Street, Windsor Avenue, Patterson Avenue, Third Avenue.

There are nine timber crib groins that range in length from 50' to 200' in length installed perpendicular to the shoreline to block the erosion. The are located at the following 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.

Geo-tubes - Prior to the beach nourishment program during the 1990s, approximately ten geo-tubes were placed between the street ends of Stockton Place and Gurney Street behind the Convention Hall to reduce the loss of sand from around the pilings of the structure.

Flood Sirens - Five Flood sirens for the purpose of giving the residents early warning of flooding are located at Wilmington and New Jersey Avenues, Texas Avenue, Reading and New York Avenues, the Benton Avenue Stormwater pumping facility, and Grant and North Sheets. The early warning enables the residents to move their vehicles to high ground during beachfront and back bay flooding.

### C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE CITY

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Hurricane	Not applicable	1944	Not available
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Tornado (F2)	Not applicable	August, 1971	\$250,000 (City of Cape May)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Severe Winter Storm (Delaware Bay Froze)	Not applicable	January, 1977	Not available
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Severe Winter Storm (Heavy Snow)	Not applicable	1978	Not available
Severe Winter Storm (Heavy Snow)	Not applicable	1979	Not available
Coastal Storm, Flooding	Not applicable	March, 1984	\$500,000 (countywide)
Hurricane (Gloria)	Not applicable	October, 1985	Not available
Major Nor'Easter	Not applicable	January 1-2, 1987	Not available
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Major Nor'Easter	Not applicable	March 1-5, 1992	Not available
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March, 1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Major Nor'Easter	Not applicable	December 19-23, 1995	Not available
Severe Winter Storm,	DR-1088	January, 1996	\$800,000 (countywide)

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm			
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Major Nor'Easter	Not applicable	March 19-21, 1996	Not available
Major Nor'Easter	Not applicable	December 3-17, 1996	Not available
Severe Winter Storm	Not applicable	November 13-16, 1997	Not available
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September, 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February, 2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 143  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 17

Source: FEMA Region 2 as of December 2009

**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$475,134,766 Max: \$565,659,398	Frequent	54	High
1	Flood	\$273,707,000	Frequent	54	High
2	Severe Storm	\$90,545,398	Frequent	36	Medium
3	Severe Winter Storm	\$7,545,900	Frequent	27	Medium
4	Tsunami	Not available	Rare	18	Low
5	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	N	Y	Y	Y	Uniform Construction Code of NJ Adopted by Ordinance 11/14/2005
2) Zoning Ordinance	Y	Y	Y	Y	Adopted by Ordinance #10-2004, Chapter XXXII, 12/2/2004 of the 1997 Revised General Ordinances
3) Subdivision Ordinance	Y	Y	N	N	Adopted by Ordinance #826-89, Chapter XXXI of the 1997 Revised General Ordinances
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Adopted by Ordinance #766 Chapter XV of the 1997 Revised General Ordinances.
5) Growth Management	Y	Y	N	Y	Refer to Zoning Ordinance
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Updated Plan in Progress, To Be Completed 10/01/2009
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Adopted by Ordinance 10/28/2005, Ord. #48-2005
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Adopted by City of Cape May Planning Board Resolution 4/10/2009
9) Capital Improvements Plan	Y	N	N	N	Adopted Annually w/Budget
10) Site Plan Review Requirements	Y	N	Y	N	Adopted by Ordinance #10-2004, Chapter XXXIII of the 1997 Revised General Ordinances 12/02/2004
11) Open Space Plan	N	N	Y	N	Adopted by Ordinance #1259- 2002, Chapter XXXVII of the 1997 Revised General Ordinances
12) Shoreline Management or Protection Plan	Y	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	See #17 (Other Ordinances)
14) Emergency Response Plan	N	Y	Y	N	City of Cape May Emergency Operations Plan, Updated 3/3/2008
15) Post Disaster Recovery Plan	N	N	N	N	City of Cape May Emergency Operations Plan, Updated 3/3/2008
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	<p>Historic Preservation Districts -City of Cape May Ord. #525 Article VIII.</p> <p>Washington Street Mall Business Improvement District -City of Cape May Ord. #165-2008.</p> <p>Design Standards – City of Cape May Ord. #525-59.</p>

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Polistina & Associates, LLC, Engineers & Planners, Planning Board Engineers, Zoning Board Engineers.
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Mott Associates, LLC, Consulting Engineers & Planners, City Engineer.
3) Planners or engineers with an understanding of natural hazards	Y	Mott Associates, LLC, Consulting Engineers & Planners, City Engineer.
4) NFIP Floodplain Administrator	Y	William R. Callahan, Construction Official
5) Surveyor(s)	Y	Mott Associates, LLC, Consulting Engineers & Planners, City Engineer.
6) Personnel skilled or trained in "GIS" applications	Y	Mott Associates, LLC, Consulting Engineers & Planners, City Engineer. Polistina & Associates, LLC, Engineers & Planners, Planning Board Engineers, Zoning Board Engineers.
7) Scientist familiar with natural hazards in the City of Cape May.	Y	Polistina & Associates, LLC, Engineers & Planners, Planning Board Engineers, Zoning Board Engineers.
8) Emergency Manager	Y	Robert H. Smith, City of Cape May Emergency Management Coordinator
9) Grant Writer(s)	Y	Gillan & Hartman & Marc Blauer
10) Staff with expertise or training in benefit/cost analysis	Y	Bruce A. MacLeod, City Manager

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Y
2) Capital Improvements Project Funding	Y
3) Authority to Levy Taxes for specific purposes	Y
4) User fees for water, sewer, gas or electric service	Y
5) Impact Fees for homebuyers or developers of new development/homes	N
6) Incur debt through general obligation bonds	Y
7) Incur debt through special tax bonds	N
8) Incur debt through private activity bonds	N
9) Withhold public expenditures in hazard-prone areas	N
10) Other	

#### E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	8 (current)	10/1/1994*
Building Code Effectiveness Grading Schedule (BCEGS)	4	06/01/1998
Public Protection	TBD	TBD
Storm Ready	NP	n/a
Firewise	NP	n/a

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Below is a table indicating the City's participation and points earned in the CRS program to date.

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the City of Cape May
300	310	Elevation Certificates	162	56
300	320	Map Information	140	140
300	330	Outreach Projects	380	30
300	340	Hazard Disclosure	81	0
300	350	Flood Protection Information	102	21
300	360	Flood Protection Assistance	71	10
400	410	Additional Flood Data	1,346	0

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the City of Cape May
400	420	Open Space Preservation	900	215
400	430	Higher Regulatory Standards	2,740	230
400	440	Flood Data Maintenance	239	0
400	450	Stormwater Management	670	45
500	510	Floodplain Management Planning	359	0
500	520	Acquisition and Relocation	3,200	0
500	530	Flood Protection	2,800	0
500	540	Drainage System Maintenance	330	255
600	610	Flood Warning Program	255	110
600	620	Levee Safety	900	0
600	630	Dam Safety	175	67
		<b>Total Points to Date</b>		<b>1,179</b>

## E.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CCM-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
CCM-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
CCM-2	Continue active participation in CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3,	City	Low - Medium	Local Budget	Short

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
					6-2, 6-3				
CCM-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	City (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
CCM-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
CCM-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
CCM-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
CCM-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
CCM-8 (see County Initiative CMC-18)	Install shoreline protection for Delaware Avenue (CR-640; entrance to Coast Guard Base) along the Cape May Harbor in the City of Cape May. County has met with ACOE and NJDEP on this previously.	Existing	Coastal Flooding, Coastal Erosion	1, 3, 4, 5, 6	1-1, 3-3, 4-7, 5-4, 6-2	County Engineering, ACOE and NJDEP; support from City	High	ACOE, State	Long-term DOF

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CCM-9 (see County Initiative CMC-8)	Elevate ~1.5 miles of CR-606 (Sunset Boulevard) through the South Cape May Meadows (also involves Lower Township and West Cape May).	N/A	Coastal Storms, Flooding	1, 3, 4, 6	1-1, 3-3, 4-2, 4-7, 4-11, 6-2	County Engineering with support of City of Cape May where it intersects City lands	High	Various, incl. federal grant funding	(lower priority project – area is not as floodprone as many other areas)
CCM-10	Install a cap on the existing seawall from Madison Avenue to Jackson	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding, Tsunami	1, 3, 4, 5	1-1, 1-4, 1-10, 3-3, 4-1, 4-7, 5-1	City DPW and engineering	Medium - High	Local funding (request to City Council upcoming)	Short-term DOF
CCM-11	Seawall repair / replacement - please see the interim initiative following	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding, Tsunami	1, 3, 4, 5	1-1, 1-4, 1-10, 3-3, 4-1, 4-7, 5-1	ACOE and NJDEP; support from City	High	USACE, NJDEP, HMA Grant Funding with local funding	Long-term DOF
CCM-12 (CMC-32)	Install backup power to two stormwater pump stations at Madison Avenue and Grant Street in Cape May City. Work with the City to properly site the generator, which could be co-managed with the City to provide backup power for their station on Queen Street and Benton Avenue. Madison Avenue can be powered with a generator located at Benton Avenue. The location for a generator for Grant Street has yet to be determined.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4, 6	1-1, 3-3, 3-4, 4-1, 4-3, 4-7, 4-8, 6-1, 6-2	County Engineering with City of Cape May	L-M (not high \$ cost)	TBD	Long-term DOF
CCM-13	Upgrade Venice Avenue pump station (increased capacity, backup power)	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 3-3, 3-4, 4-1, 4-3, 4-7, 4-8	City DPW and Engineering	High	Local Budgets with HMA grants where	Long-term DOF

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
								applicable	
CCM-14	Work with County GIS to leverage recent LIDAR elevation data to identify areas that need to be bermed to prevent back bay flooding	N/A	Coastal Storms, Severe Storms, Flooding	1, 3, 4, 6	1-5, 1-6, 1-7, 1-11, 3-4, 4-2, 4-6, 6-2	City DPW and Engineering with County GIS	Low - Medium	Local and County budgets	Short
CCM-15	Based on findings of previous initiative, develop and implement a program to install dikes/barriers to protect from back bay flooding	N/A	Coastal Storms, Coastal Erosion, Severe Storms, Flooding, Tsunami	1, 4	1-1, 1-4, 1-10, 4-1, 4-2, 4-6, 4-7	City DPW and Engineering with USACE and NJDEP	High	Local budgets with USACE, NJDEP and HMA grants as applicable	Long-term DOF
CCM-16	Dune Enhancement – Continue ongoing programs of annual planting and installation of new fence	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 3, 5	1-1, 3-4, 5-1, 5-2	City DPW and Engineering	Low - Medium	Local Budgets	Ongoing
CCM-17	Participate and support a multi-jurisdictional effort between Lower, City of Cape May and West Cape May to control flooding in the Meadows – gate valve on east end.	N/A	Coastal Storms, Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-11, 3-3, 4-2, 6-2	County Engineering, with City of Cape May, Lower Township and City of West Cape May	High	County and local budgets with HMA grants as applicable	Short-term DOF
CCM-18	Encourage and work with County to install duckbill valves on County stormwater outfalls (some 9+ county owned and the City Pumping facilities on Queen Street).	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-11, 3-3, 4-2, 6-2	County Engineering with the City of Cape May	High	County and local budgets with HMA grants as applicable	Short-term DOF
CCM-19	Work with county who owns and manages outfall pipes to continue efforts to consolidate and reduce the number of outfalls that need to be maintained (e.g. as was done when they built	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 5	1-4, 1-5, 3-3, 3-4, 6-1, 6-2	County Engineering with the City of Cape May	High	County and local budgets with HMA grants as applicable	Short-term DOF

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	the county Grant Street Pumping Station and combined the Jackson, Windsor, Grant and Patterson outfall pipes). This is a consideration for the east end of the City.								
CCM-20	Elevation of roadways – determine elevations and causes of flooding on Elmira Street and Yacht Avenue and address	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 3, 4, 6	1-1, 3-3, 4-2, 4-7, 4-11, 6-2	City DPW and Engineering	High	County and local budgets with HMA funding	Long-term DOF
CCM-21	Implement a reverse-911 system in the City	N/A	All Hazards	1, 3, 4, 5	1-1, 1-4, 1-5, 1-7, 1-11, 3-2, 3-3, 3-4, 4-1, 4-2, 4-3, 4-6, 4-7, 4-8, 4-11, 6-1	City OEM, Police, Fire; Verizon Communications	Medium (in 2009 City Budget)	Local Budgets	Ongoing (est. completion early 2010)
CCM-22	Continue to maintain the City of Cape May Beach Management Plan for the Protection of Federally and State-Listed Species (March 2008). All of the aforementioned beach-related projects have bearing on this Beach Management Plan. Work with Cape May Point who has a similar Plan.	N/A	All Hazards	1, 5, 6	1-7, 1-8, 5-1, 5-2, 6-2	City along with USFW and NJDEP, Cape May Point	High	Local along with NJDEP	Ongoing
CCM-23 (CMC-57)	Upgrade stormwater drains and outfalls along Beach Drive (CR603) in Cape May City	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-6, 4-10	County Engineering with municipal support	High	HMA Grants, County and Local Funding	Short-term

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?

## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the City has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	CCM-3, CCM-5, CCM-6, CCM-7	CCM-7, CCM-8	CCM-3, CCM-7	CCM-7, CCM-8, CCM-16, CCM-22	CCM-5, CCM-7, CCM-21	CCM-7, CCM-8, CCM-10, CCM-11, CCM-15, CCM-20
Coastal Storm	CCM-3, CCM-5, CCM-6, CCM-7, CCM-12, CCM-14, CCM-19	CCM-1, CCM-7, CCM-8, CCM-12, CCM-13, CCM-17, CCM-18, CCM-19, CCM-23	CCM-3, CCM-7	CCM-7, CCM-8, CCM-16, CCM-22	CCM-5, CCM-7, CCM-21	CCM-7, CCM-8, CCM-9, CCM-10, CCM-11, CCM-15, CCM-20, CCM-23
Flood	CCM-2, CCM-3, CCM-5, CCM-6, CCM-7, CCM-12, CCM-14, CCM-19	CCM-1, CCM-2, CCM-4, CCM-7, CCM-8, CCM-12, CCM-13, CCM-17, CCM-18, CCM-19, CCM-23	CCM-2, CCM-3, CCM-4, CCM-7	CCM-2, CCM-8, CCM-4, CCM-7, CCM-16, CCM-22	CCM-5, CCM-7, CCM-21	CCM-7, CCM-8, CCM-9, CCM-10, CCM-11, CCM-15, CCM-20, CCM-23
Severe Storm	CCM-3, CCM-5, CCM-6, CCM-7, CCM-12, CCM-14, CCM-19	CCM-1, CCM-7, CCM-8, CCM-12, CCM-13, CCM-17, CCM-18, CCM-19, CCM-23	CCM-3, CCM-7	CCM-7, CCM-8, CCM-16, CCM-22	CCM-5, CCM-7, CCM-21	CCM-7, CCM-8, CCM-10, CCM-11, CCM-15, CCM-20, CCM-23
Severe Winter Storm	CCM-3, CCM-5, CCM-6, CCM-7	CCM-7	CCM-3, CCM-7	CCM-7, CCM-16, CCM-22	CCM-5, CCM-7, CCM-21	CCM-7
Tsunami	CCM-3, CCM-5, CCM-6, CCM-7	CCM-7	CCM-3, CCM-7	CCM-7, CCM-16, CCM-22	CCM-5, CCM-7, CCM-21	CCM-7, CCM-10, CCM-11, CCM-15
Wildfire	CCM-3, CCM-5, CCM-6, CCM-7	CCM-7	CCM-3, CCM-7	CCM-7, CCM-16, CCM-22	CCM-5, CCM-7, CCM-21	CCM-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
CCM-1a	8	H	H	Y	Y	N	M-H
CCM-1b	8	H	H	Y	Y	N	M-H
CCM-2	9	M	L	Y	N	Y	H
CCM-3	All	M	M	Y	N (Yes for 5 year update)	N	M
CCM-4	14	H	L	Y	N	Y	H
CCM-5	13	M	L	Y	N	Y	M
CCM-6	13	M	L	Y	N	Y	M
CCM-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
CCM-8	5	H	H	Y	Y	N (local match only)	M
CCM-9	6	H	H	Y	Y	N (local match only)	M
CCM-10	7	H	H-M	Y	Y	Y	H
CCM-11	7	H	H	Y	Y	N (local match only)	M
CCM-12	7	H	M	Y	TBD	TBD	H
CCM-13	7	H	H	Y	Y	N (local match only)	M
CCM-14	8	M	M-L	Y	N?	Y	H
CCM-15	7	H	H	Y	Y	N (local match only)	M
CCM-16	4	M	M-L	Y	N	Y	H
CCM-17	6	H	H	Y	Y	N (local match only)	M
CCM-18	6	H	H	Y	Y	N (local match only)	M
CCM-19	6	H	H	Y	Dependant on specific initiative	N	M
CCM-20	6	H	H	Y	Y	N (local match only)	M
CCM-21	16	H	M	Y	Y	Y	H
CCM-22	5	H	H	Y	Y	Y	H
CCM-23	6	H	H	Y	Y	N	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a "Medium" priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is

considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

### I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

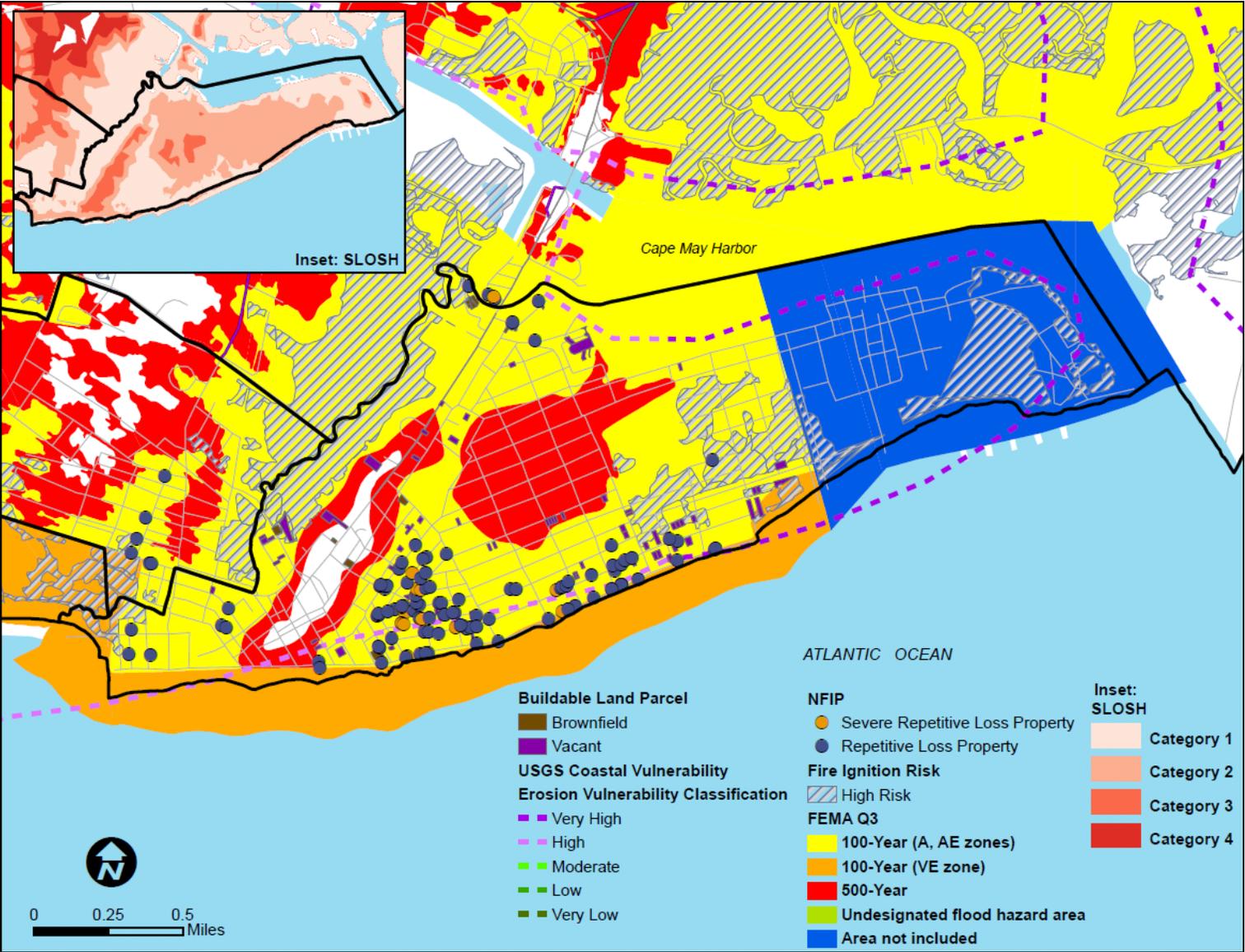
None at this time.

### J.) HAZARD AREA EXTENT AND LOCATION

A hazard area extent and location map has been generated and is provided below for the City of Cape May to illustrate the probable areas impacted within the City. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Cape May has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

### K.) ADDITIONAL COMMENTS

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

**9.4 BOROUGH OF CAPE MAY POINT**

This section presents the jurisdictional annex for the Borough of Cape May Point.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Joseph Nietubicz, Commissioner of Public Safety / NFIP Floodplain Administrator 215 Lighthouse Avenue Cape May Point, NJ 08212 (609) 884-8468 Ext. 20 <a href="mailto:JN@cmpnj.com">JN@cmpnj.com</a>	Constance Mahon, Clerk/Administrator 215 Lighthouse Avenue Cape May Point, NJ 08212 (609) 884-8468 <a href="mailto:CMahon@cmpnj.com">CMahon@cmpnj.com</a>

**B.) BOROUGH PROFILE**

**Population**

223 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
3,635 (estimated 2008 Summer Population, Cape May County Planning Dept.)

**Location**

Cape May Point is a Borough at the southwestern tip of Cape May Peninsula in Cape May County, New Jersey, where the Delaware Bay meets the Atlantic Ocean. It is bounded on the north by the Township of Lower, on the east by portions of the Township of Lower and the Borough of West Cape May and the City of Cape May, on the south by the Atlantic Ocean and Delaware Bay, and on the west by the Delaware Bay. It is part of the Ocean City Metropolitan Statistical Area. Cape May Point is home to the Cape May Light.

According to the U.S. Census Bureau, the borough has a total area of 0.3 square miles (0.8 km<sup>2</sup>), with 0.3 square miles (0.8 km<sup>2</sup>) of it land and 0.04 square miles (0.1 km<sup>2</sup>) of it (6.4-percent) water.

**Climate**

The Borough of Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.



### ***Brief History***

Cape May Point was called Stites Beach until 1876 when the name was changed to Seagrove (Get NJ, 2002). It was incorporated as a borough by an Act of the New Jersey Legislature on April 19, 1878, from portions of Lower Township, based on the results of a referendum held three days earlier. It was reincorporated on August 19, 1891 and returned to Lower Township on April 8, 1896. Cape May Point re-emerged as an independent municipality on April 6, 1908, based on the results of a referendum held on April 21, 1908 (Snyder, 1969).

### ***Governing Body Format***

Cape May Point operates under the Walsh Act commission form of government, first created to rebuild the city of Galveston, Texas after the devastating Hurricane of 1900. Cape May Point is one of more than 30 municipalities statewide to use this form of government. In three-member Commissions, as in Cape May Point, the Departments of Public Affairs and Public Safety are combined, as are the Departments of Public Works and Parks and Public Property. Revenue and Finance is the third portfolio. The borough adopted this form of government in 1916 (Rutgers University, 2005; New Jersey State Library, Date unknown).

The Commissioners have the Executive, Administrative, Judicial, and Legislative powers over their respective departments. As a group, the Commissioners have complete control over all affairs of the municipality. Immediately following the election, the three Commissioners choose a mayor from among themselves (Borough of Cape May Point, Date Unknown).

### ***Growth/Development Trends***

At this time, no new major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Borough of Cape May Point**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Borough of Cape May Point	0	0	0	0	0	0	0	0	0	0	51	5.7	51	5.7

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009

***Past, Ongoing and Potential Mitigation Activities:***

The following is excerpted from a recent news document prepared by the Borough:

The winter storm of 1991/'92 saw the south and south-east side of Cape May Point under water. It extended west as far as the Post Office - Fire Dept. and north to Oxford and Lake Lily and crept toward Seagrove Ave. Some people saw 6-7 feet of water around their house.

In 2009, Hurricane Ida stalled off North Carolina and Virginia and became a Nor'easter. IDA'easter (as it has come to be known) pelted us for five days. Folks say that it was worse than the '92 storm. It is listed as one of the top five worst storms of this century. We sustained some beach erosion, no flooding, no obvious damage, and no cleanup to speak of.

While other South Jersey shore towns were busy denuding their property of green things and planting concrete to turn rain water into floods, our past and present Planning Boards, Zoning Boards and Environmental Commission were making sure that we had enough open ground to absorb all that rain water and that we had trees to take the brunt of gale force winds. The dune fortifications, beach nourishment and the watershed from Lake Lily to Cape May are a testament to collaboration between State, Federal, Local Governments and the Nature Conservancy to work together to solve a problem. Then there was Drainage East, Drainage West and the storm drains flowing into Lake Lily. The Dune Day and Lake Committees and ALL of the volunteers who planted grass to stabilize the dunes and clean and keep clear the lake so it could absorb five days of rain and the storm-savvy property owners who didn't have any trash can lids or lumber or any debris flying around to smash windows or become missiles for the emergency crews, are a monument to community effort. It took 17 years to demonstrate and prove that all the plans that were implemented, all the work that we did, all the money that we spent, all the volunteers and their labors, worked.

The Borough of Cape May Point is a relatively flat space. Most of it is in an AE zone. We need to direct all storm water elsewhere either by gravity or with the help of pumps. Essentially our problems come in four categories: stop sea water from infiltrating the town, collect rain water, get rid of excess water as fast as possible and notify the community of emergencies.

**A. Stop Sea Water From Infiltrating The Town –**

1. Historically, the Point has been inundated by water coming through the Meadows (#1 on map), through the State Park (#2) and into the Point.
2. All along the beach front there was erosion.
3. The problem was first addressed in 1958 with a 445-foot seawall in front of St. Mary's Convent (L – Lehigh Beach on right).
4. Since then and with the impetus of the '91 storm, we completed the following projects:
  - a. Beach saver reef on Whildin (W) - 1994
  - b. Beach saver reef on Coral (CO) - 1994
  - c. Beach saver reef on Cape (CA) - 2002
  - d. Double-tee sand retention on Emerald (E) – 1994
  - e. 460-foot gabion on Whildin (W) – 2002
  - f. 690-foot 1/3 boulders and 2/3 gabion on Cape (CA) -2002
  - g. 710-foot gabion on Emerald (E) – 2003
  - h. 16-foot dune and beach re-nourishment by the Army Corps from 2nd Ave in Cape May City to and including Cape (#1) – 2004

- i. Remodel Whildin (W) and Coral (CO) and move sand to St. Pete's (SP) by the Army Corps – 2008/2009

**B. Collect Rain Water –**

1. Cape May Point's soil is sandy. It does not retain water. Any standing water is due to high levels of ground water. Our Master Plan and Zoning Ordinances saw fit to use this natural defense by requiring that 60% of all lots be open ground and be made up of either green or porous material. Co-incidentally, tall bushes and trees not only absorb water but also act as a wind screen and can absorb gale force winds.
2. All storm drains in the northwestern sector of the Borough are handled with a French drain network, i.e. water seeps into the water table. The level of Lake Lily matches the water table.
3. The Borough used a multi-year "Master Road Reconstruction Plan" developed jointly with the NJ-DOT in 1993 to implement storm drainage throughout the remainder of the Borough.
  - a. South Lake Drive System – 1996
  - b. Coral Avenue System – 2000
  - c. Lincoln Avenue extension by the County – 2001
  - d. North Ocean Avenue French Drain Network – 2001
  - e. Harvard Avenue French Drain Network- 2002
  - f. Cape Avenue combination system by the County – 2002
  - g. Dredge Lake Lily – 2003

**C. Get Rid Of Excess Water As Fast As Possible**

1. Considering B (Collecting Rain Water) above, we needed measures to move out excess water in case we get overloaded:
  - a. Drainage East – a 1200-foot long gravity flow 18-in. pipe to Lighthouse Pond in the State Park. From there the water flows to Shallow Pond in the Park and a 24-in ductile pipe to the ocean with a "Duck Bill" to prevent back-flow – 1993
  - b. Drainage West – a 95-HP submersible pump rated at 6500 GPM to discharge water through 250-foot 20-inch pipe to the main 24-inch pipe and delivers the storm water ductile iron pipe to a submerged outfall at Sunset Beach 220-feet away. The outfall is approximately 21-feet deep and has a "Duck Bill" valve to prevent backflow - 1995
  - c. Army Corps re-engineered the Meadows that belongs to the Nation Conservancy to compete the water shed from Lake Lily to the State Park to the Meadows to Cape May City – 2007
  - d. Inter-local agreement between Cape May Point, the State Park, National Conservancy, Cape May City and Cape May County to maintain the water shed from Lake Lily to Cape May City – 2009

**D. Emergency Notifications**

1. Everyone in the world can watch a storm heading north up the East Coast. We have a very active Regional Operations Center (ROC) at the County level for Emergency Management. They keep the local Emergency Managers advised of any potential storm conditions, days in advance. When conditions warrant, we have emergency work sessions at the ROC to map out plans.
2. In 2009, Cape May Point, West Cape May and Cape May City joined together in a reverse 9-1-1 project with Global Connect. The system will deliver a pre-recorded message to any group of phone numbers that we choose. It has the ability to distinguish between a person answering the

phone and an answering machine. We can record different messages for people or for machines. The system also can provide for recipients to give us feedback, e.g. they need help evacuating. The data base of phone numbers were provided by Verizon Telephone Company. Global Connect also provides software for our web sites that will allow our citizens to include up to 4 extra phone numbers to be contacted. We have used the system twice so far in 2009; once for IDA'easter and once for the Nor'easter turned snow storm, turned blizzard. We are very happy with the results to date.

Because of all the work outlined above, the inundation of the 1991/'92 storm weren't repeated in the two December storms of 2009 and hopefully, will not be in the future.

**C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE BOROUGH**

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 7  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 0

Source: FEMA Region 2 as of December 2009

**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$58,155,000 Max: \$70,815,971	Frequent	54	High
1	Flood	\$35,448,000	Frequent	54	High
2	Severe Storm	\$12,660,971	Frequent	36	Medium
3	Severe Winter Storm	\$858,140	Frequent	27	Medium
4	Tsunami	Not available	Rare	18	Low
5	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	N	Y	Y	Y	Chapter 150
2) Zoning Ordinance	Y	Y	Y	Y	Chapter 150
3) Subdivision Ordinance	Y	Y	N	N	Chapter 105
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Chapter 90
5) Growth Management	Y	Y	N	Y	Chapter 150
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Chapter 90
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Chapter 96
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Master Plan
9) Capital Improvements Plan	Y	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	
11) Open Space Plan	N	N	Y	N	
12) Shoreline Management or Protection Plan	Y	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	
14) Emergency Response Plan	N	Y	Y	N	Filed at CMCOEM
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	Landscape Ordinance Chapter 150

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Van-Note-Harvey Bruce Graham, Engineer
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Van-Note-Harvey Bruce Graham, Engineer
3) Planners or engineers with an understanding of natural hazards	Y	Van-Note-Harvey Bruce Graham, Engineer
4) NFIP Floodplain Administrator	Y	Joe Nietubicz, Public Safety Commissioner
5) Surveyor(s)	Y	Van-Note-Harvey Borough Engineers
6) Personnel skilled or trained in "GIS" applications	Y	Van-Note-Harvey Borough Engineers
7) Scientist familiar with natural hazards in the Borough of Cape May Point.	Y	Stuart Farell, Stockton State College
8) Emergency Manager	Y	William Gibson
9) Grant Writer(s)	Y	Mark Blauer, Blauer Associates
10) Staff with expertise or training in benefit/cost analysis	Y	CFO, Francine Springer CMPT

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	No
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	No

**E.4) Community Classifications**

<b>Program</b>	<b>Classification</b>	<b>Date Classified</b>
Community Rating System (CRS)	7 (current)	10/1/1993*
Building Code Effectiveness Grading Schedule (BCEGS)		
Public Protection		
Storm Ready		
Firewise		

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* = Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Below is a table indicating the Borough’s participation and points earned in the CRS program to date.

<b>Series</b>	<b>Activity Number</b>	<b>Activity Description</b>	<b>Maximum Points Possible</b>	<b>Points Received for the Borough of Cape May Point</b>
300	310	Elevation Certificates	162	56
300	320	Map Information	140	70
300	330	Outreach Projects	380	211
300	340	Hazard Disclosure	81	0
300	350	Flood Protection Information	102	0
300	360	Flood Protection Assistance	71	64
400	410	Additional Flood Data	1,346	0
400	420	Open Space Preservation	900	408

**SECTION 9.4: BOROUGH OF CAPE MAY POINT**

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the Borough of Cape May Point
400	430	Higher Regulatory Standards	2,740	72
400	440	Flood Data Maintenance	239	60
400	450	Stormwater Management	670	16
500	510	Floodplain Management Planning	359	149
500	520	Acquisition and Relocation	3,200	0
500	530	Flood Protection	2,800	0
500	540	Drainage System Maintenance	330	330
600	610	Flood Warning Program	255	101
600	620	Levee Safety	900	0
600	630	Dam Safety	175	67
		<b>Total Points to Date</b>		<b>1,604</b>

F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMP-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
CMP-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
CMP-2	Continue active	New &	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-	Borough	Low -	Local	Short



**SECTION 9.4: BOROUGH OF CAPE MAY POINT**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
(CMC-2)	participation in CRS.	Existing			7, 2-1, 2-2, 2-3, 6-2, 6-3		Medium	Budget	
CMP-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Borough (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
CMP-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
CMP-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
CMP-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
CMP-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
CMP-8	Increase dune height / dune and beach stability measures	New & Existing	All Hazards	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	Borough – Army Corps	Medium	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative



**SECTION 9.4: BOROUGH OF CAPE MAY POINT**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CMP-9	Improve current drainage system “East” by installing a “Duck Bill” valve to prevent reverse flow from the State Park into Lake Lily	Existing	All Hazards (except Wildfire)	1, 5, 6	1-1,1-6, 5-1, 6-2	Borough – Army Corps	Medium	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
CMP-10	Improve current drainage system “West” by eliminating grasses and algae from Lake Lily with herbicides and grass carp to prevent grass derbies from clogging pumping station filters and grates which prevents lake drainage during high water conditions	Existing	All Hazards	1, 3, 5, 6	1-6, 3-4, 5-1, 6-2	Borough	Medium	Local Budget	Ongoing
CMP-11 (CMC-69)	Work directly with residents of the community located in a classic wildland-urban interface next to Cape May State Park to become a National Fire Protection Association (NFPA) “Firewise” community. Participation in the NFPA “Firewise” program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the “Firewise” program, facilitating public outreach and awareness programs,	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs working with County Fire Coordinator and identified residents	L-M	Existing Budgets	Short-term



**SECTION 9.4: BOROUGH OF CAPE MAY POINT**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).								

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?

G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant’s mitigation actions by hazard of concern and the six mitigation types to illustrate that the Borough has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	CMP-3, CMP-5, CMP-6, CMP-7	CMP-7, CMP-9	CMP-3, CMP-7	CMP-7, CMP-8, CMP-10	CMP-5, CMP-7	CMP-7
Coastal Storm	CMP-3, CMP-5, CMP-6, CMP-7	CMP-1a and b, CMP-7, CMP-9	CMP-3, CMP-7	CMP-7, CMP-8, CMP-10	CMP-5, CMP-7	CMP-7
Flood	CMP-2, CMP-3, CMP-4, CMP-5, CMP-6, CMP-7	CMP-1a and b, CMP-2, CMP-4, CMP-7, CMP-9	CMP-2, CMP-3, CMP-4, CMP-7	CMP-2, CMP-4, CMP-7, CMP-8, CMP-10	CMP-5, CMP-7	CMP-7
Severe Storm	CMP-3, CMP-5, CMP-6, CMP-7	CMP-1a and b, CMP-7, CMP-9	CMP-3, CMP-7	CMP-7, CMP-8, CMP-10	CMP-5, CMP-7	CMP-7
Severe Winter Storm	CMP-3, CMP-5, CMP-6, CMP-7	CMP-7, CMP-9	CMP-3, CMP-7	CMP-7, CMP-8, CMP-10	CMP-5, CMP-7	CMP-7
Tsunami	CMP-3, CMP-5, CMP-6, CMP-7	CMP-7, CMP-9	CMP-3, CMP-7	CMP-7, CMP-8, CMP-10	CMP-5, CMP-7	CMP-7
Wildfire	CMP-3, CMP-5, CMP-6, CMP-7, CMP-11	CMP-7, CMP-11	CMP-3, CMP-7, CMP-11	CMP-7, CMP-8, CMP-10, CMP-11	CMP-5, CMP-7	CMP-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.



## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
CMP-1a	8	H	H	Y	Y	N	M-H*
CMP-1b	8	H	H	Y	Y	N	M-H*
CMP-2	9	M	L	Y	N	Y	H
CMP-3	All	M	M	Y	N (Yes for 5 year update)	N	M
CMP-4	14	H	L	Y	N	Y	H
CMP-5	13	M	L	Y	N	Y	M
CMP-6	13	M	L	Y	N	Y	M
CMP-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
CMP-8	6	M	M	Y	Y	Y (local match)	M
CMP-9	4	M	M	Y	Y	Y (local match)	M
CMP-10	5	M	M	Y	N	Y	H
CMP-11	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10

years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

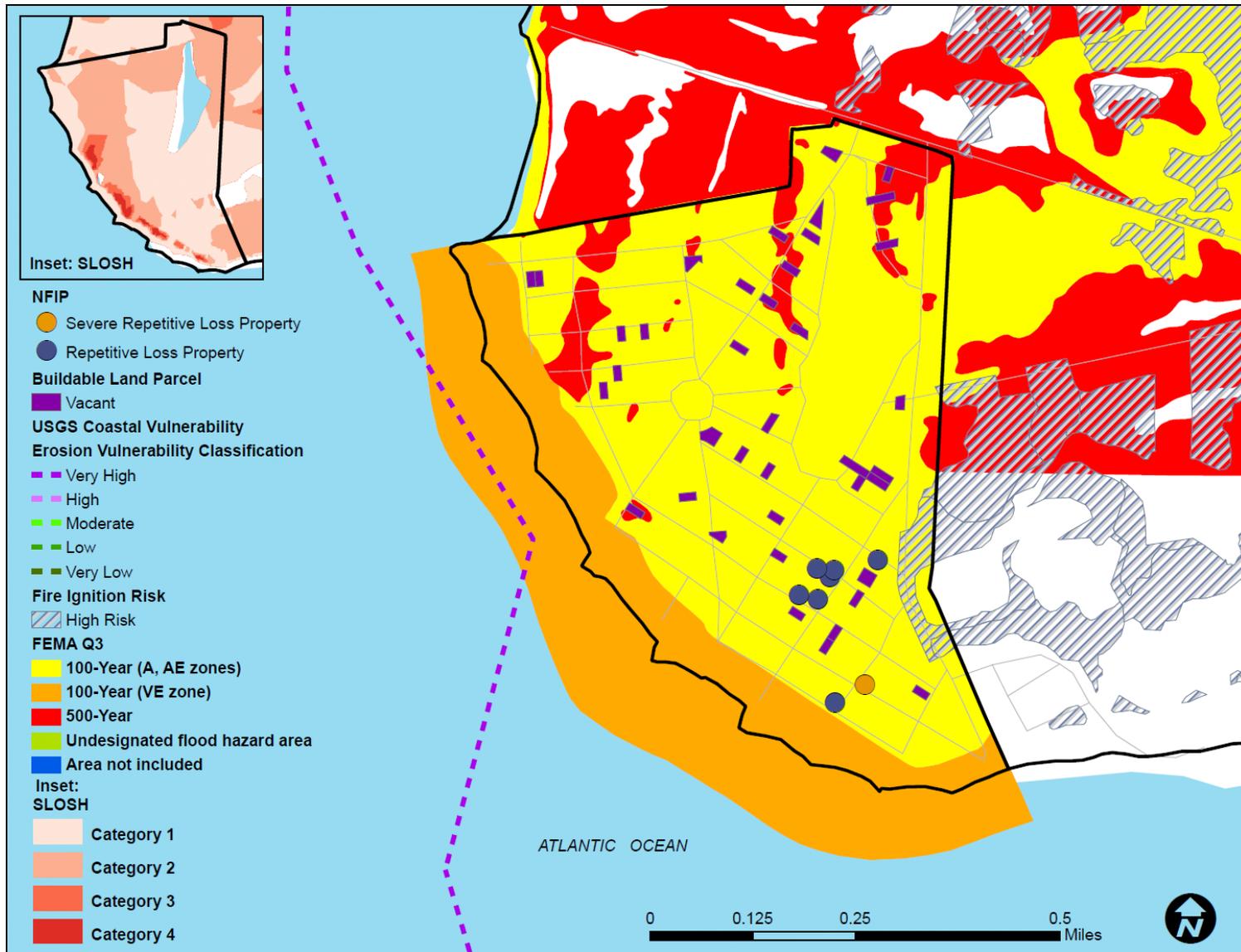
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Borough of Cape May Point to illustrate the probable areas impacted within the Borough. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of Cape May Point has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

## 9.5 TOWNSHIP OF DENNIS

This section presents the jurisdictional annex for the Township of Dennis.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
John E. Berg, Jr., Coordinator 571 Petersburg Rd, Dennisville, NJ 08214 (609) 861-0098 <a href="mailto:grandpopjb@gmail.com">grandpopjb@gmail.com</a>	Michael D. Haggerty, Deputy Coordinator 571 Petersburg Rd, Dennisville, NJ 08214 (609) 861-0098 <a href="mailto:MHAGGSR@comcast.net">MHAGGSR@comcast.net</a>

### B.) TOWNSHIP PROFILE

#### *Population*

5,725 (estimated 2008 Residential Population, Cape May County Planning Dept.)

37,449 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

The Township of Dennis is located within the northern section of Cape May County, New Jersey. It is bounded on the north by the Borough of Woodbine and Township of Upper, on the east by portions of the Township of Upper, the City of Sea Isle City and the Atlantic Ocean, on the south by the Township of Middle, and on the west by Cumberland County, New Jersey and the Delaware Bay. It is part of the Ocean City Metropolitan Statistical Area. The township included the Dennis Creek community, the East and West Creek regions, the Southern portion of the Cedar Swamp, and the Seashore region between Townsend Inlet and Ludlam's Bay. Today Dennis Township includes the communities of Belleplain, Clermont, Dennisville, Eldora, Ocean View, South Dennis and South Seaville.

According to the U.S. Census Bureau, the township has a total area of 64.3 square miles (166.5 km<sup>2</sup>), with 61.3 square miles (158.9 km<sup>2</sup>) of it land and 2.9 square miles (7.6 km<sup>2</sup>) of it (4.57-percent) water.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F.

Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

### ***Brief History***

Dennis Township was incorporated as a township by an Act of the New Jersey Legislature on March 1, 1827, from portions of Upper Township. Portions of the township were taken to form Sea Isle City borough (May 22, 1882) and Woodbine (March 3, 1903) (Snyder, 1969).

### ***Governing Body Format***

Dennis Township is governed under the Township form of government with a five-member Township Committee. The Township Committee is elected directly by the voters in partisan elections to serve three-year terms of office on a staggered basis, with one or two seats coming up for election each year (Rutger University, 2005).

### ***Growth/Development Trends***

At this time, no new major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Township of Dennis**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Township of Dennis	73	346.3	11	609.2	1	3.5	2	14.8	7	19.4	200	1490	294	2483.2

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE TOWNSHIP

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Tornado (F1)	Not applicable	September, 1979	\$250,000 (Township of Dennis)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Flood	Not applicable	August, 1997	\$485,000 (Dennis Township)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 0

**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 0

Source: FEMA Region 2 as of December 2009

**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
5	Coastal Erosion	Not available	Frequent	18	Low
1	Coastal Storm	Min: \$169,699,688 Max: \$196,672,395	Frequent	54	High
3	Flood	\$88,144,000	Frequent	45	High
2	Severe Storm	\$40,055,395	Frequent	51	High
4	Severe Winter Storm	\$5,382,340	Frequent	36	Medium
6	Tsunami	Not available	Rare	12	Low
3	Wildfire	Not available	Frequent	45	High

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	Y	Y	Y	Y	BOCA
2) Zoning Ordinance	Y	Y	Y	Y	Ch. 185
3) Subdivision Ordinance	Y	Y	N	N	Ch. 165
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Ch. 105
5) Growth Management	Y	Y	N	Y	Ch. 185
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Ch. 105
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Ch. 163
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	
9) Capital Improvements Plan	N	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	Ch. 165
11) Open Space Plan	Y	N	Y	N	Ch. 185
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	Approved 2008
15) Post Disaster Recovery Plan	Y	N	N	N	Approved 2008
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	Y	Y	Y	Y	Board of Health Ordinance
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	N/A	N/A	N/A	N/A	

**E.2) Administrative and Technical Capability**

<b>Staff/ Personnel Resources</b>	<b>Available (Y or N)</b>	<b>Department/ Agency/Position</b>
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Andy Prewitt, Municipal Engineer
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Andy Prewitt, Municipal Engineer
3) Planners or engineers with an understanding of natural hazards	Y	Andy Prewitt, Municipal Engineer
4) NFIP Floodplain Administrator	Y	Mario Zaccaria, Construction Officer
5) Surveyor(s)	Y	Andy Previti, Municipal Engineer
6) Personnel skilled or trained in "GIS" applications	N	
7) Scientist familiar with natural hazards in the Township of Dennis.	N	
8) Emergency Manager	Y	John Berg, Coordinator
9) Grant Writer(s)	Y	Consultants
10) Staff with expertise or training in benefit/cost analysis	TBD	TBD

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community Development Block Grants (CDBG)	Y
2) Capital Improvements Project Funding	Y
3) Authority to Levy Taxes for specific purposes	Y
4) User fees for water, sewer, gas or electric service	Y
5) Impact Fees for homebuyers or developers of new development/homes	
6) Incur debt through general obligation bonds	
7) Incur debt through special tax bonds	
8) Incur debt through private activity bonds	
9) Withhold public expenditures in hazard-prone areas	
10) Other	

## E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	---	---
Public Protection	---	---
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TD-2 (CMC-2)	Consider participation in the incentive-based program CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	Township	Low - Medium	Local Budget	Short
TD-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Township (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
TD-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
TD-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
TD-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Township	Low - Medium	Local Budget	Ongoing
TD-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
TD-8	Purchase generator for the two Ocean View Fire	Existing	All Hazards (except coastal	1, 3, 4	1-1, 3-3, 3-4, 4-3, 4-6, 4-7	Township	Low	Existing programs	DOF

**SECTION 9.5: TOWNSHIP OF DENNIS**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Stations. These facilities not only serve Dennis Township but are car storage for Sea Isle City.		erosion)					and grant funding where applicable	
TD-9	Purchase generators for both Academy Lane and Hagon Road Schools which are both designated 'Shelters of Last Resort'	Existing	All Hazards (except coastal erosion)	1, 3, 4	1-1, 3-3, 3-4, 4-3, 4-6, 4-7	Township	Low	Existing programs and grant funding where applicable	DOF
TD-10	A Water well is needed at Ocean Fire Station #1 to increase response capabilities	Existing	Wildfire	1, 3, 4	1-1, 3-3, 3-4, 4-6, 4-7	Township	Medium - High	Existing programs and grant funding where applicable	DOF
TD-11	A water well is needed at Dennisville Fire House to increase response capabilities	Existing	Wildfire	1, 3, 4	1-1, 3-3, 3-4, 4-6, 4-7	Township	Medium - High	Existing programs and grant funding where applicable	DOF
TD-12	Place utility wires underground because they are highly vulnerable to winds and utility coverage for the Township is frequently impacted.	New & Existing	Coastal Storm, Severe Storm, Severe Winter Storm	1, 3, 4	1-1, 3-3, 3-4, 4-7	Township; Private Homeowners	High	Existing programs and grant funding where applicable	DOF
TD-13	Install a water line down Route 9 to supply water to Middle Township	Existing	Wildfire	1, 3, 4, 6	1-1, 3-3, 3-4, 4-6, 4-7, 6-2	Township	Medium - High	Existing programs and grant funding where applicable	DOF
TD-14 (CMC-16)	Identify and rectify the cause of flooding at the intersection of SR-47 and the newly completed bridge over Dennis Creek. Both	Existing	Flood, Coastal Storm, Severe Storm	1, 3, 4, 6	1-1, 1-4, 1-6, 3-3, 4-2, 4-7, 4-10, 6-3	NJ DOT	High	NJDOT, Municipal, and HMA grants where	Long Term DOF



**SECTION 9.5: TOWNSHIP OF DENNIS**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	improved drainage design and elevation in and near the intersection may be needed.							applicable	
TD-15 (CMC-24)	Elevate Sea Isle Blvd roadway and ramps which will require elevation of the Garden State Parkway bridge overpass (intersection of Sea Isle Blvd [CR-601] and Garden State Parkway)	Existing	Flood, Coastal Storm, Severe Storm	1, 3, 4, 6	1-1, 1-4, 1-6, 3-3, 4-2, 4-7, 4-10, 6-2, 6-3	County Engineering with NJTPA	High	County, State, and HMA grants where applicable	Long Term DOF
TD-16	Purchase and permanently install variable message boards to advise of traffic, alternate routes/detours due to accidents/flooding/wildfire events/other hazardous conditions along the following Routes through the Township which serve as major evacuation routes: <ul style="list-style-type: none"> <li>• 550</li> <li>• 347</li> <li>• 47</li> <li>• 83</li> </ul>	NA	All Hazards (except Coastal Erosion)	1, 4, 6	1-4, 4-2, 4-3, 4-7, 4-11, 6-2, 6-3	Dennis Township	Medium to High	Municipal, and HMA grants where applicable	DOF
TD-17	Investigate solutions to mitigate flooding at the intersection of Routes 47 and 83	NA	Flood, Coastal Storm, Severe Storm	1, 4, 6	1-1, 1-4, 1-6, 4-2, 4-7, 6-2, 6-3	Cape May County; State DOT	Medium	Municipal, and HMA grants where applicable	DOF
TD-18	Increase the capacity of the culvert on Main Street (Fort Bridge) County Road from Route 9 to S. Seawall section of the Township/Corson Tavern Road to mitigate flooding	New & Existing	Flood, Coastal Storm, Severe Storm	1, 4, 6	1-1, 1-4, 1-6, 4-2, 4-7, 6-3	Cape May County	Medium to High	Municipal, and HMA grants where applicable	DOF
TD-19	Investigate elevating	NA	Flood, Coastal	1, 4, 6	1-1, 1-4, 1-6, 4-	Dennis	High	Municipal,	DOF



**SECTION 9.5: TOWNSHIP OF DENNIS**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Stipsen Island Road which is vulnerable to flooding		Storm, Severe Storm		2, 4-7, 6-2, 6-3	Township		and HMA grants where applicable	
TD-20	Identify proper locations for and install water draw (siphon) stations to increase fire fighting capacity and capabilities). The Township relies on private wells; there is no public water distribution.	New & Existing	Wildfire	1, 3, 4	1-1, 3-3, 3-4, 4-6, 4-7	Dennis Township; Cape May County	High	Municipal, and HMA grants where applicable	
TD-21 (CMC-24)	Elevate Sea Isle Boulevard (CR-601) from the Parkway to the Sea Isle bridge. This project is currently in the State Transportation Improvement Plan (TIP) for construction over the next two years, and is currently in the preliminary engineering phase.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	TBD	State and Federal Funding	Ongoing (est. completion in 2013)
TD-22 (CMC-42)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Court House-South Dennis Road (CR657) near Beaver Dam Road in Dennis Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 1-5, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TD-23 (CMC-45)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Woodbine-Ocean View Road (CR550) in Dennis Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 1-5, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term



**SECTION 9.5: TOWNSHIP OF DENNIS**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TD-24 (CMC-47)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Fidler Road (CR638) in Dennis Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TD-25 (CMC-56)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Corsons Tavern Road (CR628) in Dennis Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TD-26 (CMC-69)	Become a National Fire Protection Association (NFPA) "Firewise" community. Participation in the NFPA "Firewise" program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the "Firewise" program, facilitating public outreach and awareness programs, and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs working with County Fire Coordinator	L-M	Existing Budgets	Short-term
TC-27	Through attendance at the regular meetings of the Cape May County Fire Chiefs Association, and in partnership with the New	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs	LM	Existing Budgets	Short-term



Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Jersey Division of Fire Safety and the New Jersey State Forest Fire Service, expand and enhance public awareness and education programs that support wildfire mitigation at the property owner level; and expand local wildfire preparedness and response capabilities through participation in seminars and training, and the implementation of recommendations and initiatives offered by these agencies, as resources permit.								

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Township has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	TD-3, TD-5, TD-6, TD-7	TD-7	TD-3, TD-7	TD-7	TD-5, TD-7	TD-7
Coastal Storm	TD-3, TD-5, TD-6, TD-7	TD-7, TD-12, TD-14, TD-15, TD-16, TD-17, TD-19, TD-21	TD-3, TD-7	TD-7	TD-5, TD-7, TD-8, TD-9, TD-16	TD-7
Flood	TD-2, TD-3, TD-5, TD-6, TD-7	TD-2, TD-4, TD-7, TD-14, TD-15, TD-16, TD-17, TD-19, TD-21 to -25	TD-2, TD-3, TD-4, TD-7	TD-2, TD-4, TD-7	TD-5, TD-7, TD-8, TD-9, TD-16, TD-22 and -23	TD-7
Severe Storm	TD-3, TD-5, TD-6, TD-7	TD-7, TD-12, TD-14, TD-15, TD-16, TD-17, TD-19, TD-21 to -25	TD-3, TD-7	TD-7	TD-5, TD-7, TD-8, TD-9, TD-16, TD-22 and -23	TD-7
Severe Winter Storm	TD-3, TD-5, TD-6, TD-7	TD-7, TD-12	TD-3, TD-7	TD-7	TD-5, TD-7, TD-8, TD-9, TD-16	TD-7
Tsunami	TD-3, TD-5, TD-6, TD-7	TD-7	TD-3, TD-7	TD-7	TD-5, TD-7, TD-8, TD-9, TD-16	TD-7
Wildfire	TD-3, TD-5, TD-6, TD-7, TD-26, TD-27	TD-7, TD-26, TD-27	TD-3, TD-7, TD-26, TD-27	TD-7, TD-26, TD-27	TD-5, TD-7, TD-8, TD-9, TD-10, TD-13, TD-16, TD-20, TD-27	TD-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
TD-2	9	M	L	Y	N	Y	H
TD-3	All	M	M	Y	N (Yes for 5 year update)	N	M
TD-4	14	H	L	Y	N	Y	H
TD-5	13	M	L	Y	N	Y	M
TD-6	13	M	L	Y	N	Y	M
TD-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
TD-8	6	M	L	Y	Y	N (local match)	M
TD-9	6	M	L	Y	Y	N (local match)	M
TD-10	5	H	H-M	Y	Y	N (local match)	M
TD-11	5	H	H-M	Y	Y	N (local match)	M
TD-12	4	H	H	Y	Y	TBD	M
TD-13	6	H	H-M	Y	Y	N (local match)	M
TD-14	8	H	H	Y	Y	N (local match)	M
TD-15	9	H	H	Y	Y	N (local match)	M
TD-16	7	H	H-M	Y	Y	N (local match)	M
TD-17	7	M	M	Y	Y	N (local match)	M
TD-18	6	H	H-M	Y	Y	N (local match)	M
TD-19	7	H	H	Y	Y	N (local match)	M
TD-20	5	H	H	Y	N	TBD	M
TD-21	5	H	M	Y	Y	Y	H

TD-22	10	H	M	Y	Y	Y	H
TD-23	10	H	M	Y	Y	Y	H
TD-24	7	H	M	Y	Y	Y	H
TD-25	7	H	M	Y	Y	Y	H
TD-26	14	M	L	Y	N	Y	H
TD-27	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

None at this time.

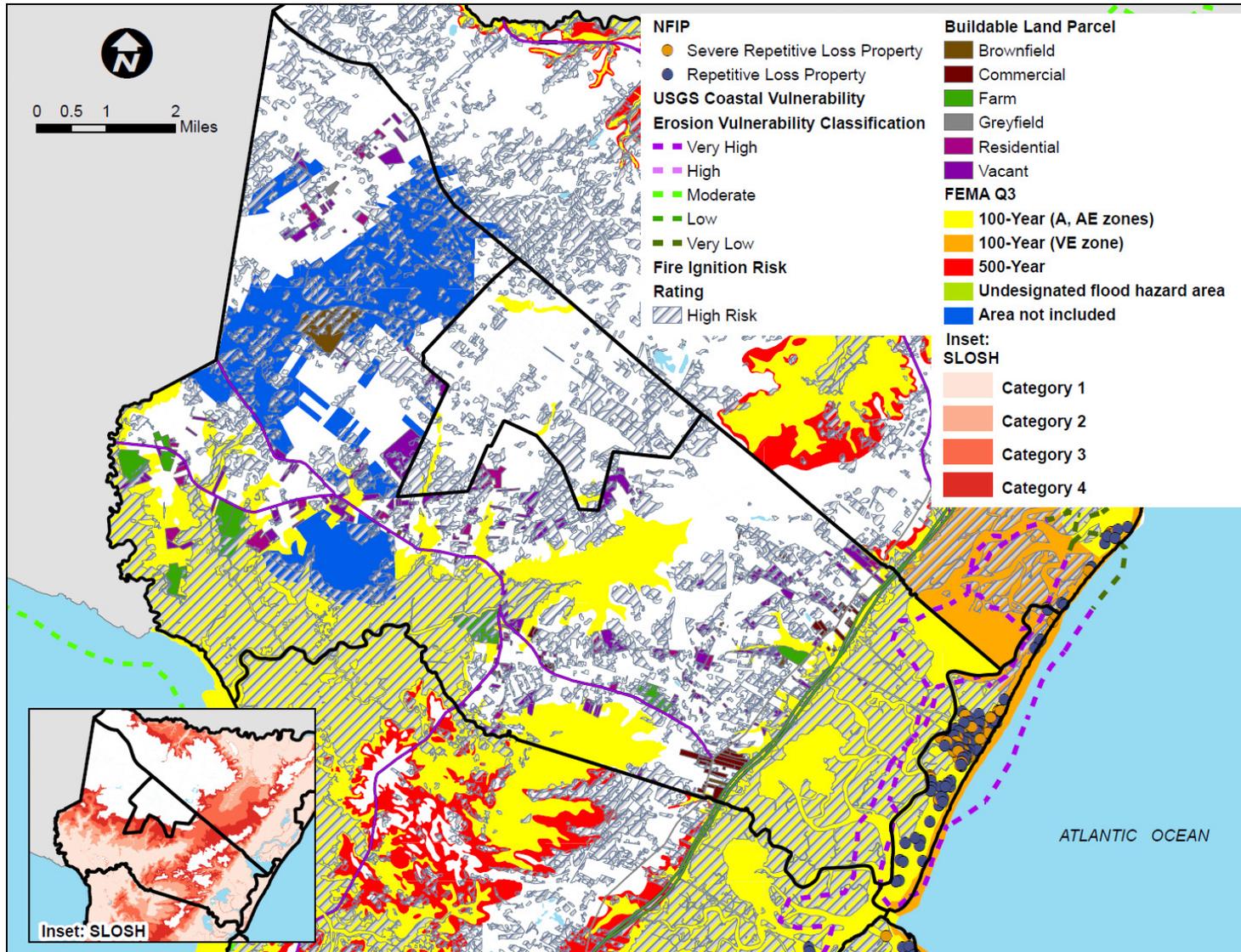
**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Township of Dennis to illustrate the probable areas impacted within the Township. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Township of Dennis has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.





Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

## 9.6 TOWNSHIP OF LOWER

This section presents the jurisdictional annex for the Township of Lower.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
Arthur Treon, Emergency Management Director 2600 Bayshore Road, Villas, NJ 08251 (609) 780-4765 <a href="mailto:atreon@co.cape-may.nj.us">atreon@co.cape-may.nj.us</a>	Gary Douglass, DPW Superintendent 2600 Bayshore Road, Villas, NJ 08251 (609) 780-6049 <a href="mailto:gdouglasslowertownship@comcast.net">gdouglasslowertownship@comcast.net</a>

### B.) TOWNSHIP PROFILE

#### *Population*

20,328 (estimated 2008 Residential Population, Cape May County Planning Dept.)

100,891 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

The Township of Lower is located within the southern section of Cape May County, New Jersey. It is bounded on the north by the Township of Middle and the Delaware Bay, on the east by the Wildwoods and the Atlantic Ocean, on the south by the City of Cape May, Boroughs of West Cape May and Cape May Point and the Atlantic Ocean, and on the west by the Delaware Bay. It is part of the Ocean City Metropolitan Statistical Area. Diamond Beach, Erma, North Cape May and Villas are census-designated places and unincorporated areas located within Lower Township. Other communities in Lower Township include Cold Spring, Fishing Creek, Schellenger's Landing and Town Bank.

According to the U.S. Census Bureau, the township has a total area of 31.1 square miles (80.5 km<sup>2</sup>), with 28.2 square miles (73.1 km<sup>2</sup>) of it land and 2.8 square miles (7.4 km<sup>2</sup>) of it (9.17-percent) water.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

Lower Township was formed as a precinct on April 2, 1723, and was incorporated as one of New Jersey's initial 104 townships by an Act of the New Jersey Legislature on February 21, 1798. Portions of the township were taken to form Cape Island Borough (March 8, 1848, now known as Cape May city), Cape May Point borough (created April 19, 1878, restored to Lower Township on April 8, 1896, recreated April 6, 1908), Holly Beach (April 14, 1885, now part of Wildwood city), South Cape May (August 27, 1894, restored to Lower Township on April 30, 1945), Wildwood Crest (April 6, 1910) and North Cape May (March 19, 1928, restored to Lower Township on April 30, 1945) (Snyder, 1969).

***Governing Body Format***

Lower Township adopted the Council-Manager form of government under the Faulkner Act in 1984. The council is composed of five council members (Mayor, Council Member-at-Large, and three Wards), each elected on a partisan basis to four-year terms on a staggered basis, with two or three seats up for election every other year. The Mayor presides at all Council meetings and has a voice and vote in the proceedings. Powers are limited to those expressly conferred by the Charter. The Manager serves the Council for an indefinite term of office and may be removed by a majority vote of the Council. The Manager is the chief executive and administrator of the Township (Rutgers University, 2005).

***Growth/Development Trends***

Known and anticipated development for the Township, provided by the Township of Lower Planning Board and Zoning Board of Adjustments (Sept. 29, 2009), is listed in the table below. This identifies board approvals where construction not yet begun.

Further it is noted that three potable water extensions are planned by the MUA in the near future, all of which have the potential to influence growth and development in these new service areas:

- Villas 1 Project, will extend service to Peters, Jacksonville and Florida Avenue
- Town Bank Project, will extend service in Club House Road from Ellwood to Wildwood Avenue
- Villas 2 project will extend service in Bayshore Road from Nevada to Miami Avenue

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

New Development/Potential Development in Municipality					
Property Name	Type Residential or Commercial	Number of Structures	Block and Lot	Description	Vulnerability
Jeffery Reichle & Thomas Rossi	Residential	19 Lots	748/4.03 & 4.04		Coastal Storm, Severe Storm, Flood, Severe Winter Storm
Edward Wuerker	Residential	13	441/2.01		Coastal Storm, Severe Storm, Severe Winter Storm
Catherine Taylor Pascali	Residential	15	752.01/39		Coastal Storm, Severe Storm, Severe Winter Storm
James & Shirley Hemingway	Residential & Commercial	16	334.01/3		Coastal Storm, Severe Storm, Severe Winter Storm
Arthur Criag & Isaac Smith Vineyard	Residential	4	753.01/19.01		Coastal Storm, Severe Storm, Severe Winter Storm
Frost Homes	Residential	8	753.01/6.02		Coastal Storm, Severe Storm, Severe Winter Storm
Eric Hanson	Residential	20	500.01/19.01 25 & 27.04		Coastal Storm, Severe Storm, Severe Winter Storm
Estate of Hessie Raff	Residential	8	416/1.10 & 1.08		Coastal Storm, Severe Storm, Severe Winter Storm
Nancy McPherson	Residential	17	752.01/10.01		Coastal Storm, Severe Storm, Severe Winter Storm
Thomas Brodesser	Residential	4	500.01/45.01		Coastal Storm, Severe Storm, Severe Winter Storm
Cape May Lumber	Residential	6	207/1-20		Coastal Storm, Severe Storm, Severe Winter Storm
Michael Loper & Andrea McVey	Residential	18	500.01/54.12 & 54.13		Coastal Storm, Severe Storm, Severe Winter Storm
Thomas Hartle	Residential	5	501/11.01		Coastal Storm, Severe Storm, Severe Winter Storm
Wuerkers Land, LLC	Residential	37	410.01/1, 2.01, 2.02 & 8		Coastal Storm, Severe Storm, Severe Winter Storm
Raymond & Elaine Slamb	Residential	10	510/4.02, 4.04 & 22		Coastal Storm, Severe Storm, Severe Winter Storm
Wuerker	Residential	23	410.01/2.02		Coastal Storm, Severe Storm, Severe Winter Storm
Negron-Craig Bentz Living Trust	Residential	26	410.01/82 & 84		Coastal Storm, Severe Storm, Severe Winter Storm
Robert Lepor	Residential	18	510/11.01		Coastal Storm, Flood, Severe Storm, Severe Winter Storm
Robert Smelter	Residential	12	752.01/8.01, 8.03 & 8.04		Coastal Storm, Severe Storm, Severe Winter Storm
Achristavest	Residential Condo	62 Units	699/3-14.01 15 & 15.01	62 Units	Coastal Storm, Severe Storm, Severe Winter Storm



New Development/Potential Development in Municipality					
Property Name	Type Residential or Commercial	Number of Structures	Block and Lot	Description	Vulnerability
Jeffery VanMourik	Mobile Home Park Re-alignment		510/14.01		Coastal Storm, Severe Storm, Severe Winter Storm
Marie Mihalick	Bakery (commercial)		673/12		Coastal Storm, Severe Storm, Severe Winter Storm
Achristavest (Pier 6600)	Residential Condo	98 Units	710.01/1-12.02 & 710.02/1.01-1.03	Pier 6600	Coastal Storm, Flood, Severe Storm, Severe Winter Storm
Feinberg McBurney	CVS Pharmacy (commercial)	1	216/32-34		Coastal Storm, Severe Storm, Severe Winter Storm
Cape Harbor Marine Services, LLC	Boat Storage and Repair (commercial)		450/36		Coastal Storm, Severe Storm, Severe Winter Storm
Lighthouse Pointe Condo	Swimming Pool	n/a	806/4.01	Pending Board Approval	Coastal Storm, Severe Storm, Severe Winter Storm

Source: Township of Lower Planning Board and Zoning Board of Adjustments (Sept. 29, 2009)

**Summary of Potentially Developable Land in the Township of Lower**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Township of Lower	9	56	34	532.8	0	0	0	0	16	22.5	401	1682.4	460	2293.7

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE TOWNSHIP

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 13

**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 7

Source: FEMA Region 2 as of December 2009

## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
3	Coastal Erosion	Not available	Frequent	36	Medium
1	Coastal Storm	Min: \$1,013,177,993 Max: \$1,248,964,877	Frequent	54	High
1	Flood	\$503,746,000	Frequent	54	High
2	Severe Storm	\$291,290,877	Frequent	45	High
3	Severe Winter Storm	\$21,265,140	Frequent	36	Medium
4	Tsunami	Not available	Rare	12	Low
3	Wildfire	Not available	Frequent	36	Medium

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	Y	Y	Y	Y	Chapter 235 - 1
2) Zoning Ordinance	Y	Y	Y	Y	Chapter 400 – 1(1-12)
3) Subdivision Ordinance	Y	Y	N	N	Chapter 400 – 1(1-12)
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Chapter 351-5.E
5) Growth Management	Y	Y	N	Y	Chapter 400 -1
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Chapter 400-24 Chapter 351-6
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Chapter 575
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Chapter 400 - 8
9) Capital Improvements Plan	Y	N	N	N	Yearly Budget approvals
10) Site Plan Review Requirements	Y	N	Y	N	Chapter 400-8 Chapter 400-24.E
11) Open Space Plan	Y	N	Y	N	Chapter 400-59
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	Chapter 400
14) Emergency Response Plan	Y	Y	Y	N	Resolution 09-183 Resolution 09-139
15) Post Disaster Recovery Plan	Y	N	N	N	Resolution 09-139
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	Y	Y	Y	Y	Adopted by Realtors Assoc.
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	N/A	N/A	N/A	N/A	

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Township Zoning William Galestock
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Construction Officer - Gary Playford
3) Planners or engineers with an understanding of natural hazards	Y	Contracted - Hatch Mott McDonald
4) NFIP Floodplain Administrator	Y	Gary Playford, Construction Official
5) Surveyor(s)	Y	Contracted - Hatch Mott McDonald
6) Personnel skilled or trained in "GIS" applications	Y	Contracted - Hatch Mott McDonald
7) Scientist familiar with natural hazards in the Township of Lower.	Y	County Health Officer
8) Emergency Manager	Y	Emergency Management Office – Art Treon
9) Grant Writer(s)	Y	Grant Office - Colleen Crippen
10) Staff with expertise or training in benefit/cost analysis	Y	Personnel Office / Construction Office

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	Yes
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	Yes (3) Fire Districts
8) Incur debt through private activity bonds	Don't Know
9) Withhold public expenditures in hazard-prone areas	No
10) Other	

## E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	--	--
Public Protection	--	--
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. -- = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TL-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
TL-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF



**SECTION 9.6: TOWNSHIP OF LOWER**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TL-2 (CMC-2)	Consider participation in the incentive-based program CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	Township	Low - Medium	Local Budget	Short
TL-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Township (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
TL-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
TL-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
TL-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
TL-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
TL-8	Fire Station – Diamond Beach Section (new) sub-station	N/A	Wildfire	1, 4	1-1, 4-6, 4-7	Fire Dist # 3 Lower Twp	Pending	Local Budget & DHS Grant Funding where applicable	DOF



**SECTION 9.6: TOWNSHIP OF LOWER**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TL-9	Road/railroad crossing improvements: Sally Marshall / Breakwater Crossing (new) to mitigate flooding	Existing	Flood (?), Flood	1, 3, 6	1-1, 1-4, 3-3, 3-4, 6-2	NJDOT	Pending	NJDOT	DOF
TL-10	Road/railroad crossing improvements: Bennet Crossing / Tabernacle Crossing (new) to mitigate flooding	Existing	Flood	1, 3, 6	1-1, 1-4, 3-3, 3-4, 6-2	NJDOT	Pending	NJDOT	DOF
TL-11	Bayshore Estates (drainage system, pump station) to mitigate flooding in this area	New	Flood	1, 3, 4	1-1, 3-4, 4-6, 4-7	Lower Township	Pending	Local Budget & Grant Funding where applicable	DOF
TL-12	New Water Tower (January 2010) to provide adequate public water supply and for emergency response purposes	New	Wildfire	3, 4	3-4, 4-6, 4-7	Lower Township MUA	High	MUA Funded	Short Term
TL-13	Dune beach replenishment	Existing	Coastal Erosion, Coastal Storm, Severe Storm, Tsunami, Public Protection	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	Lower Township	Pending	Local Budget & Grant Funding where applicable	DOF
TL-14 (CMC-7)	Support the replacement of three (3) bridges and elevate 2.7 miles of County Route 621 in Lower Township. This project is currently in the scoping phase.	N/A	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High (est. ~300M)	TIGER (economic stimulus funding) and other Federal funding sources	Longterm DOF
TL-15 (CMC-8 and WCM-	Elevate ~1.5 miles of CR-606 (Sunset Boulevard) through the South Cape May Meadows (Lower and	N/A	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	Various, incl. federal grant funding	Longterm DOF (lower priority project –



**SECTION 9.6: TOWNSHIP OF LOWER**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
12)	WCM).								area is not as floodprone as many other areas)
TL-16 (CMC-17 and TM-22)	Elevate CR-603 through Lower and Middle Township through Fishing Creek Swamp.	N/A	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	TBD	Longterm DOF
TL-17 (CMC-44)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Fishing Creek/Academy Road (CR639) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TL-18 (CMC-46)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Tabernacle Road (CR647) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TL-19 (CMC-49)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Shunpike Road (CR644) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TL-20 (CMC-52)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Seashore Road (CR626) in Lower Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TL-21 (CMC-69)	Become a National Fire Protection Association (NFPA) "Firewise" community. Participation	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs working with County Fire	L-M	Existing Budgets	Short-term



**SECTION 9.6: TOWNSHIP OF LOWER**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	<p>in the NFPA “Firewise” program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the “Firewise” program, facilitating public outreach and awareness programs, and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).</p>					Coordinator			
TL-22	<p>Through attendance at the regular meetings of the Cape May County Fire Chiefs Association, and in partnership with the New Jersey Division of Fire Safety and the New Jersey State Forest Fire Service, expand and enhance public awareness and education programs that support wildfire mitigation at the property owner level; and expand local wildfire preparedness and response capabilities through participation in seminars and training, and the implementation of recommendations and initiatives offered by these agencies, as resources</p>	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs	LM	Existing Budgets	Short-term



Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	permit.								

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?

G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant’s mitigation actions by hazard of concern and the six mitigation types to illustrate that the Township has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	TL-3, TL-5, TL-6, TL-7	TL-7, TL-13	TL-3, TL-7	TL-7, TL-13	TL-5, TL-7	TL-7, TL-13
Coastal Storm	TL-3, TL-5, TL-6, TL-7	TL-1a and 1b, TL-7, TL-13, TL-14, TL-15, TL-16	TL-3, TL-7	TL-7, TL-13	TL-5, TL-7, TL-14	TL-7, TL-13
Flood	TL-2, TL-3, TL-5, TL-6, TL-7, TL-14	TL-1a and 1b, TL-2, TL-4, TL-7, TL-14, TL-15, TL-16, TL-22 to -25	TL-2, TL-3, TL-4, TL-7	TL-2, TL-4, TL-7	TL-5, TL-7, TL-14	TL-7
Severe Storm	TL-3, TL-5, TL-6, TL-7	TL-1a and 1b, TL-7, TL-13, TL-14, TL-15, TL-16, TL-22 to -25	TL-3, TL-7	TL-7, TL-13	TL-5, TL-7, TL-14	TL-7, TL-13
Severe Winter Storm	TL-3, TL-5, TL-6, TL-7	TL-7, TL-13	TL-3, TL-7	TL-7, TL-13	TL-5, TL-7	TL-7, TL-13
Tsunami	TL-3, TL-5, TL-6, TL-7	TL-7, TL-13	TL-3, TL-7	TL-7, TL-13	TL-5, TL-7	TL-7, TL-13
Wildfire	TL-3, TL-5, TL-6, TL-7, TL-21, TL-22	TL-7, TL-21, TL-22	TL-3, TL-7, TL-21, TL-22	TL-7, TL-21, TL-22	TL-5, TL-7, TL-22	TL-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

**6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
TL-1a	8	H	H	Y	Y	N	M-H*
TL-1b	8	H	H	Y	Y	N	M-H*
TL-2	9	M	L	Y	N	Y	H
TL-3	All	M	M	Y	N (Yes for 5 year update)	N	M
TL-4	14	H	L	Y	N	Y	H
TL-5	13	M	L	Y	N	Y	M
TL-6	13	M	L	Y	N	Y	M
TL-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
TL-8	3	H	L-M	Y	Y	N	H
TL-9	5	H	L-M	Y	Dependant on specific initiative	N	M
TL-10	5	H	L-M	Y	Dependant on specific initiative	N	M
TL-11	5	H	L	Y	Y	Y	L
TL-12	3	H	L	Y	N	N	L
TL-13	6	H	L-M	Y	Dependant on specific initiative	N	H
TL-14	5	H	H	Y	Y	N	M
TL-15	5	H	H	Y	Y	N	L-M
TL-16	5	H	H	Y	Y	N	M
TL-17	7	H	M	Y	Y	Y	H
TL-18	7	H	M	Y	Y	Y	H
TL-19	7	H	M	Y	Y	Y	H
TL-20	7	H	M	Y	Y	Y	H
TL-21	14	M	L	Y	N	Y	H
TL-22	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

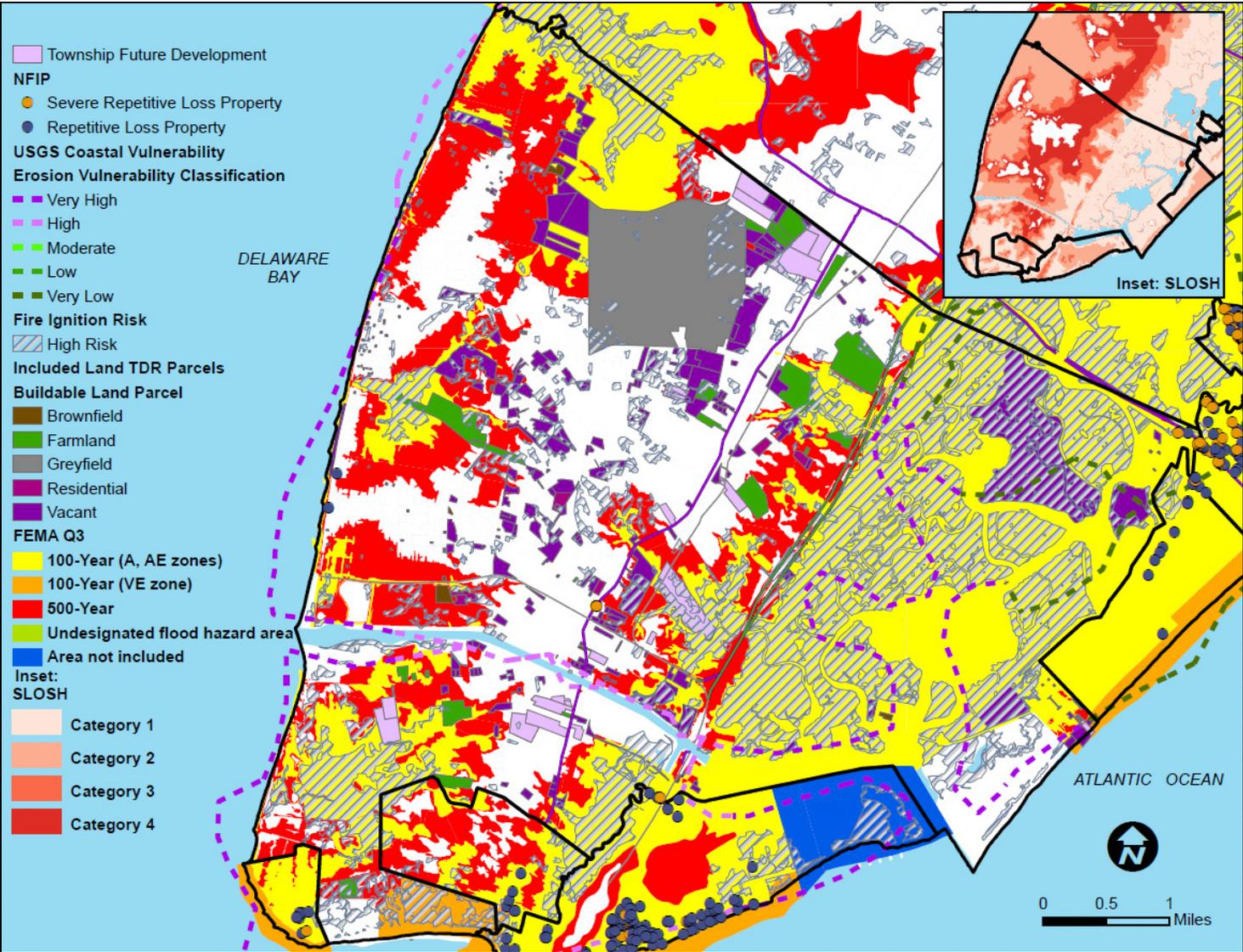
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Township of Lower to illustrate the probable areas impacted within the Township. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Township of Lower has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.



## 9.7 TOWNSHIP OF MIDDLE

This section presents the jurisdictional annex for the Township of Middle.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
Mark Mallett / Business Administrator 33 Mechanic Street, Cape May Courthouse, NJ 08210 609-465-8732 <a href="mailto:mmallett@middletownship.com">mmallett@middletownship.com</a>	Jill Zarharchuck / Deputy Emergency Management Coordinator; Paralegal/Director of Economic Development 33 Mechanic Street, Cape May Court House, NJ 08210 609-465-8731 <a href="mailto:izarharchuck@middletownship.com">izarharchuck@middletownship.com</a>

### B.) TOWNSHIP PROFILE

#### *Population*

16,278 (estimated 2008 Residential Population, Cape May County Planning Dept.)

69,181 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

The Township of Middle is located within the central portion of Cape May County, New Jersey. It is bounded on the north by the Township of Dennis, on the east by the Boroughs of Avalon and Stone Harbor and the Atlantic Ocean, on the south-southeast by the Wildwoods and the Atlantic Ocean, the southwest by the Township of Lower and the west by the Delaware Bay. It is part of the Ocean City Metropolitan Statistical Area. Cape May Court House, Rio Grande and Whitesboro-Burleigh are census-designated places (CDPs) and unincorporated communities located within Middle Township. Green Creek is an unincorporated community that has no corresponding CDP.

According to the U.S. Census Bureau, the township has a total area of 83.1 square miles (215.3 km<sup>2</sup>), with 71.3 square miles (184.6 km<sup>2</sup>) of it land and 11.8 square miles (30.6 km<sup>2</sup>) of it (14.23-percent) water.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been

known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

Middle Township was formed as a precinct on April 2, 1723, and was incorporated as one of New Jersey's initial 104 townships by an Act of the New Jersey Legislature on February 21, 1798. Portions of the township have been taken to form Anglesea Borough (on June 13, 1885; now North Wildwood City), Avalon Borough (April 18, 1892), Wildwood (May 1, 1895), Stone Harbor Borough (April 3, 1914) and West Wildwood (April 21, 1920) (Snyder, 1969).

***Governing Body Format***

Middle Township is governed under the Township form of government with a three-member Township Committee. The Township Committee is elected directly by the voters in partisan elections to serve three-year terms of office on a staggered basis, with one seat coming up for election each year. At an annual reorganization meeting, the Township Committee selects one of its members to serve as Mayor and another as Deputy Mayor (Rutgers University, 2005).

***Growth/Development Trends***

At this time, no new major residential/commercial development and major infrastructure development have been identified for the next five (5) years.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Township of Middle**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Township of Middle	11	70.6	12	156.4	0	0	3	48.9	19	42.2	247	1051.7	292	1369.8

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE TOWNSHIP

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 88  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 23

Source: FEMA Region 2 as of December 2009

## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
3	Coastal Erosion	Not available	Frequent	36	Medium
1	Coastal Storm	Min: \$722,169,474 Max: \$841,758,384	Frequent	54	High
1	Flood	\$375,355,000	Frequent	54	High
2	Severe Storm	\$155,369,384	Frequent	48	High
3	Severe Winter Storm	\$16,434,510	Frequent	36	Medium
4	Tsunami	Not available	Rare	12	Low
3	Wildfire	Not available	Frequent	36	Medium

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

## E.1) Legal and Regulatory Capability

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	Y	Y	Y	Y	112
2) Zoning Ordinance	Y	Y	Y	Y	250
3) Subdivision Ordinance	Y	Y	N	N	250
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	146
5) Growth Management	Y	Y	N	Y	Master Plan
6) Floodplain Management / Basin Plan	N	Y	Y	Y	
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	No ordinance
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Master Plan
9) Capital Improvements Plan	Y	N	N	N	Part of budget
10) Site Plan Review Requirements	Y	N	Y	N	No ordinance
11) Open Space Plan	Y	N	Y	N	No ordinance
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	No ordinance
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	Y	Y	Y	Y	No ordinance
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	N/A	N/A	N/A	N/A	

## E.2) Administrative and Technical Capability

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Township Engineer
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Township Engineer
3) Planners or engineers with an understanding of natural hazards	Y	Township Engineer
4) NFIP Floodplain Administrator	Y	Donald Arndt, Construction Official
5) Surveyor(s)	N	
6) Personnel skilled or trained in "GIS" applications	Y	Assessor's Office
7) Scientist familiar with natural hazards in the Township of Middle.	N	
8) Emergency Manager	Y	Calvin Black
9) Grant Writer(s)	Y	Jill Zarharchuck
10) Staff with expertise or training in benefit/cost analysis	Y	CFO, Business Administrator

## E.3) Fiscal Capability

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Y
2) Capital Improvements Project Funding	Y
3) Authority to Levy Taxes for specific purposes	Y
4) User fees for water, sewer, gas or electric service	Y
5) Impact Fees for homebuyers or developers of new development/homes	Y
6) Incur debt through general obligation bonds	Y
7) Incur debt through special tax bonds	N
8) Incur debt through private activity bonds	N
9) Withhold public expenditures in hazard-prone areas	N
10) Other	

## E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	--	--
Public Protection	--	--
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. -- = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## E.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TM-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
TM-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
TM-2 (CMC-	Consider participation in the incentive-based	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3,	Township	Low - Medium	Local Budget	Short

**SECTION 9.7: TOWNSHIP OF MIDDLE**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
2)	program CRS.				6-2, 6-3				
TM-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Township (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
TM-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
TM-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-10, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
TM-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
TM-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
TM-8	Purchase back-up generator to supply back-up power to the regional shelter located at Elementary #2 School	Existing	All Hazards (except Coastal Erosion)	1, 3, 4	1-1, 3-3, 4-6, 4-7	Middle Township	Low	Existing programs and grant funding where applicable	DOF
TM-9	Widen the lanes of Route 47 to accommodate more	Existing	All Hazards (except Coastal	1, 3, 4, 6	1-1, 1-4, 3-3, 4-2, 4-7, 4-10, 6-	Middle Township;	High	FEMA HMA, other grant	DOF



**SECTION 9.7: TOWNSHIP OF MIDDLE**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	traffic. This heavily trafficked roadway is an essential evacuation route. This project would be a part of a regional project with Dennis Township and Cumberland County.		Erosion)		2	Dennis Township; Cape May County; Cumberland County; State of New Jersey		funding where applicable	
TM-10	Widen the lanes on Courthouse Dennisville Road to accommodate more traffic. This heavily trafficked roadway is an essential evacuation route.	Existing	All Hazards (except Coastal Erosion)	1, 3, 4, 6	1-1, 1-4, 3-3, 4-2, 4-7, 4-10, 6-2	Middle Township; Cape May County	High	FEMA HMA, other grant funding where applicable	DOF
TM-11	Widen the lanes on Indian Trail Road (County Road). This heavily trafficked roadway is an essential evacuation route.	Existing	All Hazards (except Coastal Erosion)	1, 3, 4, 6	1-1, 1-4, 3-3, 4-2, 4-7, 4-10, 6-2	Middle Township; Cape May County	High	FEMA HMA, other grant funding where applicable	DOF
TM-12	Elevate Beach Avenue on Reeds Beach to mitigate flooding.	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	Middle Township	High	FEMA HMA, other grant funding where applicable	DOF
TM-13	Purchase and install hurricane shutters on municipal buildings; with high priority to Town Hall.	Existing	Coastal Storm, Severe Storm	1, 3, 4	1-1, 3-3, 4-6, 4-7	Middle Township	Medium	FEMA HMA, other grant funding where applicable	DOF
TM-14	Bulkheads on Reeds Beach to mitigate flooding in residential area which will mitigate flooding for approximately 30 homes.	Existing	Coastal Storm, Severe Storm, Flood	1, 4	1-1, 1-4, 1-10, 4-2	Middle Township	Medium	FEMA HMA, other grant funding where applicable	DOF
TM-15	Elevate Springer's Mill Road to mitigate flooding	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	Cape May County	High	FEMA HMA, other grant funding where applicable	DOF



**SECTION 9.7: TOWNSHIP OF MIDDLE**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TM-16	Connect Grassy Sound's sewers to public sewer system. The existing sewer system consists of an above-ground tank that is vulnerable to flooding. This would be a multi-jurisdictional effort with North Wildwood.	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 6	1-1, 1-6, 3-4, 6-2	North Wildwood; Middle Township	Medium to High	Middle Township Capital Budget; PDM	DOF
TM-17	Elevate Route 9 by High Tech in Edgewood to mitigate flooding.	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	Middle Township; State of New Jersey	High	FEMA HMA, other grant funding where applicable	DOF
TM-18 (CMC-9)	Elevate Route 47 roadway and ramps, which will require elevating the Garden State Parkway bridge overpass (intersection of State Route 47 and Garden State Parkway)	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	NJ DOT; New Jersey Turnpike Authority	High	State/Federal tolls	Long Term DOF (not currently under active consideration by State)
TM-19 (CMC-12)	Elevate Route 147 roadway and ramps, which will require elevating the Garden State Parkway bridge overpass (intersection of State Route 147 and Garden State Parkway)	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	NJ DOT; New Jersey Turnpike Authority	High	FEMA HMA, other grant funding where applicable	Long Term; DOF
TM-20 (CMC-20)	As an interim project prior to implementation of TM-21 below, elevate the Avalon Boulevard northbound onramp to the GSP (chronic problem area and critical for evacuation)	N/A	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with NJTPA	High (because funding is not identified) but project is relatively low cost – Priority is	TBD	Longterm DOF



**SECTION 9.7: TOWNSHIP OF MIDDLE**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
							HIGH		
TM-21 (CMC-21)	Elevate Avalon Blvd roadway and ramp, which will require elevating the Garden State Parkway bridge overpass (intersection of Avalon Blvd and Garden State Parkway)	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	NJ DOT; New Jersey Turnpike Authority	High	FEMA HMA, other grant funding where applicable	Long Term; DOF
TM-22	Identify and install proper locations for and install water drawn stations (siphons) to increase fire-fighting capabilities.	New & Existing	Wildfire	1, 3, 4	1-1, 3-3, 4-7, 4-8	Township	Medium	FEMA HMA, other grant funding where applicable	
TM-23 (CMC-17 and TL-16)	Elevate CR-603 (Bayshore Road) through Lower and Middle Townships through Fishing Creek Swamp. County to advise as to status of this project	Existing	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	Cape May County	High	FEMA HMA, other grant funding where applicable	Long Term; DOF
TM-24 (CMC-22, Avalon)	Elevate Avalon Boulevard from Parkway into Avalon proper (~2.5 miles).	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	TBD	Longterm DOF
TM-25 (CMC-43)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along the entire length of Shunpike Road (CR620) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TM-26 (CMC-50)	Conduct an engineering study to understand flooding issues and evaluate possible solutions at low areas along Satt Boulevard (CR626) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TM-27	Conduct an engineering	Existing	Severe Storms,	1, 3, 4, 6	1-1, 1-5, 1-6, 3-	County	Medium	County and	Short-term



**SECTION 9.7: TOWNSHIP OF MIDDLE**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
(CMC-51)	study to understand flooding issues and evaluate possible solutions along Railroad Avenue (CR626) in Middle Township		Flooding		4, 4-1, 4-6, 6-2	Engineering with municipal support		Local Funding	
TM-28 (CMC-53)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Dias Creek Road (CR612) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TM-29 (CMC-54)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Indian Trail Road (CR618) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 1-5, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TM-30 (CMC-55)	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Goshen-Swainton Road (CR646) in Middle Township	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
TM-31 (CMC-62)	Install shore/roadway protection along Ocean Drive (CR619) in Middle Township	Existing	Coastal Storms, Severe Storms, Coastal Erosion	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	County Engineering with municipal support	High	HMA Grants, County and Local Funding	Short-term
TM-32 (CMC-63)	Construction of storm drain pipe to minimize flooding on Goshen Road (CR615) from Johnson Lane to Church Street in Middle Township	New & Existing	Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-4, 1-6, 3-4, 4-1, 4-2, 4-6, 4-10, 6-2	County Engineering with municipal support	Low	HMA Grants, County and Local Funding	In Progress, Short-term
TM-33	Construction of storm	New &	Flooding,	1, 3, 4, 6	1-1, 3-4, 4-1, 4-	County	Low	HMA Grants,	In Progress,



**SECTION 9.7: TOWNSHIP OF MIDDLE**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
(CMC-64)	sewer system to alleviate flooding on Court House – South Dennis Road (CR657) from Village Drive to College Drive in Middle Township	Existing	Severe Storms		6, 6-2	Engineering with municipal support		County and Local Funding	Short-term
TM-34 (CMC-69)	Become a National Fire Protection Association (NFPA) “Firewise” community. Participation in the NFPA “Firewise” program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the “Firewise” program, facilitating public outreach and awareness programs, and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs working with County Fire Coordinator	L-M	Existing Budgets	Short-term
TM-35	Through attendance at the regular meetings of the Cape May County Fire Chiefs Association, and in partnership with the New Jersey Division of Fire Safety and the New Jersey State Forest Fire Service, expand and enhance public awareness and education programs that support wildfire mitigation at the	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs	LM	Existing Budgets	Short-term



Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	property owner level; and expand local wildfire preparedness and response capabilities through participation in seminars and training, and the implementation of recommendations and initiatives offered by these agencies, as resources permit.								

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Township has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	TM-3, TM-5, TM-6, TM-7	TM-7, TM-31	TM-3, TM-7	TM-7	TM-5, TM-7	TM-7, TM-31
Coastal Storm	TM-3, TM-5, TM-6, TM-7	TM-1a and 1b, TM-7 to 21, TM-23, TM-31	TM-3, TM-7	TM-7	TM-5, TM-7, TM-8, TM-13	TM-7, TM-14, TM-31
Flood	TM-2, TM-3, TM-5, TM-6, TM-7	TM-1a and 1b, TM-2, TM-4, TM-7 to 21, TM-23, TM-25 to -33	TM-2, TM-3, TM-4, TM-7	TM-2, TM-4, TM-7	TM-5, TM-7, TM-8, TM-13, TM-29	TM-7, TM-14, TM-32, TM-33
Severe Storm	TM-3, TM-5, TM-6, TM-7	TM-1a and 1b, TM-7 to 21, TM-23, TM-25 to -33	TM-3, TM-7	TM-7	TM-5, TM-7, TM-8, TM-13, TM-29	TM-7, TM-14, TM-31 to -33
Severe Winter Storm	TM-3, TM-5, TM-6, TM-7	TM-7 to 11	TM-3, TM-7	TM-7	TM-5, TM-7, TM-8, TM-13	TM-7, TM-14
Tsunami	TM-3, TM-5, TM-6, TM-7	TM-7 to 11	TM-3, TM-7	TM-7	TM-5, TM-7, TM-8, TM-13	TM-7
Wildfire	TM-3, TM-5, TM-6, TM-7, TM-34, TM-35	TM-7 to 11, TM-34, TM-35	TM-3, TM-7, TM-34, TM-35	TM-7, TM-34, TM-35	TM-5, TM-7, TM-8, TM-13, TM-23, TM-35	TM-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
TM-1a	8	H	H	Y	Y	N	M-H*
TM-1a	8	H	H	Y	Y	N	M-H*
TM-2	9	M	L	Y	N	Y	H
TM-3	All	M	M	Y	N (Yes for 5 year update)	N	M
TM-4	14	H	L	Y	N	Y	H
TM-5	13	M	L	Y	N	Y	M
TM-6	13	M	L	Y	N	Y	M
TM-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
TM-8	4	M	L	Y	Y	N (local match only)	M
TM-9	7	H	H	Y	Y	N (local match only)	M
TM-10	7	H	H	Y	Y	N (local match only)	M
TM-11	7	H	H	Y	Y	N (local match only)	M
TM-12	5	H	H	Y	Y	N (local match only)	M
TM-13	4	M	M	Y	Y	N (local match only)	M
TM-14	4	M	M	Y	Y	N (local match only)	M
TM-15	5	H	H	Y	Y	N (local match only)	M
TM-16	4	H	H-M	Y	TBD	N (local match only)	M
TM-17	5	H	H	Y	Y	N (local match only)	M
TM-18	5	H	H	Y	Y	N (local match only)	M
TM-19	5	H	H	Y	Y	N (local match only)	M

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
TM-20	5	H	L-M	Y	Y	N (local match only)	H
TM-21	5	H	H	Y	Y	N (local match only)	M
TM-22	4	H	M	Y	N	N (local match only)	M
TM-23	5	H	H	Y	Y	N (local match only)	M
TM-24	5	H	H	Y	Y	N (local match only)	M
TM-25	7	H	M	Y	Y	Y	H
TM-26	7	H	M	Y	Y	Y	H
TM-27	7	H	M	Y	Y	Y	H
TM-28	7	H	M	Y	Y	Y	H
TM-29	10	H	M	Y	Y	Y	H
TM-30	7	H	M	Y	Y	Y	H
TM-31	5	H	H	Y	Y	N	H
TM-32	9	H	L	Y	Y	Y	H
TM-33	5	H	L	Y	Y	Y	H
TM-34	14	M	L	Y	N	Y	H
TM-35	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a "Medium" priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a "High" priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).

- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

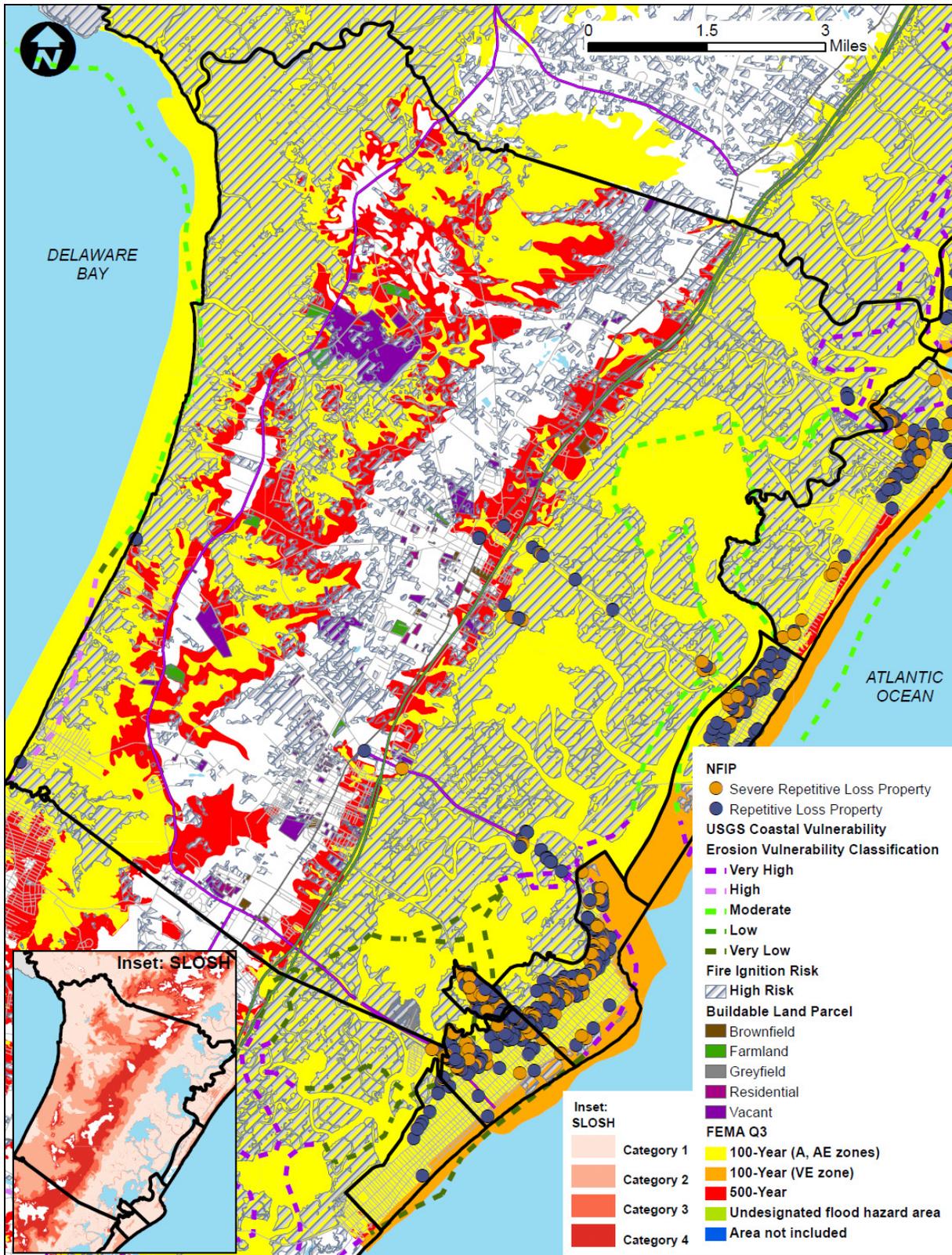
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Township of Middle to illustrate the probable areas impacted within the Township. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Township of Middle has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3; Cape May County Planning Department; Maser 2009

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

**9.8 CITY OF NORTH WILDWOOD**

This section presents the jurisdictional annex for the City of North Wildwood.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Robert Matteucci, Police Chief 901 Atlantic Avenue North Wildwood, NJ 08260 (609) 522-2030 x 1500 <a href="mailto:rmatteucci@nwpd.org">rmatteucci@nwpd.org</a>	Ralph Petrella, City Engineer Van-Note Harvey Associates, P.C. 211 North Main Street, Suite 203 Cape May Court House, NJ 08210 (609) 465-2600 <a href="mailto:rpetrellajr@vannoteharvey.com">rpetrellajr@vannoteharvey.com</a>

**B.) CITY PROFILE**

***Population***

4,800 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
 68,119 (estimated 2008 Summer Population, Cape May County Planning Dept.)

***Location***

The City of North Wildwood is located along the Atlantic Ocean coastline within the southern portion of Cape May County, New Jersey. It is bounded on the north-northeast by the Township of Middle and the Borough of Stone Harbor, on the east by the Atlantic Ocean, on the south-southwest by the City of Wildwood, Borough Wildwood Crest and the Atlantic Ocean, and the west by the Borough of West Wildwood and the Townships of Lower and Middle. It is part of the Ocean City Metropolitan Statistical Area. North Wildwood is home to the Hereford Inlet Lighthouse.

The major thoroughfare through the City is New Jersey State Route 147 which connects to New Jersey Avenue, County Route 621. Route 147 has been completely reconstructed from the Garden State Parkway to New York Avenue. Route 147 is the only direct access to and from the City (City of North Wildwood, 2007).

According to the U.S. Census Bureau, the city has a total area of 2.1 square miles (5.5 km<sup>2</sup>), with 1.8 square miles (4.6 km<sup>2</sup>) of it land and 0.4 square miles (0.9 km<sup>2</sup>) of it (16.98-percent) water.

***Climate***

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

The City of North Wildwood was originally incorporated as the borough of Anglesea on June 13, 1885, from portions of Middle Township, based on the results of a referendum held eleven days earlier. The borough was reincorporated on March 6, 1896, and again on May 4, 1897. On May 16, 1906, the Borough of North Wildwood was incorporated as a "sister community" of The Wildwoods, replacing Anglesea. The Wildwoods was a five mile island, comprised of North Wildwood, West Wildwood, Wildwood City and Wildwood Crest. On April 30, 1917, the area was reincorporated as the City of North Wildwood, in turn replacing North Wildwood borough.(Snyder, 1969; New Jersey Shore, Date Unknown).

In the 1950's, the Wildwoods grew into a major resort town. Wildwood boasts the largest collection of mid-century architecture in the U.S., now labeled "Doo-Wop Architecture". The World-Famous Boardwalk, built at the turn of the century, consists of more than 70,000 planks and stretches for nearly two miles, or 37 city blocks. Wildwood beaches, by far some of the largest on the East Coast, have been on many "best of" lists, including the Travel Channel's "Best Beaches" show and Conde Naste's "Best Sports Beach" list.

***Governing Body Format***

The City of North Wildwood has a Mayor-Council form of government under the Faulkner Act. The Mayor serves a four-year term of office while six council members are elected from wards for three-year terms on a staggered basis and one at large councilmember is elected for a two-year term. Under this form of government, the council functions as a legislative body: it must pass ordinances and approve the appointments of the Mayor. The mayor, as executive, is responsible for administrative functions and appointment of all officials (Rutgers University, 2005; City of North Wildwood, 2009).

***Growth/Development Trends***

From Floodplain Management Plan (File 3307-20): For all practical purposes, the City of North Wildwood is completely developed except for scattered vacant lots. The largest tract of undeveloped property is the City's beach (~200 acres). This land is owned by the City and is dedicated as a public park and zoned Conservation. No building can occur on this site.

The following has been identified as the major residential/commercial development and major infrastructure development for the next five (5) years: Indoor waterpark; 400-unit hotel.

Indicators of potential development in Cape May County include Vacant Developable, Residential Sub-dividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the City of North Wildwood**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
City of North Wildwood	0	0	0	0	0	0	0	0	5	0.9	28	7.7	33	8.6

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE CITY

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Flood	Not applicable	August, 1997	\$485,000 (Dennis Township)
Coastal Flood	Not applicable	January, 1998	\$4,000,000 (North Wildwood, Wildwood, Wildwood Crest, West Wildwood) \$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 339  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 116

Source: FEMA Region 2 as of December 2009

**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$894,824,000 Max: \$1,004,395,804	Frequent	54	High
1	Flood	\$669,142,000	Frequent	54	High
2	Severe Storm	\$109,571,804	Frequent	36	Medium
3	Severe Winter Storm	\$10,659,180	Frequent	27	Medium
4	Tsunami	Not available	Rare	18	Low
5	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	Y	Y	Y	Y	Municipal Code Chapter 228
2) Zoning Ordinance	Y	Y	Y	Y	Municipal Code Chapter 276
3) Subdivision Ordinance	Y	Y	N	N	Municipal Code Chapter 276
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Municipal Code Chapter 196
5) Growth Management	N	Y	N	Y	
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Adopted 04/08
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Municipal Code Chapter 379
8) Comprehensive Plan / Master Plan/ General Plan	N	N	N	Y	
9) Capital Improvements Plan	N	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	Municipal Code Chapter 276
11) Open Space Plan	N	N	Y	N	
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	Municipal Code Chapter 220
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	N/A	N/A	N/A	N/A	

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Remington Vernick Engineers Stewart Wiser, City Planner (Contract)
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Van Note Harvey Engineers Ralph Petrella, City Engineer
3) Planners or engineers with an understanding of natural hazards	Y	Van Note Harvey Engineers Ralph Petrella, City Engineer
4) NFIP Floodplain Administrator	Y	Ralph Petrella, City Engineer
5) Surveyor(s)	Y	Van Note Harvey Engineers Ralph Petrella, City Engineer
6) Personnel skilled or trained in "GIS" applications	N	
7) Scientist familiar with natural hazards in the City of North Wildwood.	Y	
8) Emergency Manager	Y	Municipal OEM Coordinator Robert Matteucci, Police Chief
9) Grant Writer(s)	Y	TRIAD Associates City Grant Coordinators (Contract)
10) Staff with expertise or training in benefit/cost analysis	TBD	

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Yes, Small Cities Grant Program
2) Capital Improvements Project Funding	Yes, Capital Improvement Fund
3) Authority to Levy Taxes for specific purposes	No
4) User fees for water, sewer, gas or electric service	Yes, Sewer
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes, General Obligation Bonds
7) Incur debt through special tax bonds	Yes, Special Tax Bonds
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	

E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	7 (current)	10/1/2000*
Building Code Effectiveness Grading Schedule (BCEGS)	TBD	--
Public Protection	TBD	--
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* = Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Below is a table indicating the City’s participation and points earned in the CRS program to date.

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the City of North Wildwood
300	310	Elevation Certificates	162	50
300	320	Map Information	140	140
300	330	Outreach Projects	380	126
300	340	Hazard Disclosure	81	0
300	350	Flood Protection Information	102	15
300	360	Flood Protection Assistance	71	10
400	410	Additional Flood Data	1,346	0
400	420	Open Space Preservation	900	274

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Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the City of North Wildwood
400	430	Higher Regulatory Standards	2,740	237
400	440	Flood Data Maintenance	239	170
400	450	Stormwater Management	670	145
500	510	Floodplain Management Planning	359	0
500	520	Acquisition and Relocation	3,200	0
500	530	Flood Protection	2,800	0
500	540	Drainage System Maintenance	330	280
600	610	Flood Warning Program	255	110
600	620	Levee Safety	900	0
600	630	Dam Safety	175	67
		<b>Total Points to Date</b>		<b>1,624</b>

F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
NW-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	City (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
NW-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	City	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
NW-2	Continue active participation in incentive-	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3,	City	Low - Medium	Local Budget	Short



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Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	based program CRS.				6-2, 6-3				
NW-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	City (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
NW-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
NW-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJ OEM	Low - Medium	Local Budget	Ongoing
NW-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	City	Low - Medium	Local Budget	Ongoing
NW-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
NW-8	Replace/repair/upgrade bay front storm sewer outfall lines (20 linear feet of pile, manhole, Tideflex valve, bulkhead repair and/or collar, restoration of disturbed areas). 26 locations identified by Van	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 3	1-1, 3-3, 3-4	Engineering	High (~800K)	Local Budget with HMA grant programs as applicable	Longterm DOF



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Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Note Harvey Associates per September 21, 2009 estimate provided to City								
NW-9	Elevate tie-in section of State Route 147 into North Wildwood. City has a letter into State DOT to elevate Spruce Avenue (SR-147) from Delaware (300 – 600 blocks)	N/A	Coastal Storms, Flooding	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-11	State DOT with municipality	High	State	Longterm DOF
NW-10	Elevate engine room floors of fire stations at 2 <sup>nd</sup> and New Jersey, and 15 <sup>th</sup> and Central Avenue	Existing	Coastal Storms, Flooding	1, 3, 4	1-1, 1-9, 3-3, 3-4, 4-6, 4-7	Municipality (engineering with fire department)	High	HMA grant programs with local budget match	Longterm DOF
NW-11	Retrofit both fire houses and police dispatch (wind resistance and continuity of operations)	Existing	Coastal Storms, Severe Storms, Severe Winter Storms, Flooding, Tsunami	1, 3, 4	1-1, 1-9, 3-3, 3-4, 4-6, 4-7	Municipality (engineering and emergency management)	High	HMA grant programs with local budget match	Longterm DOF
NW-12	Complete development and implementation of a COOP/COG plan for all government operations (an annex to the City's EOP). This plan shall be coordinated with the County and Lower Township, and shall include agreements with both.	N/A	All Hazards	1, 3, 4, 6	1-3, 1-7, 1-8, 3-1, 3-3, 4-4, 4-5, 4-7, 4-8, 6-2	Emergency Management with County OEM and Lower Township	Medium	Local Budget	Short-term
NW-13	Upgrade pipe (increase size) from Central Avenue from Chestnut to New York Avenue. This will get rid of two outfalls on the inlet beach. This project is related to the following project.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 3-4, 4-2, 4-7	Construction Office, Engineering and DPW	Currently funded locally	Local Budget	Short-term (est. completion 2010?)



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Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
NW-14	Upgrade and tie-in stormwater pump station at Pine and New York Avenue. This will control flooding on the secondary way out of town after Spruce Avenue (SR-147).	N/A	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 3-4, 4-2, 4-7	Construction Office, Engineering and DPW	High (~\$1M)	HMA grant programs with local budget match	Short-term DOF
NW-15	Continue providing educational materials, and advising and assisting property owners on retrofitting existing buildings through the City Construction Office.	N/A	All Hazards	1, 2, 4	1-1, 2-2, 4-4, 2-5, 4-1	Construction Office, Emergency Management	Low	Local Budget	Ongoing
NW-16	Continue to enforce the City's Flood Plain Ordinance requiring all buildings substantially damaged be elevated to 1-foot above the BFE.	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 4	1-1, 1-7, 1-9, 2-4, 2-5, 4-1	Construction Office, Emergency Management	Low	Local Budget	Ongoing
NW-17	Continue to enforce the City's Flood Plain Ordinance that improvements to a building area on cumulative basis. Once the value of all improvements over time reaches 50% of the original building value, the entire building must be raised to the current BFE.	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 4	1-1, 1-7, 1-9, 2-4, 2-5, 4-1	Construction Office, Emergency Management	Low	Local Budget	Ongoing
NW-18	Implement / continue the City's public outreach efforts to inform residents and visitors about flood damage and protection, and hazard awareness.	N/A	Coastal Storms, Severe Storms, Flooding	2, 4, 6	2-1, 2-2, 2-3, 2-4, 2-5, 4-1, 6-3	Construction Office, Emergency Management	Low	Local Budget	Ongoing
NW-19	Continue to support the	N/A	Coastal Storms,	1, 5	1-7, 5-1, 5-2, 5-	Construction	Low	Local	Ongoing



**SECTION 9.8: CITY OF NORTH WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	prohibition of development within the beach/dune and coastal wetland open space preservation areas.		Coastal Erosion, Flooding, Severe Storm, Tsunami		3, 5-4	Office, Emergency Management		Budget	
NW-20	Encourage the development of dunes along the City's beachfront to protect against erosion and storm surge inundation	N/A	Coastal Storms, Coastal Erosion, Flooding, Tsunami	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	Planning, Construction Office, Emergency Management	Low	Local Budget	Ongoing
NW-21	Maintain existing zoning regulations to prevent an increase in development densities.	N/A	Coastal Storms, Severe Storms, Severe Winter Storms, Flooding, Tsunami	1, 5	1-7, 1-8, 1-9, 5-3	Planning Board	Low	Local Budget	Ongoing
NW-22	The Building Inspector will continue to maintain FEMA elevation certificates for all permits for new buildings or improvements to buildings.	Both	Coastal Storms, Severe Storms, Flooding	1	1-7, 1-9	City Building Inspector	Low	Local Budget	Ongoing
NW-23	Continue to inform the public about financial assistance available for property elevation, acquisitions and retrofitting	Existing	All Hazards	2, 4	2-1, 2-2, 2-4, 2-5, 4-1	Emergency Management, Engineering	Low	Local Budget	Ongoing
NW-24	Support the completion of the North Wildwood Beach Nourishment Project, being completed by the NJDEP. The project covers the entire front beach of North Wildwood (2nd to 26th) providing a dune, built to a height of 14.75 NAVD and approx. 300' of berm in front of the dune. This project also extends into the inlet section of N. Wildwood for approximately one block	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe Storm, Tsunami	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	NJDEP with City support	\$10.6 M	NJDEP – 75% City – 25%	Ongoing



**SECTION 9.8: CITY OF NORTH WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	and into the City of Wildwood for approx. the same distance. Included in this project are three outfall pipe replacements, 15 pedestrian crossovers, 4 handicap crossovers and 3 vehicle crossovers. When completed, the dune will be planted with dune grasses and fenced at the toe on both the seaward and leeward sides.								
NW-25	Work with property owners along bayside to install and/or upgrade bulkheads to 7.5'	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 2, 4	1-1, 2-2, 2-4, 2-5, 4-1	Municipality (engineering and DPW)	High	HMA grant programs with local budget match	Long-term DOF
NW-26	Work with USACE to raise the seawall along Hereford Inlet.	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 1-5, 1-6, 3-3, 4-2, 4-6	USACE, Municipality (engineering and DPW)	High	TBD	Long-term DOF
NW-27	Work with County to upgrade stormwater drainage along CR-621 and arterials	Existing	Coastal Storms, Severe Storms, Flooding	1, 3	1-1, 1-4, 3-3, 3-4, 4-2	County Engineering and municipality (engineering and DPW)	High	County budget with HMA grant programs as applicable	Longterm DOF
NW-28	Upgrade DPW buildings which are currently located in Butler buildings that are extremely vulnerable to most any storm events	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 3-3, 4-6, 4-7	Municipality (engineering)	High	HMA grant programs with local budget match	Longterm DOF
NW-29	Retrofit school for coastal storms and other severe storms (e.g. wind resistant glazing or storm shutters, redundant utilities)	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3, 4	1-1, 3-3, 4-6, 4-7	Municipality (engineering)	High	HMA grant programs with local budget match	Longterm DOF
NW-30	Replace/upgrade manhole	Existing	Coastal Storms,	1, 3	1-1, 3-3, 3-4	Municipality	High (>\$)	HMA grant	Longterm



**SECTION 9.8: CITY OF NORTH WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	covers for sanitary system to reduce stormwater inflow that overtaxes sanitary system		Severe Storms, Flooding			(engineering)	200K	programs with local budget match	DOF
NW-31	Continue to monitor and survey the beaches. This provides critical information providing the basis for decisions regarding beach re-nourishment and long-term analysis of littoral processes.	N/A	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	City and Stockton College Coastal Research Center	Medium - High	Local Budget	Ongoing
NW-32	Determine design strength of light poles at Allen Park, and address deficiencies as necessary.	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3	1-1, 3-4	Municipality (engineering)	Medium - High	Engineering study to be locally funded; retrofit if needed from HMA grant programs with local budget match	Study – Short-term; Retrofit if needed - Longterm DOF
NW-33	Elevate Beach Patrol Building	Existing	Coastal Storms, Severe Storms, Flooding	1, 3	1-1, 1-9, 3-4	Municipality (engineering)	High	HMA grant programs with local budget match	Longterm DOF
NW-34	Install backup power at traffic lights on critical roadways (e.g. evacuation routes)	Existing	Coastal Storms, Severe Storms, Severe Winter Storms, Flooding	1, 3, 4	1-1, 1-4, 3-3, 3-4, 4-2, 4-11	Municipality (engineering)	High	DHS grant programs with local budget match	Longterm DOF
NW-35	Install bulkhead along oceanfront beach to protect dune	N/A	Coastal Storms, Coastal Erosion Severe Storms, Flooding	1, 5	1-1, 1-10, 5-2	Municipality (engineering)	High	HMA grant programs with local budget match	Longterm DOF
NW-36	Dredge back bay outfalls	Existing	Coastal Storms,	1, 3, 4	1-1, 3-3, 3-4, 4-	Municipality	High	HMA grant	Longterm



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Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	that are currently silted-in and do not drain as designed to mitigate flooding.		Severe Storms, Flooding		1	(engineering)		programs with local budget match	DOF
NW-37	Determine a solution to backflow flooding problem at Pine and Angelsea Drive (joint project with State)	Existing	Coastal Storms, Severe Storms, Flooding	1, 6	1-1, 1-6, 6-2	Municipality (engineering) with State DOT	High	State DOT; HMA grant programs with local and State budget match	Longterm DOF
NW-38	Purchase high volume portable pumps to help dewater critical areas in an emergency	New & Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 3-3, 3-4, 4-2, 4-7, 4-8	Municipality (emergency management and engineering)	High	DHS grant programs with local budget match	Longterm DOF
NW-39	Install lightning protection to critical facilities that are currently unprotected, including the OEM building and the NOAA GOES-6 weather station at 5 <sup>th</sup> and the bay (both of which have been damaged previously), and other communications facilities	Existing	Severe Storms (lightning)	1, 3, 4	1-1, 3-3, 4-3, 4-6, 4-7	Municipality (engineering) with emergency management and NOAA	Medium - High	HMA grant programs with local budget match or NOAA	Longterm DOF

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant’s mitigation actions by hazard of concern and the six mitigation types to illustrate that the City has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	NW-3, NW-5, NW-6, NW-7, NW-12, NW-19	NW-7, NW-8, NW-25, NW-26	NW-3, NW-7, NW-15, NW-23	NW-7, NW-20, NW-31	NW-5, NW-7	NW-7, NW-26, NW-35
Coastal Storm	NW-3, NW-5, NW-6, NW-7, NW-12, NW-16, NW-17, NW-19, NW-21, NW-22, NW-24, NW-32, NW-36, NW-37	NW-1, NW-7, NW-8 to 11, NW-13, NW-14, NW-25 to 30, NW-32 to 34	NW-3, NW-7, NW-15, NW-18, NW-23	NW-7, NW-20, NW-31	NW-5, NW-7, NW-38	NW-7, NW-26, NW-35
Flood	NW-2, NW-3, NW-5, NW-6, NW-7, NW-12, NW-16, NW-17, NW-19, NW-21, NW-22, NW-24, NW-36, NW-37	NW-1, NW-2, NW-4, NW-7, NW-8 to 11, NW-13, NW-14, NW-25 to 30, NW-32 to 34	NW-2, NW-3, NW-4, NW-7, NW-15, NW-18, NW-23	NW-2, NW-4, NW-7, NW-20, NW-31	NW-5, NW-7, NW-38	NW-7, NW-26, NW-35
Severe Storm	NW-3, NW-5, NW-6, NW-7, NW-12, NW-16, NW-17, NW-19, NW-21, NW-22, NW-24, NW-32, NW-36, NW-37	NW-1, NW-7, NW-8 to 11, NW-13, NW-14, NW-25 to 30, NW-32 to 34, NW-39	NW-3, NW-7, NW-15, NW-18, NW-23	NW-7, NW-31	NW-5, NW-7, NW-38, NW-39	NW-7, NW-26, NW-35
Severe Winter Storm	NW-3, NW-5, NW-6, NW-7, NW-12, NW-21, NW-32	NW-7, NW-11, NW-29, NW-32, NW-34	NW-3, NW-7, NW-15, NW-23	NW-7	NW-5, NW-7	NW-7
Tsunami	NW-3, NW-5, NW-6, NW-7, NW-12, NW-19, NW-21, NW-24	NW-7, NW-11	NW-3, NW-7, NW-15, NW-23	NW-7, NW-20	NW-5, NW-7	NW-7
Wildfire	NW-3, NW-5, NW-6, NW-7, NW-12	NW-7	NW-3, NW-7, NW-15, NW-23	NW-7	NW-5, NW-7	NW-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

5. **Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
NW-1a	8	H	H	Y	Y	N	M-H*
NW-1b	8	H	H	Y	Y	N	M-H*
NW-2	9	M	L	Y	N	Y	H
NW-3	All	M	M	Y	N (Yes for 5 year update)	N	M
NW-4	14	H	L	Y	N	Y	H
NW-5	13	M	L	Y	N	Y	M
NW-6	13	M	L	Y	N	Y	M
NW-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
NW-8	3	H	H	Y	Y	Y	M
NW-9	5	H	H	Y	Y	N (local match only)	M
NW-10	6	H	H	Y	Y	N (local match only)	M
NW-11	6	H	H	Y	Y	N (local match only)	M
NW-12	10	M	M	Y	Y	Y	H
NW-13	5	H	M	Y	Y	Y	H
NW-14	5	H	H	Y	Y	N (local match only)	H
NW-15	5	L	L	Y	Y	Y	H
NW-16	6	M	L	Y	N	Y	H
NW-17	6	M	L	Y	N	Y	H
NW-18	7	L	L	Y	Y	Y	H
NW-19	5	M	L	Y	N	Y	H
NW-20	6	M	L	Y	Y	Y	H
NW-21	4	L	L	Y	N	Y	H
NW-22	2	L	L	Y	N	Y	H
NW-23	5	L	L	Y	Y	Y	H
NW-24	6	H	H	Y	Y	N (local match only)	H
NW-25	5	H	H	Y	Y	N (local match only)	H
NW-26	7	H	H	Y	TBD	N (local match only)	M

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
NW-27	5	H	H	Y	Y	N (local match only)	M
NW-28	4	H	H	Y	Y	N (local match only)	M
NW-29	4	H	H	Y	Y	N (local match only)	M
NW-30	3	H	H	Y	Y (not HMA)	N (local match only)	M
NW-31	6	H	H-M	Y	Y (not HMA)	N (local match only)	H
NW-32	2	H	H-M	Y	?	N (local match only)	M
NW-33	3	H	H	Y	Y	N (local match only)	M
NW-34	6	H	H	Y	Y	N (local match only)	M
NW-35	3	H	H	Y	Y	N (local match only)	M
NW-36	4	H	H	Y	Y	N (local match only)	M
NW-37	3	H	H	Y	Y	N (local match only)	M
NW-38	6	H	H	Y	Y	N (local match only)	M
NW-39	5	H	H-M	Y	Y	N (local match only)	M

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes



Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

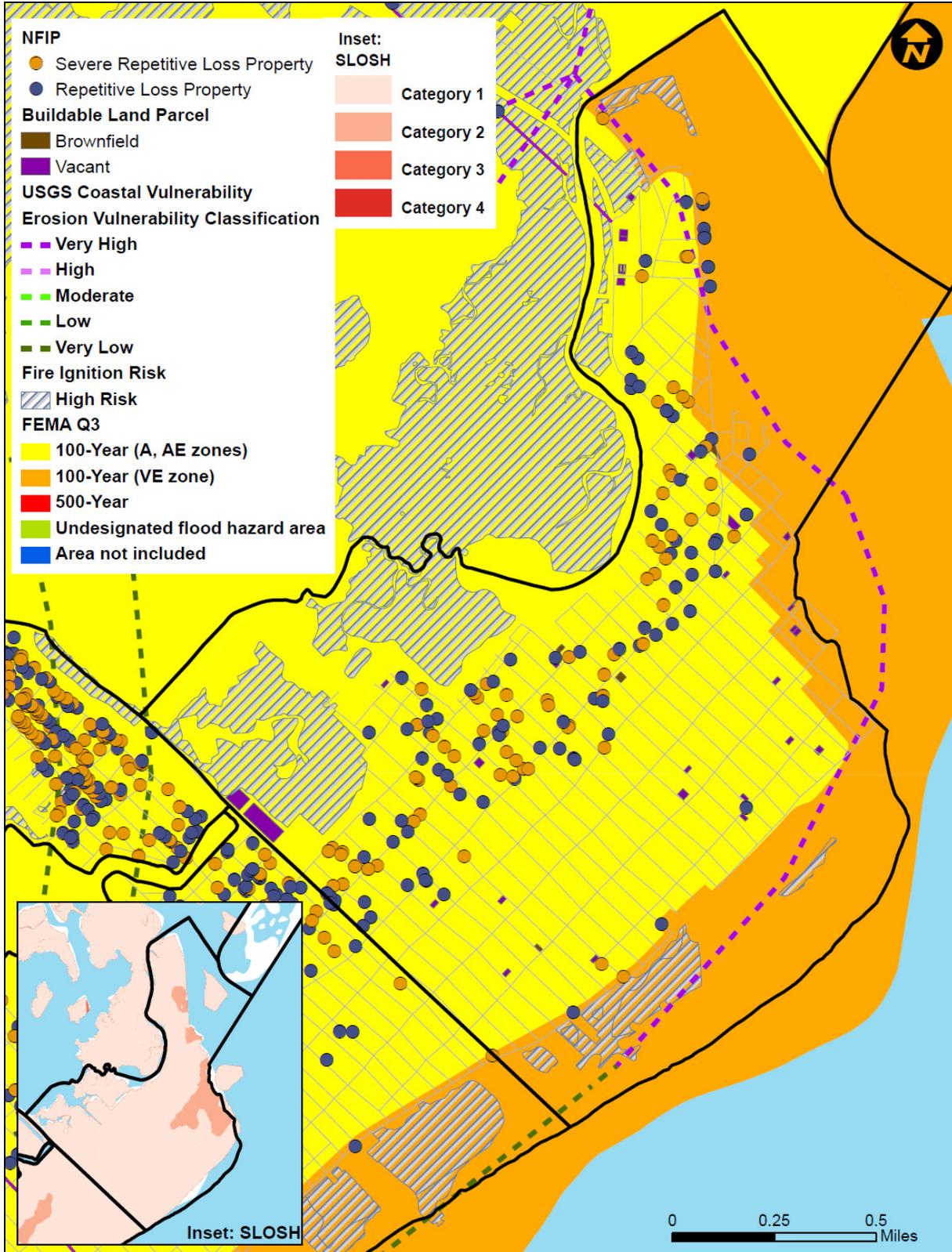
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the City of North Wildwood to illustrate the probable areas impacted within the City. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of North Wildwood has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

None at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

**9.9 CITY OF OCEAN CITY**

This section presents the jurisdictional annex for the City of Ocean City.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Frank Donato III Director of Financial Management, CFO; Emergency Management Coordinator 861 Asbury Avenue, Ocean City, NJ 08226 (609) 525-9343 <a href="mailto:fdonato@ocnj.us">fdonato@ocnj.us</a>	Elizabeth A. Terenik, PP, AICP Acting Director of Planning and Engineering City of Ocean City, 115 East 12th Street Ocean City, New Jersey 08226 (609) 399-6111 x 9721 <a href="mailto:eterenik@ocnj.us">eterenik@ocnj.us</a>

**B.) CITY PROFILE**

***Population***

14,756 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
 140,770 (estimated 2008 Summer Population, Cape May County Planning Dept.)

***Location***

The City of Ocean City is located along the Atlantic Ocean coastline within the northeastern portion of Cape May County, New Jersey. It is bounded on the north by Atlantic County, New Jersey and the Great Egg Harbor Bay, on the east by the Atlantic Ocean, on the south-southwest by the Township of Upper and the City of Sea Isle City and the west by the Township of Upper. It is the principal city of the Ocean City Metropolitan Statistical Area which encompasses all of Cape May County.

The City of Ocean City is a barrier island with bridge connections to Marmora (Township of Upper) via the 34<sup>th</sup> Street (Roosevelt Boulevard) Bridge, Egg Harbor Township via the Ocean City-Longport Bridge, Somers Point via the 9<sup>th</sup> Street Bridge (NJ 52), and Strathmere (Township of Upper) via the Corson's Inlet Bridge. The Eastern side of Ocean City borders the Atlantic Ocean, while the Western side faces the Great Egg Harbor Bay, Beach Thoroughfare, Pecks Bay and Crook Horn Creek.

According to the U.S. Census Bureau, the city has a total area of 11.1 square miles (28.7 km<sup>2</sup>), with 6.9 square miles (17.9 km<sup>2</sup>) of it land and 4.2 square miles (10.8 km<sup>2</sup>) of it (37.58-percent) water.

***Climate***

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

### ***Brief History***

Ocean City was originally formed as a borough by an Act of the New Jersey Legislature on May 3, 1884, from portions of Upper Township, based on the results of a referendum held on April 30, 1884, and was reincorporated as a borough on March 31, 1890. Ocean City was incorporated as a city, its current type of government, on March 25, 1897 (Snyder, 1969).

Known first as Peck's Beach, a seven-mile stretch of sand dunes, meadows and cedar swamps was probably named for John Peck, a whaler who used the island as a staging spot for his whaling operation. The island had served as a summer fishing camp for local Native Americans, a grazing land for cattle driven out from the mainland and an occasional hunting or picnic spot for mainland residents who would come out by boat. Original ownership of the land was by the Somers family.

Several individuals had made their home on the island, most notable of which was Parker Miller who had served as an agent for marine insurance companies. He and his family lived in a home at about what is now the southwest corner of Seventh Street and Asbury Avenue.

September 10, 1879, four Methodist ministers, Ezra B. Lake, James Lake, S. Wesley Lake and William Burrell chose the island as a suitable spot to establish a Christian retreat and camp meeting on the order of Ocean Grove. They met under a tall cedar tree, which stands today in the Lobby of the Ocean City Tabernacle. Having chosen the name "Ocean City", the founders incorporated the "Ocean City Association", laid out street and lots for cottages, hotel and businesses. The Ocean City Tabernacle was built between Wesley and Asbury Avenues and between 5<sup>th</sup> and 6<sup>th</sup> Streets (Ocean City Tabernacle Association, 2009).

From these beginnings Ocean City has grown into the town as it exists today. The first bridge was built to the island in 1883, while the first railroad soon followed. The first school began in 1881. The boardwalk grew and was relocated several times. The ship *Sindia* joined other shipwrecks on the beach on December 15, 1901, on its way to New York City from Kobe, Japan, but has since sunk below the sand. A large fire in October 1927 changed the town significantly. It destroyed almost the entire boardwalk from 10<sup>th</sup> Street to Moorlyn Terrace, and took with it a number of boardwalk businesses (Ocean City Online, 2001).

By 1960 Ocean City had grown into the largest municipality in Cape May County. Since the late 1800's, the population of Ocean City has grown rapidly. It remains a premier summer destination, boasting eight miles of beaches and two and a half miles of Boardwalk (Visit New Jersey Shore, 2009).

### ***Governing Body Format***

The City of Ocean City was incorporated on March 25, 1897. Since July 1, 1978, the City has operated under the Faulkner Act (Mayor-Council) system of municipal government. The Mayor is the chief executive of the community who is chosen for a four-year term at the Municipal Election in May and serves part-time for a yearly salary. The Mayor does not preside over, nor have a vote on the Council. The Mayor has a veto power over ordinances, but vetoes can be overridden by a vote of two-thirds of the Council. City Council is the legislative body. There are seven elected members. Four members represent

individual wards and three are elected at large. Each of the Councilpersons serves a staggered four-year term (Rutgers University, 2005).

***Growth/Development Trends***

Over 40% of Ocean City’s land area consists of wetlands, bays, inlets and beach. The remaining part of the City is entirely developed. The majority of the City is residential development, particularly two-family housing, but also including distinct single family neighborhoods. Commercial uses are clustered in various locations, with the primary commercial activity along Asbury Avenue (Central Business District) and the Boardwalk, 9<sup>th</sup> Street, 34<sup>th</sup> Street, 55<sup>th</sup> Street and West Avenue.

New construction consists primarily of redevelopment of residential properties, which occurs at a rate of approximately 100 properties per year. Significant development in the City is identified in the table below. There continues to be significant investment in public facilities and infrastructure.

Property Name	Type Residential or Commercial	Number of Structures	Address	Block and Lot	Vulnerability
West 46 <sup>th</sup> Street (still in planning stage)	Residential	TBD	West 46 <sup>th</sup> Street		Coastal Storm, Flood, Severe Storm, Severe Winter Storm
9 <sup>th</sup> and Wesley (approved by Planning)	Residential	6 multi-family units in two structures	9 <sup>th</sup> and Wesley	Block 805; Lots 17.01 & 17.06	Coastal Storm, Flood, Severe Storm, Severe Winter Storm
Soleil Hotel & Spa (approved by Planning)	Residential / Commercial	5-story, 103 suite hotel (condo ownership)	Ocean Avenue and 11 <sup>th</sup> Street	Block 1101; Lots 1, 2, 3, 4	Coastal Storm, Flood, Severe Storm, Severe Winter Storm, possibly Tsunami

Source: Ocean City Planning Committee Members

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in Ocean City**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
City of Ocean City	0	0	0	0	0	0	0	0	22	10.4	250	59.2	272	69.6

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009

***Past, Ongoing and Potential Mitigation Activities:***

The following identifies both ongoing and completed mitigation activities/projects in the City of Ocean City, including those excerpted from the City's 2008 FMP Action Plan:

- Ocean City participates in the NFIP Community Rating System (CRS) and continues to work to improve their CRS rating through various CRS activities.
- The city maintains their stormwater systems regularly according to their established Storm Water Management Plan (SWMP, SPPP). The city recently purchased a Jet-Vac truck to enhance their stormwater maintenance program.
- The city has a special needs link on their website that connects to the State website, allowing residents to identify those with special needs.
- Ocean City extensively documents damages after all major storm events.
- Ocean City has installed Tideflex valves on some of their outfalls to mitigate flooding (e.g. 24<sup>th</sup>/23<sup>rd</sup> Street is working well).
- Ocean City has an ordinance requiring new bulkheads to be placed at 9.45'. They have an ongoing program in their CIP to upgrade substandard bulkheads throughout town and have done about one per year.
- Ocean City has allowed location of a Weather Flow station at south end of City. This station is part of the NOAA hurricane forecasting network.
- Ocean City has installed GeoTubes along sections of their beach (e.g. Waverly Beach), and maintains, repairs and/or replaces these as needed.

## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE CITY

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Tornado (F0)	Not applicable	September, 1985	\$300,000 (City of Ocean City)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Lightning	Not applicable	June, 2002	\$50,000 (City of Ocean City)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Thunderstorm, Funnel Cloud	Not applicable	May, 2008	\$1,000 (City of Ocean City)
Coastal Storm and Flooding (Nor'Easter - 5" in 12 hours)	Not applicable	Sept. 11, 2009	Significant street flooding, a number of cars were damaged. GeoTube at Waverly Beach damaged/destroyed and beach erosion was severe.
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 470

**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 80

Source: FEMA Region 2 as of December 2009



## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$2,569,510,000 Max: \$2,909,229,694	Frequent	54	High
1	Flood	\$1,821,173,000	Frequent	54	High
2	Severe Storm	\$339,719,694	Frequent	36	Medium
3	Severe Winter Storm	\$31,865,970	Frequent	27	Medium
4	Tsunami	Not available	Rare	18	Low
5	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

## E.1) Legal and Regulatory Capability

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	Y	Y	Y	Y	Uniform Construction Code
2) Zoning Ordinance	Y	Y	Y	Y	MLUL/Chapter 25 of OC Code
3) Subdivision Ordinance	Y	Y	N	N	OC Code 25-700.6 authorized by N.J.S.A. 40:55D-51.
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	OC Code Chapter 21
5) Growth Management	Y	Y	N	Y	Pursuing Regional Centers Designation by NJ Office of Smart Growth
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	OC Code Chapters 18-22
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	OC Code Chapter 25-1700.32
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	MLUL/Re-exam Report 2006
9) Capital Improvements Plan	Y	N	N	N	2010 under development / 3 year plan
10) Site Plan Review Requirements	Y	N	Y	N	OC Code Chapter 23 authorized by N.J.S.A. 40:55D-51.
11) Open Space Plan	Y	N	Y	N	Recreation and Open Space Inventory, July 2008
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	OC EOP – recently certified
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	Y	Y	Y	Y	Real estate agents are required to disclose if a property is in a flood zone (most all of OC is), however they do not disclose degree and frequency of particular areas
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	Conservation and Beach and Dune District Regulations (OC Code 25- 206, adopted 2009)  Cumulative Improvements

**SECTION 9.9: CITY OF OCEAN CITY**

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
					<p>Requirement (ordinance) – requirement to bring properties up to FEMA and local requirements once &gt;50% cumulative improvements</p> <p>Working on an ordinance to require bringing property grades (including driveways and garages) above the BFE for new construction ...(see Mitigation Initiative OC-8)</p>



**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Department of Planning and Engineering Director is PP/AICP and Engineer is PE and PP
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Department of Planning and Engineering Construction Official (all engineering and construction staff)
3) Planners or engineers with an understanding of natural hazards	Y	Department of Planning and Engineering Engineer
4) NFIP Floodplain Administrator	Y	Department of Planning and Engineering, Construction Official – Patrick Newton
5) Surveyor(s)	Y	Contracted, none currently on staff
6) Personnel skilled or trained in “GIS” applications	Y	Department of Planning and Engineering Planning Staff
7) Scientist familiar with natural hazards in the City of Ocean City.	Y	Staff in various departments
8) Emergency Manager	Y	Frank Donato, Emergency Management Coordinator
9) Grant Writer(s)	Y	Department of Administration (Georgia Arnold)
10) Staff with expertise or training in benefit/cost analysis	Y	Department of Administration (Georgia Arnold)

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes (\$5M per year total, 1.5M for roads and drainage)
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes (to utility companies)
5) Impact Fees for homebuyers or developers of new development/homes	Yes
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	Yes (but don't)
8) Incur debt through private activity bonds	Yes (but don't)
9) Withhold public expenditures in hazard-prone areas	Yes (roadway repaving prioritization based on homes being elevated; don't build public facilities on beach)
10) State mitigation grant programs (e.g. NYSDEC, NYCDEP)	Yes
11) Other	

## E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	7 (current)	10/1/1992*
Building Code Effectiveness Grading Schedule (BCEGS)	4	2/1977
Public Protection	N/A	---
Storm Ready	Y	9/2008
Firewise	N/A	---

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* = Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Below is a table indicating the City's participation and points earned in the CRS program to date.

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the City of Ocean City
300	310	Elevation Certificates	162	56
300	320	Map Information	140	140
300	330	Outreach Projects	380	180
300	340	Hazard Disclosure	81	0
300	350	Flood Protection Information	102	30
300	360	Flood Protection Assistance	71	0
400	410	Additional Flood Data	1,346	0
400	420	Open Space Preservation	900	354

## SECTION 9.9: CITY OF OCEAN CITY

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the City of Ocean City
400	430	Higher Regulatory Standards	2,740	123
400	440	Flood Data Maintenance	239	96
400	450	Stormwater Management	670	37
500	510	Floodplain Management Planning	359	196
500	520	Acquisition and Relocation	3,200	0
500	530	Flood Protection	2,800	0
500	540	Drainage System Maintenance	330	280
600	610	Flood Warning Program	255	170
600	620	Levee Safety	900	0
600	630	Dam Safety	175	67
		<b>Total Points to Date</b>		<b>1,729</b>

F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
OC-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	City (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
OC-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	City	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF

**SECTION 9.9: CITY OF OCEAN CITY**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
OC-2 (CMC-2)	Continue active participation in the incentive-based program CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	City	Low - Medium	Local Budget	Short
OC-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	City (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
OC-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
OC-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
OC-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	City	Low - Medium	Local Budget	Ongoing
OC-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
OC-8	Establish an ordinance to require bringing property grades (including driveways and garages) above the BFE for new construction.	New & Existing	Coastal Storms, Flooding, Severe Storms	1, 2	1-1, 1-3, 1-7, 1-9, 2-2	Planning and Engineering	Low	Local Budget	Short-term (1-2 years)
OC-9	Develop and implement a COOP/COG for municipal government facilities (e.g. city hall records which are	Existing	All Hazards	1, 3, 4, 6	1-3, 1-7, 1-8, 3-1, 3-3, 4-4, 4-5, 4-7, 4-8, 6-2	Emergency Management and other local	Medium	Local Budget; DHS programs	Short-term



**SECTION 9.9: CITY OF OCEAN CITY**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	now kept on first floor). COOP/COG plan to be an annex to the OC EOP.					departments			
OC-10	CRS – continue to work to improve CRS rating. This includes advising ISO of current activities that may not be properly credited (e.g. real estate disclosure)	N/A	Coastal Storms, Flooding, Severe Storm	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	Emergency Management, Planning and Engineering	Low-Medium	Local Budget	Ongoing
OC-11	Consider putting expanded information on the website about more flood vulnerable sections of the City (e.g. low elevation areas) – affects CRS credits.	N/A	All Hazards	1, 2	1-5, 1-8, 2-2, 2-4, 2-5	Local Departments	Low	Local Budgets	Short-term
OC-12	Promote public awareness of local flood risk (e.g. put BFE's on telephone poles using yellow spikes or painted bands; identify flood levels at all critical facilities)	N/A	Coastal Storms, Flooding	1, 2	1-5, 1-8, 2-2, 2-4, 2-5	Emergency Management, Planning and Engineering	Low-Medium	Local Budget	Short-term
OC-13	Upgrade existing revetment wall (needs to be extended to the south and existing sections upgraded) and provide additional road protection to CR-619 in Strathmere to Ocean City, and elevate sections of road as needed.	N/A	Coastal Storms, Severe Storms, Flooding	1, 4	1-1, 1-4, 4-2, 4-10	County Engineering with municipal support	High	HMA and federal programs with local match	Long-term DOF
OC-14 (CMC-36)	Upgrade storm drainage in Ocean City, which are currently designed to handle only a 2-year storm event.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipal support	High	HMA and federal programs with local match	Longterm DOF
OC-15 (CMC-659)	Elevate Bay Avenue (CR-659) in floodprone areas	Existing	Coastal Storms, Flooding,	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	HMA and federal	Longterm DOF



**SECTION 9.9: CITY OF OCEAN CITY**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
37)	(33 <sup>rd</sup> to 28 <sup>th</sup> , 20 <sup>th</sup> to 18 <sup>th</sup> , 9 <sup>th</sup> to 2 <sup>nd</sup> ). This is an evacuation route, and was generally impassable during the recent (Sept. 2009) Nor'Easter.		Severe Storms			with municipal support		programs with local match	
OC-16	Replace firehouses at 29 <sup>th</sup> and West and 34 <sup>th</sup> and West with one in a less floodprone area. 29 <sup>th</sup> and West is located in a particularly floodprone area.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 3-3-, 3-4, 4-6, 4-7, 4-8	City	High	Applied for under Federal Stimulus program	Short-term DOF
OC-17	Retrofit police department (location of EOC) with wind resistant glazing and/or storm shutters.	Existing	Coastal Storms, Severe Storms	1, 3, 4	1-1, 3-3, 3-4, 4-6, 4-7	Emergency Management	High	FEMA HMA grant programs with local match	Long-term DOF
OC-18	Elevate Haven Avenue and 11 <sup>th</sup> Street to allow access to public building. This building can serve as an EOC, and is properly elevated but access is not.	Existing	All Hazards	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-7	City	High	FEMA HMA grant programs with local match	Long-term DOF
OC-19	Replace GeoTube at Waverly Beach that was damaged/destroyed during the September 11, 2009 Nor'Easter	N/A	Coastal Erosion	3, 5	3-4, 5-1, 5-2, 5-3, 5-4	Planning and Engineering	\$75K	Local budget	Sept. – Oct. 2009
OC-20	Beach Replenishment of Waverly Beach	N/A	Coastal Storms, Coastal Erosion, Severe Storm	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	USACE with municipal support	\$15M	ACOE and NJDEP (65/35)	By March 31 <sup>st</sup> , 2010
OC-21	Continue program to upgrade bulkheads to 9.45'. They are currently working on permitting for Revere Place, Bayberry Street, Tennessee Avenue (3), and 520 Bay (Bayside Center, boat ramp).	New and Existing	Coastal Storms, Coastal Erosion; Flooding	1, 4	1-1, 1-10, 4-1	Planning and Engineering Department	Medium - High	Local CIP and FEMA HMA grants	Short-term DOF



**SECTION 9.9: CITY OF OCEAN CITY**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
OC-22	Elevate the 35 <sup>th</sup> Street Ballfield	Existing	Coastal Storms, Flooding	1, 3	1-1, 3-4	Planning and Engineering Department	High	Local and applicable grant programs	Long-term DOF
OC-23	Elevate Haven from 9 <sup>th</sup> to 10 <sup>th</sup> Street. State to raise 9 <sup>th</sup> Street 18" as part of bridge project.	Existing	Coastal Storms, Flooding	1, 4	1-1, 1-3, 4-2	State DOT	High	State DOT	Short-term
OC-24	Drainage improvements at OC airport.	Existing	Coastal Storms, Flooding	1, 3	1-1, 3-3, 3-4	County airport with FAA	\$2.4MM	FAA	Completion in 2009
OC-25	Install new emergency broadcast/communications equipment on new ATT/Verizon lighthouse tower at OC Airport.	N/A	All Hazards	3, 4	3-3, 4-2, 4-3, 4-6, 4-7	Emergency Management with Verizon/ATT	Low-Medium	Local for communications equipment	Short-term
OC-26	Consolidation of the Drainage Systems and Construction of a Pump Station to service drainage areas from 1 <sup>st</sup> St. and 8 <sup>th</sup> St. between West Ave, and the bayfront.	Existing	Coastal Storm, Flooding, Severe Storm	1, 3, 4	1-1, 1-2, 3-3, 3-4, 4-1, 4-2, 4-6, 4-7, 4-10	Planning and Engineering Departments	\$6 Million	FEMA HMA grant programs with local match	Short-term
OC-27	Construction of a protective floodwall with stone reinforcement around the historic Music Pier. Location is on the beachfront at Moorlyn Terrace.	Existing	Coastal Storm, Coastal Erosion, Flooding, Severe Storm	1, 3	1-1, 3-4	Planning and Engineering Departments	\$1.2 Million	FEMA HMA grant programs with local match	Long Term (Completion by 2018)
OC-28	Construction of a Pump Station to service drainage areas from 26 <sup>th</sup> St. and 34 <sup>th</sup> St. between West Ave. and the bayfront.	Existing	Coastal Storm, Flooding, Severe Storm	1, 3, 4	1-1, 1-2, 1-4, 3-3, 3-4, 4-1, 4-2, 4-6	Planning and Engineering Departments	\$5.5 Million	FEMA HMA grant programs with local match	Short-term
OC-29	Road elevation of Haven Ave. between 26 <sup>th</sup> St. and 34 <sup>th</sup> St.; and Simpson Ave. between 31 <sup>st</sup> Street and 34 <sup>th</sup> Street (this is an	Existing	Coastal Storm, Flooding, Severe Storm	1, 3, 4	1-1, 1-2, 3-4, 4-1, 4-2, 4-6, 4-7, 4-10	Planning and Engineering Departments	\$5.5 Million	FEMA HMA grant programs with local match	Short-term



**SECTION 9.9: CITY OF OCEAN CITY**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	alternative to OC-28 above).								
OC-30	Stone Revetment Protection at Waverly Beach and Surf Road Beach.	Existing	Coastal Storm, Coastal Erosion, Flooding, Severe Storm	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	Planning and Engineering Departments	\$3.25 Million	FEMA HMA grant programs (incl. 404 and 406) with local match	Short-term
OC-31 (CMC-61 and TU-)	Install shore protection along Ocean Drive (CR619) at Corson's Inlet in Upper Township and Ocean City	Existing	Coastal Storms, Severe Storms, Coastal Erosion	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	County Engineering with municipal support	H	HMA Grants, County and Local Funding	Short-term
OC-32 (CMC-69)	Work directly with residents of the community located in a classic wildland-urban interface next to Corson's Inlet State Park to become a National Fire Protection Association (NFPA) "Firewise" community. Participation in the NFPA "Firewise" program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the "Firewise" program, facilitating public outreach and awareness programs, and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs working with County Fire Coordinator and identified residents	L-M	Existing Budgets	Short-term

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding;



- \* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?

## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the City has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	OC-3, OC-5, OC-6, OC-7, OC-9	OC-7, OC-18, OC-31	OC-3, OC-7, OC-11	OC-7, OC-19, OC-20	OC-5, OC-7, OC-25	OC-7, OC-21, OC-31
Coastal Storm	OC-3, OC-5, OC-6, OC-7 to 10	OC-1a and 1b, OC-7, OC-13, OC-14, OC-15, OC-17, OC-18, OC-21, OC-22, OC-23, OC-24, OC-31	OC-3, OC-7, OC-10 to 12	OC-7, OC-20	OC-5, OC-7, OC-15 to 17, OC-25	OC-7, OC-13, OC-14, OC-15, OC-17, OC-18, OC-21, OC-22, OC-23, OC-24, OC-31
Flood	OC-2, OC-3, OC-5, OC-6, OC-7 to 10	OC-1a and 1b, OC-2, OC-4, OC-7, OC-13, OC-14, OC-15, OC-17, OC-18, OC-21, OC-22, OC-23, OC-24	OC-2, OC-3, OC-4, OC-7, OC-10 to 12	OC-2, OC-4, OC-7	OC-5, OC-7, OC-15 to 17, OC-25	OC-7, OC-13, OC-14, OC-15, OC-17, OC-18, OC-21, OC-22, OC-23, OC-24
Severe Storm	OC-3, OC-5, OC-6, OC-7 to 10	OC-1a and 1b, OC-7, OC-13, OC-14, OC-15, OC-17, OC-18, OC-21, OC-22, OC-23, OC-24, OC-31	OC-3, OC-7, OC-10 to 12	OC-7, OC-20	OC-5, OC-7, OC-15 to 17, OC-25	OC-7, OC-13, OC-14, OC-15, OC-17, OC-18, OC-21, OC-22, OC-23, OC-24, OC-31
Severe Winter Storm	OC-3, OC-5, OC-6, OC-7, OC-9	OC-7, OC-18	OC-3, OC-7, OC-11	OC-7	OC-5, OC-7, OC-25	OC-7
Tsunami	OC-3, OC-5, OC-6, OC-7, OC-9	OC-7, OC-18	OC-3, OC-7, OC-11	OC-7	OC-5, OC-7, OC-25	OC-7
Wildfire	OC-3, OC-5, OC-6, OC-7, OC-9, OC-32	OC-7, OC-18, OC-32	OC-3, OC-7, OC-11, OC-32	OC-7, OC-32	OC-5, OC-7, OC-25	OC-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

4. **Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. **Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
OC-1a	8	H	H	Y	Y	N	M-H*
OC-1b	8	H	H	Y	Y	N	M-H*
OC-2	9	M	L	Y	N	Y	H
OC-3	All	M	M	Y	N (Yes for 5 year update)	N	M
OC-4	14	H	L	Y	N	Y	H
OC-5	13	M	L	Y	N	Y	M
OC-6	13	M	L	Y	N	Y	M
OC-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant )
OC-8	5	M	L	Y	N	Y	H
OC-9	10	M	M	Y	Y	Y (local match only)	M
OC-10	8	M	M-L	Y	N	Y	H
OC-11	5	L	L	Y	N	Y	H
OC-12	5	M	M-L	Y	Y	Y	H
OC-13	4	H	H	Y	Y	Y (local match only)	M
OC-14	5	H	H	Y	Y	Y (local match only)	M
OC-15	5	H	H	Y	Y	Y (local match only)	M
OC-16	6	H	H	Y	Y	Y (local match only)	M
OC-17	5	H	H	Y	Y	Y (local match only)	M
OC-18	5	H	H	Y	Y	Y (local match only)	M
OC-19	5	H	H	Y	Y	Y	H

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
OC-20	6	H	H	Y	Y	Y (local match only)	H
OC-21	3	H	H-M	Y	Y	Y (local match only)	M
OC-22	2	H	H	Y	Y	Y (local match only)	M
OC-23	3	H	H	Y	Y	Y (local match only)	M
OC-24	3	H	H	Y	Y	Y (local match only)	H
OC-25	5	H	M-L	Y	Y	Y (local match only)	H
OC-26	9	H	H	Y	Y	Y (local match only)	H
OC-27	2	H-M	H	Y	Y	Y (local match only)	M
OC-28	8	H	H	Y	Y	Y (local match only)	H
OC-29	8	H	H	Y	Y	Y (local match only)	H
OC-30	5	H-M	H	Y	Y	Y (local match only)	M
OC-31	5	H	H	Y	Y	N	H
OC-32	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation

Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).

- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

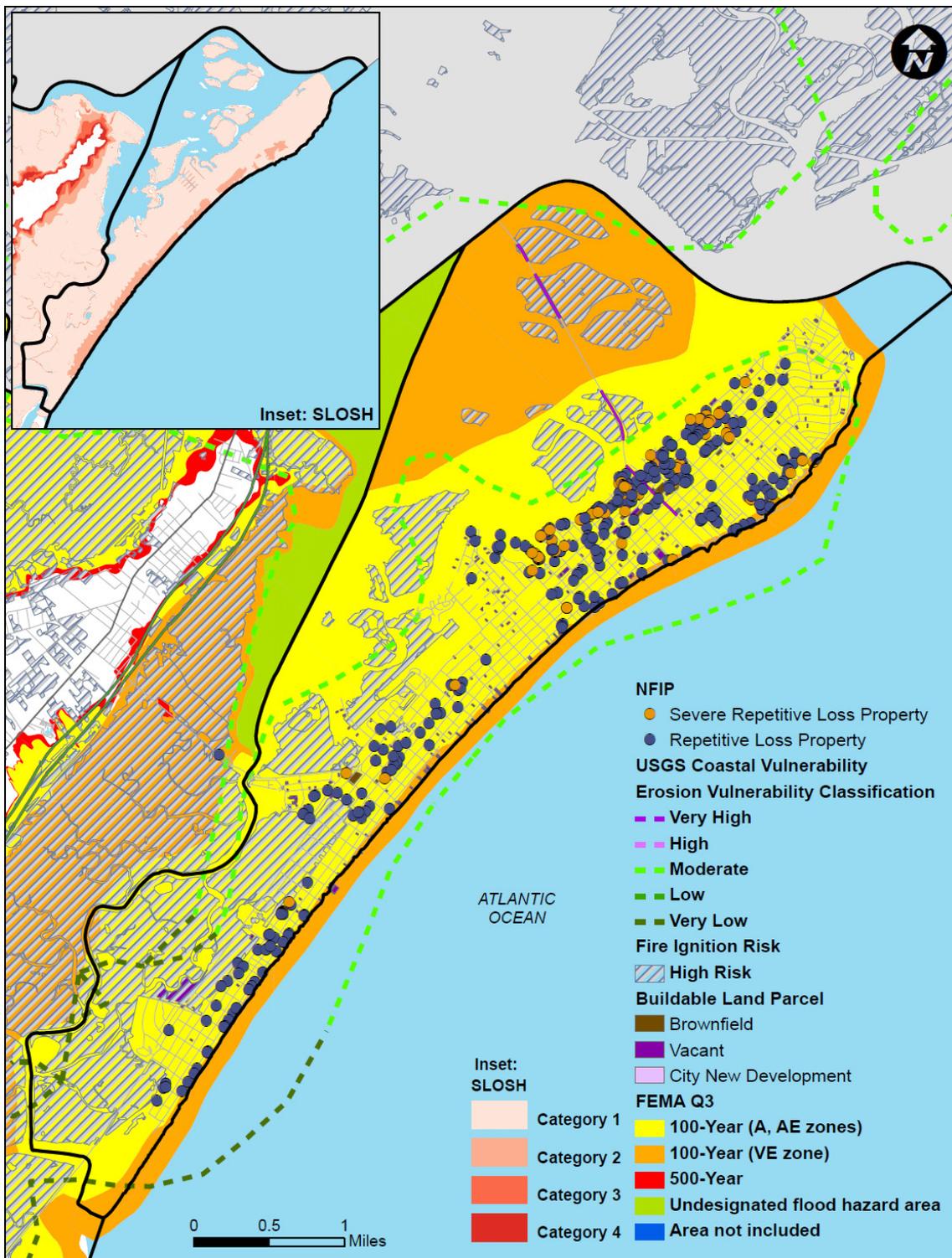
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the City of Ocean City to illustrate the probable areas impacted within the City. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Ocean City has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

## 9.10 CITY OF SEA ISLE CITY

This section presents the jurisdictional annex for the City of Sea Isle City.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
Thomas J. D'Intino, Chief of Police Sea Isle City Police Dept., 233 John F. Kennedy Blvd., Sea Isle City, NJ 08243 (609) 263-4311 x 2244 <a href="mailto:tdintino@police.seaislecitynj.us">tdintino@police.seaislecitynj.us</a>	Cornelius (Neil) Byrne, Jr., Construction Official 233 JFK Boulevard Sea Isle City, NJ 08243 (609) 263-1166 <a href="mailto:nbyrne@seaislecitynj.us">nbyrne@seaislecitynj.us</a>

### B.) CITY PROFILE

#### *Population*

2,909 (estimated 2008 Residential Population, Cape May County Planning Dept.)

47,288 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

The City of Sea Isle City is located along the Atlantic Ocean coastline of Cape May County, New Jersey. It is bounded on the north-northeast by the Township of Upper and the City of Ocean City, on the east by the Atlantic Ocean, on the south-southwest by the Borough of Avalon and the west by the Townships of Dennis and Upper. It is part of the Ocean City Metropolitan Statistical Area. The City is a beach town with most of its housing used for vacation rentals and second homes. It has a 1.5 mile beachfront promenade and several arcades, shops, restaurants and bars in the center of town. The epicenter of the town is 48<sup>th</sup> street.

According to the U.S. Census Bureau, the city has a total area of 2.5 square miles (6.6 km<sup>2</sup>), with 2.2 square miles (5.7 km<sup>2</sup>) of it land and 0.3 square miles (0.9 km<sup>2</sup>) of it (13.73-percent) water.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

Sea Isle City was originally incorporated as a borough on May 22, 1882, from portions of Dennis Township, based on the results of a referendum held six days earlier. The borough was reincorporated on March 31, 1890. On April 20, 1907, the area was reincorporated as the City of Sea Isle City, based on the results of a referendum held on April 30, 1907 (Snyder, 1969).

Joseph Ludlum was the first owner of the island. He bought the land in 1692 from a group of Quakers called the West Jersey Proprietors. Ludlum named the island after himself, and divided it into three sections. John Townsend purchased one of these sections of Ludlam Island in 1695, and named it Townsend's Inlet. What was then known as Ludlam's Beach would eventually become Sea Isle City.

Charles Kline Landis purchased the island in 1880, with the intention of creating a picturesque and relaxing vacation island. He renamed the Island "Sea Isle City." In 1883, a new rail line and road were constructed to connect the island to the mainland. The island's tourism industry boomed, as it was now very convenient for people from Philadelphia to take the train out to the island to enjoy the beaches. People began to stream into the community from the mainland, and Sea Isle City began to grow at a rapid pace (Visit New Jersey Shore, 2009).

***Governing Body Format***

Sea Isle City had been governed under the Walsh Act form of New Jersey municipal government, by a three-member commission, starting in 1913. As of July 1, 2007, Sea Isle City is now governed under a Faulkner Act (Mayor-Council) form of government by a mayor and a five-member city council (New Jersey State Library, Date Unknown; Rutgers University, 2005; Burczewski, 2007).

***Growth/Development Trends***

At this time, no new major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in Sea Isle City**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
City of Sea Isle City	0	0	0	0	0	0	0	0	3	0.3	114	16	117	16.3

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009

## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE CITY

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,000,000 (City of Sea Isle City) \$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 189  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 63

Source: FEMA Region 2 as of December 2009



## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$766,039,000 Max: \$861,793,651	Frequent	54	High
1	Flood	\$561,126,000	Frequent	54	High
2	Severe Storm	\$95,754,651	Frequent	36	Medium
3	Severe Winter Storm	\$9,977,680	Frequent	27	Medium
4	Tsunami	Not available	Rare	18	Low
5	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

## E.1) Legal and Regulatory Capability

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	Y	Y	Y	Y	UCC
2) Zoning Ordinance	Y	Y	Y	Y	City Code Zoning Ch. XXVI
3) Subdivision Ordinance	Y	Y	N	N	City Codes Land Subdivision Ch. XXXII
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	City Code Flood Prevention Ch. XIV
5) Growth Management	Y	Y	N	Y	City has applied for State Plan Endorsement
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Entire Community. Special Flood Hazard Area
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	NJDEP Permit (NJDESNJG0150037)
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Remington and Vernick
9) Capital Improvements Plan	Y	N	N	N	5 Year Plan, Adopted 12-23-08 R.S. #37
10) Site Plan Review Requirements	Y	N	Y	N	City Code - Site Plan Review
11) Open Space Plan	Y	N	Y	N	City has designated lands in a certified ROSI (Recreation and Open Space Inventory)
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	Revised/Adopted – April 2008
15) Post Disaster Recovery Plan	Y	N	N	N	In Progress
16) Post Disaster Recovery Ordinance	Y	Y	Y	N	In Progress
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	Bulkheads and Waterways Ch. XXII, Beaches and Boardwalks and Dunes Ch. XXI

**E.2) Administrative and Technical Capability**

<b>Staff/ Personnel Resources</b>	<b>Available (Y or N)</b>	<b>Department/ Agency/Position</b>
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	City and Board Engineers (Maiser Consulting)
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Business Administrator/City Engineer
3) Planners or engineers with an understanding of natural hazards	Y	Business Administrator/City Engineer
4) NFIP Floodplain Administrator	Y	Cornelius R. Byrne, Jr., Construction and Zoning Official/Building Inspector
5) Surveyor(s)	Y	City Engineer
6) Personnel skilled or trained in "GIS" applications	Y	Director of DPW
7) Scientist familiar with natural hazards in the City of Sea Isle City.	Y	City Engineer
8) Emergency Manager	Y	Police Chief
9) Grant Writer(s)	Y	Police Lieutenant
10) Staff with expertise or training in benefit/cost analysis	TBD	TBD

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	No
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	No
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	N/A

#### E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	---	---
Public Protection	---	---
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* = Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
SIC-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
SIC-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
SIC-2	Work with FEMA and ISO to re-establish participation in CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	City	Low - Medium	Local Budget	Short (2010)

**SECTION 9.10: CITY OF SEA ISLE CITY**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
SIC-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	City (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
SIC-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
SIC-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
SIC-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	City	Low - Medium	Local Budget	Ongoing
SIC-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
SIC-8 (CMC-28, TU-13)	Install permanent protection to CR-619, from the Whale Beach area in Sea Isle City to the Strathmere section of Upper Township, to replace the existing GeoTube installed in the late 1990s. The GeoTube is beyond its design life.	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe Storms	1, 3, 4, 5, 6	1-1, 1-4, 3-3, 4-2, 4-7, 4-10, 5-4, 6-2	County and ACOE, Municipal Support	High	TBD	Longterm DOF
SIC-9	Replenish the south end	N/A	Coastal Storms,	1, 3, 5, 6	1-1, 1-4, 3-4, 5-	USACE and	High	Federal and	Spring/Summer



**SECTION 9.10: CITY OF SEA ISLE CITY**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	beaches from 73rd to 94th Street with approx. 700,000 cubic yards of sand.		Coastal Erosion, Flooding		1, 5-2, 5-4, 6-2	municipality		Local Funding	2010
SIC-10	New ordinance for bulkhead elevation requirements (same as Ocean City)	New & Existing	Coastal Erosion, Coastal Storm, Flooding, Severe Storm	1, 3, 4	1-3, 1-7, 1-10, 3-2, 4-9	City	Low	Local budget	Short
SIC-11	Purchase generators at public buildings	Existing	All Hazards (except Coastal Erosion)	1, 3, 4	1-1, 3-3, 4-6, 4-7	City	Medium	Grant funding if applicable	Longterm DOF
SIC-12 (CMC-25)	Elevate JFK Boulevard (CR-625) into Sea Isle City (no funding source currently for project, but is in design phase), and upgrade stormwater system. This project is in the NJ TIP. This project will require elevation of one or more commercial properties along JFK Boulevard.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipality	High (\$2M identified for JFK in 2014, trying to move this up as City has a street-scaping project upcoming	TBD	Longterm DOF
SIC-13 (CMC-27)	Install bulkheads along back bay in Sea Isle City in locations (large areas) that are not protected. This includes both public and private property.	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe Storms	1, 3, 4, 5, 6	1-1, 3-3, 4-2, 4-7, 4-10, 5-4, 6-3	Municipal, with County and property owner support	High	TBD	Longterm DOF
SIC-14	Host a public forum to educate and help inform our citizens so that they are best prepared for flooding situations.	N/A	Coastal Storms, Flooding, Severe Storms	2, 4, 6	2-2, 2-3, 2-4, 4-1, 6-3	Municipal (Emergency Management)	Low	Local	Spring 2010

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the City has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	SIC-3, SIC-5, SIC-6, SIC-7, SIC-10	SIC-7, SIC-8	SIC-3, SIC-7	SIC-7, SIC-8, SIC-9	SIC-5, SIC-7, SIC-11	SIC-7, SIC-8, SIC-13, SIC-9
Coastal Storm	SIC-3, SIC-5, SIC-6, SIC-7, SIC-10	SIC-1a and 1b, SIC-7, SIC-8, SIC-12	SIC-3, SIC-7, SIC-14	SIC-7, SIC-8, SIC-9	SIC-5, SIC-7, SIC-11	SIC-7, SIC-8, SIC-13, SIC-9
Flood	SIC-2, SIC-3, SIC-5, SIC-6, SIC-7, SIC-10	SIC-1a and 1b, SIC-2, SIC-4, SIC-7, SIC-8, SIC-12	SIC-2, SIC-3, SIC-4, SIC-7, SIC-14	SIC-2, SIC-4, SIC-7, SIC-8, SIC-9	SIC-5, SIC-7, SIC-11	SIC-7, SIC-8, SIC-13, SIC-9
Severe Storm	SIC-3, SIC-5, SIC-6, SIC-7, SIC-10	SIC-1a and 1b, SIC-7, SIC-8, SIC-12	SIC-3, SIC-7, SIC-14	SIC-7, SIC-8, SIC-9	SIC-5, SIC-7, SIC-11	SIC-7, SIC-8, SIC-13, SIC-9
Severe Winter Storm	SIC-3, SIC-5, SIC-6, SIC-7	SIC-7	SIC-3, SIC-7	SIC-7	SIC-5, SIC-7, SIC-11	SIC-7
Tsunami	SIC-3, SIC-5, SIC-6, SIC-7	SIC-7, SIC-8	SIC-3, SIC-7	SIC-7, SIC-8, SIC-9	SIC-5, SIC-7, SIC-11	SIC-7, SIC-8, SIC-13, SIC-9
Wildfire	SIC-3, SIC-5, SIC-6, SIC-7	SIC-7	SIC-3, SIC-7	SIC-7	SIC-5, SIC-7, SIC-11	SIC-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
SIC-1a	8	H	H	Y	Y	N	M-H*
SIC-1b	8	H	H	Y	Y	N	M-H*
SIC-2	9	M	L	Y	N	Y	H
SIC-3	All	M	M	Y	N (Yes for 5 year update)	N	M
SIC-4	14	H	L	Y	N	Y	H
SIC-5	13	M	L	Y	N	Y	M
SIC-6	13	M	L	Y	N	Y	M
SIC-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
SIC-8	8	H	H	Y	Y	Y (local match only)	M
SIC-9	7	H	H	Y	Y (not through HMA)	Y (already funded)	H
SIC-10	5	L	L	Y	N	Y	M
SIC-11	4	M	M	Y	Y	Y (local match only)	M
SIC-12	5	H	M	Y	Y	N	M-H
SIC-13	7	H	H	Y	Y	N	M
SIC-14	5	L	L	Y	Y	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a "Medium" priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a "High" priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant

programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.

- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

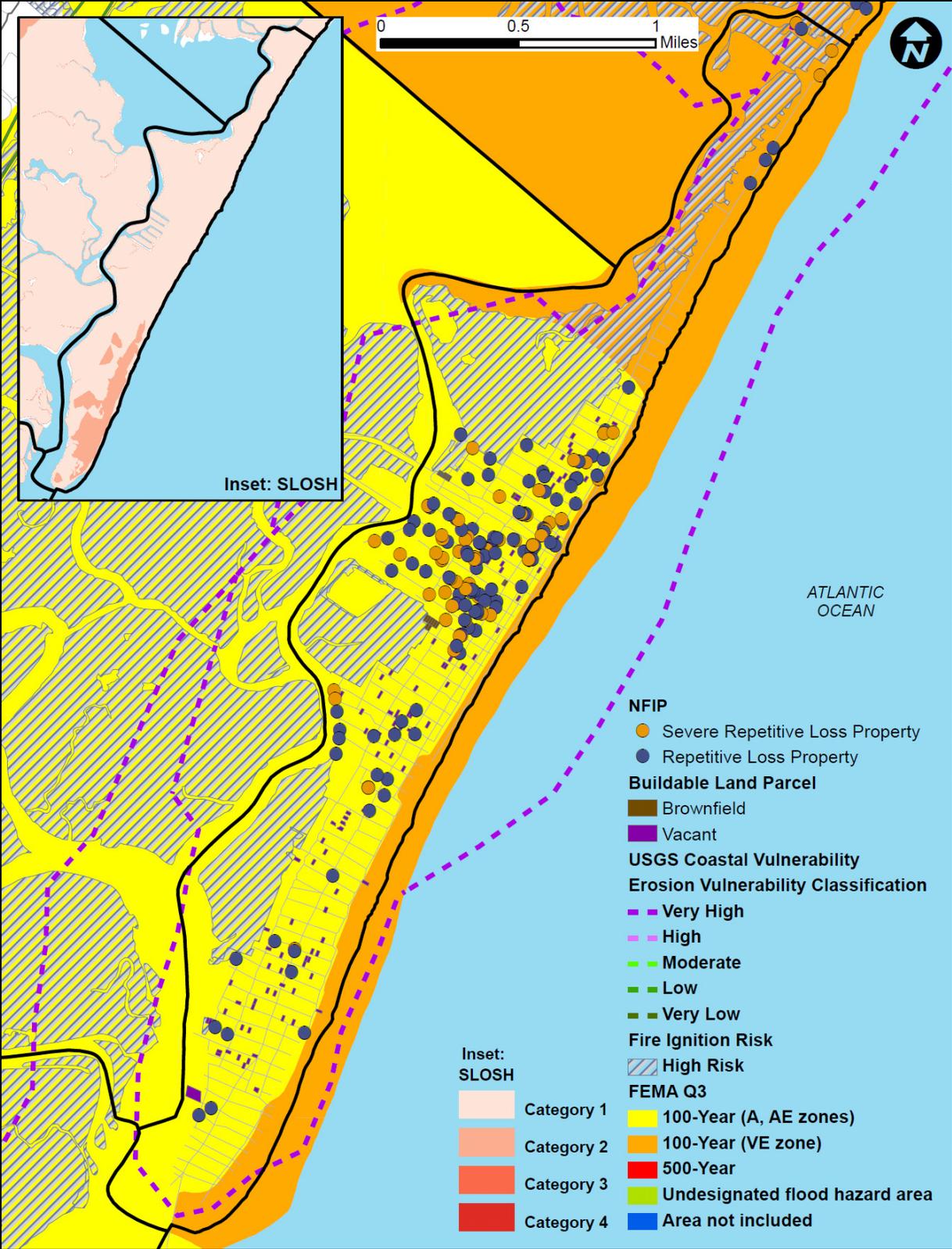
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the City of Sea Isle City to illustrate the probable areas impacted within the City. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Sea Isle City has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3; Cape May County Planning Department; Maser, 2009

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.



**9.11 BOROUGH OF STONE HARBOR**

This section presents the jurisdictional annex for the Borough of Stone Harbor.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Roger Stanford, Chief Deputy - OEM 9508 Second Ave. Stone Harbor, NJ 08247 (609) 368-6800 x 137 <a href="mailto:stanfordr@stone-harbor.nj.us">stanfordr@stone-harbor.nj.us</a>	Kenneth Hawk, Borough Administrator 9508 Second Ave. Stone Harbor, NJ 08247 (609) 368-6800 <a href="mailto:hawkk@stone-harbor.nj.us">hawkk@stone-harbor.nj.us</a>

**B.) BOROUGH PROFILE**

***Population***

1,012 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
23,668 (estimated 2008 Summer Population, Cape May County Planning Dept.)

***Location***

The Borough of Stone Harbor is located on the northern side of the barrier island, Seven Mile Island, in Cape May County, New Jersey. It is bounded on the north-northeast by the Township of Middle and the Borough of Avalon, on the east by the Atlantic Ocean, on the south-southwest by the Wildwoods and the west by the Township of Middle. It is part of the Ocean City Metropolitan Statistical Area.

The Borough of Stone Harbor is well known for its environmental institutes and a sanctuary, including the Stone Harbor Bird Sanctuary established in 1947, and is registered as a National Landmark by the National Park Service. The Stone Harbor Water Tower pumping station, built in 1924, is the oldest municipal building still in use in Stone Harbor. The tower, at 132 feet high, can be seen from almost anywhere on the island. It holds 500,000 gallons of water and is supplied by four individual fresh water wells 890 feet deep that tap the Kirkwood Aquifer. Stone Harbor attractions include the nearby Cape May County Park and Zoo, The Wetlands Institute, the Stone Harbor Bird Sanctuary, and the Stone Harbor Museum.

According to the U.S. Census Bureau, the borough has a total area of 2.0 square miles (5.2 km<sup>2</sup>), with 1.4 square miles (3.7 km<sup>2</sup>) of it land and 0.6 square miles (1.5 km<sup>2</sup>) of it (28.64-percent) water.

***Climate***

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).



The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

Aaron Leaming purchased Seven Mile Island, and the land upon which Stone Harbor currently stands in December 1772. The Tatham family purchased Seven Mile Island in the early 1800s, and the first buildings were erected on the island shortly after. The Seven Mile Beach Company bought the island in 1887, after the island had been bought and sold a few more times throughout the 19<sup>th</sup> century. Upon purchasing the island, the Seven Mile Beach Company founded the settlements of Avalon on the northern half of the island at Seven Mile Beach, and Stone Harbor in the south. Stone Harbor's first buildings were constructed in 1891. These buildings included an inn, which was built near 80th Street and seven cottages. These eight structures formed the original Stone Harbor resort (Visit New Jersey Shore, 2009).

In 1907, development in Stone Harbor increased substantially, including the sand dunes being leveled off, marshes filled in, streets paved, and curbs laid out. Seawalls and bulkheads were built to project the land next to the waterways, basins and the ocean to prevent water damage. Eight jetties were built to try to protect the beaches of Stone Harbor from the effects of beach erosion.

Stone Harbor was incorporated as a borough by an Act of the New Jersey Legislature on April 3, 1914, from portions of Middle Township, based on the results of a referendum held on April 28, 1914. The borough gained a portion of Avalon on December 27, 1941 (Snyder, 1969; Visit New Jersey Shore, 2009).

***Governing Body Format***

Stone Harbor is governed under the Borough form of New Jersey municipal government. The government consists of a Mayor and a six-member Borough Council, with all positions elected at large in partisan elections. A Mayor is elected directly by the voters to a four-year term of office. The Borough Council consists of six members elected to serve three-year terms on a staggered basis, with two seats coming up for election each year (Rutgers University, 2005).

***Growth/Development Trends***

The following new development has been identified for the next five (5) years.

New Development/Potential Development in Municipality					
Property Name	Type Residential or Commercial	Number of Structures	Address	Block and Lot	Description
Shelter Haven Resort	Commercial	1	9601 Third Ave.	96.04 / 138-144	39 unit hotel, restaurant, spa, retail

Source: Borough of Stone Harbor Planning Committee Members, 2009

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Borough of Stone Harbor**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Borough of Stone Harbor	0	0	0	0	0	0	0	0	0	0	20	3.1	20	3.1

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009

C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE BOROUGH

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01-1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

*Number of FEMA Identified Repetitive Flood Loss Properties:* 114  
*Number of FEMA Identified Severe Repetitive Flood Loss Properties:* 40

Source: FEMA Region 2 as of December 2009

**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
1	Coastal Erosion	Not available	Frequent	54	High
1	Coastal Storm	Min: \$443,504,000 Max: \$531,603,682	Frequent	54	High
1	Flood	\$304,659,000	Frequent	54	High
2	Severe Storm	\$88,099,682	Frequent	36	Medium
3	Severe Winter Storm	\$5,732,570	Frequent	27	Medium
4	Tsunami	Not available	Rare	18	Low
5	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	Y	Y	Y	Y	IRC 2006
2) Zoning Ordinance	Y	Y	Y	Y	Chapter 560: General Ordinance
3) Subdivision Ordinance	Y	Y	N	N	Chapter 560: General Ordinance Chapter 345: General Ordinance
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Chapter 300: General Ordinance
5) Growth Management	Y	Y	N	Y	Master Plan
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Chapter 300: General Ordinance NFIP FMP Update Adopted Sept. 2004
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Chapter 470: General Ordinance
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Master Plan (June 2009)
9) Capital Improvements Plan	N	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	Chapter 345: General Ordinance
11) Open Space Plan	Y	N	Y	N	Chapter 560: General Ordinance
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	Emergency Management Plan
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	State CAFRA

**E.2) Administrative and Technical Capability**

<b>Staff/ Personnel Resources</b>	<b>Available (Y or N)</b>	<b>Department/ Agency/Position</b>
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Planning Board, Construction Office, Through Borough Engineer
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Construction Official
3) Planners or engineers with an understanding of natural hazards	Y	Borough Engineer's Office, Remington Vernick Engineers
4) NFIP Floodplain Administrator	Y	Michael Koochembere, Construction Official
5) Surveyor(s)	Y	Remington Vernick Engineers, Borough Engineers
6) Personnel skilled or trained in "GIS" applications	Y	Remington Vernick Engineers
7) Scientist familiar with natural hazards in the Borough of Stone Harbor.	Y	Dr. Stewart Farrell, Coastal Research Center, Stockton College of NJ
8) Emergency Manager	Y	Kenneth Hawk, Director Roger Stanford, Deputy
9) Grant Writer(s)	Y	Remington Vernick Engineers
10) Staff with expertise or training in benefit/cost analysis	N	

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Local Bond Ordinances Annually
3) Authority to Levy Taxes for specific purposes	No
4) User fees for water, sewer, gas or electric service	User Fee for Water/Sewer Only
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	No
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	

**E.4) Community Classifications**

<b>Program</b>	<b>Classification</b>	<b>Date Classified</b>
Community Rating System (CRS)	7 (current)	10/1/1994*
Building Code Effectiveness Grading Schedule (BCEGS)	---	---
Public Protection	---	---
Storm Ready	NP	n/a
Firewise	NP	n/a

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* = Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Below is a table indicating the Borough’s participation and points earned in the CRS program to date.

<b>Series</b>	<b>Activity Number</b>	<b>Activity Description</b>	<b>Maximum Points Possible</b>	<b>Points Received for the Borough of Stone Harbor</b>
300	310	Elevation Certificates	162	60
300	320	Map Information	140	140
300	330	Outreach Projects	380	154
300	340	Hazard Disclosure	81	0
300	350	Flood Protection Information	102	49
300	360	Flood Protection Assistance	71	59
400	410	Additional Flood Data	1,346	0
400	420	Open Space Preservation	900	212

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Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the Borough of Stone Harbor
400	430	Higher Regulatory Standards	2,740	264
400	440	Flood Data Maintenance	239	38
400	450	Stormwater Management	670	135
500	510	Floodplain Management Planning	359	101
500	520	Acquisition and Relocation	3,200	0
500	530	Flood Protection	2,800	0
500	540	Drainage System Maintenance	330	270
600	610	Flood Warning Program	255	90
600	620	Levee Safety	900	0
600	630	Dam Safety	175	67
		<b>Total Points to Date</b>		<b>1,639</b>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
SH-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
SH-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
SH-2	Continue active participation in incentive-based program CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	Borough	Low - Medium	Local Budget	Short

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Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
SH-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Borough (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
SH-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
SH-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJ OEM	Low - Medium	Local Budget	Ongoing
SH-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
SH-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
SH-8	Continue dune and beach replenishment efforts – 98 <sup>th</sup> Street to 11 <sup>th</sup> Street are currently underway (4Q09)	N/A	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	NJDEP with City support	High	NJDEP – 75% Borough – 25%	Ongoing (latest project scheduled in November 2009)
SH-9	Continue stormwater drainage improvements throughout the Borough to increase capacity.	Existing	Coastal Storm, Flood, Severe Storm	1, 4	1-1, 1-4, 1-6, 3-3, 3-4, 4-2, 4-7	Borough	High	FEMA HMA grant programs, local match	On-going
SH-10	105 <sup>th</sup> Street stormwater	Existing	Coastal Storm,	1, 4	1-1, 1-4, 1-6, 3-	Borough	High	FEMA HMA	Long-term



**SECTION 9.11: BOROUGH OF STONE HARBOR**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	drainage improvement project.		Flood, Severe Storm		3, 3-4, 4-2, 4-7			grant programs, local match	DOF
SH-10a (CMC-26, BA-8)	Upgrade stormwater system on CR-619 through Stone Harbor and Avalon. Seven stormwater pump stations were installed along CR-619 from Avalon Boulevard to 19 <sup>th</sup> Street (Avalon business district) to address flooding in this area.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-4, 3-3, 3-4, 4-2, 4-7, 6-2	County Engineering with municipalities	High	FEMA HMA grant programs, local match	Long-term DOF
SH-11	Back-up generator at the school	Existing	All Hazards, except wildfire and coastal erosion	1, 3, 4	1-1, 3-3, 3-4, 4-6, 4-7	Local	Medium	DHS and State Emergency Management grant funding sources, local match	Ongoing, depending on available funding sources
SH-12	Remote tide-gages with cameras	N/A	Coastal Storms, Flooding	1, 4	1-1, 1-10, 4-3	Borough	Medium	Local, Grant funding	Long-term DOF
SH-13	Purchase weather stations	N/A	All Hazards, except wildfire	1, 4	1-5, 4-3, 4-6	OEM	Medium	EMPG	Ongoing
SH-14	Elevate the commercial property – The Market	Existing	Coastal Storms, Severe Storms, Flooding	1, 3	1-1, 3-4	Borough	High	FEMA HMA grant programs, local match	Long-term DOF
SH-15	Establish and maintain a local alert AM emergency advisory radio station	N/A	All Hazards	3, 4	3-3, 4-3, 4-6, 4-7	Borough	Medium	Local, Grants	Ongoing, depending on funding sources
SH-16 (CMC-14)	Elevate Stone Harbor Boulevard (CR-657) from the Parkway into Stone Harbor proper. This will require elevating one residential property on 96th Street (part of CR-657) and potentially others. 96th Street was elevated in 2008 to the extent possible in	Existing	Coastal Storms, Flooding	1, 4	1-1, 1-9, 4-1, 4-2, 4-11	County Engineering, with local support	High	TBD	Longterm DOF



**SECTION 9.11: BOROUGH OF STONE HARBOR**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	consideration of existing home elevations.								
SH-17	Maintain relationship with Army Corps and NJDEP for dune maintenance along the oceanfront via planting dune grass and installing sand fencing.	N/A	Coastal Erosion, Coastal Storm, Severe Storm	3, 5, 6	3-4, 5-1, 5-2, 6-2, 6-3	Borough	Low	Local	Short-term
SH-18	Continue annual review of ordinances and appropriate laws with regard to planning, zoning and code enforcement within the Borough.	N/A	Coastal Storm, Flood, Severe Storm	1, 4	1-1, 1-3, 1-5, 1-7, 1-9, 4-1	Borough	Low	Local	Short-term
SH-19	Maintain the 12 outfall pipes along the beachfront of the Borough by regularly cleaning and adding replacement sands to the area for Emergency Access.	Existing	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 3-3, 3-4, 4-6, 4-7	Borough	Medium	Local and grant funding where applicable	DOF
SH-20	Continue to work with property owners to bring all applicable properties within the Borough up to code within the NFIP.	Existing	Flood	1, 2, 4	1-1, 2-2, 2-3, 2-4, 2-5, 4-1	Borough	Low	Local	Short-term
SH-21	Maintain flood siren warning systems throughout the Borough to alert residents in the event of an emergency.	N/A	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 3-3, 3-4, 4-3, 4-6, 4-7	Borough	Low	Local	Short-term
SH-22	Continue to support beach replenishment activities from 98 <sup>th</sup> to 111 <sup>th</sup> Streets	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe Storm, Tsunami	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	NJDEP with Borough support	High	NJDEP – 75% Borough – 25%	Ongoing

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding;

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Borough has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	SH-3, SH-5, SH-6, SH-7, SH-13, SH-17	SH-7	SH-3, SH-7	SH-7, SH-8	SH-5, SH-7, SH-13, SH-15	SH-7
Coastal Storm	SH-3, SH-5, SH-6, SH-7, SH-12, SH-13, SH-17, SH-18	SH-1a and 1b, SH-7, SH-9, SH-10, SH-10a, SH-12, SH-14, SH-16, SH-20	SH-3, SH-7, SH-20	SH-7, SH-8, SH-22	SH-5, SH-7, SH-11, SH-13, SH-15, SH-21	SH-7
Flood	SH-2, SH-3, SH-5, SH-6, SH-7, SH-12, SH-13, SH-18	SH-1a and 1b, SH-2, SH-4, SH-7, SH-9, SH-10, SH-10a, SH-12, SH-14, SH-16, SH-20	SH-2, SH-3, SH-4, SH-7, SH-20	SH-2, SH-4, SH-7, SH-8, SH-22	SH-5, SH-7, SH-11, SH-13, SH-15, SH-21	SH-7
Severe Storm	SH-3, SH-5, SH-6, SH-7, SH-12, SH-13, SH-17, SH-18	SH-1a and 1b, SH-7, SH-9, SH-10, SH-10a, SH-12, SH-14, SH-16, SH-20	SH-3, SH-7, SH-20	SH-7, SH-8, SH-22	SH-5, SH-7, SH-11, SH-13, SH-15, SH-21	SH-7
Severe Winter Storm	SH-3, SH-5, SH-6, SH-7, SH-13	SH-7	SH-3, SH-7	SH-7	SH-5, SH-7, SH-11, SH-13, SH-15	SH-7
Tsunami	SH-3, SH-5, SH-6, SH-7, SH-13	SH-7	SH-3, SH-7	SH-7	SH-5, SH-7, SH-11, SH-13, SH-15	SH-7
Wildfire	SH-3, SH-5, SH-6, SH-7	SH-7	SH-3, SH-7	SH-7	SH-5, SH-7	SH-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
SH-1a	8	H	H	Y	Y	N	M-H*
SH-1b	8	H	H	Y	Y	N	M-H*
SH-2	9	M	L	Y	N	Y	H
SH-3	All	M	M	Y	N (Yes for 5 year update)	N	M
SH-4	14	H	L	Y	N	Y	H
SH-5	13	M	L	Y	N	Y	M
SH-6	13	M	L	Y	N	Y	M
SH-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
SH-8	6	H	H	Y	Y	Y (local match only)	H
SH-9	7	H	H	Y	Y	Y (local match only)	H
SH-10	7	H	H	Y	Y	Y (local match only)	M
SH-10a	5	H	H	Y	Y	Y (local match only)	M
SH-11	5	M	M	Y	Y	Y (local match only)	H-M (DOF)
SH-12	3	M	M	Y	Y	Y (local match only)	M
SH-13	3	M	M	Y	Y	Y (local match only)	H
SH-14	2	H	H	Y	Y	Y (local match only)	M
SH-15	4	M	M	Y	Y	Y (local match only)	H-M (DOF)
SH-16	5	H	H	Y	Y	Y (local match only)	M
SH-17	4	L	L	Y	N	Y	H
SH-18	6	L	L	Y	N	Y	H
SH-19	5	M	M	Y	N	Y	M
SH-20	6	M	L	Y	N	Y	H
SH-21	6	M	L	Y	N	Y	H
SH-22	6	H	H	Y	Y	Y (local match only)	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a "Medium" priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a "High" priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

None at this time.

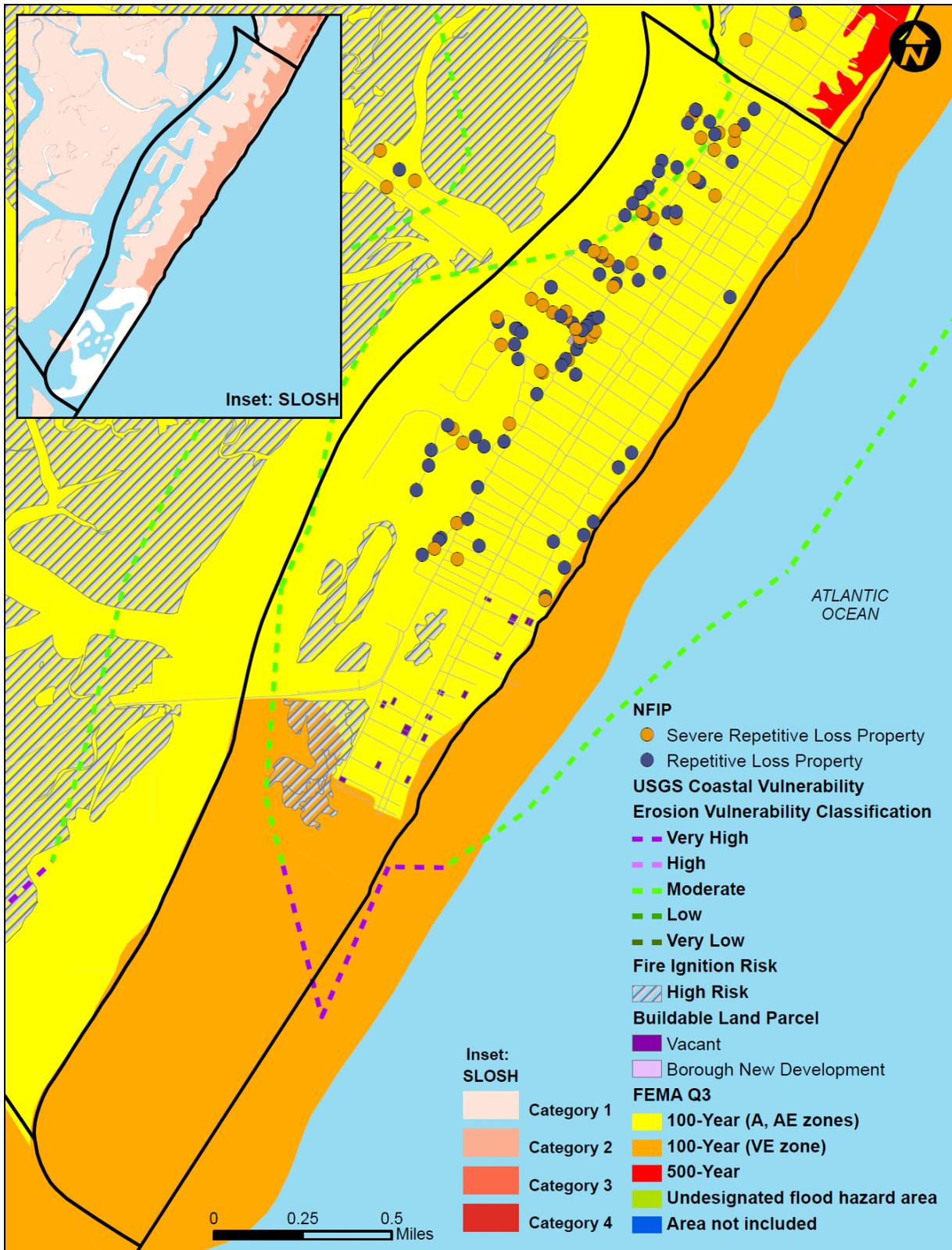
**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Borough of Stone Harbor to illustrate the probable areas impacted within the Borough. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of Stone Harbor has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.

**SECTION 9.11: BOROUGH OF STONE HARBOR**



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

## 9.12 TOWNSHIP OF UPPER

This section presents the jurisdictional annex for the Township of Upper.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
John Deuter/Emergency Management Director P.O. Box 205, Tuckahoe, NJ 08250 (609) 628-2011 <a href="mailto:emergencymanagement@uppertownship.com">emergencymanagement@uppertownship.com</a>	Mike Jones/Deputy Director of Emergency Management P.O. Box 205, Tuckahoe, NJ 08650 (609) 628-2011

### B.) TOWNSHIP PROFILE

#### *Population*

10,941 (estimated 2008 Residential Population, Cape May County Planning Dept.)

44,431 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

The Township of Upper is located on the northernmost portion of Cape May County, New Jersey. It is bounded on the north by Atlantic County, New Jersey, on the east by the City of Ocean City and the Atlantic Ocean, on the south-southwest by the Borough of Woodbine and Township of Dennis and the west by portions of the Township of Dennis and Cumberland County, New Jersey. It is part of the Ocean City Metropolitan Statistical Area. The Township is made up of 10 small villages or towns: Beesleys Point, Marmora, Palermo, Seaville, Tuckahoe, Greenfield, Marshallville, Steelmantown, Petersburg and Strathmere. Strathmere, which includes ~1.3 miles of Atlantic beachfront, adjoins with the city of Sea Isle City on its south end.

According to the U.S. Census Bureau, the township has a total area of 68.5 square miles (177.4 km<sup>2</sup>), with 63.2 square miles (163.6 km<sup>2</sup>) of it land and 5.3 square miles (13.8 km<sup>2</sup>) of it (7.77-percent) water.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F.

Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

The Township of Upper was formed as a precinct on April 2, 1723, and was incorporated as one of New Jersey's initial 104 townships by an Act of the New Jersey Legislature on February 21, 1798. Portions of the township have been taken from the Township of Dennis (March 1, 1827) and the former Borough of Ocean City (March 3, 1884) (Snyder, 1969; Visit New Jersey Shore, 2009).

***Governing Body Format***

The Township of Upper is governed under the Township form of government with a five-member Township Committee. The Township Committee is elected directly by the voters in partisan elections to serve three-year terms of office on a staggered basis, with one or two seats coming up for election each year. At an annual reorganization meeting, the Township Committee selects one of its members to serve as Mayor (Rutgers University, 2005).

***Growth/Development Trends***

At this time, no new major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

**Summary of Potentially Developable Land in the Township of Upper**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Township of Upper	25	901.2	46	1039.2	8	135	6	19.3	14	702.8	384	3063.3	483	5860.8

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009

## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE TOWNSHIP

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Tornado (F0)	Not applicable	May, 1989	\$2,500 (Township of Upper)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March-01-1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January-01-1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September-01- 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February-01-2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Coastal Storm	Not applicable	October, 2008	Damage in Strathmere
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 27

**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 6

Source: FEMA Region 2 as of December 2009

**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
4	Coastal Erosion	Not available	Frequent	18	Low
3	Coastal Storm	Min: \$385,915,547 Max: \$447,612,209	Frequent	36	Medium
1	Flood	\$228,099,000	Frequent	54	High
2	Severe Storm	\$89,361,209	Frequent	42	High
3	Severe Winter Storm	\$11,001,000	Frequent	36	Medium
5	Tsunami	Not available	Rare	12	Low
2	Wildfire	Not available	Frequent	42	High

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

## E.1) Legal and Regulatory Capability

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	Y	Y	Y	Y	Ordinance Section 10
2) Zoning Ordinance	Y	Y	Y	Y	Ordinance Section 20
3) Subdivision Ordinance	Y	Y	N	N	Ordinance Section 19
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Ordinance Section 18
5) Growth Management	Y	Y	N	Y	November 16, 2006
6) Floodplain Management / Basin Plan	N	Y	Y	Y	
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	January 12, 2005
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	November 16, 2006
9) Capital Improvements Plan	N	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	Ordinance Section 19
11) Open Space Plan	N	N	Y	N	
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	July 22, 2008
15) Post Disaster Recovery Plan	Y	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Resolution and Plan for an Engineered Beach – whole 1.3 miles of beach in Strathmere	Y	N	Y	Y	

## E.2) Administrative and Technical Capability

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Municipal Engineer
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Municipal Engineer/Construction Code Official
3) Planners or engineers with an understanding of natural hazards	Y	Municipal Engineer
4) NFIP Floodplain Administrator	Y	Edward Kenney, Construction Code Official
5) Surveyor(s)	N	
6) Personnel skilled or trained in "GIS" applications	Y	Municipal Engineer
7) Scientist familiar with natural hazards in the Township of Upper.	N	
8) Emergency Manager	Y	Director OEM
9) Grant Writer(s)	N	
10) Staff with expertise or training in benefit/cost analysis	N	

## E.3) Fiscal Capability

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	No
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	No
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	Yes
8) Incur debt through private activity bonds	Don't Know
9) Withhold public expenditures in hazard-prone areas	Don't Know
10) Other	Don't Know

#### E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	---	---
Public Protection	---	---
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TU-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
TU-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
TU-2 (CMC-2)	Consider participation in incentive-based program CRS.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-	Township	Low - Medium	Local Budget	Short

**SECTION 9.12: TOWNSHIP OF UPPER**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
					1, 5-2, 6-2, 6-3				
TU-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Township (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
TU-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
TU-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1 through 6	All	Municipal Emergency Manager with support from County OEM and NJ OEM	Low - Medium	Local Budget	Ongoing
TU-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	Township	Low - Medium	Local Budget	Ongoing
TU-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
TU-8	Continue to conduct beach replenishment to maintain minimum beach profile for storm protection (maintain their Engineered Beach)	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe Storm, Tsunami	1, 3, 5	1-1, 3-4, 5-1, 5-2, 5-3, 5-4	Town, with support from NJDEP	High	NJDEP – 75% City – 25%	Ongoing
TU-9	Reconstruct Bayview Drive in Strathmere for drainage improvements	Existing	Coastal Storms, Coastal Flooding	1, 3, 4	1-1, 3-4, 4-2	Township	High	Local and NJDOT grants	Long-term
TU-10	Develop a local bulkhead ordinance as used in other Cape May communities	N/A	Coastal Storm, Severe Storm, Flood	1, 3, 4	1-3, 1-7, 1-10, 3-2, 4-9	Township	Low	Local	Short



**SECTION 9.12: TOWNSHIP OF UPPER**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TU-11	Conduct a study of bulkhead to determine substandard (lower than 7.5') or non-existent bulkheads	Existing	Coastal Storms, Coastal Flooding	1, 3, 4	1-1, 1-5, 1-6, 1-10, 3-4, 4-1	Township	Low-Medium	Local	Short
TU-12	Develop and implement projects to install and/or upgrade bulkheads, based on the results of the TU-11 study	Existing	Coastal Storms, Coastal Flooding	1, 4	1-1, 1-10, 3-4, 4-1	Township	High	HMA grants with local or property owner match	Long-term DOF
TU-13 (CMC-28, SIC-8)	Install permanent protection to CR-619, from the Whale Beach area in Sea Isle City to the Strathmere section of Upper Township, to replace the existing GeoTube installed in the late 1990s. The GeoTube is beyond its design life.	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe Storms	1, 3, 4, 5, 6	1-1, 1-4, 3-3, 4-2, 4-7, 4-10, 5-4, 6-2	County and ACOE, with municipal support	High	Federal grants with local match	Longterm DOF
TU-14 (CMC-29, OC-13)	Upgrade existing revetment wall (needs to be extended to the south and existing sections upgraded) and provide additional road protection to CR-619 in Strathmere to Ocean City, and elevate sections of road as needed.	Existing	Coastal Storms, Coastal Erosion, Flooding, Severe storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-7, 4-10	County Engineering	High	Federal grants with local match	Longterm DOF
TU-15 (CMC-30)	Intersection of Roosevelt Boulevard (CR-623) and the Garden State Parkway (Upper Township) – Roosevelt Boulevard Elevate roadway and ramps, which will first require elevation of the Parkway bridge overpass.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	NJTPA, County Engineering	High	HMA grants with local match	Longterm DOF
TU-16 (CMC-31)	Elevate Roosevelt Boulevard (CR-623) from the Parkway into Ocean City proper.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	HMA grants with local match	Longterm DOF



**SECTION 9.12: TOWNSHIP OF UPPER**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TU-17 (CMC-33)	Elevate Tuckahoe Road (CR-636) from Butter Road to CR-610. A conceptual design for this project is available.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipal support	High	HMA grants with local match	Longterm DOF
TU-18 (CMC-34)	Work with the State DOT to address vulnerabilities on SR-50 along Cedar Swamp Creek.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-4, 3-3, 4-2, 4-10, 6-3	State DOT with County and municipal support	High	TBD	Longterm DOF
TU-19 (CMC-35)	Develop an engineering solution for severe flooding problems along CR-650 and Hope Corson Road (CR-671). County has design work on this project, except for drainage issues at western end of Route 50.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-4, 3-3, 4-2, 4-10, 6-3	County Engineering with municipal support	\$1.5 MM (High)	HMA grants with local match	Short
TU-20	Address localized flooding on Evergreen Drive and Stagecoach Road. Part of the problem here is sand/silt infiltration into the drainage system exacerbated by the local sand plant.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 3-3, 3-4, 4-2, 4-7	Township	Medium	Local	Short
TU-21 (CMC-41)	Identify proper locations for and install water draw (siphon) stations to increase fire-fighting capabilities.	N/A	Wildfire	1, 3, 4, 6	1-1, 1-11, 3-3, 4-6, 4-7, 4-8, 6-1, 6-3	County Fire and OEM with support from local fire and OEM	M-H	DHS grants; County and Local funding	Longterm
TU-22 (CMC-61, OC-31)	Install shore protection along Ocean Drive (CR619) at Corsons Inlet in Upper Township and Ocean City	Existing	Coastal Storms, Severe Storms, Coastal Erosion	1, 3, 4, 5	1-1, 3-4, 4-1, 4-6, 5-4	County Engineering with municipal support	High	HMA Grants, County and Local Funding	Short-term
TU-23	Construction of storm sewer system to alleviate flooding on Dennisville – Petersburg Road (CR610) from White Pine Lane to Old Tuckahoe Road in Upper Township	New & Existing	Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Low	HMA Grants, County and Local Funding	In Progress, Short-term



**SECTION 9.12: TOWNSHIP OF UPPER**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
TU-24	Construction of additional storm sewer infiltration system to minimize flooding on Hope Corson Road (CR671) from Route NJ 50 to Stagecoach Road in Upper Township	New & Existing	Flooding, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Low	HMA Grants, County and Local Funding	In Progress, Short-term
TU-25 (CMC-69)	Become a National Fire Protection Association (NFPA) "Firewise" community. Participation in the NFPA "Firewise" program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the "Firewise" program, facilitating public outreach and awareness programs, and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs working with County Fire Coordinator	L-M	Existing Budgets	Short-term
TU-26	Through attendance at the regular meetings of the Cape May County Fire Chiefs Association, and in partnership with the New Jersey Division of Fire Safety and the New Jersey State Forest Fire Service, expand and enhance public awareness and education programs that support wildfire mitigation at the property owner level; and	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs	LM	Existing Budgets	Short-term



**SECTION 9.12: TOWNSHIP OF UPPER**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	expand local wildfire preparedness and response capabilities through participation in seminars and training, and the implementation of recommendations and initiatives offered by these agencies, as resources permit.								

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; M = Million; TBD = To be determined.

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Township has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	TU-3, TU-5, TU-6, TU-7	TU-7, TU-13, TU-22	TU-3, TU-7	TU-7, TU-8, TU-13	TU-5, TU-7	TU-7, TU-13, TU-22
Coastal Storm	TU-3, TU-5, TU-6, TU-7, TU-10, TU-11, TU-18, TU-19	TU-1a and 1b, TU-7, TU-9, TU-12, TU-13, TU-14 TO 17, TU-20, TU-22	TU-3, TU-7	TU-7, TU-8, TU-13	TU-5, TU-7	TU-7, TU-9, TU-12 to TU-16, TU-22
Flood	TU-2, TU-3, TU-5, TU-6, TU-7, TU-10, TU-11, TU-18, TU-19	TU-1a and 1b, TU-2, TU-4, TU-7, TU-9, TU-12, TU-13, TU-14 TO 17, TU-20, TU-23, TU-24	TU-2, TU-3, TU-4, TU-7	TU-2, TU-4, TU-7, TU-8, TU-13	TU-5, TU-7	TU-7, TU-9, TU-12 to TU-16, TU-23, TU-24
Severe Storm	TU-3, TU-5, TU-6, TU-7, TU-10, TU-11, TU-18, TU-19	TU-1a and 1b, TU-7, TU-9, TU-12, TU-13, TU-14 TO 17, TU-20, TU-22 to TU-24	TU-3, TU-7	TU-7, TU-8, TU-13	TU-5, TU-7	TU-7, TU-9, TU-12 to TU-16, TU-22 to -24
Severe Winter Storm	TU-3, TU-5, TU-6, TU-7	TU-7	TU-3, TU-7	TU-7	TU-5, TU-7	TU-7
Tsunami	TU-3, TU-5, TU-6, TU-7	TU-7, TU-13	TU-3, TU-7	TU-7, TU-13	TU-5, TU-7	TU-7, TU-13
Wildfire	TU-3, TU-5, TU-6, TU-7, TU-25, TU-26	TU-7, TU-25, TU-26	TU-3, TU-7, TU-25, TU-26	TU-7, TU-25, TU-26	TU-5, TU-7, TU-21, TU-26	TU-7, TU-21

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

5. **Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
TU-1a	8	H	H	Y	Y	N	M-H*
TU-1a	8	H	H	Y	Y	N	M-H*
TU-2	9	M	L	Y	N	Y	H
TU-3	All	M	M	Y	N (Yes for 5 year update)	N	M
TU-4	14	H	L	Y	N	Y	H
TU-5	13	M	L	Y	N	Y	M
TU-6	13	M	L	Y	N	Y	M
TU-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
TU-8	6	H	H	Y	Y	Y (local match only)	H
TU-9	3	H	H	Y	Y	Y (local match only)	M
TU-10	5	L	L	Y	Y	Y	H
TU-11	6	M-L	M-L	Y	Y	Y	H
TU-12	4	H	H	Y	Y	Y (local match only)	M
TU-13	8	H	H	Y	Y	Y (local match only)	M
TU-14	4	H	H	Y	Y	Y (local match only)	M
TU-15	5	H	H	Y	Y	Y (local match only)	M
TU-16	5	H	H	Y	Y	Y (local match only)	M
TU-17	5	H	H	Y	Y	Y (local match only)	M
TU-18	6	H	H	Y	Y	Y (local match only)	M-H
TU-19	6	H	M	Y	Y	Y (local match only)	M

TU-20	6	H	M	Y	Y	Y	H
TU-21	8	M	M-H	N	Y (DHS, not mitigation)	N	L-M
TU-22	5	H	H	Y	Y	N	H
TU-23	6	H	L	Y	Y	Y	H
TU-24	6	H	L	Y	Y	Y	H
TU-25	14	M	L	Y	N	Y	H
TU-26	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

### I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

None at this time.

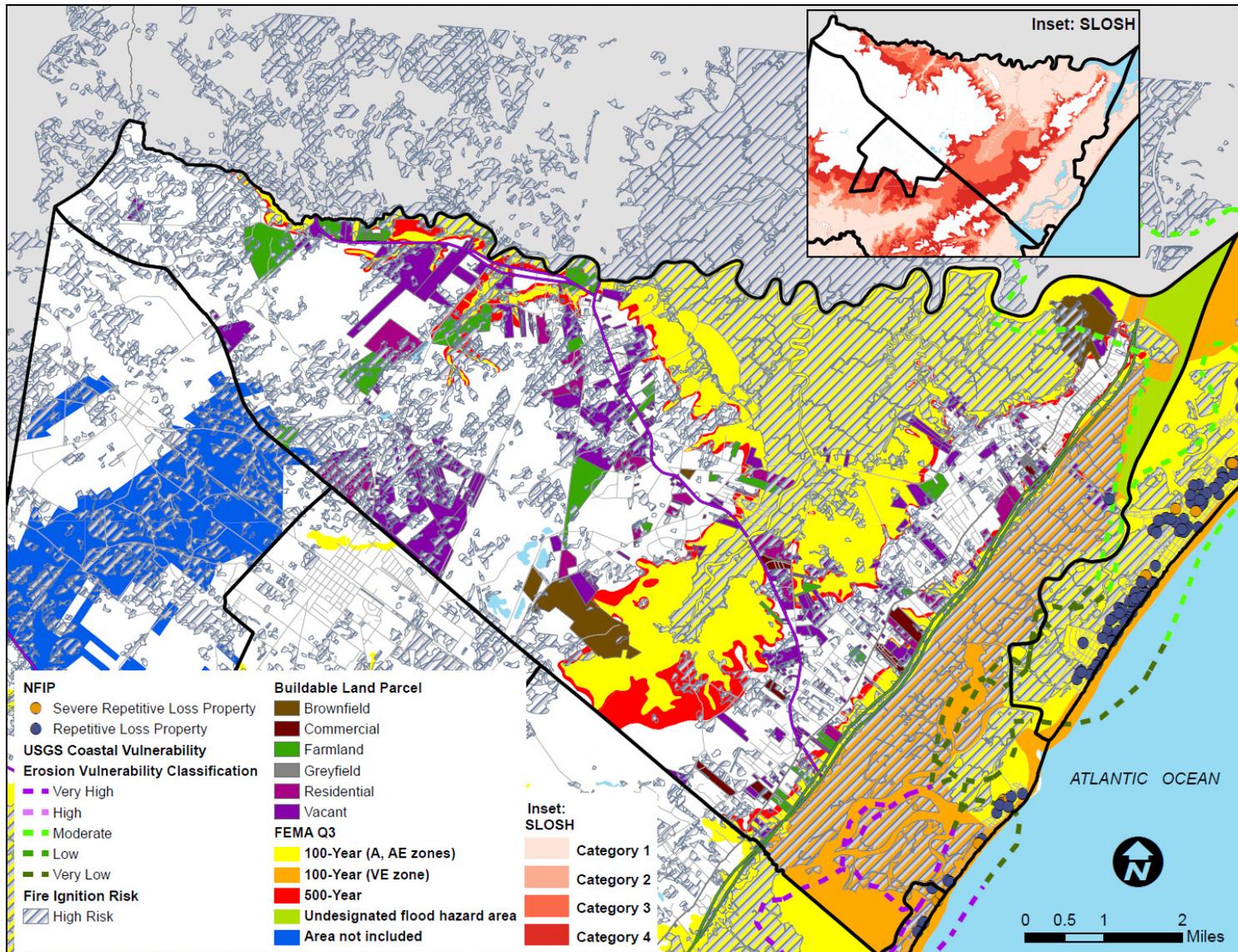
### J.) HAZARD AREA EXTENT AND LOCATION

A hazard area extent and location map has been generated and is provided below for the Township of Upper to illustrate the probable areas impacted within the Township. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping

techniques and technologies, and for which the Township of Upper has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

**9.13 BOROUGH OF WEST CAPE MAY**

This section presents the jurisdictional annex for the Borough of West Cape May.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Daniel K. Rutherford/Coordinator 113 Stevens St., West Cape May, NJ 08204 (609) 898-3140 <a href="mailto:marineinvestigations@gmail.com">marineinvestigations@gmail.com</a>	William R. Callahan; Construction Official 113 Stevens Street West Cape May, NJ 08204 (609) 884-1005

**B.) BOROUGH PROFILE**

***Population***

980 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
 8,655 (estimated 2008 Summer Population, Cape May County Planning Dept.)

***Location***

West Cape May is a Borough at the southern tip of Cape May Peninsula in Cape May County, New Jersey, where the Delaware Bay meets the Atlantic Ocean. It is bounded on the north by the Township of Lower, on the east by the City of Cape May, on the south by the Atlantic Ocean and Delaware Bay, and on the west by the Township of Lower, Borough of Cape May Point and the Delaware Bay. It is part of the Ocean City Metropolitan Statistical Area.

According to the U.S. Census Bureau, the borough has a total area of 1.2 square miles (3.1 km<sup>2</sup>), all of it land.

***Climate***

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.



***Brief History***

The Borough of West Cape May, formerly known as Eldredge, is one of the four jurisdictions that comprise Cape Island in Cape May County and was incorporated as a Borough from the Township of Upper in late 1884. The Borough was home to Mayflower descendents, former slaves, riverboat pilots and whalers. The Borough's history goes back to the time of the Lenape Indians and several buildings date to the Colonial period. The Borough has reported ties to the Underground Railroad and has been home to numerous African Americans. From 1881 to 1931, the Hastings Goldbeating Company was located in the Borough employing women to pound one-inch strips of gold into gossamer-thin sheets used for decorative arts. Women still did the "booking" of gold leaf sheets until 1961. A plaque indicating the location of the factory can be found on Goldbeaten Alley. It was this business along with real estate speculation and subdivision of the land that led to the Borough's incorporation in April 1884. The historic core of the Borough was placed on the National Register of Historic Places along with sections of the City of Cape May in 1976. (Borough of West Cape May, 2009; Snyder, 1969; Visit New Jersey Shore, 2009).

***Governing Body Format***

The Borough of West Cape May operates under the Walsh Act Commission form of government. The Board of Commissioners consists of three members, who are elected at-large in non-partisan elections and serve 4 year, concurrent terms. Once the Commissioners take office, they divide up the municipal departments, according to N.J.S.A. 40: 72-4. Each Commissioner becomes a Department Director and holds all the executive, administrative, judicial and legislative powers. There is no single chief executive.

In West Cape May, the Departments are currently distributed as follows: Department of Public Affairs and Public Safety; Department of Revenue and Finance; and Department of Public Works and Parks and Grounds (Borough of West Cape May, 2009)

***Growth/Development Trends***

At this time, no new major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Borough of West Cape May**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Borough of West Cape May	0	0	0	0	0	0	0	0	1	0.4	67	25.3	68	25.7

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE BOROUGH

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March, 1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January, 1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September, 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February, 2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 12

**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 2

Source: FEMA Region 2 as of December 2009

D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
3	Coastal Erosion	Not available	Frequent	36	Medium
1	Coastal Storm	Min: \$125,316,000 Max: \$147,226,177	Frequent	54	High
1	Flood	\$87,960,000	Frequent	54	High
2	Severe Storm	\$21,910,177	Frequent	45	High
3	Severe Winter Storm	\$1,548,500	Frequent	36	Medium
4	Tsunami	Not available	Rare	12	Low
4	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	N	Y	Y	Y	IBC
2) Zoning Ordinance	Y	Y	Y	Y	Chapter 27
3) Subdivision Ordinance	Y	Y	N	N	Chapter 25
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Chapter 23, Sections 1-5
5) Growth Management	Y	Y	N	Y	
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Yes (Update - December 2005)
9) Capital Improvements Plan	Y	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	Chapter 24
11) Open Space Plan	N	N	Y	N	
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	N	Y	Y	N	
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	N	N	Y	Y	

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Yes (contracted)
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	William Callahan – Construction Official
3) Planners or engineers with an understanding of natural hazards	Y	Yes (contracted)
4) NFIP Floodplain Administrator	Y	William Callahan – Construction Official
5) Surveyor(s)	Y	Yes (contracted)
6) Personnel skilled or trained in “GIS” applications	TBD	
7) Scientist familiar with natural hazards in the Borough of West Cape May.	TBD	
8) Emergency Manager	Y	Daniel Rutherford
9) Grant Writer(s)	TBD	Yes (contracted)
10) Staff with expertise or training in benefit/cost analysis	TBD	

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	No
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	

**E.4) Community Classifications**

<b>Program</b>	<b>Classification</b>	<b>Date Classified</b>
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	--	--
Public Protection	--	--
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. -- = Unavailable.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
WCM-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
WCM-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
WCM-2 (CMC-2)	Consider participation in the incentive-based program CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	Borough	Low - Medium	Local Budget	Short

**SECTION 9.13: BOROUGH OF WEST CAPE MAY**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
WCM-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Borough (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
WCM-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
WCM-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
WCM-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
WCM-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
WCM-8	Retrofit school to reduce vulnerability to natural hazards, including wind-resistant glazing and addition of backup power.	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3, 6	1-1, 3-3, 3-4, 6-1	School Board with assistance from local departments	Medium	FEMA HMA funding with local match	Longterm DOF
WCM-9	Retrofit City Hall to reduce vulnerability to natural hazards, including wind-resistant glazing, improved communications system, backup power and	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3	1-1, 3-3, 3-4	Engineering Department with support from Emergency Management	Medium - High	FEMA HMA funding with local match	Longterm DOF



**SECTION 9.13: BOROUGH OF WEST CAPE MAY**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	emergency lighting.								
WCM-10	Elevate Bayshore Road (CR-607). This road floods even in light rainstorms.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-11	County Engineering with local support	High	FEMA HMA funding with local match	Longterm DOF
WCM-11	Work with Shade Tree Commission and utilities to develop and implement an improved tree maintenance program	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3, 6	1-1, 3-3, 6-1	County Engineering with support from Shade Tree Commission and electric utility (AC Electric)	Low-Medium	Local and ratepayers	Short
WCM-12 (CMC-8 and TL-15)	Elevate ~1.5 miles of CR-606 (Sunset Boulevard) through the South Cape May Meadows (Lower and WCM).	N/A	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering	High	Various, incl. federal grant funding	Longterm DOF (lower priority project – area is not as floodprone as many other areas)
WCM-13 (CMC-58)	Develop a stormwater master plan for West Cape May	Existing	Coastal Storms, Severe Storms, Flooding	1, 4	1-1, 1-6, 4-1, 4-6	County Engineering/ Planning with municipal support	Low	County and Local Funding	Short-term
WCM-14 (CMC-67)	Construction of storm drain pipe to minimize flooding on Bayshore Road (CR607) from Fifth Avenue to railroad crossing in West Cape May	New & Existing	Flooding, Coastal Storms, Severe Storms	1, 3, 4, 6	1-1, 1-5, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Low	HMA Grants, County and Local Funding	In Progress, Short-term
WCM-15	Purchase and installation of an emergency generator for pump station power outages. (USDA FY 2008 Water & Sewer Replacement Project)	Existing	Flooding, Coastal Storms, Severe Storms	1, 3, 4, 6	1-1, 1-4, 1-11, 3-2, 3-3, 3-4, 4-7, 6-2	Engineering with USDA	High	USDA and local	In-progress
WCM-	Work directly with residents	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2	Local Fire	L-M	Existing	Short-term



**SECTION 9.13: BOROUGH OF WEST CAPE MAY**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
16 (CMC-69)	of the community located in a mixed interface next to phragmites to become a National Fire Protection Association (NFPA) "Firewise" community. Participation in the NFPA "Firewise" program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the "Firewise" program, facilitating public outreach and awareness programs, and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).				(all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Chiefs working with County Fire Coordinator and identified residents		Budgets	

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; PDM = Pre-Disaster Mitigation Grant Program

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Borough has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	WCM-3, WCM-5, WCM-6, WCM-7	WCM-7	WCM-3, WCM-7	WCM-7	WCM-5, WCM-7	WCM-7
Coastal Storm	WCM-3, WCM-5, WCM-6, WCM-7, WCM-11	WCM-1a and 1b, WCM-7, WCM-8 to 10, WCM-12, WCM-14, WCM-15	WCM-3, WCM-7, WCM-13	WCM-7	WCM-5, WCM-7, WCM-8, WCM-9, WCM-12	WCM-7, WCM-10, WCM-14
Flood	WCM-2, WCM-3, WCM-5, WCM-6, WCM-7	WCM-1a and 1b, WCM-2, WCM-4, WCM-7, WCM-8 to 10, WCM-12, WCM-14, WCM-15	WCM-2, WCM-3, WCM-4, WCM-7, WCM-13	WCM-2, WCM-4, WCM-7	WCM-5, WCM-7, WCM-8, WCM-9, WCM-12	WCM-7, WCM-10, WCM-14
Severe Storm	WCM-3, WCM-5, WCM-6, WCM-7, WCM-11	WCM-1a and 1b, WCM-7, WCM-9 to 10, WCM-12, WCM-14, WCM-15	WCM-3, WCM-7, WCM-13	WCM-7	WCM-5, WCM-7, WCM-12	WCM-7, WCM-10, WCM-14
Severe Winter Storm	WCM-3, WCM-5, WCM-6, WCM-7, WCM-11	WCM-7, WCM-8, WCM-9	WCM-3, WCM-7	WCM-7	WCM-5, WCM-7, WCM-8, WCM-9	WCM-7
Tsunami	WCM-3, WCM-5, WCM-6, WCM-7	WCM-7	WCM-3, WCM-7	WCM-7	WCM-5, WCM-7	WCM-7
Wildfire	WCM-3, WCM-5, WCM-6, WCM-7, WCM-16	WCM-7, WCM-16	WCM-3, WCM-7, WCM-16	WCM-7, WCM-16	WCM-5, WCM-7	WCM-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

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5. **Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
WCM-1a	8	H	H	Y	Y	N	M-H*
WCM-1b	8	H	H	Y	Y	N	M-H*
WCM-2	9	M	L	Y	N	Y	H
WCM-3	All	M	M	Y	N (Yes for 5 year update)	N	M
WCM-4	14	H	L	Y	N	Y	H
WCM-5	13	M	L	Y	N	Y	M
WCM-6	13	M	L	Y	N	Y	M
WCM-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
WCM-8	4	H	M	Y	Y	Y (local match only)	M
WCM-9	3	H	H-M	Y	Y	Y (local match only)	M
WCM-10	5	H	H	Y	Y	Y (local match only)	M
WCM-11	3	M	M-L	Y	Y	Y (local match only)	H
WCM-12	5	H	H	Y	Y	N	L-M
WCM-13	4	M	L	Y	N	Y	H
WCM-14	6	H	L	Y	Y	Y	H
WCM-15	8	H	H	Y	Y (USDA)	Y	H
WCM-16	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a "Medium" priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a "High" priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

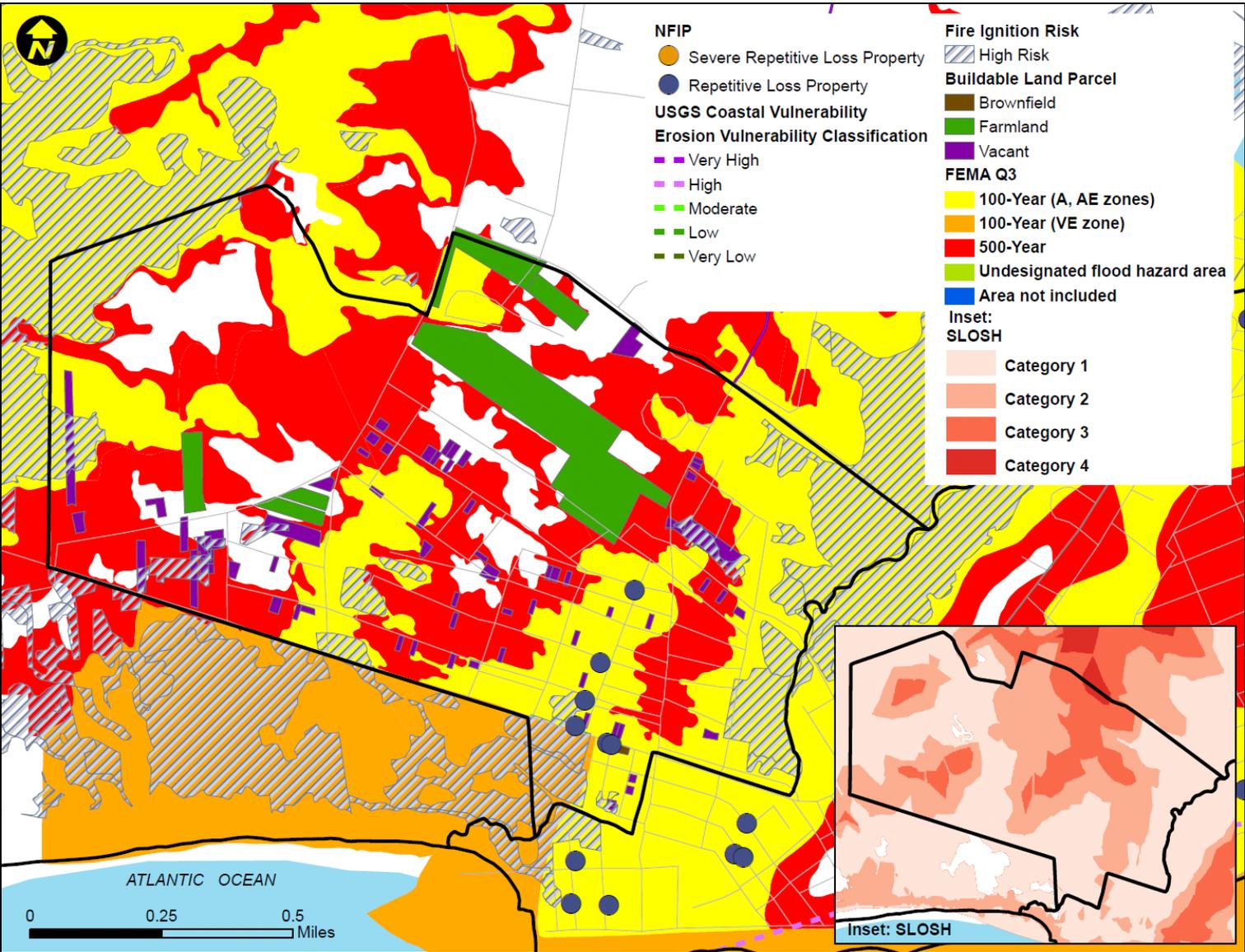
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Borough of West Cape May to illustrate the probable areas impacted within the Borough. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of West Cape May has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.



**9.14 BOROUGH OF WEST WILDWOOD**

This section presents the jurisdictional annex for the Borough of West Wildwood.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Fran Pellegrino, Supervisor of Public Works 701 West Glenwood Ave., West Wildwood, NJ 08260 (609) 522-4845 <a href="mailto:mariasharkey@comcast.net">mariasharkey@comcast.net</a>	Glen Franzoi, Construction Official 701 West Glenwood Avenue West Wildwood, NJ 08260 (609) 522-4845

**B.) BOROUGH PROFILE**

**Population**

400 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
 7,092 (estimated 2008 Summer Population, Cape May County Planning Dept.)

**Location**

The Borough of West Wildwood is located on a barrier island along the Atlantic Ocean coastline of Cape May County, New Jersey. It is bounded on the north and west by the Township of Middle and the Richardson and Grassy Sound, on the east by the City of North Wildwood and the Atlantic Ocean, and on the south by the City of Wildwood and the Atlantic Ocean. West Wildwood is a small island connected to Wildwood by a two-lane bridge.

The Borough of West Wildwood and its neighboring communities of the City of Wildwood, City of North Wildwood, and the Borough of Wildwood Crest make up "The Wildwoods" resort, a popular vacation destination for those living in all parts of New Jersey as well as within the New York City and Philadelphia, Pennsylvania metropolitan areas.

According to the U.S. Census Bureau, the borough has a total area of 0.3 square miles (0.9 km<sup>2</sup>), with 0.3 square miles (0.7 km<sup>2</sup>) of it land and 0.1 square miles (0.2 km<sup>2</sup>) of it (25.71-percent) water.

**Climate**

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F.



Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

### ***Brief History***

The Borough of West Wildwood was incorporated as a borough by an Act of the New Jersey Legislature on April 21, 1920, from portions of Middle Township (Snyder, 1969).

In the 1950's, the Wildwoods grew into a major resort town. Wildwood boasts the largest collection of mid-century architecture in the U.S., now labeled "Doo-Wop Architecture". The World-Famous Boardwalk, built at the turn of the century, consists of more than 70,000 planks and stretches for nearly two miles, or 37 city blocks. Wildwood beaches, by far some of the largest on the East Coast, have been on many "best of" lists, including the Travel Channel's "Best Beaches" show and Conde Naste's "Best Sports Beach" list.

### ***Governing Body Format***

The Borough of West Wildwood has been governed under the Walsh Act form of New Jersey municipal government, by a three-member commission, since 1964 (Rutgers University, 2005; New Jersey State Library, Date Unknown).

### ***Growth/Development Trends***

At this time, no new major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Borough of West Wildwood**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Borough of West Wildwood	0	0	0	0	0	0	0	0	0	0	40	8.9	40	8.9

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009

C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE BOROUGH

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March, 1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January, 1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$4,000,000 (North Wildwood, Wildwood, Wildwood Crest, West Wildwood) \$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September, 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February, 2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 286  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 144

Source: FEMA Region 2 as of December 2009



**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
3	Coastal Erosion	Not available	Frequent	36	Medium
1	Coastal Storm	Min: \$90,069,000 Max: \$100,475,915	Frequent	54	High
1	Flood	\$81,325,000	Frequent	54	High
2	Severe Storm	\$10,406,915	Frequent	45	High
3	Severe Winter Storm	\$980,180	Frequent	36	Medium
4	Tsunami	Not available	Rare	12	Low
4	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	Y	Y	Y	Y	Ordinance # 463, Adopted: 2-2-07
2) Zoning Ordinance	Y	Y	Y	Y	Ordinance # 398, Adopted: 2-4-00
3) Subdivision Ordinance	Y	Y	N	N	Ordinance # 398, Adopted: 2-4-00
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Ordinance # 356, Adopted: 10-14-93
5) Growth Management	Y	Y	N	Y	Master Plan, Adopted: 8-2008
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Ordinance # 356, Adopted: 10-14-93
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Ordinance # 455, Adopted: 3-3-06
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Master Plan, Adopted: 8-2008
9) Capital Improvements Plan	Y	N	N	N	Budget
10) Site Plan Review Requirements	Y	N	Y	N	Master Plan, Adopted: 8-2008
11) Open Space Plan	Y	N	Y	N	Master Plan, Adopted: 8-2008
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	Master Plan, Adopted: 8-2008
14) Emergency Response Plan	Y	Y	Y	N	Borough of West Wildwood Emergency Response Plan, Adopted: 9-16-99
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	Master Plan, Adopted: 8-2008

**E.2) Administrative and Technical Capability**

<b>Staff/ Personnel Resources</b>	<b>Available (Y or N)</b>	<b>Department/ Agency/Position</b>
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Municipal Engineer
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	COCOW
3) Planners or engineers with an understanding of natural hazards	Y	Municipal Engineer
4) NFIP Floodplain Administrator	Y	Glenn Franzoi, Construction Official
5) Surveyor(s)	Y	Contracted via Engineer
6) Personnel skilled or trained in "GIS" applications	TBD	TBD
7) Scientist familiar with natural hazards in the Borough of West Wildwood.	TBD	TBD
8) Emergency Manager	Y	Office of Emergency Management
9) Grant Writer(s)	Y	Chief Financial Officer
10) Staff with expertise or training in benefit/cost analysis	Y	Contracted Services, CFO Auditor

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community development Block Grants (CDBG)	Had in the past, possibly now
2) Capital Improvements Project Funding	Yes – Budgeted Yearly
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes – Water and Sewer
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	Yes
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	

**E.4) Community Classifications**

<b>Program</b>	<b>Classification</b>	<b>Date Classified</b>
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	---	---
Public Protection	---	---
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* = Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
WW-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
WW-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
WW-2	Work with FEMA and ISO to re-establish participation	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3,	Borough	Low - Medium	Local Budget	Short



**SECTION 9.14: BOROUGH OF WEST WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	in CRS.				6-2, 6-3				
WW-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Borough (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
WW-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
WW-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
WW-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
WW-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
WW-8	Extended stabilization project for 26 <sup>th</sup> Street to reduce storm surge and prevent debris from entering the municipality	New & Existing	Coastal Storm, Coastal Erosion, Flood, Severe Storm	1, 3, 4	1-1, 1-4, 3-3, 4-2	Borough	Medium to High	Local match; FEMA or other grants	Long-term
WW-9	Regional Project with all Wildwoods: Elevate bulkhead heights and replace all municipal	New & Existing	Coastal Storm, Flood, Severe Storm	1, 2, 6	1-1, 2-2, 2-4, 2-5, 6-2	Municipality (engineering and DPW)	High	HMA grant programs (if applicable) with local	Long-term DOF



**SECTION 9.14: BOROUGH OF WEST WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	bulkhead to new ordinance elevations							budget match	
WW-10	Evaluate the substructure of the Public Safety Building / Borough Hall for water damage from past flood events to determine if repair/mitigation is necessary	Existing	Coastal Storm, Flood, Severe Storm	1, 3	1-1, 3-3, 3-4	Municipality	Medium	HMA grant programs (if applicable) with local budget match	Long-term DOF
WW-11	New siren system with voice-over tone at 3 locations to increase reliability, increase coverage and improve effectiveness: 1) Public Works 2) Recreation Complex 3) Public Safety/Borough Hall  Current siren system failed last year and 155 cars were damaged.	New & Existing	All Hazards (except Coastal Erosion)	3, 4	3-3, 4-3, 4-6, 4-7	Municipality	Medium to High	Federal grant programs with local budget match	Long-term DOF
WW-12 (CMC-11)	Address flooding on Glenwood Avenue (CR-614) through West Wildwood	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	County Engineering with municipal support	High	Various, incl. federal grant funding	Longterm DOF
WW-13	Reconstruction of Neptune Avenue from Glenwood Avenue to the North Drive entrance to the Fire House – Public Works site.	Existing	Coastal Storms, Flooding, Severe Storms	1, 3, 4	1-1, 1-4, 1-11, 3-2, 3-3, 3-4, 4-4-2, 4-7, 4-10	Municipal engineering	High (~\$370k)	HMA; local budgets for match	Longterm DOF (LOI for HMA grant submitted 1Q10)

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding;

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Borough has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	WW-3, WW-5, WW-6, WW-7	WW-7, WW-8	WW-3, WW-7	WW-7, WW-8	WW-5, WW-7	WW-7
Coastal Storm	WW-3, WW-5, WW-6, WW-7	WW-1a and 1b, WW-7 to 10, WW-12, WW-13	WW-3, WW-7	WW-7, WW-8	WW-5, WW-7, WW-10, WW-11	WW-7
Flood	WW-2, WW-3, WW-5, WW-6, WW-7	WW-1a and 1b, WW-2, WW-4, WW-7 to 10, WW-12, WW-13	WW-2, WW-3, WW-4, WW-7	WW-2, WW-4, WW-7, WW-8	WW-5, WW-7, WW-10, WW-11	WW-7
Severe Storm	WW-3, WW-5, WW-6, WW-7	WW-1a and 1b, WW-7 to 10, WW-12, WW-13	WW-3, WW-7	WW-7, WW-8	WW-5, WW-7, WW-10, WW-11	WW-7
Severe Winter Storm	WW-3, WW-5, WW-6, WW-7	WW-7	WW-3, WW-7	WW-7	WW-5, WW-7, WW-11	WW-7
Tsunami	WW-3, WW-5, WW-6, WW-7	WW-7	WW-3, WW-7	WW-7	WW-5, WW-7, WW-11	WW-7
Wildfire	WW-3, WW-5, WW-6, WW-7	WW-7	WW-3, WW-7	WW-7	WW-5, WW-7, WW-11	WW-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
WW-1a	8	H	H	Y	Y	N	M-H*
WW-1b	8	H	H	Y	Y	N	M-H*
WW-2	9	M	L	Y	N	Y	H
WW-3	All	M	M	Y	N (Yes for 5 year update)	N	M
WW-4	14	H	L	Y	N	Y	H
WW-5	13	M	L	Y	N	Y	M
WW-6	13	M	L	Y	N	Y	M
WW-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
WW-8	4	H	H-M	Y	Y	Y (local match only)	M
WW-9	5	H	H	Y	Y	Y (local match only)	M
WW-10	3	M	M	Y	Y	Y (local match only)	M
WW-11	4	H	H-M	Y	Y	Y (local match only)	M
WW-12	5	H	H	Y	Y	N	M
WW-13	9	H	H	Y	Y	Y (local match only)	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.

- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

None at this time.

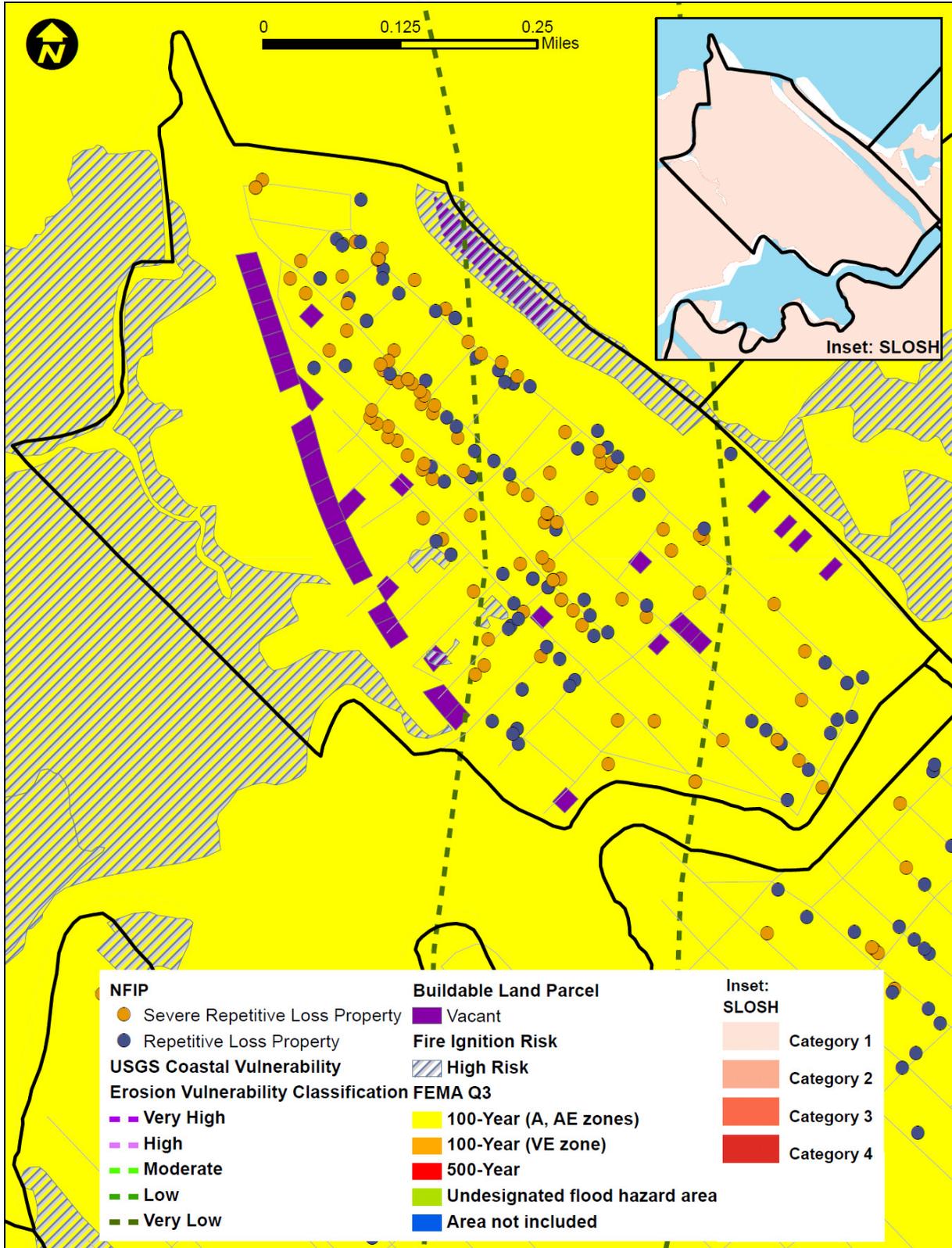
**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Borough of West Wildwood to illustrate the probable areas impacted within the Borough. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of West Wildwood has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.

**SECTION 9.14: BOROUGH OF WEST WILDWOOD**



Sources: USGS, 2001; FEMA Q3, Cape May County Planning Department

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

**9.15 CITY OF WILDWOOD**

This section presents the jurisdictional annex for the City of Wildwood.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Larry Booy/Zoning Officer City of Wildwood, 4400 New Jersey Ave Wildwood, NJ 08260 (609) 522-2444 Ext. 2240 <a href="mailto:LBooy@wildwoodnj.org">LBooy@wildwoodnj.org</a>	Mike Bailey / Deputy Emergency Manager City of Wildwood, 4400 New Jersey Ave Wildwood, NJ 08260 (609) 523-8676 <a href="mailto:mibailey@wildwoodnj.org">mibailey@wildwoodnj.org</a>

**B.) CITY PROFILE**

***Population***

5,259 (estimated 2008 Residential Population, Cape May County Planning Dept.)

71,082 (estimated 2008 Summer Population, Cape May County Planning Dept.)

***Location***

The City of Wildwood is located on a barrier island along the Atlantic Ocean coastline of Cape May County, New Jersey. It is bounded on the north-northeast by the Borough of West Wildwood, Township of Middle and the City of North Wildwood, on the east-southeast by the Atlantic Ocean, on the south-southwest by the Borough of Wildwood Crest and the Atlantic Ocean, and the west by the Township of Lower. It is part of the Ocean City Metropolitan Statistical Area.

Wildwood is also used as a collective term referring to the four communities with Wildwood comprising part of the municipality name — specifically the Borough of Wildwood Crest, City of Wildwood, Borough of West Wildwood and the City of North Wildwood — together with Diamond Beach, a portion of Lower Township situated on the island. Collectively, these communities are known as "The Wildwoods."

According to the U.S. Census Bureau, the city has a total area of 1.4 square miles (3.6 km<sup>2</sup>), with 1.3 square miles (3.3 km<sup>2</sup>) of it land and 0.1 square miles (0.2 km<sup>2</sup>) of it (6.52-percent) water.

***Climate***

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

Wildwood was originally incorporated as a borough by an Act of the New Jersey Legislature on May 1, 1895, from portions of Middle Township, based on the results of a referendum held the previous day. On January 1, 1912, Wildwood was incorporated as a city, replacing both Wildwood borough and Holly Beach City (Snyder, 1969).

In the 1950's, the Wildwoods grew into a major resort town. Wildwood boasts the largest collection of mid-century architecture in the U.S., now labeled "Doo-Wop Architecture". The World-Famous Boardwalk, built at the turn of the century, consists of more than 70,000 planks and stretches for nearly two miles, or 37 city blocks. Wildwood beaches, by far some of the largest on the East Coast, have been on many "best of" lists, including the Travel Channel's "Best Beaches" show and Conde Naste's "Best Sports Beach" list.

***Governing Body Format***

The City of Wildwood is governed by a three-member commission under the Walsh Act Commissioner form of municipal government (Rutgers University, 2005).

***Growth/Development Trends***

New Development/Potential Development in Municipality					
Property Name	Type Residential or Commercial	Number of Structures	Address	Block and Lot	Description
PPI Rio Assoc.	Residential	TBD	Rio Grande and Ocean Ave	TBD	Hi-Rise Condotel
East Bennett Holdings	Residential	TBD	Leaming, Ocean and Bennett Ave	TBD	Hi-Rise Condotel
Wildwood Beach Resort	Residential	TBD	4600 Ocean Ave.	TBD	Hi-Rise Condotel
Waypoint Beach Club	Residential	TBD	Atlantic, Spencer and Spicer Ave	TBD	Hi-Rise Condotel
Martinique	Residential	TBD	Oak and Wildwood Ave	TBD	Hi-Rise Condotel
Riviera Holdings	Residential	TBD	Ocean, Spicer and Spencer	TBD	Hi-Rise Condotel
BMF Holdings	Residential	TBD	Ocean and Popular Avenues	TBD	Hi-Rise Condotel
The Pearl	Residential	TBD	Atlantic and Taylor Ave	TBD	Mid-Rise Condotel
Ocean Investments	Residential	TBD	3800 Ocean	TBD	Mid-Rise Condotel
Wildwood Beaches LLC	Residential	TBD	301 E. Wildwood	TBD	Mid-Rise Condotel
Lavelle Invest.	Residential	TBD	708 W. Burk Ave	TBD	Mid-Rise Condotel
Beach Block	Residential	TBD	26 <sup>th</sup> and Juniper	TBD	Mid-Rise

New Development/Potential Development in Municipality					
Property Name	Type Residential or	Number of	Address	Block	Description
Property					Condotel

Source: City of Wildwood Planning Committee Members, 2009

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the City of Wildwood**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
City of Wildwood	0	0	0	0	0	0	0	0	13	9.6	41	16.6	54	26.2

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE CITY

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March, 1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January, 1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$4,000,000 (North Wildwood, Wildwood, Wildwood Crest, West Wildwood) \$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September, 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February, 2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 199

**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 74

Source: FEMA Region 2 as of December 2009

## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
4	Coastal Erosion	Not available	Occasional	12	Low
1	Coastal Storm	Min: \$994,690,000 Max: \$1,096,872,888	Frequent	54	High
1	Flood	\$756,045,000	Frequent	54	High
2	Severe Storm	\$102,182,888	Frequent	45	High
3	Severe Winter Storm	\$11,131,370	Frequent	36	Medium
4	Tsunami	Not available	Rare	12	Low
4	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

## E.1) Legal and Regulatory Capability

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	Y	Y	Y	Y	Chapter 11A; Adopted 1/1/1977
2) Zoning Ordinance	Y	Y	Y	Y	Chapter 17; Adopted 4/15/2008
3) Subdivision Ordinance	Y	Y	N	N	Chapter 16
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Chapter 17; Adopted 4/15/2008
5) Growth Management	Y	Y	N	Y	Master Plan 9/17/2007
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Chapter 17; Adopted 4/15/2008
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Chapter 25; Ord. No. 666-06
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	Master Plan 9/17/2007
9) Capital Improvements Plan	N	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	Chapter 17; Adopted 4/15/2008
11) Open Space Plan	N	N	Y	N	
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	Master Plan 9/17/2007
14) Emergency Response Plan	Y	Y	Y	N	Resolution 445-11-08, Adopted 11/26/2008
15) Post Disaster Recovery Plan	Y	N	N	N	
16) Post Disaster Recovery Ordinance	Y	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	Chapter 17; Adopted 4/15/2008

**E.2) Administrative and Technical Capability**

<b>Staff/ Personnel Resources</b>	<b>Available (Y or N)</b>	<b>Department/ Agency/Position</b>
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Contracted (ARH Associates, Inc.)
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Contracted (ARH Associates, Inc.)
3) Planners or engineers with an understanding of natural hazards	Y	Contracted (ARH Associates, Inc.)
4) NFIP Floodplain Administrator	Y	Larry Booy, Zoning Officer
5) Surveyor(s)	N	
6) Personnel skilled or trained in "GIS" applications	Y	Contracted (ARH Associates, Inc.)
7) Scientist familiar with natural hazards in the City of Wildwood.	N	
8) Emergency Manager	Y	Emergency Management/Deputy Coordinator
9) Grant Writer(s)	Y	Contracted
10) Staff with expertise or training in benefit/cost analysis	N	

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	
8) Incur debt through private activity bonds	
9) Withhold public expenditures in hazard-prone areas	
10) Other	

## E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	--	--
Public Protection	--	--
Storm Ready	Participating	September 2009
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. -- = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CW-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
CW-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
CW-2	Consider participation in incentive-based program CRS.	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3, 6-2, 6-3	City	Low - Medium	Local Budget	Short

**SECTION 9.15: CITY OF WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CW-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	City (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
CW-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
CW-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJ OEM	Low - Medium	Local Budget	Ongoing
CW-6	Enhance and/or maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	City	Low - Medium	Local Budget	Ongoing
CW-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
CW-8	Replace bulkheads at street-ends (west side of the City)	Existing	Coastal Storm, Flood, Severe Storm	1, 4	1-1, 1-10, 4-1	City	Medium to High	HMA and local budget for match	DOF
CW-9	Continue to enforce that all new construction, buildings substantially damaged, or substantially improved be elevated above the Base Flood Elevation through the Planning Board and zoning ordinances.	New & Existing	Coastal Storm, Flood, Severe Storm	1, 4	1-1, 1-7, 1-9, 4-1	City	Low	Local	On-going



**SECTION 9.15: CITY OF WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CW-10 (CMC-10)	Elevate Route 47 from George Redding Bridge to Susquehanna Ave to mitigate flooding	Existing	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 1-4, 3-3, 4-2, 4-10	State DOT	High	State	Longterm DOF
CW-11	Replace all 10- to 15-year old Tideflex valves already in place.	Existing	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 3-4, 4-2	City	High	HMA and local match	Short-term, DOF
CW-12	Repair and/or replace the existing bulkhead / revetments on Grassy Sound Channel between the Beach Creek Restaurant to and under the Boathouse Restaurant. Currently there is no bulkhead under the Boathouse Restaurant. Tidewaters crest the existing revetment and contribute to flooding at the intersection of Rio Grande Ave. – Susquehanna Ave.	Existing	Flood, Severe Storms	1, 4	1-1, 1-10, 4-1	City Engineering	Approx. \$125,000	HMA grant funding; city budget for local match	Longterm DOF
CW-13	Replace ineffective 48-inch tide flex valve at Outfall #1 to mitigate flooding at the Rio Grande Avenue – Susquehanna Avenue intersection.	Existing	Flood, Severe Storms	1, 3, 4	1-1, 3-4, 4-2	City Engineering	Approx. \$50,000	HMA grant funding; city budget for local match	Longterm DOF
CW-14	Replace the existing storm drainage system out-letting through Outfall #2, including Old Rio Grande Avenue to mitigate flooding at the Rio Grande Avenue – Susquehanna Avenue intersection. This new construction may include a watertight penetration of the bulkhead, new tide flex valve, new 18-inch diameter HDPE/DIP, new	Existing	Flood, Severe Storms	1, 3, 4	1-1, 3-4, 4-2	City Engineering	Approx. \$100,000	HMA grant funding; city budget for local match	Longterm DOF



**SECTION 9.15: CITY OF WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	catch basins and manholes from the existing bulkhead to the most upstream manhole at Old Rio Grande Avenue (to the north).								
CW-15	Replace catch basin curb boxes with J-ECO curb boxes to mitigate flooding at the Rio Grande Avenue – Susquehanna Avenue intersection.	Existing	Flood, Severe Storms	1, 3	1-1, 3-4	City Engineering	Approx. \$20,000	HMA grant funding; city budget for local match	Longterm DOF
CW-16	Construct a storm water pump station and emergency generator building sized to pump the design storm into Grassy Sound Channel.	New & Existing	Flood, Severe Storms	1, 3, 4	1-1, 3-3, 3-4, 4-6	City Engineering	Approx. \$2,000,000	HMA grant funding; city budget for local match	Longterm DOF
CW-17	Repair/replace the existing bulkhead at Block 79, Lots 38, 39 & 40 which are in need of serious repair/replacement. Currently the bulkhead is crested allowing flooding of W. Burk Avenue – Hudson Avenue (by property owners). These repairs/replacements need to meet the requirements of the current Bulkhead Ordinance.	Existing	Coastal Storm, Flood, Severe Storm	1, 4	1-1, 1-10, 4-1	City Engineering	Approx. \$55,000	HMA grant funding; city budget for local match	Longterm DOF
CW-18	Complete construction of the bulkhead at Block 78, Lots 29 and 33 to mitigate flooding and ensure it conforms with the current Bulkhead Ordinance.	Existing	Coastal Storm, Flood, Severe Storm	1, 4	1-1, 1-10, 4-1	City Engineering	Medium to High	Federal grant funding and local match	DOF
CW-19	Install a 4-inch Tideflex valve at Outfall #8 for the 4-inch drain in West Tacony Road to mitigate flooding.	Existing	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 3-4, 4-2	City Engineering	Approx. \$5,000	HMA grant funding; city budget for local match	Longterm DOF



**SECTION 9.15: CITY OF WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
CW-20	Install new 18-inch Tideflex valve at Hudson Avenue Outfall #7 to mitigate flooding. Reconstruct West Tacony Road (from Mediterranean Ave to Park Blvd) to drain to adjacent intersections and existing stormwater drainage facilities.	Existing	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 3-4, 4-2	City Engineering	Approx. \$190,000 (total project cost)	HMA grant funding; city budget for local match	Longterm DOF
CW-21	Relocate conflicting utilities at the intersection of Susquehanna Ave and Burk Ave install a new lateral connecting the catch basins with a positively sloped pipe, eliminating the loss of head.	Existing	Coastal Storm, Flood, Severe Storm	1, 3	1-1, 3-3, 3-4	City Engineering	Approx. \$50,000	HMA grant funding; city budget for local match	Longterm DOF
CW-22	Install new 18-inch Tideflex valve at Mediterranean Avenue - Otten's Harbor Outfall #5 and seal around the pipe to mitigate tidewaters flowing back into the storm drainage system and flooding tributary streets.	Existing	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 3-4, 4-2	City Engineering	Approx. \$15,000	HMA grant funding; city budget for local match	Longterm DOF
CW-23	Replace catch basins and laterals, and install outfall pipe with 18-inch Tideflex valve at Mediterranean Avenue – W. Taylor Avenue intersection Outfall #4 to mitigate flooding. Outfall #4 has an invert below the ground level thus impeding the outlet of storm runoff.	Existing	Coastal Storm, Flood, Severe Storm	1, 3	1-1, 3-4	City Engineering	Approx. \$65,000 (total project cost)	HMA grant funding; city budget for local match	Longterm DOF
CW-24	Repair, restructure and reinforce the existing revetment on north side of	Existing	Coastal Erosion Coastal Storm, Flood, Severe	1, 3	1-1, 3-4	City Engineering	Approx. \$50,000	HMA grant funding; city budget for	Longterm DOF



**SECTION 9.15: CITY OF WILDWOOD**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	Mediterranean Avenue at W. Taylor Avenue to mitigate flooding.		Storm					local match	
CW-25	From the July 2003 Storm Sewer Outfall Redesign: Re-engineer the existing outfall system to eliminate the existing ineffective (below-grade) functionally obsolete outfalls to mitigate flooding, health and safety hazards, beach closings and losses to the local economy. One proposed solution is to consolidate the storm water collection system into a detention basin which will then pump the storm water system through a single outfall line extending into the ocean.	New & Existing	Coastal Storm, Flood, Severe Storm	1, 3, 4	1-1, 3-3, 3-4	City	Approx. \$15 Million	HMA, other federal grants, and local match	Long-term, DOF
CW-26	Repair, restructure and reinforce the earthen berm where there is a breach at the W. Taylor Ave intersection.	Existing	Coastal Erosion, Coastal Storm, Flood, Severe Storm	1, 3	1-1, 3-3, 3-4	City Engineering	Approx. \$50,000	HMA grant funding; city budget for local match	Longterm DOF
CW-27	Replace the existing, deteriorated bulkhead at Juniper Avenue, to mitigate flooding and ensure it conforms with the current Bulkhead Ordinance.	Existing	Coastal Storm, Flood, Severe Storm	1, 4	1-1, 1-10, 4-1	City Engineering	Approx. \$55,000	HMA grant funding; city budget for local match	Longterm DOF
CW-28	Explore the concept of "Sheltering In-Place" in vertical development as a viable option to traditional evacuation.	N/A	All Hazards (except Coastal Erosion, Wildfire)	1, 4	1-4, 1-5, 4-1, 4-2	City	Low to Medium	Local Budget (DHS funding as applicable)	Short

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding;

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the City has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	CW-3, CW-5, CW-6, CW-7	CW-7, CW-24, CW-26	CW-3, CW-7	CW-7	CW-5 to CW-7	CW-7, CW-24, CW-26
Coastal Storm	CW-3, CW-5, CW-6, CW-7, CW-9	CW-1a and 1b, CW-7, CW-10, CW-11, CW-13 to 15, CW-17, CW-18 to 27	CW-3, CW-7	CW-7	CW-5 to CW-7, CW-28	CW-7, CW-8, CW-12, CW-14 to 18, CW-21, CW-23, CW-25 to CW-27
Flood	CW-2, CW-3, CW-5, CW-6, CW-7, CW-9	CW-1a and 1b, CW-2, CW-4, CW-7, CW-10, CW-11, CW-13 to 15, CW-17, CW-18 to 27	CW-2, CW-3, CW-4, CW-7	CW-2, CW-4, CW-7	CW-5 to CW-7, CW-28	CW-7, CW-8, CW-12, CW-14 to 18, CW-21, CW-23, CW-25 to CW-27
Severe Storm	CW-3, CW-5, CW-6, CW-7, CW-9	CW-1a and 1b, CW-7, CW-10, CW-11, CW-13 to 15, CW-17, CW-18 to 27	CW-3, CW-7	CW-7	CW-5 to CW-7, CW-28	CW-7, CW-8, CW-12, CW-14 to 18, CW-21, CW-23, CW-25 to CW-27
Severe Winter Storm	CW-3, CW-5, CW-6, CW-7	CW-7	CW-3, CW-7	CW-7	CW-5 to CW-7, CW-28	CW-7
Tsunami	CW-3, CW-5, CW-6, CW-7	CW-7	CW-3, CW-7	CW-7	CW-5 to CW-7, CW-28	CW-7
Wildfire	CW-3, CW-5, CW-6, CW-7	CW-7	CW-3, CW-7	CW-7	CW-5 to CW-7, CW-28	CW-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
CW-1a	8	H	H	Y	Y	N	M-H*
CW-1b	8	H	H	Y	Y	N	M-H*
CW-2	9	M	L	Y	N	Y	H
CW-3	All	M	M	Y	N (Yes for 5 year update)	N	M
CW-4	14	H	L	Y	N	Y	H
CW-5	13	M	L	Y	N	Y	M
CW-6	13	M	L	Y	N	Y	M
CW-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
CW-8	3	H	H	Y	Y	Y (local match only)	M
CW-9	5	H	L	Y	N	Y	H
CW-10	5	H	H	Y	Y	N	M
CW-11	3	H	H	Y	Y	Y (local match only)	M
CW-12	3	H	H	Y	Y	Y (local match only)	M
CW-13	3	H	H	Y	Y	Y (local match only)	M
CW-14	3	H	H-M	Y	Y	Y (local match only)	M
CW-15	2	M	M	Y	Y	Y (local match only)	M
CW-16	4	H	H	Y	Y	Y (local match only)	M
CW-17	3	H	H	Y	Y	Y (local match only)	M
CW-18	3	H	H-M	Y	Y	Y (local match only)	M
CW-19	3	H	L	Y	Y	Y (local match only)	M
CW-20	3	H	H	Y	Y	Y (local match only)	M
CW-21	2	H	H	Y	Y	Y (local match only)	M
CW-22	3	H	H	Y	Y	Y (local match only)	M
CW-23	2	H	M	Y	Y	Y (local match only)	M
CW-24	2	H	M	Y	Y	Y (local match only)	M
CW-25	3	H	H	Y	Y	Y (local match only)	M
CW-26	3	H	M	Y	Y	Y (local match only)	M
CW-27	3	H	H	Y	Y	Y (local match only)	M-H

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
CW-28	4	M	M-L	Y	N	Y (local match only)	M

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

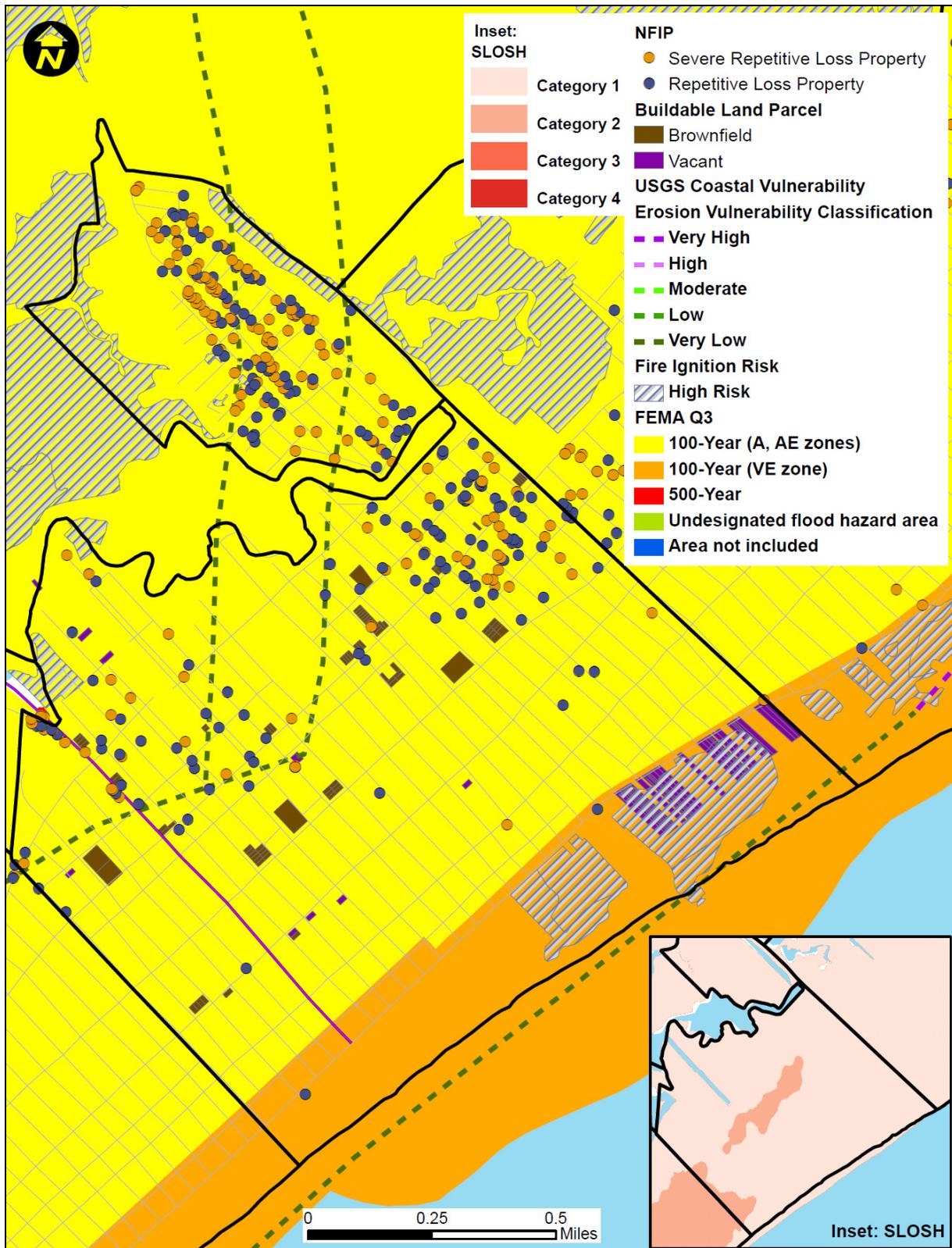
**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the City of Wildwood to illustrate the probable areas impacted within the City. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Wildwood has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**SECTION 9.15: CITY OF WILDWOOD**



Sources: USGS, 2001; FEMA Q3; Cape May County Planning Department; Maser, 2009

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

**9.16 BOROUGH OF WILDWOOD CREST**

This section presents the jurisdictional annex for the Borough of Wildwood Crest.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Lewis H. Conley, Jr.; Borough Engineer Van Note-Harvey Associates, PC; 211 North Main Street, Suite 203, Cape May Court House, NJ 08210 (609) 465-2600, x18 <a href="mailto:lewconley@vannoteharvey.com">lewconley@vannoteharvey.com</a>	Kevin M. Yecco, Clerk/Administrator Borough of Wildwood Crest; 6101 Pacific Avenue, Wildwood Crest, NJ 08260 (609) 522-5176 <a href="mailto:kyecco@wildwoodcrest.org">kyecco@wildwoodcrest.org</a>

**B.) BOROUGH PROFILE**

***Population***

3,985 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
 55,401 (estimated 2008 Summer Population, Cape May County Planning Dept.)

***Location***

The Borough of Wildwood Crest is located on a barrier island along the Atlantic Ocean coastline of Cape May County, New Jersey. It is bounded on the north-northeast by the Township of Lower and City of Wildwood, on the east-southeast by the Atlantic Ocean, on the south-southwest by the Township of Lower and the Atlantic Ocean, and the west by the Township of Lower. It is part of the Ocean City Metropolitan Statistical Area.

The Borough of Wildwood Crest and its neighboring communities of the City of Wildwood, City of North Wildwood, and the Borough of West Wildwood make up "The Wildwoods" resort, a popular vacation destination for those living in all parts of New Jersey as well as within the New York City and Philadelphia, Pennsylvania metropolitan areas.

According to the U.S. Census Bureau, the borough has a total area of 1.3 square miles (3.4 km<sup>2</sup>), with 1.1 square miles (3.0 km<sup>2</sup>) of it land and 0.2 square miles (0.4 km<sup>2</sup>) of it (11.45-percent) water.

***Climate***

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F.



Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

### ***Brief History***

The area of the Borough of Wildwood Crest was first developed by Philip B. Baker in the 1900s as a southern addition to the resort of Wildwood, with the first houses going up in 1906. Wildwood Crest was incorporated as a borough by an Act of the New Jersey Legislature on April 6, 1910, from portions of Lower Township (Snyder, 1969).

In the 1950's, the Wildwoods grew into a major resort town. Wildwood boasts the largest collection of mid-century architecture in the U.S., now labeled "Doo-Wop Architecture". The World-Famous Boardwalk, built at the turn of the century, consists of more than 70,000 planks and stretches for nearly two miles, or 37 city blocks. Wildwood beaches, by far some of the largest on the East Coast, have been on many "best of" lists, including the Travel Channel's "Best Beaches" show and Conde Naste's "Best Sports Beach" list.

### ***Governing Body Format***

The Borough of Wildwood Crest has been governed by a three-member commission under the Walsh Act Commissioner form of municipal government since 1937 (Rutgers University, 2005; New Jersey State Library, Date Unknown).

### ***Growth/Development Trends***

At this time, no new major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Borough of Wildwood Crest**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Borough of Wildwood Crest	0	0	0	0	0	0	0	0	6	4.1	50	7	56	11.1

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009

C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE BOROUGH

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March, 1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January, 1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$4,000,000 (North Wildwood, Wildwood, Wildwood Crest, West Wildwood) \$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September, 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February, 2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 12  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 1

Source: FEMA Region 2 as of December 2009

**D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
3	Coastal Erosion	Not available	Frequent	36	Medium
1	Coastal Storm	Min: \$583,730,000 Max: \$666,566,607	Frequent	54	High
1	Flood	\$347,439,000	Frequent	54	High
2	Severe Storm	\$82,836,607	Frequent	45	High
3	Severe Winter Storm	\$8,047,060	Frequent	36	Medium
4	Tsunami	Not available	Rare	12	Low
4	Wildfire	Not available	Occasional	12	Low

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

**E.) CAPABILITY ASSESSMENT**

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	Y	Y	Y	Y	NJ Uniform Construction Code
2) Zoning Ordinance	Y	Y	Y	Y	Chapter 85 of the codified codes Updated March 2009 and available online
3) Subdivision Ordinance	Y	Y	N	N	Chapter 85-128
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	Chapter 85-114 "Critical Areas"
5) Growth Management	Y	Y	N	Y	Chapter 85 of the codified codes Updated March 2009 and available online
6) Floodplain Management / Basin Plan	Y	Y	Y	Y	Developed/posted online at <a href="http://www.wildwoodcrest.org">www.wildwoodcrest.org</a>
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Chapter 66 – Adopted 4/6/05
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	Y	General Code available online
9) Capital Improvements Plan	Y	N	N	N	Approved, via capital ordinance(s) or budget on annual basis
10) Site Plan Review Requirements	Y	N	Y	N	Chapter 85-132 & 133
11) Open Space Plan	Y	N	Y	N	Chapter 85 of the codified codes Updated March 2009 and available online
12) Shoreline Management or Protection Plan	Y	Y	N	N	Beach/Dune Maintenance Code, Chapter 8 of the Code of Borough and available online
13) Economic Development Plan	N	N	Y	Y	
14) Emergency Response Plan	Y	Y	Y	N	Administered through the Cape May County Office of Emergency Management
15) Post Disaster Recovery Plan	Y	N	N	N	Administered through the Cape May County Office of Emergency Management
16) Post Disaster Recovery Ordinance	Y	Y	Y	N	County is charged with this function
17) Real Estate Disclosure req.	Y	Y	Y	Y	Annual letter to all realtors requiring homebuyers with mortgages to obtain flood insurance

**SECTION 9.16: BOROUGH OF WILDWOOD CREST**

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	Y	N	Y	Y	Beach/Dune Maintenance Code, Chapter 8 of the Code of Borough and available online

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Van Note-Harvey Associates, PC Engineering Borough Engineer / Consultant
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Van Note-Harvey Associates, PC Engineering Borough Engineer / Consultant
3) Planners or engineers with an understanding of natural hazards	Y	Van Note-Harvey Associates, PC Engineering Borough Engineer / Consultant
4) NFIP Floodplain Administrator	Y	Patrick Malia, Construction Official
5) Surveyor(s)	Y	Van Note-Harvey Associates, PC Engineering Borough Engineer / Consultant
6) Personnel skilled or trained in "GIS" applications	Y	Van Note-Harvey Associates, PC Engineering Borough Engineer / Consultant
7) Scientist familiar with natural hazards in the Borough of Wildwood Crest.	Y	Various, incl. engineering
8) Emergency Manager	Y	Police Department – Chief Thomas DePaul
9) Grant Writer(s)	Y	Police Department – Lt. Mayer, Blauer Associates, Triad Associates, and Van Note-Harvey Associates
10) Staff with expertise or training in benefit/cost analysis	Y	Chief Financial Officer – Steven Ritchie

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	No
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	N/A

**E.4) Community Classifications**

<b>Program</b>	<b>Classification</b>	<b>Date Classified</b>
Community Rating System (CRS)	8 (current)	10/1/1993*
Building Code Effectiveness Grading Schedule (BCEGS)	---	---
Public Protection	---	---
Storm Ready	NP	n/a
Firewise	NP	n/a

N/A = Not applicable. NP = Not participating. - = Unavailable.

\* = Date Classified for the CRS Program reflects the date of entry into the program, not the date of the most recent class upgrade.

The classifications listed above relate to the community’s effectiveness in providing services that may impact it’s vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Below is a table indicating the Borough’s participation and points earned in the CRS program to date.

<b>Series</b>	<b>Activity Number</b>	<b>Activity Description</b>	<b>Maximum Points Possible</b>	<b>Points Received for the Borough of Wildwood Crest</b>
300	310	Elevation Certificates	162	56
300	320	Map Information	140	140
300	330	Outreach Projects	380	150
300	340	Hazard Disclosure	81	0
300	350	Flood Protection Information	102	56
300	360	Flood Protection Assistance	71	0
400	410	Additional Flood Data	1,346	0
400	420	Open Space Preservation	900	202

## SECTION 9.16: BOROUGH OF WILDWOOD CREST

Series	Activity Number	Activity Description	Maximum Points Possible	Points Received for the Borough of Wildwood Crest
400	430	Higher Regulatory Standards	2,740	195
400	440	Flood Data Maintenance	239	110
400	450	Stormwater Management	670	55
500	510	Floodplain Management Planning	359	0
500	520	Acquisition and Relocation	3,200	0
500	530	Flood Protection	2,800	0
500	540	Drainage System Maintenance	330	265
600	610	Flood Warning Program	255	40
600	620	Levee Safety	900	0
600	630	Dam Safety	175	67
		<b>Total Points to Date</b>		<b>1,336</b>

Past and ongoing mitigation activities in the Borough include:

- Sunset Lake Bank Stabilization
- Dune construction along beachfront
- Stormwater drainage improvements of the Borough's streets

F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
WC-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
WC-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
WC-2	Continue active participation in incentive-	New & Existing	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-7, 2-1, 2-2, 2-3,	Borough	Low - Medium	Local Budget	Short



**SECTION 9.16: BOROUGH OF WILDWOOD CREST**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	based program CRS.				6-2, 6-3				
WC-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Borough (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
WC-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
WC-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJ OEM	Low - Medium	Local Budget	Ongoing
WC-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
WC-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
WC-8 (CMC-19)	Upgrade stormwater drainage system along CR-621 and arterials in the Wildwoods (Wildwood Crest, Wildwood and North Wildwood). These are inadequate to even a 2-year storm.	Existing	Coastal Storms, Flooding	1, 3	1-1, 3-4	County Engineering with municipalities	High	HMA grants and local match	Long-term DOF
WC-9	Stormwater drainage	Existing	Coastal Storms,	1, 3	1-1, 3-4	Borough	High	Local and	Ongoing



**SECTION 9.16: BOROUGH OF WILDWOOD CREST**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	improvement of the Borough's streets – ongoing project		Severe Storms, Flooding					grant as applicable	
WC-10	Increase the size of stormwater outfalls to permit faster drainage and mitigate flooding	Existing	Coastal Storms, Severe Storms, Flooding	1, 3	1-1, 3-4	Borough	High	HMA and local match	DOF
WC-11	Sunset Lake bank stabilization (bayside)– ongoing project	Existing	Coastal Storms, Coastal Erosion, Severe Storms, Flooding	1, 5	1-1, 5-1, 5-2	Borough	High	TBD	Ongoing
WC-12	Dune construction along the beachfront – ongoing project	New & Existing	Coastal Storms, Coastal Erosion, Flooding	1, 5	1-1, 5-1, 5-2	Borough and State	High	TBD	Ongoing
WC-13	Replacement of bay-front street-end bulkheads	Existing	Coastal Storms, Coastal Erosion, Flooding	1, 5	1-1, 1-10, 5-2	Borough	High	Federal grants where applicable and local match	DOF
WC-14	Ocean stormwater outfalls to be extended in the fall of 2009 (third extension of the outfalls since 2001)	Existing	Coastal Storms, Severe Storms, Flooding	1, 3	1-1, 3-4	Borough	High	TBD	Ongoing

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding;  
 \* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Borough has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	WC-3, WC-5, WC-6, WC-7	WC-7, WC-13	WC-3, WC-7	WC-7, WC-11 to 13	WC-5, WC-7	WC-7
Coastal Storm	WC-3, WC-5, WC-6, WC-7	WC-1a and 1b, WC-7, WC-8 to 10, WC-13, WC-14	WC-3, WC-7	WC-7, WC-11 to 13	WC-5, WC-7	WC-7, WC-14
Flood	WC-2, WC-3, WC-5, WC-6, WC-7	WC-1a and 1b, WC-2, WC-4, WC-7, WC-8 to 10, WC-13, WC-14	WC-2, WC-3, WC-4, WC-7	WC-2, WC-4, WC-7, WC-11 to 13	WC-5, WC-7	WC-7, WC-14
Severe Storm	WC-3, WC-5, WC-6, WC-7	WC-1a and 1b, WC-7, WC-8 to 10, WC-14	WC-3, WC-7	WC-7	WC-5, WC-7	WC-7, WC-14
Severe Winter Storm	WC-3, WC-5, WC-6, WC-7	WC-7	WC-3, WC-7	WC-7	WC-5, WC-7	WC-7
Tsunami	WC-3, WC-5, WC-6, WC-7	WC-7	WC-3, WC-7	WC-7	WC-5, WC-7	WC-7
Wildfire	WC-3, WC-5, WC-6, WC-7	WC-7	WC-3, WC-7	WC-7	WC-5, WC-7	WC-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
WC-1a	8	H	H	Y	Y	N	M-H*
WC-1b	8	H	H	Y	Y	N	M-H*
WC-2	9	M	L	Y	N	Y	H
WC-3	All	M	M	Y	N (Yes for 5 year update)	N	M
WC-4	14	H	L	Y	N	Y	H
WC-5	13	M	L	Y	N	Y	M
WC-6	13	M	L	Y	N	Y	M
WC-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
WC-8	2	H	H	Y	Y	Y (local match only)	M
WC-9	2	H	H	Y	Y	TBD	H
WC-10	2	H	H	Y	Y	Y (local match only)	M
WC-11	3	H	H	Y	TBD	N	H
WC-12	3	H	H	Y	TBD	N	H
WC-13	3	H	H	Y	Y	Y (local match only)	M
WC-14	2	H	H	Y	Y	N	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant

programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.

- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

None at this time.

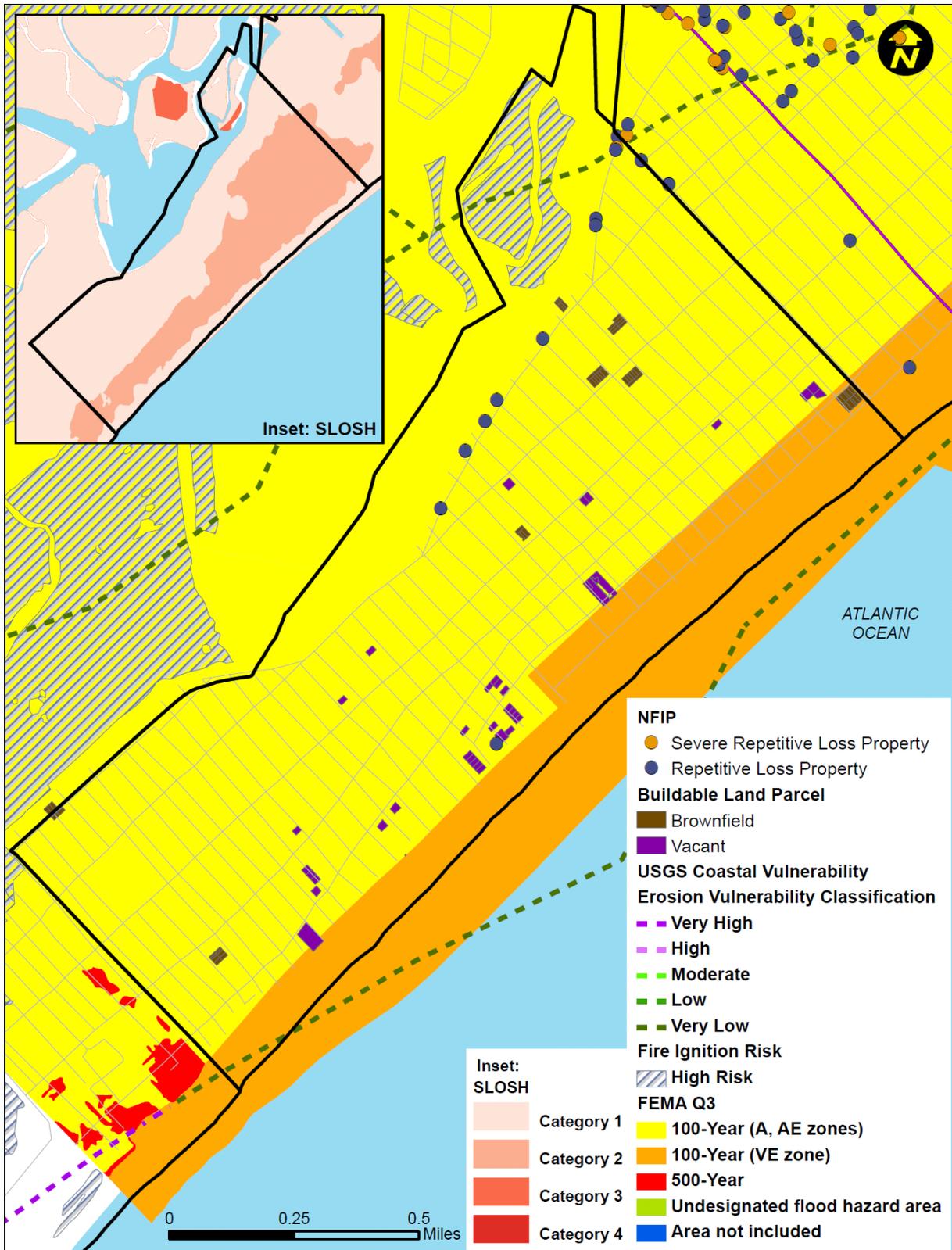
**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Borough of Wildwood Crest to illustrate the probable areas impacted within the Borough. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of Wildwood Crest has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.

**SECTION 9.16: BOROUGH OF WILDWOOD CREST**



Sources: USGS, 2001; FEMA Q3; Cape May County Planning Department; Maser, 2009

Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

## 9.17 BOROUGH OF WOODBINE

This section presents the jurisdictional annex for the Borough of Woodbine.

### A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
Lisa Garrison, Borough Clerk 501 Washington Avenue, Woodbine, NJ 08270 (609) 861-2153 <a href="mailto:clerk@boroughofwoodbine.net">clerk@boroughofwoodbine.net</a>	Jeff Doran, Deputy Emergency Management Coordinator 501 Washington Avenue, Woodbine, NJ 08270 (609) 861-2153 <a href="mailto:jeffreydoran@comcast.net">jeffreydoran@comcast.net</a>

### B.) BOROUGH PROFILE

#### *Population*

2,463 (estimated 2008 Residential Population, Cape May County Planning Dept.)  
 9,606 (estimated 2008 Summer Population, Cape May County Planning Dept.)

#### *Location*

The Borough of Woodbine is located within the northern section of Cape May County, New Jersey. It is bounded on the north and east by the Township of Upper and on the south and west by the Township of Dennis. It is part of the Ocean City Metropolitan Statistical Area.

According to the U.S. Census Bureau, the borough has a total area of 8.0 square miles (20.7 km<sup>2</sup>), all of it land. The majority of the Borough lies within the Pinelands Preservation Area, wherein land use is strictly controlled by the Pinelands Commission authorized by the NJDEP.

#### *Climate*

Cape May County, with all its municipalities, lies within the Coastal Climate zone of the State of New Jersey. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience warmer temperatures than interior regions of the state. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes. Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Coastal storms, often characterized as Nor'Easters, hurricanes or tropical storms, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains (ONJSC, Date Unknown).

The average monthly temperatures of the county in winter are 42° to 47°F during December, January and February. March climbs up to about 51°F. April's average is 60°F and in May it can get as warm as 69°F. Average water temperatures are 37 to 42°F (CapeMay.com, Date Unknown). Cape May County has been known to experience the least amount of snow accumulations in the State, reaching approximately 15 inches in snow annually.

***Brief History***

Woodbine was founded in 1891 as a settlement for Eastern European Jews. The Baron DeHirsch Fund, organized by Baron DeHirsch, purchased 5,300 acres (21 km<sup>2</sup>) of land in Dennis Township, in Cape May County, New Jersey to start a settlement. Within two years, they cleared the forest and built a town and many farms. The residential center of Woodbine still uses the same grid that was originally laid out in 1891. Using modern agricultural practices, the first colonists turned Woodbine into a model agricultural community. Woodbine was incorporated as a borough by an Act of the New Jersey Legislature on March 3, 1903, from portions of Dennis Township (Snyder, 1969). Because most of the original settlers were Jewish, Woodbine became known as "the first self-governing Jewish community since the fall of Jerusalem."

The community started the Baron DeHirsch Agricultural College in 1894. Until it was closed during World War I (1917), the college was a model of progressive education. The college and its graduates won many state, national, and international awards. World War I, however, signaled a change in the community from a community with an agricultural economy to one with a light manufacturing economy. The Baron DeHirsch Agricultural College became what is today the Woodbine Developmental Center, a state run facility for training the mentally-handicapped. The Developmental Center is Cape May County's largest employer.

During World War II, the United States Army built an airfield in Woodbine to be used as a training base and as a base for anti-submarine patrols. German U-boats were very active off the East Coast of America, especially off the Jersey coast. Today, Woodbine Municipal Airport is the center of Woodbine's redevelopment efforts.

***Governing Body Format***

The Borough of Woodbine is governed by a Mayor and a six-member Borough Council. The mayor serves a four-year term of office and is directly elected by the voters. Borough Council members serve three year terms of office on a staggered basis, with two seats coming up for election each year.

***Growth/Development Trends***

At this time, no new major residential development has been identified for the next five (5) years. The Borough has been working to attract commercial and industrial business to the Municipal Airport property, specifically in the Woodbine Airport Business Park which occupies approximately 50 acres of the Airport's 750 acre total.

Indicators of potential development in Cape May County include Vacant Developable, Residential Subdividable, Farmland Developable, Commercial Buildable, Greyfield Sites, and Brownfield Sites. These areas, identified by the 2009 *Maser Consulting, Transfer of Development Rights Feasibility Study*, are summarized in the following table.

**Summary of Potentially Developable Land in the Borough of Woodbine**

Municipality	Residential Sub-dividable		Farmland Developable		Commercial Buildable		Greyfield Sites		Brownfield Sites		Vacant		Total Per Municipality	
	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres	Number of Lots	Number of Acres
Borough of Woodbine	27	428.6	39	441	0	0	0	0	3	1.8	84	862.3	153	1733.7

Source: Maser Consulting, Transfer of Development Rights Feasibility Study, 2009



## C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE BOROUGH

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Coastal Storm, Flooding	DR-124	March, 1962	\$3,000,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$24,000 (countywide)
Flood	Not applicable	November, 1977	\$2,400,000 (countywide)
Flood	Not applicable	March, 1984	\$500,000 (countywide)
Tornado (F0)	Not applicable	September, 1986	\$250,000 (Borough of Woodbine)
Coastal Storm	Not applicable	October, 1991	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
Tidal Flood	Not applicable	November, 1991	\$167,000 (countywide)
Severe Coastal Storm	DR-936	January, 1992	\$16,000 (countywide)
Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	December, 1992	\$16,800,000 (countywide)
Severe Winter Storm	EM-3106	March, 1993	\$2,600,000 (statewide)
Coastal Flood	Not applicable	March, 1994	\$167,000 (countywide)
Severe Winter Storm, Coastal Storm	DR-1088	January, 1996	\$800,000 (countywide)
Coastal Flood, Coastal Erosion	Not applicable	January, 1996	\$3,600,000 (countywide)
Coastal Flood	Not applicable	January, 1998	\$3,800,000 (countywide)
Coastal Storm	DR-1206	February, 1998	\$3,600,000-\$4,200,000 (countywide)
Hurricane Floyd	EM-3148	September, 1999	\$492,000 (countywide)
Snowstorm	EM-3181	February, 2003	\$1,400,000 (countywide)
Strong Winds	Not applicable	March, 2003	\$5,000 (countywide)
Thunderstorm, Wind	Not applicable	October, 2003	\$32,000 (countywide)
Severe Winter Storm, Coastal Flooding	Not applicable	February, 2006	\$225,000 (countywide)
Thunderstorm	Not applicable	October, 2007	\$200,000 (Borough of Woodbine)
Thunderstorm, Wind	Not applicable	March, 2008	\$10,000 (multi-jurisdictional)
Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	November, 2009	TBD

**Number of FEMA Identified Repetitive Flood Loss Properties:** 0

**Number of FEMA Identified Severe Repetitive Flood Loss Properties:** 0

Source: FEMA Region 2 as of December 2009

## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c, d</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
5	Coastal Erosion	Not available	Rare	6	Low
1	Coastal Storm	Min: \$12,038,159 Max: \$12,105,159	Frequent	54	High
4	Flood	\$0	Frequent	27	Medium
2	Severe Storm	\$12,038,159	Frequent	51	High
3	Severe Winter Storm	\$2,199,640	Frequent	36	Medium
5	Tsunami	Not available	Rare	6	Low
1	Wildfire	Not available	Frequent	54	High

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20-39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Cape May County were based on the default general building stock database provided in HAZUS-MH MR4 (RSMeans 2006).  
The coastal storm loss estimate is a combination of the wind and storm surge minimum and maximum damages for the 500-year event. Severe storm (structure only) and flood (structure and contents) hazard loss estimates are for the 500-year MRP event. For severe winter storm, the loss estimate is 1% of total general building stock value (structure only).
- d.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- The probability of occurrence for these events is weighted at “0” due to no exposure

**E.1) Legal and Regulatory Capability**

<b>Regulatory Tools (Codes, Ordinances., Plans)</b>	<b>Local Authority (Y or N)</b>	<b>Prohibitions (State or Federal) (Y or N)</b>	<b>Higher Jurisdictional Authority (Y or N)</b>	<b>State Mandated (Y or N)</b>	<b>Code Citation (Section, Paragraph, Page Number, date of adoption)</b>
1) Building Code	Y	Y	Y	Y	State and IBC
2) Zoning Ordinance	Y	Y	Y	Y	Ch. 268, Adopted 1982
3) Subdivision Ordinance	Y	Y	N	N	Ch. 269
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	N	
5) Growth Management	Y	Y	N	Y	Zoning
6) Floodplain Management / Basin Plan	N	Y	Y	Y	
7) Stormwater Management Plan/Ordinance	Y	Y	Y	Y	Ch. 470, Adopted 2005
8) Comprehensive Plan / Master Plan/ General Plan	N	N	N	Y	
9) Capital Improvements Plan	N	N	N	N	
10) Site Plan Review Requirements	Y	N	Y	N	
11) Open Space Plan	N	N	Y	N	
12) Shoreline Management or Protection Plan	N	Y	N	N	
13) Economic Development Plan	Y	N	Y	Y	
14) Emergency Response Plan	N	Y	Y	N	
15) Post Disaster Recovery Plan	N	N	N	N	
16) Post Disaster Recovery Ordinance	N	Y	Y	N	
17) Real Estate Disclosure req.	N	Y	Y	Y	
18) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	N/A	N/A	N/A	N/A	

**E.2) Administrative and Technical Capability**

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Under contract
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Under contract
3) Planners or engineers with an understanding of natural hazards	Y	Under contract
4) NFIP Floodplain Administrator	Y	Bruce Graham, Zoning Officer
5) Surveyor(s)	Y	Under contract
6) Personnel skilled or trained in "GIS" applications	N	
7) Scientist familiar with natural hazards in the Borough of Woodbine.	Y	Various, including via contract
8) Emergency Manager	Y	
9) Grant Writer(s)	Y	Triad Consultants
10) Staff with expertise or training in benefit/cost analysis	TBD	

**E.3) Fiscal Capability**

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community development Block Grants (CDBG)	Yes – Currently Using
2) Capital Improvements Project Funding	No
3) Authority to Levy Taxes for specific purposes	Yes – Have Not Used
4) User fees for water, sewer, gas or electric service	No
5) Impact Fees for homebuyers or developers of new development/homes	Yes – COAH Fee Ordinance Established but Not Utilized Yet
6) Incur debt through general obligation bonds	Yes – Have Not Used
7) Incur debt through special tax bonds	Yes – Never Used
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) Other	N/A

## E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	TBD	TBD
Public Protection	TBD	TBD
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
BW-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
BW-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Coastal Storm, Flood, Severe Storm	1, 2, 4, 6	1-1, 1-2, 1-9, 1-11, 2-4, 4-1, 6-2, 6-3	Borough	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Long-term DOF
BW-2	Consider participation in the	New &	Flood	1, 2, 6	1-1, 1-2, 1-5, 1-	Borough	Low -	Local Budget	Short



**SECTION 9.17: BOROUGH OF WOODBINE**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
(CMC-2)	incentive-based program CRS.	Existing			7, 2-1, 2-2, 2-3, 6-2, 6-3		Medium		
BW-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New & Existing	All Hazards	1 through 6	All	Borough (through mitigation planning point of contacts)	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Ongoing
BW-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	1, 2, 4, 5, 6	1-1, 1-2, 1-3, 1-7, 1-9, 2-3, 2-4, 4-1, 4-2, 4-9, 5-1, 5-2, 6-2, 6-3	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Ongoing
BW-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 4-11, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Low - Medium	Local Budget	Ongoing
BW-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	1-7, 1-8, 3-1, 3-2, 3-3, 4-1, 4-4, 4-5, 4-7, 4-8, 6-1, 6-2, 6-3	Borough	Low - Medium	Local Budget	Ongoing
BW-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	1 through 6	All	Local departments (as applicable for specific initiative)	Low - High	Existing programs and grant funding where applicable	Ongoing – Long-term depending on initiative
BW-8	Retrofit (harden) Borough facilities that may be used to support sheltering and staging operations (in cooperation with County and State OEM), including backup utilities where needed.	Existing	All Hazards	1,3,4,6	1-1, 1-3, 1-4, 3-2, 3-3, 3-4, 4-2, 4-5, 4-6, 4-7, 4-9, 6-1, 6-2	Municipal Emergency Manager with support from County OEM and NJOEM	Medium - High	FEMA Mitigation and HLS grants; County and Local funding	Long-term
BW-9 (CMC-	Work with County to identify proper locations for and	N/A	Wildfire	1, 3, 4, 6	1-1, 1-11, 3-3, 4-6, 4-7, 4-8, 6-	County Fire and OEM	Medium	DHS grants; County and	Long-term



**SECTION 9.17: BOROUGH OF WOODBINE**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
50)	install water draw (siphon) stations to increase fire-fighting capabilities.				1, 6-3	with support from local fire and OEM		Local funding	
BW-10	Work with County OEM and Borough industries and commercial operations (e.g. Sea Isle Ice Company, Woodbine Municipal Airport) to enhance their capabilities to support regional emergency preparedness, response and recovery.	N/A	AI Hazards	1,3,4,6	1-3, 1-4, 3-2, 3-3, 3-4, 4-2, 4-5, 4-6, 4-7, 4-8, 4-9, 6-1, 6-2, 6-3	County and Local OEM; owners of applicable Borough businesses and facilities	Medium - High	DHS grants; County and Local funding	Long-term
BW-11	Work with servicing utilities (e.g. Atlantic Electric) to ensure that services meet modern and appropriate design standards to resist failures caused by natural hazards.	Existing	Coastal Storms, Severe Storms, Severe Winter Storms	1, 3, 4, 6	1-1, 1-3, 1-4, 3-2, 3-3, 3-4, 4-2, 4-7, 4-9, 6-2	County and Local OEM; Utilities such as Atlantic Electric	Medium - High	Owners of utilities	TBD
BW-12	Scott Avenue reconstruction project - reconstruction of Scott Avenue from DeHirsch Boulevard (County Route 550) to Freidriechstadt Avenue, including storm drainage improvements	N/A	Flooding, Coastal Storms, Severe Storms	1, 3, 4	1-1, 1-4, 1-11, 3-2, 3-3, 3-4, 4-2, 4-7, 4-9, 4-10	Borough DPW with NJDOT support	High (received \$175K state DOT funding)	NJDOT Municipal Aid Program; local budget	Short-term
BW-13	Conduct an engineering study to understand flooding issues and evaluate possible solutions along Webster Avenue (CR638) in the Village of Woodbine	Existing	Severe Storms, Flooding	1, 3, 4, 6	1-1, 1-5, 1-6, 3-4, 4-1, 4-6, 6-2	County Engineering with municipal support	Medium	County and Local Funding	Short-term
BW-14 (CMC-69)	Become a National Fire Protection Association (NFPA) "Firewise" community. Participation	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs working with County Fire	L-M	Existing Budgets	Short-term



**SECTION 9.17: BOROUGH OF WOODBINE**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	<p>in the NFPA “Firewise” program shall be supported by countywide and regional resources including the Cape May County Fire Chiefs Association and the New Jersey State Forest Fire Service (Firewise Community Liaison) by providing information on the “Firewise” program, facilitating public outreach and awareness programs, and supporting community fire risk reduction activities as appropriate (see County Initiative CMC-69).</p>					Coordinator			
BW-15	<p>Through attendance at the regular meetings of the Cape May County Fire Chiefs Association, and in partnership with the New Jersey Division of Fire Safety and the New Jersey State Forest Fire Service, expand and enhance public awareness and education programs that support wildfire mitigation at the property owner level; and expand local wildfire preparedness and response capabilities through participation in seminars and training, and the implementation of recommendations and initiatives offered by these agencies, as resources</p>	N/A	Wildfire	1, 2, 4, 6	1-1, 1-3, 1-7; 2 (all objectives); 4-1, 4-4, 4-5, 4-9; 6-2, 6-3	Local Fire Chiefs	LM	Existing Budgets	Short-term



**SECTION 9.17: BOROUGH OF WOODBINE**

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
	permit.								

Note(s): CMC = Cape May County; Short term = 1 to 5 years; Long Term = 5 years or greater; OG = On-going program; DOF = Depending on funding; \* Does this mitigation initiative reduce the effects of hazards on new and/or existing building and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Borough has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Coastal Erosion	BW-3, BW-5, BW-6, BW-7	BW-7	BW-3, BW-7	BW-7	BW-5, BW-7	BW-7
Coastal Storm	BW-3, BW-5, BW-6, BW-7	BW-1a and 1b, BW-7, BW-8, BW-10, BW-12	BW-3, BW-7	BW-7	BW-5, BW-7, BW-8, BW-10, BW-12	BW-7
Flood	BW-2, BW-3, BW-5, BW-6, BW-7	BW-1a and 1b, BW-2, BW-4, BW-7, BW-8, BW-10, BW-12, BW-13	BW-2, BW-3, BW-4, BW-7	BW-2, BW-4, BW-7	BW-5, BW-7, BW-8, BW-10, BW-12	BW-7
Severe Storm	BW-3, BW-5, BW-6, BW-7	BW-1a and 1b, BW-7, BW-8, BW-10, BW-11, BW-12, BW-13	BW-3, BW-7	BW-7	BW-5, BW-7, BW-8, BW-10, BW-11, BW-12	BW-7
Severe Winter Storm	BW-3, BW-5, BW-6, BW-7	BW-7, BW-8, BW-10, BW-11	BW-3, BW-7	BW-7	BW-5, BW-7, BW-8, BW-10, BW-11	BW-7
Tsunami	BW-3, BW-5, BW-6, BW-7	BW-7, BW-8, BW-10	BW-3, BW-7	BW-7	BW-5, BW-7, BW-8, BW-10	BW-7
Wildfire	BW-3, BW-5, BW-6, BW-7, BW-14, BW-15	BW-7, BW-14, BW-15	BW-3, BW-7, BW-14, BW-15	BW-7, BW-14, BW-15	BW-5, BW-7, BW-9, BW-15	BW-7

Notes:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
BW-1a	8	H	H	Y	Y	N	M-H*
BW-1b	8	H	H	Y	Y	N	M-H*
BW-2	9	M	L	Y	N	Y	H
BW-3	All	M	M	Y	N (Yes for 5 year update)	N	M
BW-4	14	H	L	Y	N	Y	H
BW-5	13	M	L	Y	N	Y	M
BW-6	13	M	L	Y	N	Y	M
BW-7	All	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
BW-8	13	H	M-H	Y	Y	N	M
BW-9	8	M	M	Y	Y (but not HMA)	N	L
BW-10	14	H	M-H	Y	Y (but not HMA)	Y	M
BW-11	10	H	M-H	Y	Y	Y	H
BW-12	10	H	H	Y	Y (NJDOT)	Y	H (ongoing)
BW-13	7	H	M	Y	Y	Y	H
BW-14	14	M	L	Y	N	Y	H
BW-15	14	M	L	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and OEM (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

**Explanation of Priorities**

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

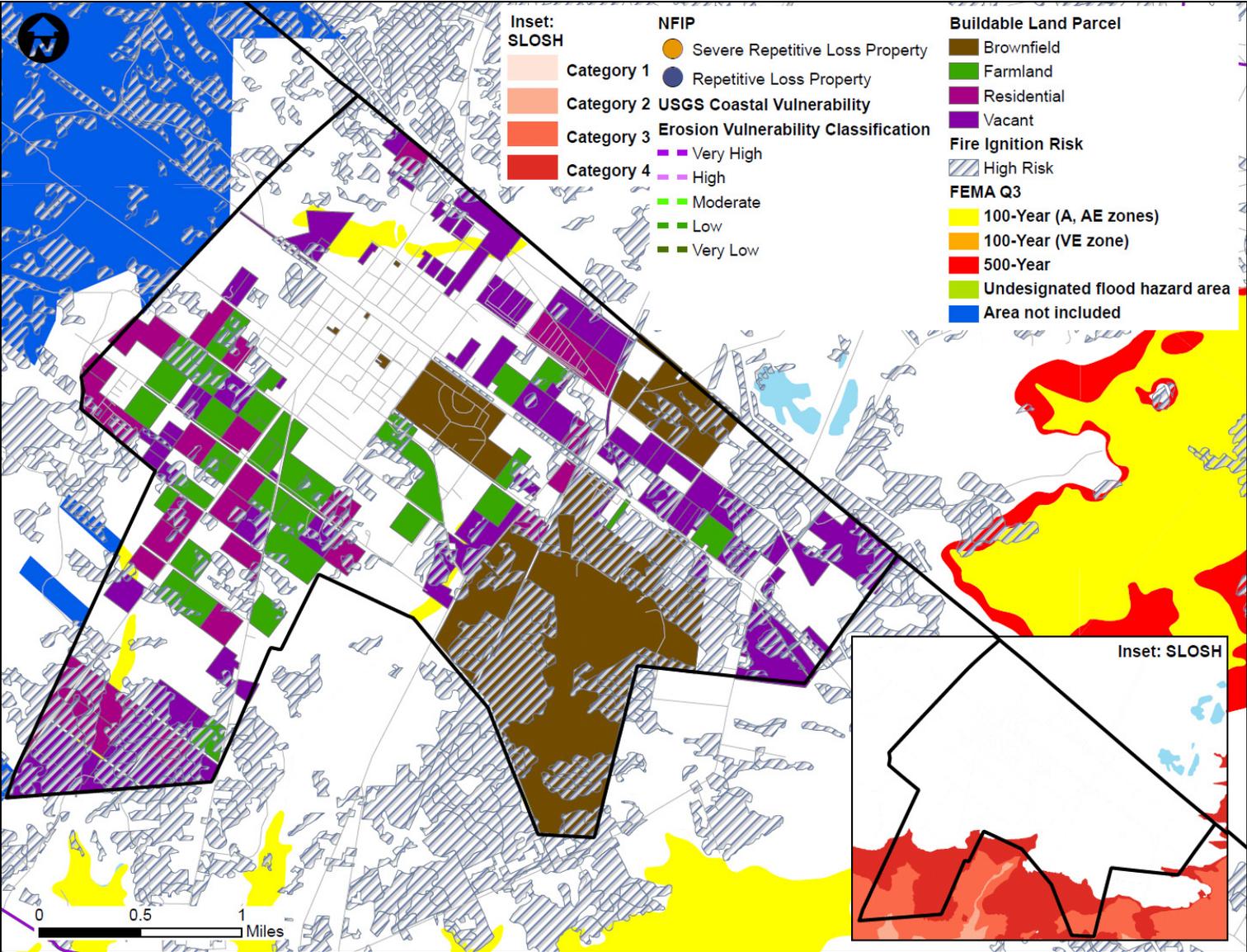
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Borough of Woodbine to illustrate the probable areas impacted within the Borough. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of Woodbine has significant exposure. The county maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: USGS, 2001; FEMA Q3; Cape May County Planning Department; Maser, 2009  
 Notes: The entire municipality is vulnerable to the following hazards: coastal storm, severe storm and severe winter storm. Only the high risk wildfire areas are illustrated on this map; please refer to Section 5.4.6 for all wildfire hazard risk areas. At this time, there is no defined tsunami hazard area for Cape May County.

