Hudson County Strategic Recovery Report

Post Superstorm Sandy Planning Assistance

Submitted to the New Jersey Department of Community Affairs

Prepared by the Hudson County Division of Planning

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I. Background

Hudson County is the smallest, most urbanized and most densely populated county in the State of New Jersey. Often referred to as part of New Jersey's "Gold Coast", the County comprises 12 incorporated municipalities, located in the northeastern region of New Jersey within the New York Metropolitan Statistical Area (as designated by the US Census Bureau). The County's urbanized core is comprised of the Cities of Hoboken and Jersey City. The northern swath of the County consists of the five densely populated communities of the Towns of Guttenberg and West New York, Townships of North Bergen and Weehawken, and the City of Union City. The City of Bayonne comprises the County's southern peninsula. West Hudson consists of the County's smaller, less densely populated areas and includes the Borough of East Newark, Town of Harrison, and the Town of Kearny. The northwestern area of the County is comprised of the Town of Secaucus.

The land area of Hudson County is 46.6 square miles, making it the smallest of New Jersey's 21 counties. With the 2010 Census counting 634,266 inhabitants and an average population density of 13,731.4 persons per square mile , Hudson County is the most densely populated county in New Jersey and the sixth most densely populated county in the country, trailing only four of New York City's boroughs and San Francisco County, California.

The County is a coastal peninsula bounded by the Hudson River to the east, the Kill Van Kull strait and the Upper New York Bay to the south, and the Passaic River and Newark Bay to the west. The Hackensack River also runs through the center of the County from north to south. The County is divided into four tidally influenced watersheds: the Hackensack Watershed to the north, the Passaic River watershed to the west, the Rahway River/Arthur Kill/Kill Van Kull watershed to the south and the Hudson River to the east. Newark Bay is located at the southwestern end of the County and there are four creeks, which are tributaries to the Hackensack River, including the Penhorn Creek, the Cromakill Creek, Bellmans Creek and Mill Creek.

The climate is typical of the Middle Atlantic seaboard, with the winters influenced by cold dry air masses, which have their origin over sub-polar continental regions, and summers affected by warm, humid air masses from sub-tropical regions, modified by their passage over land surfaces. The vegetation consists of planted lawns, trees and shrubbery and is typical of residential and commercial areas. The average annual rainfall averages between 43 and 47 inches and snowfall averages about 30 inches per year. The average annual maximum temperature is 60.13 and the average annual minimum temperature is 45.08 degrees Fahrenheit.

Hudson County, despite its already high levels of density and limited developable space, continues to see high rates of population growth. The 2010 Census estimated the New Jersey population at 8,791,894 and expected the state to grow by 1.4 million people by the year 2025. From 1990 to 2000 Hudson County's population grew 10 percent, reaching a population of 608,975, while New Jersey had only an 8.85 percent

increase. In 2010, the County's population jumped to 634,266, up 4.2% from 2000, according to the 2010 U.S. Census. This population change was highlighted by a significant increase in the city of Hoboken's population as it reached 50,005, up 29.6% from 2000. The result of this increasing population size and stable land area is an intensification of the County's already high density. This trend is expected to continue, with the North Jersey Transportation Planning Authority ("NJTPA") and New York Metropolitan Transportation Council ("NYMTC") predicting Hudson County's population will rise to more than 800,000 people by the year 2040. Recent data supports this prediction of an increase in Hudson County's population: The 2011 American Community Survey 1-year total population estimate was 652,302.

II. Vulnerability

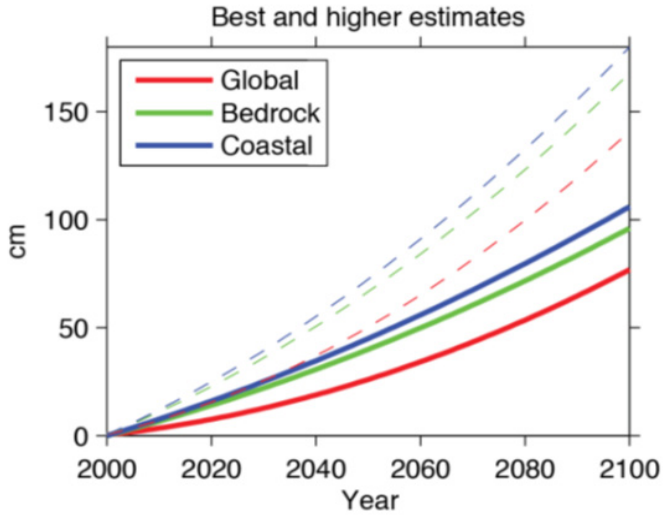
The impact of a disaster event is a function not only of the seriousness of the hazard but also of the vulnerability of the affected area. This section will address the preexisting conditions that make the Hudson County region especially vulnerable to natural hazards. These conditions exacerbated the damages suffered during Superstorm Sandy, and would likely similarly aggravate the effects of future disaster events.

Vulnerability as a concept includes aspects of geography, regional socioeconomic characteristics, physical, communications, and critical infrastructure as well as a myriad of less obvious fracture lines of regional weakness.

Climate Change

Hudson County is on the front lines of climate change, surrounded as it is by three rivers and two bays and just miles from the Atlantic Ocean. The county will see direct impacts from both rising sea levels and more intense storms, as well as from the combined impacts of the two.

Currently, the best estimate for sea level rise in NJ is 1.3' by 2050 and 3.1' by 2100. In an unlikely worst case scenario, with all systems near physical limits, New York City – and Hudson County —could see 2.9 meters of sea level rise by 2100 . A 2013 research article by scientists from the Rutgers Department of Earth and Planetary Sciences states that by 2100, it is expected that a "2 to 5 year storm" will have the flooding of a "100 year storm"—meaning that, since the storm surge builds on the existing sea level, less of a storm surge will be required to reach higher water levels (modified after Psuty, 1986 Miller et al., in review). Sea level rise will increase the floodplain acreage within Hudson County, thus increasing the population and property exposed to flooding risk.



Best (solid) and high (dashed) sea-level projections
Source: Miller et al., in review

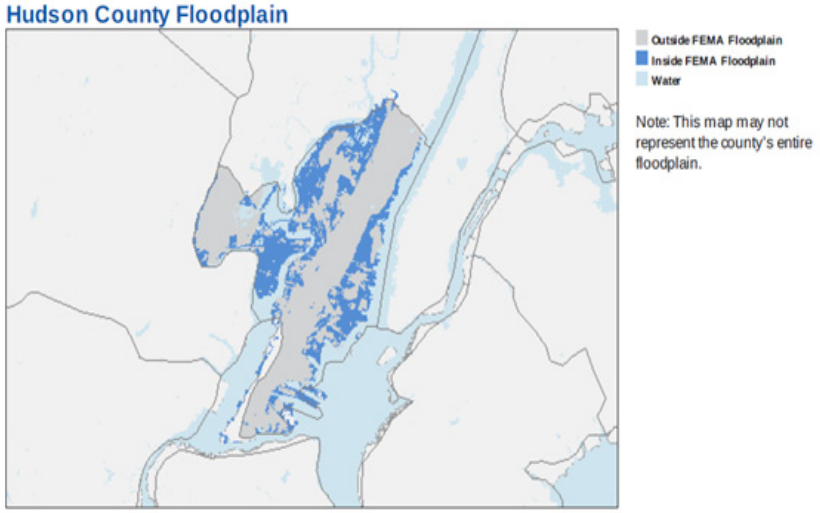
	Total
2050 best	1.3 ft (0.40 m)
2050 low	0.7 ft (0.21 m)
2050 high	2.0 ft (0.61 m)
2100 best	3.1 ft (0.94 m)
2100 low	1.6 ft (0.49 m)
2100 high	4.8 ft (1.46 m)

NJ projections: Global + regional subsidence + local
Source: Miller et al., in review

Geography

A substantial portion of Hudson County is geographically exposed to flooding. Much of the region was originally low-lying marshland outside of the north-south Palisades ridge and the western part of Kearny. Within Hudson County, 10,034 acres, or 34% of the county's total acreage, lies inside the FEMA defined floodplain.

This exposure translates directly to vulnerability for New Jersey's most densely populated county. Of Hudson County's floodplain area, 80%, or a total of 8027.2 acres, is classified by NOAA as "developed." This puts both people and property within the developed floodplain zone at risk in the case of a disaster, or even relatively routine flood events.

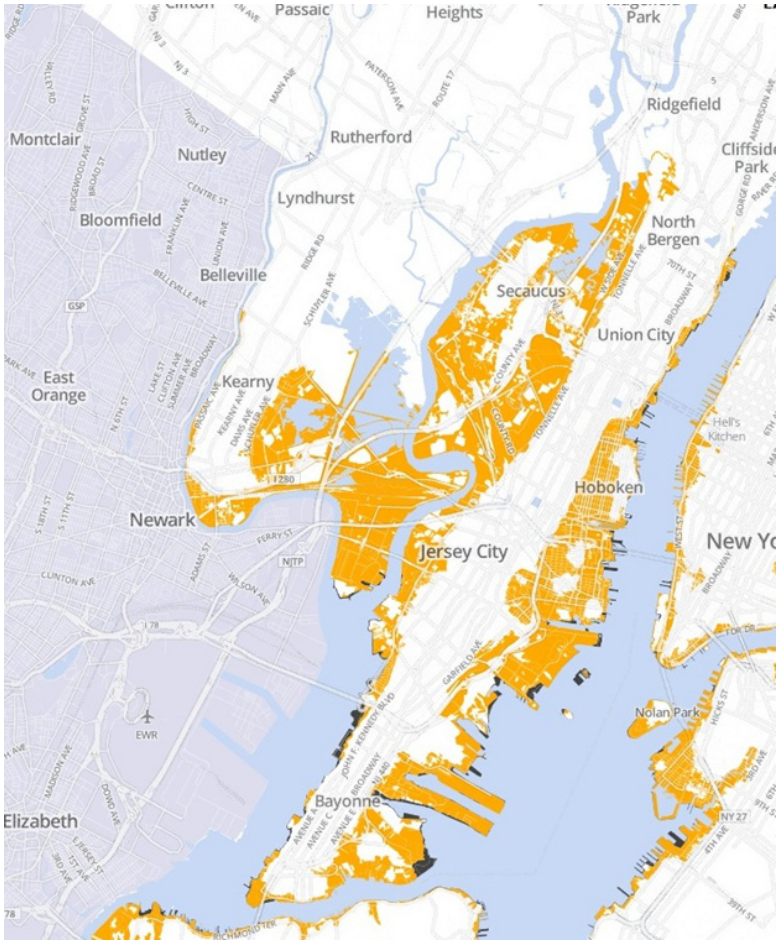


Source: NOAA County snapshot

As of this date, the best available data, the preliminary FIRM maps (December 2013,) increase the Special Flood Hazard Area and the Base Flood Elevation for much of the Hudson County waterfront. The flood and wave action risk in the county remains high. Continued conversion of natural lands to development exacerbates the problem of the floodplain both by increasing the exposed population and diminishing the capacity of natural lands to absorb the impact of a disaster. From 2001-2006, 41% of land converted to development was located within the FEMA floodplain, directly increasing the population and property exposed to flooding within the county.

Previous

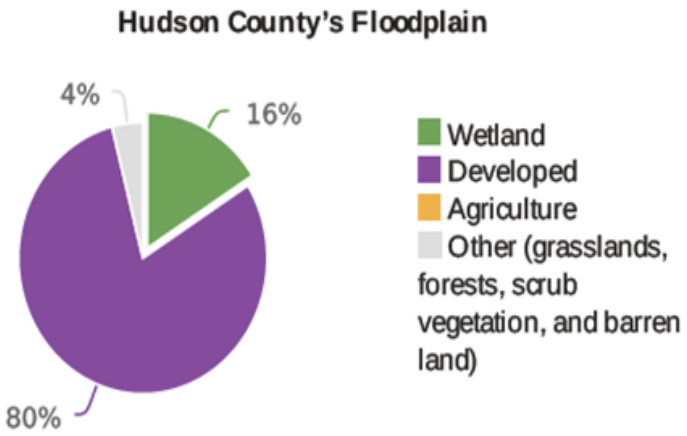
Source: WNYC



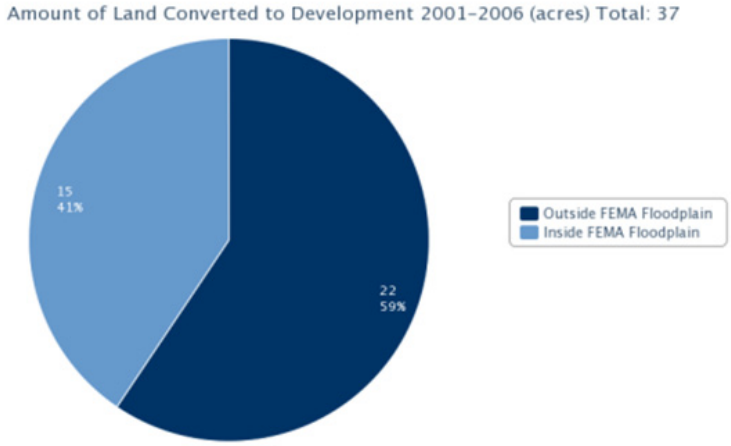
Current

Source: WNYC

Conversion is especially detrimental when wetlands are converted to development, as wetlands act as natural sponges to protect surrounding areas from flooding during a disaster. Given that 8% of Hudson County is wetlands, a substantial portion of the "natural lands" that are converted to development will be wetlands. This will only increase the county's flood vulnerability.



Source: NOAA County Snapshot Wetland Benefits



Source: NOAA County Snapshot wetlands

Social

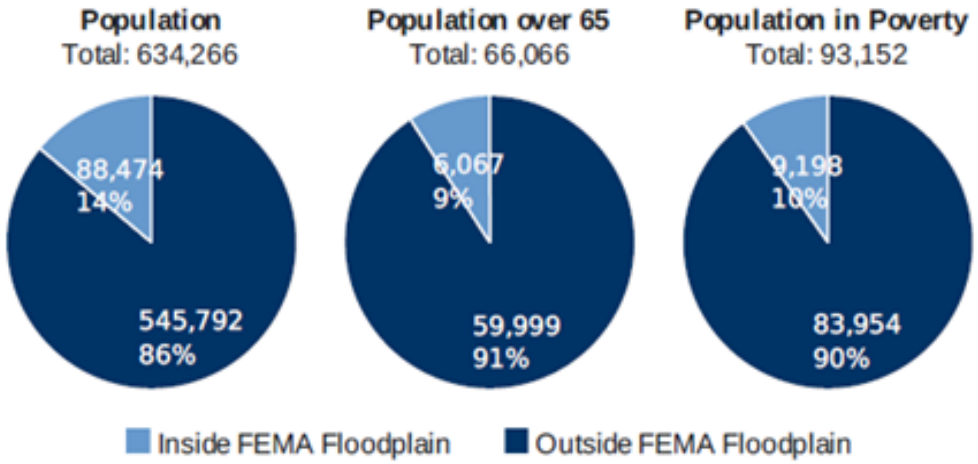
As much as regional geography, the social characteristics of those who face an event define regional vulnerability. According to the FEMA Hurricane Sandy Modeling Task Force, 97,519 people in Hudson County were exposed to storm surge. Within the floodplain population, senior citizens and the population in poverty are two especially vulnerable groups that must be taken under special consideration when planning for disaster preparation, response, and recovery. For these groups, mobility, communication, and self-sufficiency in the case of an event may be restricted, so extra precautions must be put in place as part of the planning process. Social vulnerability is a complex and multifaceted concept that nonetheless must be taken into account when preparing for and responding to an event.

Hudson County is one of the state's most vulnerable areas socially, as the aftermath of Hurricane Sandy proved. Low income levels, heavy

public transit dependence and lack of vehicle access, and lack of homeowner's insurance all reduce the ability of individuals and families to prepare for, cope with, and recover from a storm event.

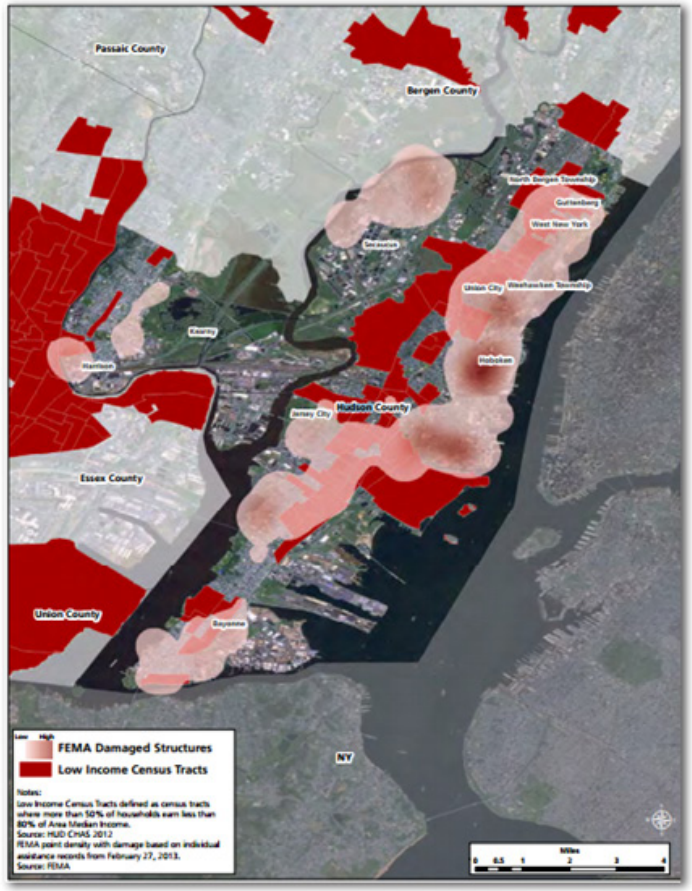
Relatively high levels of low-income residents are perhaps the most visible area of social vulnerability in Hudson County. The 2011 American Community Survey classified 12.8% of all Hudson County families and 15.1% of all individuals as below poverty level income. As of 2010, United Way NJ estimated that 16% of Hudson County's households were in poverty, and classified 25% of the county's households as Asset Limited, Income Constrained, Employed (ALICE). Both types of households generally do not have the assets to sustain and recover from a storm event.

As the graphics below illustrate, Hudson County has a substantial socially vulnerable population exposed to geographical risk. NOAA estimates that 10% of Hudson County's population in poverty, and 9% of the population over 65, lives within the FEMA floodplain. The NJ-DCA Action Plan produced after Hurricane Sandy shows the geographic location of low income census tracts that saw substantial damage from Hurricane Sandy, and would likely be affected by future events as well.



Source: NOAA County Snapshot

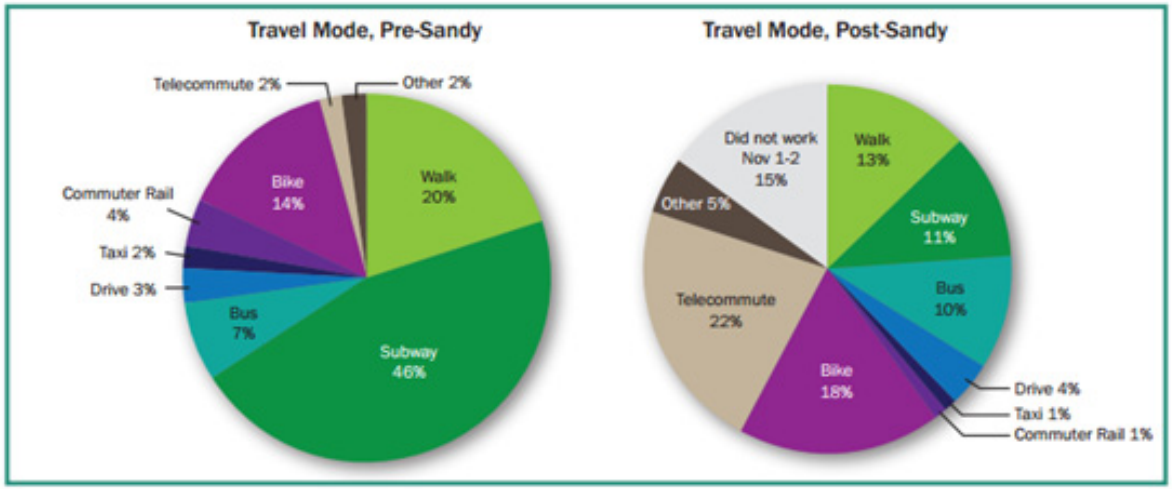
Map Series - Low and Moderate Income Census Tracts and Storm Damage by County - Hudson County



Source: NJ DCA Action Plan

Travel and commute represent another element of social vulnerability likely to be an area of weakness for Hudson County during a future disaster as it was during Superstorm Sandy. As of 2011, 39.2% of Hudson County residents commuted using public transportation, and 33.4% of households had no vehicle available. For these groups, both evacuation and recovery are complicated, as reaching safety during a disaster or getting to work during the aftermath may be problematic.

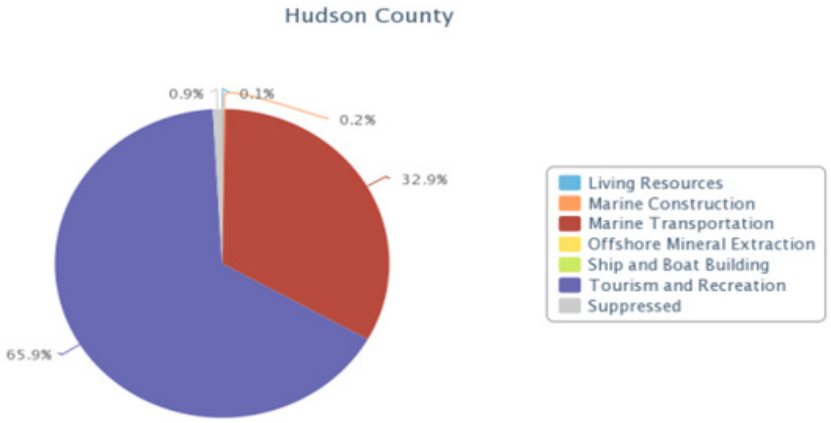
Sandy showed the devastating impact of work loss during a disaster—Hudson County saw $86,220,017 in lost wages for households with income below the ALICE threshold during the course of the disaster and recovery. Because of the lack of availability of a vehicle or the nature of their work, it is likely that low income households were disproportionately impacted by wage loss.



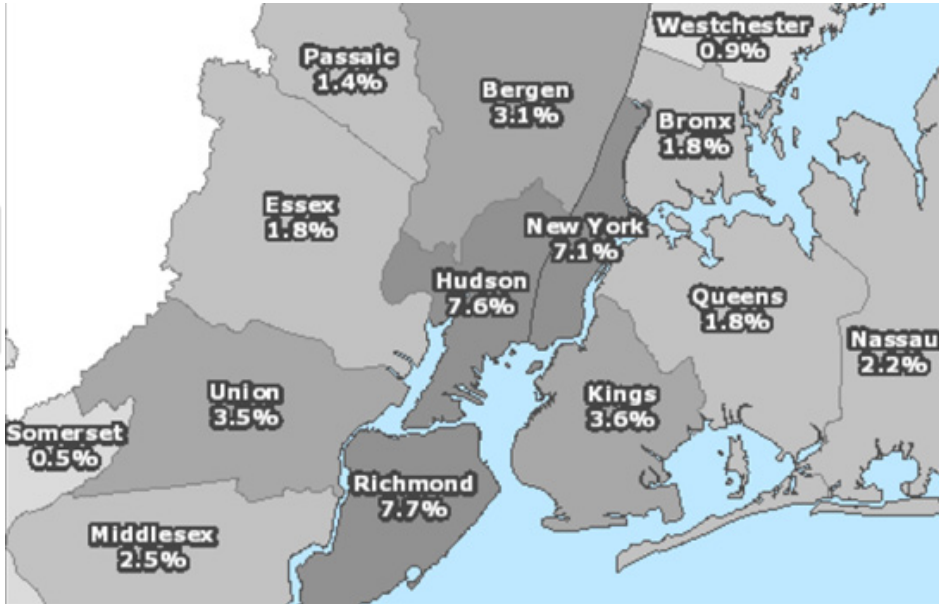
For New York City, Source: "Transportation During and After Hurricane Sandy"

Economy

In planning for recovery, economic vulnerability is an essential consideration. While it is a hazard during a storm event, under normal circumstances the water that surrounds Hudson County is a major economic resource, especially for the Tourism and Recreation and Marine Transportation sectors. Within Hudson County, 17,270 employees were classified as having "ocean jobs" by NOAA in 2010, the second-highest rate in the region after Staten Island and representing $491m in wages, $939m in goods & services, and 7.6% of the county's total jobs. Both ocean-dependent employment and the infrastructure that supports it are areas of vulnerability requiring advance planning in order to mitigate damage and expedite recovery.



For New York City, Source: "Transportation During and After Hurricane Sandy"

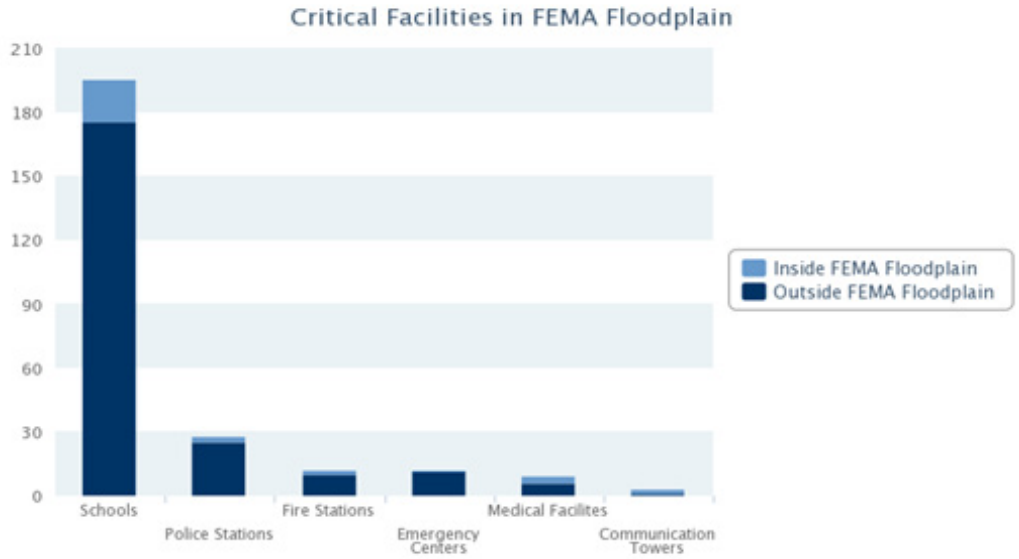


2010 Ocean Jobs as % of Total Jobs, Source: NOAA Ocean Jobs snapshot

Emergency Response Infrastructure

While the majority of Hudson County's critical facilities are outside of the FEMA floodplain, according to the FEMA Modeling Task Force Hurricane Sandy Impact Analysis, 528 critical facilities (waste water, electrical, chemical, communications, oil and gas, fire stations, care facilities, police stations, and schools) were exposed to storm surge during Sandy.

Even critical facilities located outside of the floodplain may be vulnerable during disaster events due to power outages, access issues, or other indirect effects. Planning for access and continued functioning of these facilities during and after a disaster is an essential element of mitigating vulnerability.



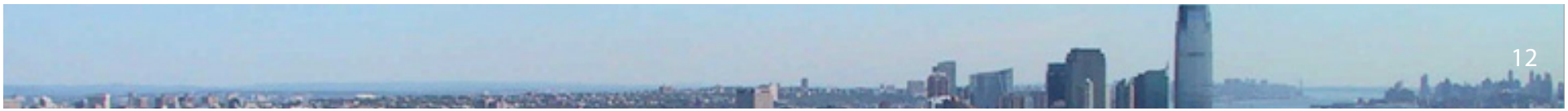
Source: NOAA County Snapshot critical facilities

Flooding on Christopher Columbus Drive, Jersey City during Hurricane Sandy
Source: Hudson County Division of Planning

III. Damages and Impacts

Significant damages from Superstorm Sandy were sustained throughout Hudson County, impacting infrastructure, transportation and electrical facilities, as well as county, municipal, and private property. Several municipalities, including Jersey City, Hoboken, and Weehawken, experienced major flooding due to their low-lying locations and the unprecedented storm surge. Hudson County was particularly vulnerable due to its outdated infrastructure, specifically its combined sewer systems.

Preliminary data from the Hudson County Tax Assessor's Office estimated the total ratable losses for the six hardest hit municipalities (Bayonne, Harrison, Hoboken, Jersey City, Kearny and Weehawken) at approximately $20.95 million. Additionally, there were major power outrages throughout the County, with some lasting between 7 to 10 days. The Palisades Medical Center in North Bergen required evacuations due to major flooding, as well as a loss of power and the failure of two generators. Beyond physical damage, other effects of Superstorm Sandy include losses incurred by businesses unable to operate due to damage, lack of electricity, or the inability of employees to reach their workplace; as well as the loss of spending from commuters and tourists.



The following section outlines the damages and impacts throughout Hudson County as a result of Superstorm Sandy.

Government

Office of the County Engineer

The Hudson County Office of the County Engineer compiled a comprehensive inventory for emergency repairs to public infrastructure damaged by Superstorm Sandy. The total for the cost of the projects to repair damages to county infrastructure was $5,940,487.09. The full list of damages can be seen in Appendix B.

County buildings in Kearny were heavily damaged by flooding during Superstorm Sandy. Repairs to structures, electrical equipment, replacement of furniture and other supplies destroyed totaled $1,162,500 at the Hudson County Correctional Facility, and $2,886,527 at Juneau Center. Hudson County Route 508 in Kearny, between Interstate Route 280 and New Jersey Route 7, flooded during Superstorm Sandy, requiring emergency pumping to remove flood waters, and repair of storm sewer pumps, electrical panels, and traffic signal controllers. Three bridges in Harrison and East Newark, spanning the Passaic River between Hudson and Essex Counties, sustained flood damage during Superstorm Sandy. The moveable bridges required repairs to their electrical systems, machinery, motors, lighting, and electrical components, costing $288,510. Twenty two traffic signal controllers throughout the county were damaged, and repairs were required, including repairs to cabinets, secondary controllers, conflict monitors, and wiring, totaling $110,754. County buildings in Jersey City, including the Annex Building, Administration Building, and Brennan Courthouse, sustained some wind and flooding damages, and equipment at the Duncan Avenue Garage had to be replaced. At the Meadowview Campus in Secaucus, County buildings 7,8,9, and the Psychiatric Hospital required repairs to their slate roofs. A traffic signal at the intersection of 32nd Street and JFK Boulevard required repair to the head and electrical work. Additionally, in Weehawken, the municipality undertook repairs to the riverfront walkway, replaced some damaged items such as landscaping and pavers, and cleaned up debris, at a total cost of $500,000.

For each of these projects, Federal, State, or municipal funds have been applied for to cover nearly all of the costs. The only projects which have not yet been completed are the repairs to the Hudson County Correctional Facility in Kearny and the Duncan Avenue Garage in Jersey City, though the repair work and equipment replacement is ongoing at these facilities and should be completed in 2014.

Total damages to Public Infrastructure in Hudson County:	**$5,940,487.09**
Source: Hudson County Office of the County Engineer, November 2013	

County Claims to FEMA

Hudson County submitted claims to FEMA for damages to county facilities and equipment. The Juneau Emergency Operations Center in Kearny sustained $3.6 million in damages. Damages to county vehicles totaled nearly $584,000. Over $28,000 of repairs were needed to the Penhorn Creek Pumping Station in Secaucus, The total of the claims amounted to $9,514,110.77. The full list of claims can be seen in Appendix C.

Hudson County Claims submitted to FEMA Total:	**$9,514,110.77**
Source: Hudson County Department of Roads and Public Property	

Hudson County Division of Parks

The Hudson County Division of Parks estimated their total damage from Superstorm Sandy at $312,968.78. The full list of damages reported by the Division of Parks can be seen in Appendix D. The Division of Parks faced many downed trees and limbs, damage to security cameras, lights, and other electrical components, loss of tools and equipment at construction and machine shops at Lincoln Park, and damage to sports fields and facilities

Hudson County Division of Parks Sandy Damage Total:	**$312,968.78**
Source: Hudson County Division of Parks	

Hudson County Management of Information System Department

The Hudson County Management Information System (MIS) Department reported a large amount of damages to information technology systems throughout Hudson County. At the Hudson County Annex Building, loss of power to the storage unit containing the virtual servers caused the failures of 30 servers, and required more than 80 hours of work to restore. The network providing internet, email, and other services failed. Once a temporary power was provided, it took over 8 hours of work to restore the network. The primary backup data storage device failed, and the secondary backup had to be used to restore data. The unit, costing $60,000, has not yet been replaced. Because of power loss, computers and phones at county offices were not working, and non-essential employees did not report to work.

At the Hudson County Plaza Building, because of power failure, the HVAC system did not cool the data center, which caused overheating of the equipment. The system sensed the issue and automatically shut off the equipment, which resulted in a complete data system failure, requiring over 8 hours of work to restore. The virtual host failed, prohibiting users from accessing essential services. It took over 16 hours to restore the virtual host. Four drives failed and needed to be replaced, costing $1,000 to replace.

Other county facilities and equipment experienced damages as well. The force of high winds shifted the microwave radio link between Jersey City and Secaucus so that it became misaligned, resulting in slow network speeds. It took $500 over 2 hours to realign the equipment. Video cameras and fiber optic cables were damaged throughout the county. At Lincoln Park, the video storage unit failed because of power loss and

some video was lost. The drives had to be replaced, costing a total of $2,000. Cameras and fiber optic cables were knocked down by wind and fallen trees, and the repair and remounting cost $2,000. At Bayonne Park, camera usage was unavailable for an extended period because of power outages. Fiber optic cable links became unstable after trees in the park fell, and they had to be replaced at a cost of $250,000. The local management server for the park failed, and the replacement cost was $7,000. Strong winds also damaged radio equipment, requiring the replacement of some units, which cost $40,000. At the Hudson County Department of Corrections, video court equipment failed because of flooding in the building. The equipment needed to be replaced, at a cost of $250.

Businesses, Commerce, and Industry

Superstorm Sandy had a major negative impact on businesses and industry in Hudson County. Many structures and facilities were damaged by storm surge or wind damage, along with equipment and stock within. Many businesses that did not sustain physical damage were still unable to operate, as they were affected by power outages for several days, and employees were unable to get to work because of debris in roadways and damage to public transit facilities, infrastructure, and vehicles. Beyond the great amount of physical damage, total hours lost, reduced productivity, and loss of customers and clients are difficult to calculate. Businesses which are unable to acquire assistance will be forced to absorb these costs, taking away from earnings, and some who are unable to sustain the losses may be forced to relocate or close. Long-term economic data may offer some insight into the overall effects of Hurricane Sandy on jobs and earnings.

The Hudson County Economic Development Corporation reports that following Hurricane Sandy, they offered a loan program which provided business loans of up to $100,000 with no interest. The organization received 17 inquiries who were interested in the program, but they all declined when they realized that the funding was not a grant.

The South Kearny Industrial Association represents business interests in the active industrial district of South Kearny, which is located only a few feet above sea level and surrounded by the Hackensack and Passaic Rivers, and was heavily impacted by flooding during the storm. The Association reported that 11 companies in the area were "dramatically affected" by storm damages, 5 businesses did not reopen and left the area completely, and 7 businesses were "mildly affected." All of these businesses applied to FEMA for assistance.

Residents

Many Hudson County residents were affected by Superstorm Sandy. According the "NJ DCA Action Plan", 2% of the households in Hudson County had homes that sustained "severe" or "major" damage, totaling 4,407 units. Within Hudson County, nine census tracts had between 10% and 24% of households experience severe or major damage. Heavy winds damaged roofs, and flying debris struck windows and siding.

Flooding from storm surge and leaky roofs caused water damage, and subsequently many of these homes are facing issues with mold. Based on FEMA information, about $21.65 million in housing assistance claims would be eligible for the funds through the Individual and Households Program.

Hudson County Residents and Households Exposed to Storm Surge during Superstorm Sandy		
Total Population (2010)	Population Exposed to Storm Surge (2010)	Percentage of Population Exposed
634,266	97,519	15.38%
Total Number of Households (2010)	Number of Households Exposed to Storm Surge (2010)	Percentage of Households Exposed
246,437	44,896	18.22%
Source: FEMA Modeling Task Force Hurricane Sandy Impact Analysis, 6/21/13		

A total of 10,864 households applied for FEMA Individual Assistance (IA). FEMA inspectors performed field inspections, estimated the Full Value Loss of personal property, as well as real property, and totaled the two to determine the Total Full Value Loss (FVL). Households with damages were classified into four categories: Affected (FVL between $0 and $5,000), Minor (FVL between $5,000 and $17,000), Major (FVL greater than $17,000), and Destroyed (determined by the FEMA inspector). In total, 4,972 households were determined to have sustained damage by the FEMA inspectors. Of these households with damage, 3,250, or 65.37% of the damaged households, were categorized as affected, 1,413, or 28.42% of households sustained minor damage, 296 households, or 5.95%, sustained major damage, and 13 were determined to be destroyed. These damage estimates express the major costs faced by homeowners as a result of Superstorm Sandy. The total estimated loss of all the homeowners who applied for FEMA Individual Assistance throughout Hudson County is over $25 million.

Level of Assessed Damage to Hudson County Households Which Applied for FEMA Individual Assistance		
# of Households applied for FEMA Individual Assistance	10,864	
# of households which sustained damage	4,972	
Affected	3,250	65.37%
Minor	1,413	28.42%
Major	296	5.95%
Destroyed	13	0.26%
Total estimated loss of households	> $25 million	
Source: FEMA Modeling Task Force Hurricane Sandy Impact Analysis, 6/21/13		

The county has a large at-risk population, who were especially affected by Superstorm Sandy. The Hudson County Alliance to End Homelessness conducted its annual Point-In-Time-Homeless count on January 30, 2013. The count identified 942 homeless persons in Hudson County, an increase of 8.9% from the previous year. The organization presumes that most of the increase in the number of homeless persons and families was a result of the impact of Hurricane Sandy. In the 2013 count, 37 individuals and 3 families reported that their homelessness was caused by natural disaster, compared with only 4 who identified it as a cause in 2012. Of these households, 27 were temporarily living in hotels which were being paid for by FEMA.

Transportation

Hudson County's extensive public transit system was greatly affected by Superstorm Sandy. The NY/NJ Port Authority's PATH system sustained about $800 million in damages, which especially affected their low-lying stations. As part of NJ Transit's estimated $4 billion in Sandy-related losses, a third of the agency's fleet - 70 locomotives and 273 rail cars – suffered $120 million in damages by flooding to low-lying rail yards in Kearny and Hoboken, and several rail stations were flooded, including the Hoboken Terminal. In addition, the Hudson-Bergen Light Rail experienced track washouts at the Port Imperial and West Side Avenue stations as well as flooding in Hoboken.

Critical Facilities

Data from the FEMA Modeling Task Force Hurricane Sandy Impact Analysis indicates that many critical facilities throughout Hudson County were exposed to the impacts of storm surge. Many of these facilities are located in vulnerable areas, and were rendered inoperable at a time of great need during the storm.

Hudson County Critical Facilities Exposed to Storm Surge during Superstorm Sandy	
Waste Water Facilities Exposed to Surge	7
Electrical Facilities Exposed to Surge	63
Chemical Facilities Exposed to Surge	59
Communication Facialities Exposed to Surge	376
Oil and Gas Facilities Exposed to Surge	1
Fire Stations Exposed to Surge	6
Care Facilities Exposed to Surge	2

Police Stations Exposed to Surge	1
Schools Exposed to Surge	13
Source: FEMA Modeling Task Force Hurricane Sandy Impact Analysis, 6/21/13	

These figures were determined using the field verified surge extent and data compiled by the National Geospatial Intelligence Agency from the Department of Homeland Security, New Jersey Division of Fire Safety, New Jersey Department of Education, and the New Jersey Department of Health.

Debris

Damage, especially from wind, generated large amounts of debris, primarily from buildings and trees which clogged waterways and storm drains and blocked roads. The FEMA Modeling Task Force Hurricane Sandy Analysis estimated that 152,547.64 cubic yards of debris were created and left by Superstorm Sandy.

Estimated Debris Created by Superstorm Sandy in Hudson County	
Estimated Structural Debris (cubic yards)	151,959.11
Estimated Tree Debris (cubic yards)	588.53
Estimated Total Debris (cubic yards)	152,547.64
Source: FEMA Modeling Task Force Hurricane Sandy Impact Analysis, 6/21/13	

The debris required a significant amount of resources for removal and disposal.

IV. Municipal Progress

County Coordination

Cooperation among the twelve municipalities of Hudson County was essential to the regional response and recovery effort following

Superstorm Sandy. From the beginning, County government actively participated in this collaboration. Directly after the storm, the County led meetings with each municipality to guide them in creating Letters of Intent to apply to the Hazard Mitigation Grant Program (HMGP) to begin recovery. The results of these meetings—the projects for which each municipality submitted a letter of intent for funding—are highlighted in the Action Plan in Section VII of this report.

Federal and State Financial Assistance

Grant assistance to Hudson County in the aftermath of Superstorm Sandy included FEMA Individual Assistance, FEMA Public Assistance Funds to Municipalities, HUD Community Block Grants, NJ EDA Stronger NJ Business Grants, and Federal Highway Administration and Federal Transit Administration funds for repairs to transportation infrastructure.

FEMA Individual Assistance included grants, rental assistance, and funds for temporary or permanent home repair for individuals impacted by the storm. FEMA Public Assistance Funds to Municipalities, which include grants for emergency and permanent restorative work, were requested by every municipal government of Hudson County, other than the Borough of East Newark, as well as some local nonprofits. Municipalities were also funded through the Department of Housing and Urban Development's Community Block Grants in order to meet financial needs not met by other funding sources.

For small businesses in New Jersey affected by Superstorm Sandy, the New Jersey Economic Development Authority offered grants and loans through the Stronger NJ Business Grants program. Through this program, small businesses and non-profit organizations affected by Superstorm Sandy had until 31 December 2013 to apply for grants or forgivable loans of up to $50,000 per location for repairs and other financial rebuilding efforts.

On the infrastructure level, the Federal Highway Administration (United States Department of Transportation) provided financial assistance to the New Jersey Department of Transportation to repair highways damaged by Superstorm Sandy. Additionally, the New Jersey Transit Corporation was granted recovery and relief funds by the United States Department of Transportation's Federal Transit Administration for efforts including the repair of vital public transportation infrastructure.

City of Bayonne

The City of Bayonne, with a population count of 63,024 in the 2010 U.S. Census, is located at the tip of Hudson County's peninsula where Newark Bay, the Kill van Kull, and New York Bay meet. This area has very little elevation, and generally sits at sea level. Bayonne has been

historically connected to the shipping industry. Although advantageous for commerce, Bayonne's location makes it prone to flooding.

Following Superstorm Sandy, the majority of Bayonne was without power. City officials conducted three damage assessment tours with FEMA representatives. A temporary Disaster Recovery Center was established by FEMA in City Hall, and later, a permanent center in the Bayonne Community Museum. Bayonne's Office of Emergency Management distributed over 105,000 meals, clothing, water, batteries, and more than 600 home cleaning kits to city residents who had experienced flooding; they also obtained and provided generators, fuel to power them, and food to residents of the city's senior and public housing facilities.

The City OEM is working with other agencies to apply for grants for recovery funds. The OEM is tracking recovery funds in the city, and expects the total funding received to total about $2.5 million. The City of Bayonne held a public meeting to provide residents with information on seeking compensation for damages due to flooding and power outages.

The Bayonne OEM has applied to FEMA's Hazard Mitigation Grant Program for funding to protect infrastructure from future flooding and loss of power. The City has received a 75KW generator for emergency back-up power, and has received initial approval for three 50KW generators to provide back-up power for firehouses currently without a back-up power system. The City's Office of Emergency Management is working with the County OEM on identifying relief and mitigation funding opportunities.

Summary of Federal Sandy Relief Funding, Bayonne		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$4.67 million
FEMA Public Assistance Funds to Municipalities	Bayonne City	$1.88 Million
Community Development Block Grants	Various Recipients	$1,018,308.68
Description: Homeowner Resettlement	*Various Homeowners*	*$730,00.00*
Description: Reconstruction Rehabilitation Elevation and Mitigation	*Various Homeowners*	*$238,308.68*
Description: Stronger NJ Business Grants; Number of grants approved: 1	*Various Businesses*	*$50,000.00*
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Borough of East Newark

East Newark is a small town located along the east bank of the Passaic River, between Harrison and Kearny, and is connected to Newark via the

Clay Street Bridge. It is roughly five blocks wide. The 2010 U.S. Census counted 2,406 residents.

Summary of Federal Sandy Relief Funding, East Newark		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$52,587.91
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Town of Guttenberg

The Town of Guttenberg has the unique distinction of being the most densely populated municipality in the United States. The 2010 Census counted 11,176 people living in 0.196 square miles, making the population density 57,020.41 persons per square mile. While it did not suffer heavy damages from Superstorm Sandy, the municipality remains at-risk for future storm events. The Town is currently making progress towards resiliency through planning and implementation of several measures. Some mitigation efforts include the installation of generators in public facilities, plans to construct a new community center that will also serve as an emergency shelter, and the municipality is working closely with residents and property owners along the waterfront to identify and implement mitigation measures in cooperation with the Hudson County OEM. Additionally, OEM personnel from several North Hudson towns have formed a meeting group to collaborate on efficiently communicating and coordinating during future emergency management efforts.

Summary of Federal Sandy Relief Funding, Guttenberg		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$2,805.00
FEMA Public Assistance Funds to Municipalities	Guttenberg Town	$43,527.50
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Town of Harrison

Harrison is geographically situated along the Passaic River, north of Newark Bay. The population was counted at 13,620 during the 2010 U.S. Census. Harrison currently has plans for waterfront development with emphasis on public access, which will also incorporate flood control measures to protect against flooding from the Passaic River.

Summary of Federal Sandy Relief Funding, Harrison		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$1.45 Million
FEMA Public Assistance Funds to Municipalities	Harrison Town	$485,820.82
Community Disaster Block Grants	Various Recipients	$179,165.06
Description: Homeowner Resettlement	*Various Homeowners*	*$40,000.00*
Description: Stronger NJ Business Grants; Number of grants approved: 6	*Various Businesses*	*$139,165.06*
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

City of Hoboken

The City of Hoboken lies at the foot of the Hudson Palisades, and is defined by its small size (less than a square mile), its location (along the west bank of Hudson River,) and its population density (about 39,000 people per square mile). The 2010 U.S. Census counted 50,005 people living in a little over a square mile. Hoboken was featured on national news for its flooding and large amount of people stranded in their homes. Since Superstorm Sandy, Hoboken has become a symbol of climate change, and is exploring countless mitigation strategies to mitigate flood risk exposure.

Hoboken is examining various flood control proposals. As most of the city is located within the FEMA flooplain and is only a few feet above sea level, relocating residents out of the floodplains through buyouts as is being done in other municipalities is not practical. Instead, Hoboken is looking at new regulations to raise the lowest occupied floors and utilities in buildings in the flood zone. As this is a major challenge given the exisitng dense levels of development, Hoboken is also exploring the feasibility of building permanent and removable walls and floodgates around the perimeter of the city.

Substations in Hoboken were damaged by flood waters during Superstorm Sandy, causing power outages in the city. The City is partnering with the U.S. Department of Energy, the New Jersey Board of Public Utilities, and PSE&G to develop a smart Micro-Grid reliant on a mix of different energy sources that could power critical facilities in the event that Hoboken is disconnected from the national grid.

The City of Hoboken has also initiated several planning efforts to aid in recovery from Superstorm Sandy and resilience against future storm events. The City received $200,000 from the New Jersey Department of Community Affairs as part of the Post Sandy Planning Assistance Grant

Program. The Post Sandy Planning Assistance Grants will allow Hoboken to develop valuable strategic plans to guide the overall growth, land use, and development in the city, as well as implement storm recovery and resiliency measures. Additionally, The Hoboken Green Infrastructure Plan was selected as a Local Demonstration Project through Together North Jersey. The Local Demonstration Project program forms a collaboration of partners to conduct strategic planning initiatives which promote sustainable and transit-oriented development. The Hoboken Green Infrastructure Plan will develop storm water management and flood control strategies utilizing green infrastructure to mitigate against the flooding of Hoboken's transit system and the community as a whole, and which can be implemented to protect against future flooding and storm events as well as serve as a model to communities around New Jersey.

Summary of Federal Sandy Relief Funding, Hoboken		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$6.13 Million
FEMA Public Assistance Funds to Municipalities	Hoboken City	$5.88 Million
FTA Public Transportation Emergency Relief	NJ Transit Corporation	$2.141 Million
Description: Hoboken City Yard and Terminal		*$2.141 Million*
Community Development Block Grants	Various Recipients	$1,705,850.00
Description: Homeowner Resettlement	*Various Homeowners*	*$1.56 Million*
Program: Stronger NJ Business Grants; Number of grants approved: 7	*Various Businesses*	*$145,850.00*
Project School Emergency Response to Violence	Hoboken City School District	$48,142.00
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

City of Jersey City

Jersey City is Hudson County's largest city in terms of both population, with 247,637 residents according to the 2010 U.S. Census, and geographic size. The city is diverse in its populace and in topography. It is surrounded by water; New York Bay, the Hudson River, Tidewater Basin, Mill Creek, Newark Bay, and the Hackensack River all run through the city. Jersey City was greatly affected by Superstorm Sandy in low lying areas such as Country Village, Liberty State Park, historic downtown, and Exchange Place. Thirteen foot storm surge caused the inundation of many of these areas. Jersey City Medical Center was flooded and required evacuation, and other critical facilities such as fire stations and shelters were affected by flooding. Jersey City also endured widespread power outages. Some businesses were shut down for a week or more. Superstorm Sandy caused significant damage to Jersey City Housing Authority buildings. The city, which received little external help, was praised for its

efforts during and after Superstorm Sandy.

Jersey City is currently exploring several flood hazard mitigation options for implementation. One possibility would be engineered flood barriers, which would be a tiered approach and include redundancy measures. Harbor-based mitigation measures for Upper New York Harbor are being studied. Land-based mitigation strategies, with neighborhood level protection, are being examined. The City is looking to implement mitigation measures for critical facilities and public buildings, with measures under consideration including back-up power sources, alternative locations, dry flood proofing and wet flood proofing, as well as flood gates. Finally, mitigation strategies for private buildings, including dry flood proofing and wet flood proofing, and flood gates, are being considered throughout the city. Additionally, Jersey City is in the process of developing a Wave Action Mitigation Plan which will create strategies to prevent wave damage from storm surge during storm events and protect existing as well as new structures against damages from the impact of waves.

The City received legal attention in 2011 by the Environmental Protection Agency, who stated that the city failed to properly operate and maintain its combined sewer system; Jersey City settled the suit that summer and pledged to invest more than $52 million in infrastructure repairs and upgrades. A combined sewer system, where sewer and rain drainage share pipes, is problematic during times like Sandy, as raw sewage is mixed with floodwater.

The Jersey City Municipal Utilities Authority and the Jersey City Office of Emergency Management have developed a new Storm Water Management Plan which discusses measures to reduce flooding in the city, and which would help with mitigation against future storm events. Measures discussed include a detention tank at the Phillips Drive Municipal Utilities Authority site. The installation of outfall pumps in the city is being considered. A possible option under consideration is the creation of a city or neighborhood level barrier systen, which would be composed of several combined facilities and infrastructure, including the elevation of land through redevelopment projects in waterfront sections of the city such as Liberty Harbor North, Grand Jersey, Bayfront, Newport, Western Waterfront, and Harborside, the hardening of existing modern structures along the waterfront, the elevation of streets in strategic locations such as Route 440 and Route 1&9 Truck, Kellogg Street, and streets along the Hudson River side of the city such as Grand Street and Washington Boulevard, as well as the elevation of some sections of the Hudson River Waterfront Walkway. This barrier system would be combined with land-based flood gates installed in public right-of-ways between naturally elevated areas, new artificially elevated areas, and hardened structures. Finally, pumping systems would be installed in the event the flood barriers were overtopped.

Summary of Federal Sandy Relief Funding, Jersey City		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$11.60 Million
FEMA Public Assistance Funds to Municipalities	Jersey City	$13.12 Million

Summary of Federal Sandy Relief Funding, Jersey City		
Funding Source	Recipients	Amount Obligated
Community Development Block Grants	Various Recipients	$1,377,087.13
Description: Homewoner Resettlement	*Various Homeowners*	*$1.0 Million*
Description: Stronger NJ Business Grants; Number of grants approved: 11	*Various Businesses*	*$377,087.13*
Federal Highway Administration	NJDOT	$217,662.12
Description: Route 1 & 9 Truck over Hackensack River		*$205,175.65*
Description: Route 7 over Hackensack River, Wittpenn Bridge		*$12,486.87*
Project School Emergency Response to Violence	Jersey City School District	$5,459.00
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Town of Kearny

Kearny is located at the northwestern edge of Hudson County. The town is separated from Bergen County by Route 7, Essex County by the Passaic River, and the rest of eastern Hudson County the Hackensack River. The population was counted in the 2010 U.S. Census at 40,684.

The Meadowlands Maintenance Complex in Kearny became the center of controversy, as NJ Transit chose to keep most of its rail stock there despite warnings that the area could be prone to flooding.

The decision to designate the Meadowlands Maintenance Complex as a safe location for equipment during the storm is a controversial one. NJ Transit explained that the facilitiy had never flooded before and was not identified in studies as a flood prone area as the reasoning behingd their decision.

Kearny's master plan acknowledges a lack of active green space, and aims to "preserve the environmental resources of the town by limiting development in environmentally sensitive areas and encourage landscaping and preservation of natural elements." Such environmentally sensitive areas include the Meadowlands, whose shorelines in Kearny were drastically altered by the storm.

Summary of Federal Sandy Relief Funding, Kearny		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$1.45 Million
FEMA Public Assistance Funds to Municipalities	Kearny Town	$828,366.93
FTA Public Transportation Emergency Relief Fund	NJ Transit Corporation	$6.703 Million
Description: MMC Maintenance Facility		*$4.130 Million*
Description: Mason & Building 9 substations		*$2.574 Million*
Federal Highway Administration	NJDOT	$1.17 Million
Description: Route 7		*$818,072.19*
Description: Route 1 & 9 Truck over Passaic River		*$153,653.50*
Description: Route 1 & 9 Truck over Hackensack River		*$205,175.65*
Community Development Block Grants	Various Recipients	$90,000.00
Description: Homeowner Resettlement	*Various Individuals*	*$40,000.00*
Description: Stronger NJ Business Grants; Number of grants approved: 1	*Various Businesses*	*$50,000.00*
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Township of North Bergen

North Bergen is situated atop the New Jersey Palisades. The township's population was counted at 60,773 in the 2010 U.S. Census. Hudson County's northernmost municipality plans for future development to be mindful of its natural beauty, including its steep slopes, protection of its wetlands and floodplains, and the preservation of the cliff face of the Palisades.

North Bergen's calendar year 2013 municipal budget includes additional funding for the Office of Emergency Management so that it will be better equipped and prepared for response and relief during future storm events. The Township also plans to install back-up emergency generators at two critical facilities, its town hall and police station, and has forged a relationship with the Palisades Medical Center for better emergency planning.

Summary of Federal Sandy Relief Funding, North Bergen		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$144,588.48
FEMA Public Assistance to Municipalities	North Bergen Township	$1.31 Million
Community Development Block Grants	Various Recipients	$10,000.00
Description: Homeowner Resettlement	*Various Homeowners*	*$10,000.00*
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Town of Secaucus

Secaucus is located within the New Jersey Meadowlands, and had a population of 16,260 counted in the 2010 U.S. Census. The town is situated between the Hackensack River to the west and the Palisades to the east. The river separates Secaucus from Bergen County, forming Hudson County's western border. Low-lying portions of town that border the river faced the most damage during Superstorm Sandy's storm surge. Reports show that 100 residents had to be rescued from their flooded homes. After Superstorm Sandy, Secaucus raised flood walls in its most flood prone areas, and applied for numerous grants to fund efforts to increase resiliency. These efforts include green infrastructure, such as rain gardens, and outreach efforts to educate the community. Secaucus also upgraded its Office of Emergency Management to increase its office space, information technology, and communication infrastructure, and is reviewing its resiliency efforts for critical and vital facilities, including Meadowlands Hospital.

Summary of Federal Sandy Relief Funding, Secaucus		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$818,486.35
FEMA Public Assistance to Municipalities	Secaucus Town	$718,730.20
Community Development Block Grants	Various Recipients	$200,000.00
Description: Homeowner Resettlement	*Various Homeowners*	*$200,000.00*
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

City of Union City

Union City is a densely populated city with a population of 66,438 counted during the 2010 U.S. Census. The city sits atop the ridge of the Hudson Palisades, and as such is the only municipality in Hudson County without any waterfront property. Union City was spared much of the damage that devastated the lower-lying areas of Hudson County because of its location.

Summary of Federal Sandy Relief Funding, Union City		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$70,729.66
FEMA Public Assistance Funds to Municipalities	Union City	$345,092.19
Community Development Block Grants	Various Businesses	$50,000
Program: Stronger NJ Business Grants; Number of grants approved: 4		*$50,000*
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Township of Weehawken

Weehawken had a population of 12,554 counted in the 2010 U.S. Census. The emerging Palisades define Weehawken's topography. The city begins at the foot of the Palisades, and continues upward towards the crest of the ridge. Two sections of town were greatly affected by Superstorm Sandy: the downtown portion, known as The Shades saw heavy flooding, and the waterfront was greatly impacted by Sandy's storm surge, including damage to park facilities and private property. Following Superstorm Sandy, Weehawken repaired its park facilities, assisted private property owners with federal agencies, and raised money through private charity funds.

Since Superstorm Sandy, utility services in municipal facilities have been raised above the level of flood waters, and generators are being installed in municipal buildings. The Township has filed for hazard mitigation grant assistance from the County Office of Emergency Management. The Township of Weehawken is also discussing developing joint flood prevention facilities with the City of Hoboken.
Weehawken, because of its proximity to New York, receives attention from developers looking to create housing for New York commuters and those wanting to live on the Hudson waterfront. Because Weehawken expressed interest in green building and sustainable projects, these future redevelopment projects along the river will most likely strive for minimal environmental impacts. Weehawken is receiving help from the federal and state governments, and from non-profit organizations such as Sustainable Jersey. Launched in 2009, Sustainable Jersey is a nonprofit, nonpartisan organization which gives municipalities tools, workshops, and rewards for pursuing sustainability programs.

Summary of Federal Sandy Relief Funding, Weehawken		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$1.22 Million
FEMA Public Assistance to Municipalities	Weehawken Township	$476,438.90
Community Development Block Grants	Various Recipients	$70,000.00
Description: Homeowner Resettlement	*Various Homeowners*	*$70,000.00*
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

Township of West New York

According to the 2010 Census, West New York had a population count of 49,708. Like Weehawken, West New York is a municipality whose elevation varies dramatically, with the core of the city located on top of the New Jersey Palisades, and newer developments on former industrial sites along the Hudson River waterfront.

West New York identified limited damages caused by Superstorm Sandy. However, the Township is focusing on resiliency efforts to protect against future storms. Back-up power for residences and municipal facilities has been identified as a major priority. Since Hurricane Sandy, the Township has been working with contractors and engineers to identify key facilities requiring back-up power. The Township is currently working on providing permanent back-up power to the Municipal Building, which includes the police and fire departments, and plans to work on the EMS and DPW facilities in the future. The Township and emergency personnel have been working more closely with the County Office of Emergency Management and neighboring municipalities since Superstorm Sandy.

Summary of Federal Sandy Relief Funding, West New York		
Funding Source	Recipients	Amount Obligated
FEMA Individual Assistance	Various Individuals	$151,165.92
FEMA Public Assistance Funds to Municipalities	West New York Town	$621,787.44
Community Development Block Grant	Various Recipients	$58,085.00
Description: Homeowner Resettlement	*Various Homeowners*	*$10,000.00*
Description: Stronger NJ Business Grants; Number of grants approved: 1	*Various Businesses*	*$48,085.00*

Summary of Federal Sandy Relief Funding, West New York		
Funding Source	Recipients	Amount Obligated
Source: Federal Funds Tracker, NJ Sandy Transparency Portal, Office of the State Comptroller		

V. Planning Goals and Objectives

As part of the process of rebuilding and recovering from the damage caused by Superstorm Sandy, Hudson County has identified several planning goals and objectives which can support this process and offer protection against future events. The goals and objectives are intended to guide the County's efforts to increase resiliency and protect residents, property, and infrastructure. These include both short-term and long-term goals to resolve ongoing issues. The goals and objectives are assigned a priority level of low, medium, or high.

Short Term

Stabilization and Repair of the Hudson River Waterfront Walkway

Priority: Medium

The Hudson River Waterfront Walkway provides public access to the Hudson River shoreline and is a vital open space asset to the county. The Walkway includes piers with recreational facilities such as playgrounds, tennis courts, and outdoor entertainment venues, with a total length of 10.5 miles stretching along the western shore of the Hudson River through nine municipalities, seven of which are in Hudson County. The Hudson River Waterfront Conservancy, a non-profit organization, supports the planning, building, and maintenance of the Walkway, but individual property owners along the waterfront are responsible for constructing and maintaining segments of the Walkway. The Hudson River Walkway Conservancy plans to see the Walkway expanded to provide an 18.5 mile long, 30 foot wide path from the southern tip of Hudson County in Bayonne north to the George Washington Bridge.

The Hudson River Waterfront Walkway, being closest to the shoreline, was the first facility to be hit by the storm surge during Superstorm Sandy and sustained significant damage. The most recent update from the Hudson River Waterfront Conservancy, dated June 2013, indicates that most of the immediate damage from Sandy has been fixed but two sections in Hudson County remain closed and in need of repair.

Sections of the Walkway should be upgraded to be more resilient against future storms, flooding, erosion, sea level rise, and other events. Damage resistant materials should be used for facilities and construction should allow for the proper flow and drainage of storm waters. Additional standards, codes, and regulations could help to standardize and upgrade construction to address some of these issues. The Hudson

River Waterfront Conservancy is advocating for an engineering analysis on the prevention of storm surges and flooding to be required in all plans for rebuilding along the shore line. As the individual property owners are responsible for building and maintaining the Walkway, it can be a burdening expense for them to continually repair and rebuild their section of the Walkway. The Hudson River Waterfront Conservancy, as well as some property owners along the waterfront, are seeking a dependable source of government funding to aid in this task. To further support the construction and management of the Walkway going forward, property owners along the Walkway, as well as the municipalities with Hudson River shorelines, should join together with the Hudson River Waterfront Conservancy to collaborate on meeting these goals.

The similar but less complete Hackensack RiverWalk, a vision of the Hudson County Department of Parks & Community Services, is planned to extend along the Hackensack River waterfront through the west and central sections of Hudson County, from Bayonne to North Bergen. Existing sections of the RiverWalk were damaged by Superstorm Sandy and have mostly been repaired, but should be analyzed and possibly enhanced for resistance against future storms. A complementary partnership should be formed between property owners and municipalities along the Hackensack riverfront, non-profit organizations, and the County to oversee and advocate for the completion and management of the Hackensack RiverWalk. In their updated Open Space Resources Reports, the City of Bayonne and the Town of Secaucus have made construction of additional sections of the RiverWalk a priority to increase open space, through the acquisition of vacant parcels along the Hackensack waterfront as well as inclusion of walkway segments as part of new developments.

Substation Upgrades

Priority: High

Many electrical substations, essential to the transmission and provision of electricity, were damaged during Superstorm Sandy, mainly by flood waters. The severe damage to electrical substations was a primary contributor to long-lasting power outages in Hudson County and throughout New Jersey. A considerable number of electrical substations were located at lower elevations and proximate to waterways. Although these substations may have escaped flood damage in the past, Superstorm Sandy has shown that more intense future storms as well as sea level rise will make these substations vulnerable in the future. Substations should be upgraded to be more protected against future storm events, including more resistant and protected equipment, elevations, and possible relocations of substations.

PSE&G has developed a new "Energy Strong" plan for Hudson County in response to Superstorm Sandy and in preparation for future storm events. The plan calls for $1 billion in infrastructure improvements in Hudson County over a 10 year period to protect or raise electrical switches and substations. Twelve switching stations and substations which PSE&G plans to either elevate or strengthen are located in Hudson County: six in Jersey City, three in Hoboken, and one each in North Bergen, Bayonne, and Kearny. Additionally, the plan includes strengthening upgrades to utility poles and wires, and gas line improvements or replacements in flood prone areas.

Two applications to the Hudson County Planning Board have recently been submitted by PSE&G for upgrades at the Kearny Generating Station and the Hoboken Sub-Station. PSE&G intends to demolish Generating Units 10 and 11 at the Kearny Generating Station and construct a new three story building with ground level maintenance shops and offices on the upper levels, along with an adjacent parking area. The offices replace those damaged by Hurricane Sandy at the Kearny and Essex Generation Stations. The project includes the installation of gravel infiltration beds for storm water management, and the new building will have a green roof which will reduce about 1000 cubic feet of storm water runoff. PSE&G plans to upgrade and modernize the Hoboken Sub-Station to increase reliability by installing new control panels and circuit breakers, utility process transformers, an emergency diesel generator, and a Gas Insulated Switchgear and Control House building. The Sub-Station is located within the flood hazard area designated on FEMA's flood insurance rate maps. New buildings to be constructed on the site will be located at least one foot above the non-regulatory advisory base flood elevation, and new equipment to be installed on the site will be at least 13 feet above base flood elevation.

Repairs to and Resiliency Planning for Major County Facilities

Priority: Medium

County facilities must be repaired and made more resilient for future storm events. Facilities must be able to maintain operations during storm events. Plans should be in place to ensure the continued operation of these facilities during a storm event that brings the threat of loss of power, water, and access to transit routes.

Hudson County has developed a Continuity of Operations/Continuity of Government Plan (COOP/COG) which is intended to provide a guide to assess the impact of a variety of disasters on the county government, and respond appropriately to maintain and restore capabilities, essential functions, and services. The plan prioritizes the necessity of functions, departments, and key staff members and leadership for all county departments. The plan outlines operational mandates, which are legally required government functions, to guide prioritization and restoration. It also identifies critical resources such as vital files, equipment, and utilities which are needed for vital functions, as well as alternative facilities if relocations are necessary. It intends to provide a clear chain of command for implementing the plan, and focuses on Recovery Time Objectives which are timelines for restoring government functions. The plan also specifies that After Action Reports be written following any implementation of the plan as documentation of actions taken, and does include a guide on updating and maintenance of the plan.

The COOP/COG plan identifies Hudson County's risk for future coastal storms and flooding as high, as the county is located near the coast and surrounded by water, and much of the county is at low elevation. Eleven of the county's twelve municipalities have a waterfront on a tidal river, and therefore the surrounding areas are at immediate risk of coastal flooding. The COOP/COG plan also identifies the risk of strong winds from storms as high, but the effects of wind as low, and unlikely to cause damage. The plan should be periodically reviewed and updated

every few years as well as following storms and other disasters to provide the most up-to-date, practical policies and information gained from experience. Additionally, to continue to be prepared for management and recovery from future disasters, Hudson County should continue to review and utilize the latest information in disaster readiness planning, including sources from the state, and FEMA.

The Hudson County All-Hazard Mitigation Plan is a detailed pre-disaster preparation plan for the county and all of its municipalities. The plan identifies and describes potential hazards, details critical facilities, assesses the vulnerability of people, structures, and the economy, estimates potential losses, and details mitigation strategies to reduce damages. The plan identifies the risk of coastal storms and associated damage from flooding and winds as high, and documents occurrences and damages from these events in the past. Hudson County is currently in the process of updating its All-Hazard Mitigation Plan, which will include data from Superstorm Sandy such as locations, severity, and damages from wind, flooding, and storm surge; in its models for predicting damages and financial losses. The plan will also include policies and actions influenced by experience gained during Superstorm Sandy. The County should continue to update the plan periodically and following major storm events and other disasters to take advantage of the most up to date knowledge and experience.

As some critical facilities are currently located in areas vulnerable to damage from flooding and sea level rise, they should be relocated to safer sites. An example is the new Hudson County Office of Emergency Management's Emergency Operations Center in Kearny. Named after the USS Juneau, a cruiser whose sinking during World War II took the lives of 20 Hudson County residents, the facility was under construction when Superstorm Sandy impacted New Jersey and sustained $2.4 million in damage. It had been raised 10 feet to the 100 year flood level during construction as a precaution against flooding, but Sandy's storm surge exceeded this level at 14 feet. The building has since been completed, and was dedicated on November 13, 2013.

Hudson County suffered the damage or destruction of 62 county vehicles during Superstorm Sandy. The county should look into relocations of vehicle storage facilities to avoid future damages from flooding. Equipment was also damaged or lost in the storm. Equipment should be inventoried and relocated prior to a storm either to where it is needed for recovery efforts or will be safe from storm damage.

The Hudson County Office of Emergency Management (OEM) is responsible for emergency alerts and warnings. The county should ensure that their emergency siren system, which was flooded during Superstorm Sandy and failed to sound, works properly during future storms. Additionally, the county's AM radio station, which broadcast outdated information during Superstorm Sandy, should be utilized to provide up-to-date information. The county has made progress by updating its Emergency Notification System, a free automated telephone advisory system. This system allows for specific targeted dissemination of important emergency information.

Additionally, the Hudson County Division of Planning, in cooperation with the Office of Emergency Management, is in the process of implementing the ArcGIS Online Interactive Mapping Initiative. With an initial focus on emergency management and planning, this platform is going to be an added tool to be used by OEM in their Emergency Operations Center. The ability to provide real-time information and mapping

will aid the decision making process in the fast paced environment associated with any disaster event.

Repairs/Upgrades to Transit

Priority: High

Hudson County is home to major transit facilities and infrastructure, and is a storage location for equipment, for several major transportation organizations. Additionally, Hudson County is very reliant on public transportation. According to 2010 U.S. Census data, 71.2% of Hudson County residents worked outside of the county, and 2012 American Community Survey data 1-year estimates indicate that nearly 25% of Hudson County workers do not own a car, and over 40% take public transportation to work. Superstorm Sandy caused significant damage to transportation facilities, infrastructure, and equipment. The damage has required expensive repairs, and has spurred a total re-examination of facility locations, emergency preparedness, and disaster recovery plans. Transportation organizations must come together with planners to determine ways they can provide optimal service, recover from Superstorm Sandy, and be more resilient to future storm events.

The PATH system was greatly affected by Superstorm Sandy. Both stations and the tunnels between New Jersey and Manhattan were severely flooded, and PATH trains and equipment were damaged. Cleaning, power washing, repairs, and replacement of stations, tunnels, and rails, substations, pumps and other infrastructure which were damaged, corroded, or coated with salt residue is ongoing. Alternating tunnels for single track operation, and closures for work, will continue into 2014. Three substations and two switching stations are in the progress of being replaced or upgraded, with the projected expected to be completed by 2017. Temporary flood barriers, such as blocks and sandbag barricades, have been installed in and around stations and infrastructure. The Port Authority identifies "complete storm-related recovery and restoration" as a short term goal, and to "prove resilient to future flood threats and storms" as a long term goal. Stations, tunnels, electrical cables, and other infrastructure should be repaired, and upgrades to the stations and tunnels, as well as relocations of storage facilities to make them more resistant to flooding and flood damages, should be examined.

An independent study on NJ Transit's decision making and response during the storm finds that the organization needs to find other locations to store trains and must improve coordination. Trains left at rail yards in Kearny and Hoboken were damaged or destroyed by flooding. The total cost of the damage to the agency has been estimated at $120 million. NJ Transit has acquired other facilities outside of the county for rail car storage, but must make further upgrades to or replace its Hoboken and Kearny facilities. They have begun with the installation of "Trap Bags," a protective system of sandbags forming a six foot high wall, at the Kearny Meadowlands Maintenance Complex and Rail Operations Center in September 2013 as a temporary protective measure. NJ Transit must use accurate weather reports during storm events, as well as develop precise models for possible impacts of flooding on key infrastructure and facilities, and safeguard the infrastructure and facilities accordingly. Additionally, Hudson County should seek to work with NJ Transit to make train, bus, and light rail infrastructure in the county more resistant to future storms; including adding protection to facilities and infrastructure, providing generators and other back-up sources

of power, prioritizing repairs, and establishing alternative emergency routes to help get Hudson County's residents moving again following a major storm.

Superstorm Sandy flooded four of the six rail tunnels under the Hudson River. The completion of the Amtrak Gateway tunnel project from Secaucus to Penn Station would increase rail capacity between New Jersey and New York City and be more resistant to future flooding. The project includes features which make the tunnel and systems resilient to storm damage, including flood gates, advanced water pumping systems, and power system backups and redundancies. Amtrak received $185 million from the Hurricane Sandy Relief Bill for the Hudson Yards Right-of-Way Preservation Project in 2013.

Repairs to/Rebuilding Damaged Housing

Priority: High

Hudson County should aid residential property owners by assisting them in finding resources for the repair of housing units lost or damaged by Superstorm Sandy. Additionally, the county should support the process of relocating residents and tenants from areas that were damaged and are now unsafe, or areas that are vulnerable to future events. Through new, more stringent building codes and construction standards requiring elevations of occupied spaces, and construction techniques and materials resistant to flooding and winds, housing in Hudson County can be made more resistant to storm damage in the future.

Assistance to Businesses Affected by Storm

Priority: High

Hudson County should assist in locating aid and technical assistance for recovery for business owners that were impacted and faced losses as a result of the storm. Many business throughout Hudson County sustained damage from Superstorm Sandy, which threatens their ability to continue operating. Businesses sustained physical damage from flooding near the waterfront or wind damage throughout the county. Additionally, in the immediate aftermath of the storm, businesses relying on commuters or tourists suffered from the loss of customers, as crippled transit prevented people from getting around.

Long Term

Stabilization of the Palisades Cliffs

Priority: Low

Much of Hudson County lies on or along the New Jersey Palisades cliffs. Storm damage, combined with long-term erosion, can cause sections of the cliffs to become unstable, and shifting or collapse of the cliffs can cause damage to buildings and infrastructure. In May 2012, a 500 foot-high section of the cliffs collapsed, creating a field of boulders below, some as large school buses, with an estimated total of 10,000 tons of rock falling during the collapse. This collapse occurred in a natural area within Palisades Interstate Park north of Hudson County, but a similar event in developed Hudson County would be a devastating disaster.

Studies and planning are needed to assess the condition of the Palisades cliffs, and stabilization may be needed to prevent catastrophes and protect against damage from future storm events. Organizational oversight needs to be established to monitor the condition of the cliffs, implement stabilization projects, lead disaster relief, and communicate with other impacted and affected agencies and parties. The New Jersey Geological Survey can provide leadership and technical support for studies, mapping, and planning. Additionally, new, uniform standards and regulations throughout the county may be necessary to protect future developments along the cliffs from destabilization which could threaten the property and other surrounding areas.

Installation of a Smart Power Grid

Priority: Low

A smart grid allows utility companies to better understand the conditions and operational capacity of utility infrastructure and systems, and enables more timely and efficient maintenance and repairs. Information is essential to understanding problems and developing solutions, and a smart grid would allow for better informed decisions to be made. PSE&G plans to put $454 million throughout the state towards implementing smart grid components to electrical systems. Part of these upgrades involves establishing back-ups within the power system to identify and use available back up sources of power in case of failures. Additionally, some overhead wires will be buried.

Establishment of Community Disaster Shelters

Priority: Medium

Hudson County has significant numbers of people who are particularly vulnerable to disasters, including low-income persons, senior citizens, the disabled, and many residents who may lack access to transportation or places to stay in case of a disaster. ADA compliant shelters adequately stocked with supplies should be established throughout the County accessible to areas at risk of significant damage from storms and with

prepared transportation plans in case evacuations becomes necessary. The county should work with municipalities, developers, and other organizations to include shelter facilities in large building projects or throughout communities.

Coordination Between the County and Municipalities for Emergency Services Deployment for Disaster Relief and Recovery

Priority: High

It is critical to ensure that interagency channels of communication are efficient, and that officials of municipal and county governments and agencies can coordinate short and long-term recovery efforts to establish and implement priorities, avoid redundancies, and ensure timely and comprehensive provision of services. As emergency services such as police and fire departments, first aid, and public works are generally provided by individual municipalities, communication and coordination between them can be a challenge and can affect response times. The Hudson County Office of Emergency Management is responsible for monitoring emergencies and providing relief services throughout the county. The OEM, with help from the Division of Planning, is currently in the process of developing an interactive mapping system for live data, communications, and response during an emergency. Additionally, first responders, emergency management, and others involved in emergency and disaster response and recovery must receive the training and equipment they need to serve effectively and efficiently.

Information is important not just during a disaster, but before it even starts. Knowledge, along with resiliency measures, can offer protection and reduce damage and injuries during a storm event. County agencies and other partners should maintain public awareness and education campaigns to encourage Hudson County residents to protect themselves and their property against the impact of possible future storms.

Construction of Shoreline Improvements for Stabilization and Defense Against Flood Waters/Rising Sea Levels for Low-Lying Areas

Priority: High

As sea levels begin to rise and future storms grow more intense, new infrastructure may be necessary to defend against flood waters and storm surges, especially in and along the shorelines and low lying areas of Hudson County. Creative and effective new plans, construction methods, and infrastructure can make Hudson County more resilient and resistant to future storm events. Sea walls, berms, and tide gates can help keep water out of low-lying, flood prone shoreline areas.

A plan to use parks, buildings, and greenways at the waterfront as flood barriers has been developed by the Office of Metropolitan Architecture and the Royal HasoningDHV, Dutch architecture and engineering firms, and has been selected as a finalist in the Rebuild by Design contest initiated by the U.S. Department of Housing and Urban Development and President Obama's Hurricane Sandy Rebuilding Task Force in June 2013. The winning design may be realized utilizing disaster recovery grants from HUD, as well as additional funding sources from both the

public and private sector. The plan calls for an integrated system which includes a greenway along a rail corridor surrounding the city, which serves as a park and system to store rainwater, walls, and new pumps and drainage systems.

Restrictions on Construction in Floodplains/Low-Lying Areas, New Codes/Standards/Regulations for Construction in these Areas

Priority : Medium

Land use controls such as zoning regulations, building standards and codes, and other municipal ordinances can prevent construction in areas susceptible to heavy impact from storms, as well as require new materials and methods of construction to make structures more resistant to damage.

Hudson County is heavily developed around its waterfronts and low-lying areas. Historically, ports and ferries, as well as industrial facilities seeking ease of movement for their raw materials and products, established themselves along the waterfront, spurring other types of development in the surrounding areas. In the present day, waterfront views, especially Hudson County's unrivaled views of the New York City skyline along the Hudson River, are a major draw for residential and commercial development. Additionally, because the low-lying flat areas allow ease of movement, many key facilities and infrastructure continue to be located in these areas as well, including ports, roads, rail, and electric substations. In the long term, the County and its municipalities should utilize studies predicting the impact of storms, flooding, and sea level rise throughout the county and determine whether certain areas at high risk of damage require stricter building codes, standards, and regulations for development. If development should be restricted completely, the County should look into acquiring properties and/or developing processes for compensation to private property owners through programs such as New Jersey DEP's Blue Acres program.

Hoboken has recently taken steps in this direction by passing two new city ordinances on December 18, 2013. One ordinance prohibits commercial and residential development on the city's piers. The other creates new construction standards to prevent flooding, such as the inclusion of anchoring decks and patios, locating of heating and air conditioning units above flood water levels, and elevation of lower floors of buildings for projects equal to or exceeding 50 percent of the property's market value.

Wetlands Creation and Protection

Priority: Low

Wetlands serve as a natural barrier to flooding, as their plants and soils help to absorb water. Many low-lying areas of Hudson County near shorelines are built on what were originally wetlands. The restoration of wetlands in Hudson County would aid in reducing storm surge and flood damage, with the additional benefits of providing green space and increasing plant and animal life.

The Blue Acres program, a component of the New Jersey Department of Environmental Protection's Green Acres program, is a funding source for the state to acquire properties in flood zones. Land purchased through the program can then be set aside as open space, and natural wetlands can be recreated to help protect against flooding.

Beyond wetlands, riparian buffers can be established. Riparian buffers are natural, forested areas surrounding natural water courses where development is restricted or prohibited. The riparian buffers help to absorb flood waters from these water courses, and collect and distribute rainwater.

Addressing Issues to Vulnerable Populations (Senior Citizens, Low-Income Residents, Disabled)

Priority: High

Hudson County residents include large numbers of people, such as senior citizens, low income residents, and the disabled, who are especially vulnerable to extreme events. As these populations may be limited physically or economically, storm damage can have a more debilitating effect on them. Plans and arrangements for the provision of food, heating and cooling, other supplies, transportation, and relocation to safe and accessible shelters should be made for these populations. Vulnerable populations throughout the county have been and should continue to be identified, and this information should be available to first responders and others planning for and aiding in future storm events.

Full Upgrade of Storm Water Systems

Priority: High

Much of the storm water infrastructure in Hudson County is outdated and/or inadequate. The massive amounts of water from storm surges and

rain from storms, along with the debris these waters carry, can overload these systems and exacerbate flooding. The county and municipalities need to create plans for a suitable, reliable storm water infrastructure system and implement the upgrades identified by the plans. Existing sewer systems need to be identified, mapped, and assessed. Some municipalities, such as Secaucus, have taken the initiative. The Town of Secaucus is surrounded by the waterways and wetlands of the New Jersey Meadowlands, and requires a system of drainage ditches, storm lines, pumps, and retention basins to keep water out of the town during storms. Secaucus has installed new storm lines, is waiting to receive bids on additional lines which would allow the Golden Avenue Pump Station to increase capacity and efficiency, and has applied to FEMA for an additional $17 million of work. The county and the municipalities must partner together and share information to complete this process. Additional studies on the flow of storm and flood waters across the features of the terrain, and storm water system capabilities, using experience gained from Hurricane Sandy and other storm events, can help to identify vulnerabilities or deficiencies and guide upgrades and redesigns.

Develop Countywide Green Infrastructure to Reduce Flood Waters

Priority: Low

Hudson County is one of the most densely urbanized areas in the United States, with most of its land developed and built on. The high level of land coverage impedes the flow and drainage of rain and flood waters, which leads to standing water and exacerbates flooding. However, engineered drainage systems can be included as part of structures and sites to help move or soak up water and prevent it from collecting. Green roofs, rain gardens, infiltration trenches, and porous pavements, and landscaping using certain native plant species, can help to absorb storm water. Elevation contours, filter strips, swales, and drains can help to aid water movement, diversion, and drainage. Well planned site design reducing the amount of building and pavement coverage will save more space for natural surfaces, and construction should seek to avoid altering natural drainage patterns. Street designs can also manage the flow of water through incorporating features which can accommodate storm water, such as sidewalk trees and planters and grass-covered traffic islands. Increasing the amount of open space in the county will also help to alleviate the drainage problem.

New land development regulations are needed to incorporate green techniques in construction, and Hudson County has taken some steps in this direction. In order to receive approval for site development or subdivisions, developers must submit an Urban Runoff Mitigation plan which details how the design of the development will address storm runoff issues, as well as create a maintenance schedule to persistently manage the mitigation techniques. The County also plans to update its Storm Water Management Plan in response to future storms and evolving storm water mitigation issues. Additionally, the county will continue to reduce the land coverage of impervious surfaces, and increase the amount of soil and plant life land coverage to help absorb water.

Plans for Transportation, Evacuations, and Priorities for Repairs/Maintenance of Major Transit Routes

Priority: Medium

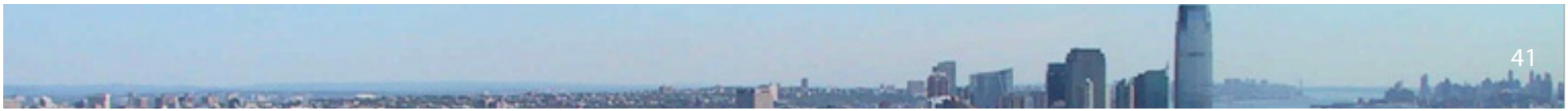
Rapid action is essential in times of disaster. It is important to maintain transportation routes for necessary movement of emergency responders; transit and utility workers; supplies; and the public, who need to reach places where they can receive supplies and treatment, loved ones, and in the long term, return to their places of employment. Designated transportation routes must also be open in case evacuations are necessary. Hudson County has many low-lying areas which have large residential populations, especially Hoboken and sections of Bayonne and Jersey City. These areas would be inundated from storm surges during a coastal storm and need to be evacuated if major storm surges are expected. Plans should be in place to prioritize and implement repairs to roads, public transit, and other transportation infrastructure, and efficient communication and coordination must be ensured.

Long Term Economic Recovery

Priority: High

With utilities, transportation infrastructure, and buildings sustaining damage, business and industry in Hudson County was severely impacted by Superstorm Sandy, resulting in lost assets, productivity, and profits. Actions should be taken to ensure key businesses and industries in the county are resilient and resistant to future storm events. Recovery efforts from future storms should be swift and strategic to allow businesses to have what they need to get back to work. Assurance must be provided to businesses in Hudson County, as well as others who may consider locating here in the future, that they will receive aid and have what they need to be resilient following storms. PSE&G's "Energy Strong" infrastructure upgrade plan, originally presented to business owners at the Hudson County Chamber of Commerce, should offer some reassurance that power outages of the scale and duration of those seen during Sandy will not be repeated, allowing businesses to restore functionality more quickly. Hudson County intends to apply for grants to conduct research on the economic conditions and needs within the county, and will include recommendations for storm recovery, future growth, as well as resiliency against future storms, in the upcoming CEDS 5 Year for 2015-2019. Additionally, commuters who have shifted their travel patterns away from Hudson County, as well as tourists who shy away from the area because of reports of damage, should be targeted with awareness and promotion campaigns to lure them back to Hudson County as customers of businesses.

The following table lists the projects for which Hudson County intends to apply for assistance through the Post Sandy Planning Assistance Grant Program Phase II grants, and lists which of the identified goals and objectives each project will help to address:



Phase II Grant Projects	Goals and Objectives Addressed
County Master Plan update	Stabilization and repair of the Hudson River Waterfront Walkway, Substation Upgrades, Repairs to and Resiliency Planning for Major County Facilities, Repairs/Upgrades to Transit, Repairs to/Rebuilding Damaged Housing, Assistance to Businesses Affected by Storm, Stabilization of the Palisades Cliffs, Installation of a Smart Power Grid, Establishment of Community Disaster Shelters, Coordination Between the County and Municipalities for Emergency Services Deployment, Disaster Relief, and Recovery, Construction of Shoreline Improvements for Stabilization and Defense Against Flood Waters/Rising Sea Levels for Low-Lying Areas, Restrictions to Construction in Floodplains/Low Lying Areas, New Codes/Standards/Regulations for Construction in these Areas, Wetlands Creation and Protection, Addressing Issues to Vulnerable Populations (Senior citizens, Low-Income Residents, Disabled), Full Upgrade of Storm Water Systems, Development Countywide Green Infrastructure to Reduce Flood Waters, Plans for Transportation, Evacuations, and Priorities for Repairs/Maintenance of Major Transit Routes, Long Term Economic Recovery
Hudson County Division of Parks Master Plan update	Stabilization and repair of the Hudson River Waterfront Walkway, Stabilization of the Palisades Cliffs, Construction of Shoreline Improvements for Stabilization and Defense Against Flood Waters/Rising Sea Levels for Low-Lying Areas, Wetlands Creation and Protection, Development Countywide Green Infrastructure to Reduce Flood Waters
Comprehensive Economic Development Strategy update	Assistance to Businesses Affected by Storm, Addressing Issues to Vulnerable Populations (Senior citizens, Low-Income Residents, Disabled), Long Term Economic Recovery
5-year Capital Improvement Plan	Stabilization and repair of the Hudson River Waterfront Walkway, Repairs to and Resiliency Planning for Major County Facilities, Repairs/Upgrades to Transit, Stabilization of the Palisades Cliffs, Installation of a Smart Power Grid, Establishment of Community Disaster Shelters, Coordination Between the County and Municipalities for Emergency Services Deployment, Disaster Relief, and Recovery, Construction of Shoreline Improvements for Stabilization and Defense Against Flood Waters/Rising Sea Levels for Low-Lying Areas, Full Upgrade of Storm Water Systems, Development Countywide Green Infrastructure to Reduce Flood Waters, Plans for Transportation, Evacuations, and Priorities for Repairs/Maintenance of Major Transit Routes

VI. Action Plan

Please note, highlighted columns are priority projects for the County.

County

DEPARTMENT	PROJECT	DESCRIPTION	PROJECT TYPE	COST	TIME FRAME	POSSIBLE FUNDING SOURCES
Hudson County MIS	Redundant Data Service	Hosting of redundant data services in alternate facilities in case of damage to main facility	Communication	$200,000.00	Medium	New Jersey Department of Transportation Local Aid Infrastructure Fund Program
Hudson County MIS	Digital Mobil Radio Request	New Digital Mobil Radio (DMR) system to support both daily and emergency communication needs	Communication	$1,270,000.00	Medium	New Jersey Department of Transportation Local Aid Infrastructure Fund Program
Hudson County MIS		**Total**		**$1,470,000.00**		
HCIA	Koppers Out-Parcel Ditch	Replacement of the ditch with a drainage pipe and replacement of the tide gate at the Hackensack River to reduce flooding of Rt. 7 and adjacent properties due to clogging of the ditch/gate	Flood Control	$500,000.00	Long	FEMA Pre-Disaster Mitigation Grant Program

DEPARTMENT	PROJECT	DESCRIPTION	PROJECT TYPE	COST	TIME FRAME	POSSIBLE FUNDING SOURCES
Hudson County Department of Corrections		Flood control.	Flood Control	$1,200,000.00	Medium	Flood Mitigation Assistance Program
Hudson County Department of Corrections		Building of an emergency access road to the facility--currently only one access route.	Access	$2,000,000.00	Long	U.S. Department of Transportation TIGER Discretionary Grants; New Jersey Department of Transportation Local Aid Infrastructure Fund Program; New Jersey Department of Transportation Municipal Aid Program; New Jersey Department of Transportation County Aid Program
Hudson County Department of Corrections		Installation of auto-lift to prevent flood damage to emergency vehicles.	Infrastructure	$130,000.00	Medium	FEMA Hazard Mitigation Grant Program

DEPARTMENT	PROJECT	DESCRIPTION	PROJECT TYPE	COST	TIME FRAME	POSSIBLE FUNDING SOURCES
Hudson County Department of Corrections		**Total**		**$3,330,000.00**		
Hudson County Division of Parks	Elevation of Proposed Lincoln Park Maintenance Building	Elevation of the building to 12.0 feet, relocation of the proposed structure, additional structural fill and structural piles for foundation, structural reinforced slab due to poor soils, design and construction of approach ramp system for building garage areas, ramp connections to all man doors.	Elevation	$675,000.00	Long	Flood Mitigation Assistance Program
Hudson County Division of Parks	Design and Installation of Backflow Preventer valve between Park Lane and Hackensack River	Installation of a backflow preventor to prevent backflow of water through the Lincoln Park lake outfall pipe, which caused flooding of the park lake and a section of NJ Rt. 1&9 during Hurricane Sandy.	Flood Control	$170,000.00	Medium	Flood Mitigation Assistance Program Stronger NJ Grant Pro-gram
Hudson County Division of Parks		**Total**		**$845,000.00**		
Hudson County Engineering Department	Cedar Creek Pump Sta-tion, Outfall, and Bulkhead Project	Flood control: improvements including new bulkhead, pumps, motors, controls, electric service and housing to reactivate the currently inoperable Cedar Creek Pump Station on the Passaic River and mitigate repetitive flooding of regional connector roads and property damage along the Cedar Creek Marsh.	Flood Control	$5,000,000.00	Long	Flood Mitigation Assistance Program
Hudson County Engineering Department	Retaining Wall/Parapet Stabilization Project	Flood control: Stabilization of Paterson Plank Road retaining walls and parapets in Jersey City and North Bergen and Manhattan Avenue retaining wall improvements in Union City.	Flood Control	$10,650,000.00	Long	FEMA Hazard Mitigation Grant Program
Hudson County Engineering Department		**Total**		**$15,650,000.00**		

DEPARTMENT	PROJECT	DESCRIPTION	PROJECT TYPE	COST	TIME FRAME	POSSIBLE FUNDING SOURCES
Hudson County Roads and Public Property	Juneau Building elevation of Critical Systems	Elevation and floodproofing of areas containing critical Command Center or electrical/mechanical facilities to comply with new FEMA Floodplain elevations.	Elevation	$675,000.00	Medium	Flood Mitigation Assistance Program
Hudson County Roads and Public Property	Penhorn Creek Pump Station	Reconstruction of the antiquated and undersized "St. Paul's"- Penhorn Creek Pump Station, Bulkhead, and Outfall draining the Penhorn Creek Drainage Area, which includes several county roadways and other vital facilities.	Flood Control	$4,600,000.00	Long	Flood Mitigation Assistance Program
Hudson County Roads and Public Property	New Generators and Mitigation at Critical Facilities	Six new generators for four County facilities, a new tie breaker switch for an existing generator, and elevation of the undamaged generator at the Juneau building.	Generator	$2,491,735.00	Short	New Jersey Hazard Mitigation Grant Program
Hudson County Roads and Public Property		**Total**		**$7,766,735.00**		

Municipalities

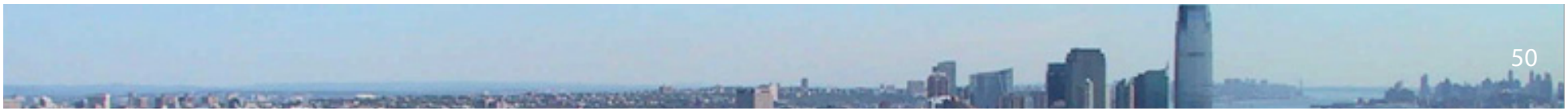
Beyond the County's Action Plan, Hudson County's municipalities have identified projects for recovery and resiliency. The County will seek to assist the municipalities in acquiring funding sources for these projects as well.

Municipality	Project	Description	Project Type	Cost	Time Frame
City of Bayonne	Emergency Generator at Engine Company #4, Rescue 1	Installation of emergency generator.	Generator	$418,500.00	Short
City of Bayonne	Generator at Engine Company #2, Tower 1	Installation of emergency generator.		$418,500.00	Short
City of Bayonne	Generator at City Hall/Engine Company #3, Tower 2	Installation of emergency generator.		$756,000.00	Short
City of Bayonne	Generator at Engine Company #6, Ladder 3	Installation of emergency generator.		$418,500.00	Short
City of Bayonne		**Total**		**$2,011,500.00**	
Bayonne Board of Education	Generators for Critical Facilities	Installation of emergency generators at several schools throughout the Bayonne school district.		$650,000.00	Short
Bayonne City Housing Authority	Generator for East 21st Street Complex	Installation of emergency generator.		$1,030,000.00	Short
Bayonne City Housing Authority	Generator for West 2nd Street Complex	Installation of emergency generator.		$1,240,000.00	Short

Municipality	Project	Description	Project Type	Cost	Time Frame
Bayonne City Housing Authority	Generator for East 50th Street Complex	Installation of emergency generator.		$1,975,000.00	Short
Bayonne City Housing Authority	Generator for East Avenue A Complex	Installation of emergency generator.		$3,700,000.00	Long
Bayonne City Housing Authority		**Total**		**$7,945,000.00**	
Bayonne Municipal Utilities Authority	MOTBY Pump Station #3 Project	Elevate electrical controls, elevate emergency generator and ATS.		$235,500.00	Long
Bayonne Municipal Utilities Authority	MOTBY Pump Station #2 Project	Elevate electrical controls, elevate emergency generator and ATS.		$235,500.00	Long
Bayonne Municipal Utilities Authority	MOTBY Pump Station #1 Project	Elevate electrical controls, elevate emergency generator and ATS.		$235,500.00	Long
Bayonne Municipal Utilities Authority	Avenue J Pump Station Project	Elevate electrical controls, elevate emergency generator and ATS.		$235,500.00	Long
Bayonne Municipal Utilities Authority	MOTBY Pump Station #1A Project	Elevate electrical controls, elevate emergency generator and ATS.		$307,500.00	Long
Bayonne Municipal Utilities Authority	1st Street Pump Station Project	Elevate electrical controls, elevate emergency generator and ATS.		$318,250.00	Long
Bayonne Municipal Utilities Authority	New Hook Road Pump Station Project	Elevation of precast concrete control building and associated electrical equiptment.		$534,000.00	Long

Municipality	Project	Description	Project Type	Cost	Time Frame
Bayonne Municipal Utilities Authority	5th Street Pump Station Project	Construction of a flood wall with vehicle access gate and a flow control gate on the influent sewer.		$2,009,500.00	Long
Bayonne Municipal Utilities Authority	Oak Street Pump Station Project	Construction of a flood wall with vehicle access gate and a flow control gate on the influent sewer.		$5,088,000.00	Long
Bayonne Municipal Utilities Authority	63rd Street Pump Station Project	Addition of an emergency generator.		$164,500.00	Long
Bayonne Municipal Utilities Authority		**Total**		**$9,363750.00**	
Communities of Faith for Housing/ Hoboken	Generator for Shelter	Installation of an emergency generator.		$320,000.00	Short
Town of Guttenberg	Boulevard East Flood Control Project	Installation of a new 30" separate storm sewer pipe on the east side of Boulevard East , directing it to the existing combined sewer.	Flood Control	$1,040,000.00	Long
Town of Guttenberg	Generator for EOC/Police Station	Installation of an emergency generator.		$90,000.00	Short
Town of Guttenberg		**Total**		**$1,130,000.00**	
City of Hoboken	Property Acquisition and Demolition, Relocation 308 2nd St.		Acquisition	$500,000.00	Long

Municipality	Project	Description	Project Type	Cost	Time Frame
City of Hoboken	Property Acquisition and Minor Localized Flood Reduction Projects	Acquisition and development of land tracts identified in 2010 Master Plan Reexamination Report for open space to be used for parks and recreational purposes as well as for flood reduction and storage through stormwater retention and detention facilities.	Acquisition	$80,000,000.00	Long
City of Hoboken	5% Initiative Project Public Awareness and Education Campaign About Mitigation	Multi-media public awareness campaign to educate the public about hazards and risks and the National Flood Insurance Program. Hoboken will also pursue designation as a participating Community Rating System community.	Public Awareness	$100,000.00	Medium
City of Hoboken	Hoboken Flood Mitigation and Reduction Project	Design and construction of a flood wall system with approximately 2 miles of flood barriers and 4 stormwater pump stations.	Flood Control	$44,161,000.00	Long
City of Hoboken	5% Initiative Project Impending Hazard Warning System	Purchase of solar-powered variable message signs for use before, during, and after disaster events.	Communication	$125,300.00	Medium
City of Hoboken	Minor Localized Flood Reduction Project Hoboken City Hall Stormwater Improvement Project	Design and construction of a model sustainable green infrastructure stormwater management system at Hoboken City Hall to reduce stormwater runoff and flooding.	Stormwater Management	$214,500.00	Medium



Municipality	Project	Description	Project Type	Cost	Time Frame
City of Hoboken	Dry Flood Proofing of Historic Structure Hoboken Public Library	Waterproofing interior lower level walls and floors, installing sump pits and connective piping, emergency backup generator, manually operated flood dams, on-site drainage improvements, isolation of upper level sanitary waste lines from lower level waste lines.	Dry Proofing	$800,000.00	Medium
City of Hoboken	Purchase and Installation of Emergency Backup Generators (5% Initiative)	Purchase and installation of natural gas-fed back-up generators above BFE for critical community facilities to deliver emergency and municipal services during power outages or disaster events.	Generator	$1,777,000.00	Short
City of Hoboken	Madison Condo Association Floodproofing			$25,000.00	Medium
City of Hoboken	Church of Our Lady of Grace St. Joseph Church			$200,000.00	
City of Hoboken		**Total**		**$127,902,800.00**	
City of Jersey City	Jersey City Engineering Installation of Generators	Emergency power to traffic signals: installation of generators, solar panels, and waterproofing of 35 signal controllers.		$525,000.00	Short
City of Jersey City	Jersey City OEM Generators for Critical Facilities	Emergency generators for critical city-wide assets.		$3,500,000.00	Short

Municipality	Project	Description	Project Type	Cost	Time Frame
City of Jersey City	Moveable Wave Action Barrier	Construction of a moveable wave action barrier under the roadway along the Hudson River to prevent wave surge. The flood wall is automatically activated by flood water on the streets.		$16,000,000.00	Long
City of Jersey City		**Total**		**$20,025,000.00**	
Jersey City Housing Authority	Utility elevation at Marion Gardens	Elevation and decentralization of below grade boilers and electrical panels at a public housing site in a flood zone (ABFE "A").		$3,410,000.00	Short
Jersey City Housing Authority	Utility elevation at Holland Gardens and Booker T. Washington	Elevation and decentralization of below grade boilers and electrical panels at a public housing site in a flood zone (ABFE "V").		$4,235,000.00	Short
Jersey City Housing Authority	Holland Gardens and Booker T. Washington Stormwater Management Plan	Flood control, stormwater management and geotechnical stablization at two public housing sites in flood zone (ABFE "V").		$9,350,000.00	Short
Jersey City Housing Authority	Berry Gardens Wind Retrofit	Replacement of storm-damaged façade and restoration to withstand storm-force winds.		$5,025,000.00	
Jersey City Housing Authority		**Total**		**$22,020,000.00**	
Jersey City Municipal Utilities Authority	18th Street Outfall Project	Installation of storm water pumps at JCMUA's 18th St. outfall in order to mitigate CSO street flooding and sewer backups.		$500,000.00	

Municipality	Project	Description	Project Type	Cost	Time Frame
Jersey City Municipal Utilities Authority	Essex Street and Colgate Walkway Project	Installation of storm water pumps at netting facilities to allow water to continue to be pumped out during high tide conditions, mitigating sewer backups and street flooding.		$2,000,000.00	
Jersey City Municipal Utilities Authority	Mina Drive Netting Facility Project	Installation of storm water pumps at netting facilities to allow water to continue to be pumped out during high tide conditions, mitigating sewer backups and street flooding.		$3,000,000.00	
Jersey City Municipal Utilities Authority	Sip Avenue Netting Facility Project	Installation of storm water pumps at netting facilities to allow water to continue to be pumped out during high tide conditions, mitigating sewer backups and street flooding.		$3,000,000.00	
Jersey City Municipal Utilities Authority	Mill Creek Regulator Project	Installation of storm water pumps at netting facilities to allow water to continue to be pumped out during high tide conditions, mitigating sewer backups and street flooding.		$5,000,000.00	
Jersey City Municipal Utilities Authority	Clendenny Netting Facility Project	Installation of storm water pumps at netting facilities to allow water to continue to be pumped out during high tide conditions, mitigating sewer backups and street flooding.		$6,000,000.00	
Jersey City Municipal Utilities Authority	Claremont/ Cateret Netting Facility Project	Installation of storm water pumps at netting facilities to allow water to continue to be pumped out during high tide conditions, mitigating sewer backups and street flooding.		$6,000,000.00	
Jersey City Municipal Utilities Authority	East Side Plant Drainage Project	Upgrade abandoned sediment tanks to water storage vessels to alleviate some of the flooding in the downtown Jersey City area.		$30,000,000.00	
Jersey City Municipal Utilities Authority	Generator for East Side Plant	Replacement of a sea water-damaged emergency generator at the East Side Plant and installation of a 6000-gallon aboveground fuel storage tank above current 100-year floodplain.		$1,200,000.00	Short

Municipality	Project	Description	Project Type	Cost	Time Frame
Jersey City Municipal Utilities Authority		**Total**		**$56,700,000.00**	
Town of Kearny	Construction of New Dukes Street Pump Station	Construction of a stormwater pump station at Dukes Street to reduce flooding of the local built area as well as mitigating flooding in the Dead Horse Creek Watershed drainage area.	Flood Control	$7,172,000.00	Long
Town of Kearny	Purchase and Installation of Permanent Generators for Critical Facilities	Purchase and installation of permanent generators at 8 critical facilities to provide emergency services.	Generator	$680,000.00	Short
Town of Kearny	Purchase and Installation of Permanent Generators for Pumping Stations	Purchase and installation of permanent generators at 8 pumping stations to mitigate power failure hazards and provide uninterrupted pumping capacity in the case of power failure.	Generator	$990,000.00	Short
Town of Kearny	Localized Flood Reduction Projects; Upgrades to Tide Gates	Upgrade of 2 existing tide gates and installation of 1 new tide gate with duckbill type valve to reduce backflow and extend pump lifecycle.	Flood Control	$450,000.00	Medium
Town of Kearny	5% Initiative Projects	Electric and alarm services for early detection systems at pumping stations.	Flood Control/ Communication	$200,000.00	Short
Town of Kearny		**Total**		**$9,942,000.00**	

Municipality	Project	Description	Project Type	Cost	Time Frame
Kearny Municipal Utilities Authority	Isolation valve and Temporary Bypass System	Installation of a shutoff isolation valve to temporarily redirect flow from the gravity sewer collection area around the HAPS during flooding to mitigate future flooding. The HAPS, which provides wastewater service to the southern portion of Kearny and a portion of the New Jersey Turnpike, also receives flow from two upstream pump stations.		$231,000.00	
Kearny Municipal Utilities Authority	Harrison Avenue Pump Station Flood proofing	Creation of a flood barrier system for the currently unprotected HAPS, which is located in a wetlands area and within a flood zone.		$430,000.00	
Kearny Municipal Utilities Authority	Generator for Harrison Avenue Pump Station	Replacement of the current generator, which is approaching the end of its useful life due to prolonged operation during Hurricane Sandy.		$200,000.00	Short
Kearny Municipal Utilities Authority	Generator for Critical Facility	Replacement of a generator nearing the end of its useful life at the Kearny Point Pump Station, which provides wastewater service to the southern portion of Kearny. The KPPS is located outside the FEMA flood zone area.		$363,000.00	Short
Kearny Municipal Utilities Authority		**Total**		**$1,224,000.00**	
Township of North Bergen	River Road Flood Mitigation	Phase 1: Engineering studies to evaluate viability of project elements for the 1-mile stretch along River Road. Phase 2: System of locks to keep water out of the area, with pump stations and backflow preventors.	Flood Control	$ 8,000,000.00	Long
Township of North Bergen	Multiple-Site Generator Installation	Permanent generator installation at Town Hall, 4233 Kennedy Blvd; Lincoln School Annex, 1206 63rd St; and Department of Public Works.	Generator	$600,000.00	Short

Municipality	Project	Description	Project Type	Cost	Time Frame
Township of North Bergen	Bellman's Creek/ Pumping Station	Tide gate pump station installed at the Fairview Avenue/ Railroad Avenue intersection and dredging of Bellman's Creek to prevent surcharge upstream between 91st St. and Railroad Ave. to reduce flooding the the area.	Flood Control	$6,500,000.00	Medium
Township of North Bergen	Hudson Pointe Reconstruction/ Elevation	Elevation of garage and main door thresholds, reconstruction of garage ramps, site improvements including added fill and elevation of pavement and sidewalk, and related work at The Views at Hudson Pointe.	Elevation	$428,000.00	Long
Township of North Bergen	Roc Harbor Shoreline Stabilization and Infrastructure			$2,500,000.00	Long
Township of North Bergen		**Total**		**$18,028,000.00**	
North Hudson Sewerage Authority	Wet Weather Pump Stations	Construction of three wet weather pump stations (shovel-ready) of the same type as the H-1 pump station, placed into operation Sept. 2011 and responsible for substantially faster rates of drainage in Southwest Hoboken.		$20,000,000.00	Long
North Hudson Sewerage Authority	Generators for Critical Facilities	Replacement of emergency generators for continuing plant functioning that operated during Hurricane Sandy due to the likelihood of damage due to prolonged operation beyond design parameters and exposure to power surges.		$4,300,000.00	Short
North Hudson Sewerage Authority		**Total**		**$24,300,000.00**	
Town of Secaucus	Born Street Pumping Station	Construction of a new pumping station to replace current ineffective Born Street station.	Flood Control	$1,700,000.00	Long

Municipality	Project	Description	Project Type	Cost	Time Frame
Town of Secaucus	Permanent Back-up Generator Installation	Installation of permanent back-up generators at Secaucus Day Care, 150 Plaza Center (connected to Engine Co. 1); and Secaucus Library, 1379 Paterson Plank Rd., which can function to facilitate OEM operations and as a shelter.	Generator	$281,000.00	Short
Town of Secaucus	Koelle/Valley Flood Walls	Installation of sheet pile walls (material chosen due to spacial constraints) to prevent flooding in the eastern residential portion of town. Could be separated into two smaller projects.	Flood Control	$9,250,000.00	Long
Town of Secaucus	Koelle Tide Gate	Replacement of the Koelle Tide Gate at the Koelle Blvd. end of the drainage ditch between the Hackensack River and Koelle Boulevard, construction of a new headwall to keep debris from compromising the gate's operation, construction of a berm to control high tides.	Flood Control	$51,000.00	Long
Town of Secaucus	Creekside Berm	Raising of the bank at the end of the drainage ditch leading to the Hackensack River to provide flood protection.	Flood Control	$14,000.00	Long
Town of Secaucus	Plaza Center Discharge	Installation of check valves within the town's stormwater conveyance, upstream of the connection with the NJDOT system to stop storm surges from entering downtown Secaucus.	Flood Control	$164,000.00	Medium
Town of Secaucus	Golden Avenue Pumping Station			$2,400,000.00	Long
Town of Secaucus	Elevation of Bobinski Residence			$89,281.00	
Town of Secaucus	Generators for Critical Facilities	Installation of generators at critical facilities.		$210,750.00	Short
Town of Secaucus		**Total**		**$14,160,031.00**	

Municipality	Project	Description	Project Type	Cost	Time Frame
Secaucus Municipal Utilities Authority	Comprehensive Drainage Project			$300,000.00	Long
City of Union City	Generator Installation	Installation of generators at the Bruce D. Walter Recreation center- Red Cross Certified Shelter at 507 West St., Union City.	Generator	$517,000.00	Short
City of Union City	Generator Installation	Generator installation at City Hall .	Generator	$773,000.00	Short
City of Union City	Generator Installation	Generator installation at Jose Martinez Freshman Academy.	Generator	$773,000.00	Short
City of Union City		**Total**		**$2,063,000.00**	
Palisades Medical Center	Purchase and Elevation of Generators	Purchase of 3 generators and elevation of generators to safe heights in accordance with new flood plain projections.	Generator	$2,000,000.00	Short
Palisades Medical Center	Information Technology Disaster Avoidance	Protection of hospital information systems and enabling of access to critical information when systems are unavailable.	Communication	$2,700,000.00	Medium
Palisades Medical Center	Communications Systems	Relocation of communications hub to existing space on a higher floor of the same building to prevent flooding.	Elevation	$500,000.00	Medium
Palisades Medical Center	Boiler Room Renovations	Elevation of boilers and waterproofing of the boiler housing structures.	Elevation	$850,000.00	Medium
Palisades Medical Center		**Total**		**$6,050,000.00**	
Stevens Institute of Technology	Sinatra Drive Rip Rap Project	Installation of heavy rip rap along 300lf of Hudson riverbank adjacent to Stevens operations headquarters to strengthen this vulnerable area and allow continued functioning in storm conditions.		$25,000.00	

Municipality	Project	Description	Project Type	Cost	Time Frame
Stevens Institute of Technology	Generator for Critical Facilities	Generators for Stevens University's emergency power needs to support safety and critical functions		$1,070,000	Short
Stevens Institute of Technology	Facility Roof Hardening	Protection of roof structures from future storm and wind surges using a ballast roofing system.		$1,400,000	Medium
Stevens Institute of Technology		**Total**		**$2,495,000.00**	
Township of Weehawken	18th Street Pumping Station Project	Construction of flood barriers to protect the 18th Street Pumping Station, which drains the Shades neighborhood of Weehawken.		$12,000,000.00	Long
Township of Weehawken	Generator for Critical Facilities	Installation of emergency generators at critical facilities and shelters.		$1,065,000.00	Short
Township of Weehawken		**Total**		**$13,065,000.00**	
Town of West New York	Generator for Critical Facilities	Installation of generators at critical facilities.		$100,000.00	Short

VII. Funding Sources

Funding Source	Program Description	Administrator	Eligible Entity
Local Government Capacity Grant Program	Financial and technical support for "outreach, analysis, coordination, and planning activities" for planning projects which further the realization of the Regional Plan For Sustainable Development. These include a variety of projects in different topic areas including economic development, environmental planning, redevelopment, and transportation	Together North Jersey/Rutgers University	Counties and municipalities which are members of the Together North Jersey Steering Committee
Community Development Block Grant	Provides grant funding for a variety of purposes related to community development for low and moderate income populations, especially ensuring quality affordable housing and stimulating businesses and jobs	U.S. Department of Housing and Urban Development	States, and local governments which comprise either the central cities of Metropolitan Statistical areas, metropolitan cities of at least 50,000 people, qualified urban counties with at least 200,000 or more people, and other local governments designated to receive funds by the states
Blue Acres Program	Fund for the state to purchase properties in flood zones for their permanent preservation as open space	New Jersey Department of Environmental Protection	Owners of properties located in flood zones which have sustained or are prone to flood damage due to storms
Neighborhood Revitalization Tax Credit Program	A 100% tax credit to businesses which provide funds to organizations for comprehensive revitalization plans. 60% of the funds must be used by the organizations for housing and economic development, and the remaining funds may go to supportive services and other activities which promote neighborhood revitalization	New Jersey Department of Community Affairs	Non-profit organizations in municipalities qualified to receive funds from the "Special Municipal Aid Act" or "Abbot Districts"
Walmart Local Giving Program	Grants for support of projects to positively benefit communities proximate to Walmart Stores	Walmart	non-profit organizations, state, county or local government agencies, school, churches and faith-based organizations

Funding Source	Program Description	Administrator	Eligible Entity
Local Initiatives Support Corporation Grant Program and Technical Assistance Program	Grants for community development projects including affordable housing development, commercial development, community facilities, and strategic planning, as well as technical assistance for these and other activities	Local Initiatives Support Corporation	A variety of organizations
Goldman Sachs Urban Investments	Provides loans and investments to urban communities for economic development, neighborhood revitalization, and community services	Goldman Sachs Urban Investments Group	non-profit organizations
HUD Choice Neighborhoods Grant Program	Provides grants for comprehensive planning for neighborhood revitalization and implementation for three primary categories: housing, people, and neighborhoods	U.S. Department of Housing and Urban Development	County and local governments, Housing Authorities
Capital One Economic Development	Provides investment and loans for affordable housing, small business development, and community stabilization and revitalization	Capital One	Businesses, non-profits, and other organizations
Bank of America Charitable Foundations Funding Opportunities: Community Development	Grants, loans, and investment in community development and neighborhood stabilization and revitalization projects	Bank of America	organizations and institutions involved in community development
U.S Economic Development Administration Economic Development Assistance Program	Provides grant funding to support economic growth, innovation, and competitiveness, and attract investment to economically distressed areas	U.S. Economic Development Administration	Local, State, and County Governments, Non-profit organizations, institutes of higher education, Federally recognized Native American tribal governments
U.S. Economic Development Administration Planning Program and Local Technical Assistance Program	Provides grant funding and technical assistance for economic development plans. The program supports the creation, implementation, or updating of Comprehensive Economic Development Strategies which define economic goals for the entity's area of focus	U.S. Economic Development Administration	Local, State, and County Governments, Non-profit organizations, institutes of higher education, Federally recognized Native American tribal governments

Funding Source	Program Description	Administrator	Eligible Entity
U.S. Department of Housing and Urban Development Community Challenge Planning Grant Program	Awards funding through grants to update master plans and zoning and building codes to further the objectives of creating economically thriving and sustainable communities through the development of affordable housing, mixed-use development, adaptive reuse, and related strategies	U.S. Department of Housing and Urban Development	Local, State, and County Government entities
U.S. Department of Transportation TIGER Discretionary Grants	Provides investment for the execution of projects for road, rail, transit, and ports which "promise to achieve critical national objectives" including economic recovery and promoting livability and sustainability	U.S. Department of Transportation	Local, State, and Tribal Governments and political subdivisions, Transit Agencies, Port Authorities, Metropolitan Planning Organizations, Multi state or jurisdictional groups applying through a lead applicant with all other members eligible applicants
U.S. Department of Transportation TIGER II Planning Grants	Provides funding for planning of projects for road, rail, transit, and ports which "promise to achieve critical national objectives" including economic recovery and promoting livability and sustainability	U.S. Department of Transportation	Local, State, and Tribal Governments and political subdivisions, Transit Agencies, Port Authorities, Metropolitan Planning Organizations, Multi state or jurisdictional groups applying through a lead applicant with all other members eligible applicants
New Jersey Department of Transportation Local Aid Infrastructure Fund Program	Provides funding to establish a Local Aid Infrastructure Fund for emergency needs	New Jersey Department of Transportation	New Jersey Counties and Municipalities
New Jersey Department of Transportation Municipal Aid Program	Funding distributed to municipalities for road improvements such as resurfacing, repair, and reconstruction	New Jersey Department of Transportation	New Jersey Municipalities
New Jersey Department of Transportation County Aid Program	Funding distributed to counties for projects which enhance county roads and bridges	New Jersey Department of Transportation	New Jersey Counties

Funding Source	Program Description	Administrator	Eligible Entity
New Jersey Department of Transportation Centers of Place Program	Special funding program for municipalities formally participating in the New Jersey State Development and Redevelopment Plan. The funding supports "non-traditional transportation improvements that advance municipal growth objectives"	New Jersey Department of Transportation	New Jersey Municipalities
New Jersey Department of Transportation Local Bridges, Future Needs Program	Provides funding for projects for maintenance, upgrades or replacement of bridges under county jurisdiction	New Jersey Department of Transportation	New Jersey Counties
New Jersey Department of Transportation Local Scoping Program	Federally funded program which supports moving projects through the National Environmental Policy Act and preliminary engineering for eligibility to be included in the Statewide Transportation Improvement Program	New Jersey's Designated Metropolitan Planning Organizations	New Jersey Counties and Municipalities
New Jersey Department of Transportation Local Lead Program	Federally funded program for advancing transportation projects meeting certain criteria through final design, right-of-way, and/or construction	New Jersey's Designated Metropolitan Planning Organizations	New Jersey Counties and Municipalities
New Jersey Department of Transportation Transportation Enhancement Program	Federally funded program to design and implement projects related to transportation in one of twelve categories which "foster more livable communities, preserve and protect environmental and cultural resources, and promote alternative modes of transportation"	New Jersey Transportation Enhancement Advisory Committee	New Jersey County and Municipal government entities, and non-profit organizations
Federal Aid Highway Emergency Relief Program	Federally funded program for repair and reconstruction projects of Federal-aid highways and roads on Federal lands which have sustained damage from an environmental disaster	Federal Highway Administration's state division office	New Jersey County and Municipal government entities, Civic and Environmental Groups

Funding Source	Program Description	Administrator	Eligible Entity
FEMA Pre-Disaster Mitigation Grant Program	Provides funding for preemptive hazard mitigation planning and execution of	Federal Emergency Management Agency	State and Local Governments, Native American tribes and tribal organizations
Geraldine R. Dodge Foundation Environment Grants	Grant funding for promoting resilient ecosystems, conservation of land and watersheds, urban greening, and sustainability through community participation, as well as for public policy initiatives which support these objectives	The Geraldine R. Dodge Foundation	501(c)(3) non-profits based in New Jersey or whose projects have a significant impact in the state
Green Communities Challenge Grant	Provides funding for municipalities to aid in creating a Community Forestry Management Plan, which guides urban and community forestry projects	New Jersey Department of Environmental Protection	Municipalities or County Government agencies who can match or exceed the amount provided by the grant
Land and Water Conservation Fund	Matching grant funding to states and municipalities for the planning, acquisition, and improvement of public outdoor recreation areas and facilities	U.S. National Park Service	State or Municipal Governments
FEMA Hazard Mitigation Grant Program	Grant funding for long-term hazard mitigation actions following a major disaster to decrease loss of life and property	Federal Emergency Management Agency	State and local governments, Indian tribes and organizations, and non-profit organizations
Flood Mitigation Assistance Program	Provides grants for planning Flood Mitigation Plans, project grants for implementing flood protection measures including elevating, acquiring, and relocating National Flood Insurance Program Insured projects, and Management Cost Grants for administering the programs	Federal Emergency Management Agency	State and local governments, and Indian tribes and organizations
Repetitive Flood Claims Program	Program provides funding to decrease long term risk of damage from flooding to structures insured by the National Flood Insurance Program which have received one or more claim payments for flood damages	Federal Emergency Management Agency	State and local governments, and Indian tribes and organizations

Funding Source	Program Description	Administrator	Eligible Entity
North American Wetlands Conservation Act Grant Program	Provides grant funding for the conservation, restoration, and enhancement of wetlands habitats	U.S. Fish and Wildlife Service	Organizations or individuals who have developed partnerships to advance wetlands conservation projects benefit of wildlife
Sustainable Communities Regional Planning Grants	Provides grant funding for "locally-led collaborative efforts" for regional planning to promote housing, economic development, and infrastructure development guided by six "livability principles"	U.S Department of Housing and Urban Development	Partnerships of local governments and other organizations
Community Development Block Grant Disaster Recovery Assistance	Grant funding to assist low-income communities in recovery from Presidentially declared disasters	U.S Department of Housing and Urban Development	State, local, and county governments. Funding must go towards projects which benefit low and moderate income residents, or for areas where over half the resident population are low or moderate income residents
New Jersey Recreation Trails Program Grants	Provides funding for creating and maintaining trails, trail facilities, equipment, and acquisitions of easements and fee simple titles for trail properties	New Jersey Department of Environmental Protection	State, county, and local governments, and non-profit organizations
Rivers, Trails, and Conservation Assistance Program	Provides funding and assistance for creating and developing parks and trails, providing public access to waterways, and providing recreational opportunities	U.S. National Park Service	State and local agencies, Native American tribes, non-profit organizations
Safe Streets to Transit Program	Provides funding for projects which improve safety for pedestrians and increases access to public transit facilities	New Jersey Department of Transportation	New Jersey Counties and Municipalities

Appendices

Appendix A: National Flood Insurance Program premiums in Hudson County affected by the Biggert-Waters Act

			Timing of Change											
			Phase Out Immediately (25% annual increases until true-risk rate)*			Change of Ownership (or other 100205(g) trigger)	No Phase Out at This Time (Pending Full Implementation of BW-12 or 100205(g) trigger)							
State	County	Community	100205 (a)(1)(A) Single Family or Condo Unit Owner Non-Primary (Non-Principal)	100205 (a)(1)(D) Business (Non-Residential)**	100205 (a)(1)(B)&(C) SRL Pre-FIRM Subsidized	100205(g) Single Family or Condo Unit Owner Principal Residence	Non Pre-FIRM SRL	2-4 Family	5+ Family	Condominium Building	Total Affected by 100205	Not Affected by 100205	Grand Total	% Affected
NEW JERSEY	HUDSON COUNTY	BAYONNE, CITY OF	-	4	-	4	-	2	-	-	10	240	250	4.00%
NEW JERSEY	HUDSON COUNTY	EAST NEWARK, BOROUGH OF	-	-	-	1	-	-	-	-	1	2	3	33.33%
NEW JERSEY	HUDSON COUNTY	GUTTENBERG, TOWN OF	-	-	-	1	-	-	-	3	4	158	162	2.47%
NEW JERSEY	HUDSON COUNTY	HARRISON, TOWN OF	-	7	-	-	-	7	1	-	15	207	222	6.76%
NEW JERSEY	HUDSON COUNTY	HOBOKEN, CITY OF	47	89	2	311	1	232	156	1,976	2,814	6,327	9,141	30.78%
NEW JERSEY	HUDSON COUNTY	JERSEY CITY, CITY OF	31	85	8	223	1	334	86	509	1,277	4,840	6,117	20.88%
NEW JERSEY	HUDSON COUNTY	KEARNY, TOWN OF	3	37	-	-	2	-	-	-	42	57	99	42.42%
NEW JERSEY	HUDSON COUNTY	NORTH BERGEN, TOWNSHIP OF	1	7	1	5	-	-	-	-	14	481	495	2.83%
NEW JERSEY	HUDSON COUNTY	SECAUCUS, TOWN OF	2	-	-	10	-	7	-	-	19	32	51	37.25%
NEW JERSEY	HUDSON COUNTY	WEEHAWKEN, TOWNSHIP OF	2	-	-	19	-	13	4	12	50	227	277	18.05%
NEW JERSEY	HUDSON COUNTY	WEST NEW YORK, TOWN OF	-	-	-	-	-	-	-	-	-	991	991	0.00%
			86	229	11	574	4	595	247	2,500	4,246		17,808	23.84%

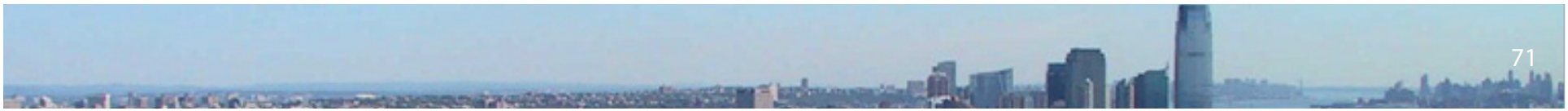
County	Municipality	Street Address / Location	Type of Project	Replacement or Repair?*	Description of Work	Total Project Cost	Federal, State or Municipal Funds Applied For?	If Yes, How Much Funds Applied For?
Hudson	Kearny	Hudson County Correctional Facility, 35 Hackensack Avenue, Kearny, NJ	10 - Building	Repair	Repair building damage and Replace miscellaneous damaged items & electrical components, due to flooding of Hurricane Sandy	$1,162,500.00	Yes	$1,162,500.00
Hudson	Kearny	Hudson County Correctional Facility, 35 Hackensack Avenue, Kearny, NJ	5- Utility line	Repair	Steam Pipe repair due to damage by flooding of Hurricane Sandy	$500,000.00	Yes	$500,000.00
Hudson	Kearny	Building 77, 110 S.Hackensack Avenue, Kearny, NJ	10- Building	Repair	Repair building damage and Replacement of damaged items (furniture etc,) by flooding of Hurricane Sandy	$2,886,527.00	Yes	$2,400,000.00
Hudson	Kearny	Route 508 between Rt.280 & Rt. 7	1- Roadway	Repair	Repair of existing storm sewer pumps and electrical panel due to flood damage by Hurricane Sandy	$37,718.40	Yes	$37,718.40
Hudson	Kearny	Route 508 3 Traffic Signal Controllers between Rt.280 & Rt. 7	10- Traffic Signals	Repair	Traffic Signal controller repairs due to flooding caused by Hurricane Sandy	$49,143.00	Yes	$49,143.00
Hudson	Kearny	Route 508 between Rt.280 & Rt. 7	1- Roadway	Repair	Emergency pumping to relieve roadway flooding caused by Hurricane Sandy	$108,082.85	Yes	$108,082.85
Hudson	Harrison/ East Newark	Hudson/Essex Joint Bridges- Jackson St., Bridge St. and Clay St.	4- Bridge	Repair	Repairs to movable bridges' Electrical systems, Bridge Machinery, motors, lighting & electrical components due to flooding caused by Hurricane Sandy	$288,510.00	Yes	$288,510.00
Hudson	Jersey City,West New York, North Bergen,Union City, Weehawken, Harrison, East Newark, and Kearny	Various Traffic Signal controllers (22) Throughout Hudson County	10- Traffic Signals	Repair	Repairs to Traffic Signal controllers, which include cabinets, secondary controllers, conflict monitors and wiring due to flooding caused by Hurricane Sandy	$110,754.00	Yes	$110,754.00
Hudson	Jersey City	Annex, 567 Pavonia Avenue, Jersey City,NJ	10- Building	Repair	Repairs to building due to wind damage and flooding caused by Hurricane Sandy	$20,000.00	Yes	$20,000.00
Hudson	Jersey City	Administration Building, 595 Newark Avenue, Jersey City, NJ	10- Building	Repair	Repairs to building due to wind damage and flooding caused by Hurricane Sandy	$1,500.00	Yes	$1,500.00
Hudson	Jersey City	Brennan Courthouse, 583 Newark Avenue, Jersey City, NJ	10- Building	Repair	Repairs to building due to wind damage and flooding caused by Hurricane Sandy	$20,000.00	Yes	$20,000.00
Hudson	Secaucus	Meadowview Campus, Building # 7 595 County Avenue, Secaucus,NJ	10- Building	Repair	Repairs to Slate Roof due to wind damage caused by Hurricane Sandy	$5,000.00	Yes	$5,000.00
Hudson	Secaucus	Meadowview Campus, Building # 8 595 County Avenue, Secaucus,NJ	10- Building	Repair	Repairs to Slate Roof due to wind damage caused by Hurricane Sandy	$1,500.00	Yes	$1,500.00
Hudson	Secaucus	Meadowview Campus, Building # 8 Correctional HQ 595 County Avenue, Secaucus,NJ	10- Building	Repair	Repairs to Slate Roof due to wind damage caused by Hurricane Sandy	$1,200.00	Yes	$1,200.00
Hudson	Secaucus	Meadowview Campus, Building # 9 595 County Avenue, Secaucus,NJ	10- Building	Repair	Repairs to Slate Roof due to wind damage caused by Hurricane Sandy	$1,200.00	Yes	$1,200.00
Hudson	Secaucus	Meadowview Campus, Psychiatric Hospital 595 County Avenue, Secaucus,NJ	10- Building	Repair	Repairs to building roof due to wind damage and flooding caused by Hurricane Sandy	$6,000.00	Yes	$2,524.50
Hudson	Jersey City	Duncan Ave Garage, 549 Duncan Avenue, Jersey City, NJ	10- Building	Repair	Replacement of Equipment Damaged due to flooding caused by Hurricane Sandy	$167,254.00	Yes	$167,254.00
Hudson	Secaucus	Penhorn Creek Pump Station	10- Pump Station	Repair	Repairs to pump motor & electrical repairs due to flooding caused by Hurricane Sandy	$68,046.00	Yes	$68,046.00
Hudson	North Bergen	32nd St & JFK Boulevard	1- Roadway	Repair	Repair to Traffic signal head and electrical work due to wind damage caused by Hurricane Sandy	$5,551.84	Yes	$5,551.84
Hudson	Weehawken	Weehawken Cove	10- Riverfront Walkway	Repair	MUNICIPAL-Repairs to riverfront walkway and replacment of miscellaneous damaged items (landscaping, pavers,etc.) and debris clean up, due to wind damage and flooding caused by Hurricane Sandy	$500,000.00	Yes	$500,000.00

Repair means that no more than 50% of the

Project Constructed? (if No, then complete next column)	Estimated Completion Date	Freshwater Wetland GP Required? * for DEP Use Only*
No	December-14	No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
Yes		No
No	November-13	No
Yes		No
Yes		No
Yes		No

Appendix C: Hudson County Claim Submissions to FEMA

Grant #	Applicant Name	Fed #	State #	Title	Type	Size	Eligible Amt	F %	Expended %	F Paid	S Paid
4086	Hudson County Roads & Public Property	2901		Temporary Steam Boiler	B	L	$216,323.65	90%	0%	83%	
4086	Hudson County Roads & Public Property	2802		Emergency Protective Measures	B	L	$1,304,140.93	90%	0%	57%	
4086	Hudson County Roads & Public Property	3486		Penhorn Creek PS	D	S	$28,185.48	90%		100%	
4086	Hudson County Roads & Public Property	3579		Steam Lines and Electrical	F	L	$910,312.88	90%	0%	0%	
4086	Hudson County Roads & Public Property	4020		JUNEAU CENTER	E	L	$3,610,238.19	90%	0%	0%	
4086	Hudson County Roads & Public Property	4009		Collapsed Blue Cobblestone Wall	G	S	$25,232.00	90%		100%	
4086	Hudson County Roads & Public Property	4000		Synthetic Turf Repair	G	L	$130,560.34	90%	0%	0%	
4086	Hudson County Roads & Public Property	4148		75GL Water Heater & Cast Iron Gas Boiler	E	S	$3,539.75	90%		100%	
4086	Hudson County Roads & Public Property	4434		Debris Removal	A	L	$731,096.35	90%	0%	50%	
4086	Hudson County Roads & Public Property	4575		Damaged Vehicles	E	L	$583,897.12	90%	0%	0%	
4086	Hudson County Roads & Public Property	4594		OEM Equip at HCCC	E	L	$43,986.18	90%	0%	0%	
4086	Hudson County Roads & Public Property	4596		HCCC Elevator Repairs	E	L	$498,986.11	0%	0%		
4086	Hudson County Roads & Public Property	4675		Building Repairs/ Equipment	E	L	$100,823.98	90%	0%	0%	
4086	Hudson County Roads & Public Property	4709		Building Repairs & Building Contents	E	L	$44,884.57	90%	0%	0%	
4086	Hudson County Roads & Public Property	4979		Correctional Center Security System	E	L	$207,033.65	90%	0%	0%	
4086	Hudson County Roads & Public Property	5003		External Buildings - Trailers	E	S	$44,824.00	0%			
4086	Hudson County Roads & Public Property	5021		External Buildings' Contents	E	L	$312,767.40	0%	0%		
4086	Hudson County Roads & Public Property	5046		Main Building & Contents + Modular Bldg N&S	E	L	$717,278.19	0%	0%		



Appendix D: Damages from Hurricane Sandy reported by the Hudson County Division of Parks

PROJECT	LOCATION	VENDOR	COST	EQUIPMENT	MAN HOURS	PICTURES	COMPLETED	MITIGATION	VEHICLES	REMARKS
Bluestone Wall	Mercer Park	quote to repair	24,800.00			yes	section to be	yes		Quote to fix submitted to Fema, engineer requires for safety the removal of entire wall.
Restrooms men's/women's	Bayonne Park	inhouse and inmates,cost of supplies, inmate lunches	$8,685.81	Drill,saws,hammers, nails,etc. Electrical work	724 total hours	yes	yes		Pickup, Mason dump, Utility F350, Carpenter Panel van	Equipment list, man hours attached,supplies
Security Cameras	Bayonne Park	Johnston Communication	$11,200				yes	no		
Trees	All Parks	Inhouse/Reliable tree serv. Suburban Disposal		Chainsaws, trucks,saws,chipper, containers, frontloaders	Park staff/Reliable tree services	yes	yes	no		Fema has GPS of all trees, manpower and equipment used
Four Ponds	Bayonne	inhouse	$445.00	replace motor	inhouse	no	no	no	dump, Utility F350, Carpenter	control and motor flooded during storm
Little League Building	Lincoln Park	inhouse repair. Purchase replacement items for concession stand, restrooms.	$7,269.92	drill,trucks,saws,paint,new flooring, complete bathroom roofing supplies, replace all detsroyed kitchen equip.	334 total hours	yes	yes			walls, floors, steps,bathroom, concession stand completely renovated due to storm, ice machine, fridge, freezer
Little League Field	Lincoln Park	Applied Landscaping Tech.	$72,000.00	Vendor supplied	vendor	yes	yes	no	vendor	fixed and sanitized field
Fields 10 & 11	Lincoln Park	The Land Tek Group	$57,696.34	vendor supplied	vendor	yes	yes	yes	vendor	While repairing turf fields, new base construction and and installation of synthetic turf at home plates were completed.$34,000 was for field repairs from Sandy; $24,000 was for upgrades done to prevent future storm damage.
Cameras	Lincoln Park	Johnston Communication	4,200.00	vendor	vendor	yes	yes	no	vendor	
Admin. Building	Lincoln Park	Richmond Elevator	$2,117.50	vendor			yes			
Gas Pumps	Lincoln Park	Lombardo & Envior.	1,371.00	replaced sump sensor,tank sensor and fix monitoring system		yes	no	no		
HVAC	Lincoln Park	Air Systems	$422.66	replaced filters and belts, debris removed from storm		yes	no	no		
Fountain	Lincoln Park	Inhouse	$1,251.00	motor	inhouse	not yet			Pickup, Mason dump, Utility F350, Carpenter Panel van	waiting to see if replacing parts will allow Fountain to work
			$1,337.00	pump						
Sports Lighting	Lincoln Park	SkyLogix	$4,600.00	8-zone remote control unit, RCU configured						
Machine Shop	Lincoln Park		$4,565.08	Supplies destroyed		not all				PO#s - 17119, 19131, 15730 REQ# - 16750
Machine Shop	Lincoln Park			Vehicles						Handled by Buildings and Roads
Machine Shop	Lincoln Park			vehicles repaired						Handled by Buildings and Roads
Construction Shop	Lincoln Park	various vendors	$29,477.88	replacement for lost tools		not all replaced				PO# 18750, 17372, 20212, 18383. Invoice # 20203, 20204, 20205, 20209, 20210
Construction Shop	Lincoln Park	Grant Supply	$2,816.61	hot water heater, boiler						Greenhouse and Construction Bathroom
Construction Shop	Lincoln Park			Tool Repairs						
Construction Shop	Lincoln Park	inhouse		repair buildings damaged	inhouse	mitigation				tear down sheet rock, replace, replace damaged floors, shelving.
Construction Shop	Lincoln Park		$9,041.00	Boiler & Heater		yes	yes			Subgrant Application
Construction/Mason Building	Lincoln Park	Bayway Lumber	Quote of $2140.60 to repair		Estimated 5 Days, 2 Workers	Yes				
Dugout Roofs	Lincoln Pk. Little League, Laurel	Inhouse	$2,326.80	Roof torch, propane tank,karnack cement, roof edging, flashing membrane	229 Hours worked	yes	yes		Pickup, Mason dump, Utility F350, Carpenter Panel van	
Gas Pumps	Bayonne	Lombardo Environmental	$357.00	Micro Switch in gas pump	Vendor		yes		vendor	
Field 10 & 11	Lincoln Park	Vanore Electric	$25,523.29	vendor	vendor		yes		vendor	
Lake Aerators	Lincoln Park	Vanore Electric	$8,507.76	vendor	vendor		yes		vendor	
Machine Shop	Lincoln Park	Vanore Electric	$8,507.76	vendor	vendor		yes		vendor	
Bayonne Quad	Bayonne	Vanore Electric	$20,077.89	vendor	vendor		yes		vendor	
	Bayonne Bath	Vanore Electric	$2,230.88	vendor	vendor		yes		vendor	

Appendix E: Stakeholder Outreach

County Stakeholder Input List

County Department
Hudson County Comprehensive Economic Development Strategy (CEDS)
Hudson County Economic Development Corporation
Hudson County MIS Department
Hudson County Division of Parks
Hudson County Office of Emergency Management
Hudson County Department of Roads and Public Property
Prosecutor's Office
Division Housing and Community Development
Division of Engineering

Municipality	Representative
Bayonne	Sue Mack, City Planner
Guttenberg	Nate Burroughs , Town Consultant
Hoboken	Stephen Marks, Assistant Business Administrator (Information submitted for CEDS Update 2013)
Jersey City	Dan Frohwirth, JC EDC (Information submitted for CEDS Update 2013)
North Bergen	Nate Burroughs , Town Consultant
Secaucus	Nate Burroughs , Town Consultant
Weehawken	Robert Drasheff, Town Planner
West New York	Nate Burroughs , Town Consultant

Appendix F: Maps

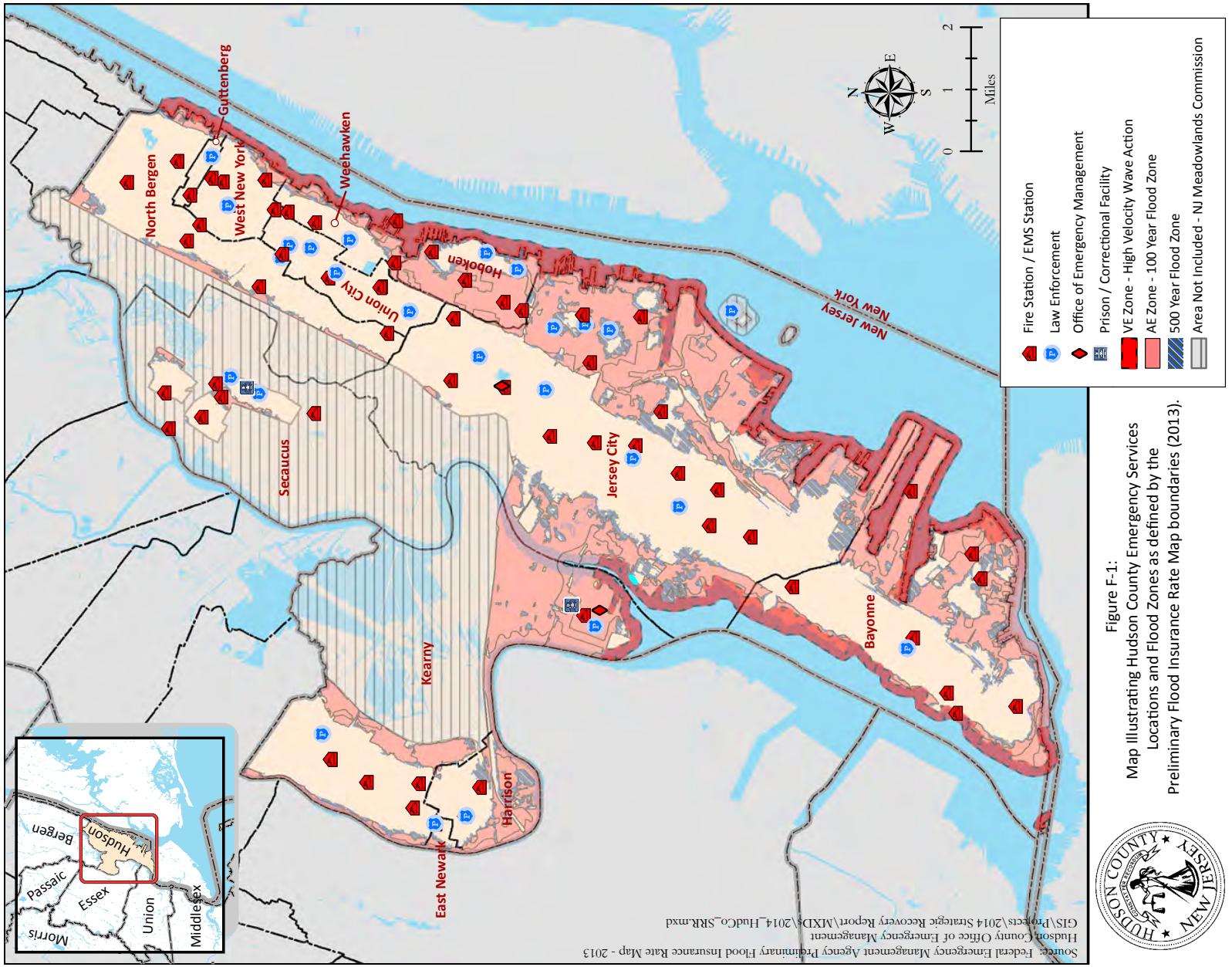


Figure F-1:
Map Illustrating Hudson County Emergency Services Locations and Flood Zones as defined by the Preliminary Flood Insurance Rate Map boundaries (2013).

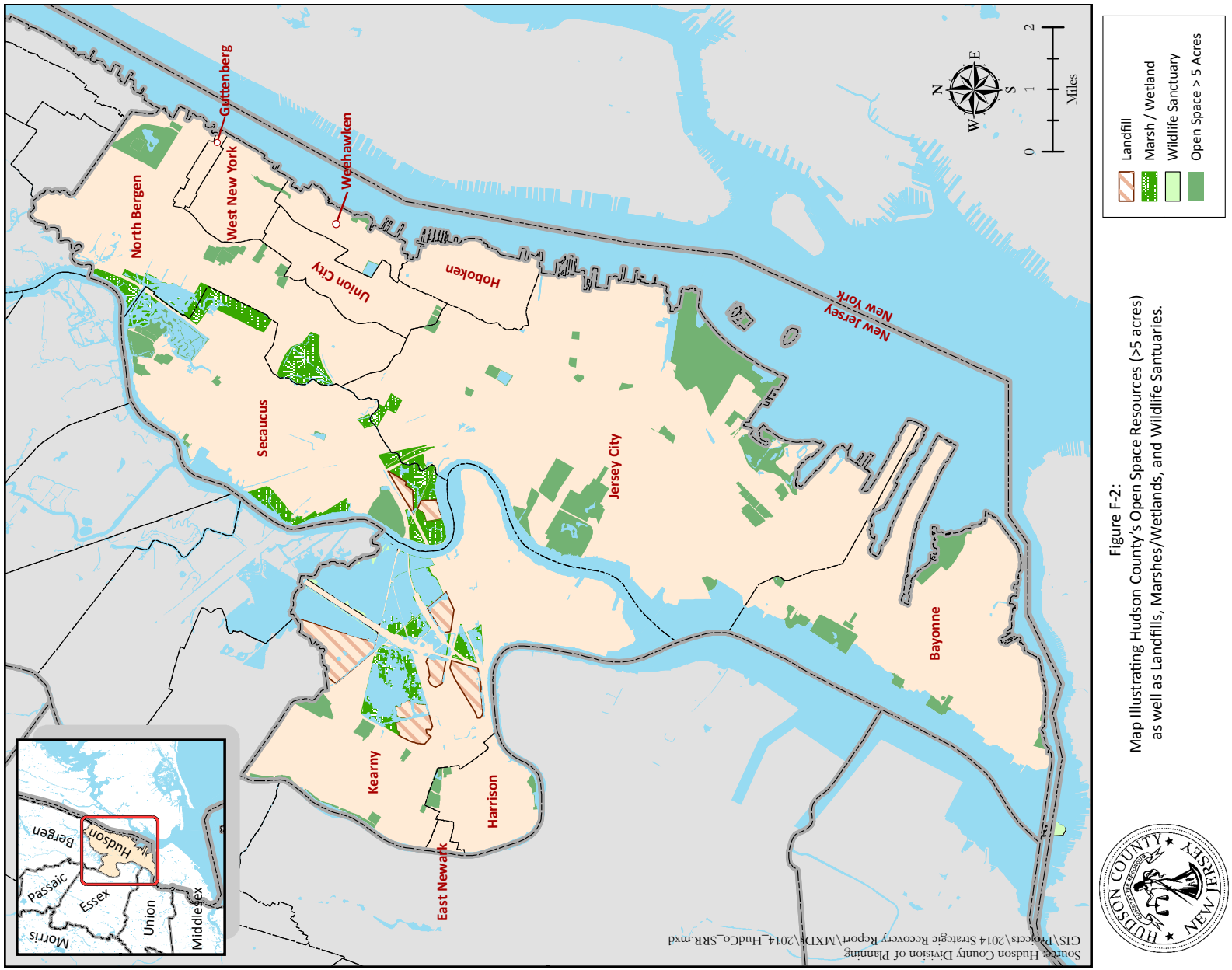


Figure F-2:
Map Illustrating Hudson County's Open Space Resources (>5 acres) as well as Landfills, Marshes/Wetlands, and Wildlife Santuaries.

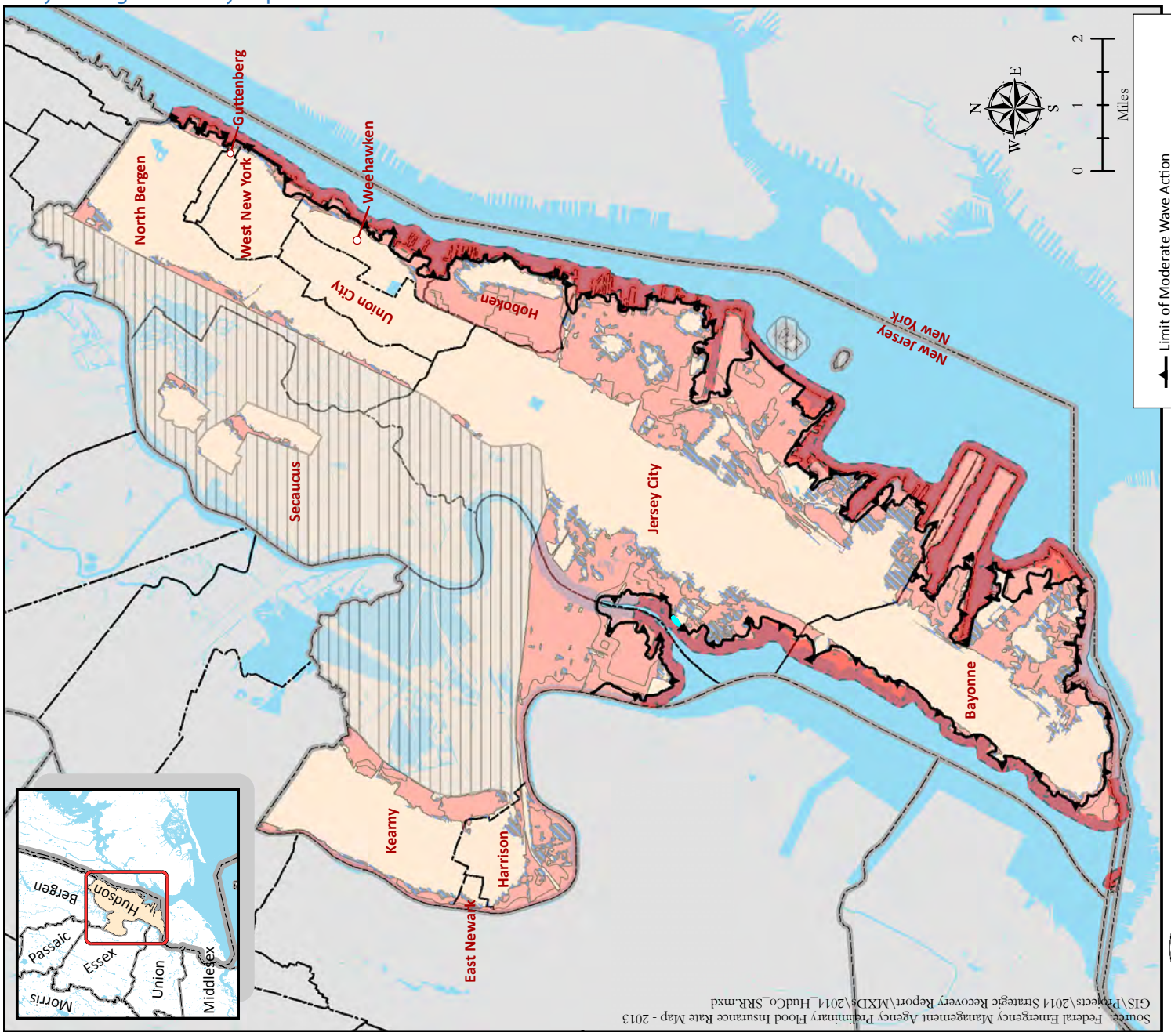


Figure F-3:
Map Illustratng flood areas as defined by the
Preliminary Flood Insurance Rate Map boundaries (2013).

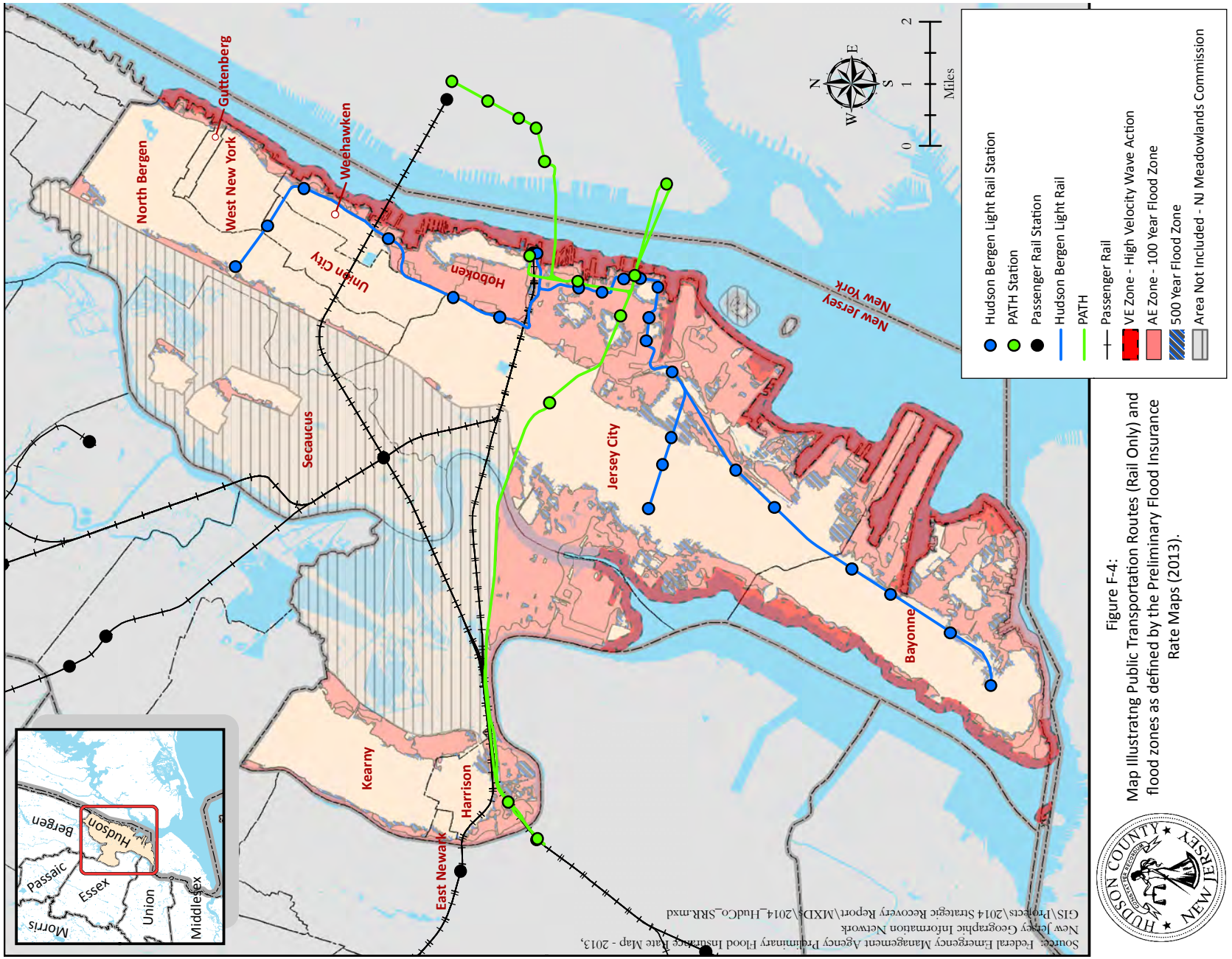


Figure F-4:
Map Illustratng Public Transportation Routes (Rail Only) and flood zones as defined by the Preliminary Flood Insurance Rate Maps (2013).

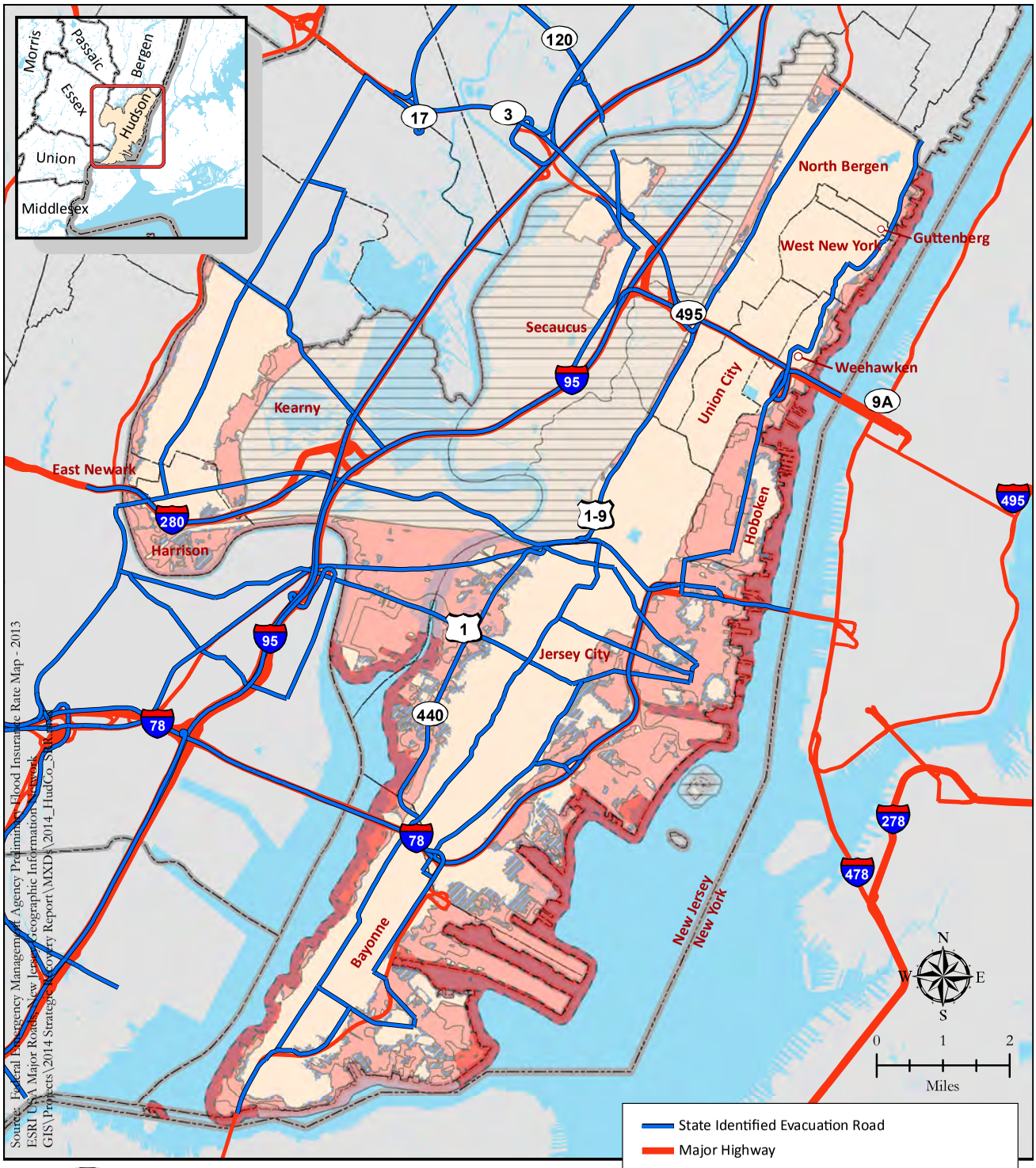


Figure F-5:
Map Illustratng Major Roads and State Identified Evacuation Routes with Flood Zones as defined by the Preliminary Flood Insurance Rate Maps (2013).

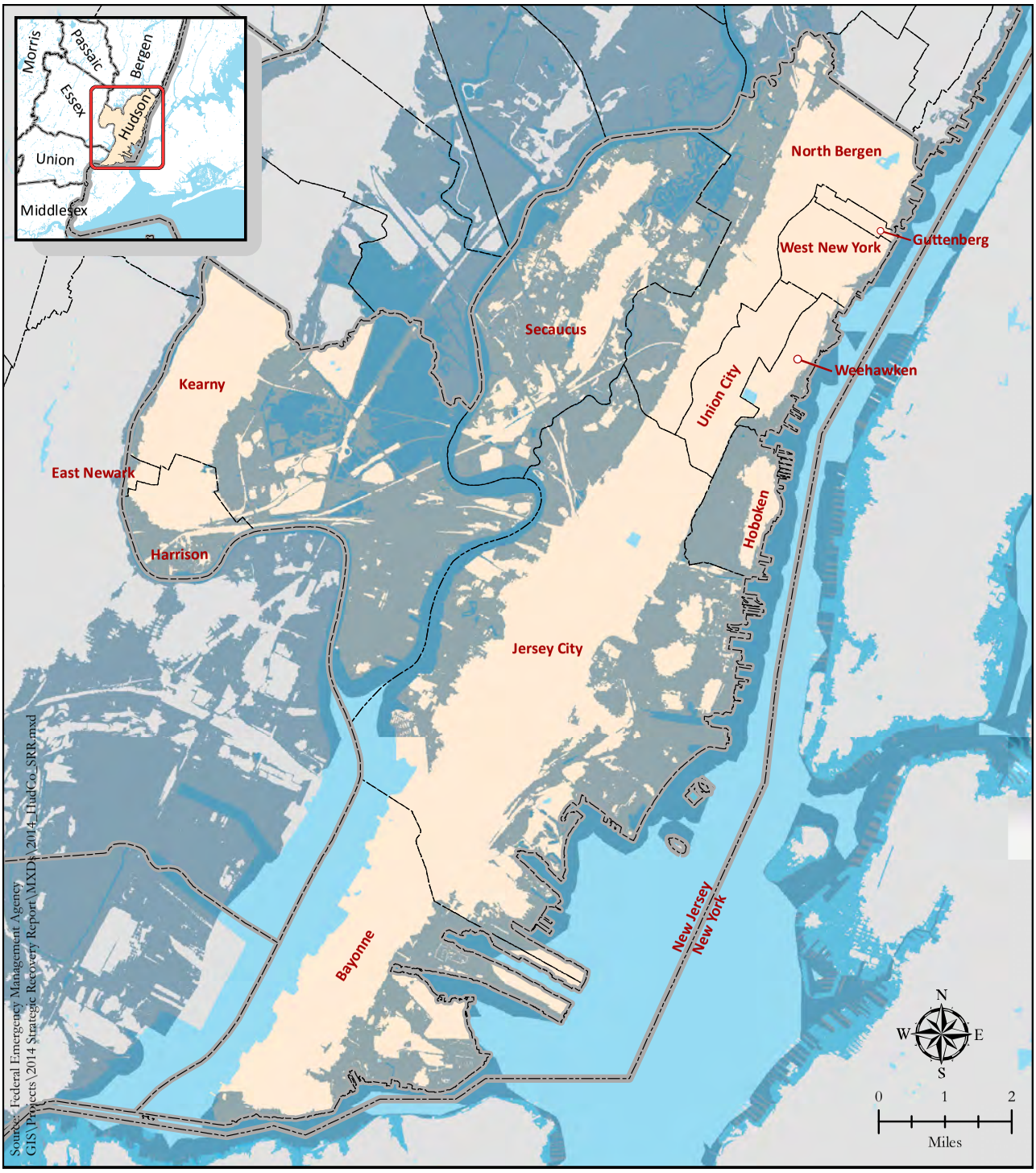


Figure F-6:
Map Illustratng the Extent of the Superstorm Sandy Storm Surge as mapped by the Federal Emergency Management Agency.

- Superstorm Sandy Storm Surge - NYC Final
- Superstorm Sandy Storm Surge - Final

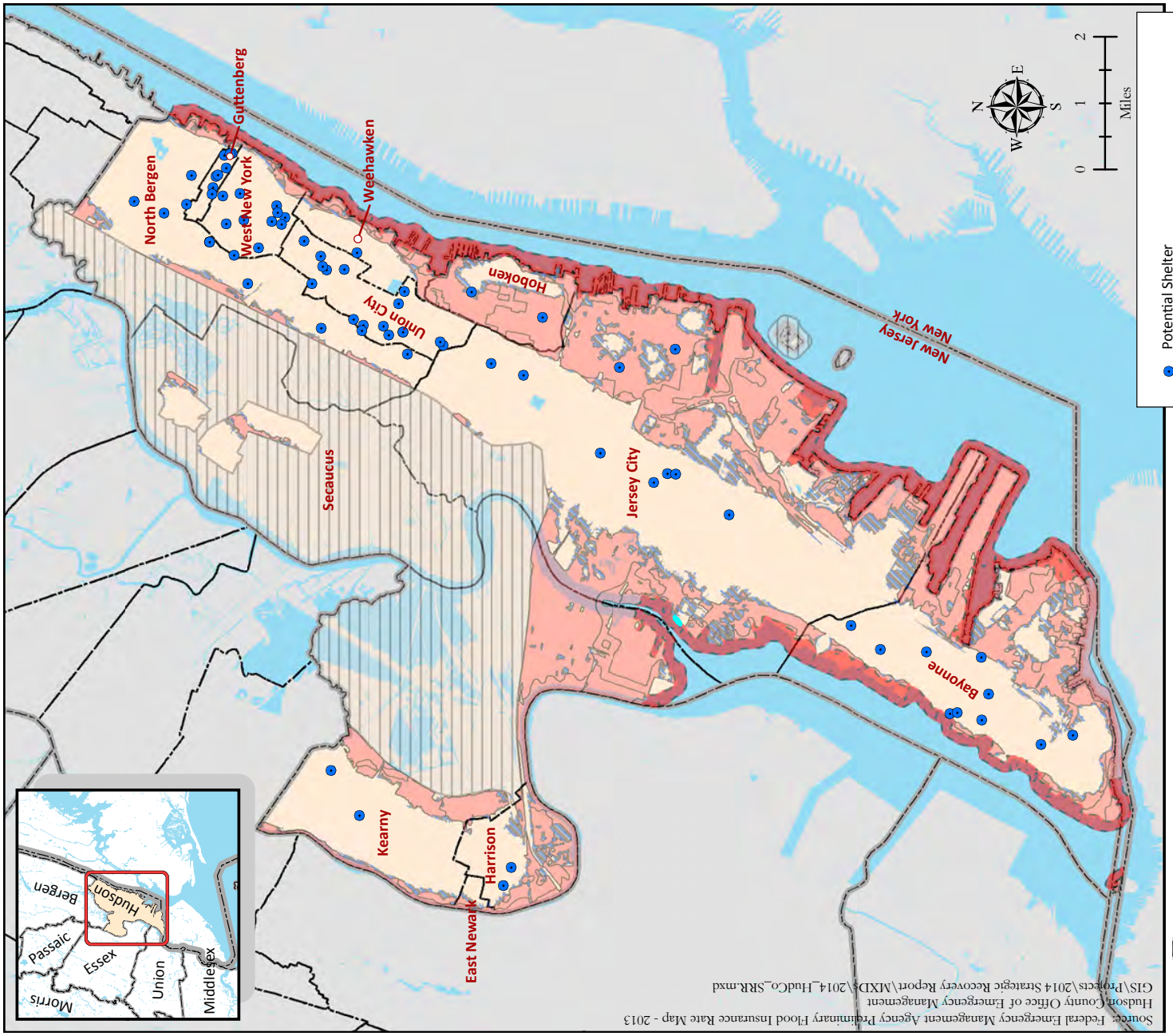


Figure F-7:
Map Illustrating Potential Shelters and flood areas as defined by the Preliminary Flood Insurance Rate Maps (2013).

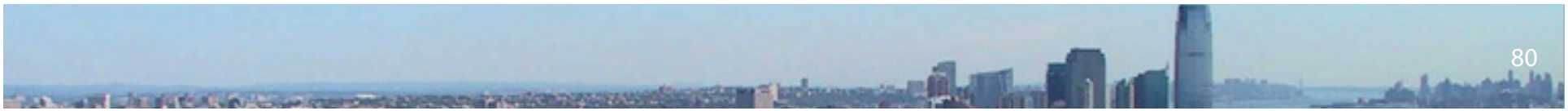


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Figure 2.1 & 2.2

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Figure 2.3

NOAA County Snapshot, Hudson County, 2013: Floodplain

Figure 2.4 &2.5

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Figure 2.6

NOAA County Snapshot, Hudson County, 2013: Wetland Benefits

Figure 2.7

NOAA County Snapshot, Hudson County, 2013: Wetland Benefits

Figure 2.8

NOAA County Snapshot, Hudson County, 2013: Floodplain

Figure 2.9

NJ DCA Action Plan

Figure 2.10

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Figure 2.11

NOAA County Snapshot, Hudson County, 2013: Ocean Jobs

Figure 2.12

NOAA County Snapshot, Hudson County, 2013: Ocean Jobs

Figure 2.13

NOAA County Snapshot, Hudson County, 2013: Floodplain

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