

1. Executive Summary

Superstorm Sandy was one of the largest storms to ever hit the northeastern United States. Causing an estimated \$70 billion in damage, Sandy was the most destructive hurricane of the 2012 Atlantic hurricane season and the second-costliest hurricane in U.S. history. In New Jersey, high winds and precipitation, as well as overflowing ocean, bays and rivers, caused direct damage to homes, businesses and town facilities, including fallen trees, blown off shingles, and flooded critical infrastructure. Tidal surges caused flooding and excessive damage to coastal protective barriers including dunes, bulk heads, and jetties.

The Department of Community Affairs initially allocated \$5 million in Community Development Block Grant- Disaster Recovery (CDBG-DR) funds towards the Post Sandy Planning Assistance Grant Program (PSPAG). The goal of the PSPAG is to support municipalities and counties affected by Superstorm Sandy to develop long range plans for community redevelopment and hazard mitigation. The PSPAG program offers grants to municipalities and counties to hire American Institute of Certified Planners/New Jersey Board of Professional Planners (AICP/PP) licensed planners to address the issues caused by the storm, draft plans to rebuild a more sustainable and resilient community that can withstand damage from future storms, and encourage sustainable economic growth.

On October 28, 2013, Housing and Urban Development (HUD) announced a second allocation of CDGB-DR funds to Sandy-impacted states. As a result, New Jersey published a Substantial Amendment to its Action Plan and allocated an additional \$10 million to the PSPAG and other planning-related programs.

In order for the Township of Brick to be eligible for grant activities under the PSPAG program, Brick must complete a comprehensive Strategic Recovery Planning Report. This SRPR has been prepared in accordance with all applicable requirements of the PSPAG Program. This Report evaluates the impacts of Superstorm Sandy on the community's housing, infrastructure and economic growth and sets forth the goals, strategies, and actions that are urgently needed for the public safety of Brick's citizens and the economic recovery of the Township. Once the Strategic Recovery Planning Report is completed, the Township of Brick will be eligible for the following grants under

the PSPAG program: re-examination reports for master plans or resiliency plans, community development and neighborhood plans, design standards, capital improvement plans, suburban environmental design, and development of codes or ordinances.

The Township of Brick has been progressive in improving hazard mitigation and resiliency. The recommendations set forth in this Report, along with further funding, will allow the Township to continue with its efforts. These recommendations focus on improving the resiliency of infrastructure, updating Master Plan elements to improve consistency with hazard mitigation initiatives, economic development, housing, communication and education, capital improvement, and Community Rating System compliance. The goal of these recommendations is to prevent the loss life and property caused by future storm events.

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2. Introduction

2.1 Purpose of Report

Due to the damage caused by Superstorm Sandy, many New Jersey municipalities and counties face a myriad of recovery challenges. Among them is the need for planning support to develop community recovery plans that strategically address the issues that now confront them.

This Strategic Recovery Planning Report (SRPR) will serve as a blueprint to guide the recovery of Brick Township from the effects of Superstorm Sandy and to reduce vulnerabilities to future storms. Accordingly, the Report:

- Evaluates the impacts on affected community features in Brick and address the conditions created or exacerbated by the storm;
- Articulates the planning goals, strategies, and priority projects and actions that are most urgently needed to improve public safety, increase resistance to damage from future storms, and stimulate economic recovery; and
- Contains detailed descriptions of each proposed action and project; a statement of need that demonstrates how each action or project relates to the impacts of Superstorm Sandy; why the action or project is important to the economic and environmental health of the community; and the major tasks associated with each action or project.

2.2 Brick Township Profile

Brick Township is located in northeastern Ocean County. The Township is bordered by Point Pleasant Borough, Wall Township and Howell Township to the north, Lakewood Township to the west, Toms River Township to the south and Mantoloking to the east. The Township has a total area of 26.2 square miles. According to GIS data, approximately 45,000 structures are located within the Township. Of these structures, over 10,000 are located within the floodplain based on FEMA Preliminary Flood Insurance Rate Maps.

The Township is spanned by five watershed areas – the Manasquan River, Metedeconk River, Beaver Dam Creek, Kettle Creek, and Reedy Creek Watersheds. A one mile stretch of the barrier island drains to the Barnegat Bay and Atlantic Ocean. The Manasquan River watershed contains the Sawmill Creek, Godfrey Lake and a number of unnamed tributaries, creeks and streams. The Metedeconk River watershed contains the Main Branch of the Metedeconk River, the North Branch of the Metedeconk River, Beaver Dam Creek, North Branch of Beaver Dam Creek, and the Cedar Bridge Branch. The Kettle Creek Watershed contains Kettle Creek, Lake Irisado, Tunes Branch, Long Causeway Branch and Polhemus Branch which drain into the Barnegat Bay. The Reedy Creek Watershed contains only the Reedy Creek and many lagoons and unnamed tributaries of the Barnegat Bay Watershed.

According to the 2010 United States Census, Brick Township had a population of 75,072 people; however because the Township includes beachfront access, the summer population may be higher. The Township should look to determine population fluctuations between summer and the remainder of the year. Additionally, the population density was 2,919.4 inhabitants per square mile. There were 33,677 housing units at an average density of 1,309.6 units per square mile. The Township conducted a build-out analysis in 2005 to identify all properties within the Township available for development. By analyzing GIS parcel layers, tax assessor data and tax maps the Township projected that 760 more new households can be constructed on the existing buildable vacant land. The Township projects that the population will see an increase of approximately 2,000 more people by 2030.

Brick Township has the most privately owned waterfront property of any municipality in New Jersey totaling 53.2 miles: 1.79 miles of ocean-front on the Barrier Island, 39.5 miles of river-front and 11.93 miles of bay-front. There are two ocean swimming beaches and one fishing beach located on the Barrier Island. The Township has approximately 25 private marinas providing over 3,000 slips for recreational boating and fishing access. In 2006 the Township purchased its first marina, Trader's Cove Marina, located at the foot of the Mantoloking Bridge.

Development patterns within the Township are typical of an auto-oriented suburban community with commercial enterprise along the major state and county highways and residential areas located on smaller local roadways. While single-family detached residences are the most common housing type within the Township, when considering the continuing increase in population, new residential development within the Township should trend toward mixed used development and pedestrian-centered access to commercial areas.

Brick has access to several major State highways. Nearby highways running north/south include Routes 70 and 88, which travel northeast to southwest through the central portion of the Township. The Garden State Parkway passes through the western part of the municipality with three interchanges: Exits 91, 90 and 89.

Brick Township does not currently have any mass transit train stations; however, it is served by New Jersey Transit trains at the Bay Head station via North Jersey Coast Line which provides commuter service to New York City. New Jersey Transit bus service between the Township and Philadelphia is available on the 317 route and to Trenton on the 67 route.

3. Evaluation of Superstorm Sandy's Impact and Recovery Efforts

This report section discusses the impact of Superstorm Sandy on the Township's infrastructure, private property, economy and community. Each subsection includes recovery efforts undertaken by Brick Township, as well as available county and state recovery programs.

3.1 Damage to Infrastructure

Of every state in the region, New Jersey suffered the most in terms of power outages from Superstorm Sandy. New Jersey had the largest number of customers without power at the peak, 2.6 million. Power outages were caused by damaged substations and power plants as well as fallen utility poles. Brick Township itself was reported to be without power for twelve days, with some mainland coastal portions of the Township being without power for 16 days. On the Barrier Island, power was not restored until February, 2013. To date, some portions of the Island are still without power.

Route 70, which acts as a major evacuation route for the region, experience major flooding during the storm, delaying evacuation efforts. Additionally Route 35 received a substantial amount of damage with large portions of roadway having completely washed away. The State Department of Transportation has undertaken an improvement project to make the highway more resilient. The new roadway will be built in a manner that makes it stronger and better able to withstand future storms. The drainage system will also be substantially improved. It is being designed to handle 25-year storms. Inlet grates will trap debris, and subsurface water quality manufactured treatment devices will purify storm-water prior to discharge into the bay. The electrical and control equipment for the pump stations will be built on platforms near the pumps.

To recover from Superstorm Sandy damage and prepare for future disasters, the Township has pursued the following measures to improve infrastructure.

Hazard Mitigation Grant Program Infrastructure Projects

Brick Township has been active in pursuing funding from the Hazard Mitigation Grant Program (HMGP). The Township has planned to install permanent back-up energy supplies for three of its most critical facilities including; The Municipal Complex, Department of Public Work and the Police Sub-Station/ Pioneer Hose Fire Company Barrier Island Forward Command Post. The addition of these new generators will help to increase the effectiveness of the emergency service response by both the local fire and police departments and will also help to maintain continuing operations within the Township. Brick Township has also showed interest in pursuing funding for providing and/or upgrading generators at five of the transition shelters including; Brick Township High School, Brick Memorial High School, Ocean County Vocational-Technical School, Emma Havens Young School and Veterans Memorial Middle School. Thus far, the Township has been approved for 4 generator projects through Infrastructure funding and Energy Allocation. Therefore, acquiring additional funding resources should remain a priority.

Letters of Intent for the HMGP have also been provided for funding of shoreline stabilization and beach erosion control project projects. Six areas which includes: Cedar Bridge Manor Park, North Riverside Drive, Cedar Island Bayfront, Dock Road Beach, Mallard Park Beach and Bay Harbor Beach, have been identified; and each is subject to erosion and scour from potential storm surge flooding and extreme weather conditions. Without mitigation, public and private properties as well as roadways within these areas will be in danger of serious flooding during 100-year, 24 hours storm events.

Beach Replenishment

The Army Corps of Engineers is carrying out beach repair and restoration which will mitigate the impacts of future storms. The project provides coastal storm risk reduction to highly populated communities and infrastructure located along the

shoreline. Protection is provided through the construction of 25-foot high dunes and extension of the beach by about 200 feet. The enlarged beaches and dunes will help to prevent the type of dune breaches that occurred during Superstorm Sandy. It is estimated that the Beach Replenishment project is to be completed in 2015.

Steel Revetment Installation

Installation of a steel bulkhead along the Barrier Island is currently underway. It will be placed within the dune line in order to protect the Route 35 emergency evacuation route. The project is being undertaken by the State of New Jersey and is expected to be completed in the Fall of 2014. Engineered beach and dune systems are designed to provide protection from flood and wave damage from storms. The Army Corp of Engineers has found that engineered beaches can serve a critical function in protecting homes and businesses along New Jersey's shoreline in the face of nor'easters and other extreme weather events.

Road Improvements

Road elevations and associated improvements are being investigated to avoid flooding in the event of another major storm. South Drive is about two to three feet above sea level and approximately 400 feet of the road repeatedly undergoes damage from heavy sheet-flow associated with major rainfall events. South Drive provides the only vehicular access for residents on the Princeton Peninsula. During major storm events, the route is rendered unsafe.

The Township is also looking to raise "Snake" Road, which consists of Mandalay Road, Pilot Drive, Holley Avenue and Knoll Crest Avenue. This roadway is the principle evacuation route for 142 residences in the County. Since August of 2012, it has been estimated that the road was rendered impassible six times. Superstorm Sandy resulted in increased tidal flux throughout the Bay. As a result, the access of the roadway is more often impassible during normal tidal cycles.

Capital Improvements

The Township follows a capital improvement program to ensure that roadways, drainage, parks and other infrastructure is maintained at a high standard. For the

2014 Capital Improvement Program, the Township has recommended such projects as, but not limited to: roadway reconstruction, improvements to drainage, traffic calming, pedestrian improvements, shoreline restoration and lake dredging.

3.2 Property Damage

The Township of Brick experienced a severe loss of dunes and major beach erosion during Superstorm Sandy. Wave energy and storm surge was absorbed directly by many of the ocean front structures and were catastrophically damaged and/or destroyed. As of early 2014, 202 homes were reported to be abandoned in Brick Township. Many of these homes are primary residences. In some cases; however, these homes are owned by homeowners who inherited these houses or purchased a second home as an investment. In these situations, the owners are typically disqualified from most types of financial aid to rebuild or elevate the structures. Additionally, over 1,000 residents applied for Reconstruction, Rehabilitation, Elevation and Mitigation (RREM) program funding, described in more detail below.

State and Federal Homeowner Recovery Programs

FEMA runs a Hazard Mitigation Grant Program (HMGP) which is a \$100 million reimbursement grant program set up to assist homeowners elevate their homes after Hurricane Sandy. The HMGP elevation program provides up to \$30,000 of reimbursement for eligible homeowners to elevate their primary single-family residences. The program is being paid for by FEMA funds. The application period for homeowners closed on September 15, 2013.

At the State level, the Reconstruction, Rehabilitation, Elevation and Mitigation (RREM) Program and Homeowner Resettlement Program are the primary CDGB-DR funded recovery programs for homeowners. These programs are intended to “fill the gap” between the cost of Sandy-related repairs and other funds received by the owner. The State has allocated \$710 million and \$215 million of the first wave of CDGB-DR funds to support these programs, respectively. However, **Figures 1 and 2** below show that the unmet needs for the RREM Program remain substantial.

Program	Total Allocation ^a	Total	Number of	Average	Estimated	Excess / (Shortfall)
		Number of Eligible Households	Households Receiving Grant Award			
RREM	\$710,000,000	12,389	5,124	\$106,000 ^c	\$1,313,234,000	\$(603,234,000)
Homeowner Resettlement	\$215,000,000	18,335	16,791	\$10,000	\$183,350,000	\$0

^a This Total Allocation amount reflects the shift of funds approved in Action Plan Amendment 4.
^b These figures exclude program delivery costs.
^c This figure is based on the average RREM grant awards that were signed as of January 13, 2014, and reflects the impact of private insurance, U.S. Small Business Administration (SBA) loans and other funding sources that are accounted for in the State's duplication of benefits analyses performed to ensure that CDBG-DR funds only are provided to address unmet needs. Notably, as of September 12, 2013, SBA disbursed more than \$122 million in loans across 5,100 homeowners and renters.

Figure 1

Program	Total Allocation	Projected	Number of	Average	Need of	Excess / (Shortfall)
		Number of Households Assisted	Households Requesting Assistance		Cost of Elevation	
HMGPE Elevation Program	\$100,000,000	2,700	6,510	\$65,000 ^a	\$423,150,000	(\$323,150,000) ^b

^a Costs of elevation vary significantly by property, depending on such factors as the size of the home to be elevated and the footprint of the home. A \$65,000 elevation cost estimate is used because it is an approximate average of what an elevation in New Jersey might be expected to cost.
^b This figure excludes program delivery costs.

Figure 2

The New Jersey standard is to elevate residential structures a minimum of one foot higher than the Advisory Base Flood Elevation (ABFE). 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.

In order to alleviate some of the unmet need, **Figure 3** shows the second tranche of CDBG-DR funding has allocated the following for these programs.

Figure 3

Category	Allocation Level		Program	Allocation Level	LMI Estimate
	Total Amount	Total Estimated LMI Amount			
Homeowner Assistance Programs	\$490,000,000	\$220,000,000	Reconstruction, Rehabilitation, Elevation & Mitigation	\$390,000,000	50%
			Blue Acres Buyout Program	\$100,000,000	25%
Rental Housing and Renter Programs	\$245,000,000	\$230,000,000	Fund for Restoration of Multi-Family Housing	\$200,000,000	95%
			Neighborhood Enhancement Program	\$20,000,000	75%
			Sandy Special Needs Housing Fund	\$25,000,000	100%

Ocean County Long Term Recovery Group

The Ocean County Long Term Recovery Group's (OCLTRG) goal is to assist all county residents in recovery from disasters by addressing and prioritizing unmet needs. The Group's priorities include the following:

- Individuals and families who need assistance to maintain or obtain safe, sanitary and secure housing, including: – Those who are not served, or who are underserved, by other existing aid programs, including those who are ineligible for FEMA.
 - Those who are experiencing economic hardship in pursuing a plan for recovery.
 - Those who are isolated or have difficulty accessing services.
 - Those who have begun the recovery process but have encountered a setback and need assistance with their continued recovery.
 - Those who need assistance in order to prevent deterioration in their continued recovery.
- Landlords of owner-occupied residential rental property of four units or less when such assistance will provide safe, sanitary, and secure housing that will be affordable and permanent for the owner-occupant and his or her residential tenants.
- Landlords of owner-occupied residential rental property of three units or less when such assistance will provide safe, sanitary, and secure housing that will be affordable and permanent for residential tenants.

Brick Township has taken the following steps to strengthen flood damage prevention for both public and private property:

Ordinance Amendments

The Township adopted Chapter 196: Flood Damage Prevention in 2013 by Ordinance 3-13 which repealed the former Chapter 196 titled Flood Hazard Areas. The new Flood Damage Prevention ordinance was enacted to promote public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. The purpose of this ordinance is to:

- Protect human life and health;

- Minimize expenditure of public money for costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, bridges located in areas of special flood hazard;
- Help maintain a stable tax base by providing for the second use and development of areas of special flood hazard so as to minimize future flood blight areas;
- Ensure that potential buyers are notified that property is in an area of special flood hazard; and
- Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

In order to accomplish the above mentioned purposes, the Flood Damage Prevention ordinance uses the following methods:

- Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- Require that uses vulnerable to floods including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters;
- Control filling, grading, dredging, and other development which may increase flood damage; and,
- Prevent and regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

Additionally, Article XXXVIII A was added in March of 2013 to the Land Use Ordinance as “Supplemental Land Use and Zoning Regulations in Special Flood

Hazard Areas.” The purpose of this article is to recognize limitations associated with federal and state construction and reconstruction requirements in special flood hazard areas, and encourage the restoration and reconstruction of existing neighborhoods within the Township.

3.3 Economic Impact

Most businesses in Brick Township suffered a level of interruption by power outages and road closures. In addition, the local and regional tourism industry has been adversely impacted to some extent which has created a more challenging business environment for certain businesses. Should another natural disaster occur, there are several programs available to help small businesses recover.

Small Business Administration

In the months following Hurricane Sandy, the Small Business Administration (SBA) has been issuing loans to homes and businesses in New Jersey to aid in their recovery and reconstruction efforts. NJ.com has compiled data from the SBA and made it available online.

In August, 2013 the SBA held a Recovery and Matchmaking Summit to educate and connect small businesses to commercial buyers from the private sector and federal, state and local governments. The goal of this program is to help small businesses in the region to get back on their feet and compete for opportunities.

Strong NJ Business Grant Program

With a focus on the most impacted communities throughout the state, New Jersey is offering aid through grants and forgivable loans to New Jersey small business or non-profit organization which sustained a minimum of \$5,000 in physical damage from Superstorm Sandy. Eligible small businesses and non-profits may apply for grants and forgivable loans of up to \$50,000 per impacted location. If an entity has multiple locations in New Jersey incorporated under a single federal tax identification or employer identification (EIN) number, it may receive up to \$250,000 per entity and it may use one application to seek funds for all incorporated, impacted locations.

3.4 Community Impact

The U.S. Department of Housing and Urban Development (HUD) requests that jurisdictions across the nation conduct a bi-annual, statistically reliable and unduplicated count of the homeless over the course of one day in the last ten (10) days in January. The jurisdictions in NJ conduct an annual count of the homeless on a voluntary basis and report findings in the *Point in Time Count*.

In January of 2012, before Superstorm Sandy hit, the *Point in Time Count* reported that 648 men, women, and children in Ocean County were homeless. The largest contributing factor to homelessness in 2012 was alcohol or drug abuse problems, which affected 58.3 percent of the people surveyed with mental illness at a close second with 47.2 percent of the people surveyed. In January of 2013, however, Ocean County saw a small increase in its homeless population, reporting 678 homeless men, women and children. The major contributing factor to homelessness in 2013 was mental illness affecting 48.6 percent of the people surveyed. The 4th highest contributing factor to homelessness was natural disaster at 34.7 percent. This was a significant change from the prior year, as the natural disaster factor to homelessness was not found on the 2012 Point in Time Count.

The 2013 Point in Time Count was conducted nearly three months after Superstorm Sandy impacted the area and, as evidenced by these findings, still an overwhelming number of people remained displaced from their homes. Due to the slow implementation of State and Federal funding, the displacement of families, homelessness and other similar issues are still in progress of being remedied.

Recovery for Displaced Families

During the events of Superstorm Sandy, the Township established emergency transition centers at the senior center and High School. In the aftermath of the Storm, Brick Township provided a mobile town center with construction officials and rental assistance in order to respond quickly to recovery needs. Local charities and houses of worship also provided volunteers to assist displaced families. The Township continues to work towards getting residents back into their homes.

The New Jersey Department of Human Services provides the Sandy Homeowner/Renter Assistance Program (SHRAP) as a temporary relief program to assist

individuals and families experiencing a housing crisis resulting from Superstorm Sandy. The goals of the SHRAP program were to provide housing stability by: Maintaining temporary housing while primary residence was repaired/rebuilt; maintaining a primary residence to return to when repair/reconstruction was completed; and ensuring affected households had items deemed essential for health and safety upon returning to primary residence. As of June 30, 2014 the Ocean County SHRAP Office no longer accepts applications for this program.

The Visitation Relief Center, located in Brick Township, is a long term is a long-term hurricane relief program developed by the Visitation Church and the community of Brick Township. The mission of this organization is to aid families to recovery and help them to rebuilding after Superstorm Sandy. They have distributed \$1.9 million worth of donated items to Sandy survivors and have helped to rebuild 27 homes in recent months.

Additionally, the Ocean County Division of Social Services provides a number of services for people suffering from homelessness including: intake/screening, placement services, liaison services to transitional housing sites/shelters and rooming/boarded homes, housing search assistance and Temporary Rental Assistance. The County Division of Social Services also operates a 24-Hour Homeless Emergency Phone Line to provide an after-hours number for homeless housing-related emergencies.

Affordable Housing

The Township continues to implement the policies and goals outlined within the Housing and Fair Share Element of the Master Plan and intends to comply with all future affordable housing regulations in order to ensure a diverse housing stock for all residents affected by the Storm. The programs and initiatives listed within the *Recovery for Displaced Families* section of this Report are available to families of low- and moderate- income as well.

4. Vulnerability Assessment

4.1 Vulnerability Analysis

By overlaying social and economic data on the same map with sea level rise, a community can perceive the impending impact that sea level rise can have on vulnerable people and businesses. Many parts of New Jersey can be found in hazard-prone areas known as 'vulnerable communities.' Based on the New Jersey Flood Mapper diagrams that can be found online and the CRSSA Resiliency maps, Brick Township is within this vulnerable category as many of its neighborhoods are proximate to waterways.

A significant problem associated with sea level rise is that many developed areas proximate to tidal water bodies may be compromised. For example, Mantoloking Road runs directly parallel to the Metedeconk River, over the Barnegat Bay, and onto Route 35 which is alongside the Atlantic Ocean. In the case of a Category 1 Hurricane making landfall, this area would not be suited for residents to evacuate, as the road would be flooded over.

Furthermore, there are two fire stations that are in the direct path of the evacuation route. In the event of a flood, not only can residents not evacuate using the emergency route, but the rescue workers also cannot assist these residents because they are in a high vulnerability area.

However, it is important to note that critical facilities within the Township are not located in high hazard areas. The schools and hospitals are distant enough that they are not immediately affected by sea level rise up to three feet. That being said, some facilities are close to dangerous areas that could cause future complications.

Any sea level rise (SLR) starting from one foot could impact Brick Township. Areas near the Metedeconk River, Barnegat Bay, and Atlantic Ocean are in an area of high vulnerability as sea level rises. Even the relatively low end scenario of one foot of sea level rise will require adaptation as numerous streets and low lying bayside communities will see fairly regular tidal inundation. Jacques Cousteau National Estuarine Research Reserve (JCNRR) best estimates that the arrival of one foot of

sea level rise will happen before 2050. As sea level rise is expected to accelerate this century, three feet of sea level rise is likely before 2100 (see table below).

Total sea level rise projections for New Jersey.			
	Total cm	Total inches	Total feet
2050 best	40	16	1.3
2050 low	23	9	0.7
2050 high	60	24	2.0
2100 best	96	38	3.1
2100 low	50	20	1.6
2100 high	147	58	4.8
All values with respect to a year 2000 baseline.			

NJ sea level rise projection ranges and best estimates. Miller AK, Kopp RE, Horton BP, Browning JV and Kemp AC. 2013. A geological perspective on sea-level rise and its impacts along the U.S. mid-Atlantic coast. *Earth's Future* 1(1):3-18.

Two feet of sea level rise sees regular tidal flooding slowly impacting more and more of the bayside communities. Three feet of sea level rise will result in regular tidal inundation in almost all waterfront communities.

A three feet rise will also begin to impact the evacuation route of Mantoloking Road. Interestingly, the barrier island area of Brick appears to be one of the last waterfront areas impacted by sea level rise. However, any level of inundation due to regular tidal flooding will have large scale impacts on emergency response on the Barrier Island and the main land. Sea level rise will also result in greater impact of storm events as a surge atop a higher sea level will be more dramatic than the same surge atop a lower sea level. Necessary adaptation to sea level rise and the heightening of other hazards such as surge must be taken into account when planning for the future.

One-, Two-, and Three- foot SLR Maps are included within Appendix A of this report.

4.2 Adapting for Flood and Sea Level Rise

In order to adapt to potential sea level rise, the Township and residents may utilize the following strategies:

- Promote shore protection techniques and open space preservation that allow beach and coastal wetlands to attenuate wave action as sea level rises.
- Identify and improve evacuation routes and evacuation plans for low-lying areas, to prepare for increased storm surge and flooding.
- Protect and restore stream and river banks to ensure good water quality and safe guard water quantity.
- Elevate homes and roadways that fall within floodplain areas.
- Promote elevation, wet floodproofing, dry floodproofing and other storm protection measures for businesses, as appropriate.
- Concentrate development in areas that will not be affected by sea level rise.
- Retreat-The Township or State may buy out homeowners, without the use of eminent domain, in particularly vulnerable locations to turn the areas into parks or rehabilitated ecosystems.

4.3 Land Use Vulnerabilities Exacerbated by the Storm

Superstorm Sandy exacerbated the vulnerability of homeowners and business owners located in low-lying areas to the flooded waterways that border and run through the Township. Additionally, extended loss of power, especially on the Barrier Island, stifled the process of returning residents back into their homes.

Additionally, Superstorm Sandy revealed how vulnerable critical components of sewer infrastructure are to storms that cause coastal flooding, carry heavy precipitation, and temporarily cut access to the electricity grid. As a result of sewer overflow, pathogens and bacteria from inadequately treated sewage can impact human health and the health of aquatic ecosystems.

4.4 Opportunities Created

The impacts of Superstorm Sandy have emphasized the areas in which the Township of Brick may improve its resiliency in future storm events which include but are not limited to:

- Promoting public awareness of hazard mitigation and resiliency issues;

- Focusing public agencies on community vulnerabilities to hazards such as flooding;
- Encouraging regional solutions to flood- and storm-related impacts;
- Ensuring that future capital projects are designed and constructed to incorporate features that are resilient to storm- and flood-related impacts; and
- Focusing on resiliency when rebuilding damaged facilities.
- Integrating hazard mitigation into Master Plan elements.
- Developing ordinances that are targeted at protecting public and private property from flood hazards.
- Maintaining and improving stormwater infrastructure to avoid hazardous overflow during major storm events.
- Greater awareness of environmental protection and stewardship to provide for a more sustainable future.
- Continue to maintain effective emergency services.

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5. Integration of Existing Planning Documents

The following section examines the adequacy of the existing municipal and county planning and emergency management documents. These documents describe the changes needed to support and achieve municipal planning goals, to address municipal needs related to post storm recovery and to mitigate future storm impacts. Each document analysis includes existing goals and objects that are imperative to hazard mitigation and recovery planning and should continue to shape decision-making. Recommendations are additionally provided to strengthen each document, if necessary.

5.1 Township Documents

Brick Township Master Plan, 2007

The Brick Township Master Plan identified the following general goals and objectives that should remain high priorities when planning for future natural disasters.

Environment

- To implement the Open Space & Recreation Plan.
- To encourage the continued Municipal acquisition and recreational development of vacant waterfront property for public access & use.
- To Implement the Conservation & Open Space Plan Element.
- To implement the conservation plan by protecting the environmentally sensitive lands as delineated on the Master Plan
- To provide for additional open space and recreational areas and to provide incentives for dedication to the Township of lands for those purposes.
- To implement the Municipal Stormwater Management Plan Element.
- To improve surface & groundwater quality through the completion of the Sewerage Infrastructure Improvement Act requirements by adhering to the NJDEP Water Quality Standards and Municipal Stormwater Regulations Program.

- To discourage direct discharge of storm water into bodies of water, to discourage the off-site flow of storm water and to require on-site retention in underground facilities whenever feasible.
- To implement the Community Forestry Management Plan Element
- To protect environmentally critical areas and preserve woodlands and open space and to encourage the beautification of the Township through landscaped areas.
- To encourage energy conservation policies through techniques as applied in Site Plan and Subdivision Review and other governmental action.
- To improve the quantity and quality of landscaping and buffer plantings.
- To protect riparian buffers from encroachment from new development.

Development

- To encourage upgrading of residential neighborhoods through housing rehabilitation increased Code Enforcement, landscape improvements, and infrastructure maintenance.
- To allocate proper areas of the remaining vacant land for future community facilities including school sites, recreation, open spaces, fire and first aid stations, future water resource facilities and sites for government functions.
- To provide affordable housing through continued implementation of the Township's Housing Element and Fair Share Plan.
- To revise the "Lot Area" definition to reflect physical impairments and encumbrances on individual parcels of land including but not limited to steep slopes, wetlands, deed restrictions and easements.

Land Use Element, 2007

The Land Use Plan for the Township of Brick is a guide for the future physical, economic, social and recreational development of the Township's remaining vacant land and for the redevelopment of inappropriately developed or substandard property. This Plan was prepared with an emphasis on the

continued preservation of open space within the Township in an effort to sustain the current environment and quality of life for its residents.

The Township of Brick has the most waterfront of any municipality in New Jersey; therefore, protection of this resource is a paramount priority. The current trend of land use decisions within the Township have focused on decreasing the amount of impervious cover on older, antiquated, developed commercial areas in order to improve water quality and decrease non-point source pollution to the receiving waterways.

Conservation & Open Space Element, 2007

Brick Township includes many critical and unique natural environments. The conservation of these areas minimizes the impact of development upon the quality of life for all of the Township's residents and creates a desirable suburban destination. The purpose of the Conservation and Open Space Plan is to provide for the recognition, protection and preservation of these natural resources. The following goals and policies are set forth in the Conservation and Open Space Plan:

- Identify and map critical environmental resources including wetlands, floodplains, soils, rare and endangered species, aquifer recharge areas, surface water systems, watersheds and habitats;
- Provide for floodplain overlay zoning;
- Prepare and implement a plan for the preservation of stream corridors, greenways and greenbelts;
- Encourage acquisition and expansion of preserved areas that encourages consolidation of contiguous areas of open spaces; and
- Create linkages between recreational and conservation areas.

Recommendations

It is recommended that the Conservation & Open Space Element be updated to include the following:

- Based on the findings of the Jacques Cousteau Flood Mapper program, discussed in 3.5 of this report, areas should be identified to acquire or preserve areas of the Township, without the use of eminent domain that may be potentially affected by sea level rise or major storm events.

- Include potential projects for the New Jersey Department of Environmental Protection's Coastal Blue Acres program to acquire lands, without the use of eminent domain, that have been damaged by storms, that may be prone to storm damage, or that buffer or protect other lands from storm damage, for recreation and conservation purposes.
- Open Space Management based on suggestions from the FEMA Community Rating System such as, but not limited to: natural shoreline protection; deed restrictions; natural functions open space; special flood-related hazards open space; and open space incentives.

Brick Township Stormwater Management Plan, 2007

The Stormwater Management plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major developments, defined as projects that disturb one or more acres of land. These standards are intended to minimize the adverse impacts of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides base flow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities.

Under New Jersey's Municipal Land Use Law, Chapter 291 N.J.S.A. 40:55D-95 Storm Water Management Plan Requirements, "A storm water management plan and storm water management ordinance or ordinances shall conform to all relevant Federal and State statutes, rules and regulations concerning storm water management or flood control and shall be designed:

- a. To reduce flood damage, including damage to life and property;
- b. To minimize storm water runoff from any new land development;
- c. To reduce soil erosion from any development or construction project;
- d. To assure the adequacy of existing and proposed culverts, bridges and other in-stream structures;
- e. To maintain groundwater recharge;
- f. To prevent, to the greatest extent feasible, an increase in non-point pollution;

- g. To maintain the integrity of stream channels for their biological functions, as well as for drainage; and
- h. To minimize public safety hazards at any storm water detention facilities constructed as part of subdivision or pursuant to a site plan.

In addition, the Township further outlines goals to:

- a. Minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water; and
- b. Protect public safety through the proper design and operation of stormwater basins.

Recommendations

It is recommended that the Township expand the Best Management Practices (BMP) subsection of the Stormwater Management Plan to emphasize the importance and to include descriptions of green stormwater management techniques. BMP's such as bio-swales, rain gardens and vegetative rooftop covers should be strongly encouraged throughout the Township in order to reduce stormwater run-off and non-point source pollution.

The Township may additionally consider supplementing the Stormwater Management Plan to include details on drainage system maintenance to ensure that the community keeps channels and storage basins clear of debris so that flood carrying and storage capacity are maintained. The Community Rating System offers points for having a capital improvement program that corrects drainage problems.

Community Forestry Element, 2007

The Community Forestry Element has been designed to maintain and promote a healthy, safe and sustainable shade tree resource that will physically and aesthetically benefit the community and its residents in the most cost effective manner possible. The Township is in the process of updating the Community Forestry Element to include a five-year management action plan.

Land Development Ordinance

Brick Township's Land Use Ordinances states specific intents and purposes targeted at protecting environmentally critical areas from the negative effects of development, including:

- Encourage municipal action to guide the appropriate use and development of all lands in Brick in a manner which will promote public health, safety, morals and general welfare.
- Provide adequate light, air and open space.
- Ensure that the development of individual municipalities does not conflict with the development and general welfare of neighboring municipalities, the county and the state as a whole.
- Promote the establishment of appropriate population densities and concentrations that will contribute to the well-being of persons and neighborhoods in the community and preservation of the environment.
- Provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all Brick citizens.
- Promote a desirable visual environment through creative development techniques and good civic design and arrangements.
- Promote the conservation of open space and valuable natural resources and to prevent urban sprawl and degradation of environment through improper use of land.

Additionally, the Township has a specific flood control ordinance which states that: "The land subject to flooding and land deemed by the Planning Board to be uninhabitable shall not be platted for residential occupancy, nor for such other uses as may increase danger to health, life or property or aggravate the flood

hazard, as set by the one-hundred-year flood level. Floodplain revisions shall be subject to the Soil Conservation Service soil survey of the New Jersey Department of Environmental Protection. However, such land within the plat may be set aside for such uses as will not be endangered by periodic or occasional inundation or will not produce unsatisfactory living conditions.”

Recommendations

In addition to the current code, the following ordinances are recommended to be included for additional Flood Hazard Protection:

- Supplement Flood Prevention Ordinance or add regulations to Township Code requiring removal or securing of boats, floating docks, gangways, etc. from water bodies within a specified period from the issuance of an order from Emergency Management personnel. Establish penalties for owners of floating objects removed by the Township due to compliance issues in order to prevent property damage during storm events.
- Amend Flood Prevention Ordinance or add regulations to Township Code prohibiting the construction of occupied structures seaward of the mean high water line or on piers or platforms except for essential structures for “functionally dependent uses” such as marinas or boatyards.
- Develop design standards to address the visual impact of mitigation measures such as elevating bulkheads, elevating buildings on foundations or pilings, etc. Such design standards might include requirements for skirting exposed pilings, façade treatments on foundations, parking under the lowest habitable floor, using exterior decking to stagger stairways to elevated first floor levels, etc.
- Develop a Fertilizer Application Ordinance to control reduce the amount of damaging non-point source pollution during storm events.

Emergency Operations Plan

The Emergency Operations Plan (EOP) was compiled to protect life and property in natural disasters, technological disasters and national security crises by coordinating response activities of municipal and volunteer entities to ensure their optimum use. It provides for actions to be taken to mitigate, prepare for, respond to, and recover from the effects of an emergency or disaster occurrence.

5.2 Contiguous Municipality Documents

The Township should coordinate with adjacent municipalities regarding land use goals and objectives, watershed management, evacuation routes and emergency management. The Township should look to coordinate with contiguous municipalities, Ocean County and the State regarding ongoing and planned infrastructure and land development projects to ensure that infrastructure and land use changes will be reflected in emergency response training, evacuation route planning, etc.

5.3 County Documents

Disaster Mitigation should be considered on a regional level. Therefore, as the Township looks to update the Master Plan, County-wide documents should be consulted and integrated when emergency planning and recovery policies are developed.

Ocean County Master Plan, 2011

The Ocean County Comprehensive Master Plan is a policy statement, expressed in both written and graphic form, about the future development of the County. The goals and major responsibilities of the Ocean County Planning Board are to prepare and adopt comprehensive objectives embodied in this Plan. The objectives are intended to address issues of regional concern and to provide a regional perspective on land use and other issues facing Ocean County. Historically, the primary responsibility for land use decisions has been entrusted to municipalities through local master planning, zoning and subdivision and site plan controls. Track changes in land use and land cover, as well as areas preserved as permanent open space.

Land Use Recommendations

- Continue to work with the Department of State and other relative agencies on the State Strategic Plan and other State Planning initiatives.
- Continue to work with the County Planners Association, State agencies and applicable municipalities to encourage realistic planning initiatives that can be adopted and maintained.
- Encourage municipalities to grow in a fashion that is true to smart growth principals and Town Center design standards, allowing for a mix of land uses in a singular area to increase accessibility by all residents.
- Work with the Pinelands Commission and applicable towns to preserve and protect the important environs and species located in the Pinelands, while coordinating long range land use and growth management plans.
- Support the tourism amenities and needs of shore towns and continue to facilitate the protection and replenishment of County's beaches and shoreline areas.
- Ensure public access is protected and enhanced where appropriate.

Open Space, Parks and Recreation Recommendations

- Continue to support the Ocean County Natural Lands Trust Fund Advisory Committee and its mission to identify and acquire natural areas that are environmentally sensitive, ecologically important, and/or contiguous to existing preserved open space.
- Maintain an ongoing evaluation of the recreational needs of Ocean County residents and assist in identifying new park and open space areas as necessary.
- Continue to work with all Federal, State, local and non-profit partners to acquire open space and maximize financial resources available for preservation.
- Continue to seek and support donations to the various open space programs in Ocean County.

Stormwater Management Recommendations

- Continue stormwater basin restorations and ongoing partnerships to identify and restore impaired stormwater management facilities to improve infiltration and reduce runoff throughout the watershed.

- Continue to work with the Barnegat Bay Partnership to target research and assessment efforts.
- Coordinate County, State and Federal funding to maximize the effectiveness of stormwater protection and rehabilitation efforts.
- Encourage land use planning strategies such as low impact design to preserve open space and maximize the natural infiltration of stormwater.
- Explore and assess best management practices used by other areas in the country to address stormwater management.
- Continue to take a proactive approach to the NJ Soils Health Legislation by working with the Ocean County Soil Conservation District to promote construction practices to maintain soil health and reduce compaction.
- Encourage and support compliance with the NJ Fertilizer Law.
- Continue to assess structural and nonstructural options for stormwater management to increase infiltration, remove debris and reduce nutrient and pollution loads.
- Work with partners to expand public education programs on stormwater management, targeting property owners, engineers, developers and local officials.
- Encourage compliance with new legislation that requires the NJ Department of Transportation to address stormwater management issues on state highways including Routes 9, 35, 37, 70, 72, 88 and 166.

Ocean County Multi-Jurisdictional Natural Hazard Mitigation Plan, 2013

The Ocean County Multi-Jurisdictional Natural Hazard Mitigation Plan was adopted in 2013 in accordance with the Disaster Mitigation Act of 2000. The HMP was developed for the purpose of:

- Providing a blueprint for saving lives and reducing property damage from the effects of future natural and man-made disaster in Ocean County;
- Qualifying the County for pre-disaster and post-disaster grant funding;
- Complying with state and federal legislative requirements related to local hazard mitigation planning;
- Demonstrating a firm local commitment to hazard mitigation principles; and
- Improving community resiliency following a disaster event.

The Plan represents the collective efforts of citizens, elected and appointed government officials, business leaders, volunteers of non-profit organizations, and other stakeholders. The Plan identifies natural hazards that could affect the County's jurisdictions, evaluates the risks associated with these hazards, identifies the mitigation actions to lessen the impacts of a disaster on Ocean County communities, and prioritizes them based on the municipal master plans and other planning documents.

Any proposed implementation strategies that are undertaken by the Township should first be presented to the County's Office of Emergency Management and Department of Planning to ensure that the Township's vision is consistent with that of the County and adjacent municipalities.

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6. Alternative Assessment

This alternative assessment will be used to determine the potential effects on the human and natural environment should a “no-action” alternative be utilized and the Township chooses not to plan for future storm events. This analysis, along with other pertinent information will guide the Township’s decision makers about whether or not to implement the proposed action alternatives. The action alternatives are analyzed in comparison to a no-action alternative in order to determine potential side effects.

6.1 No-Action Alternative

Should a “no-action” alternative be chosen, the Township could see the following potential impacts:

- Brick Township would lose out on funding at the State and Federal level to complete life- and property- saving hazard mitigation projects;
- Portions of the Township could continue to see severe flooding during major storm events;
- Major roadways and evacuation routes could be compromised during storm events if not redesigned to avoid flooding issues;
- Risk to health, safety and welfare of Township residents
- Potential loss of tax base due to abandoned and damaged properties
- Flood Insurance rates under the Biggert-Waters Act will continue to increase for structures that are non-compliant with current flood elevation requirements.

6.2 Action Alternative

Section 6 of this Report outlines implementation strategies to prepare the Township for future natural hazards. These recommendations are the action alternative to avoid the potential impacts as listed above.

7. Implementation Strategy

Based on the analysis of relevant planning documents, reports and ordinances in addition to recovery work currently underway throughout the Township, the following actions are recommended.

7.1 General

- a. Pursue State and Federal grants, and grants from non-government organizations, to fund recovery and resiliency projects and initiatives.
- b. Leverage the Ocean County Long Term Recovery Group and other organizations to assist in the recovery effort. Maintain open communications with these entities in order to facilitate the recovery process.
- c. Pursue Post-Sandy Planning Recovery Assistance Grants from the NJDCA for design standards, ordinances, master plan amendments and related items as described in more detail in the subsections below.
- d. Complete a capital improvement program to prepare shovel ready projects.

7.2 Participation in FEMA's Community Rating System (CRS)

The CRS program was implemented to recognize and encourage community floodplain management activities. Under the CRS, a municipality receives discounts on flood insurance premium based on its class rating and its implementation of local mitigation, outreach, and educational activities that go well beyond the minimum NFIP requirements. Participation in the CRS provides a multitude of benefits to the community in addition to the insurance premium discounts. These benefits include:

- Money staying in the community instead of being spent on insurance premiums;
- Better organization of local flood programs;
- Enhanced public education which will build a knowledgeable constituency interested in supporting and improving flood protection measures;
- Reduction of damage to property and public infrastructure and reduction of human suffering should another major storm even occur; and
- Protection of the environment

Brick Township is currently working towards compliance with the CRS program and plans to become compliant through the aid of SRPR funding. Recommended tasks

that will move Brick Township towards CRS compliance are integrated throughout the following sections and are designated with (CRS) after the project description. The Township additionally plans to actively pursue Federal funding on behalf of residents through a Municipal Hazard Mitigation Grant Program.

7.3 Master Plan

Amend existing Master Plan Elements

Conservation and Open Space Element

- a. Based on the findings of the Jacques Cousteau Flood Mapper program, discussed in 3.5 of this report, suitable areas in the Township should be identified for acquisition or preservation, without the use of eminent domain, which may be potentially affected by sea level rise or major storm events.
- b. Include potential projects for the New Jersey Department of Environmental Protection's Coastal Blue Acres program to acquire lands, without the use of eminent domain, that have been damaged by storms, that may be prone to storm damage, or that buffer or protect other lands from storm damage, for recreation and conservation purposes.
- c. Open Space Management based on suggestions from the FEMA Community Rating System such as, but not limited to: natural shoreline protection; deed restrictions; natural functions open space; special flood-related hazards open space; and open space incentives.

Stormwater Management Plan

- a. Expand the Best Management Practices (BMP) subsection of the Stormwater Management Plan to emphasize the importance and to include descriptions of green stormwater management techniques.
- b. Supplement the Stormwater Management Plan to include details on drainage system maintenance to ensure that the community keeps channels and storage basins clear of debris so that flood carrying and storage capacity are maintained. The Community Rating System offers points for having a capital improvement program that corrects drainage problems.

Adopt new elements to the Master Plan

- a. Develop and adopt a Green Buildings and Sustainability Element of the Master Plan.
- b. Develop and adopt a Hazard Mitigation Element into the Master Plan. This Element should focus on hazard mitigation and community resiliency at both the local and regional level and be consistent with the County Hazard Mitigation Plan.
- c. Prepare a Municipal Public Access Plan (MPAP) and a Community Vulnerability Assessment (CVA) in accordance with NJDEP guidelines to enhance public access to tidal waters in a comprehensive manner. Pursue grants for the preparation of the MPAP and CVA from NJDEP.
- d. Assess Land Use regulations and zoning to place more stringent requirements in flood prone areas.

Neighborhood Plans

- a. Develop specific strategic plans for neighborhoods most severely impacted by Sandy, including neighborhoods along the Barnegat Bay. Pursue Post-Sandy Planning Recovery Assistance Grant from the NJDCA for this project.

Action Plan- Master Plan					
Project	Major Tasks	Estimated Cost	Potential Funding Sources	Estimated Implementation Dates	Estimated Completion Dates *
Amendments to existing Master Plan Elements	Plan preparation, plan adoption	\$10,000.00	PSPAG	November 2014	May 2015
Green Buildings and Sustainability Element	Plan preparation, plan adoption	\$20,000.00	Sustainable Jersey/ PSPAG	April 2015	July 2015
Hazard Mitigation Element	Public input, plan preparation, plan adoption	\$50,000.00	PSPAG	November 2014	April 2015
Adopt Specific Neighborhood Plans	Public input, plan preparation, plan adoption	\$30,000.00	PSPAG	January 2015	June 2015
Adopt a Floodplain Management Plan (CRS)	Floodplain study, plan preparation, plan adoption	\$50,000.00	PSPAG	September 2014	March 2015
Municipal Public Access Plan and Community Vulnerability Assessment	Public input, plan preparation, plan adoption	\$30,000.00	PSPAG	February 2015	June 2015

7.4 Ordinance Development

- a. Supplement Flood Prevention Ordinance or add regulations to Township Code requiring removal or securing of boats, floating docks, gangways, etc. from water bodies within a specified period from the issuance of an order from Emergency Management personnel.
- b. Amend Flood Prevention Ordinance or add regulations to Township Code prohibiting the construction of occupied structures seaward of the mean high water line or on piers or platforms except for essential structures for “functionally dependent uses” such as marinas or boatyards.
- c. Develop design standards to address the visual impact of mitigation measures such as elevating bulkheads, elevating buildings on foundations or pilings, etc.
- d. Develop a Fertilizer Application Ordinance to control reduce the amount of damaging non-point source pollution during storm events.
- e. Continue to evaluate the Township Code to ensure it reflects the latest requirements for flood prone areas as regulations change over time.

Action Plan- Ordinance Development					
Project	Major Tasks	Estimated Cost	Potential Funding Sources	Estimated Implementation Dates	Estimated Completion Dates *
Ordinance Development	Prepare and adopt ordinances	\$20,000.00	PSPAG	June 2015	December 2015

7.5 Capital Improvement

Develop a Capital Improvement Plan focused on Recovery and Mitigation

- a. Develop a five year plan for capital projects that will focus municipal capital investment on public facilities, fleets and equipment to build community recovery and resiliency. Pursue Post-Sandy Planning Recovery Assistance Grant from the NJDCA for this project. Representative Capital Improvement projects are shown below:
 - 1. Roadway elevation projects in low-lying areas;
 - 2. Improvements and retrofits to stormwater facilities;
 - 3. Improvements to wastewater management and sanitary sewer system;

4. Flood mitigation and resiliency projects;
 5. Land restoration projects;
 6. Community facilities and neighborhood revitalization projects;
 7. Purchase of emergency water vehicles; and
 8. Purchase of municipal back-up generators.
- b. Complete a Repetitive Loss Area Analysis including a detailed mitigation plan for areas identified from the analysis.

Action Plan- Capital Improvement					
Project	Major Tasks	Estimated Cost	Potential Funding Sources	Estimated Implementation Dates	Estimated Completion Dates *
Capital Improvement Plan	Plan preparation and adoption	\$30,000.00	PSPAG	November 2014	May 2015
Repetitive Loss Area Analysis (CRS)	Identify and analyze properties, prepare report	\$50,000.00	PSPAG	September 2014	March 2015

7.6 Communication and Preparedness

Outreach and Education

- a. Continue to monitor recovery and resiliency education and training opportunities for Township residents, business owners and municipal staff.
- b. Remain up to date on disaster preparedness protocol and policies.
- c. Maintain open communication with residents and business owners regarding aforementioned information via Township website, periodic e-mailings, social media, hand outs, etc.
- d. Coordinate with contiguous municipalities, Ocean County and the State regarding ongoing and planned infrastructure and land development projects to ensure that infrastructure and land use changes will be reflected in emergency response training, evacuation route planning, etc.
- e. Pursue Post-Sandy Planning Recovery Assistance Grant from the NJDCA for these projects.

Action Plan- Communication and Preparedness					
Project	Major Tasks	Estimated Cost	Potential Funding Sources	Estimated Implementation Dates	Estimated Completion Dates *
Public Outreach Program (CRS)	Design and carry out outreach programs	\$10,000.00	Sustainable Jersey	Ongoing	Ongoing
Flood Warning and Response (CRS)	Prepare pre-flood plan, develop flood protection website	\$10,000.00	FEMA, NJOEM	Ongoing	Ongoing

7.7 Resiliency and Sustainability

Sustainability should provide for, encourage, and promote the efficient use of natural resources and the installation and usage of renewable energy systems; consider the impact of buildings on the local, regional and global environment; allow ecosystems to function naturally; conserve and reuse water; treat storm water on-site; and optimize climatic conditions through site orientation and design.

Sustainable practice and design has the ability to promote resiliency by securing safety from fire, flood, panic, and other natural man-made disasters. The Township has been proactive in determining ways to increase the resiliency of its shore through techniques such as “living shorelines.”

Seek alternative “green” methods of infrastructure

- a. Encourage the implementation of Best Management Practices (BMP) such as grassed swales, riparian buffers and infiltration trenches where appropriate to reduce stormwater run-off during large flooding events.
- b. Maintain strategic acquisition of open space to enable coastal wetlands migration.

Improve Resiliency

- a. Encourage critical businesses such as supermarkets, gas stations and medical centers, to obtain emergency power building systems that can continue to operate should the power grid fail. This may include alternative energy such as solar, micro-grid and geothermal.
- b. Actively pursue Federal funding on behalf of residents through a Municipal Hazard Mitigation Grant Program.

Acquire Property through Coastal Blue Acres Program

- a. The New Jersey Department of Environmental Protection Coastal Blue Acres (CBA) program may be used to acquire properties, where appropriate. The CBA program helps municipalities and counties to acquire lands in coastal areas that have been damaged by storms, that may be prone to storm damage, or that buffer or protect other lands from storm damage, for recreation and conservation purposes. Eminent Domain will not be utilized as part of this initiative.
- b. Identify areas within the Township's designated Town Center that could potentially support concentrated, higher density planning projects such in order to offset the possible loss of ratables due to property acquisition.

Action Plan- Resiliency and Sustainability					
Project	Major Tasks	Estimated Cost	Potential Funding Sources	Estimated Implementation Dates	Estimated Completion Dates *
Open Space Preservation (CRS)	Acquire properties without eminent domain	TBD	NJDEP	Ongoing	Ongoing
Coastal Erosion Protection Maintenance (CRS)	Determine areas of improvement, determine protection measures and maintenance	TBD	National Fish and Wildlife Foundation, NJDEP	Ongoing	Ongoing
Retrofit traditional Stormwater Basins to reflect Best Management Practices	Design and implementation	TBD	HMGP, NJDEP	Ongoing	Ongoing
Property Acquisition through Blue Acres	Acquire land without eminent domain	TBD	NJDEP	Ongoing	Ongoing

7.8 Community Development

Affordable and Workforce Housing

- a. Continue to implement the Housing Element/Fair Share Plan and maintain compliance with current and future Affordable Housing regulations.
- b. Continue to promote a variety of high quality housing to meet the needs of all Township residents and property owners.

Housing Displacement

- a. Encourage residents to take advantage of Federal, State, County and Local programs that aid in home rebuilding and supporting distressed households. Make this information readily available to residents.
- b. Work with Federal, State and County to improve and streamline the process of returning residents to their homes following major natural disasters.
- c. Identify emergency housing capacity.
- d. Actively pursue Federal funding on behalf of residents through a Municipal Hazard Mitigation Grant Program.

Action Plan- Community Development					
Project	Major Tasks	Estimated Cost	Potential Funding Sources	Estimated Implementation Dates	Estimated Completion Dates *
Affordable Housing	Maintain compliancy with COAH rules and regulations	-	Affordable Housing Trust Fund	Ongoing	Ongoing
Housing Displacement	Continue to work with government and other entities to address housing needs	-	-	Ongoing	Ongoing
Hazard Mitigation Grant Program	Continue applying for funding	-	HMGP	Ongoing	Ongoing

7.9 Economic Development

Create a small business incubator and assistance program

- a. Attract new businesses to the Township in order to offset the potential loss of residential ratables along the coast.
- b. Continue to monitor recovery and resiliency opportunities for Township businesses.
- c. Provide extensive information and administrative support relative to existing small business assistance programs.
- d. Study the need for supplemental, locally administered programs of direct assistance to support the unique needs of emerging small businesses.
- e. Amend the Township’s Economic Development Element to include post-disaster recovery plans and recommendations for small businesses.

- f. Pursue Post-Sandy Planning Recovery Assistance Grant from the NJDCA for these projects.
- g. Pursue CRS certification and continue to strive for a lower rating to reduce flood interest rates for the community.
- h. Actively pursue Federal funding on behalf of residents through a Municipal Hazard Mitigation Grant Program.

Action Plan- Economic Development					
Project	Major Tasks	Estimated Cost	Potential Funding Sources	Estimated Implementation Dates	Estimated Completion Dates *
Create small business assistance programs	Determine the needs of small businesses	TBD	NJ Economic Development Authority	Ongoing	Ongoing
Amend Economic Development Element	Plan Preparation and Adoption	\$6,000.00	NJ Economic Development Authority	Ongoing	Ongoing

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6. Conclusion

As Brick Township recovers and rebuilds after Superstorm Sandy, steps must be taken to ensure that impacts of future disasters will be alleviated. Through the help of available Federal, State and County programs, Brick Township has many viable resources to continue moving forward. The recommendations outlined in this Strategic Recovery Planning Report will aid the Township in becoming more resilient to future natural disasters and in expediting recovery.

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Appendix A: Sea Level Rise Maps

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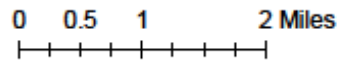
Brick Township 1 Foot Sea Level Rise

Legend

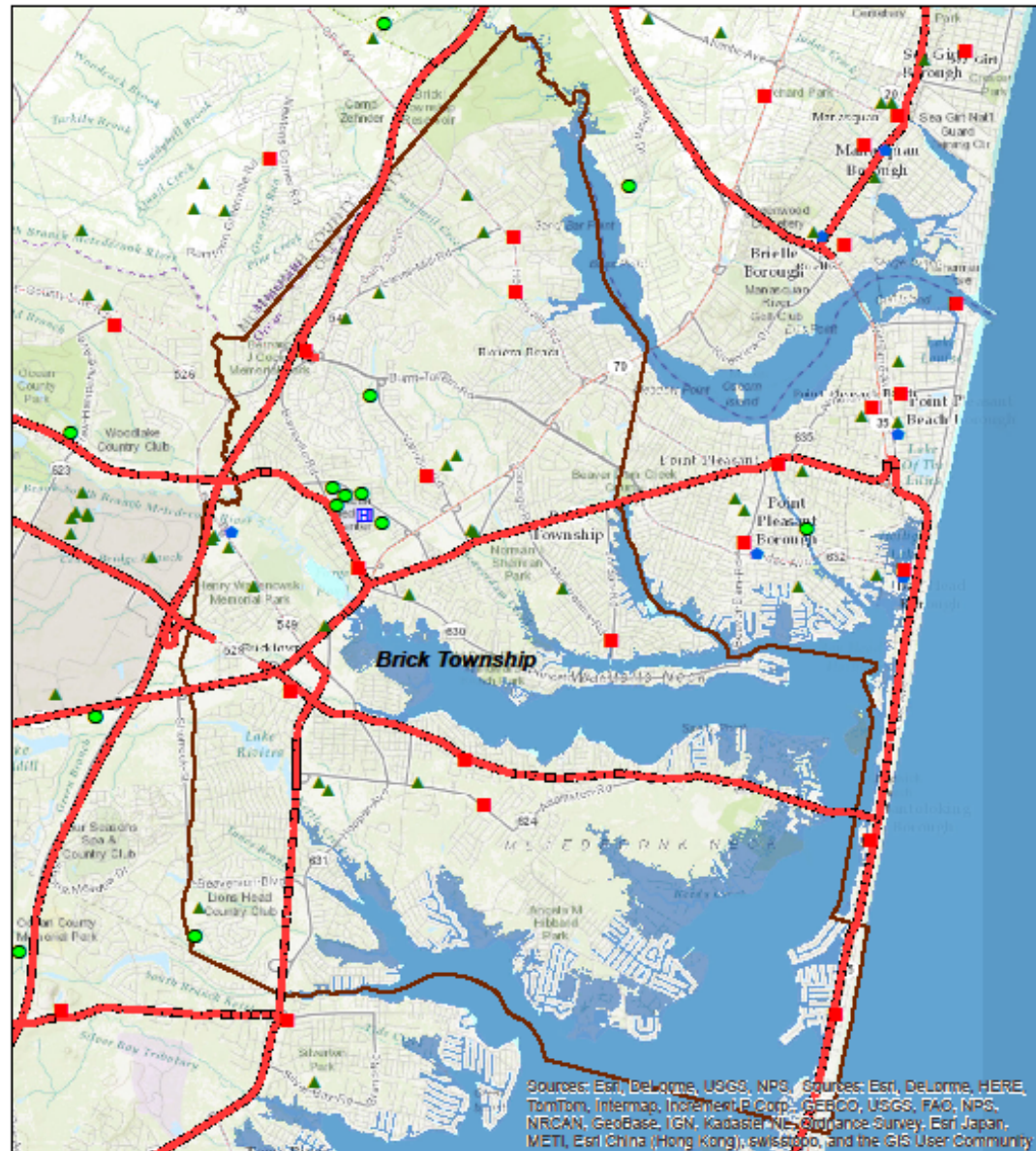
- ▲ Schools
- Fire Stations
- Law Enforcement
- Assisted Living
- H Hospitals
- Evacuation Routes
- Municipality
- 1ft SLR

Year 2010 Population: 75072

According to Kenneth G. Miller et al. in the 2013 study "A Geological Perspective on Sea-Level Rise and its Impacts Along the U.S. Mid-Atlantic Coast" a probable threat is the 1ft sea level rise condition that could be expected by 2050. This map depicts that sea level rise and is centered on target municipalities.



Map Author: Bryan Serino
Rutgers, New Brunswick
Center for Remote Sensing
and Spatial Analysis



Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, DeLorme, HERE, TomTom, Intermap, INCREMENTAL Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community

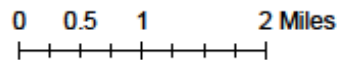
Brick Township 2 Feet of Sea Level Rise

Legend

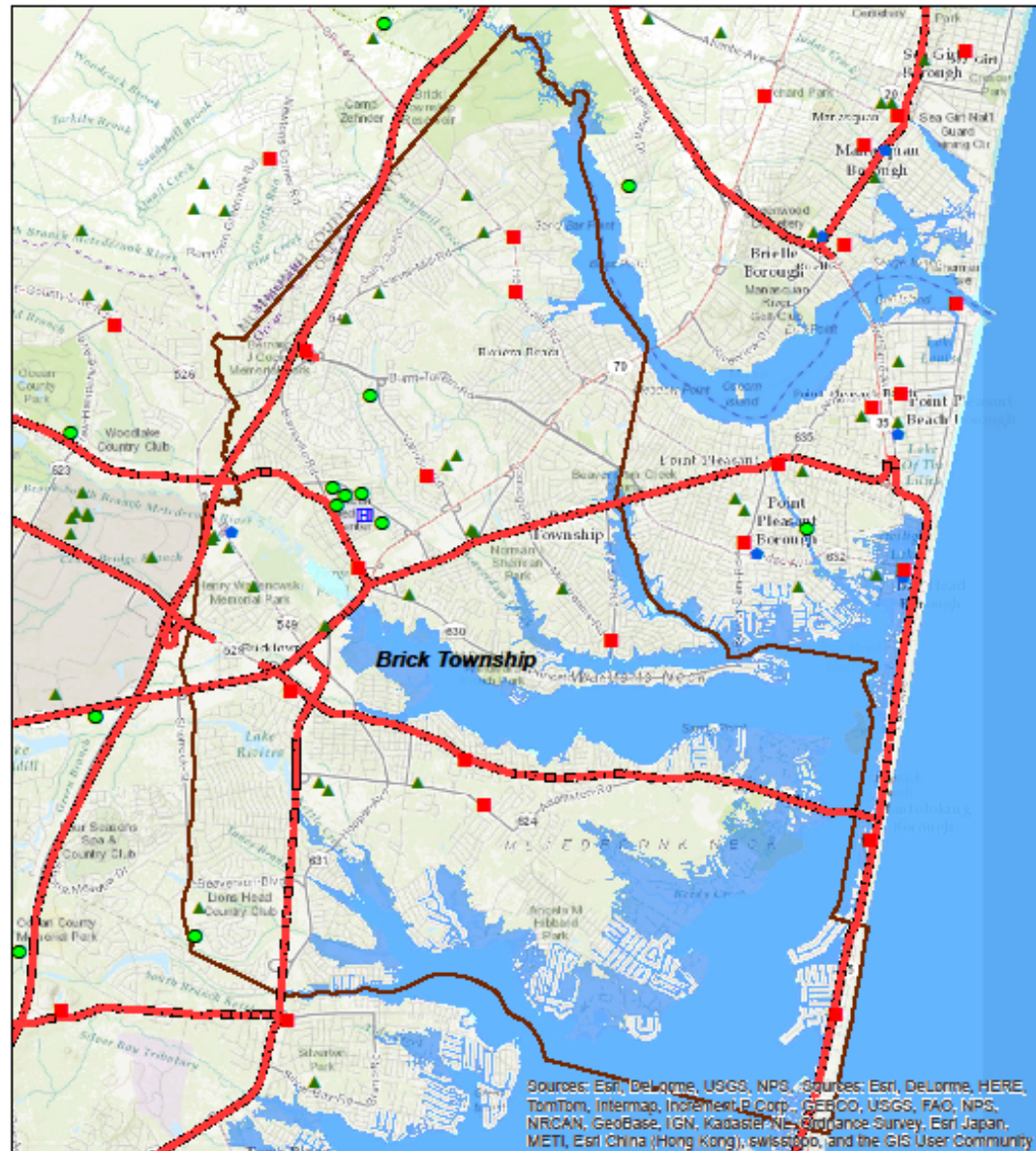
- ▲ Schools
- Fire Stations
- Law Enforcement
- Assisted Living
- H Hospitals
- Evacuation Routes
- Municipality
- 2ft SLR

Year 2010 Population: 75072

According to Kenneth G. Miller et al. in the 2013 study "A Geological Perspective on Sea-Level Rise and its Impacts Along the U.S. Mid-Atlantic Coast" a probable threat is the 1ft sea level rise condition that could be expected by 2050. This map depicts that sea level rise and is centered on target municipalities.



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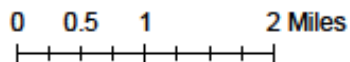
Brick Township 3 Feet of Sea Level Rise

Legend

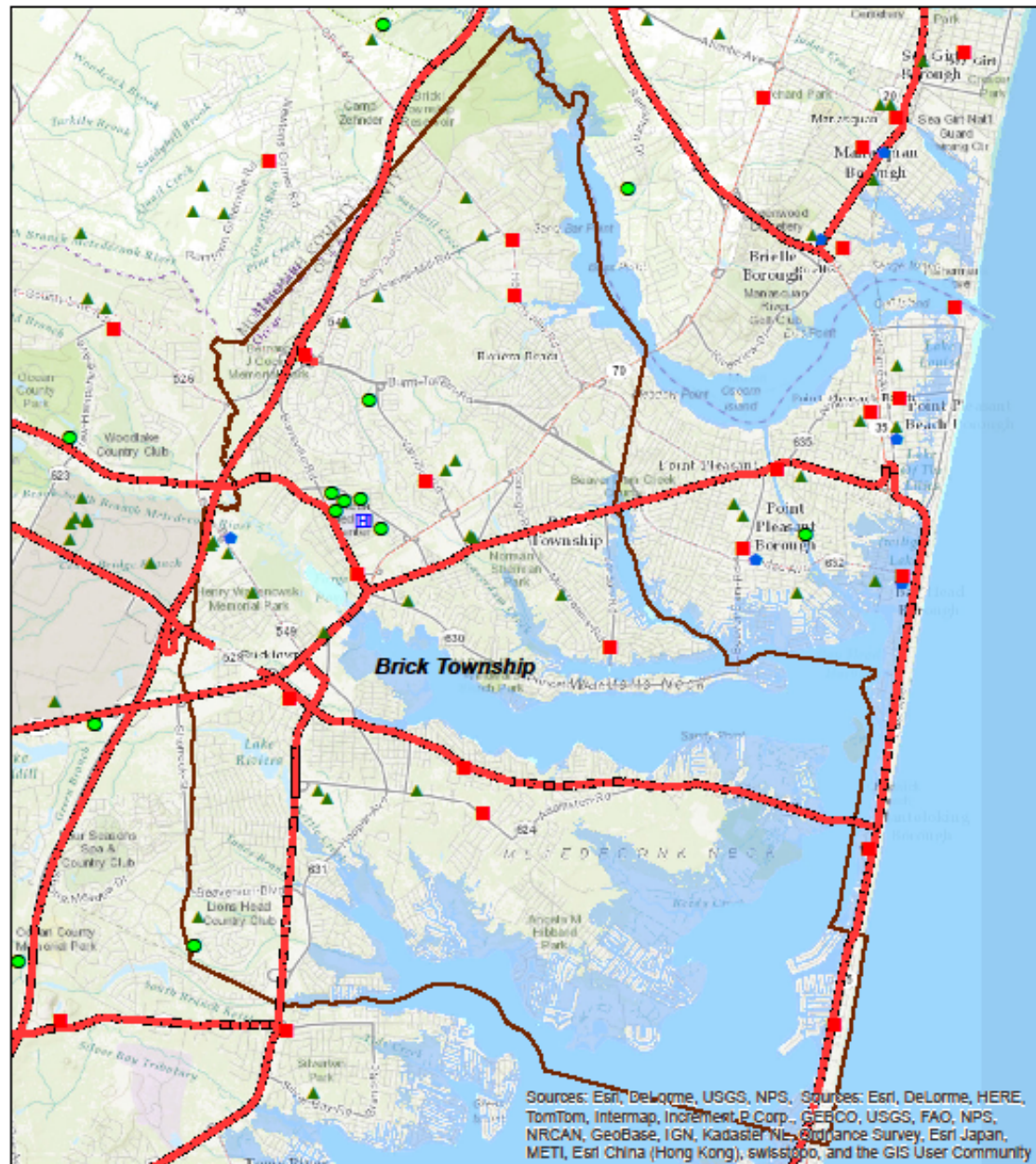
- ▲ Schools
- Fire Stations
- Law Enforcement
- Assisted Living
- H Hospitals
- Evacuation Routes
- Municipality
- 3ft SLR

Year 2010 Population: 75072

According to Kenneth G. Miller et al. in the 2013 study "A Geological Perspective on Sea-Level Rise and its Impacts Along the U.S. Mid-Atlantic Coast" a probable threat is the 1ft sea level rise condition that could be expected by 2050. This map depicts that sea level rise and is centered on target municipalities.



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Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, DeLorme, HERE, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community

