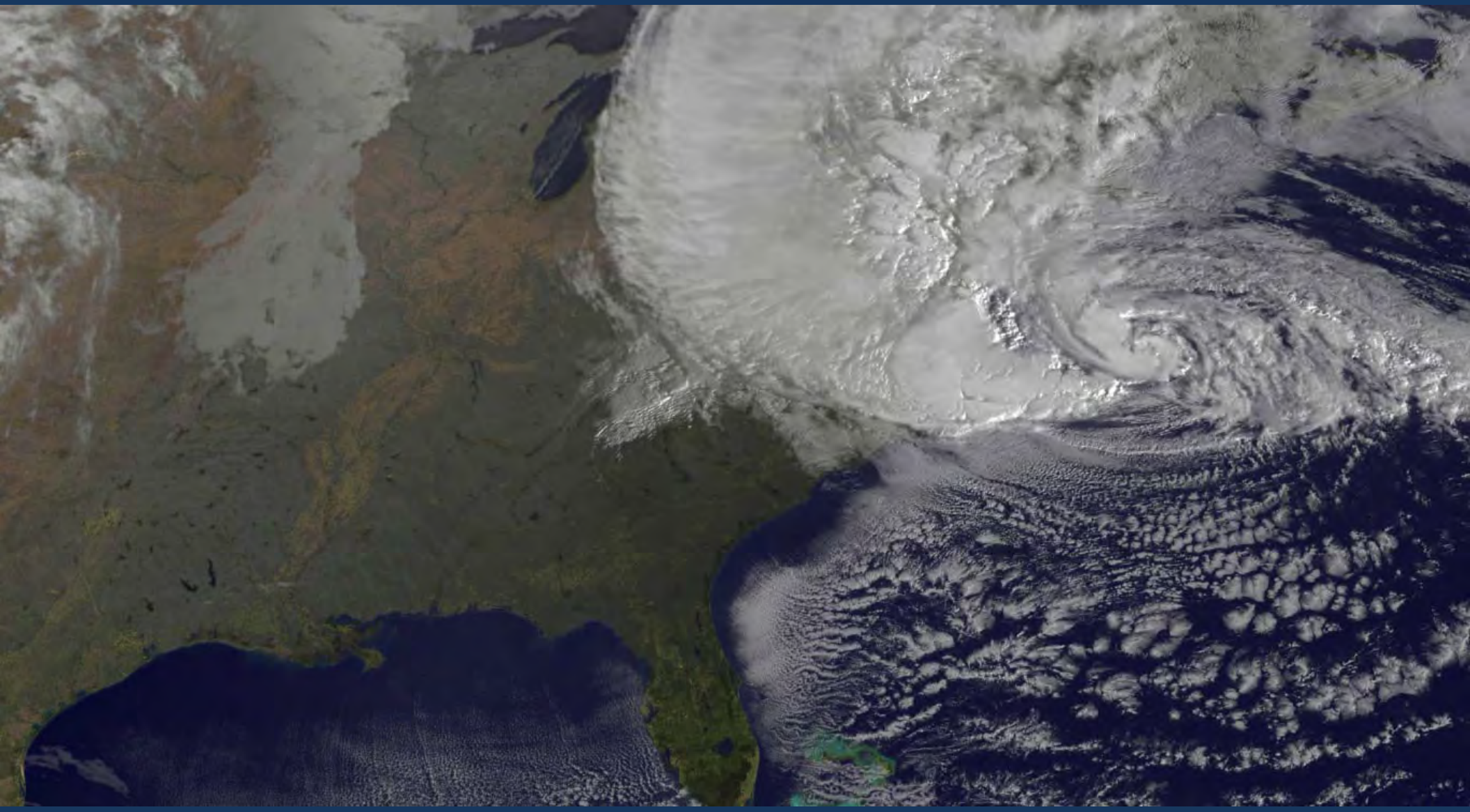


The Borough of Point Pleasant Beach Ocean County, New Jersey



Strategic Recovery Planning Report
May 2014

**Borough of Point Pleasant Beach
Ocean County, New Jersey**

Strategic Recovery Planning Report

May 2014

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The original of this document was signed and sealed in accordance with New Jersey Law.

Executive Summary

When Hurricane Sandy struck the coast of New Jersey on October 29, 2012, it brought extensive damage to Point Pleasant Beach Borough. A large number of residential properties and businesses suffered damage. Additionally, roadways were flooded and covered with sand, and electricity service was disrupted. The Borough also experienced damage to bulkheads, dunes, its boardwalk, and other important features.

In response to the impacts of Hurricane Sandy, the Borough's recovery efforts have been extensive. For example, it: evacuated residents; enacted a curfew and banned the sale of alcoholic beverages; filled barricades and cordoned off dangerous areas; responded to gas leaks and other disaster-related fire alarms and fires; cut and removed downed power lines; built a berm to protect property at the terminus of Arnold Avenue; cleaned sand from storm drains; made emergency repairs to sewer and water lines; removed storm-generated vegetative, bulky, and construction debris; removed hazardous household waste; provided a temporary comfort station at the Fisherman Memorial Inlet Parking Lot; made initial repairs to the Fisherman Memorial Inlet Parking Lot; held public information meetings on various recovery-related topics; held additional Board of Adjustment meetings; issued official statements and communication to keep the public apprised as to the status of recovery efforts and important events; amended zoning ordinances to facilitate recovery; repaired dunes and replenished beaches; and, made initial repairs to the Point Pleasant Beach Boardwalk.

Though much has been done since Hurricane Sandy, there is more to do. This report, therefore, outlines a recommended set of actions to guide the borough in promoting further recovery and resiliency. Among the actions it recommends are to: incorporate the principles of the 2013 Multi-Jurisdictional All Hazard Mitigation plan into the Point Pleasant Beach Borough Master Plan; investigate opportunities for shared services and mutual aid; consider redundant or hardened power source at the municipal building; provide natural gas backup service for generators; provide the Department of Public Works with an emergency staging facility; provide temporary housing for emergency personnel; update Floodplain Management Plan; automate and expedite processing of building and zoning permits; update the Master Plan to address post-Sandy strategies and policies related to hazard mitigation and community resiliency; prepare and adopt a debris management plan; revise the Borough's zoning ordinance in accordance with the updates of the master plan and floodplain management plan; streamline development review process; Develop a GIS system and provide training; reinforce existing and provide new bulkheads at various locations; investigate feasibility of providing dunes along entire beachfront; develop recovery information resources and a training program for Borough staff; and, continue to participate in the National Flood Insurance Program.

Acknowledgements

Borough of Point Pleasant Beach

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Bret Gordon, Councilman

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Introduction

This Strategic Recovery Planning Report serves as a blueprint to guide the recovery of the Borough of Point Pleasant Beach from the effects of Hurricane Sandy, and to reduce vulnerabilities to future storms. Accordingly, it:

- Evaluates Hurricane Sandy’s impacts on community features;
- Addresses conditions that Hurricane Sandy created or exacerbated;
- Articulates planning goals, strategies, and actions to improve public safety, develop resistance to future storms, and stimulate economic recovery; and,
- Describes each proposed project at a level of detail that:
 - Demonstrates how it relates to the storm’s impacts;
 - Explains why it is important to the Borough’s economic and environmental health;
 - Lists the major tasks with which it may be associated;
 - Includes an estimation of the cost of implementation;
 - Identifies potential or actual funding sources; and,
 - Provides a timeline for implementation.

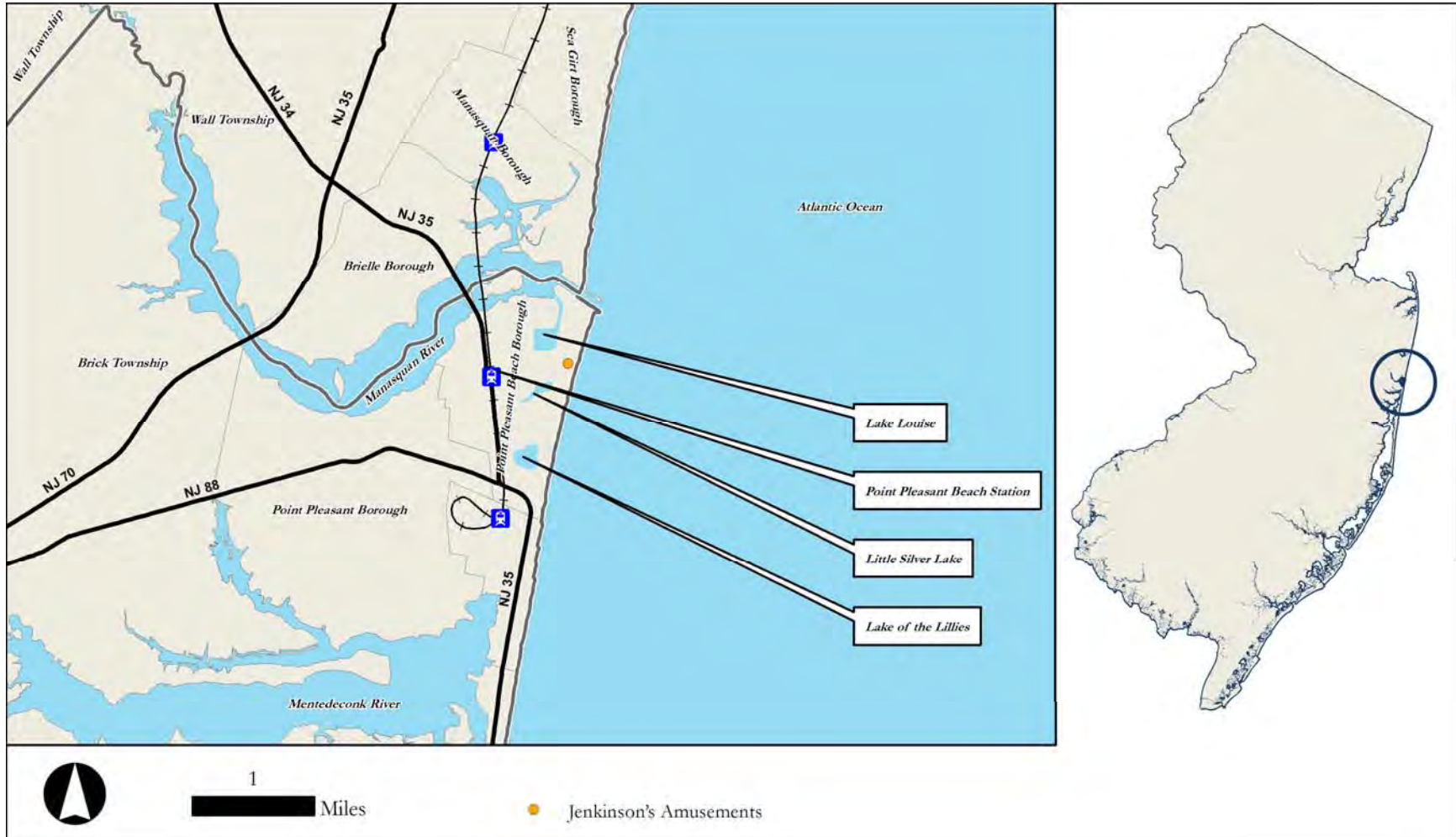
Description of the Borough

Point Pleasant Beach Borough is located on the Atlantic Ocean in northern Ocean County, and is surrounded by: Bay Head Borough to the south; and, Point Pleasant Borough to the southwest. To the north of Point Pleasant Beach Borough, and across the Manasquan River, are Brielle and Manasquan Boroughs in Monmouth County.

New Jersey Route 35 provides regional connections to the north and south of the Borough. New Jersey Route 88 provides connections to the west. Additionally, Point Pleasant Beach Borough is served by New Jersey Transit’s North Jersey Coast Line, which provides rail service between Bay Head Borough to the south and New York Penn Station.

The Borough encompasses an area of approximately 1.79 square miles, about 83.5 percent of which is land surface. The remaining 16.5 percent is comprised of water surfaces, including Lake of the Lillies, Little Silver Lake, Lake Louise, and the Manasquan River. The Atlantic Ocean forms the eastern boundary of the Borough, but is not located within the Borough. Other important features of Point Pleasant Beach Borough include Jenkinson’s Amusements, which is a tourist attraction of regional significance and located along the Atlantic Ocean, and New Jersey Transit’s Point Pleasant Beach Railway station, which is located at New Jersey Route 35 and Arnold Avenue in the central part of the Borough. The regional location and key features of Point Pleasant Beach Borough are depicted in Figure 1 (located on the next page).

Figure 1: Regional Location



With regard to Point Pleasant Beach's population, it is noted that the Borough had a population of 4,665 residents at the time of the 2010 US Census. This represents a decrease of 12.2 percent over the 2000 population of 5,314 residents, and a decrease of 8.7 percent over the 1990 population of 5,112 residents. By comparison, the 2010 Ocean County population of 576,567 residents increased by nearly 13 percent since 2000, and by approximately 33 percent since 1990.

In addition to the above, it is noted that Point Pleasant Beach Borough is entirely located within the area that is regulated by the state's Coastal Area Facility Review Act (CAFRA). Certain types of development within the CAFRA Zone are subject to the enhanced review and permitting requirements, which are administered by the Division of Land Use Regulation of the New Jersey Department of Environmental Protection.

Assessment of Existing Planning Documents

This section of the Strategic Recovery Planning Report examines the adequacy of existing municipal and county planning documents to support recovery from the impacts of Hurricane Sandy, and to mitigate negative impacts from future storms. The following planning documents have been reviewed as part of this assessment: 1992 Master Plan; 2007 Master Plan Reexamination Report; 2007 Floodplain Management Plan; the 2008 Housing Element and Fair Share Plan; the Ocean County 2011 Comprehensive Master Plan; and the Ocean County 2013 Multi-

Jurisdictional All-Hazard Mitigation Plan. Each is discussed in the following subsections.

1992 Master Plan Land Use Plan

The Point Pleasant Beach 1992 Master Plan Land Use Plan updated the land use element of the Borough's 1978 Comprehensive Master Plan. It outlined the following goals and objectives:

- Recognize the importance of protecting and stabilizing established residential and commercial areas of the Borough.
- Separate those land uses, which are inherently incompatible, and in those transition areas between zoning districts to encourage adequate traffic separation, buffering and screening.
- Provide appropriate land use regulations to preserve the pedestrian scale of the central business district along Arnold Avenue.
- Relate land use decisions to the established land use pattern of the Borough, with new development taking place at essentially the same scale and intensity as nearby existing development patterns.
- Adequately relate planning in the Borough to adjoining municipalities, Ocean County, and the State of New Jersey to assure full recognition of regional planning issues.
- Protect and preserve areas of environmental sensitivity, such as wetlands.

- Restrict impervious surface coverage through the development regulations ordinance as a way of controlling stormwater runoff.
- Regulate development in recognition of the importance of retaining the Borough's valuable natural resources, including the beach, views of the ocean, and relationship to the Manasquan River.
- Recognize the continuing role of Point Pleasant Beach as a family resort, while addressing its increasing attractiveness as a year-round community.

The goals and objectives of the 1992 Master Plan Land Use Plan are generally consistent with promoting recovery from the impacts of Hurricane Sandy, and encouraging resiliency to future storms. This is particularly true in the case of those goals and objectives that relate to: the preservation of areas of environmental sensitivity; restriction of impervious surface coverage; and, retention of valuable natural resources.

2007 Master Plan Reexamination Report

The Borough's master plan was last reexamined in 2007. The 2007 Master Plan Reexamination Report reaffirmed all of the land use goals and objectives that have been outlined in the previous subsection, but noted that the Planning Board wishes to encourage: a lower proportion of renter-occupied housing to support a stable population base; and, encourage opportunities for bed-and-breakfast uses within the Borough's commercial and resort-residential zone districts.

The 2007 Master Plan Reexamination Report makes a number of recommendations relative to the Borough's land use element, development regulations and zone plan. However, these were made prior to Hurricane Sandy and are largely irrelevant to the Borough's recovery from its impacts and increasing resiliency to future storms. Nonetheless, it (i.e., the 2007 Master Plan Reexamination Report) makes the recommendation that the Borough evaluate stormwater management planning and mitigation measures in order to stay current with the latest technologies and best management practices. Any improvements to the Borough's stormwater management planning procedures and mitigation measures will help to promote resilience to hurricanes and related storms.

2007 Floodplain Management Plan

The Borough's Floodplain Management Plan was originally adopted in 2007, and outlines the strategy that the Borough will employ to address stormwater-related impacts. It sets the following goals:

- Reduce flooding by preventing tidal backflow;
- Facilitate and upgrade stormwater facilities for proper drainage;
- Decrease wave wash over by maintaining beach and dune programs;
- Review the latest technology for flood reduction;
- Reduce losses by promoting retrofitting or elevating flood prone structures;

- Promote public education on all measures for flood safety and loss reduction;
- Reduce impermeable surface area to facilitate drainage;
- Reduce losses by continuing to develop and improve the existing warning system and maintain it, as well as hold drills and exercises to test the plan;
- Update evacuation plan and other hazard plans; and,
- Acquire open space property located in the floodplain to prevent development.

All of the goals of the 2007 Floodplain Management Plan are consistent with promoting recovery from the impacts of Hurricane Sandy and resiliency to future storms.

2008 Housing Element and Fair Share Plan

The 2008 Housing Element and Fair Share Plan outlines the means by which Point Pleasant Beach intends to meet its fair share affordable housing obligation. Since the adoption of this plan, numerous legal challenges have been made to the COAH process. As a result, the future fair share obligation is indeterminate until such time as new substantive rules for affordable housing planning are adopted by COAH. COAH proposed new substantive rules on May 1, 2014. However, as of the preparation of this report, they had not yet been adopted.

With regard to the nexus between affordable housing planning, the recovery from Hurricane Sandy, and the promotion of resiliency to future storms, it is noted that the fair share

obligation includes a requirement to rehabilitate existing housing units, and construct new, affordable units.

Rehabilitation of housing units and construction of new, affordable units helps to increase the structural integrity, safety, and affordability of the Borough's housing stock. This increases resiliency to future storms. Additionally, if affected units are rehabilitated, it can promote recovery from the effects of Hurricane Sandy.

2011 Comprehensive Master Plan

The Ocean County Planning Board adopted the Comprehensive Master Plan on December 21, 2011. It serves as a policy statement about the future development of Ocean County, and examines a wide range of topics, including: the county's demographics; economic planning and workforce development; transportation and mobility; housing; design; land use; agriculture; open space and recreation planning; regional environmental conditions; water resources; waste, wastewater, and stormwater management; and, regional air quality.

The Comprehensive Master Plan makes a number of recommendations that are relevant to Point Pleasant Beach's recovery from the effects of Hurricane Sandy, and reducing vulnerabilities to future storms. These are outlined below:

- Continue to work with the North Jersey Transportation Planning Authority to gather high crash location data and assess where safety improvements are needed.

- *Addressing high crash locations will improve roadway safety and efficiency, which, in turn, will facilitate the evacuation of Point Pleasant Beach Borough in times of crisis.*
- Encourage the New Jersey Department of Transportation to modernize and upgrade state highways throughout Ocean County, including US Route 9, NJ Route 35, NJ Route 37, NJ Route 70, NJ Route 72, NJ Route 88 and NJ Route 166.
 - *Modernizing and upgrading Ocean County’s highways will improve mobility and facilitate the evacuation of Point Pleasant Beach Borough in times of crisis, including during future storms. This is particularly true for New Jersey Route 35, which provides a north-south connection through Point Pleasant Beach Borough, and intersects with numerous state highways and other roadways that provide connections to the west.*
- Encourage the retention of established residential neighborhoods and the rehabilitation of the county’s older housing stock. Facilitate participation in home rehabilitation and historical preservation grant programs, where applicable.
 - *Home rehabilitation may help to improve the structural integrity of existing housing stock. This, in turn, provides extra security and protection during extreme weather events, such as hurricanes and storms.*
- Encourage low-impact design techniques to minimize the disturbance of natural areas and maximize the recharge of stormwater on-site.
 - *Maximizing the recharge of stormwater on-site may help to decrease the incidence of flooding.*
- Support the tourism amenities and needs of shore towns and continue to facilitate the protection and replenishment of county’s beaches and shoreline areas.
 - *Protection and replenishment of the county’s beaches and shoreline areas will help the county to cope with future hurricanes and storms, and mitigate their impacts.*
- Explore and assess best management practices used by other areas in the country to address stormwater management.
 - *Effectively addressing stormwater management helps to minimize flooding and promotes resiliency to future hurricanes and storms.*
- Continue to assess structural and nonstructural options for stormwater management to increase infiltration, remove debris and reduce nutrient and pollution loads.
 - *Increasing infiltration will help to reducing flooding. Additionally, removing debris will help to increase the efficiency of existing stormwater management facilities.*
- Encourage compliance with new legislation that requires the New Jersey Department of Transportation to address stormwater management issues on state highways, including US Route 9, NJ Route 35, NJ Route 37, NJ Route 70, NJ Route 72, NJ Route 88 and NJ Route 166.
 - *Addressing stormwater management issues along highways will help to minimize stormwater impacts, and increase highway safety. This is particularly important as highways generate*

stormwater runoff, and may serve as evacuation routes during emergencies.

2013 Multi-Jurisdictional All-Hazard Mitigation Plan

Ocean County has prepared a Multi-Jurisdictional All-Hazard Mitigation Plan. At the time of the preparation of this Strategic Recovery Planning Report, the plan has not been formally adopted. The assessment of the 2013 Multi-Jurisdictional All-Hazard Mitigation Plan has, therefore, been completed with the draft plan, which was submitted by the county's consultant on December 5, 2013. It is anticipated that Ocean County and each of the 33 municipalities within it will adopt the plan. Representatives from Point Pleasant Beach Borough (incl., its coordinator of emergency management, construction official, and administrator) were involved in the plan development process.

The key purposes of the Multi-Jurisdictional All Hazard Mitigation Plan are: to provide a blueprint for saving lives and reducing property damage from the effects of future natural and man-made disasters in Ocean County; and, to improve community resiliency following disastrous events. In addition, the Multi-Jurisdictional All Hazard Mitigation Plan also fulfills state and federal legislative requirements related to local hazard mitigation planning, and opens door to pre- and post-disaster grant funding.

The Multi-Jurisdictional All Hazard Mitigation Plan is comprehensive in scope and, in addition to examining the

county's geography and natural environment, economic assets, and population, land use, and built environment characteristics, includes a detailed risk assessment. Among the risks contemplated by the Multi-Jurisdictional All Hazard Mitigation Plan are: natural hazards, such as coastal erosion, drought, earthquakes, extreme temperature, flooding, storms (i.e., hurricanes, tropical storms, and nor'easters), tornadoes and windstorms, wildfires, and winter storms (i.e., heavy snowstorms and blizzards, and sleet and ice storms); human-made hazards, such as hazardous materials, nuclear incidents, transportation accidents, urban fire and explosion, and utility interruption; and, climate change hazards associated with sea level rise.

Based on the results of the Multi-Jurisdictional All Hazard Mitigation Plan's risk assessment, Point Pleasant Beach Borough has an elevated risk of floods, storms (incl., hurricanes, tropical storms, and nor'easters), wildfires, environmental hazards, drought, transportation accidents, and urban fires and explosions, as compared to the rest of Ocean County. The level of risk posed by utility interruption, winter storms, extreme temperatures, wind (incl., tornadoes), and earthquakes in Point Pleasant Beach Borough is equivalent to that of Ocean County as a whole. There is a decreased risk of climate change, coastal erosion, and nuclear incidents relative to the rest of Ocean County.

The Multi-Jurisdictional All Hazard Mitigation Plan outlines a mitigation strategy that is centered on the following goals and objectives:

- Encourage sustainable development to protect people, property, community resource and the environment from natural and human-made disasters.
 - Meet and exceed minimum standards of the National Flood Insurance Program.
 - Manage building code, land use code, ordinance and other planning mechanisms to prevent and mitigate the impact of disasters on people and property.
 - Improve information available for mitigation planning.
 - Coordinate and increase applications for federal and state grant programs.
 - Integrate and leverage other planning mechanisms from: neighboring jurisdictions; local, county and regional organizations; and, state partnerships to implement the plan.
 - Improve shelter management.
- Build and rebuild structures and infrastructure to protect people, and to reduce impacts of future disasters.
 - Increase the number of residential properties protected from hazards.
 - Increase the number of community resources and amount of infrastructure protected from hazards.
 - Improve the ability of critical facilities and infrastructure to safely operate during storms and utility interruptions.
 - Improve evacuation capability.
- Protect and restore the natural environment to support disaster resiliency.
 - Improve the health of natural systems to safely and naturally accommodate flooding and wildfire.
 - Improve the health of natural systems used to protect residential properties and other community resources.
 - Plan for increased open space in the most vulnerable areas.
 - Promote appropriate urban-wild land interface for wildfire mitigation.
- Promote education, awareness and outreach before, during and after disaster.
 - Improve and expand information and opportunities for input available by television, radio, websites, social media, newsletters, and meetings.
 - Increase participation in mitigation programs, including the Community Rating System, StormReady, and FireWise programs.
 - Tailor timely messages for audiences, including children, parents, community groups, universities, seniors and other groups.
 - Improve alert and warning systems.

In addition to the preceding mitigation strategy, the Multi-Jurisdictional All Hazard Mitigation Plan outlines the following actions for Point Pleasant Beach Borough:

- Continue outreach through local radio station.
- Continue police and fire outreach programs in schools.

- Continue to enforce building codes.
- Continue to participate in the National Flood Insurance Program.
- Elevate residential properties.
- Continue participation in the Community Rating System Program.
- Maintain and improve warning-related systems (e.g., Nixle and Reverse 911).
- Participate in United States Army Corps of Engineers beach replenishment and dune restoration projects.

The mitigation strategy and municipal actions that have been outlined in the Multi-Jurisdictional All Hazard Mitigation Plan are generally supportive of and promote Point Pleasant Beach's recovery from the effects of Hurricane Sandy, and the reduction of vulnerabilities to future storms.

Future Development Potential

Point Pleasant Beach Borough has an established land use pattern and is, essentially, a fully developed community. There is, however, one incomplete, twelve-lot major subdivision, which was approved in 2004. This subdivision is located in the southern part of the Borough, on Block 179.01, and only one of the twelve approved lots have been developed.

There are no areas that have been determined to be in need of redevelopment in accordance with the Local Redevelopment and Housing Law (NJSA 40A:12A-1).

Sandy's Impacts on the Borough

Hurricane Sandy caused dangerous conditions in Point Pleasant Beach Borough. High winds, storm surge, and floodwaters of up to seven feet resulted in: extensive damage to buildings and structures; disruption of electrical service; downed trees throughout the Borough; and damage to roadways. Hurricane Sandy also resulted in the deposition of sand and other debris onto roadways and rights-of-way, and the entry of debris into the sewer system.

Figure 2: Flooded Borough Street



In addition to the above, it is noted that Hurricane Sandy's economic impact was severe. This is demonstrated by the fact that the Borough lost approximately \$99 million in ratables, and incurred \$9.5 million in restoration and repair costs.

The following subsections further describe the full range of Hurricane Sandy's impacts on the Borough. Specifically, they examine the hurricane's specific impacts on: residential structures; local businesses; critical infrastructure; municipal parks; bulkheads and dunes; the municipal boardwalk; electrical service; sewer and water service; municipal parking facilities; and, roadways.

Figure 3: Flooded Borough Street and Downed Tree



Impacts on Residential Structures

As indicated by the New Jersey Department of Community Affairs' Community Development Block Grant Disaster Recovery Action Plan, about 45 percent (i.e., 968 of 2,150) of Borough households were affected with "major" or "severe" damage. The United States Department of Housing and Urban Development considers a residential unit to have sustained: "major" damage when there is between \$8,000 and \$28,799 of physical damage, or more than one foot of flooding on the first floor; and, "severe" damage when there is more than \$28,800 of physical damage, or more than four feet of flooding on the first floor.

Figure 4: Damaged House and Downed Power Line



Impacts on Local Businesses

Hurricane Sandy impacted a number of local businesses. Specific impacts ranged from temporary business disruption (e.g., due to loss of power) to severe damage resulting from high winds and floodwaters, and storm surge. While the Borough has prepared no official tally of the number of impacted businesses, it is interesting to note that the Small Business Administration has provided more than \$1,700,000 in Business and Economic Injury Disaster loans. More information on these loans is provided in Appendix A.

Figure 5: Impacted Businesses on Boardwalk



Impacts on Critical Infrastructure

Hurricane Sandy resulted in the flooding of Point Pleasant Beach Fire House No. 1 on Arnold Avenue. However, water did not reach the municipal complex, which is the location of the Borough’s emergency operations center.

In addition to the above, it is noted that a downed tree caused damage to the Borough’s variable message board. Also, police and emergency vehicles that were exposed to saltwater during evacuation operations are experiencing increased maintenance issues.

Other impacts on the Borough’s critical infrastructure are discussed in the following sections of this report.

Figure 6: Critical Infrastructure

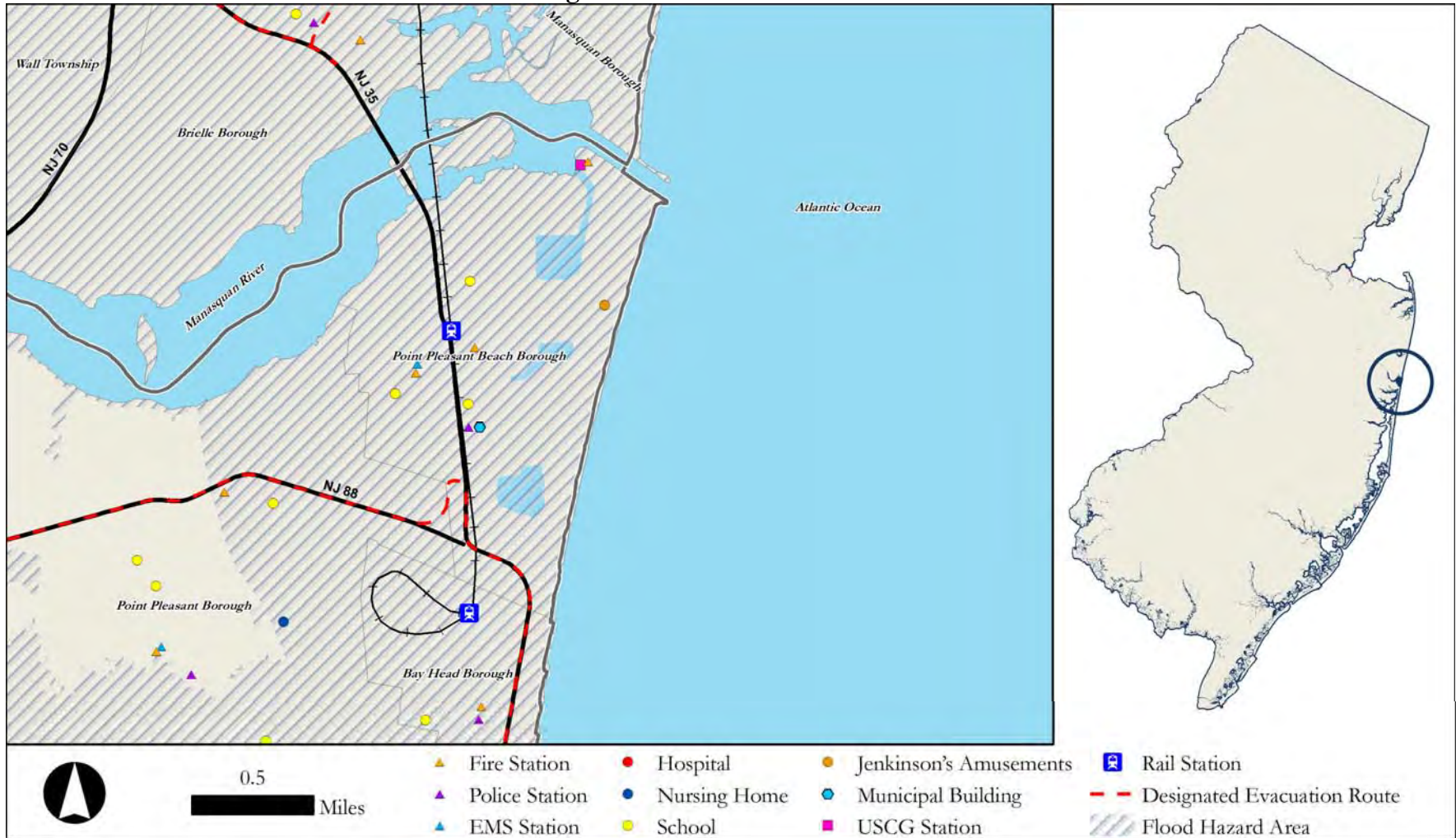
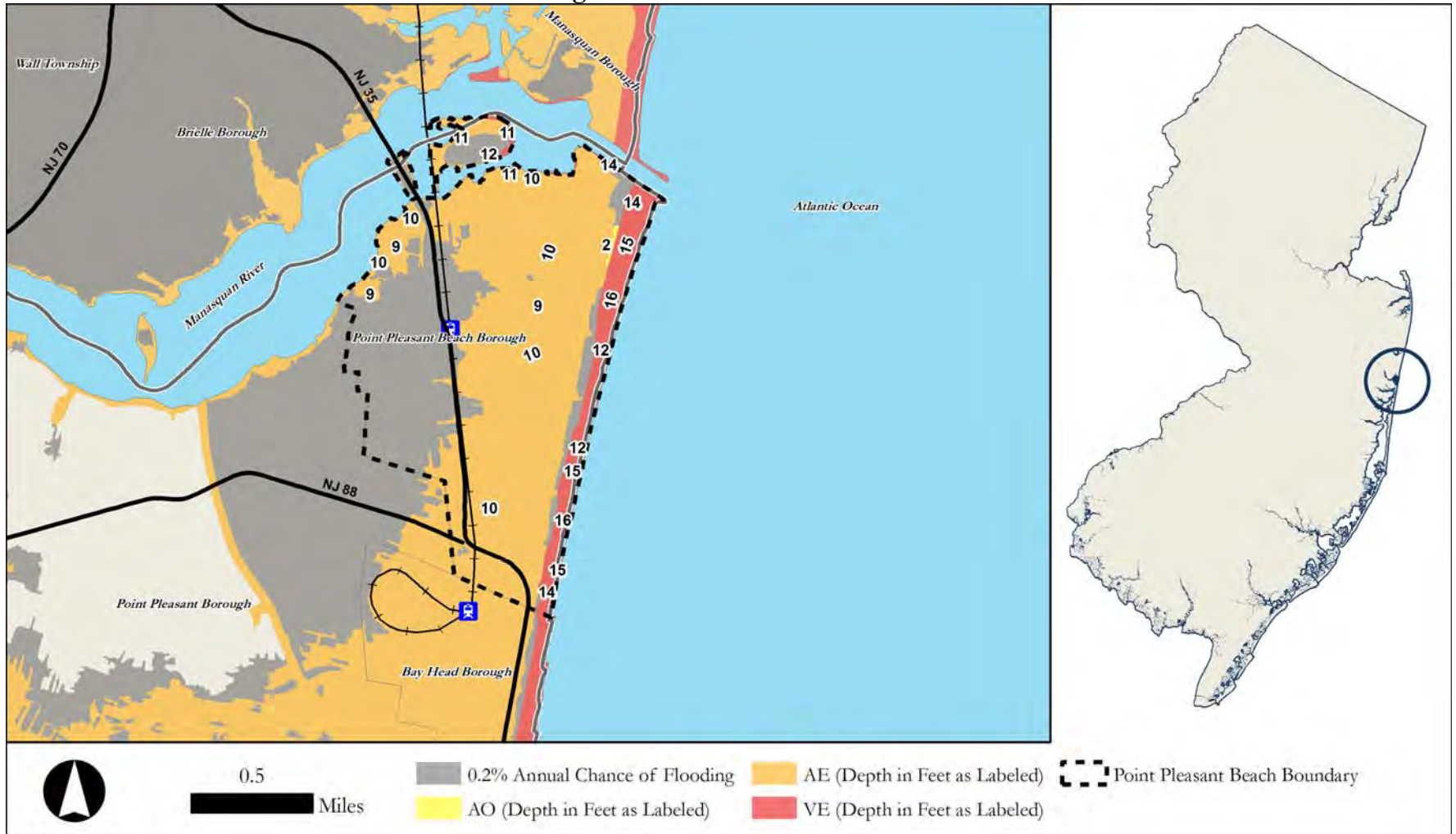


Figure 7: Flood Hazard Areas



Impacts on Roadways

Hurricane Sandy resulted in damage to roadways. The following roadways were damaged:

- Washington Avenue:
 - The roadway surface and base of the eastern terminus of Washington Avenue were washed-out.
 - Striping for three parking stalls was lost as a result of damage to the roadway surface.
- Delaware Avenue:
 - The roadway surface and base of the eastern terminus of Delaware Avenue were washed-out.
- New York Avenue:
 - The roadway surface and base of the eastern terminus of New York Avenue were washed-out.
 - A 700 square-foot, 1.5 inch-deep gouge was unintentionally made during removal of storm-related debris from this section of New York Avenue.

In addition to the above, Hurricane Sandy deposited extensive amounts of sand on roadways. One such roadway was Ocean Avenue, which became impassable and was closed to traffic. Sand from Ocean Avenue was used to replenish the Borough’s beaches.

Figure 8: Sand Deposited on Roadways



Impacts on Fisherman Memorial Inlet Parking Lot

Hurricane Sandy caused damage to the Fisherman Memorial Inlet Parking Lot, which is located on the Manasquan Inlet. The following damaged occurred:

- Sections of pavement, curbing, and sidewalks were washed-out or otherwise damaged. On-surface traffic striping and painted handicap parking symbols were lost as a result of damage to pavement surfaces.
- Traffic control and related safety devices (incl., guard railing and concrete parking bumpers) were washed-out or damaged by storm-related debris.

- The on-site comfort station was totally destroyed. Only the concrete foundation and utility connections survived the storm.
- Riprap apron, bulkhead cap boards, and two sets of stairs were washed-out.

Impacts on the Point Pleasant Beach Boardwalk

Hurricane Sandy resulted in damage to the Point Pleasant Beach Boardwalk from wave action, sand action, and floating debris.

The damage occurred in four areas:

- From Trenton Avenue to Arnold Avenue:
 - Sand and wave action demolished the boardwalk. No materials were salvageable.
- From Central Avenue to Manasquan Inlet:
 - 1,085 linear feet of this section of the Point Pleasant Beach Boardwalk was damaged beyond repair.
 - 528 linear feet of this section of the Point Pleasant Beach Boardwalk was uplifted by sand that was washed under the boardwalk. This section can be repaired.
- From Arnold Avenue to Central Avenue:
 - 355 linear feet of this section of the Point Pleasant Beach Boardwalk was damaged by wave and sand action. The section was damaged beyond repair.
- From Trenton Avenue to New Jersey Avenue:
 - Repairable damage occurred to the railing along a 350 linear-foot section of the boardwalk.

- Repairable damage occurred to the railing, decking, and stringers of a 570 linear-foot section of the boardwalk.
- Irreparable damage occurred to all elements of a 157 linear-foot section of the boardwalk. This section was damaged beyond repair.

Figure 9: Damaged Boardwalk (1 of 2)



Figure 10: Damaged Boardwalk (2 of 2)



Impacts on the Point Pleasant Beach Bathhouse and Food Concession Stand

Hurricane Sandy resulted in extensive damage to the Point Pleasant Beach Bathhouse and Food Concession Stand, which is located at the southern terminus of the Point Pleasant Beach Boardwalk. Additionally, the entire contents of the building were lost.

Impacts on Bulkheads and Dunes

Hurricane Sandy resulted in damage to bulkheads. The following bulkheads were damaged:

- Timber bulkhead at the east end of Delaware Avenue:
 - The bulkhead was damaged by storm surge, breaking waves and floating debris, which removed the northern five feet of the bulkhead and caused the southern 35 feet of the bulkhead to rotate (i.e., lean) by approximately ten degrees.

In addition to the above, it is noted that dunes along the Borough's southern beaches sustained damage from storm surge and flooding.

Impacts on Municipal Parks

Hurricane Sandy resulted in damage to municipal parks. The damage is outlined below:

- Pleasure Park:
 - High winds from Hurricane Sandy damaged and downed trees.
- Green Acres Park:
 - High winds from Hurricane Sandy downed a tree, which resulted in damage to a six-foot tall, 200-foot long chain link fence that separated the little league baseball field in Green Acres Park from commuter rail lines.
- Fisherman's Memorial Park:
 - Storm surge damaged: the walkway decking and railing that ran from the street and surrounded the memorial; the park's electrical system; and, trash receptacles.

- Storm surge washed away two benches.

Disruption of Electric Service and Impacts on Related Facilities

Electric service was interrupted throughout the Borough. Outages lasted for approximately four days in most of the Borough. Service was restored on an area-by-area basis.

Generators were available at various locations, including at the municipal building. While there were no reported mechanical or operational issues with the generators, limited fuel supply was an ongoing issue during and after Hurricane Sandy.

Disruption of Water and Sewer Service and Impacts on Related Facilities

Hurricane Sandy did not result in disruption to water and sewer service on a Borough-wide basis. However, ground saturation, heavy debris truck traffic, and the removal of buildings from their foundations caused damage to, or resulted in the need for plunging of, sewer- and waterlines at or near the following locations:

- Waterlines:
 - 1301 Richmond Avenue;
 - 204 Randall Avenue;
 - 504 Atlantic Avenue;
 - Woodland Road at Oak Terrace; and,
 - 122 Ocean Avenue.
- Sewer Lines:

- Eastern terminus of Delaware Avenue;
- Eastern terminus of Maryland Avenue;
- Southern terminus of Beacon Lane;
- New Jersey Route 35 and Beacon Avenue;
- Ocean Avenue from Broadway to Central Avenue; and,
- Ocean Avenue from New Jersey Route 35 to the Lake of the Lillies.

Vulnerabilities and Opportunities

Discussed below are the vulnerabilities that have been exacerbated by Hurricane Sandy, and the opportunities it created.

Vulnerabilities Exacerbated

Hurricane Sandy exacerbated the vulnerabilities posed by the low elevation of residences and businesses located in flooded areas of Point Pleasant Beach Borough. The loss of power throughout the Borough also exposed residents to dangerously cold nighttime temperatures, and wave action presented serious threats to life and property.

In addition to the above, it is noted that the hurricane weakened bulkheads and caused shoreline erosion. This made the Borough vulnerable to flooding and wave action. Extensive damage to dunes also increased the Borough's vulnerability to flooding and wave action. Though dunes have been repaired, the fiscal impact on the municipal budget was significant.

Opportunities Created

Hurricane Sandy has provided Point Pleasant Beach Borough with an important learning opportunity, and its impacts demonstrate that the Borough may become more resilient to future hurricanes and storms by doing the following:

- Promoting increased cooperation between municipalities and utilities;
- Promoting public awareness of the importance of hazard mitigation and the need to develop resiliency;
- Focusing the attention of public entities on issues, such as flooding, high winds, and vulnerabilities;
- Encouraging regional solutions to flood- and storm-related impacts; and,
- Ensuring that future and reconstructed capital projects are designed and constructed to incorporate features that are resilient to storm- and hurricane-related impacts.

Status of Recovery Efforts

Point Pleasant Beach Borough responded to the impacts of Hurricane Sandy by doing the following:

- Evacuating residents from the Borough;
- Enacting a curfew and banning the sale of alcoholic beverages;
- Filling barricades and cordoning off dangerous areas;
- Responding to gas leaks and other disaster-related fire alarms and fires;
- Cutting and removing downed power lines;

- Building a berm to protect property at the terminus of Arnold Avenue;
- Cleaning sand from storm drains;
- Making emergency repairs to sewer and water lines;
- Removing storm-generated vegetative, bulky (e.g., rugs, furniture), and construction debris;
- Removing hazardous household waste;
- Providing a temporary, trailer-based comfort station at the Fisherman Memorial Inlet Parking Lot;
- Repairing the Fisherman Memorial Inlet Parking Lot;
- Holding public information meetings on various recovery-related topics (incl., with staff from the New Jersey Department of Environmental Protection, Federal Emergency Management Agency, and the United States Army Corps of Engineers);
- Holding additional Board of Adjustment meetings in order to cope with the influx of applications after Hurricane Sandy;
- Issuing official statements and communication, in print and via its public radio station, to keep the public informed of recovery efforts and important events (e.g., public information sessions);
- Amending zoning ordinances to facilitate recovery (e.g., increasing dwelling height so as to allow for compliance with flood elevation requirements, facilitating reconstruction of single-family units, enhancing flood protection standards);

- Repairing dunes and replenishing beaches; and,
- Repairing the Point Pleasant Beach Boardwalk.

Going forward, the Borough will continue its recovery efforts by doing the following:

- Installing a linear sand dune planted with sea oat grass in front of those portions of the Point Pleasant Beach Boardwalk that were damaged by Hurricane Sandy;
- Elevating 353 residential structures that have been substantially damaged;

- Acquiring Block 176, Lot 44 (located at 1 Ocean Avenue) for use as an aquifer recharge area; and,
- Dredging Little Silver Lake and installing a storm pump in order to mitigate the risk of flooding and the subsequent damage to property and structures during future storm events.

Figure 11: Pilings Ready for Framing



Figure 12: New Home under Construction



Recommended Actions

To prevent damage from future hurricanes and storms, the Strategic Recovery Planning Report recommends that Point Pleasant Beach employ storm-resistant building strategies in all future municipal construction. Examples of storm-resistant building strategies include: the use of steel, concrete, or wooden pilings to elevate buildings and protect them from storm surge; reinforcing construction to provide increased strength and wind load resistance; designing buildings to be aerodynamic; using wind-resistant doors and windows; and using flexible (e.g., wood) or high-strength (e.g., reinforced concrete) building materials. Other examples of storm-resistant building strategies abound.

This report also recommends that the Borough develop storm-resistant infrastructure, including: the raising of equipment pumps and buildings above the flood hazard elevation; and, the use of berms or levees to protect capital facilities. The use of green infrastructure and resilient design is encouraged.

In addition to the above, the Strategic Recovery Planning Report recommends that Point Pleasant Beach promote recovery from Hurricane Sandy and resiliency to future hurricanes and storms by taking the actions that are detailed in Table 1. These actions have been developed in consultation with officials from a variety of Borough offices. They are classified in order of priority, with: short-term priority meaning that the particular action should be implemented within 12 months; and, long-term priority meaning that the particular action should be implemented within 36

months. The prioritization could, however, shift depending on available funding. The cost of each project will be estimated in the future, when the specific scope of work is determined.

Based on the funding priorities of Table 1, the Borough will also seek funding from the New Jersey Department of Community Affairs as part of the Post-Sandy Planning Assistance Grant Program for the following activities, which are eligible for funding under the program:

- Automating and updating its system for processing zoning and construction permits;
- Creating a GIS database and low elevation aerial mapping to support future planning efforts;
- Updating the Master Plan to address post-Sandy strategies and policies related to hazard mitigation and community resiliency;
- Updating the Floodplain Management Plan;
- Zoning amendments to increase the efficiency of the permit review process and expedite recovery;
- Zoning amendments to provide resilient and sustainable design standards; and,
- Zoning amendments in conjunction with master plan amendments to address hazard mitigation and floodplain management.

The information that is provided in Table 1 is supplemented by Appendix A, which provides a listing and description of potential funding sources for implementation of the recommended actions.

Table 1: Actions to Promote Recovery

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Incorporate the principles of the 2013 Multi-Jurisdictional All Hazard Mitigation Plan into the Point Pleasant Beach Borough Master Plan.</p> <ul style="list-style-type: none"> • Identify needs and opportunities • Engage public and private stakeholders • Draft new language • Revise and adopt plan 	<p>Hurricane Sandy mobilized police, emergency response, and utility personnel. In doing so, it exposed areas that need improvement.</p>	<p>Incorporating the principles of the 2013 Multi-Jurisdictional All Hazard Mitigation Plan into the Point Pleasant Beach Borough Master Plan will help to ensure that the future development and operations of the Borough occur in a consistent manner. This will increase safety and promote resiliency to future storms.</p>	<p>Medium</p>	<p>✓</p>	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Investigate opportunities for shared services and mutual aid, in particular with adjoining communities to improve emergency response for a greater number of residents</p> <ul style="list-style-type: none"> • Develop partnerships • Execute agreements 	<p>Hurricane Sandy stressed the Borough's existing volunteer fire and emergency medical services.</p>	<p>Increased emergency coverage will help to improve safety and efficiency of Borough response to emergencies.</p>	<p>Low</p>	<p>✓</p>	
<p>Consider providing a new generator at the municipal building</p> <ul style="list-style-type: none"> • Investigate options • Secure funding • Purchase and install equipment 	<p>Hurricane Sandy disrupted electricity service. While currently operational, the generator at the municipal building is old and reaching the end of its expected life.</p>	<p>A new generator at the municipal building will ensure that the municipal building, which is the center of emergency operations in the Borough, has a reliable source of power in times of crisis. Any new generator should have an automatic grid-generator switch.</p>	<p>High</p>		<p>✓</p>

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Provide natural gas backup service for generators</p> <ul style="list-style-type: none"> • Investigate feasibility • Develop plans • Implement 	<p>Generators were used during and after Hurricane Sandy. While there were no mechanical issues with the generators, limited fuel supply was problematic.</p>	<p>Use of natural gas could increase reliability of generator service and result in increased resiliency to storms. Generators should, however, continue to be operable with diesel fuel for extra security, in the event that natural gas supplies are interrupted.</p>	<p>High</p>		<p>✓</p>
<p>Provide the Department of Public Works with an emergency staging facility</p> <ul style="list-style-type: none"> • Investigate funding • Determine appropriate location • Develop plans • Implement 	<p>Hurricane Sandy required a significant response by the Department of Public Works. A proper staging facility would result in increased efficiency of response.</p>	<p>An efficient response of the Department of Public Works is critical during times of emergency and will help to protect lives and property.</p>	<p>High</p>		<p>✓</p>

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Provide temporary housing for emergency personnel</p> <ul style="list-style-type: none"> • Investigate options • Secure funding • Implement 	<p>Hurricane Sandy resulted in the need for round-the-clock emergency personnel in the Borough.</p>	<p>Providing housing for emergency personnel would ensure that they are in the Borough and ready to respond during times of crisis. Such a facility could also be used for training and storage; such a facility could also serve as a new, upgraded emergency operations center with meeting and radio rooms.</p>	<p>High</p>	<p>✓</p>	
<p>Update Floodplain Management Plan</p> <ul style="list-style-type: none"> • Engage public and private stakeholders • Evaluate lessons learned from Hurricane Sandy • Develop a plan • Adopt and implement 	<p>Hurricane Sandy caused extensive flooding.</p>	<p>Enhanced floodplain management will promote resiliency to future storms.</p>	<p>Low</p>	<p>✓</p>	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Automate and expedite processing of building and zoning permits.</p> <ul style="list-style-type: none"> • Determine needs • Evaluate software options and other tools • Make necessary purchases 	<p>Hurricane Sandy placed a significant burden on Borough resources and personnel.</p>	<p>Increasing the efficiency of permit review and issuance will increase the efficiency of recovery, and promote resiliency.</p>	<p>Low</p>	<p></p>	<p>✓</p>

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Reexamine the Borough's Master Plan Elements and prepare a sustainability element to address post-Sandy strategies and policies related to hazard mitigation, community resiliency, and forecasted sea level rise and its impacts. This should involve amending the goals and objectives, incorporating areas of redevelopment, as well as up-to-date mapping of current land uses, new FEMA mapping, community facilities, and important natural resource areas</p>	<p>The last time the Master Plan was reexamined was in 2007. Planning documents should be moved closely to align with natural resources and recovery, response, and resiliency, especially issues dealt with in the aftermath of Hurricane Sandy</p>	<p>Planning can mitigate risks and vulnerabilities, and protect property and safety</p>	<p>Medium</p>	<p>✓</p>	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Prepare and adopt a debris management plan</p> <ul style="list-style-type: none"> • Engage public and private stakeholders • Develop a plan • Adopt and implement 	Hurricane Sandy generated extensive debris.	A debris management plan will promote recovery from future storms.	Low	✓	
<p>Revise the Borough's zoning ordinance in accordance with the updates of the master plan and floodplain management plan</p> <ul style="list-style-type: none"> • Prepare revisions • Adopt and implement 	Hurricane Sandy placed a significant burden on Borough resources and personnel. It also placed a burden on property owners seeking to make repairs and rebuild.	Increasing the efficiency of permit review and issuance will increase the efficiency of recovery, and promote resiliency. It will also provide relief to property owners. Storm-resilient design standards will promote sustainability.	Low	✓	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Streamline development review process</p> <ul style="list-style-type: none"> • Evaluate options • Adopt and implement policy 	<p>Hurricane Sandy placed a significant burden on Borough resources and personnel. It also placed a burden on property owners seeking to rebuild.</p>	<p>Increasing the efficiency of the development review process will increase the efficiency of recovery.</p>	<p>Low</p>	<p>✓</p>	
<p>Develop a GIS database and user interface to catalog and inventory all infrastructure owned by the Borough, including roadways and its stormwater and sanitary sewer collection systems. This will include up-to-date GPS mapping of the utility infrastructure, as well as inventory and classification of the road network to build a Borough-wide capital improvement plan.</p>	<p>Point Pleasant Beach faced devastating damages to many of its services and municipal facilities.</p>	<p>An up-to-date catalog and inventory of Borough-owned infrastructure will better prepare Point Pleasant Beach to provide recovery and response services during future storms and other severe weather events.</p>	<p>Medium</p>		<p>✓</p>

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
<p>Reinforce existing and provide new bulkheads at various locations</p> <ul style="list-style-type: none"> • Prepare inventory of existing bulkheads • Evaluate need for reinforced and new bulkheads • Prepare design plans • Initiate construction 	Hurricane Sandy damaged and undermined bulkheads.	Reinforced and new bulkheads will help to minimize flooding and protect life and property.	High	✓	

Action	Relation to Hurricane Sandy's Impacts	Importance to Economic and Environmental Health	Estimated Cost	Short-Term Priority	Long-Term Priority
Investigate feasibility of providing dunes along entire beachfront <ul style="list-style-type: none"> • Engage public and private stakeholders • Investigate options • Secure funding • Implement plans where feasible 	Hurricane Sandy damaged dunes and caused flooding and damage from storm surge.	Providing dunes along the entire beachfront will increase resiliency to future storms.	High	✓	
Develop recovery information resources (e.g., guidebooks, pamphlets, and websites) and a training program for Borough staff	After Hurricane Sandy, residents and local business people had questions about recovery assistance. Borough staff was not always able to provide immediate answers.	By providing Borough staff with the adequate tools and information to assist the public, the speed at which the Borough recovers from future storms will be increased.	Low	✓	
Continue to participate in the National Flood Insurance Program	NFIP is critical for recovery from hurricane impacts	Rebuilding of damaged structures	Low	✓	

Appendix A: Potential Funding Sources

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Homeowner Resettlement Program: A total of \$180,000,000 in federal funds has been allocated to support the Homeowner Resettlement Program, which was designed to encourage homeowners to remain in the nine counties (Atlantic, Bergen, Cape May, Essex, Hudson, Middlesex, Monmouth, Ocean, and Union) that were most severely impacted by Hurricane Sandy. The funds may be used for any non-construction purpose that assists the homeowner to remain in, or return to, the county in which they lived prior to Hurricane Sandy. The grant amount is \$10,000. This is a Community Development Block Grant Disaster Recovery Program.

Homeowner Reconstruction, Rehabilitation, Elevation, and Mitigation Program: A total of \$600,000,000 in federal funds has been allocated to help eligible primary homeowners repair or rebuild homes impacted by Hurricanes Sandy. The Homeowner Reconstruction, Rehabilitation, Elevation, and Mitigation program will assist homeowners in rehabilitation, reconstruction, elevation, and mitigation so that they can do the necessary work on their homes to make them livable and comply with requirements for structures located in flood plains. The program provides grants to eligible homeowners of up to \$150,000. The Homeowner Reconstruction, Rehabilitation, Elevation, and Mitigation program is intended to “fill the gap” between the total cost of repairs and all other funds the owner has received to repair the structure. This is a Community Development Block Grant Disaster Recovery Program.

Landlord Rental Repair Program: This program provides up to \$50,000 per unit in grant funding assistance to eligible owners of rental properties with up to 25 units. The Small Rental Properties/Landlord Rental Repair program will provide funds to help rental property owners restore their properties through rehabilitation, reconstruction, elevation, and mitigation. The program is intended to help existing owners restore their properties and receive reimbursement for eligible building expenses that have been incurred by owners prior to its implementation, but which have not paid for by other programs. This is a Community Development Block Grant Disaster Recovery Program.

Neighborhood Enhancement Program: This program provides funding to stabilize “threatened but viable” neighborhoods, through the creation of affordable housing. The program is intended to be a tool used by local plans to invest in and rebuild these communities. It funds the rehabilitation or reuse of abandoned, foreclosed, and vacant housing, structures, or lots, and addresses the shortage of affordable housing caused by the storm while returning blighted buildings to viability. The program provides zero percent loans to eligible entities that will create for sale or rental housing units through rehabilitation or redevelopment. Initial occupancy of the units developed under this program is restricted to households earning no more than 80 percent of the area’s medium income, as defined by the United States Department of Housing and Urban Development. A total of \$30,000,000 has been allocated to this program. This is a Community Development Block Grant Disaster Recovery Program.

Hazard Mitigation Grant Program — Elevation Program: This is a \$100 million reimbursement grant program that has been established to assist homeowners to elevate their properties after Hurricane Sandy. The program provides up to \$30,000 to eligible homeowners to elevate their primary, single-family residences. The New Jersey standard is to elevate residential structures one foot higher than the advisory base flood elevation. This reduces the risk of damage to the property and its contents in the event of major flooding. It may also provide a significant reduction in flood insurance premiums compared to a structure that is not elevated. This is a program of the Federal Emergency Management Agency (FEMA).

Small Business Administration Disaster Loan Program: The United States Small Business Administration provides low-interest disaster loans to homeowners, renters, businesses of all sizes, and most private nonprofit organizations. Disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate; personal property; machinery and equipment; and, inventory and business assets. As of February 2013, a total of \$8,035,100 had been loaned to applicants in Point Pleasant Beach Borough, including: 81 homeowners, which were loaned a total of \$6,328,300; and, seven businesses, which were loaned \$1,706,800.