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September 2014 - UPDATE

Mayor George C. Nebel  
Borough of Mantoloking  
P.O. Box 487  
202 Downer Avenue  
Mantoloking, NJ 08872

**RE: Borough of Mantoloking  
Floodplain Management Plan  
2014 Annual Progress Report (October 2013 – September 2014)  
Community Rating System – Activity 510**

Prepared and Reviewed By:

NFIP Flood Hazard Mitigation Planning Committee;

James J. Brown, Mantoloking Councilman, Borough Resident  
Robert S. McIntyre, Councilman, Borough Resident  
Lawrence Plevier, P.E., Borough Engineer  
Joseph Ehrhardt, Construction Official  
Courtney Bixby, Deputy Coordinator, OEM, Borough Resident  
William Heckman, Public Works Superintendent  
Robert Mainberger, P.E., Borough Dune Inspector/Flood Plain Manager  
Francis X. Bruton, CFM, Hatch Mott MacDonald  
Peter A. Flihan, Jr., Borough Resident  
John H. Jones, Borough Resident  
George Peterson, Borough Resident  
Craig Symons, Borough Resident  
Stanley F. Witlowski, Borough Resident

Dear Mayor:

As you are aware, the Borough of Mantoloking has developed, adopted and is implementing its Flood Mitigation Plan (the Plan) to serve as a guidance document to mitigate flood damage to properties and the environment within the Borough. The Plan not only establishes the goals and guidelines for future flood protection throughout the community, but provides a summary of past efforts made by the Borough throughout the years to control flood damage. This Plan defines the Borough's continued commitment towards the protection, health, safety and welfare of its residents and their property, as well as the Borough's commitment towards the improvement of their environment. The Plan has been reviewed by the Federal Emergency Management Agency (FEMA) and the New Jersey Office of Emergency Management (State OEM) to ensure that the plan is in accordance with the State's



mitigation program. Additionally, the Plan has been reviewed by multiple Municipal, State and County Government agents and offices, along with neighboring Towns and utility companies, to not only obtain additional suggestions to further better the Borough's plan, but to educate and inform the surrounding areas of the Borough's intentions towards mitigation issues.

The Plan is a document that continuously implements measures to aid in mitigating flood issues and has been prepared based on an approved schedule to enact these activities. As such a review of these activities is conducted every year to ensure that the goals and objectives of the Plan are achieved. Accordingly, the NFIP Flood Hazard Mitigation Planning Committee conducted its annual meeting and prepared a report, contained herewith, of the activities for 2014 (October 2013 through September 2014) and reviewed proposed activities for 2015.

It should also be noted that the Plan has reached its 5 year service and is scheduled for an Update. Accordingly, the Plan will be updated per the requirements of the 2013 CRS coordination Manual over the next several months and shall be considered for adoption by the Borough's governing body.

#### **2013/2014 Annual Report for the Flood Mitigation Plan**

Representatives of the Committee met on September 23, 2014 to discuss the Flood Mitigation Plan and the progress of the goals and objectives represented. Provided below is a summary of the meeting and a brief explanation of the activities discussed/conducted:

1. Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains.

1a. Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program.

This program would enforce pile installations and floor flood resistance elevations to mitigate future flood damage, inclusive of rebuilding, elevating, or even demolition and property purchases, if feasible.

UPDATE: The Borough continues to implement and enforce CRS related activities while addressing improvements of its own properties.

During 2013, there was further in-depth discussion relating to the issue of implementing pile foundation requirements throughout the Borough, not just V-Zone areas. Since it was determined through past discussions of this issue that International Building Code allows the use of other foundations if tests reveal piles are not needed, enforcement would have to be through other means; Land Use, Flood Prevention. The Committee requested action on the pile foundation issue which included reaching out to DCA for clarification and determination if additional CRS credit could be achieved for the stricter construction standard. The Committee also



would research if other communities adopted this measure and enact accordingly. It should be noted that this was attempted previously and legal construction code restrictions prevented it. This was reviewed by the previous Borough Construction Official, Mr. Timothy Skinner, and determined that no such actions can be enforced as DCA permits the usage of other foundations. However, the Borough's new Construction Official will further review.

With the implementation of newer FIRMS (scheduled for release in 2014 - 2015) which are increasing the base flood elevation, it has been decided again not to pursue increasing the Borough's freeboard to 2' above the Base Flood Elevation (BFE). The Borough still maintains and regulates to a 1' freeboard per State requirements.

The Borough also implemented the following to aid in the resistance to flooding impacts:

1. Modified its Flood Damage Prevention Ordinance which recognizes the 'best available data' as the governing Base Flood Elevation. The current best available data is the Preliminary FIRM.
  2. Modification of its Land Use Regulations to accommodate the revised Base Flood Elevations of the issued best available data.
  3. Implementation of a Soil Disturbance Ordinance 621 which regulates fill activities.
  4. Held numerous public meetings to present pending flood maps and risks.
  5. Posted all correspondence regarding flood maps and beach and dune anticipated activities on Borough website.
- 1b. Continue to conform to all requirements adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment.

As the years progress, the Borough continuously strives to be in full conformance with the NFIP. The Borough also allocates funds to achieve these tasks.

UPDATE: It was recommended that points of advice to continue FEMA/NFIP compliance after the Borough review and permit process be implemented. This will include inclusion of tips within the annual flyer to keep compliance and avoid issues associated with aesthetics and landscaping improvements.

All NFIP commitments are continuing to be performed.

2. Mitigate the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods.



- 2a. Conform to and implement the CRS program mitigation measures in a planned systematic approach.

Implement the CRS program in accordance with yearly identifiable tasks which will allow Borough wide NFIP premium reductions in the most cost effective manner. Under this program a Repetitive Loss Reduction Plan will be prepared, along with improving the addressable siren system, public address system and emergency broadcast system, acquisition of aquatic or flood response vehicle, increase identification of emergency evacuation route and flood preparedness plan.

UPDATE: The Borough collected feedback and comments based upon the events of Hurricane Irene in an effort to improve the evacuation/emergency broadcast system. Upon review of the comments, the Committee determined to address some of these issues specifically the possible implementation of two (2) more alarms. As a location for the alarms was difficult due to the limited availability of open space and the inability to install the device on private property, an alternative approach of transmitting a AM-radio broadcast was researched. This information system would be operated by Borough personnel and will relay information specific to Mantoloking. Since it is a radio signal, service would be operational even through the loss of power. The AM-radio broadcast system has been implemented and is fully operational.

With the completion of the Herbert Street Bridge and the NJDOT paving of Route 35 continuing through 2015, the Committee/Borough has implemented a revised evacuation route that has been reviewed and approved by the appropriate County and State parties. The updated route has the section of town South of Herbert Street utilizing Route 35 North and Herbert Street West as their evacuation Route.

Similar to Hurricane Irene, another report/study will be prepared by the Borough OEM based on the response associated with Super Storm Sandy. This too will be reviewed by the Committee upon its completion as the Borough is officially removed from its official State of Emergency and suggestions will be addressed accordingly as funds become available and are cost effective.

- 2b. Encourage public awareness and education by various means of communication with its residents and property owners.

Mantoloking realizes the first step in reducing property losses is to inform every property owner of the flood hazard area that they lie in. All Mantoloking residents have been informed by a flyer mailed to them to make them aware that the property they own is in a special flood hazard area and that, historically, the Borough floods during storms. The public display in Borough Hall has a collection of information for property owners which cover flood preparedness, protecting a building from



flooding, flood prevention, flood plain management, retrofitting and natural and beneficial functions of flood plains.

UPDATE: Property owners continue to receive flyers twice annually while various brochures are made available at public events and informative literature is updated regularly; posted and made available at the Borough Hall. A "Welcome Package" is prepared and submitted to all new families who purchase property within the Borough. With the increased renting activities occurring within Town, this information is also provided to the owner for distribution to the renter(s) to ensure the knowledge is transferred. In an effort that the most up-to-date information is provided in this flyer, a revised for will be issued later this year that will address several concerns of the Borough residents as well as any updates to FEMA policies.

Information is also distributed to realtors within the area requesting that potential buyers are to be advised that the property is within the Special Flood Hazard Area and that flood insurance is required. It was also suggested that when a Deed is transferred, the flyer should be presented as well to the new owners.

The Borough's website is constantly updated to include this information for viewing by the general public and is advertised as well.

### 3. Mitigate flooding through projects that control flood waters

#### 3a. Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas in accordance with floodplain management regulations.

Work under this task will be implemented in conjunction with the Borough's roadway reconstruction program that will consider raising the elevation of roads to resist flooding. Presently, the Borough has an identified phased roadway program. The first phase of the present program is on file with the Borough Engineer. In addition, as each phase of the program is developed, any specific non-critical rainwater conveyance problems that can be remedied in conjunction with this program, as brought to light by public or private complaint, are included.

UPDATE: The Borough cleans the storm sewers on an annual basis while maintaining a schedule.

Roadways are improved based on the amount of funds available to the Municipality and the associated cost benefit. As the Roads are paved the associated storm systems are improved as well. Currently, State Highway 35 is being improved the NJDOT and the appropriate storm water facilities will be upgraded accordingly inclusive of two (2) significant storm water pump stations constructed by the NJDOT and the ends of Downer and Lyman Street. As this project progresses, various outfalls and piping will



be either abandoned or transferred to the Borough. Such appurtenances will be incorporated into the Borough's program.

#### Backbay Backflow Check Valve Program

Please see item 3e below.

- 3b. Develop Atlantic Ocean flood protection features to meet a 100 year coastal storm flood resistance level.

100 year coastal flood resistance is anticipated to be completed with the conclusion of the anticipated USACE Beachfill project, which will enhance the Atlantic oceanfront beach and dune system. Enhancement work, until this project is completed, has been conducted as standard operating procedure under the Borough's beach and dune maintenance program.

UPDATE: The Borough, in conjunction with the County of Ocean and neighboring communities continues to pursue implementation of a regional beach fill as the results of the Borough's beach renourishment feasibility study indicates that financially a regional project makes the most sense to the Borough. In this regard, the Borough, through efforts of the Mayor and as endorsed by the Beach Protection Committee have spearheaded communication with the County and neighboring committees to explore the potential of a regional program in conjunction with aid from the County and the NJDEP. The initial effort by the Mayor and Committee culminated in a meeting with the County and our neighboring beachfront communities who concurred with the proposed program.

Due to the impacts of Superstorm "Sandy" the federal government has allocated funds to implement the regional beach renourishment program. The USACE Beachfill Project is scheduled for award by the end of 2014.

The Borough's biggest hurdle was the acquisition of the Public Easement as the language has been viewed as unfriendly. The Borough has engaged the NJDEP and property owners in several meetings regarding the revision of this language and with a strong public outreach program minor revisions of the language has been accomplished.

The Borough has now acquired all but five (5) oceanfront easements. As directed by the USACE, the Borough will be acquiring the balance of the easements by condemnation with support from the State of New Jersey under the Disaster Declaration Act (DCA). Approximately twenty (20) other easements which had clerical errors will be revised.

#### Steel Sheet Pile

In an effort to protect its infrastructure, the New Jersey Department of Transportation and the New Jersey Department of Environmental Protection; Bureau of Coastal Engineering enacted a project for shoreline



protection by means of a steel bulk head which would be constructed within the existing dune system and supplemented by the proposed US Army Core of Engineer's Beachfill Project. The bulkhead or steel sheet pile system would extend from the existing rock revetment currently installed in Northern Mantoloking to the Southern Municipal limit of Brick Township. The 3.5 mile steel sheet pile project commenced construction in June 2014 and is scheduled for completion in November 2014.

3c. Develop back bay bulkhead system to meet a 25 year coastal storm flood level

Backbay bulkheads must be elevated to the 25-year storm level to prevent flooding of the Borough from the back bay area (protection of near this magnitude already exists on the ocean frontage).

Elevation of backbay bulkheads cannot be completed immediately, as 95% of these are privately owned and would be a very costly undertaking. Accordingly, the Borough is reviewing adopting an Ordinance which requires bulkheads to be raised as they come up for replacement. Since the average life of a bulkhead is 30 years, and the fact that some are new, the project may take over 30 years to become fully implemented.

Through review of the stillwater elevations for the municipality, it was determined that the 25-year stillwater backbay flood level will be approximately Elevation 3.88 NAVD88 (5.0 NGVD 29).

UPDATE: With the initial adoption of the Bulkhead Ordinance experiencing resistance, the Committee determined the possible implementation of a Permit Application process where the Borough could then regulate the minimum height. It has been determined that efforts should be concentrated on establishing resistance against ocean flooding (Atlantic Ocean) then addressing the back bay. The Borough's Construction Official will be reviewing DCA codes which will support this effort.

3d. Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas

25-year storm conveyance systems in critical areas (sanitary sewer pump station, NJ American Water Well and Pump Station Site, Borough Hall, etc.) would require the implementation of storm water pumping systems to overcome the disabling of gravity systems due to storm elevated water levels in backbay areas. The implementation of this project is slated to be evaluated as part of the NJDOT Route 35 upgrades.

UPDATE: Through the improvements of Route 35, two storm water pump stations will be installed: one at Lyman Street and one at Downer Avenue.

Once this system is in place, the Borough will review local flooding not



alleviated by the NJDOT system.

Various other locations within the Borough will be investigated to determine if additional pump station installations will be implemented to address municipal conveyance. However, with the bayside barrier being of varying conditions such as unimproved bay front, bulkheads, revetment, and beach, the installation of pump stations will have to be reviewed further prior to implementation.

3e. Implementation of backbay backflow check valve program.

This project requires the continued analysis and evaluation of Borough and State outfall systems, formulation of appropriate replacement locations and installation of check valves as required.

UPDATE: With the Borough still in recovery from the effects of Super Storm Sandy, this program has not moved forward this year. It is the Borough's full intention to continue this program as monies are available and anticipate that other valves will be upgraded/installed in 2015.

4. Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state

4a. Adopt and support NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same

In order to assure adoption and the availability of matching funds to put the NJDEP/Mantoloking Coastal Protection Plan and project in place in accordance with Item #3 above, the Borough is presently working on reliable funding sources to support this program and which will allow the Borough to adopt and execute the required agreements to implement the plan.

UPDATE: It now appears that the State of New Jersey will provide all matching funds for the project, however, the Borough will maintain its funds for the maintenance of beach and dune system as it is competed.

4b. Evaluate all dune systems and augment improvements to same.

This project goal requires implementation over a longer term period, in conjunction with additional engineering and computer analysis followed by physical augmentation of the dune system in conjunction with the Richard Stockton College Coastal Resource Center (RSCCRC). Phase 1 of the project entails the dune computer analysis; Phase 2, dune augmentation in critical areas; Phase 3, mass dune system augmentation where necessary accompanied by planting and fence work. Project development to be implemented as follows:



UPDATE: Due to the impacts of Super Storm Sandy and its devastation of the Borough's beach and dune system, the results of this study are void. As the Committee recommended the possibility of re-evaluating Phase 1, it was determined moot since this will be a requirement of USACE when the beach replenishment project is constructed. The USACE will be responsible to monitor and maintain as necessary.

However, due to the impacts of Sandy, in the interim until the USACE project is complete, the Borough has implemented a non-stop aggressive dune rebuilding program and sand importation program which started in October 2012 and continues to present.

- 4c. Continuation of monitoring and study by Richard Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance

With the ever changing shoreline, due to ocean currents and seasonal storms, the dunes are monitored to ensure the needed protection is present.

UPDATE: Stockton State College continues to monitor and survey the movement of sand on the dune and beach. They produce a quarterly report throughout the year while producing an annual summary at the end of the fourth quarter. After severe storm events, an additional evaluation is conducted to determine the damage sustained.

An evaluation of the Borough's dune system is conducted every year to determine the overall status. Each resident is notified of specific recommendations to aid in the development of their dune. A report is generated detailing the overall condition of the dune system which is mailed to the resident. The Borough has also initiated a program where residents have been notified of various dune ordinance violations to increase awareness and accelerate the dune preservation program.

As the USACE beach replenishment project moves forward, the USACE will be responsible to monitor the beach and dune system and the Stockton program may be eliminated.

5. Additional Programs or Projects
  - 5a. Conduct storm sewer inspection and clean accordingly. (Completed – see item 3a above)
  - 5b. Investigate the bulkhead at Albertson Street and implement improvements.
  - 5c. Review locations for the implementation of storm pumping stations based upon effects of the NJDOT's system.
  - 5d. Implement the installation of a steel sheet pile system along the Borough's beach system buried within the landward side (backslope) of the USACE dune system.



6. 5 Year Update

With the Plan reaching its 5 year service an Update is necessary to ensure its relevance. Accordingly, the Plan will be updated over the next several months per the requirements of the 2013 CRS Coordination Manual and shall be considered for adoption by the Borough's governing body upon its completion. A follow-up meeting has been scheduled for October 21, 2014 to continue this process.

# TIMETABLE FOR OBJECTIVES

Activity	Responsible Parties	Year						
		2008	2009	2010	2011	2012	2013	2014
1) Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains								
a) Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program	Borough Code Official, E.M.O., Borough Engineer		X <sup>1</sup>		X <sup>1</sup>		X <sup>1</sup>	X <sup>1</sup>
b) Continue with all commitments adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment	Borough Code Official, E.M.O., Borough Engineer		X		X		X	X
2) Modify the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods								
a) Conform to, and implement CRS program mitigation measures in planned systematic approach	Borough Engineer, Borough Planner	X		X		X		X
b) Encourage public awareness and education by various means of communication with its residents and property owners	Flood Mitigation Committee	X	X	X	X	X	X	X
3) Modify flooding through projects that control flood waters								
a) Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas	Borough Engineer, Borough Code Official	X <sup>2</sup>						
b) Develop Atlantic Ocean flood protection features to meet a 100-year coastal storm flood resistance level.	Borough Engineer, Borough Dune Inspector							X
c) Develop backbay bulkhead system to meet a 25 year coastal storm flood level	Borough Engineer	X <sup>3</sup>						
d) Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas	Borough Engineer		X	X			X	X
e) Implementation of backbay backflow check valve program	Borough Engineer			X				X
4) Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state (NA <sup>4</sup> )								
a) Adopt and support USACE/NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same	Mayor, Borough Council							
b) Evaluate all dune systems and augment improvement to same	Borough Dune Inspector							
c) Continuation of monitoring and study by Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance	Borough Dune Inspector							

Notes: 1 - This task will be dependent on updates that are enforced under the CRS program; 2 - Phased program, to be conducted annually as roadways are improved; 3 - Improvement to be conducted by homeowner as bulkhead is replaced; 4 - Requirement of the USACE upon completion of Beachfill Project.



The Committee will update the Flood Mitigation Plan over the next several months with the activities mentioned herewith and arrange for the revised Plan to be adopted by the Borough at the beginning of the calendar year. Over the course of the year the Committee will continue to meet to discuss the success of various projects and actions that are necessary to aid other objectives and goals. As this date is finalized, advanced notification will be provided.

To ensure that Council is aware of the progress of the Flood Mitigation Committee, please arrange for distribution of this report to Council. In addition, for compliance with Community Rating System Activity Section 500, please arrange for this report to be viewed on the Borough's website and provide notification in the local newspaper that this report has been prepared and is available at the Borough Hall. We are providing the following language for use in notifying the public of the availability of this document:

"The NFIP Flood Hazard Mitigation Planning Committee of Mantoloking Borough has completed their annual report of the objectives and goals for 2013/2014 of the Borough's Flood Mitigation Plan. Members of the public are welcome to view the report as it is available on the Borough's website ([www.mantoloking.org](http://www.mantoloking.org)) as well as available for viewing at the Borough Hall."

Should you require any additional information, please do not hesitate to contact this office.

Very truly yours,

Hatch Mott MacDonald

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Senior Vice President  
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[robert.mainberger@hatchmott.com](mailto:robert.mainberger@hatchmott.com)

cc: Mr. John H. Moyle, Manager of Bureau of Dam Safety – NJDEP  
Borough Council  
Mr. Jim Brown, CRS Coordinator  
Mr. Larry Plevier, PE, Hatch Mott MacDonald  
Mr. Francis X. Bruton, CFM, Hatch Mott MacDonald  
File Mantoloking 3349212014 Flood Mitigation Plan – Annual Report



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**2012/2013 Annual Report for the Flood Mitigation Plan**

Representatives of the Committee met on August 20, 2013 to discuss the Flood Mitigation Plan and the progress of the goals and objectives represented. Provided below is a summary of the meeting and a brief explanation of the activities conducted during 2012/2013:

1. Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains.

1a. Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program.

This program would enforce pile installations and floor flood resistance elevations to mitigate future flood damage, inclusive of rebuilding, elevating, or even demolition and property purchases, if feasible.

UPDATE: The Borough continues to implement and enforce CRS related activities while addressing improvements of its own properties.

There was further in-depth discussion relating to the issue of implementing pile foundation requirements throughout the Borough, not just V-Zone areas. Since it was determined through past discussions of this issue that International Building Code allows the use of other foundations if tests reveal piles are not needed, enforcement would have to be through other means; Land Use, Flood Prevention. The Committee requested action on the pile foundation issue which included reaching out to DCA for clarification and determination if additional CRS credit could be achieved for the stricter construction standard. The Committee also would research if other communities adopted this measure and enact accordingly. It should be noted that this was attempted previously and legal construction code restrictions prevented it.

With the implementation of the new FIRMS (scheduled for release in 2014) which are increasing the base flood elevation, it has been decided to no longer pursue potentially increasing the Borough's freeboard to 2' above the Base Flood Elevation (BFE). The Borough still maintains and regulates to a 1' freeboard per State requirements.

1b. Continue to conform to all requirements adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment.

As the years progress, the Borough continuously strives to be in full conformance with the NFIP. The Borough also allocates funds to achieve these tasks.

UPDATE: All NFIP commitments are continuing to be performed.



2. Mitigate the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods.

2a. Conform to and implement the CRS program mitigation measures in a planned systematic approach.

Implement the CRS program in accordance with yearly identifiable tasks which will allow Borough wide NFIP premium reductions in the most cost effective manner. Under this program a Repetitive Loss Reduction Plan will be prepared, along with improving the addressable siren system, public address system and emergency broadcast system, acquisition of aquatic or flood response vehicle, increase identification of emergency evacuation route and flood preparedness plan.

UPDATE: The Borough collected feedback and comments based upon the events of Hurricane Irene in an effort to improve the evacuation/emergency broadcast system. Upon review of the comments, the Committee determined to address some of these issues specifically the possible implementation of two (2) more alarms. As a location for the alarms was difficult due to the limited availability of open space and the inability to install the device on private property, an alternative approach of transmitting a AM-radio broadcast was researched. This information system would be operated by Borough personnel and will relay information specific to Mantoloking. Since it is a radio signal, service would be operational even through the loss of power.

With the completion of the Herbert Street Bridge and the NJDOT paving of Route 35 scheduled for implementation for Fall 2013, the Committee/Borough has been reviewing the evacuation route and has suggested various improvements. These suggestions have been collected and submitted to the appropriate County and State parties to implement. As the Multi Jurisdictional All County Hazards Plan is implemented, it will be reviewed and then determined if the revised route should be enacted.

Similar to Hurricane Irene, another report/study will be prepared by the Borough OEM based on the response associated with Super Storm Sandy. This too will be reviewed by the Committee and suggestions will be addressed accordingly as funds become available and are cost effective.

2b. Encourage public awareness and education by various means of communication with its residents and property owners.

Mantoloking realizes the first step in reducing property losses is to inform every property owner of the flood hazard area that they lie in. All Mantoloking residents have been informed by a flyer mailed to them to make them aware that the property they own is in a special flood hazard



area and that, historically, the Borough floods during storms. The public display in Borough Hall has a collection of information for property owners which cover flood preparedness, protecting a building from flooding, flood prevention, flood plain management, retrofitting and natural and beneficial functions of flood plains.

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Information is also distributed to realtors within the area requesting that potential buyers are to be advised that the property is within the Special Flood Hazard Area and that flood insurance is required.

The Borough's website is constantly updated to include this information for viewing by the general public and is advertised as well.

### 3. Mitigate flooding through projects that control flood waters

#### 3a. Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas in accordance with floodplain management regulations.

Work under this task will be implemented in conjunction with the Borough's roadway reconstruction program that will consider raising the elevation of roads to resist flooding. Presently, the Borough has an identified phased roadway program. The first phase of the present program is on file with the Borough Engineer. In addition, as each phase of the program is developed, any specific non-critical rainwater conveyance problems that can be remedied in conjunction with this program, as brought to light by public or private complaint, are included.

UPDATE: The Borough entertained the option of purchasing a jet-vacuum truck to conduct storm sewer system cleanings. This was not finalized so the Borough cleans the storm sewers through alternative methods. A maintenance schedule is followed.

Old Bridge Street and Bay Avenue from Downer Avenue to Herbert Street was paved with the associated storm systems improved as well. This procedure will continue each year as a roadway is improved. Roadways are improved based on the amount of funds available to the Municipality and the associated cost benefit. State Highway 35 will be improved by the NJDOT (commence Fall 2013) and the appropriate storm water facilities will be upgraded accordingly inclusive of two (2) significant storm water



pump stations to be constructed by the NJDOT.

Backbay Backflow Check Valve Program

Please see item 3e below.

- 3b. Develop Atlantic Ocean flood protection features to meet a 100 year coastal storm flood resistance level.

100 year coastal flood resistance is anticipated to be completed with the conclusion of the anticipated NJDEP/USACE/Mantoloking project, which will enhance the Atlantic oceanfront beach and dune system. Enhancement work, until this project is completed, has been conducted as standard operating procedure under the Borough's beach and dune maintenance program.

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Due to the impacts of Superstorm "Sandy" the federal government has allocated funds to implement the regional beach renourishment program.

The Borough's biggest hurdle was the acquisition of the Public Easement as the language has been viewed as unfriendly. The Borough has engaged the NJDEP and property owners in several meetings regarding the revision of this language and with a strong public outreach program minor revisions of the language has been accomplished.

The Borough has now acquired all but five (5) oceanfront easements. The balance of the easements will be acquired by condemnation if needed with support from the State of New Jersey under the Disaster Declaration Act (DCA).

The Borough is also working with the FHA and NJDEP to install a steel sheetpile wall across the oceanfront of the Borough.

- 3c. Develop back bay bulkhead system to meet a 25 year coastal storm flood level

Backbay bulkheads must be elevated to the 25-year storm level to prevent



flooding of the Borough from the back bay area (protection of near this magnitude already exists on the ocean frontage).

Elevation of backbay bulkheads cannot be completed immediately, as 95% of these are privately owned and would be a very costly undertaking. Accordingly, the Borough is reviewing adopting an Ordinance which requires bulkheads to be raised as they come up for replacement. Since the average life of a bulkhead is 30 years, and the fact that some are new, the project may take over 30 years to become fully implemented.

Through review of the stillwater elevations for the municipality, it was determined that the 25-year stillwater backbay flood level will be approximately Elevation 3.88 NAVD88 (5.0 NGVD 29).

UPDATE: With the initial adoption of the Bulkhead Ordinance experiencing resistance, the Committee determined the possible implementation of a Permit Application process where the Borough could then regulate the minimum height. It has been determined that efforts should be concentrated on establishing resistance against ocean flooding (Atlantic Ocean) then addressing the back bay.

3d. Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas

25-year storm conveyance systems in critical areas (sanitary sewer pump station, NJ American Water Well and Pump Station Site, Borough Hall, etc.) would require the implementation of storm water pumping systems to overcome the disabling of gravity systems due to storm elevated water levels in backbay areas. The implementation of this project is slated to be evaluated as part of the NJDOT Route 35 upgrades.

UPDATE: Through the improvements of Route 35, two storm water pump stations will be installed: one at Lyman Street and one at Downer Avenue.

Once this system is in place, the Borough will review local flooding not alleviated by the NJDOT system.

Various other locations within the Borough will be investigated to determine if additional pump station installations will be implemented to address municipal conveyance. However, with the bayside barrier being of varying conditions such as unimproved bay front, bulkheads, revetment, and beach, the installation of pump stations will have to be reviewed further prior to implementation.

3e. Implementation of backbay backflow check valve program.

This project requires the continued analysis and evaluation of Borough and State outfall systems, formulation of appropriate replacement locations and installation of check valves as required.



UPDATE: The Borough continued its check valve installations at Old Bridge Street. It is anticipated that other valves will be upgraded/installed in 2014.

4. Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state

4a. Adopt and support NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same

In order to assure adoption and the availability of matching funds to put the NJDEP/Mantoloking Coastal Protection Plan and project in place in accordance with Item #3 above, the Borough is presently working on reliable funding sources to support this program and which will allow the Borough to adopt and execute the required agreements to implement the plan.

UPDATE: It now appears that the State of New Jersey will provide all matching funds for the project, however, the Borough will maintain its funds for the time being should the State program be revised.

4b. Evaluate all dune systems and augment improvements to same.

This project goal requires implementation over a longer term period, in conjunction with additional engineering and computer analysis followed by physical augmentation of the dune system in conjunction with the Richard Stockton College Coastal Resource Center (RSCCRC). Phase 1 of the project entails the dune computer analysis; Phase 2, dune augmentation in critical areas; Phase 3, mass dune system augmentation where necessary accompanied by planting and fence work. Project development to be implemented as follows:

UPDATE: Due to the impacts of Super Storm Sandy and its devastation of the Borough's beach and dune system, the results of this study are void. As the Committee recommended the possibility of re-evaluating Phase 1, it was determined moot since this will be a requirement of USACE when the beach replenishment project is constructed. The USACE will be responsible to monitor and maintain as necessary.

4c. Continuation of monitoring and study by Richard Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance

With the ever changing shoreline, due to ocean currents and seasonal storms, the dunes are monitored to ensure the needed protection is present.

UPDATE: Stockton State College continues to monitor and survey the movement of sand on the dune and beach. They produce a quarterly report



throughout the year while producing an annual summary at the end of the fourth quarter. After severe storm events, an additional evaluation is conducted to determine the damage sustained.

An evaluation of the Borough's dune system is conducted every year to determine the overall status. Each resident is notified of specific recommendations to aid in the development of their dune. A report is generated detailing the overall condition of the dune system which is mailed to the resident. The Borough has also initiated a program where residents have been notified of various dune ordinance violations to increase awareness and accelerate the dune preservation program.

As the USACE beach replenishment project moves forward, the USACE will be responsible to monitor the beach and dune system and the Stockton program may be eliminated.

5. Additional Programs or Projects

- 5a. Conduct storm sewer inspection and clean accordingly. (Completed – see item 3a above)
- 5b. Investigate the bulkhead at Albertson Street and implement improvements.
- 5c. Review locations for the implementation of storm pumping stations.
- 5d. Implement the installation of a steel sheet pile system along the Borough's beach system buried within the landward side (backslope) of the USACE dune system.

# TIMETABLE FOR OBJECTIVES

Activity	Responsible Parties	Year						
		2008	2009	2010	2011	2012	2013	2014
1) Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains								
a) Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program	Borough Code Official, E.M.O., Borough Engineer		X <sup>1</sup>		X <sup>1</sup>		X <sup>1</sup>	X <sup>1</sup>
b) Continue with all commitments adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment	Borough Code Official, E.M.O., Borough Engineer		X		X		X	X
2) Modify the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods								
a) Conform to, and implement CRS program mitigation measures in planned systematic approach	Borough Engineer, Borough Planner	X		X		X		X
b) Encourage public awareness and education by various means of communication with its residents and property owners	Flood Mitigation Committee	X	X	X	X	X	X	X
3) Modify flooding through projects that control flood waters								
a) Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas	Borough Engineer, Borough Code Official	X <sup>2</sup>						
b) Develop Atlantic Ocean flood protection features to meet a 100-year coastal storm flood resistance level.	Borough Engineer, Borough Dune Inspector							X
c) Develop backyard bulkhead system to meet a 25 year coastal storm flood level	Borough Engineer	X <sup>3</sup>						
d) Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas	Borough Engineer		X	X			X	X
e) Implementation of backyard backflow check valve program	Borough Engineer			X				X
4) Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state								
a) Adopt and support USACE/NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same	Mayor, Borough Council				X			
b) Evaluate all dune systems and augment improvement to same	Borough Dune Inspector	X <sup>4</sup>		X <sup>4</sup>	X <sup>4</sup>			
c) Continuation of monitoring and study by Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance	Borough Dune Inspector	X	X	X	X	X	X	X

Notes: 1 - This task will be dependent on updates that are enforced under the CRS program; 2 - Phased program, to be conducted annually as roadways are improved; 3 - Improvement to be conducted by homeowner as bulkhead is replaced; 4 - Multiple phased project.



Hatch Mott  
MacDonald

The Committee will update the Flood Mitigation Plan over the next several months with the activities mentioned herewith and arrange for the revised Plan to be adopted by the Borough at the beginning of the calendar year. Over the course of the year the Committee will continue to meet to discuss the success of various projects and actions that are necessary to aid other objectives and goals. As this date is finalized, advanced notification will be provided.

To ensure that Council is aware of the progress of the Flood Mitigation Committee, please arrange for distribution of this report to Council. In addition, for compliance with Community Rating System Activity Section 500, please arrange for this report to be viewed on the Borough's website and provide notification in the local newspaper that this report has been prepared and is available at the Borough Hall. We are providing the following language for use in notifying the public of the availability of this document:

"The NFIP Flood Hazard Mitigation Planning Committee of Mantoloking Borough has completed their annual report of the objectives and goals for 2012/2013 of the Borough's Flood Mitigation Plan. Members of the public are welcome to view the report as it is available on the Borough's website ([www.mantoloking.org](http://www.mantoloking.org)) as well as available for viewing at the Borough Hall."

Should you require any additional information, please do not hesitate to contact this office.

Very truly yours,

Hatch Mott MacDonald

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cc: Mr. John H. Moyle, Manager of Bureau of Dam Safety – NJDEP  
Borough Council  
Mr. Jim Brown, CRS Coordinator  
Ms. Irene Ryan, CMC  
Mr. Larry Plevier, PE, Hatch Mott MacDonald  
Mr. Francis X. Bruton, CFM, Hatch Mott MacDonald  
File Mantoloking M700906-III-3 (2013 Flood Mitigation Plan – Annual Report)



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September 2011 - UPDATE

Mayor George C. Nebel  
Borough of Mantoloking  
P.O. Box 487  
202 Downer Avenue  
Mantoloking, NJ 08872

**RE: Borough of Mantoloking  
Floodplain Management Plan  
2011 Annual Progress Report (October 2010 – September 2011)  
Community Rating System – Activity 510**

Prepared and Reviewed By:

NFIP Flood Hazard Mitigation Planning Committee;

Dear Mayor:

As you are aware, the Borough of Mantoloking has developed, adopted and is implementing its Flood Mitigation Plan (the Plan) to serve as a guidance document to mitigate flood damage to properties and the environment within the Borough. The Plan not only establishes the goals and guidelines for future flood protection throughout the community, but provides a summary of past efforts made by the Borough throughout the years to control flood damage. This Plan defines the Borough's continued commitment towards the protection, health, safety and welfare of its residents and their property, as well as the Borough's commitment towards the improvement of their environment. The Plan has been reviewed by the Federal Emergency Management Agency (FEMA) and the New Jersey Office of Emergency Management (State OEM) to ensure that the plan is in accordance with the State's mitigation program. Additionally, the Plan has been reviewed by multiple Municipal, State and County Government agents and offices, along with neighboring Towns and utility companies, to not only obtain additional suggestions to further better the Borough's plan, but to educate and inform the surrounding areas of the Borough's intentions towards mitigation issues.

The Plan is a document that continuously implements measures to aid in mitigating flood issues and has been prepared based on an approved schedule to enact these activities. As such a review of these activities is conducted every year to ensure that the goals and objectives of the Plan are achieved. Accordingly, the NFIP Flood Hazard Mitigation Planning Committee conducted its annual meeting and prepared a report, contained herewith, of the activities for 2011 (October 2010 through September 2011) and reviewed proposed activities for 2012.

Page 1 September 2010 Nebel

Livelink/PIMS02 (online)/288082 - Mantoloking/2011 CoastalGeneral/Documents/Reports/Internally  
Produced/Flood Mitigation Plan



**2010/2011 Annual Report for the Flood Mitigation Plan**

Representatives of the Committee met on September 23, 2011 to discuss the Flood Mitigation Plan and the progress of the goals and objectives represented. Provided below is a summary of the meeting and a brief explanation of the activities conducted during 2011:

1. Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains.

1a. Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program.

This program would enforce pile installations and floor flood resistance elevations to mitigate future flood damage, inclusive of rebuilding, elevating, or even demolition and property purchases, if feasible.

UPDATE: The Borough continues to implement and enforce CRS related activities while addressing improvements of its own properties. The Committee is also in significant discussion with the Planning Board regarding adoption of code changes to increase floor heights back to the two (2) feet above the floodplain and implement pile foundation requirements. The Committee requested action on the pile foundation issue by determining if the Borough can enact a stricter pile regulation since the International Building Code allows the use of other foundations if tests reveal piles are not needed.

1b. Continue to conform to all requirements adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment.

As the years progress, the Borough continuously strives to be in full conformance with the NFIP. The Borough also allocates funds to achieve these tasks.

UPDATE: All NFIP commitments are continuing to be performed.

2. Mitigate the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods.

2a. Conform to and implement the CRS program mitigation measures in a planned systematic approach.

Implement the CRS program in accordance with yearly identifiable tasks which will allow Borough wide NFIP premium reductions in the most cost effective manner. Under this program a Repetitive Loss Reduction Plan will be prepared, along with improving the addressable siren system, public address system and emergency broadcast system, acquisition of



aquatic or flood response vehicle, increase identification of emergency evacuation route and flood preparedness plan.

UPDATE: As a result of the recent evacuation events due to Hurricane Irene, the Borough has been collecting feedback on actions to improve the evacuation/emergency broadcast system. Upon review of the comments, the Committee determined to address some of these issues which could include the possible implementation of two (2) more alarms and any other issues suggested. A study/report is being prepared by the Borough OEM based on the evacuation procedures/efforts.

With the completion of the Herbert Street Bridge and the NJDOT paving of Route 35 scheduled for implementation for spring 2012, the Committee/Borough has been reviewing the evacuation route and has suggested various improvements. These suggestions will be collected and submitted to the appropriate County and State parties to implement.

The remaining issues along with other suggestions will be addressed as funds become available and are cost effective.

- 2b. Encourage public awareness and education by various means of communication with its residents and property owners.

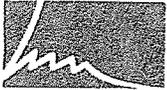
Mantoloking realizes the first step in reducing property losses is to inform every property owner of the flood hazard area that they lie in. All Mantoloking residents have been informed by a flyer mailed to them to make them aware that the property they own is in a special flood hazard area and that, historically, the Borough floods during storms. The public display in Borough Hall has a collection of information for property owners which cover flood preparedness, protecting a building from flooding, flood prevention, flood plain management, retrofitting and natural and beneficial functions of flood plains.

UPDATE: Property owners receive flyers twice annually while various brochures are made available at public events and informative literature is updated regularly; posted and made available at the Borough Hall. A "Welcome Package" is prepared and submitted to all new families who purchase property within the Borough. With the increased renting activities occurring within Town, said information is also provided to the owner for distribution to the renter(s) to ensure the knowledge is transferred.

The Borough's website is constantly updated to include this information for viewing by the general public and is advertised as well.

### 3. Modify flooding through projects that control flood waters

- 3a. Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas in accordance with floodplain management



regulations.

Work under this task will be implemented in conjunction with the Borough's roadway reconstruction program that will consider raising the elevation of roads to resist flooding. Presently, the Borough has an identified phased roadway program. The first phase of the present program is on file with the Borough Engineer. In addition, as each phase of the program is developed, any specific non-critical rainwater conveyance problems that can be remedied in conjunction with this program, as brought to light by public or private complaint, are included.

UPDATE: The Borough has entertained the option of possibly purchasing a jet-vacuum truck to conduct storm sewer system cleanings. This would permit the Borough to implement a maintenance schedule without the expenditures of public bid.

Lagoon Lane was paved with the associated storm systems improved as well. This procedure will continue each year as a roadway is improved. The roadway to be improved is determined by the amount of funds available to the Municipality and the associated cost benefit. The Borough intends to complete Old Bridge Street and Bay Avenue from Downer Avenue to Herbert Street during 2012, while State Highway 35 will be improved by the NJDOT (commence spring 2012). The appropriate storm water facilities will be upgraded accordingly.

#### Backbay Backflow Check Valve Program

Please see item 3e below.

- 3b. Develop Atlantic Ocean flood protection features to meet a 100 year coastal storm flood resistance level.

100 year coastal flood resistance is anticipated to be completed with the conclusion of the anticipated NJDEP/USACE/Mantoloking project, which will enhance the Atlantic oceanfront beach and dune system. Enhancement work, until this project is completed, has been conducted as standard operating procedure under the Borough's beach and dune maintenance program.

UPDATE: The Borough, in conjunction with the County of Ocean and neighboring communities continues to pursue implementation of a regional beach fill as the results of the Borough's beach renourishment feasibility study indicates that financially a regional project makes the most sense to the Borough. In this regard, the Borough, through efforts of the Mayor and as endorsed by the Beach Protection Committee have spearheaded communication with the County and neighboring committees to explore the potential of a regional program in conjunction with aid from the County and the NJDEP. The initial effort by the Mayor and Committee



culminated in a meeting with the County and our neighboring beachfront communities who concurred with the proposed program.

Besides the availability of funding, the biggest hurdle is the acceptance of the Public Easement as the language has been determined as unfriendly. The Borough has engaged the NJDEP and past NJDEP Commissioners in several meetings regarding the revision of this language and has more recently met with a public outreach representative of the New Jersey Department of Environmental Protection to discuss revision of the language with Mr. Martin, the new NJDEP Commissioner under Governor Christie's Administration.

In the last meeting, the NJDEP agreed to join with the Borough to discuss easement conditions with the USACOE which are controlled by the Federal regulations. A follow up meeting with the NJDEP Commissioner and regional political state representatives has been scheduled to discuss easement conditions and alternate approaches to the needed beach fill activities and program.

3c. Develop back bay bulkhead system to meet a 25 year coastal storm flood level

Backbay bulkheads must be elevated to the 25-year storm level to prevent flooding of the Borough from the back bay area (protection of near this magnitude already exists on the ocean frontage).

Elevation of backbay bulkheads cannot be completed immediately, as 95% of these are privately owned and would be a very costly undertaking. Accordingly, the Borough will adopt an Ordinance which requires bulkheads to be raised as they come up for replacement. Since the average life of a bulkhead is 30 years, and the fact that some are new, the project may take over 30 years to become fully implemented.

Through review of the stillwater elevations for the municipality, it was determined that the 25-year stillwater backbay flood level will be approximately Elevation 3.88 NAVD88 (5.0 NGVD 29).

UPDATE: With the initial adoption of the Bulkhead Ordinance experiencing resistance, the Committee determined the possible implementation of a Permit Application process where the Borough could then regulate the minimum height. The Committee continues to revisit this application and will advise accordingly.

3d. Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas

25-year storm conveyance systems in critical areas (sanitary sewer pump station, NJ American Water Well and Pump Station Site, Borough Hall, etc.) would require the implementation of storm water pumping systems to



overcome the disabling of gravity systems due to storm elevated water levels in backbay areas. The implementation of this project is slated to be evaluated as part of the NJDOT Route 35 upgrades.

UPDATE: Various locations within the Borough will be investigated to determine if such an installation will be implemented. However, with the bayside barrier being of varying conditions such as unimproved bay front, bulkheads, revetment, and beach, the installation of pump stations will have to be reviewed further prior to implementation.

3e. Implementation of backbay backflow check valve program.

This project requires the continued analysis and evaluation of Borough and State outfall systems, formulation of appropriate replacement locations and installation of check valves as required.

UPDATE: The Borough continued its check valve installations at the North end of town on Lagoon Lane. It is anticipated that another valve will be upgraded/installed along Old Bridge Street as the improvements are completed (2012).

4. Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state

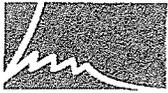
4a. Adopt and support NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same

In order to assure adoption and the availability of matching funds to put the NJDEP/Mantoloking Coastal Protection Plan and project in place in accordance with Item #3 above, the Borough is presently working on reliable funding sources to support this program and which will allow the Borough to adopt and execute the required agreements to implement the plan.

UPDATE: This action is directly related to part 3B above. Actions were taken this year to implement a possible regional project between local contiguous municipalities, however issues relating to easements have slowed the progression of this program. The Borough currently has a system for saving funds for this activity and is exploring various other approaches to obtain the remaining funds needed should this project come to fruition.

4b. Evaluate all dune systems and augment improvements to same.

This project goal requires implementation over a longer term period, in conjunction with additional engineering and computer analysis followed by physical augmentation of the dune system in conjunction with the Richard Stockton College Coastal Resource Center (RSCCRC). Phase 1 of the project entails the dune computer analysis; Phase 2, dune



augmentation in critical areas; Phase 3, mass dune system augmentation where necessary accompanied by planting and fence work. Project development to be implemented as follows:

Phase 1 - Computer Analysis: COMPLETED

UPDATE: An analysis of the dune system was completed utilizing a Geographical Information System based knowledge-driven modeling technology that identifies weaknesses in the dune system and highlights areas that may be vulnerable to storms. Simulations were then run for 2-year through 100-year storms using parameters developed by FEMA and RSCRC which produced a dune susceptibility map of the Borough.

The Borough has the intention to complete Phases 2 and Phase 3 as the funds are appropriated.

With the erosion that the Borough has experienced over the last few seasons due to hurricanes and nor'easters, the Committee has recommended the possibility of re-evaluating Phase 1. Although the dune and beach system are mechanically repaired to pre-storm status, it may be beneficial to re-evaluate.

- 4c. Continuation of monitoring and study by Richard Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance

With the ever changing shoreline, due to ocean currents and seasonal storms, the dunes are monitored to ensure the needed protection is present.

UPDATE: Stockton State College continues to monitor and survey the movement of sand on the dune and beach. They produce a quarterly report throughout the year while producing an annual summary at the end of the fourth quarter. After severe storm events, an additional evaluation is conducted to determine the damage sustained.

An evaluation of the Borough's dune system is conducted every year to determine the overall status. Each resident is notified of specific recommendations to aid in the development of their dune. A report is generated detailing the overall condition of the dune system which is mailed to the resident. The Borough has also initiated a program where residents have been notified of various dune ordinance violations to increase awareness and accelerate the dune preservation program.

5. Additional Programs or Projects

- 5a. Improve walkways to beach with pile supports while increasing height to promote further dune growth at Lyman Street.
- 5b. Conduct storm sewer inspection and clean accordingly. (Completed – see item 3a above)
- 5c. Investigate the bulkhead at Albertson Street and implement improvements.

# TIMETABLE FOR OBJECTIVES

Activity	Responsible Parties	Year						
		2008	2009	2010	2011	2012	2013	2014
1) Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains								
a) Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program	Borough Code Official, E.M.O., Borough Engineer		X <sup>1</sup>		X <sup>1</sup>			X <sup>1</sup>
b) Continue with all commitments adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment	Borough Code Official, E.M.O., Borough Engineer		X		X			X
2) Modify the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods								
a) Conform to, and implement CRS program mitigation measures in planned systematic approach	Borough Engineer, Borough Planner	X		X		X		X
b) Encourage public awareness and education by various means of communication with its residents and property owners	Flood Mitigation Committee	X	X	X	X	X	X	X
3) Modify flooding through projects that control flood waters								
a) Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas	Borough Engineer, Borough Code Official	X <sup>2</sup>						
b) Develop Atlantic Ocean flood protection features to meet a 100-year coastal storm flood resistance level.	Borough Engineer, Borough Dune Inspector						X	
c) Develop backbay bulkhead system to meet a 25 year coastal storm flood level	Borough Engineer	X <sup>3</sup>						
d) Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas	Borough Engineer		X	X				
e) Implementation of backbay backflow check valve program	Borough Engineer			X				
4) Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state								
a) Adopt and support USACE/NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same	Mayor, Borough Council				X			
b) Evaluate all dune systems and augment improvement to same	Borough Dune Inspector			X <sup>4</sup>				
c) Continuation of monitoring and study by Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance	Borough Dune Inspector	X	X	X	X	X	X	X

Notes: 1 - This task will be dependent on updates that are enforced under the CRS program; 2 - Phased program, to be conducted annually as roadways are improved; 3 - Improvement to be conducted by homeowner as bulkhead is replaced; 4 - Multiple phased project.



Hatch Mott  
MacDonald

The Committee will update the Flood Mitigation Plan over the next several months with the activities mentioned herewith and arrange for the revised Plan to be adopted by the Borough at the beginning of the calendar year. Over the course of the year the Committee will continue to meet to discuss the success of various projects and actions that are necessary to aid other objectives and goals. As this date is finalized, advanced notification will be provided.

To ensure that Council is aware of the progress of the Flood Mitigation Committee, please arrange for distribution of this report to Council. In addition, for compliance with Community Rating System Activity Section 500, please arrange for this report to be viewed on the Borough's website and provide notification in the local newspaper that this report has been prepared and is available at the Borough Hall. We are providing the following language for use in notifying the public of the availability of this document:

"The NFIP Flood Hazard Mitigation Planning Committee of Mantoloking Borough has completed their annual report of the objectives and goals for 2010/2011 of the Borough's Flood Mitigation Plan. Members of the public are welcome to view the report as it is available on the Borough's website ([www.mantoloking.org](http://www.mantoloking.org)) as well as available for viewing at the Borough Hall."

Should you require any additional information, please do not hesitate to contact this office.

Very truly yours,

Hatch Mott MacDonald

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cc: Borough Council  
Jim Brown, CRS Coordinator  
Irene Ryan, CMC  
Larry Plevier, PE, Hatch Mott MacDonald  
Francis X. Bruton, Hatch Mott MacDonald  
File Mantoloking M700906-III-3 (2011 Flood Mitigation Plan – Annual Report)



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September 2010 - UPDATE

Mayor George C. Nebel  
Borough of Mantoloking  
P.O. Box 487  
202 Downer Avenue  
Mantoloking, NJ 08872

**RE: Borough of Mantoloking  
Floodplain Management Plan  
2009/2010 Annual Progress Report  
Community Rating System – Activity 510**

Prepared and Reviewed By:

NFIP Flood Hazard Mitigation Planning Committee;

Dear Mayor:

As you are aware, the Borough of Mantoloking has developed, adopted and is implementing its Flood Mitigation Plan (the Plan) to serve as a guidance document to mitigate flood damage to properties and the environment within the Borough. The Plan not only establishes the goals and guidelines for future flood protection throughout the community, but provides a summary of past efforts made by the Borough throughout the years to control flood damage. This Plan defines the Borough's continued commitment towards the protection, health, safety and welfare of its residents and their property, as well as the Borough's commitment towards the improvement of their environment. The Plan has been reviewed and approved by the Federal Emergency Management Agency (FEMA) and the New Jersey Office of Emergency Management (State OEM) ensuring that it is in accordance with Federal guidelines and the State's Hazard Mitigation Plan. Additionally, the Plan has been reviewed by multiple Municipal, State and County Government agents and offices, along with neighboring Towns and utility companies, to not only obtain additional suggestions to better the Borough's plan, but to educate and inform the surrounding areas of the Borough's approach and intentions towards mitigation issues.

The Plan is a document that continuously implements measures to aid in mitigating flood issues and has been prepared based on an approved schedule to enact these activities. As such a review of these activities is conducted every year to ensure that the goals and objectives of the Plan are achieved. Accordingly, the NFIP Flood Hazard Mitigation Planning Committee conducted its annual meeting and prepared a



report, contained herewith, of the activities for 2009 and the anticipated program for 2010.

**2009/2010 Annual Report for the Flood Mitigation Plan**

Members of the Committee met on October 19, 2009 to discuss the Flood Mitigation Plan and the progress of the plan's goals and objectives. Provided below is a summary of the meeting and a brief explanation of the activities conducted during 2009 and anticipated for 2010:

1. Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains.

1a. Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program.

This program would enforce pile installations and floor flood resistance elevations to mitigate future flood damage, inclusive of rebuilding, elevating, or even demolition and property purchases, if feasible.

UPDATE: This program has still yet to be fully developed and adopted by the Borough. Although the Community continues implement and enforce CRS related activities, a plan directed specific to repetitive loss locations has not been developed, however the Borough has been addressing improvements of its own properties, such as the elevation of the Emergency Generation for Public Works (two (2) feet above the floodplain) and significant discussion on the Planning Board level regarding adoption of code changes to increase floor heights and implement pile foundation requirements.

Upon further review of the adoption of the increased pile parameter, it was determined that the original concept was not approved. The Committee continues to revisit this application and will advise accordingly;

1b. Continue to conform to all requirements adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment.

As the years progress, the Borough continuously strives to be in full conformance with the NFIP. The Borough also allocates funds to achieve these tasks.

UPDATE: All NFIP commitments are continuing to be performed.

2. Mitigate the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods.

2a. Conform to and implement the CRS program mitigation measures in a planned systematic approach.



Implement the CRS program in accordance with yearly identifiable tasks which will allow Borough wide NFIP premium reductions in the most cost effective manner. Under this program a Repetitive Loss Reduction Plan will be prepared, along with improving the addressable siren system, public address system and emergency broadcast system, acquisition of aquatic or flood response vehicle, increase identification of emergency evacuation route and flood preparedness plan.

UPDATE: The Borough has acquired a flood response vehicle. The public address system has been improved to announce specific instructions regarding the specific emergency and is tested on an annual basis. The Borough has also improved its reverse 911 system to further assist in emergency situations.

With the recent County improvements to the Herbert Street bridge and the anticipated paving of Route 35 (NJDOT), it was suggested by the Committee to review the evacuation route to determine if improvements can be implemented.

The remaining issues along with other suggestions, will be addressed as funds become available and are cost effective.

- 2b. Encourage public awareness and education by various means of communication with its residents and property owners.

Mantoloking realizes the first step in reducing property losses is to inform every property owner of the flood hazard area that they lie in. All Mantoloking residents have been informed by a flyer mailed to them to make them aware that the property they own is in a special flood hazard area and that, historically, the Borough floods during storms. The public display in Borough Hall has a collection of information for property owners which cover flood preparedness, protecting a building from flooding, flood prevention, flood plain management, retrofitting and natural and beneficial functions of flood plains.

UPDATE: Property owners receive flyers twice annually while various brochures are made available at public events and informative literature is updated regularly; posted and made available at the Borough Hall.

The Borough's website is constantly updated to include this information for viewing by the general public and is advertised as well.

3. Modify flooding through projects that control flood waters

- 3a. Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas in accordance with floodplain management regulations.



Work under this task will be implemented in conjunction with the Borough's roadway reconstruction program that will consider raising the elevation of roads to resist flooding. Presently, the Borough has an identified phased roadway program. The first phase of the present program is on file with the Borough Engineer. In addition, as each phase of the program is developed, any specific non-critical rainwater conveyance problems that can be remedied in conjunction with this program, as brought to light by public or private complaint, are included.

This procedure will continue each year as a roadway is improved. The roadway to be improved is determined by the amount of funds available to the Municipality and the associated cost benefit.

Projects Completed:

Arnold Street Revetment Project:

Under a NJDEP CAFRA - Waterfront Development Permit (Permit No. 1519-07.0016.1 (CAF 070001, WFD 070001), the Borough of Mantoloking constructed a new stone engineered revetment improvements along the end of the Arnold Street right-of-way at Barnegat Bay. The new engineered revetment improvements were approximately 47 linear feet and included the removal of the existing concrete non-engineered revetment. The revetment consisted of approximately 2 layers of 0.5 ton armor stone over a 12 inch thick stone bedding mat, which was completely wrapped in geotextile fabric. The improvements for the revetment at the end of Arnold Street were completed in late September 2009 by the Department of Public Works. The completed revetment improvements allowed for public access to the Barnegat Bay waterfront from the street-end. The project was prepared for a design wave of a 50 year return period.

Storm Sewer CCTV Inspection and Jet Vac Cleaning:

Under the Federal Disaster Relief Program for the Tropical Depression Ida storm event, the Borough of Mantoloking completed closed circuit television (CCTV) inspection and jet vacuum cleaning of various storm sewer facilities impacted by the said storm event. The internal pipe video inspection services included both pre and post cleaning inspections. All storm sewer inlets were cleaned on East Avenue, Channel Lane, Lagoon Lane North, Lagoon Lane South, Bergen Avenue, Arnold Street, Bay Avenue, and Old Bridge Street. Storm inlets on Downer Avenue at the intersection of Bay Avenue were also cleaned, and the two (2) most northern inlets on Barnegat Lane were also cleaned. Storm sewer piping of various material and sizes were cleaned within the above mentioned municipal roadways, which consisted of 188 lf of 8" pipe, 297 lf of 10" pipe, 1,109 lf of 12" pipe, 378 lf of 15" pipe, 263 lf of 16" pipe, 31 lf of 18" pipe, and 52 lf of 21" pipe. The CCTV inspection and storm sewer cleaning was completed in May 2010.



Backbay Backflow Check Valve Program

Please see item 3e. below.

- 3b. Develop Atlantic Ocean flood protection features to meet a 100 year coastal storm flood resistance level.

100 year coastal flood resistance is anticipated to be completed with the conclusion of the anticipated NJDEP/USACE/Mantoloking project, which will enhance the Atlantic oceanfront beach and dune system. Enhancement work, until this project is completed, has been conducted as standard operating procedure under the Borough's beach and dune maintenance program.

UPDATE: The Borough, in conjunction with the County of Ocean and neighboring communities continues to pursue implementation of a regional beach fill as the results of the Borough's beach renourishment feasibility study indicates that financially a regional project makes the most sense to the Borough. In this regard, the Borough, through efforts of the Mayor and as endorsed by the Beach Protection Committee have spearheaded communication with the County and neighboring committees to explore the potential of a regional program in conjunction with aid from the County and the NJDEP. The initial effort by the Mayor and Committee culminated in a meeting with the County and our neighboring beachfront communities who concurred with the proposed program.

Besides the availability of funding, the biggest hurdle is the acceptance of the Public Easement as the language has been determined as unfriendly. The Borough has engaged the NJDEP and past NJDEP Commissioners in several meetings regarding the revision of this language and has more recently met with a public outreach representative of the New Jersey Department of Environmental Protection to discuss revision of the language with Mr. Martin, the new NJDEP Commissioner under Governor Christie's Administration. A follow up meeting with the NJDEP Commissioner and regional political state representatives has been scheduled to discuss easement conditions and alternate approaches to the needed beach fill activities and program.

- 3c. Develop back bay bulkhead system to meet a 25 year coastal storm flood level

Backbay bulkheads must be elevated to the 25-year storm level to prevent flooding of the Borough from the back bay area (protection of near this magnitude already exists on the ocean frontage).

Elevation of backbay bulkheads cannot be completed immediately, as 95% of these are privately owned and would be a very costly undertaking. Accordingly, the Borough will adopt an Ordinance which requires bulkheads to be raised as they come up for replacement. Since the average



life of a bulkhead is 30 years, and the fact that some are new, the project may take over 30 years to become fully implemented.

UPDATE: Through review of the stillwater elevations for the municipality, it was determined that the 25-year stillwater backbay flood level will be approximately Elevation 5.0 NGVD 29 ( 3.88 NAVD88 ).

The initial adoption of the Bulkhead Ordinance still experiences resistance. The Committee continues to revisit this application and will advise accordingly.

3d. Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas

25-year storm conveyance systems in critical areas (sanitary sewer pump station, NJ American Water Well and Pump Station Site, Borough Hall, etc.) would require the implementation of storm water pumping systems to overcome the disabling of gravity systems due to storm elevated water levels in backbay areas. The implementation of this project is slated to be evaluated as part of the NJDOT Route 35 upgrades.

UPDATE: Although no progress has been made on the installation of pumping systems, the Borough still intends to investigate this option.

3e. Implementation of backbay backflow check valve program.

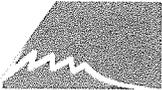
This project requires the continued analysis and evaluation of Borough and State outfall systems, formulation of appropriate replacement locations and installation of check valves as required.

UPDATE: The Borough has installed two (5) check valves in separate locations within the town at the street ends of Downer, Arnold, Bay Channel, and Bergen Streets. Another is scheduled to be installed at the North end of town on Lagoon Lane within the next few weeks.

4. Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state

4a. Adopt and support NJDEP Coastal protection Plan and appropriate moneys as necessary to implement same.

In order to assure adoption and the availability of matching funds to put the NJDEP/Mantoloking Coastal Protection Plan and project in place in accordance with Item #3 above, the Borough is presently working on reliable funding sources to support this program and which will allow the Borough to adopt and execute the required agreements to implement the plan.



UPDATE: This action is directly related to part 3B above. Actions were taken this year to implement a possible regional project between local contiguous municipalities, however issues relating to easements have slowed the progression of this program. The Borough currently has a system for saving funds for this activity and is exploring various other approaches to obtain the remaining funds needed should this project come to fruition.

4b. Evaluate all dune systems and augment improvements to same.

This project goal requires implementation over a longer term period, in conjunction with additional engineering and computer analysis followed by physical augmentation of the dune system in conjunction with the Richard Stockton College Coastal Resource Center (RSCCRC). Phase 1 of the project entails the dune computer analysis; Phase 2, dune augmentation in critical areas; Phase 3, mass dune system augmentation where necessary accompanied by planting and fence work. Project development to be implemented as follows:

Phase 1 - Computer Analysis: COMPLETED

UPDATE: An analysis of the dune system was completed utilizing a Geographical Information System based knowledge-driven modeling technology that identifies weaknesses in the dune system and highlights areas that may be vulnerable to storms. Simulations were then run for 2-year through 100-year storms using parameters developed by FEMA and RSCCRC which produced a dune susceptibility map of the Borough.

The Borough has the intention to complete Phases 2 and Phase 3 as the funds are appropriated.

4c. Continuation of monitoring and study by Richard Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance

With the ever changing shoreline, due to ocean currents and seasonal storms, the dunes are monitored to ensure the needed protection is present.

UPDATE: Stockton State College continues to monitor and survey the movement of sand on the dune and beach. They produce a quarterly report throughout the year every year while producing an annual summary at the end of the fourth quarter. After severe storm events, an additional evaluation is conducted to determine the damage sustained.

An evaluation of the Borough's dune system is conducted every year to determine the overall status. Each resident is notified of specific recommendations to aid in the development of their dune. A report is generated detailing the overall condition of the dune system.



Hatch Mott  
MacDonald

5. Additional Programs or Projects
  - 5a. Improve walkways to beach with pile supports while increasing height to promote further dune growth.
  - 5b. Conduct storm sewer inspection and clean accordingly. (Completed – see item 3a above)
  - 5c. Review the installation of additional revetment along dune system, geo tubes, etc.

# TIMETABLE FOR OBJECTIVES

Activity	Responsible Parties	Year						
		2008	2009	2010	2011	2012	2013	2014
1) Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomical, or unwise use of floodplains								
a) Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program	Borough Code Official, E.M.O., Borough Engineer		X <sup>1</sup>		X <sup>1</sup>			X <sup>1</sup>
b) Continue with all commitments adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment	Borough Code Official, E.M.O., Borough Engineer		X		X			X
2) Modify the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods								
a) Conform to, and implement CRS program mitigation measures in planned systematic approach	Borough Engineer, Borough Planner	X		X		X		X
b) Encourage public awareness and education by various means of communication with its residents and property owners	Flood Mitigation Committee	X	X	X	X	X	X	X
3) Modify flooding through projects that control flood waters								
a) Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas	Borough Engineer, Borough Code Official	X <sup>2</sup>						
b) Develop Atlantic Ocean flood protection features to meet a 100-year coastal storm flood resistance level.	Borough Engineer, Borough Dune Inspector						X	
c) Develop backbay bulkhead system to meet a 25 year coastal storm flood level	Borough Engineer	X <sup>3</sup>						
d) Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas	Borough Engineer		X	X				
e) Implementation of backbay backflow check valve program	Borough Engineer			X				
f) Upgrade Arnold Avenue Bayside Revetment to resist erosion	Borough Engineer		X	X				
4) Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state								
a) Adopt and support USACE/NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same	Mayor, Borough Council				X			
b) Evaluate all dune systems and augment improvement to same	Borough Dune Inspector	X <sup>4</sup>		X <sup>4</sup>	X <sup>4</sup>			
c) Continuation of monitoring and study by Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance	Borough Dune Inspector	X	X	X	X	X	X	X

Notes: 1 - This task will be dependent on updates that are enforced under the CRS program; 2 - Phased program, to be conducted annually as roadways are improved; 3 - Improvement to be conducted by homeowner as bulkhead is replaced; 4 - Multiple phased project.



Hatch Mott  
MacDonald

Our next meeting regarding the activities conducted during 2010/2011 will be scheduled shortly. To aid in the planning/approval process of the proposed activities, a revised timeline and meeting schedule is being discussed with the Committee. At this meeting the Committee will discuss the success of various projects and actions that are necessary to aid other objectives and goals. As this date is finalized, advanced notification will be provided.

To ensure that Council is aware of the progress of the Flood Mitigation Committee, please arrange for distribution of this report to Council. In addition, for compliance with Community Rating System Activity Section 500, please arrange for this report to be viewed on the Borough's website and provide notification in the local newspaper that this report has been prepared and is available at the Borough Hall. We are providing the following language for use in notifying the public of the availability of this document:

"The NFIP Flood Hazard Mitigation Planning Committee of Mantoloking Borough has completed their annual report of the objectives and goals for 2009/2010 of the Borough's Flood Mitigation Plan. Members of the public are welcome to view the report as it is available on the Borough's website ([www.mantoloking.org](http://www.mantoloking.org)) as well as available for viewing at the Borough Hall."

Should you require any additional information, please do not hesitate to contact this office.

Very truly yours,

Hatch Mott MacDonald

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cc: Borough Council  
Jim Brown, CRS Coordinator  
Irene Ryan, CMC  
Larry Plevier, PE, Hatch Mott MacDonald  
Francis X. Bruton, Hatch Mott MacDonald  
File Mantoloking M700906-III-3 (2010 Flood Mitigation Plan – Annual Report) new



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September 25, 2009

Mayor George C. Nebel  
Borough of Mantoloking  
P.O. Box 487  
202 Downer Avenue  
Mantoloking, NJ 08872

**RE: Borough of Mantoloking  
Floodplain Management Plan  
2008 Annual Progress Report  
Community Rating System – Activity 510**

Prepared and Reviewed By:

NFIP Flood Hazard Mitigation Planning Committee;

Dear Mr. Mayor:

As you are aware, the Borough of Mantoloking has developed, adopted and is implementing its Flood Mitigation Plan (the Plan) to serve as a guidance document to mitigate flood damage to properties and the environment within the Borough. The Plan not only establishes the goals and guidelines for future flood protection throughout the community, but provides a summary of past efforts made by the Borough throughout the years to control flood damage. This Plan defines the Borough's continued commitment towards the protection, health, safety and welfare of its residents and their property, as well as the Borough's commitment towards the improvement of their environment. The Plan has been reviewed by the Federal Emergency Management Agency (FEMA) and the New Jersey Office of Emergency Management (State OEM) to ensure that the plan is in accordance with the State's mitigation program. Additionally, the Plan has been reviewed by multiple Municipal, State and County Government agents and offices, along with neighboring Towns and utility companies, to not only obtain additional suggestions to further better the Borough's plan, but to educate and inform the surrounding areas of the Borough's intentions towards mitigation issues.

The Plan is a document that continuously implements measures to aid in mitigating flood issues and has been prepared based on an approved schedule to enact these activities. As such a review of these activities is conducted every year to ensure that the goals and objectives of the Plan are achieved. Accordingly, the NFIP Flood Hazard Mitigation Planning Committee conducted its annual meeting and prepared a report, contained herewith, of the activities for 2008.



**2008 Annual Report for the Flood Mitigation Plan**

Representatives of the Committee met on September 12, 2008 to discuss the Flood Mitigation Plan and the progress of the goals and objectives represented. Provided below is a summary of the meeting and a brief explanation of the activities conducted during 2008:

1. Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomic, or unwise use of floodplains.

1a. Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program.

This program would enforce pile installations and floor flood resistance elevations to mitigate future flood damage, inclusive of rebuilding, elevating, or even demolition and property purchases, if feasible.

UPDATE: This program has still yet to be fully developed and adopted by the Borough. Although the Community continues implement and enforce CRS related activities, a plan directed specific to repetitive loss locations has not been developed, however the Borough has been addressing improvements of its own properties, such as the elevation of the Emergency Generation for Public Works two (2) feet above the floodplain and significant discussion on the Planning Board level regarding adoption of code to increase floor heights and pile foundation requirements.

1b. Continue with all commitments adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment.

As the years progress, the Borough continuously strives to be in full conformance with the NFIP. The Borough also allocates funds to achieve these tasks.

UPDATE: All NFIP commitments are continuing to be performed.

2. Modify the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods.

2a. Conform to and implement CRS program mitigation measures in planned systematic approach.

Implement CRS program in accordance with yearly identifiable tasks which will allow NFIP premium reductions in the most cost effective manner. Under this program a Repetitive Loss Reduction Plan will be prepared, along with improving the addressable siren system, public address system and emergency broadcast system, acquisition of aquatic or



flood response vehicle, increase identification of emergency evacuation route and flood preparedness plan.

UPDATE: The Borough has acquired a flood response vehicle. The public address system has been improved to announce specific instructions regarding the specific emergency and is tested on an annual basis. The remaining issues will be addressed as funds become available and are cost effective.

- 2b. Encourage public awareness and education by various means of communication with its residents and property owners.

Mantoloking realizes the first step in reducing property losses is to inform every property owner of the flood hazard area that they lie in. All Mantoloking residents have been informed by a flyer mailed to them to make them aware that the property they own is in a special flood hazard area and that, historically, the Borough floods during storms. The public display in Borough Hall has a collection of information for property owners which cover flood preparedness, protecting a building from flooding, flood prevention, flood plain management, retrofitting and natural and beneficial functions of flood plains.

UPDATE: Property owners receive flyers twice annually while various brochures are made available at public events and informative literature is updated regularly; posted and made available at the Borough Hall.

- 3a. Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas in accordance with floodplain management regulations.

Work under this task will be implemented in conjunction with the Borough's roadway reconstruction program that will consider raising the elevation of roads to resist flooding. Presently, the Borough has an identified phased roadway program. The first phase of the present program is on file with the Borough Engineer. In addition, as each phase of the program is developed, any specific non-critical rainwater conveyance problems that can be remedied in conjunction with this program, as brought to light by public or private complaint, are included.

UPDATE: During 2008, Barnegat Lane and Runyon Lane were improved and the associated storm systems were improved as well.

This procedure will continue each year as a roadway is improved. Which roadway to be improved is determined by the amount of funds available to the Municipality and the associated cost benefit.

- 3b. Develop Atlantic Ocean flood protection features to meet a 100 year coastal storm flood resistance level.



100 year coastal flood resistance is anticipated to be completed with the conclusion of the anticipated NJDEP/USACE/Mantoloking project, which will enhance the Atlantic oceanfront beach and dune system. Enhancement work, until this project is completed, has been conducted as standard operating procedure under the Borough's beach and dune maintenance program.

UPDATE: The Borough, in conjunction with the County of Ocean and neighboring communities continue to implement a regional fill as the results of the Borough's beach renourishment feasibility study indicates that financially a regional project makes the most sense to the Borough. In this regard, the Borough, through efforts of the Mayor and as endorsed by the Beach Protection Committee have spearheaded communication with the County and neighboring committees to explore the potential of a regional program in conjunction with aid from the County and the NJDEP. The initial effort by the Mayor and Committee will be culminated in a meeting with the County and our neighboring beachfront communities scheduled for January of 2009. The Borough's efforts will continue throughout the year with a possible meeting of the Borough and County officials with the NJDEP and regional political state representatives in the summer or fall of 2009 to discuss easement conditions and alternate approaches to the needed beach fill activities and program.

3c. Develop back bay bulkhead system to meet a 25 year coastal storm flood level

Back bay bulkheads must be elevated to the 25-year storm level to prevent flooding of the Borough from the back bay area (protection of this magnitude already exists on the ocean and inlet frontages).

Elevation of back bay bulkheads cannot be completed immediately, as 95% of these are privately owned and would be a very costly undertaking. Accordingly, the Borough will adopt an Ordinance which requires bulkheads to be raised as they come up for replacement. Since the average life of a bulkhead is 30 years, and through the use of vinyl sheeting, and the fact that some are new, the project may take over 30 years.

UPDATE: The development of a backbay bulkhead ordinance was been authorized by the Council. Through review of the stillwater elevations for the municipality, it was determined that the 25-year stillwater backbay flood level will be approximately Elevation 5.0 NGVD.

3d. Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas

25-year storm conveyance systems in critical areas (sanitary sewer pump station, NJ American Water Well and Pump Station Site, Borough Hall, etc.) would require the implementation of storm water pumping systems to overcome the disabling of gravity systems due to storm elevated water



levels in backbay areas. The implementation of this project is slated to be evaluated as part of the NJDOT Route 35 upgrades.

UPDATE: Although no progress has been made on the installation of pumping systems, the Borough still intends to investigate this option.

3e. Implementation of back bay backflow check valve program.

This project requires the continued analysis and evaluation of Borough and State outfall systems, formulation of appropriate replacement locations and installation of check valves as required.

UPDATE: The Borough has installed two (2) check valves in separate locations within the town at the street ends of Downer and Arnold Street. These check valves are currently being monitored and depending on their success, other check valves are to be implemented.

4a. Adopt and support NJDEP Coastal protection Plan and appropriate moneys as necessary to implement same.

In order to assure adoption and the availability of matching funds to put the NJDEP/Mantoloking Coastal Protection Plan and project in place in accordance with Item #3 above, the Borough is presently working on reliable funding sources to support this program and which will allow the Borough to adopt and execute the required agreements to implement the plan.

UPDATE: This action is directly related to part 3B above. Actions were taken this year by a possible project between the local municipalities, however issues relating to easements have slowed the progression. The Borough currently has a system for saving funds for this activity and is exploring various other approaches to obtain the remaining funds needed should this project come to fruition.

4b. Evaluate all dune systems and augment improvements to same.

This project goal requires implementation over a longer term period, in conjunction with additional engineering and computer analysis followed by physical augmentation of the dune system in conjunction with the Richard Stockton College Coastal Resource Center. Phase 1 of the project entails the dune computer analysis; Phase 2, dune augmentation in critical areas; Phase 3, mass dune system augmentation where necessary accompanied by planting and fence work. Project development to be implemented as follows:

Phase 1 - Computer Analysis

UPDATE: An analysis of the dune system was completed utilizing a Geographical Information System based knowledge-driven modeling



technology that identifies weaknesses in the dune system and highlights areas that may be vulnerable to storms. Simulations were then run from 2-year through 100-year storms using parameters developed by FEMA producing a dune susceptibility map of the Borough.

The Borough has the intention to complete Phases 2 and Phase 3 as the funds are appropriated.

- 4c. Continuation of monitoring and study by Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance

With the ever changing shoreline, due to ocean currents and seasonal storms, the dunes are monitored to ensure the needed protection is present.

UPDATE: Stockton State College continues to monitor and survey the movement of sand on the dune and beach. They produce a quarterly report throughout the year every year while producing a yearly summary during the fourth quarter. After severe storm events, an additional evaluation is conducted to determine the damage sustained.

An evaluation of the Borough's dune system is conducted every year to determine the overall status. Each resident is notified of specific recommendations to aid in the development of their dune. A report is generated detailing the overall condition of the dune system.

# TIMETABLE FOR OBJECTIVES

Activity	Responsible Parties	Year						
		2008	2009	2010	2011	2012	2013	2014
1) Modify human susceptibility to flood damage and disruption by avoiding hazardous, uneconomic, or unwise use of floodplains								
a) Upgrade all new and redeveloping construction in conformance with adopted CRS repetitive loss reduction program	Borough Code Official, E.M.O., Borough Engineer		X <sup>1</sup>		X <sup>1</sup>			X <sup>1</sup>
b) Continue with all commitments adopted under the National Flood Insurance program inclusive of all implemented building code regulations for development or redevelopment	Borough Code Official, E.M.O., Borough Engineer		X		X			X
2) Modify the impact of flooding by assisting individuals and communities to prepare for, respond to, and recover from floods								
a) Conform to, and implement CRS program mitigation measures in planned systematic approach	Borough Engineer, Borough Planner	X		X		X		X
b) Encourage public awareness and education by various means of communication with its residents and property owners	Flood Mitigation Committee	X	X	X	X	X	X	X
3) Modify flooding through projects that control flood waters								
a) Develop rainwater conveyance facilities to meet 25 year storm event loading in non-critical areas	Borough Engineer, Borough Code Official	X <sup>2</sup>						
b) Develop Atlantic Ocean flood protection features to meet a 100-year coastal storm flood resistance level.	Borough Engineer, Borough Dune Inspector						X	
c) Develop back bay bulkhead system to meet a 25 year coastal storm flood level	Borough Engineer	X <sup>3</sup>						
d) Review application of modular pump station systems to relieve flooding in Mantoloking Bayside areas	Borough Engineer		X					
e) Implementation of back bay backflow check valve program	Borough Engineer			X				
f) Upgrade Arnold Avenue Bayside Revetment to resist erosion	Borough Engineer		X	X				
4) Preserve and restore the natural resources and functions of floodplains by maintaining and reestablishing floodplain environments in their natural state								
a) Adopt and support USACE/NJDEP Coastal Protection Plan and appropriate moneys as necessary to implement same	Mayor, Borough Council				X			
b) Evaluate all dune systems and augment improvement to same	Borough Dune Inspector	X <sup>4</sup>		X <sup>4</sup>	X <sup>4</sup>			
c) Continuation of monitoring and study by Stockton College, Coastal Research Center, on beach and dune erosion and beach and dune performance	Borough Dune Inspector	X	X	X	X	X	X	X

Notes: 1 - This task will be dependent on updates that are enforced under the CRS program; 2 - Phased program, to be conducted annually as roadways are improved; 3 - Improvement to be conducted by homeowner as bulkhead is replaced; 4 - Multiple phased project.



Hatch Mott  
MacDonald

Our next meeting regarding the activities conducted during 2009 will be scheduled for the month of October. At this meeting the Committee will discuss the success of various projects and actions that are necessary to aid other objectives and goals. As this date is finalized, advanced notification will be provided.

To ensure that Council is aware of the progress of the Flood Mitigation Committee, please arrange for distribution of this report to Council. In addition, for compliance with Community Rating System Activity Section 500, please arrange for the report to be viewed on the Borough's website and provide notification in the local newspaper that this report has been prepared and is available at the Borough Hall. We are providing the following language for use to notifying the public of the availability of this document:

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Should you require any additional information, please do not hesitate to contact this office.

Very truly yours,

Hatch Mott MacDonald

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Francis X. Bruton, Hatch Mott MacDonald  
File Mantoloking M700906-III-3 (2008 Flood Mitigation Plan – Annual Report) new