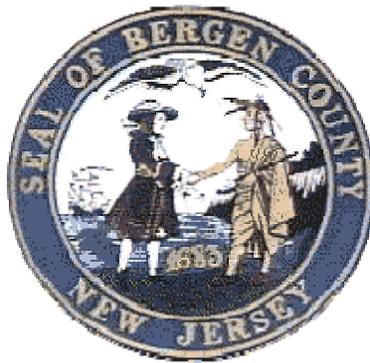


# NATURAL HAZARD MITIGATION PLAN

Bergen County, New Jersey

August 2008



Prepared by:  
Hazard Mitigation Plan Leadership Team



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# Welcome to Bergen County

Settled by the Dutch, Bergen County (Bergen, County) was created in 1683 as one of New Jersey's four original counties. Located in the northeastern corner of New Jersey, it is bordered by the Hudson River and New York City to the east, New York State to the north, Passaic County to the west, Hudson County to the south and Essex County at the southwestern corner.

The diverse landscape includes the scenic cliffs of the Palisades overlooking the Hudson River, the Ramapo Mountains of the New Jersey Highlands, the Ramapo River, Saddle River and Hackensack River valleys, the urban wetlands of the New Jersey Meadowlands, and three reservoir areas at Woodcliff Lakes, Lake Tappan and Oradell. Bergen County is comprised of 70 municipalities covering a total area of approximately 247 square miles (234 square miles of land and 13 square miles of water).

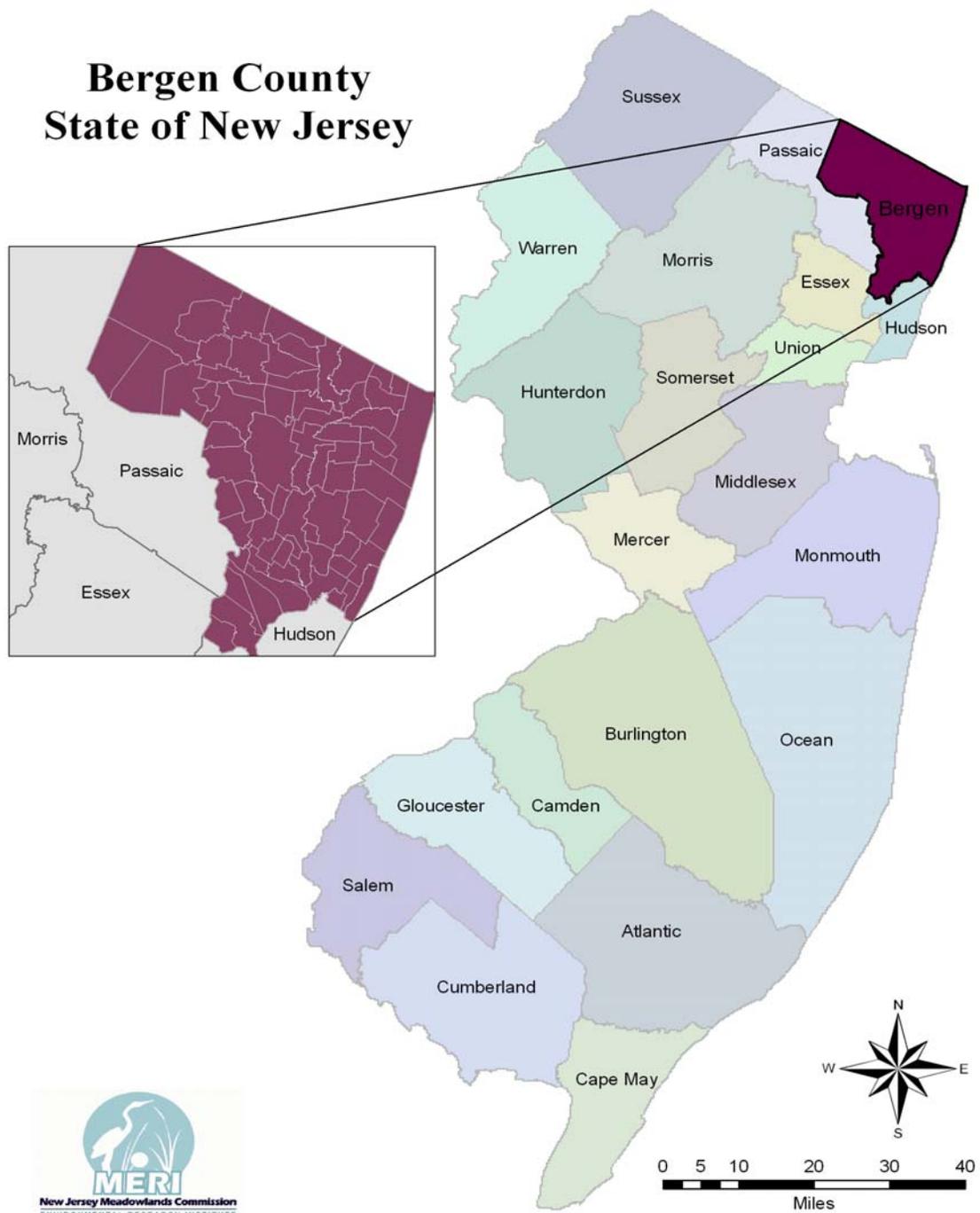
The skyline of New York City can be seen across the Hudson River, and access to the city is convenient via the double-decked George Washington Bridge. The opening of the bridge in 1931 contributed greatly to the growth of the county, which until then had consisted largely of farmland, century-old homes and pockets of residential development. At the present time, Bergen County is primarily suburban with several municipalities that are more urban in nature. Bergen has approximately 900,000 residents, or over 10% of all the people living in New Jersey - the largest number of people residing in any county in the state<sup>1</sup>.

Elementary and high schools throughout Bergen County enjoy a reputation for excellence, and five colleges in the county offer outstanding opportunities for higher education. The county provides one of the greatest pools of highly educated, skilled laborers in the metropolitan area.

Bergen features a range of businesses and employment opportunities that complement its location and population. With an excellent roadway network and public transportation system in place, the County has become home to numerous corporate headquarters, in addition to major metropolitan shopping centers and local downtown business districts. The bounty of hotels and restaurants attracts business travelers as well as tourists visiting the county and the greater New York metropolitan area.

The desirable transportation network and access to New York City have made Bergen County a very desirable place to live. The varied housing stock provides rental and owner options ranging from high-rise and garden-style apartments to comfortable suburban homes on tree-shaded streets to wooded estates.

Whether living, working, or visiting Bergen County, there is plenty to see and do. Bergen is known for its historic heritage and variety of recreational, cultural, and entertainment facilities. There are 20 county parks totaling 9,000 acres of first-class swimming, golf, riding, and skiing, as well as passive areas for those seeking solitude, as well as the many municipal facilities available to the local residents. The world renowned Meadowlands Sports Complex offers opportunities to attend athletic events, concerts, and cultural exhibits year round.



This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

**Figure 1: New Jersey Counties<sup>2</sup>**

# 1. Introduction

## 1.1 Vision

It is the vision of Bergen County to be a premier northeastern locale recognized as a superior place to live, work, and play. This vision is firmly based on the philosophy of sustainability - balance of social, economic, and environmental well-being - whereby the citizens of Bergen County shall strive to achieve their needs and aspirations without compromising the ability of future generations to do the same. Vital to this sustainability is the need to reduce the vulnerability of people and property to natural and human-caused disasters. The Bergen County Natural Hazard Mitigation Plan (Plan) is the means by which such vulnerability to hazards, natural ones in particular, may be reduced in a proactive manner.

## 1.2 Goals and Objectives

The goals and objectives of the Bergen County Natural Hazard Mitigation Plan are as follows:

### **Goal 1: Protect and promote public health and safety**

#### Objectives

- a. Achieve excellence in hazard mitigation planning
- b. Improve service to vulnerable populations; reduce harm resulting from emergencies
- c. Educate citizens regarding sustainable development, disaster preparedness and hazard mitigation
- d. Implement and maintain state-of-the-art disaster warning systems

### **Goal 2: Safeguard critical public facilities and infrastructure**

#### Objectives

- a. Analyze and mitigate potential impacts from hazards for all public facilities and infrastructure (new and existing)
- b. Implement mitigation programs that protect all critical governmental facilities and services and promote reliability of systems to minimize impacts from hazards, maintain operations and expedite recovery in emergencies
- c. Create back-up facilities for critical systems such as water, sewer, digital data, electricity, and communications for all critical facilities
- d. Formalize and implement best practices for protecting systems and networks

### **Goal 3: Protect public and private property**

#### Objectives

- a. Adopt and enforce public policies to minimize impacts of development and enhance safe construction in high-hazard areas
- b. Integrate new hazard and risk information into building codes, land use planning mechanisms and other public regulations
- c. Educate public officials, developers, realtors, insurance agents, contractors, property owners, and the general public regarding hazard vulnerability and potential severity as well as potential mitigation actions
- d. Promote hazard mitigation of all public and privately-owned property
- e. Incorporate hazard mitigation into all community planning and projects
- f. Promote hazard mitigation for all historic structures
- g. Promote post-disaster mitigation as integral with repair and recovery efforts

#### **Goal 4: Promote economic vitality in Bergen County and its 70 constituent municipalities**

##### Objectives

- a. Partner with the private sector - small and large businesses - to promote hazard mitigation as integral to standard business practices
- b. Educate businesses and community members regarding how economic vitality may be impacted by potential hazards and how the impacts on the business sector may impact the local citizens
- c. Partner with the private sector to create programs and processes whereby employees may be an active, powerful resource for disaster preparedness and mitigation both on the job and at home

#### **Goal 5: Preserve the natural environment and promote human health**

##### Objectives

- a. Analyze the secondary effects of potential disasters on human and environmental health, such as mold growth, hazardous material spills, chemical releases by fire/flood/ice, materials used for clean up and recovery, etc., and develop projects to mitigate potential impacts
- b. Convert all materials and chemicals used by government agencies in development, operations, maintenance, etc., to environmentally benign and conservation friendly materials and chemicals, considering a balance of social, economic, and environmental accounting
- c. Decrease consumption of energy at the municipal and county level (petrochemical, electrical, etc.)
- d. Decrease greenhouse gas emissions at the municipal and county level to 1990 levels by the year 2010

- e. Conduct educational programs regarding all manner of environmental and human health awareness, including but not limited to, global warming, energy efficiency, carbon emissions, recycling and reuse
- f. Engage the public and private sectors in energy efficiency and carbon emission reduction programs such as blanketing water heaters, converting to compact florescent lighting, weather proofing, maintaining proper tire pressure, etc.

### **1.3 Purpose and Scope of the Plan**

The Disaster Mitigation Act of 2000 (DMA 2000) defines *hazard mitigation* as any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.<sup>3</sup> This may include a wide range of actions including, but not limited to: adopting and enforcing building codes that harden structures to potential damage; retrofitting buildings, bridges, and other infrastructure; planning for businesses to reduce down-time if a hazard occurs; and educating the public to prepare, mitigate damage, and recover more quickly after impact of a hazard.

The Federal Emergency Management Agency (FEMA) promotes hazard mitigation planning as a fundamental part of a four-phase cycle of emergency management:

**Mitigation:** activities to eliminate or reduce the effects of future hazardous events;

**Preparedness:** planning and practicing responses to emergencies and hazardous events;

**Response:** assistance during and immediately following a disaster to safeguard life and property; and

**Recovery:** operations geared toward returning the community to pre-disaster conditions.

### **Purpose of Creating a Natural Hazard Mitigation Plan**

The Natural Hazard Mitigation Plan is Bergen County's first comprehensive attempt to identify potential natural hazards and associated risks across jurisdictions and to develop an integrated mitigation strategy. The Plan addresses the mitigation of potential damage to public, quasi-public, and private entities, facilities, and infrastructure. Through measures proposed in this plan, Bergen County seeks to substantially reduce and/or eliminate long-term risk to life and properties associated with natural hazards.

This Plan specifically emphasizes natural hazards and does not assess the risks or associated mitigation measures of human-caused hazards (such as terrorism) which are not within the purview of this initiative. Such analyses and planning are being pursued at the federal, state and local levels under other efforts.

This Plan is written in a clear, concise manner for all stakeholders of Bergen County to learn and understand more about potential risks and vulnerability to natural hazards in the local environs. It includes a strategy consisting of goals and measurable objectives to protect and mitigate for instances of risk to Bergen County citizens and properties from exposure to such hazards.

As a result of reading this plan, it is hoped that stakeholders will realize that the responsibility for mitigating natural hazards rests with everyone, and not merely with the government. Mitigation planning should be evaluated for all aspects and locations

associated with daily life: at home, in the workplace, in schools and institutional establishments, at recreational facilities and functions, at retail centers, and other locations and activity centers throughout the local communities.

### **Plan Components**

**Chapter 1** includes the introduction, goals and objectives, purpose and scope of the Plan.

**Chapter 2** provides documentation of the process by which the County developed the Plan and identification of parties involved.

**Chapter 3** addresses the assessment of risk as a function of exposure to natural hazards including descriptions of hazards, historical impacts of events, susceptible locations and the probabilities that future hazards may occur. This chapter identifies structures and locations in Bergen County which are vulnerable to natural hazard impact, estimates potential losses, and evaluates present and future land use.

**Chapter 4** discusses the mitigation strategy, including specific mitigation actions, process for analyzing effectiveness of such actions, and a plan for implementation.

**Chapter 5** details the monitoring and maintenance approach for the Plan. For this Plan to be effective, it must mesh as seamlessly as possible with other existing municipal, county, regional, and state plans. This chapter details how various local plans and planning teams will communicate and work cooperatively as well as explaining the outreach efforts to involve the public in on-going natural hazard mitigation planning.

**Chapter 6** describes the affirmation of adoption of the Plan by Bergen County as

well as any/all jurisdictions herein represented.

**Chapter 7** provides citations of references and resources that used in the planning process.

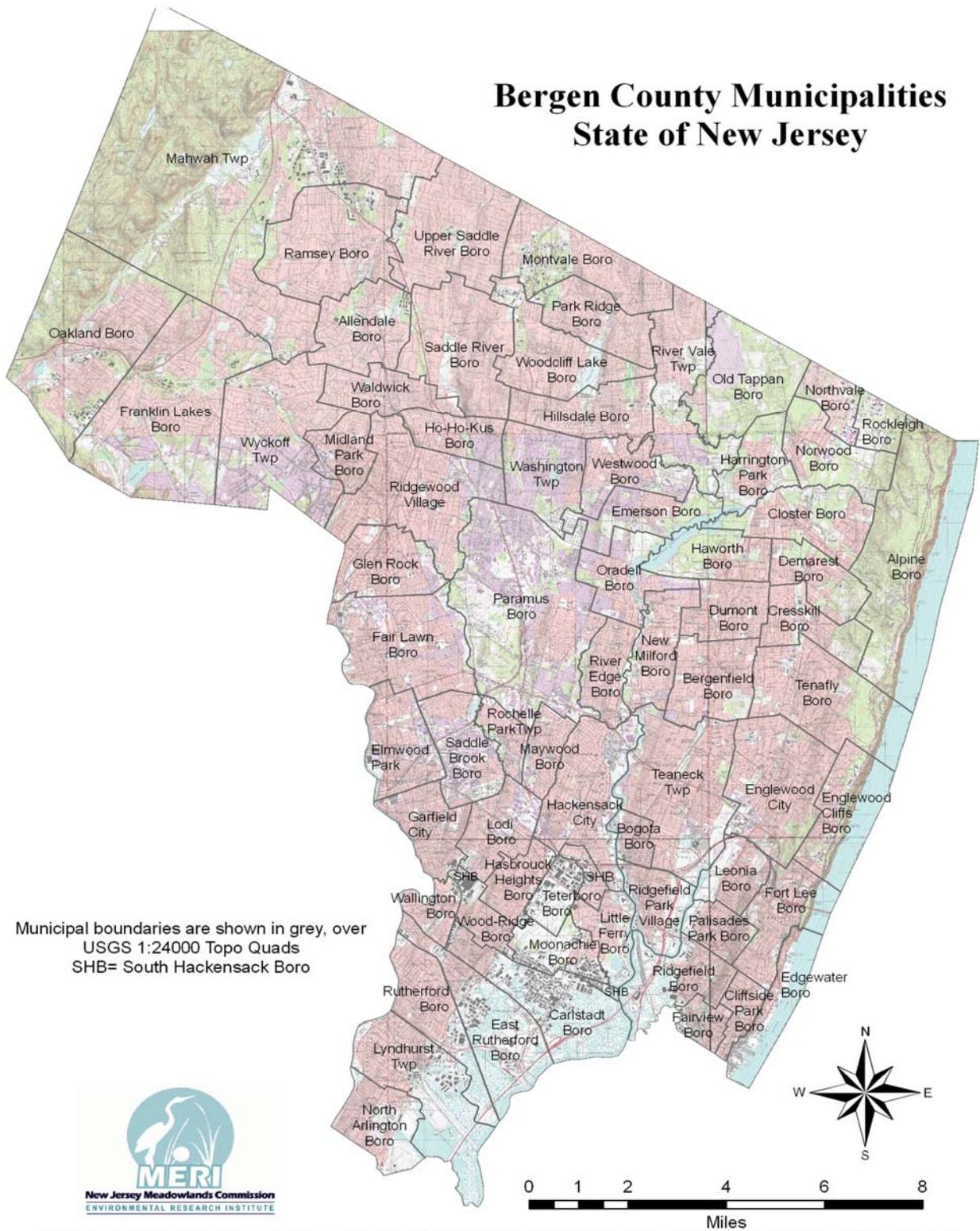
Several appendices provide supporting documentation for the Plan, including maps and graphics, forms submitted by the municipalities, and references cited in the document.

### ***1.4 Participating Jurisdictions***

This Plan represents the County of Bergen as well as its 70 constituent municipalities, including:

Allendale  
Alpine  
Bergenfield  
Bogota  
Carlstadt  
Cliffside Park  
Closter  
Cresskill  
Demarest  
Dumont  
East Rutherford  
Edgewater  
Elmwood Park  
Emerson  
Englewood  
Englewood Cliffs  
Fairlawn  
Fairview  
Fort Lee  
Franklin Lakes  
Garfield  
Glen Rock  
Hackensack  
Harrington Park  
Hasbrouck Heights

Haworth  
Hillsdale  
Ho-Ho-Kus  
Leonia  
Little Ferry  
Lodi  
Lyndhurst  
Mahwah  
Maywood  
Midland Park  
Montvale  
Moonachie  
New Milford  
North Arlington  
Northvale  
Norwood  
Oakland  
Old Tappan  
Oradell  
Palisades Park  
Paramus  
Park Ridge  
Ramsey  
Ridgefield  
Ridgefield Park  
Ridgewood  
River Edge  
River Vale  
Rochelle Park  
Rockleigh  
Rutherford  
Saddle Brook  
Saddle River  
South Hackensack  
Teaneck  
Tenafly  
Teterboro  
Upper Saddle River  
Waldwick  
Wallington  
Washington  
Westwood  
Woodcliff Lake  
Wood-Ridge  
Wyckoff



**Figure 2: Bergen County Municipalities<sup>4</sup>**

## 2. The Planning Process

This section of the Natural Hazard Mitigation Plan details the process used to create the Plan. It identifies the parties involved, their participation, methods of public outreach employed, and types of information gathered in order to assess potential projects worthy of hazard mitigation assistance in Bergen County.

It demonstrates the truly collaborative effort required to protect the population of Bergen County and reduce its vulnerability to all types of natural hazards by identifying the most effective ways to make the communities more resistant to the impacts of these hazards.

This Plan should be viewed as a living document, subject to periodic updates, improvements, and modifications, as deemed appropriate. Thereby, the planning process is dynamic; it can, and should, be revisited to monitor the progress of the projects proposed in this Plan and to assess the need for future projects.

### 2.1 The Planning Team

Many people and entities were involved in bringing the Bergen County Natural Hazard Mitigation Plan to fruition. The Plan Development Team was comprised of staff from the New Jersey Meadowlands Commission (NJMC); Bergen County Office of Emergency Management (BCOEM) and Bergen County Department of Public Works Engineering and Mosquito Control Divisions. While most of the governmental entities are commonly known entities in other regions, an explanation of the NJMC is warranted, particularly since

the Commission staff has taken the lead in making the Plan a reality. The NJMC is a regional zoning, planning and regulatory agency, in but not of the New Jersey Department of Community Affairs, established by an Act of the New Jersey Legislature in 1969. Its founding mandates are to protect the delicate balance of nature, provide for orderly development, and manage solid waste activities in the New Jersey Meadowlands District. The District is nearly 20,000 acres comprised of 10 Bergen County municipalities (Carlstadt, East Rutherford, Little Ferry, Lyndhurst, Moonachie, North Arlington, Ridgefield, Rutherford, South Hackensack, and Teterboro) and four Hudson County municipalities (Jersey City, Kearny, North Bergen, and Secaucus).

The Plan Development Team defined the data needed for the plan, reached out to stakeholders for assistance to gather and disseminate information, examined vulnerable sites and facilities, and prioritized potential mitigation projects for future implementation and Federal funding (See **Table 1**).

The second tier of participants that played a key role in the development of this multi-jurisdictional Plan was the municipal-level OEM Coordinators (See **Table 2**).

These individuals attended numerous workshops and meetings to learn exactly what natural hazard information was needed and a standard format for documentation. A great deal of the site-specific vulnerability and potential mitigation data originated from the OEM Coordinators. In addition to their interaction with the core Plan Development Team, the OEM Coordinators acted as liaisons to a third tier of participants in the planning process, the local Community Emergency Response Teams (CERT), civic

organizations, advocacy groups, and the general public by providing outreach to these significant stakeholders, many of whom hold a wealth of information regarding areas in need of hazard management and mitigation at the local level.

**Table 1: Plan Development Team**

<b>Member</b>	<b>Team Role</b>	<b>Agency Position</b>
<b>New Jersey Meadowlands Commission</b>		
Nicholas Agnoli, PE	Mitigation Plan Coordinator/Data Collection/Engineer	Principal Engineer
Ralph Venturini	Deputy Mitigation Plan Coordinator/Data Collection/Code Official	Chief Plan Examiner
Deborah Alaimo Lawlor, PP/AICP	Mitigation Plan Author/Data Collection/Planner	Chief Planner
Cheryl Rezendes, AICP	Crosswalk Coordinator/Data Collection/Planner	Principal Planner
Lawrence Scorzelli	Stakeholder Liaison/Data Collection/Code Official	Senior Plan Examiner
Wai Lee, PE	Data Collection and Analysis/Engineer	Senior Engineer
Ayse Figanmese	Data Collection and Analysis/Engineer	Engineer
Brian Thumpayil	Data Collection/Engineer	Intern
Nicholas Marucci	Data Collection/Engineer	Engineer
Dominador Elefante	Map and Database Services	GIS Administrator
Brandon Alviano	Data Collection/Planner	Staff Planner
Carl Leppin	Data Collection/Code Official	Senior Plan Examiner
Mia Petrou, PP/AICP	Data Collection/Planner	Senior Planner
Mark Skerbetz, PP/AICP	Data Collection/Planner	Senior Planner
Brad Miller	Data Collection/Engineer	Engineer
<b>County of Bergen</b>		
Chief John Schmidig	OEM Coordinator	County Chief of Police
Lt. Dwayne Razzetti	Deputy OEM Coordinator	County Police Lieutenant
Sgt. Barry Leventhal	Deputy OEM Coordinator	County Police Sergeant
PO Gidget Petry	Assistant Mitigation Plan Coordinator	County Police Officer
James Mordaga	Technical Advisor	County Public Safety Director
Gary Ascolese, PE	Technical Advisor	County Engineer
Robert Mulder, PE	Data Collection/Engineer	Assistant County Engineer
Barry Ricciardi	Data Collection/Engineer	Principal Hydraulics Engineer
Peter Pluchino	Data Collection	Mosquito Control Division Director

**Table 2: Municipal OEM Coordinators**

<b>Municipality</b>	<b>OEM Coordinator</b>
Allendale	Chief Robert Herndon
Alpine	Mr. Charles Hoffman
Bergenfield	Mr. Thomas Rose
Bogota	Ms. Patricia Kearns
Carlstadt	Mr. Dave Maluda
Cliffside Park	Mr. Stewart DeVito
Closter	Sgt. James Winters
Cresskill	Chief Frank Tino Jr.
Demarest	Chief Arthur DeLuca
Dumont	Chief Brian Venezia
	Chief Don
Elmwood Park	Ingrasselino
East Rutherford	Mr. Harold Tilt
Edgewater	Chief Donald Martin
Emerson	Capt. David Hayes
Englewood	Chief David Bowman
	Chief Lawrence
Englewood Cliffs	Whiting
Fair Lawn	Mr. Thomas Metzler
Fairview	PO Vincent Bellucci
Fort Lee	Capt. Stephen Ferraro
Franklin Lakes	Mr. Thomas Fahy
Garfield	PO Michael Marsh
Glen Rock	Mr. Bertram Kerrigan
Hackensack	Chief Joel Thornton
Harrington Park	Chief David Moppert
	Chief Michael
Hasbrouck Heights	Colaneri
Haworth	Mr. Glenn Poosikian
Hillsdale	Mr. William Franklin
Ho-Ho-Kus	Mr. Jay Ludwig
	Sgt. Gregory
Leonia	Valentine
Little Ferry	Chief Ralph Verdi
Lodi	Mr. Robert Cassiello
Lyndhurst	Chief James O'Connor
Mahwah	Mr. Raymond Roe
Maywood	Mr. John Gargagliano
Midland Park	Chief Robert Klingen
Montvale	Capt. James Frederick

<b>Municipality</b>	<b>OEM Coordinator</b>
Moonachie	Mr. Joseph Healy
New Milford	Lt. John Kiene
North Arlington	Mayor Russell Pitman
Northvale	Mr. Nicola Lepore
Norwood	Chief Jeffrey Krapels
Oakland	Mr. Roy Bauberger
Old Tappan	Capt. Thomas Shine
Oradell	Sgt. Leonard Haak
Palisades Park	Mr. George Beck
Paramus	Mr. Steven Mehl
Park Ridge	Sgt. Craig Coughlin
Ramsey	Mr. Michael Adams
	Mr. Michael
Ridgefield	Handschin
Ridgefield Park	Mr. Douglas Hansen
Ridgewood	Mr. Robert Greenlaw
River Edge	Mr. Richard Berry
River Vale	Mr. William Peters
Rochelle Park	Mr. Peter Donatello Jr.
Rockleigh	Mr. Michael Malhame
	Chief Steven
Rutherford	Neinstedt
Saddle Brook	Chief Robert Kugler
Saddle River	Mr. Walter Ash Jr.
South Hackensack	Mr. Raymond DeRiso
Teaneck	Chief Paul Tiernan
Tenafly	Mr. Harvey Eisner
Teterboro	Mr. Robert Pisko
	Chief Theodore
Upper Saddle River	Preusch
Waldwick	Mr. Robert Ryan
Wallington	Mr. Mark Lepinski
Washington Township	Mr. Joseph Rinaldi Sr.
	Mr. Thomas Lagatol
Westwood	III
Woodcliff Lake	Mr. Joseph Higgins Jr.
Wood-Ridge	Mr. Paul Dahl
	Sgt. Michael
Wyckoff	Steinbruch

## 2.2 History of the Process

Since "mitigate" simply means "to make less severe," it could be said that Bergen County has been in the hazard mitigation business since the first settlers located along the beautiful river valleys and mountain foothills of the region. While many hazards, from winter storms to tornadoes, have affected the County's inhabitants, flooding most often comes to mind when the topic of hazard mitigation planning arises. This is due to the fact that Bergen County is laced with several major rivers and an array of associated tributaries.

As is often the case with communities located adjacent to waterways, thriving development fills the floodplains, moving closer and closer to the water's edge for reasons of scenic beauty, transportation, industry, power generation, water supply and more. This pattern of development poses challenges as natural environmental phenomenon (such as the rise and fall of river levels) may impact human health and financial prosperity. This has occurred repeatedly over the years, bringing with it increased repetitive filing of losses due to damages incurred.

To lessen the impact of funding for repetitive losses during a disaster, FEMA, in accordance with the Disaster Mitigation Act of 2000 (44 CFR Parts 201 and 206), mandated that all jurisdictions (municipalities and counties) develop comprehensive all-hazard mitigation plans by November 1, 2003 in order to be eligible for Federal Hazard Mitigation Grant funding following a presidentially-declared disaster. FEMA has authorized the development of multi-jurisdictional hazard mitigation plans to comply with this requirement. FEMA and the NJOEM granted permission to BCOEM to develop a plan for Bergen

County and all of its municipalities. All 70 constituent municipalities in the County agreed to participate in this hazard mitigation planning endeavor.

In 2003, the NJOEM contracted with Stevens Institute of Technology (Stevens) to provide technical assistance to Bergen and other counties in developing their multi-jurisdictional plans. BCOEM spent several months compiling local hazard data for Stevens' use. However, the NJOEM terminated its contractual agreement with Stevens prior to the development of a Bergen County Natural Hazard Mitigation Plan.

On November 9, 2005, at a workshop with the NJOEM, Bergen County Engineer Robert Mulder and representatives of BCOEM and NJMC were advised that Bergen County was eligible to apply for a Federal Pre-Disaster Mitigation Planning Grant. The purpose of the grant is to enable counties to complete county-wide multi-jurisdictional hazard mitigation plans. Based on the technical expertise and resource capabilities of the NJMC staff to complete a comprehensive hazard mitigation plan, at the request of the Bergen County Executive Dennis McNerney, on November 21, 2005 the NJMC consented (see **Appendix A**, *NJMC Resolution No. 05-123*) to apply for the grant as Bergen County's agent and develop the multi-jurisdictional pre-disaster hazard mitigation plan for Bergen County. Additionally, NJMC agreed to coordinate the solicitation of input from Bergen County and the constituent municipal officials. On December 21, 2005, The County of Bergen passed Resolution No. 1900 supporting the grant application and directing BCOEM staff to take all necessary steps to cooperate and assist NJMC and the constituent municipalities with development of the plan (see **Appendix**

**B).** On January 19, 2006 the NJMC and Bergen County signed a joint agreement regarding the preparation of the grant application and the development of the natural hazard multi-jurisdictional pre-disaster mitigation plan for Bergen County by the NJMC (see **Appendix C**). On July 21, 2006, Bergen County and the NJMC were notified by NJOEM that the County had not been selected as a recipient of a Federal Year 2006 Pre-Disaster Mitigation Planning Grant. Upon notification that a grant would not be forthcoming, the NJMC staff was directed by Executive Director Robert Ceberio to continue assisting the County with preparation of the Plan even in the absence of the federal funding.

### **2.3 Agency Coordination and Public Participation**

In order for the municipalities of Bergen County and the public at large to fully understand what was needed to create a multi-jurisdictional hazard mitigation plan, a comprehensive outreach program was developed as an educational tool. This outreach program, once established, allowed the core Plan Development Team to gather OEM Coordinators; key stakeholders such as municipal code enforcement officials, utility companies, impacted residents and businesses; and other interested parties in a manner that brought some of the most knowledgeable resources, along with the most pertinent information about the region, together in the shortest amount of time practicable.

The planning process consisted of meetings and data collection amongst four primary groups of participants:

- Government Agencies
- OEM Coordinators
- Key Stakeholders
- General Public

For ease of coverage and to provide as much accessibility between the core Plan Development Team and the 70 constituent municipalities, the towns were assigned to one of four sub-groups - Northwest, Northeast, Central, and South - with two NJMC staff assigned to each area. This took place on March 8, 2006 with subsequent meetings allowing for specific area related questions to be addressed at the close of business.

**Table 3** provides details of meetings and/or other public outreach employed and topics discussed. There were numerous meetings held and several workshops to assist OEM Coordinators in each municipality with the task of gathering the bulk of the information kept on record by governmental and institutional entities. It should be noted that turnout at the meetings and events was particularly high for a voluntary effort, often with upwards of 50 participants per session. **Table 4** details the level of participation in the Plan by each municipality in Bergen County. Any information submitted, as well as meetings attended during the planning process, is reflected in Table 4.

Upon completion, the Plan will be submitted to the New Jersey State Police, Bergen County, and the 70 Bergen County municipalities for review and approval prior to final approval from FEMA. Resolutions from each of the participating jurisdictions will be retained on file at the BCOEM. Public input will be accepted at each of the local and county meetings at which the resolutions are voted upon in order to provide broad geographical access for public comment on the final plan. Additionally, the entire plan and appendices will be available for public review and comment on the NJMC and Bergen County websites.

**Table 3: Meetings and Public Outreach**

Date	Description of Meeting/Outreach Topics
11/8/2005	Initial meeting between BCOEM and NJMC
3/8/2006	Quarterly Emergency Management Coordinator's meeting sponsored by Bergen County Office of Emergency Management. Each quarterly meeting included NJMC update of Mitigation Plan status, discussion of hazards addressed by plan, explanation of 4-part mitigation development process, and request for feedback from attendees/communities. NJMC/BCOEM answered individual questions after meeting. Invitees included municipal OEM Coordinators, CERT Program Managers, as well as representatives from NJ State Police, Port Authority of NY/NJ, Public Service Electric and Gas Company, United Water Company, Passaic Valley Water Commission, and other interested parties.
3/22/2006	Mitigation Plan Workshop sponsored by NJMC at Bergen County Police and Fire Academy, in Mahwah. Invitees included Bergen County municipal officials and general public for kick-off presentation. Public participation was encouraged, (see <b>Appendix D</b> for PowerPoint presentation from the workshop.)
3/29/2006	Meeting with Wood-Ridge OEM Coordinator Paul Dahl at NJMC offices. Mr. Dahl brought information on recent event and critical areas and NJMC staff provided input regarding information needed for forms and inclusion in the plan.
4/6/2006	Meeting with Garfield OEM Coordinator Officer Mike Marsh in Garfield. Officer Marsh was recently assigned to the Mitigation Plan. NJMC staff brief him on plan progress and assisted him with recent event analysis forms.
4/6/2006	Meeting with former East Rutherford OEM Coordinator Harold Tilt at NJMC regarding the type of data needed on the NJMC mitigation information forms.
4/18/2006	Meeting with East Rutherford OEM Coordinator Alan DeRosa at NJMC. Mr. DeRosa introduced himself as the new OEM Coordinator and explained the data that the Borough amassed to date, including maps of critical areas. NJMC staff went over the required forms with him.
4/20/2006	Meeting with Lodi Police Lieutenant Reuter in Lodi. NJMC staff brought the required mitigation information forms and discussed what was needed for each.
4/28/2006	Meeting with Captain Faulborn, Lt. Connor, and Town Administrator John Perkins in Dumont. NJMC Staff reviewed documents that Dumont had provided to date and determined what outstanding information Dumont still needed to submit.
5/2/2006	Meeting between Park Ridge and NJMC staff to review submittal.
5/4/2006	Meeting with Moonachie OEM Coordinator Sergeant Torsiello in Moonachie. NJMC had not received any information from Moonachie so staff brought forms and explained their purpose and assisted Sgt. Torsiello with filling several out as samples.
5/8/2006	Meeting with Park Ridge Lt. Craig Coughlin and NJMC staff at NJMC to review Park Ridge documents and advise him as to what remained to be submitted.
5/23/2006	Meeting with Tenafly Sgt. David Epstein and OEM Coordinator Harvey Eisner in Tenafly to discuss information they submitted to date and advise that regarding what additional structures might be considered critical.
6/14/2006	Quarterly Emergency Management Coordinator's meeting sponsored by Bergen County Office of Emergency Management. Each quarterly meeting included NJMC update of Mitigation Plan status, discussion of hazards addressed by plan, explanation of 4-part mitigation development process, and request for feedback from attendees/communities. NJMC/BCOEM answered individual questions after meeting. Invitees included municipal OEM Coordinators, CERT Program Managers, as well as representatives from NJ State Police, Port Authority of NY/NJ, Public Service Electric and Gas Company, United Water Company, Passaic Valley Water Commission, and other interested parties.
7/5/2006	Meeting with Fairlawn OEM Coordinator Ira Marx at NJMC to review Fairlawn's mitigation forms prior to submittal, specifically critical structures.
8/2/2006	Meeting with Wood-Ridge OEM Coordinator Paul Dahl at NJMC offices. He had several more questions about required information on mitigation forms.

8/30/2006	Meeting with Paramus OEM Coordinator Steve Mehl at Paramus Emergency Operation Center. NJMC staff review Paramus' 20/20 document and advised him as to what are classified as critical structures and repetitive loss properties
9/6/2006	Meeting with Bergen-Passaic Municipal Inspectors Association at their monthly meeting held at the Venetian Restaurant in Garfield. Presentation provided by BCOEM.
9/13/2006	Quarterly Emergency Management Coordinator's meeting sponsored by Bergen County Office of Emergency Management. Each quarterly meeting included NJMC update of Mitigation Plan status, discussion of hazards addressed by plan, explanation of 4-part mitigation development process, and request for feedback from attendees/communities. NJMC/BCOEM answered individual questions after meeting. Invitees included municipal OEM Coordinators, CERT Program Managers, as well as representatives from NJ State Police, Port Authority of NY/NJ, Public Service Electric and Gas Company, United Water Company, Passaic Valley Water Commission, and other interested parties.
2/7/2007	Meeting with Bergen-Passaic Municipal Inspectors Association at their monthly meeting held at Seasons Restaurant in Washington Township. Presentation provided by BCOEM.
3/13/2007	Quarterly Emergency Management Coordinator's meeting sponsored by Bergen County Office of Emergency Management. Each quarterly meeting included NJMC update of Mitigation Plan status, discussion of hazards addressed by plan, explanation of 4-part mitigation development process, and request for feedback from attendees/communities. NJMC/BCOEM answered individual questions after meeting. Invitees included municipal OEM Coordinators, CERT Program Managers, as well as representatives from NJ State Police, Port Authority of NY/NJ, Public Service Electric and Gas Company, United Water Company, Passaic Valley Water Commission, and other interested parties.
5/29/2007	Hazard Mitigation Workshop sponsored by NJ State Police OEM. SFC Paul Miller provided a presentation with specific emphasis on recent storm damage due to 2007 Nor'easter/FEMA #1694-DR-NJ. Attendees included Tatiana Glavan of Congressman Scott Garret's office, Bergen and Hudson County OEM Coordinators, Bergen and Hudson County CERT Program Managers, fire fighters, rescue technicians, municipal engineers, and the members of the general public. (See <b>Appendix E</b> for Fact Sheet from the workshop.)
7/11/2007	Quarterly Emergency Management Coordinator's meeting sponsored by Bergen County Office of Emergency Management. Each quarterly meeting included NJMC update of Mitigation Plan status, discussion of hazards addressed by plan, explanation of 4-part mitigation development process, and request for feedback from attendees/communities. NJMC/BCOEM answered individual questions after meeting. Invitees included municipal OEM Coordinators, CERT Program Managers, as well as representatives from NJ State Police, Port Authority of NY/NJ, Public Service Electric and Gas Company, United Water Company, Passaic Valley Water Commission, and other interested parties.
11/13/2007	Hazard Mitigation Plan Public Workshop sponsored by Bergen County Office of Emergency Management. Meeting included an update from NJMC Staff and Bergen County OEM on the progress of the Plan, and opportunity for public input. Invitees included Bergen County municipal OEM Coordinators and members of the general public.

**Table 4: Data Received by the NJMC from Bergen County Municipalities**

SSN	MUNICIPALITY	Resolution Approving the Plan	Neighborhood Profiles	Critical Facilities	Repetitive Losses	Recent Event Analysis	Submitted Mitigation Project(s)	Record of Review	Attended Meeting on 3/08/06	Attended Meeting on 3/22/06	Met w/NJMC staff	Attended Meeting on 6/14/06	Attended Meeting on 9/13/06	Attended Meeting on 3/13/07	Attended Meeting on 5/29/07	Attended Meeting on 7/11/07	Attended Meeting on 11/13/07
201	Allendale Borough		YES	YES	YES	YES	YES	YES		X						X	
202	Alpine Borough		YES	YES	YES	YES	YES	YES	X	X		X		X		X	X
203	Bergenfield Borough		YES	YES		YES	YES	YES	X			X	X	X		X	X
204	Bogota Borough		YES	YES	YES	YES	YES	YES	X				X	X		X	X
205	Carlstadt Borough		YES	YES	YES	YES	YES	YES				X	X	X			X
206	Cliffside Park Borough		YES	YES	YES	YES	YES	YES	X					X			
207	Closter Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X		X	X
208	Cresskill Borough		YES	YES	YES	YES	YES	YES	X	X			X	X			
209	Demarest Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X		X	X
210	Dumont Borough		YES	YES	YES	YES	YES	YES	X	X	4/28/06	X	X	X	X	X	X
212	East Rutherford Borough	YES	YES	YES	YES	YES	YES	YES			4/6/06,4/18/06		X	X		X	X
213	Edgewater Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X		X	X
211	Elmwood Park Borough		YES	YES	YES	YES	YES	YES		X		X	X				X
214	Emerson Borough		YES	YES		YES	YES	YES				X	X	X		X	X
215	Englewood City		YES	YES	YES	YES	YES	YES	X			X	X	X			X
216	Englewood Cliffs Borough		YES	YES	YES	YES	YES	YES	X	X			X	X			X
217	Fair Lawn Borough	YES	YES	YES	YES	YES	YES	YES	X	X	7/5/06	X	X	X	X	X	X
218	Fairview Borough		YES	YES	YES	YES	YES	YES									
219	Fort Lee Borough	YES	YES	YES	YES	YES	YES	YES	X	X		X		X		X	X
220	Franklin Lakes Borough		YES	YES	YES	YES	YES	YES	X					X			X
221	Garfield City		YES	YES	YES	YES	YES	YES	X		4/6/06		X	X		X	X
222	Glen Rock Borough		YES	YES	YES	YES	YES	YES	X			X	X	X		X	X
223	Hackensack City		YES	YES	YES	YES	YES	YES	X	X		X	X	X	X	X	X
224	Harrington Park Borough		YES	YES	YES	YES	YES	YES		X		X					X
225	Hasbrouck Heights Borough		YES	YES	YES	YES	YES	YES	X			X	X	X		X	X
226	Haworth Borough		YES	YES	YES	YES	YES	YES	X			X	X	X			
227	Hillsdale Borough		YES	YES	YES	YES	YES	YES		X		X				X	
228	Ho-Ho-Kus Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X	X	X	X
229	Leonora Borough		YES	YES	YES	YES	YES	YES						X			X
230	Little Ferry Borough	YES	YES	YES	YES	YES	YES	YES		X		X	X		X		X
231	Lodi Borough		YES	YES	YES	YES	YES	YES	X	X	4/20/06	X	X	X	X	X	
232	Lyndhurst Township		YES	YES	YES	YES	YES	YES	X	X		X	X	X		X	X
233	Mahwah Township		YES	YES	YES	YES	YES	YES	X	X		X	X	X	X	X	X
234	Maywood Borough		YES	YES	YES	YES	YES	YES		X							
235	Midland Park Borough	YES	YES	YES	YES	YES	YES	YES		X		X	X	X		X	X

SSN	MUNICIPALITY	Resolution Approving the Plan	Neighborhood Profiles	Critical Facilities	Repetitive Losses	Recent Event Analysis	Submitted Mitigation Project(s)	Record of Review	Attended Meeting on 3/08/06	Attended Meeting on 3/22/06	Met w/NJMC staff	Attended Meeting on 6/14/06	Attended Meeting on 9/13/06	Attended Meeting on 3/13/07	Attended Meeting on 5/29/07	Attended Meeting on 7/11/07	Attended Meeting on 11/13/07
236	Montvale Borough	YES	YES	YES	YES	YES	YES	YES				X					
237	Moonachie Borough		YES	YES	YES	YES	YES	YES			5/4/06						
238	New Milford Borough		YES	YES	YES	YES	YES	YES	X	X		X	X			X	X
239	North Arlington Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X		X	X
240	Northvale Borough	YES	YES	YES	YES	YES	YES	YES				X	X	X		X	X
241	Norwood Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X		X	X
242	Oakland Borough		YES	YES	YES	YES	YES	YES	X	X			X	X			X
243	Old Tappan Borough		YES	YES	YES	YES	YES	YES	X			X	X	X			X
244	Oradell Borough	YES	YES	YES	YES	YES	YES	YES				X		X		X	X
245	Palisades Park Borough		YES	YES	YES	YES	YES	YES								X	
246	Paramus Borough		YES	YES	YES	YES	YES	YES	X	X	8/30/06		X			X	X
247	Park Ridge Borough		YES	YES	YES	YES	YES	YES			5/2/06,5/8/06	X					
248	Ramsey Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X	X	X	X
249	Ridgefield Borough		YES	YES	YES	YES	YES	YES	X			X	X	X		X	X
250	Ridgefield Park Village		YES	YES	YES	YES	YES	YES	X	X		X	X	X		X	X
251	Ridgewood Village		YES	YES	YES	YES	YES	YES	X			X	X	X			X
252	River Edge Borough		YES	YES	YES	YES	YES	YES	X				X			X	
253	River Vale Township		YES	YES	YES	YES	YES	YES	X							X	X
254	Rochelle Park Township	YES	YES	YES	YES	YES	YES	YES	X			X	X	X	X	X	
255	Rockleigh Borough	YES	YES	YES	YES	YES	YES	YES									X
256	Rutherford Borough		YES	YES		YES	YES	YES	X	X		X	X	X	X		X
257	Saddle Brook Township		YES	YES	YES	YES	YES	YES				X			X		
258	Saddle River Borough		YES	YES	YES	YES	YES	YES								X	
259	South Hackensack Township		YES	YES	YES	YES	YES	YES	X	X		X	X	X	X	X	X
260	Teaneck Township		YES	YES	YES	YES	YES	YES	X			X	X	X	X	X	X
261	Tenafly Borough		YES	YES	YES	YES	YES	YES	X	X	5/23/06	X				X	
262	Teterboro Borough		YES	YES	YES	YES	YES	YES		X						X	X
263	Upper Saddle River Borough		YES	YES	YES	YES	YES	YES						X			
264	Waldwick Borough		YES	YES	YES	YES	YES	YES	X	X		X	X	X	X	X	X
265	Wallington Borough		YES	YES	YES	YES	YES	YES		X							
266	Washington Township		YES	YES	YES	YES	YES	YES		X		X	X		X	X	X
267	Westwood Borough		YES	YES	YES	YES	YES	YES								X	X
268	Woodcliff Lake Borough	YES	YES	YES	YES	YES	YES	YES	X	X		X	X	X	X	X	X
269	Wood-Ridge Borough		YES	YES	YES	YES	YES	YES	X	X	3/29/06,8/2/06		X		X	X	
270	Wyckoff Township		YES	YES	YES	YES	YES	YES		X		X					X
	Bergen County	YES	YES	YES		YES	YES		X	X					X		X

## 2.4 Data Gathering

Gathering the data necessary to identify potential projects and areas in need of mitigation from real or potential natural hazard damage was a massive undertaking, particularly since it was done at the multi-jurisdictional scale. A significant amount of effort was put into educating municipal representatives and key stakeholders regarding basic details needed in order to assemble as much available information as expeditiously as possible.

Initially, NJMC asked the Bergen County municipalities to submit any historical natural hazard disaster information they had on record. This data may have included names and locations of impacted sites/areas, critical facilities, critical infrastructure, other infrastructure of importance, vulnerability analyses, etc. Information may have been gathered from a number of existing municipal documents such as master plans; capital improvement plans, floodplain management plans, emergency operation plans, former insurance claims, etc. (see **Appendix F, Record of Review**). Each of the municipalities provided a packet of information entitled *Mitigation 20/20* on forms previously developed by Stevens Institute of Technology. NJMC also prepared forms entitled *Recent Event Analysis* which were used by the municipalities to catalog additional past historical data including magnitude and costs associated with disaster events, (see **Appendix G**).

To identify as many potential mitigation projects as possible, an open public involvement process was essential to the development of the plan. The County organized a stakeholder engagement program, whereby the general public and civic groups could offer sites and facilities,

as well as historic natural hazard information for consideration in the planning process. The Plan Development Committee asked the OEM Coordinators to reach out in their municipalities; utilizing standardized forms (see **Appendix J, Stakeholder Engagement: Identifying Mitigation Projects**). These forms were made available in a variety of locations and forums including town halls, libraries, club meetings, post offices, local stores, via hand-distribution, etc. The public was able to fill out and send forms back to the local OEM Coordinators or directly to the NJMC offices for consideration over a five-week time period.

Overall, 416 potential mitigation projects were proposed for consideration between the municipal analyses and stakeholder engagement steps of the process.

### 3. Risk Assessment

In assessing Bergen County's vulnerability to potential natural hazards, it was important to take into account the natural and built environments and review details of past hazard events.

This chapter contains summary information regarding background characteristics of the land and environment for the County in general. It also identifies natural hazards that have been experienced by most Bergen County municipalities. Then it proceeds to detail hazards which have caused damage to individual municipalities in recent years and identifies critical facilities located in each municipality.

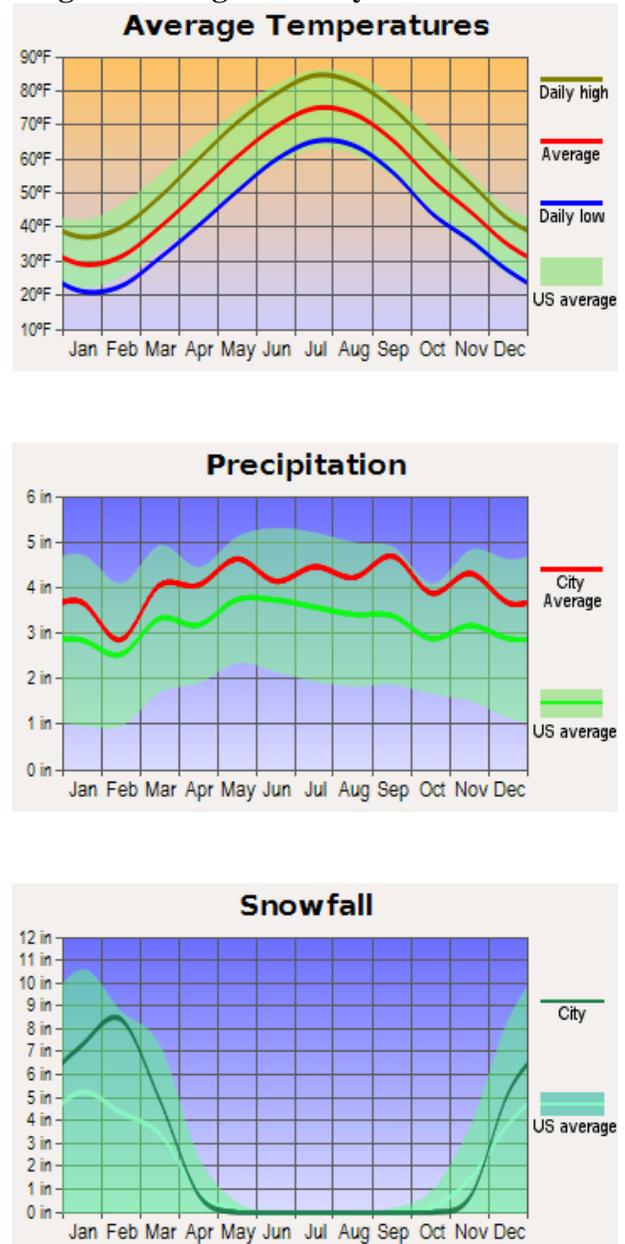
#### 3.1 Climatological Characteristics of the County

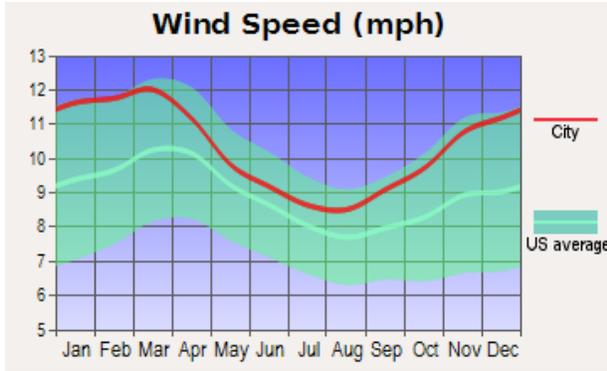
The following gives a general overview of climatic conditions for Bergen County municipalities, on average, at different times of the year. In scoping out climatological data, it was found that most data sources maintain the information on a municipal level, not a county level. While NJMC Geographic Information Systems specialists determined that it might be possible to obtain raw data from the State of New Jersey Climatologist and create new county-wide graphics, it would be quite time consuming and probably not yield a significant amount of additional information. In comparing the data of numerous municipalities, it was determined that by selecting a centrally-located municipality in the County - Paramus - it provided climatological information closely representative of the overall County for

purposes of a multi-jurisdictional plan such as this.

The following graphics include average climatology for temperature, precipitation, snowfall, and wind speed.<sup>5</sup>

**Figure 3: Bergen County Weather Data**





As noted, weather in Bergen County is seasonal with precipitation, snowfall, and wind speeds slightly exceeding, but within normal range, of the national average.

### 3.2 Physical Geography

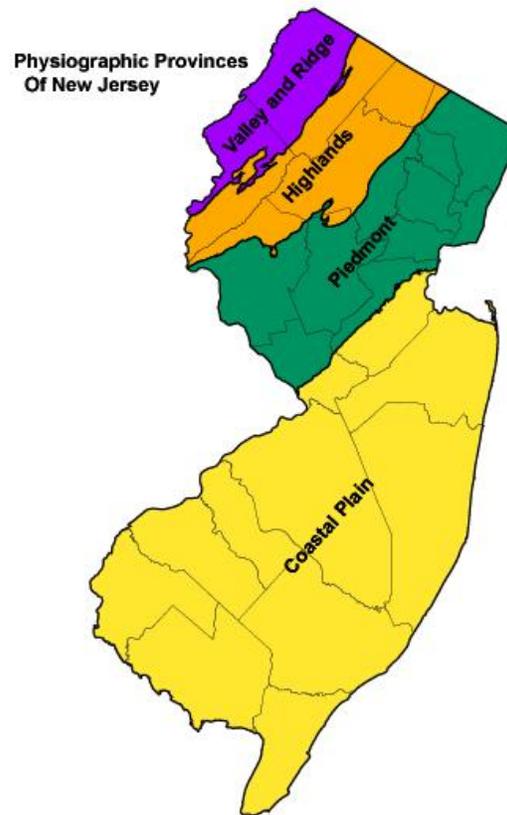
Bergen County is situated within two of New Jersey's physiographic provinces, the Highlands and Piedmont Provinces, as illustrated in **Figure 4**.<sup>6</sup> Bergen contains the Palisades, one of the most dramatic geological features in the New York City region. The Palisades are a string of steep cliffs hovering over the western edge of the lower Hudson River. Rising vertically from the river edge, the cliffs range in height between 350 to 550 feet. Ramapo Mountain, at 1,171 feet, is the highest elevation on the southeast portion of the Highlands Province in Bergen County.

According to *The Geology of New Jersey*, a bulletin of the New Jersey Geologic Survey, the underlying rock base in the Highlands Province is primarily Middle Proterozoic age metamorphosed igneous and sedimentary rock. Where the Highlands meets the Piedmont Province, the crystalline rocks of the Highlands come into contact with much younger Triassic and Jurassic age sedimentary and Jurassic age igneous rocks of the Piedmont. The Highlands and Piedmont rocks are separated by a series of major faults, including the Ramapo Fault.

Rocks range from the more resistant gneisses and granites of the hill areas to sandstone, siltstone, and shale deposited closer to the river and lake basins of the region.

The Palisades contain rifting associated with historic volcanic activity. Rock in this area is primarily basalt and diabase, indicative of this activity.

Much of this underlying geologic data is illustrated in **Figure 5**, Geologic Map of New Jersey, on the following page.<sup>7</sup>



County boundaries for reference only.  
Source: New Jersey Geologic Survey

**Figure 4: Physiographic Provinces of New Jersey**

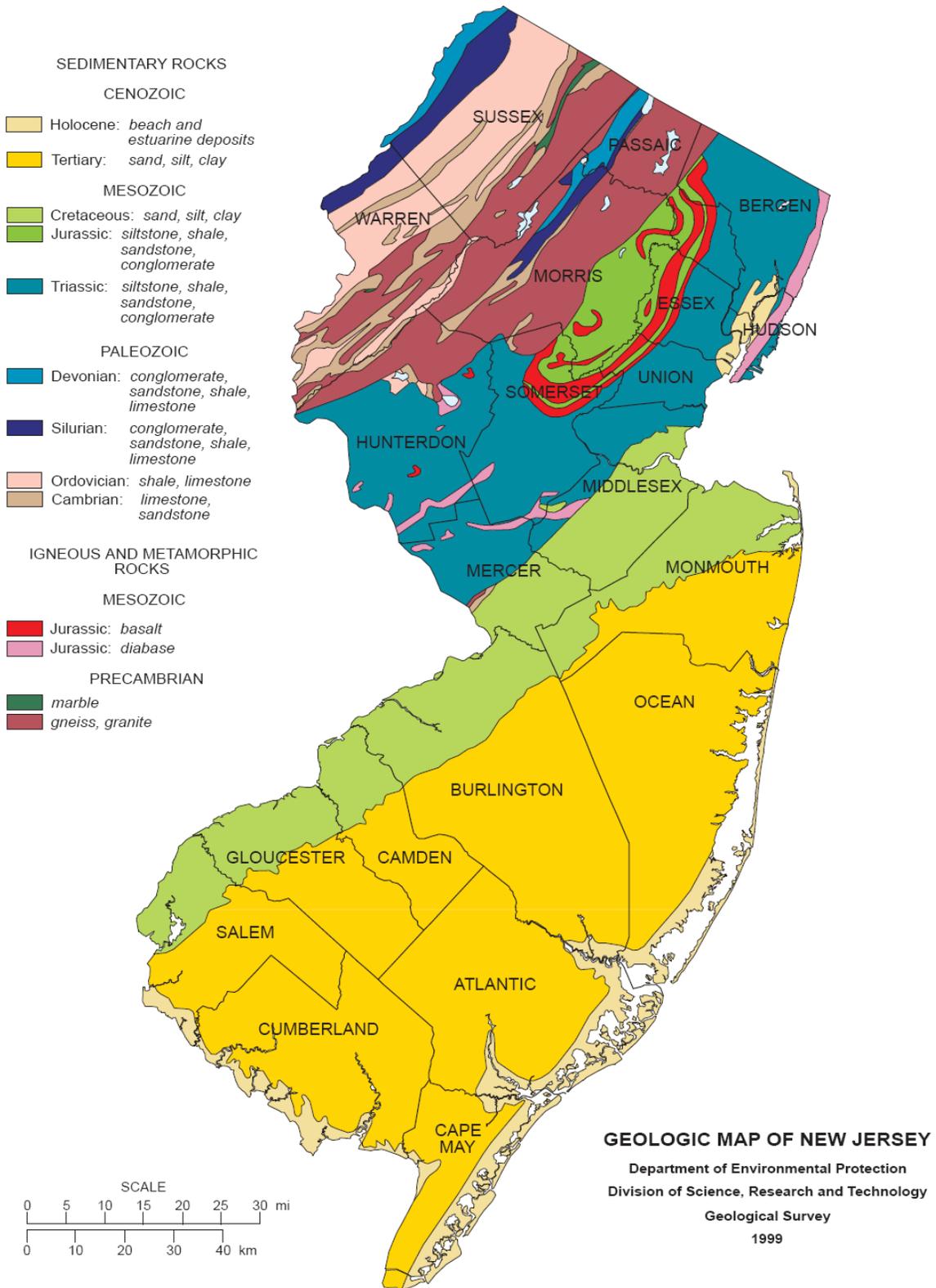


Figure 5: Geologic Map of New Jersey

### **3.3 Demographics/ Land Use/Transportation**

Bergen County is a highly developed, primarily suburban area in New Jersey with several urban municipalities located throughout, including the county seat of Hackensack. While the County is the most densely populated in the state, the population is not evenly distributed by number or character. Northern Bergen County municipalities tend to be less densely populated than South Bergen municipalities. Northern towns also differ from the southern towns in that the northern demographic base tends to be of a higher household income and less diverse racial/ethnic background.

The developed nature of the County is reflected in **Figure 6**.<sup>8</sup> The map illustrates the County almost exclusively as urban land, with forest cover found mainly in the areas of the Palisades and Ramapo Mountains and wetlands principally in the Meadowlands District.

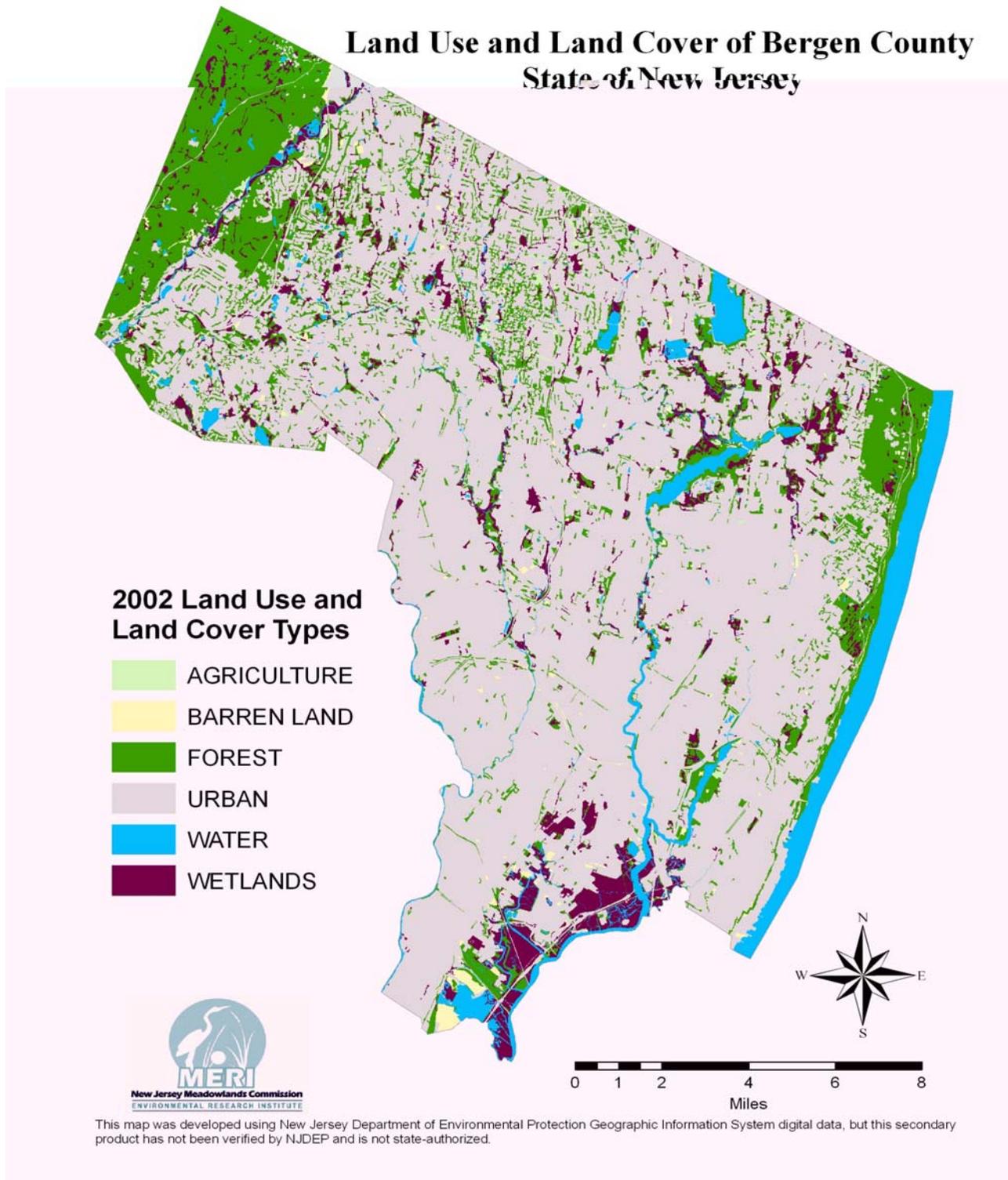
Land use in New Jersey is regulated at the municipal level in accordance with the State Constitution and the New Jersey Municipal Land Use Law. In the Meadowlands District in Bergen County, land use and zoning powers are within the purview of the New Jersey Meadowlands Commission's Master Plan and District Zoning Regulations.

There is a well-established transportation network throughout Bergen County. Major roadways consist of Interstate Routes 80, 95 (New Jersey Turnpike), and 287; U.S. Routes 1, 9W, and 202; many State highways including Routes 3, 4, 17, 120, and 208; and the Garden State and Palisades Parkways. These roadways are illustrated in **Figure 7** on the following page.<sup>9</sup>

Because of the highly developed nature of Bergen County, much of the development that is occurring across the County is through redevelopment. Several towns are currently undergoing efforts to revitalize their downtown areas. Brownfield development also continues, as the lack of vacant land forces developers to look at redevelopment. Although the economy has slowed down, Bergen County remains a desirable place to live and work, due to its location. Several major projects are currently being undertaken at the site of Giants Stadium in East Rutherford. A new 82,500 seat stadium and new Giants training facility are currently being constructed. The 4.8 million square foot Xanadu entertainment and retail complex is currently being constructed adjacent to the Stadium, as well as a new NJ Transit station and rail link that will connect these facilities to the NJ Transit Pascack Valley Line.

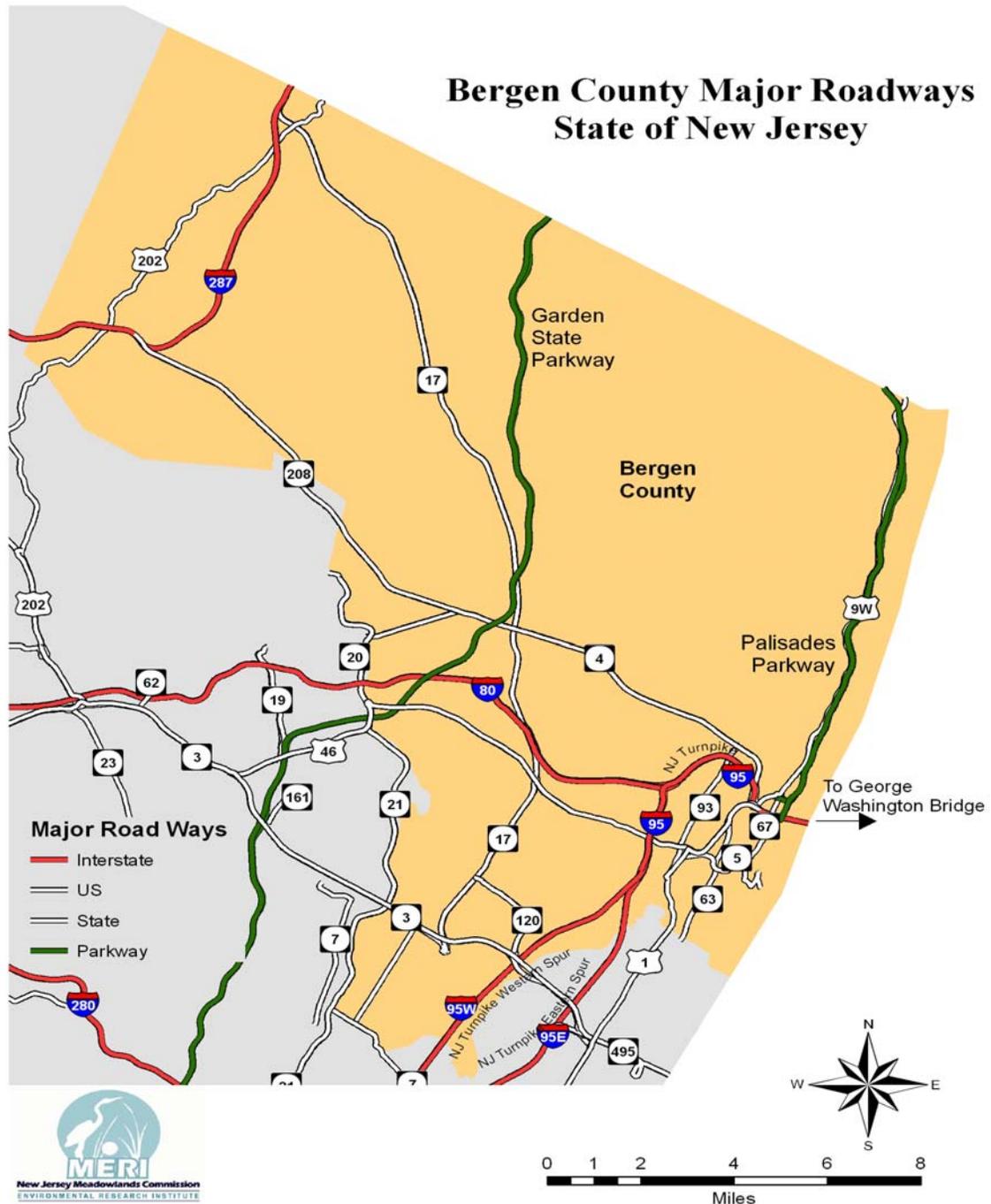
According to Cushman and Wakefield, the unemployment rate in New Jersey continues to increase, as fallout from the credit crisis continues. Office leasing has slowed, and new construction activity in Bergen County has stalled. Bergen's overall office vacancy rate for the second quarter of 2008 was 17.7%.<sup>10</sup>

Data regarding development trends will be supplemented and updated in the next version of the Plan. The Plan Development Team will work with the 70 municipalities to ensure that current development information is included.



**Figure 6: 2002 Land Use and Land Cover Types**

Figure 7: Bergen County Roadways



This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

### 3.4 Hazard Identification

**Table 5** is a list of potential natural hazards and the likelihood that an event may occur in Bergen County, taken from the State of New Jersey 2007 State Hazard Mitigation Plan, historical and recent hazard event data, and communication with local and regional experts.<sup>11</sup>

**Table 5: Bergen County Hazards**

Hazard Type	Identified Hazard of Concern?
Avalanche	No
Coastal Erosion	No
Drought	Yes
Earthquake	Yes
Expansive Soils	No
Extreme Heat	Yes
Extreme Cold/Snow/Ice	Yes
Flood – Riverine/Stormwater	Yes
Flood – Coastal	Yes
Hailstorm	No
Hurricane	Yes
Landslide	Yes
Subsidence	No
Tsunami	No
Volcano	No
Wildfire	Yes
Windstorms/Tornadoes	Yes

In assessing risk associated with potential natural hazard occurrences, it is important to determine the probability and frequency of, and severity/vulnerability to the hazard. By doing so, the Plan is able to target and concentrate on hazards that are more likely to occur, cause the most harm, require the most attention, and/or are most easily or cost-effectively mitigated.

The *probability* of future events is the chance or likelihood that a hazard will occur in any given year. For instance, a flood event that has at least a 1 in 100 (or 1%) chance of occurring in any given year is known as a 100-year flood event, and the area that could potentially be flooded by such an event is known as the 100-year floodplain. The expected average *frequency* of such a flood would be once every 100 years.

The *severity* or *vulnerability* with regard to a specific hazard is the estimate of potential damage or impact that a particular hazard event may have on a designated community.

**Table 6** shows New Jersey emergency and disaster declarations from 1955-2005. Bergen County has experienced nine disaster declarations since 1996.

**Table 6: New Jersey Declarations, 1955-2005**

New Jersey Declarations, 1955-2005			New Jersey	Bergen County
Year	Description	Code		
Aug-55	Hurricane, floods	41-DR	n	
Mar-62	Severe storms, high tides, flooding	124-DR	n	
Aug-65	Water shortage	205-DR	n	
Jun-68	Heavy rains, flooding	245-DR	n	
Sep-71	Heavy rains, flooding	310-DR	n	
Aug-73	Severe storms, flooding	402-DR	n	
Nov-74	Severe storms, high winds, high tides	3005-EM	n	
Jul-75	Heavy rains, high winds, hail, tornadoes	477-DR	n	
Aug-76	Severe storms, high winds, flooding	519-DR	n	
Feb-77	Ice conditions	528-DR	n	
Oct-80	Water shortage	3083-EM	n	
Apr-84	Coastal storms,	701-DR	n	

	flooding			
Oct-85	Hurricane Gloria	749-DR	n	
Mar-92	Coastal storm	936-DR		
Dec-92	Coastal storm	973-DR		
Mar-93	Severe blizzard	3106-EM	n	
Jan-96	Snow, blizzard	1088-DR		y
Nov-96	Flooding	1145-DR		y
Sep-97	Severe storms, flooding	1189-DR		
Mar-98	Coastal storm	1206-DR		
Sep-99	Hurricane Floyd	1295-DR		
Sep-99	Hurricane Floyd	3147-EM		y
Sep-99	Hurricane Floyd	3148-EM		y
Aug-00	Flooding	1337-DR		
Nov-00	Virus threat	3156-EM		y
Sep-01	Terrorist attack emergency declaration	3169-EM	n	
Jun-02	Double trouble fire	2411-FM		
Mar-03	Snowstorm	3181-EM		y
Sep-03	Power outage	3188-EM		y
Jul-04	Severe storm, flooding	1530-DR		
Oct-04	Tropical Depression Ivan	1563-DR		
Apr-05	Severe storms and flooding	1588-DR		y
Sep-05	Hurricane Katrina evacuation	3257-EM		y

**3.5 Hazards Eliminated**

Based on the combination of geographic location, climate, and geology, the Plan will not address avalanches, coastal erosion, tsunamis, volcanoes, subsidence, hailstorms, or expansive soils. The likelihood of such events occurring is not considered to be a critical threat to Bergen County or any of the constituent municipalities reflected in the Plan.

**Avalanche**

An avalanche is the flow of snow down a mountainside. Avalanches typically do not occur on slopes flatter than 25 degrees or steeper than 60 degrees. Snow does not accumulate well on steep slopes and does not flow well on flat slopes. Bergen County does not have mountainsides that are vulnerable to avalanches, nor do snowfall accumulations reach amounts large enough for avalanches to be considered a hazard. There have been no incidences of avalanches in the past.

**Coastal Erosion**

Coastal erosion is the wearing away of land or the removal of beach or dune sediments by wave action, tidal currents, or wave currents. Note that Bergen County, per FEMA's Flood Insurance Rate Maps, does not have any Zone V or Zone E hazard areas. As such, the area is not designated as having "coastal flood zones with wave action" and coastal erosion, though not impossible, is unlikely in the area. Wave oscillations are attenuated by the funneling of ocean water through several restrictions and bays, including Upper New York Bay, Kill Van Kull, and Newark Bay. Only six counties in the State of New Jersey have designated Zone V or Zone E hazard areas (Ocean, Cape May, Atlantic, Monmouth, Middlesex and Hudson).

**Tsunami**

A tsunami is a series of large waves created by an underwater disturbance such as an earthquake, landslide, volcanic eruption, or meteorite. Tsunamis generally affect the coastlines and thus were eliminated as a hazard in Bergen County.

**Volcano**

A volcano is a mountain that opens downward to a reservoir of molten rock below the surface of the earth. The danger

zone around a volcano typically covers a 20-mile radius. Active volcanoes in the United States are found mainly in Hawaii, Alaska, and the Pacific Northwest. Volcanoes were eliminated as a possible hazard in Bergen County.

**Subsidence**

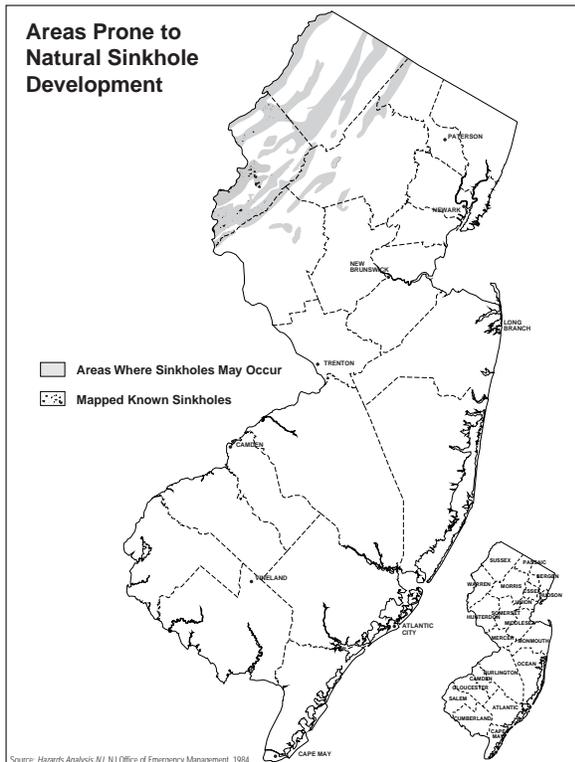
Subsidence is the motion of a surface (usually, the Earth's surface) as it shifts downward relative to a datum such as sea-level. Subsidence frequently occurs in karst terrains, where dissolution of limestone by fluid flow in the subsurface causes the creation of voids (i.e. caves). If the roof of these voids becomes too weak, it can collapse and the overlying rock and earth will fall into the space, causing subsidence at the surface. This type of subsidence can result in sinkholes, which can be hundreds of meters deep.

The New Jersey Geological Survey has identified municipalities in New Jersey that have significant limestone deposits which may contribute to subsidence hazards. None are located in Bergen County. As **Figure 8** indicates, Bergen County has no significant limestone deposits, and thus no areas that are prone to natural sinkholes. The probability of subsidence occurring is low and further assessment of this hazard is not needed.<sup>12</sup>

**Hailstorm**

Hail is a form of precipitation which consists of balls or irregular lumps of ice (hailstones). Hailstones on Earth consist mainly of water ice and measure between 5 and 50 millimeters in diameter, with the larger stones coming from severe thunderstorms. Hail forms in strong thunderstorm clouds, particularly those with intense updrafts, high liquid water content, great vertical extent, large water droplets, and where a good portion of the cloud layer is below freezing. In the summer months in New Jersey, thunderstorms are very common. However, the possibility of hail is relatively low because the cloud layers are usually not below freezing and the precipitation usually falls as rain. There have been a total of 21 recordings of hailstorms in Bergen County dating back to May of 1986, as detailed in **Table 7**.<sup>13</sup>

The last recorded hailstorm was in June 2005 with the largest hail measuring ¾" in diameter. Of the 21 recorded hailstorms, none have caused significant property damage, injury or death. The largest diameter hailstone recorded was 1" in diameter, which would not result in significant damage. There have been no reports of injury, death, or damage due to hail in the past.



**Figure 8: NJ Areas Prone to Natural Sinkhole Development**

While hailstorms may occur in Bergen County, the probability of hailstorms posing a significant hazard is very low. In general, hailstones do not reach a large enough size

to cause a considerable damage or injury. Hailstorms thus were eliminated as a potential hazard in Bergen County.

**Table 7: Bergen County Historical Hail Events**

**21 Hail event(s)** were reported in **Bergen County, New Jersey** between **01/01/1950** and **03/31/2007**

**Mag:** Magnitude  
**Dth:** Deaths  
**Inj:** Injuries  
**PrD:** Property Damage  
**CrD:** Crop Damage

*Click on **Location or County** to display Details.*

New Jersey								
Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
1 <a href="#">BERGEN</a>	05/31/1986	1430	Hail	0.75 in.	0	0	0	0
2 <a href="#">BERGEN</a>	09/22/1987	1454	Hail	1.00 in.	0	0	0	0
3 <a href="#">Paramus</a>	05/06/1997	12:30 PM	Hail	0.88 in.	0	0	0	0
4 <a href="#">Hackensack</a>	05/08/1999	04:45 PM	Hail	0.75 in.	0	0	0	0
5 <a href="#">Lyndhurst</a>	04/09/2001	07:01 PM	Hail	0.88 in.	0	0	0	0
6 <a href="#">Lodi</a>	05/29/2001	02:05 PM	Hail	0.75 in.	0	0	0	0
7 <a href="#">Lyndhurst</a>	08/14/2001	06:50 PM	Tstm Wind/hail	0 kts.	0	0	0	0
8 <a href="#">Maywood</a>	08/28/2001	05:00 PM	Tstm Wind/hail	0 kts.	0	0	0	0
9 <a href="#">Saddle Brook</a>	04/19/2002	04:40 PM	Hail	1.00 in.	0	0	0	0
10 <a href="#">Garfield</a>	05/31/2002	06:10 PM	Hail	1.00 in.	0	0	0	0
11 <a href="#">Ramsey</a>	05/31/2002	06:48 PM	Hail	0.75 in.	0	0	0	0
12 <a href="#">Garfield</a>	06/19/2002	03:31 PM	Hail	1.00 in.	0	0	0	0
13 <a href="#">Teterboro</a>	06/26/2002	04:20 PM	Hail	1.00 in.	0	0	0	0
14 <a href="#">Oakland</a>	05/12/2004	02:21 PM	Hail	0.88 in.	0	0	0	0
15 <a href="#">Lyndhurst</a>	05/12/2004	03:05 PM	Hail	0.75 in.	0	0	0	0
16 <a href="#">Ramsey</a>	06/01/2004	04:00 PM	Hail	1.00 in.	0	0	0	0
17 <a href="#">Allendale</a>	06/01/2004	04:03 PM	Hail	1.75 in.	0	0	0	0
18 <a href="#">Saddle River</a>	06/01/2004	04:15 PM	Hail	1.75 in.	0	0	0	0
19 <a href="#">Central Portion</a>	06/01/2004	05:25 PM	Hail	0.75 in.	0	0	0	0
20 <a href="#">Ft Lee</a>	08/11/2004	01:35 PM	Hail	1.00 in.	0	0	0	0
21 <a href="#">Rutherford</a>	06/22/2005	02:30 PM	Hail	0.75 in.	0	0	0	0
<b>TOTALS:</b>					0	0	0	0

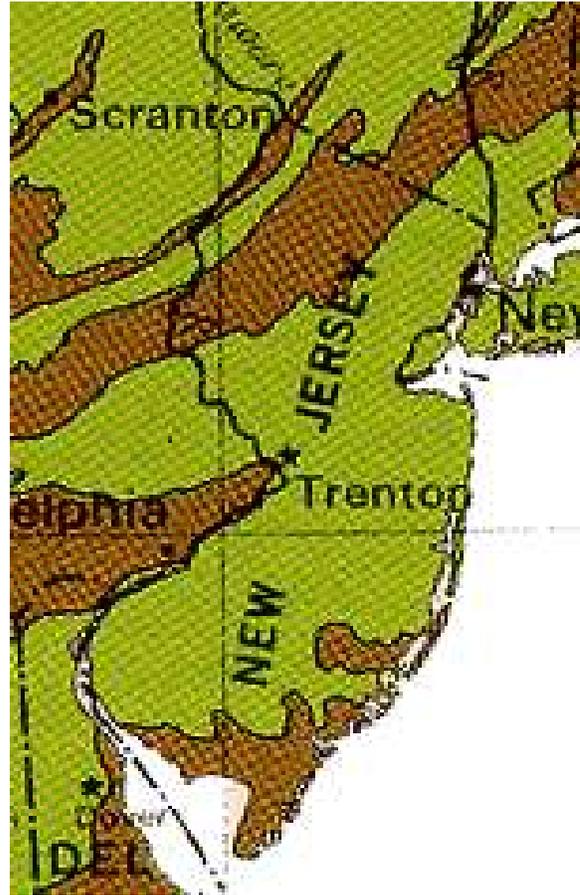


**Expansive Soils**

According to the USGS, expansive soils are those that shrink or swell as the moisture content decreases or increases.<sup>14</sup> Expansive clay particles are invisible to the naked eye and swell by absorbing large amounts of water relative to their volume. When these particles dry out, they can shrink considerably. When winter rains fall on the dry, cracked ground, the clays swell; the cracks close; and the ground can heave up as much as several inches. Expansive soils pose a threat when built upon. A house built on expansive soil will likely move if the foundation has not been designed to take the soil type into account. Movement occurs because the soils expand so forcefully, the foundation actually shifts. Different parts of the house can move at different rates and distances, thus cracking the foundation. During extreme drought conditions, even homes that are not normally affected by expansive soil problems may experience slight cracking.

According to **Figure 9**, most of the soil in New Jersey has less than a 50% chance of consisting of clay with a slight to moderate swelling potential.<sup>15</sup> There have been no recordable incidents in the past where expansive soils have caused significant damage in Bergen County. As such, expansive soils will not be addressed in the Plan.

**Figure 9: Swelling Clays Map of the Coterminous United States**



**MAP LEGEND**

- Unit contains abundant clay having high swelling potential
- Part of unit (generally less than 50%) consists of clay having high swelling potential
- Unit contains abundant clay having slight to moderate swelling potential
- Part of unit (generally less than 50%) consists of clay having slight to moderate swelling potential
- Unit contains little or no swelling clay
- Data insufficient to indicate clay content of unit and/or swelling potential of clay (Shown in westernmost states only)

### **3.6 Profiling Hazards and Assessing Vulnerability**

#### **Coastal Flooding**

Coastal flooding is typically a result of storm surges, wind-driven waves, and/ or heavy rainfall. These conditions are produced by hurricanes during the summer and fall, and nor'easters and other large coastal storms during the winter and spring. Storm surges may overrun barrier islands and push sea water up coastal rivers and inlets, blocking the downstream flow of inland runoff. Thousands of acres of crops and forest lands may be inundated by both saltwater and freshwater. Escape routes, particularly from barrier islands, may be cut off quickly, stranding residents in flooded areas and hampering rescue efforts.

According to the September 30, 2005 FEMA Flood Insurance Study (FIS) for Bergen County, New Jersey, which supersedes the December 8, 1998 FIS, principal flooding in southern Bergen County results from tidal stages of the Newark Bay, which affect the Hackensack River, and in turn, Bellman's Creek and Wolf Creek. The tidal influence is negated on Wolf Creek by a tidal barrier located approximately 1,000 feet upstream of the confluence of Wolf Creek and Bellman's Creek.<sup>16</sup>

Specifically, the FIS notes that the Hackensack Meadowlands District is impacted yearly by nor'easter storm events. Additionally, nor'easters and hurricanes have produced the largest stream elevations, and not rainfall events. The maximum historical tide was produced by a hurricane on September 3, 1821. The surge was approximately 10 to 11 feet above normal tide.

The FIS differentiates between coastal flooding and riverine flooding (see below). Coastal flooding, due to hurricanes and nor'easters, is isolated by the report and related Flood Insurance Rate Maps (FIRMs) to the following locations:

#### **Hackensack River**

- Village of Ridgefield Park (Portions of Major Flooding Due to Coastal Surges)
- Borough of Bogota (All Due to Coastal Surges)
- Borough of North Arlington (Portions)
- Township of Lyndhurst (Portions)
- Borough of Little Ferry (All)
- Borough of Teterboro (All)
- Borough of Rutherford (Portions)
- Borough of East Rutherford (Portions)
- Borough of Moonachie (All)
- Borough of Carlstadt (All)
- City of Hackensack (Portions)
- Township of Teaneck (Portions)
- Township of South Hackensack (All)
- Borough of Hasbrouck Heights (All)

#### **Hudson River**

- Borough of Edgewater (All)
- Borough of Fort Lee (All)
- Borough of Englewood Cliffs (All)
- Borough of Tenafly (Portions)
- Borough of Alpine (All)

As shown above, the extent of coastal flooding (with the exception of the Borough of Edgewater) from a surge in the Hudson River is extremely limited due to the steep topography along the New Jersey banks.

**Figure 10** shows the locations of coastal and riverine floodplains in Bergen County, as well as the boundary between the coastal and fluvial flood zones<sup>17</sup>. Data for this figure was compiled from two sources. The Digital Flood Insurance Rate Maps (DFIRMs) were obtained from FEMA. Municipal boundaries and the hydrography

stream network were obtained from NJDEP. The information was imported into the NJMC's Geographic Information System (GIS), and subsequently used to generate Figure 10. Appendix G contains individual maps of each Bergen County municipality, showing critical facility location and the 100-year floodplain.

The extent and the magnitude of the coastal flooding and riverine flooding in Bergen County municipalities are further highlighted in **Table 8** below.

For coastal flooding, the flood hazard area boundaries represent the extent of inundation caused by a coastal surge with a 1% and 0.2% annual probability of occurrence (also known as the 100-year and 500-year events, respectively) and that critical facilities supplied by the municipalities have been added to the mapping. The elevations used to develop these extents are based on the findings of the above FIS. In the past, FEMA's Flood Insurance Rate Maps (FIRMs) were updated every 10-15 years in the New York metropolitan area. The new digital format (DFIRM) allows for more accurate floodplain determinations, and the capability to update the maps more frequently. FEMA states in the FIS that the flooding in the study area is predominantly tidal and that elevations resulting from a given tide are not sensitive to fluvial flows with the exception of Teterboro airport, an area flooded by Moonachie Creek, and areas in Secaucus.<sup>18</sup>

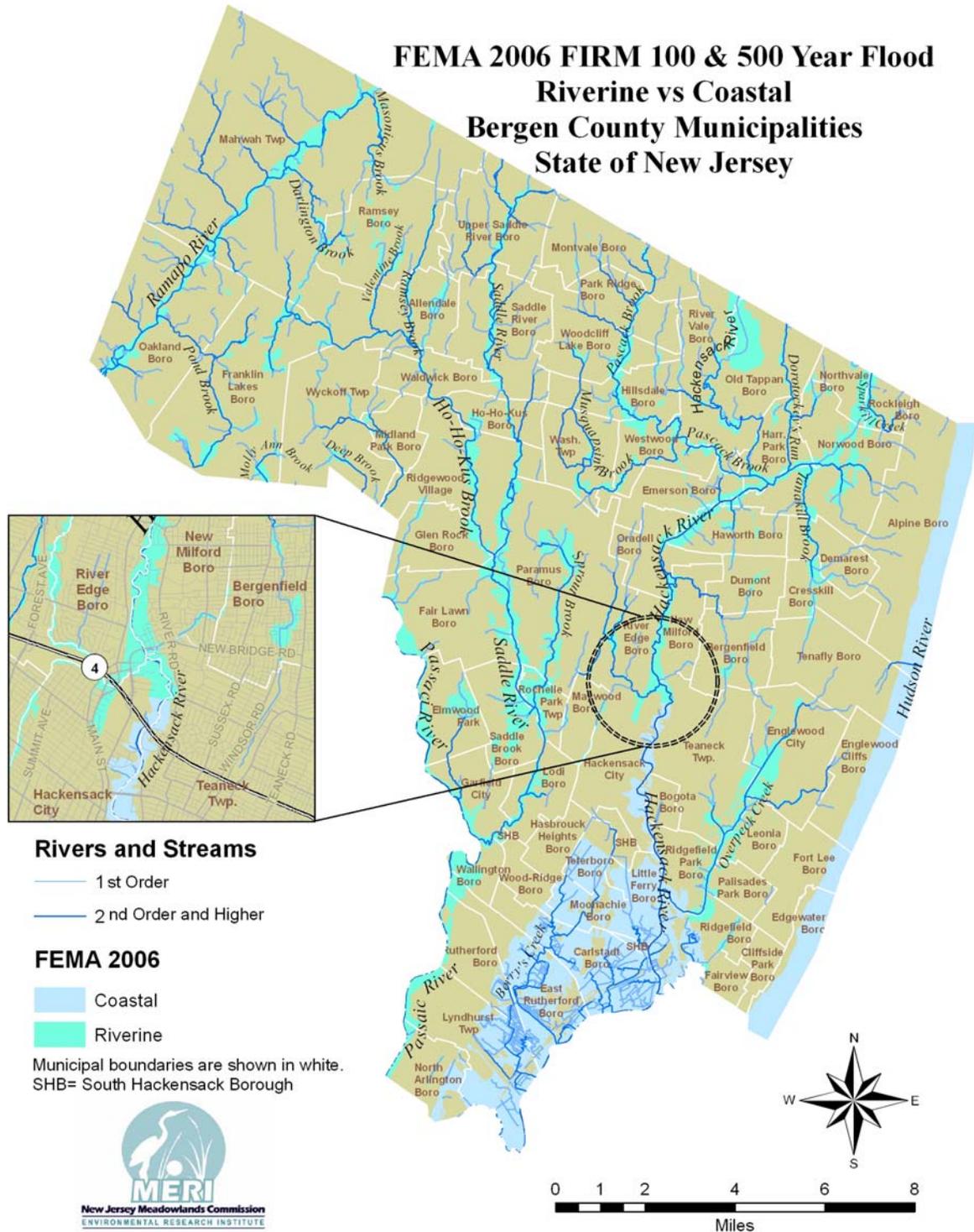
Since the creation of New Jersey's Coastal Management (CZM) Program in 1980, the NJDEP has regulated development and other related activities in coastal areas in order to reduce the probability of impact from coastal erosion and flooding, as well as to protect the sensitive coastal environment from human disturbance. These areas include:

- Lands regulated under the Coastal Area Facility Review Act (CAFRA);
- State tidal waters from mean high water (MHW) to the 3-mile limit;
- New Jersey Meadowlands District;
- Tidal wetlands; and
- Properties located between the MHW line landward to the first public roadway, if between 100 and 500 feet of the MHW line.

As noted earlier in the Plan, parts of ten Bergen County municipalities are located within the New Jersey Meadowlands District - Carlstadt, East Rutherford, Little Ferry, Lyndhurst, Moonachie, North Arlington, Ridgefield, Rutherford, South Hackensack, and Teterboro. The majority of these municipalities have properties located along the Hackensack River or tidal tributaries of the river. They also contain numerous tidal wetlands. These municipalities have been some of the most severely impacted by coastal flooding in the County in the past and remain susceptible.

### **Riverine/ Stormwater Flooding**

Periodic flooding of lands adjacent to non-tidal rivers and streams is a natural and inevitable occurrence. When stream flow exceeds the capacity of the normal water course, some of the above-normal stream flow spills over onto adjacent lands within the floodplain. Unlike coastal flooding (above), riverine flooding is a function of precipitation levels and water runoff volumes within the watershed of the stream or river. The recurrence interval of a flood is defined as the average time interval, in years, expected to take place between the occurrence of a flood of a particular magnitude and an equal or larger flood. Flood magnitude increases with increasing recurrence interval.



**Figure 10: 100- and 500-Year Riverine and Coastal Flood, Bergen County**

**Table 8: Percentage of Bergen County Municipalities Subject to 100- and 500-Year Flood**

Municipality	Riverine		Costal	
	100 Year	500 Year	100 Year	500 Year
ALLENDALE BORO	12%	2%	0%	0%
ALPINE BORO	0%	0%	32%	0%
BERGENFIELD BORO	5%	3%	0%	0%
BOGOTA BORO	0%	0%	14%	1%
CARLSTADT BORO	0%	0%	77%	0%
CLIFFSIDE PARK BORO	0%	0%	0%	0%
CLOSTER BORO	20%	2%	0%	0%
CRESSKILL BORO	10%	2%	0%	0%
DEMAREST BORO	7%	1%	0%	0%
DUMONT BORO	5%	1%	0%	0%
EAST RUTHERFORD BORO	3%	1%	64%	0%
EDGEWATER BORO	0%	0%	79%	1%
ELMWOOD PARK BORO	10%	15%	0%	0%
EMERSON BORO	9%	1%	0%	0%
ENGLEWOOD CITY	10%	6%	0%	0%
ENGLEWOOD CLIFFS BORO	0%	0%	39%	0%
FAIR LAWN BORO	11%	7%	0%	0%
FAIRVIEW BORO	5%	1%	0%	0%
FORT LEE BORO	0%	0%	14%	0%
FRANKLIN LAKES BORO	10%	3%	0%	0%
GARFIELD CITY	9%	6%	0%	0%
GLEN ROCK BORO	8%	3%	0%	0%
HACKENSACK CITY	6%	0%	12%	1%
HARRINGTON PARK BORO	22%	2%	0%	0%
HASBROUCK HEIGHTS BORO	0%	0%	2%	0%
HAWORTH BORO	21%	2%	0%	0%
HILLSDALE BORO	13%	3%	0%	0%
HOHOKUS BORO	11%	2%	0%	0%
LEONIA BORO	16%	0%	0%	0%
LITTLE FERRY BORO	0%	0%	83%	4%
LODI BORO	10%	5%	0%	0%
LYNDHURST TWP	4%	2%	46%	0%
MAHWAH TWP	6%	1%	0%	0%
MAYWOOD BORO	3%	3%	0%	0%
MIDLAND PARK BORO	4%	2%	0%	0%
MONTVALE BORO	4%	1%	0%	0%
MOONACHIE BORO	0%	0%	77%	4%
NEW MILFORD BORO	14%	3%	0%	0%

Municipality	Riverine		Costal	
	100 Year	500 Year	100 Year	500 Year
NORTH ARLINGTON BORO	6%	2%	16%	0%
NORTHVALE BORO	25%	1%	0%	0%
NORWOOD BORO	21%	1%	0%	0%
OAKLAND BORO	9%	1%	0%	0%
OLD TAPPAN BORO	26%	1%	0%	0%
ORADELL BORO	9%	2%	0%	0%
PALISADES PARK BORO	6%	0%	0%	0%
PARAMUS BORO	12%	6%	0%	0%
PARK RIDGE BORO	5%	1%	0%	0%
RAMSEY BORO	10%	2%	0%	0%
RIDGEFIELD BORO	8%	1%	40%	0%
RIDGEFIELD PARK VILLAGE	11%	0%	14%	1%
RIDGEWOOD VILLAGE	12%	3%	0%	0%
RIVER EDGE BORO	11%	3%	0%	0%
RIVER VALE TWP	13%	1%	0%	0%
ROCHELLE PARK TWP	32%	17%	0%	0%
ROCKLEIGH BORO	25%	2%	0%	0%
RUTHERFORD BORO	5%	3%	25%	0%
SADDLE BROOK TWP	16%	13%	0%	0%
SADDLE RIVER BORO	6%	1%	0%	0%
SOUTH HACKENSACK TWP	4%	3%	19%	0%
TEANECK TWP	7%	0%	2%	1%
TENAFLY BORO	1%	1%	12%	0%
TETERBORO BORO	0%	0%	48%	14%
UPPER SADDLE RIVER BORO	8%	0%	0%	0%
WALDWICK BORO	5%	1%	0%	0%
WALLINGTON BORO	29%	10%	0%	0%
WASHINGTON TWP	8%	1%	0%	0%
WESTWOOD BORO	19%	5%	0%	0%
WOOD-RIDGE BORO	0%	0%	5%	0%
WOODCLIFF LAKE BORO	10%	2%	0%	0%
WYCKOFF TWP	3%	2%	0%	0%

As with coastal flooding, floodplains are divided into areas that experience different levels of flooding depending on their elevation. A 100-year riverine flood will inundate the 100-year zone of that floodplain, and a 500-year flood will inundate the 500-year flood zone. The 500-year floodplain is higher in elevation. Several methods were used by FEMA to develop the inundation extents. For smaller watersheds, with drainage areas less than 1 square mile, the Rational Method was used. The Rational Method is a very simplified peak flow analysis. For larger watersheds, the hydrology was based on Special Report No. 38, a method developed by NJDEP and the USGS (FIS, p. 35). Input parameters include drainage area, main channel slope, surface storage area, and impervious cover. Lastly, when a sufficient amount of data was available, flood-flow frequency data was established using actual discharges from local gauging stations.

Flooding is one of the most common and frequently identified hazards in Bergen County. It is also one that Bergen municipalities seek the most assistance for, along with the other water-related hazards. While New Jersey land use regulations are in place to control future development in the floodplain, older structures still exist and need to be maintained.

**Drought**

Bergen County is in New Jersey's Northeast Drought Region, as designated by NJDEP. Droughts of varying intensity occur several times a decade in New Jersey as noted in **Table 9**.<sup>19</sup> **Table 10** details the amount of time spent in each of the drought categories.<sup>20</sup> Fortunately, in addition to being the hottest and most drying, the high summer months of July and August are normally the wettest months of the year as a

result of the greater availability of atmospheric moisture and the higher frequency of thunderstorms.

Reservoir levels decrease and aquifer draw-downs intensify during drought conditions. According to the NJDEP's drought resource website, river and reservoir levels are equally important as water supply sources to Bergen County.<sup>21</sup> All municipalities in Bergen County are equally likely to be impacted by drought conditions.

The New Jersey Drought Emergency Plan, prepared by the New Jersey Departments of Law and Public Safety and Environmental Protection, fully identifies authority, organization, concept of operations, and responsibilities for any drought emergency and is used as needed in response to potential drought situations. Drought status information is maintained at <http://njdrought.org>. Drought emergencies are implemented when drought begins to affect residents and businesses.

**Table 9: New Jersey Drought Periods**  
Periods of 2 or More Months of Severe or Extreme Drought

Northern Climate Division		
Drought Periods	Duration	Lowest PDSI
7/1923 - 9/1923	3 months	-3.48 in 8/1923
1/1931 - 2/1931	2 months	-3.11 in 1/1931
11/1931 - 2/1932	4 months	-3.68 in 12/1931
7/1932 - 9/1932	3 months	-3.81 in 9/1932
12/1939 - 1/1940	2 months	-3.24 in 1/1940
11/1949 - 1/1950	3 months	-3.72 in 12/1949
7/1963 - 8/1963	2 months	-3.44 in 8/1963
8/1964 - 8/1966	25 months	-5.25 in 8/1966
7/1999 - 8/1999	2 months	-3.86 in 7/1999
12/2001 - 5/2002	6 months	-4.42 in 2/2002

**Table 10: New Jersey Drought Summary**  
Northern Climate Division

PDSI Category	Percent of Time in Category	Cumulative Percent Time
Extreme	1.5	1.5
Severe	3.5	5.0
Moderate	12.7	17.7
Mild	19.4	37.1
Incipient	13.0	50.1
Near Normal	12.0	62.1
Wet	37.9	100.0
Lowest PDSI in 1303 months	-5.25 in 8/1966	

Note: Based on the monthly Palmer Drought Severity Index as computed by the National Climatic Data Center. Cumulative is the percent of time in given category plus all preceding categories.

When emergencies are declared, all residents, including those with private wells, are urged to adhere to mandatory restrictions such as limiting or eliminating lawn watering, driveway washing, and car washing. Often, non-essential business use may be restricted. When waterways approach historic low flows, groundwater supplies may also be affected.

**Extreme Heat**

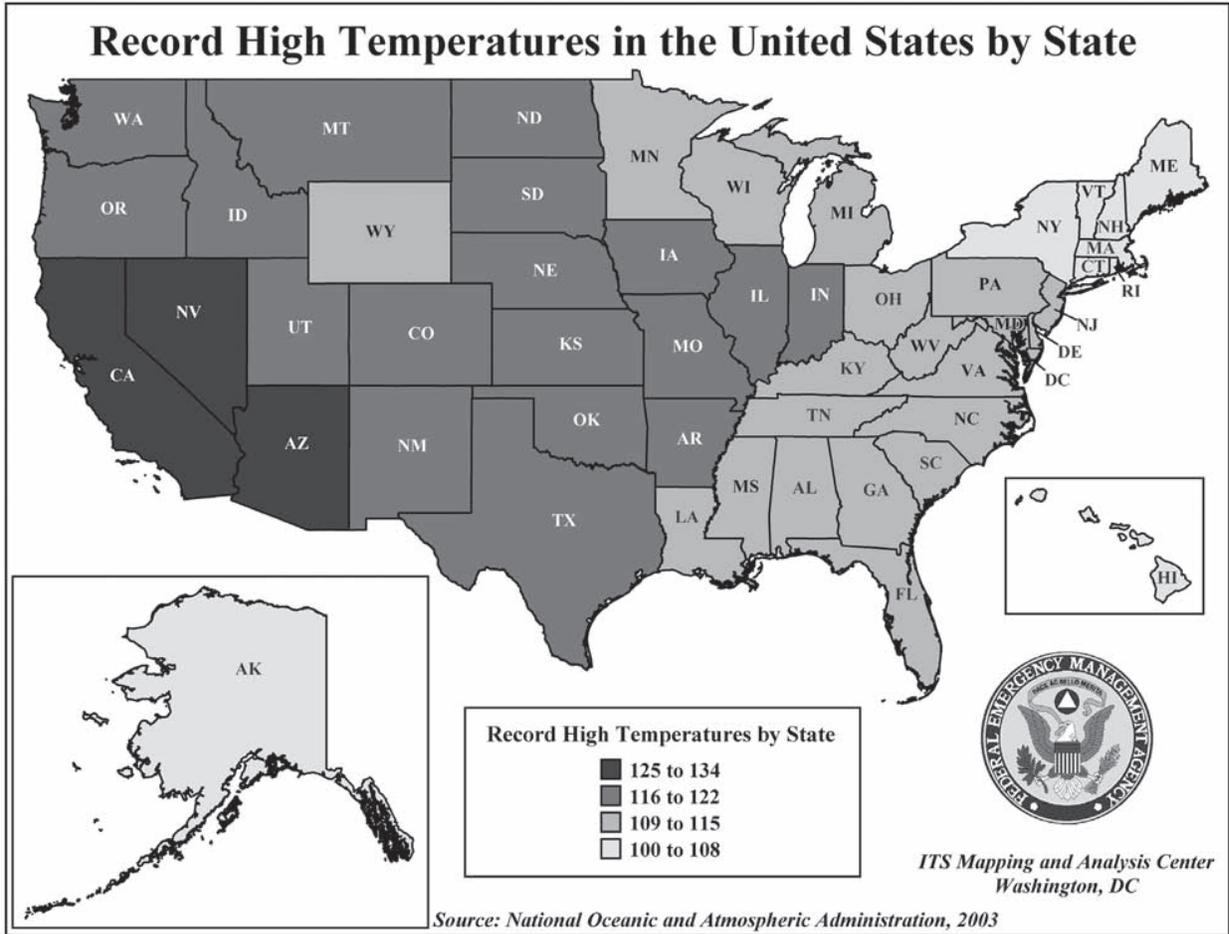
According to FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a dome of high atmospheric pressure traps hazy, damp air near the ground. Extremely dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation. All municipalities in

Bergen County are equally likely to be impacted by extreme heat.

The elderly, the very young, and those who are disabled are at risk from extreme heat. Studies indicate that extreme heat that continues for periods longer than 2 days causes a significant rise in heat-related illnesses. Spending several hours each day in air conditioning, however, can reduce the risk of heat-related illness. People living in urban areas may be at greater risk from the effects of a prolonged heat wave than people living in rural regions. Stagnant atmospheric conditions can trap pollutants in urban areas, and asphalt and concrete stay warm longer. This phenomenon is known as the urban heat island effect.

The risks associated with a heat wave can include:

- Heat cramps: Muscular pains and spasms resulting from heavy exertion. Heat cramps are often the first signal that the body is suffering from extreme heat.
- Heat exhaustion: A form of mild shock that typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating.
- Heat/Sun stroke: A life-threatening condition in which the victim's temperature control system that produces sweating to cool the body stops working. The body temperature can rise to the extent that brain damage and death may result if the body is not cooled quickly.



**Figure 11: Record High Temperatures in the United States by State<sup>22</sup>**

New Jersey experiences temperatures in the summer that range from 85 to 100 degrees, with occasional temperatures that may reach above 100 degrees Fahrenheit. The probability of Bergen County experiencing extreme heat is very high. It is almost certain that there will be a period of extreme heat in Bergen County every summer. Steps to be taken to stay safe during extreme heat include:

- Stay indoors as much as possible and limit exposure to the sun.
- Stay on the lowest floor out of the sunshine if air conditioning is not available.
- Consider spending the warmest part of the day in public buildings such as libraries, schools, movie theaters, shopping malls, and other community

facilities. Circulating air can cool the body by increasing the perspiration rate of evaporation.

- Eat well-balanced, light, and regular meals. Avoid using salt tablets unless directed to do so by a physician.
- Drink plenty of water. Persons who have epilepsy or heart, kidney, or liver disease; are on fluid-restricted diets; or have a problem with fluid retention should consult a doctor before increasing liquid intake.
- Limit intake of alcoholic beverages.
- Dress in loose-fitting, lightweight, and light-colored clothes that cover as much skin as possible.
- Protect face and head by wearing a wide-brimmed hat.

- Check on family, friends, and neighbors who do not have air conditioning and who spend much of their time alone.
- Never leave children or pets alone in closed vehicles.
- Avoid strenuous work during the warmest part of the day. Use a buddy system when working in extreme heat, and take frequent breaks.

According to the National Oceanic and Atmospheric Administration’s (NOAA) National Climatic Data Center (NCDC), extreme heat has claimed lives in New Jersey. There are two instances in Bergen County where extreme heat has led to the death of residents. On July 4, 1999, a heat wave claimed the lives of 10 individuals residing in Bergen County. Another heat wave in August of 2006 claimed two more

lives. While extreme heat is unavoidable, it is important that residents follow the proper precautions and safety practices when the weather gets extremely hot.

**Extreme Cold/ Winter Storm**

Winters in New Jersey can be extremely hazardous. Temperatures often reach well below freezing point and wind chills can make it feel as though it is below zero degrees Fahrenheit. All municipalities in Bergen County are equally likely to be impacted by extreme cold and winter storms. Wind chill is an index of air temperature indicating how quickly heat is lost from skin when exposed to cold, windy conditions. **Figure 12** shows what the temperature actually feels like with the wind chill factor.<sup>23</sup>

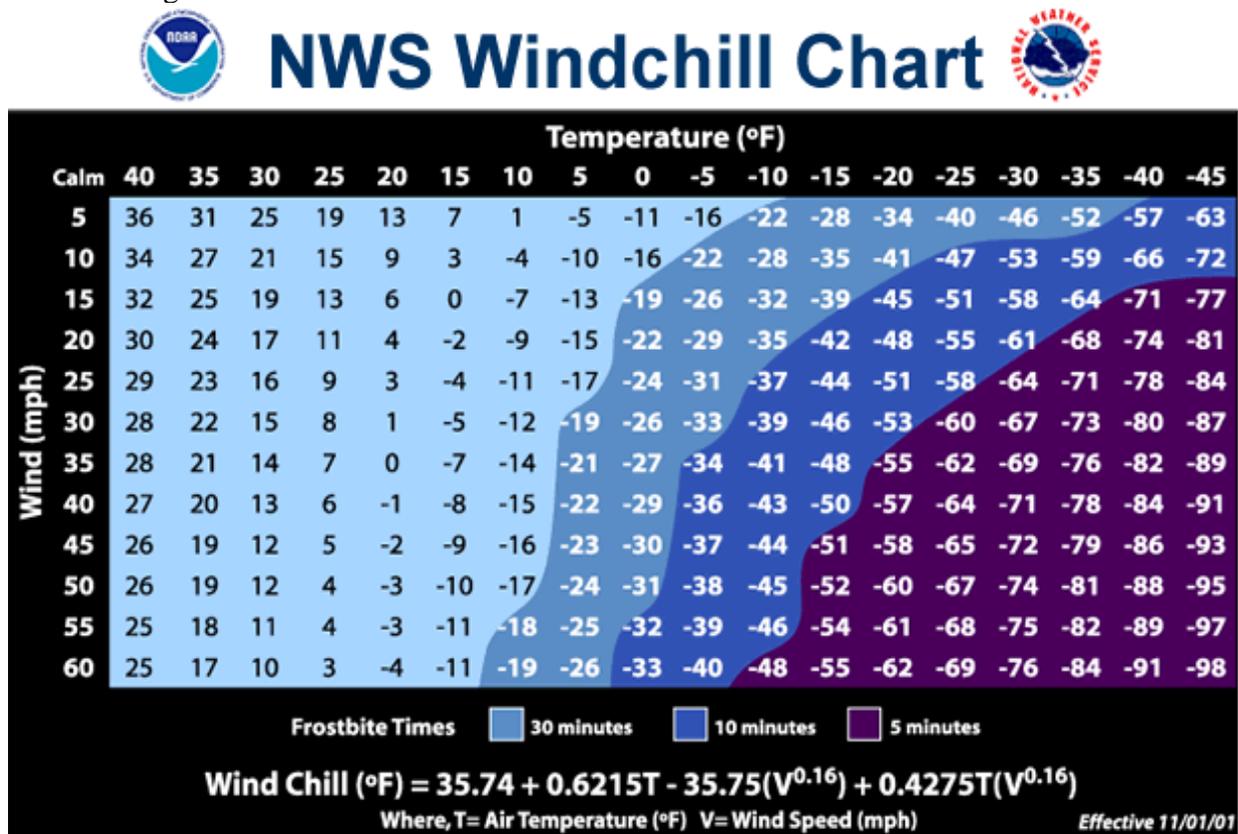


Figure 12: National Weather Service Wind Chill Chart

Wind chills can lead to serious conditions of frost bite and even hypothermia.

Hypothermia, or abnormally low body temperature, results when the body starts losing heat faster than it can be produced. Hypothermia can affect the brain, making it difficult for the victim to think clearly, move well, or even realize that they are in danger. When the body temperature is below 95 degrees Fahrenheit, the situation is an emergency.

Those most at risk include the elderly, babies sleeping in cold bedrooms, children left unattended, and anyone who remains outdoors for long periods. Symptoms of hypothermia include uncontrolled shivering, memory loss, disorientation, and drowsiness. Warning signs in infants include cold, bright red skin and very low energy. Frostbite is damage to body tissue caused by extreme cold. Symptoms of frostbite include numbness and a pale color in extremities such as fingers, toes, and earlobes. Skin may feel unusually firm or waxy. If you must go outdoors during extremely cold temperatures, it is important to dress appropriately:

- Wear several layers of loose-fitting, lightweight, warm clothing rather than one layer of heavy clothing. The outer garments should be tightly woven and water repellent.
- Wear mittens, which are warmer than gloves.
- Wear a hat.
- Cover your mouth with a scarf to protect your lungs.

Extremely cold temperatures and wind chills are not the only hazards that affect New Jersey in the winter. New Jersey is also highly susceptible to snow storms, blizzards and nor'easters. A blizzard includes winds of 35 mph or more and blowing snow that

reduces visibility to less than ¼ mile for three hours or longer. Heavy snow can immobilize a region and strand commuters, close airports, stop the flow of supplies and disrupt emergency and medical services. Accumulations of snow can cause the collapse of roofs, trees, and power lines. Homes and farms may be isolated for days, and unprotected crops may be lost. A Nor'easter is defined as a macro-scale storm whose winds come from the northeast, especially in the coastal areas of the northeastern United States and Atlantic Canada (<http://www.wikipedia.com>). More specifically, it describes a low pressure area whose center of rotation is just off the coast and whose leading winds in the left forward quadrant rotate onto land from the northeast. The precipitation pattern is similar to other extratropical storms. A Nor'easter can cause coastal flooding, coastal erosion and gale force winds. The northeastern United States, from New Jersey to the New England coast, Quebec and Atlantic Canada see nor'easters each year, most often in the winter and early spring, but also sometimes during the autumn. These storms can leave inches of rain or several feet of snow on the region, and can last for several days. There have been several severe storms to hit Bergen County in recent years. Two of the most severe were the North American Blizzard of 1996 (January) and the North American Blizzard of 2006 (February).

The Blizzard of 1996 was a state declared emergency which dropped at least 24" of snow onto the entire state of New Jersey. Roads were shut down during the three day storm and power outages were reported statewide. Businesses were closed either due to road conditions or because of the loss of power. **Table 11** shows a summary of snowfall for the northeast and comparisons to other storms:

**Table 11: Snowfall Amounts for the Northeast**

City	Blizzard of '96 Total (inches)	Record Snowfall Amount	Date of Record Amount	"Storm of the Century" (March 1993)
Philadelphia, PA	30.7	21.3	Feb. 11-12, 1983	12.0
Newark, NJ	27.8	22.6	Feb. 3-4, 1961	12.7
Washington Dulles AP	24.6	22.8	Feb. 10-11, 1983	14.1
Providence, RI	24.0	28.6	Feb. 7-8, 1978	10.2
Elkins, WV	23.4	20.7	Nov. 24-25, 1950	18.8
Baltimore, MD	22.1	22.8	Feb. 11, 1983	11.9
Wilkes-Barre/Scranton, PA	21.0	21.4	Mar. 13-14, 1993	21.4
Charleston, WV	20.5	18.9	Mar. 13-14, 1993	18.9
New York, NY	20.2	26.4	Dec. 26-27, 1947	10.6
Boston, MA	18.2	27.1	Feb. 6-7, 1978	12.8
Hartford, CT	18.2	21.0	Feb. 11-12, 1983	14.8
Washington National AP	17.1	18.7	Feb. 18-19, 1979	6.6
Bridgeport, CT	15.0	17.0	Dec. 19-20, 1948	10.8
Portland, ME	10.2	27.1	Jan. 17-18, 1979	18.6
Pittsburgh, PA	9.6	24.6	Mar. 12-13, 1993	24.6
Williamsport PA	8.6	24.1	Jan. 12-13, 1964	15.9

Snowfall totals for the Blizzard of 1996 are based on data received through Tuesday morning. Record snowfall amounts are for storms spanning no more than two days.

Data compiled by the Northeast Regional Climate Center at Cornell University.<sup>24</sup>

Another state declared emergency, the Blizzard of 2006 saw record snowfall for New York City at 26.9" recorded at Central Park. In New Jersey, the storm was powerful enough to stop NJ Transit bus service from 7:00 a.m. to 4:00 p.m. 21.0" of snow fell in Newark, New Jersey and 16,000 people were left without power. Businesses were closed for most of the day throughout northern New Jersey.

While the NJOEM does not recommend driving during a snowstorm or blizzard, they offer the following precautions if a resident finds it absolutely necessary to take a motor vehicle out on the road in inclement cold weather conditions:

- Always buckle your seat belt.
- Brake properly to avoid skidding. If driving on snow or ice, start slowly and brake gently. Begin braking early when you come to an intersection.
- If you start to slide, ease off the gas pedal or brakes. Steer into the direction of the skid until you regain traction, and then straighten your vehicle. If you have antilock brakes, apply steady pressure.
- In fog, drive with headlights set on dim or use fog lights.
- In rain, fog, snow or sleet, stay within the limits of your vision. If it is too difficult to see, pull off the road and stop.
- Drive slowly and increase your following distance. Your speed should adjust for conditions and match the flow of traffic.
- Watch for slick spots. Be physically and mentally prepared to react.

Given the history of extreme temperatures and snowstorms in New Jersey and Bergen

County in particular, it is almost certain that at least one case of extreme cold and/or snowfall will be seen during winter months. It is important to make sure residents know what precautions to take when these conditions occur. Though it is not possible to keep everyone indoors during cold temperatures and to keep all drivers off the roads during snow storms, it is important for Bergen County Police and OEM to be able to do their best to prevent unnecessary injuries or deaths.

**Earthquake**

*Damaging earthquakes are rare, but not unheard of in New Jersey. Earthquakes with an estimated magnitude of 5.2 on the Richter scale occurred in the New York City area in 1737 and 1834. In historic times, earthquakes of magnitudes between 6 and 7 have occurred in the Boston, Massachusetts and Charleston, South Carolina areas, and in the St. Lawrence Valley of Quebec. New Jersey is in a similar tectonic setting as these places and earthquakes of this magnitude are possible. The risk of a damaging quake, in combination with the density and value of the buildings, place New Jersey tenth among all states for potential economic loss from earthquakes.*

New Jersey Geological Survey<sup>25</sup>

FEMA defines an earthquake as a sudden slipping or movement of a portion of the earth's crust, accompanied and followed by a series of vibrations. It is important to understand all of the terms associated with earthquakes, which include the following:

**Epicenter:** The place on the Earth's surface directly above the point on the fault where the earthquake rupture begins. Once fault slippage begins, it expands along the fault

during the earthquake and can extend hundreds of miles before stopping.

**Fault:** The fracture across which displacement occurs during an earthquake. The slippage may range from less than an inch to more than 10 yards in a severe earthquake.

**Magnitude:** The amount of energy released during an earthquake, which is computed from the amplitude of the seismic waves. A magnitude of 7.0 on the Richter scale indicates an extremely strong earthquake. Each whole number on the scale represents an increase of about 30 times more energy released than the previous whole number represents. Therefore, an earthquake measuring 6.0 is about 30 times more powerful than one measuring 5.0. The relationship between magnitude and intensity is detailed in **Table 12**.

**Seismic Waves:** Vibrations that travel outward from the earthquake fault at speeds of several miles per second. Although fault slippage directly under a structure can cause considerable damage, the vibrations of seismic waves cause most of the destruction during earthquakes.

**Aftershock:** An earthquake of similar or lesser intensity that follows the main earthquake.

**Table 12: Approximate Relationship between Magnitude and Intensity<sup>26</sup>**

Magnitude	Felt Area (Square miles)	Distance Felt (approx. miles)	Modified Mercalli Scale (close to epicenter)
3.0-3.9	750	15	I-III
4.0-4.9	3,000	30	IV-V
5.0-5.9	15,000	70	VI-VII

6.0-6.9	50,000	125	VII-VIII
7.0-7.9	200,000	250	IX-X

Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded on seismograph.
2.5 to 5.4	Often felt, but only causes minor damage.
5.5 to 6.0	Slight damage to buildings and other structures.
6.1 to 6.9	May cause serious damage in very populated areas.
7.0 to 7.9	Major earthquake. Serious damage.
8.0 or greater	Massive earthquake. Can totally destroy communities near epicenter.

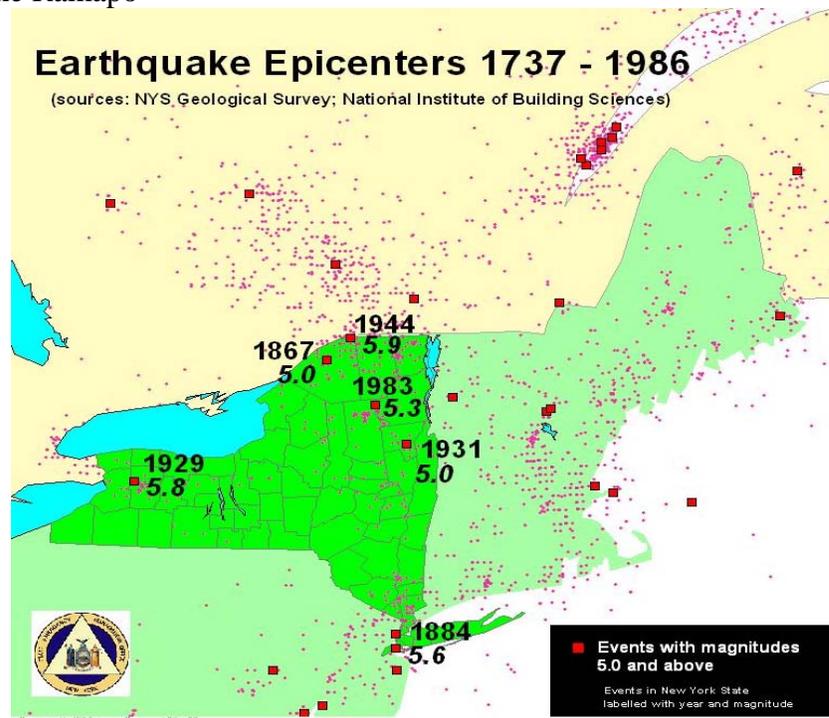
The longest and most active geologic fault in New Jersey is the Border Fault. The fault, which divides the Highlands and Piedmont Physiographic Provinces, geologically unique regions, extends south from Stony Point, New York to Reading, Pennsylvania. In the north, it passes into New Jersey about half a mile west of State Route 202 in Bergen County, and passes out of northwestern New Jersey north of Stockton in Hunterdon County. The Ramapo section of this fault, known as the Ramapo Fault, extends south from the New Jersey-New York border along two thirds of the New Jersey portion of the Border Fault, and has been the most active section of the Border Fault. Over 25 percent of the earthquakes experienced in New Jersey over the past 200 years had their epicenters within 30 miles of the fault.

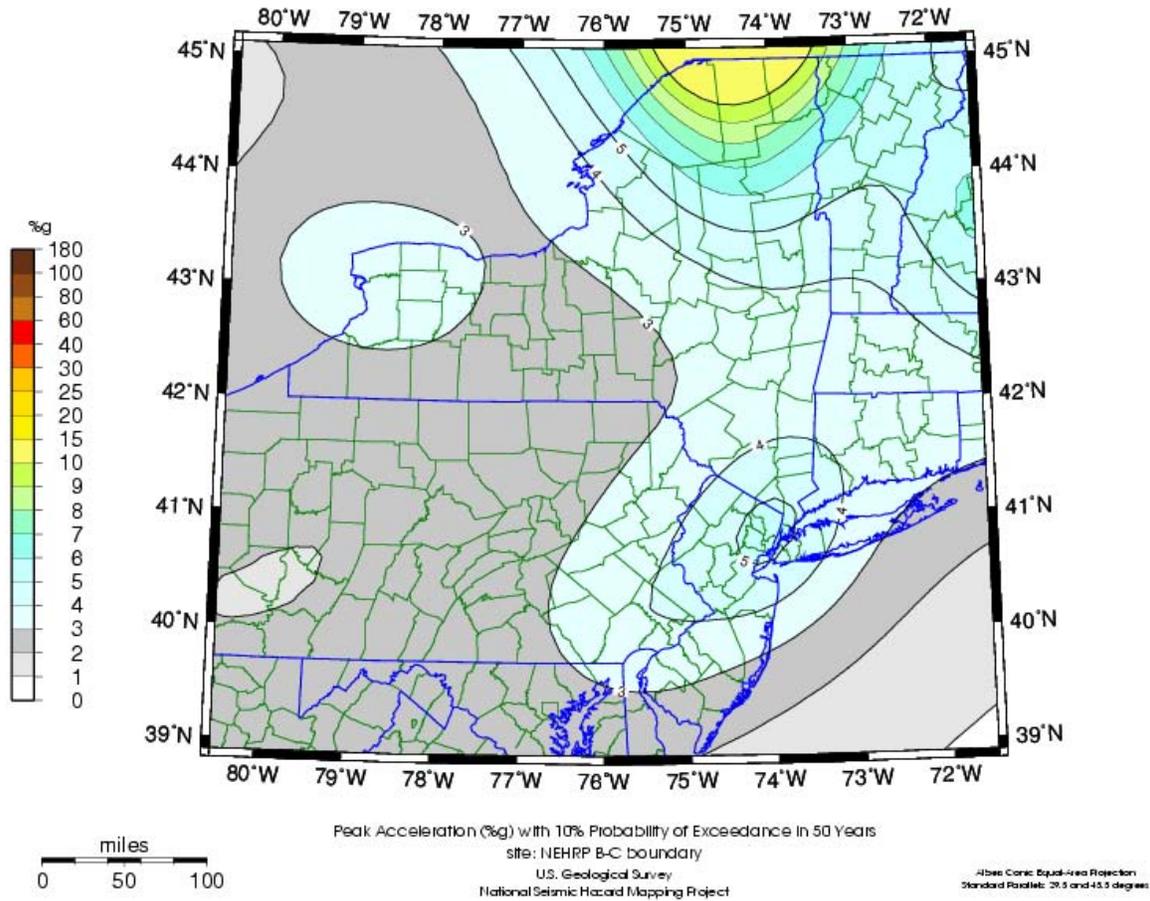
Figure 13 is taken from the New York State Hazard Mitigation Plan.<sup>27</sup> It represents historical earthquake epicenters spatially across the northeast, illustrating and indicating, through areas of

historical earthquake groupings, a generally higher incidence and magnitude of earthquakes. Though the map does not clearly define New Jersey, it depicts many events in the northern New Jersey vicinity, including several instances of magnitudes 5.0 and above proximate to Bergen County.

Although predicting the time, place, and magnitude of earthquakes is not possible, it is possible to predict their potential to do damage. Structural damage caused by an earthquake depends on how much the ground shakes. The amount of ground shaking, in turn, depends on how soft and how deep the soil is, and on the type of bedrock lying beneath it. Also important is whether the soil type will lose strength, liquefy, or slide downhill when shaken. The New Jersey Geological Survey maps seismic soil properties, including shaking behavior, liquefaction susceptibility, and tendency to landslide.

Figure 13: Earthquake Epicenters, 1737-1986





**Figure 14: Peak Horizontal Acceleration with 10% Probability of Exceedance in 50 Years**

The USGS maps the peak ground acceleration (PGA) values with a 10% chance of being exceeded over 50 years. **Figure 14** above shows the geographic area affected (all colored areas on the map), the probability of an earthquake of each given level of severity (10% chance in 50 years, or once in 500 years), and the severity (the PGA is indicated by color). The lowest risk of earthquake is shown in gray and the greatest risk in brown. PGA is a measure of the strength of ground movements. PGA measures the rate in change of motion relative to the established rate of

acceleration due to gravity. If the PGA value is less than 2 (i.e., a gray color), seismic risk is relatively low and earthquakes are not required to be identified as a hazard. In the case of Bergen County, there is a PGA value of 5-6, which means the seismic risk is moderate to high. **Figure 14** shows peak ground acceleration (PGA) with a 10% chance of being exceeded over 50 years as highest in northeastern New Jersey (5-6%g) and decreasing to the south (2%g). According to FEMA's How-To Guidance entitled, *Understanding Your Risks*, earthquakes should be profiled as a hazard if the PGA is greater than 3%g.<sup>28</sup>

In addition to the map data, Bergen County has the ability to evaluate the potential

vulnerability in terms of estimated loss from earthquakes and other natural hazards. The Hazards U.S. Multi-Hazard (HAZUS-MH) is a nationally applicable standardized methodology and software program that estimates potential losses from earthquakes, hurricanes, and floods. HAZUS-MH, developed by FEMA, uses GIS to [map and display hazard data](#) as well as the results of damage and economic loss estimates for buildings and infrastructure. HAZUS-MH can also estimate the impacts of earthquakes, hurricane winds, and floods on populations.<sup>29</sup>

HAZUS-MH studies indicate a low frequency, but high potential dollar losses for earthquakes in northern New Jersey. The New York Consortium for Earthquake Mitigation (NYCEM) HAZUS Multi-Hazards Study of the greater New York City metro area (including parts of northern New Jersey) indicated a low hazard frequency, but high severity because of dense population, vulnerable infrastructure, and substantial economic value. According to *Earthquake Risks and Mitigation in the New York/New Jersey/Connecticut Region*, prepared by the NYCEM, the replacement value of the buildings in Bergen County is \$56 billion.<sup>30</sup> The New Jersey Geological Survey (NJGS) has conducted a HAZUS earthquake loss estimation study for Bergen County. This report, entitled, *Earthquake Loss Estimation Study for Bergen County, New Jersey*, used HAZUS to estimate quantitative earthquake losses for Bergen County. The report considered various earthquake “worst case” scenarios using default HAZUS rock/soil data, as well as updated data compiled by the NJGS. For example, for a 5.0 magnitude earthquake occurring in Bergen County, it is estimated that 12,800 buildings would be damaged, with \$1.08 billion in property damages and \$80 million in business interruption losses.

The report lists several caveats that accompany the use of the HAZUS model, but concludes that the results for the 5.0 magnitude earthquake are reasonably representative of the actual damage an earthquake in New Jersey could cause, although the damage would not be limited to Bergen County. The complete report is available for download from the NJDEP website<sup>31</sup>.

The last earthquake recorded in New Jersey was on February 17, 2006 in Franklin Township, just northwest of Bergen County. The earthquake was a magnitude 0.9. The last earthquake in New Jersey with a magnitude over 3.0 was on August 26, 2003 with an epicenter 35 miles northwest of Trenton, which shook New Jersey with a magnitude of 3.8. The largest earthquake reported in New Jersey was a magnitude 5.3 recorded November 30, 1783. This earthquake was felt from New Hampshire to Pennsylvania. A foreshock at 02:00 UTC on November 30 and an aftershock at 07:00 UTC were reported only in New York and in Philadelphia, Pennsylvania. Another historic earthquake felt in New Jersey was on October 9, 1871, near the Delaware Border. Chimneys toppled and windows broke in northern Delaware at Wilmington. Damage also was reported at New Castle (10 kilometers south of Wilmington) and at Oxford, Pennsylvania, (about 40 kilometers west of Wilmington). This earthquake was also reportedly felt in New Jersey.<sup>32</sup>

### **Landslides/ Mudslides**

A landslide is a geological phenomenon which includes a wide range of ground movement, such as rock falls, deep failure of slopes and shallow debris flows. Although gravity's action on an over-steepened slope is the primary reason for a landslide, there are other contributing factors affecting the original slope stability such as a heavy

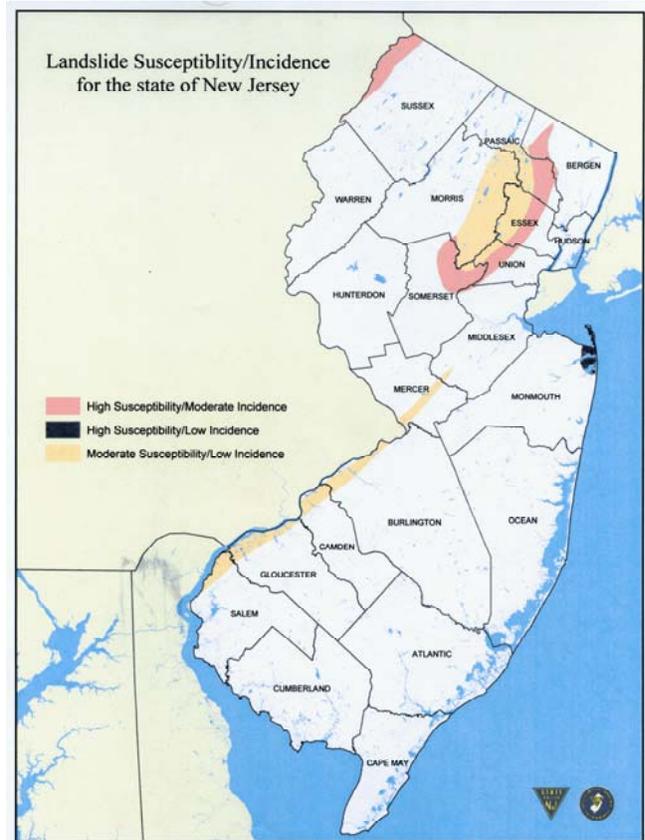
rainfall event, earthquake, or human activity. The rate of landslide movement ranges from rapid to very slow. A landslide can involve large or small volumes of material. Material can move practically intact or be greatly deformed and rearranged. The slope may be nearly vertical or fairly gentle.

The USGS defines landslide as the movement of rock, debris or earth down a slope. The term landslide encompasses events such as rock falls, topples, slides, spreads and flows, such as debris flows commonly referred to as mudflows and mudslides. Landslides can be initiated by rainfall, earthquakes, volcanic activity, changes in groundwater, disturbance and change of a slope by man-made construction activities, or any combination of the above. Failure of a slope occurs when the force that is pulling the slope downward (gravity) exceeds the strength of the earth materials that compose the slope. Materials can move slowly, (millimeters per year) or can move quickly and disastrously, as is the case with debris-flows. Debris-flows can travel down a hillside of speeds up to 200 miles per hour (more commonly, 30 - 50 miles per hour), depending on the slope angle, water content, and type of earth and debris in the flow. These flows are initiated by heavy, usually sustained, periods of rainfall, but sometimes can happen as a result of short bursts of concentrated rainfall in susceptible areas. Burned areas charred by wildfires are particularly susceptible to debris flows, given certain soil characteristics and slope conditions.

**Figure 15** was compiled based on attributes associated with 133 historic and recent landslide locations mapped by the New Jersey Geological Survey.<sup>33</sup> The landslides have occurred in the northern and central part of the state and include slumps, debris flows, rockfalls and rockslides. Although

New Jersey landslides are not as common as in other areas of the United States, they are a geologic hazard in areas with steep to moderate slopes or geologic units prone to failure. They cause damage to utilities, property, and transportation routes. The average annual direct and indirect cost of

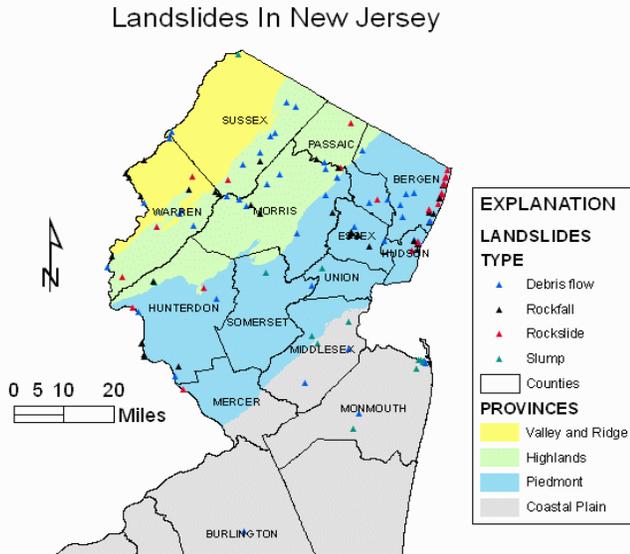
**Figure 15: Landslide Susceptibility in New Jersey**



New Jersey landslides is likely in the hundreds of thousands of dollars. New Jersey landslides have also caused fatalities and injuries, although none were recorded in Bergen County. The northwest portion of the County is the only area with steep hills that lead up to the Ramapo Mountains. **Figure 15** depicts a small area in the northwest portion of Bergen County as having a high susceptibility to landslides but in a moderate incidence. The sharp cliffs of

the New Jersey Palisades lift much of the County up from the eastern boundary with the Hudson River. **Figure 16** shows the Palisades Cliffs area, the site of the past occurrences of rockfalls and rockslides.<sup>34</sup>

**Figure 16: Landslides in New Jersey**



**High Winds/ Tornadoes**

The American Meteorological Society defines a tornado as a violently rotating column of air, in contact with the ground, either pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud.<sup>35</sup>

Tornadoes vary in intensity regardless of shape, size, and location, though strong tornadoes are typically larger than weak tornadoes. Tornado intensities are rated by the damage on a scale known as the Fujita Scale, found in **Table 13**.<sup>36</sup>

Tornado season in New Jersey is generally March through August, although tornadoes can occur at any time during the year.

According to the *State of New Jersey 2007 State Hazard Mitigation Plan*, in an analysis of tornado occurrence per square mile, New Jersey ranks 20<sup>th</sup> in the United States for the frequency of tornadoes, 30<sup>th</sup> for injuries per area, and 23<sup>rd</sup> for costs per area.<sup>37</sup> Since 1956, there have been eight recorded instances of tornadoes touching down in Bergen County. Two of the most destructive tornadoes occurred on July 10, 1989 in Fair Lawn causing approximately five million dollars in damage. The tornadoes were rated F0 on the Fujita Scale.

Most recently on May 17, 2007, winds of 60-80 mph caused a microburst, a powerful downdraft that hits the ground and spreads out according to the National Weather Service, causing destructive storm damage.

Bergen County is in a low risk zone for tornadoes and high winds, but is vulnerable to tornado damage due to the dense development in the County. All municipalities in Bergen County are equally likely to be impacted by a tornado.

**Figure 17** illustrates the number of tornadoes per 1,000 square miles of the northern New Jersey area to be 1-5.<sup>38</sup> **Figure 18**<sup>39</sup> and **Figure 19**<sup>40</sup> indicate that in Zone II, in which Bergen County is located, community shelters are the preferred method of protection from high winds events, as homes could also be susceptible to a hurricane.

Based on historic facts, the probability of a tornado in Bergen County is low.

**Table 13: The Fujita Scale**

<b>F-Scale Number</b>	<b>Intensity Phrase</b>	<b>Wind Speed</b>	<b>Type of Damage Done</b>
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

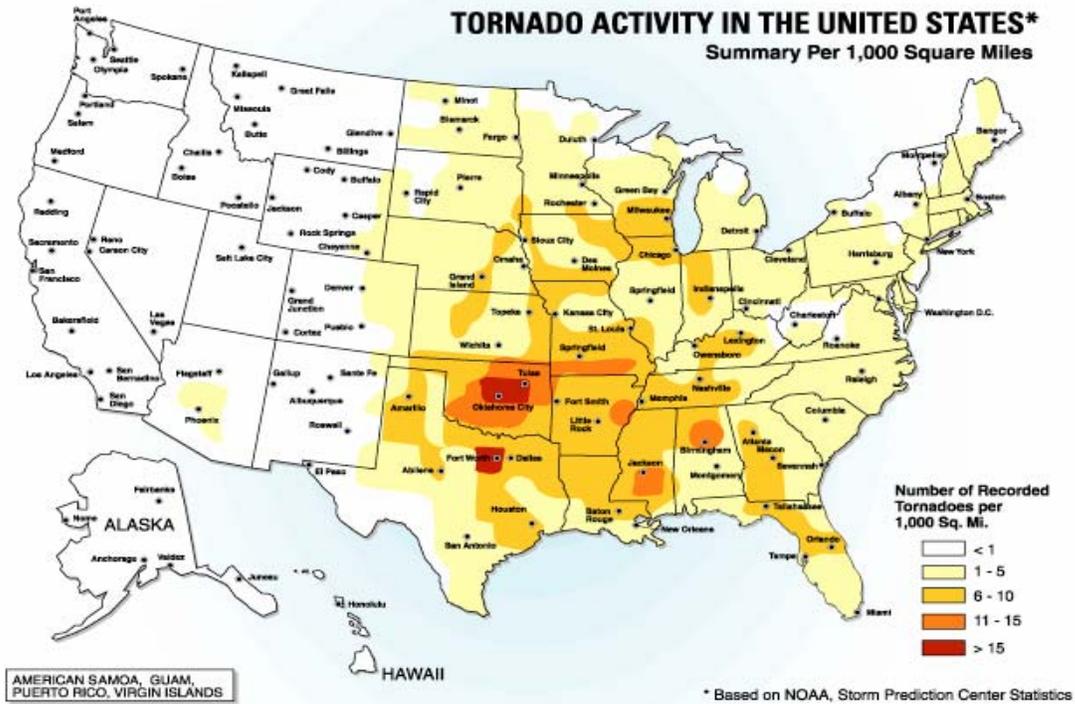
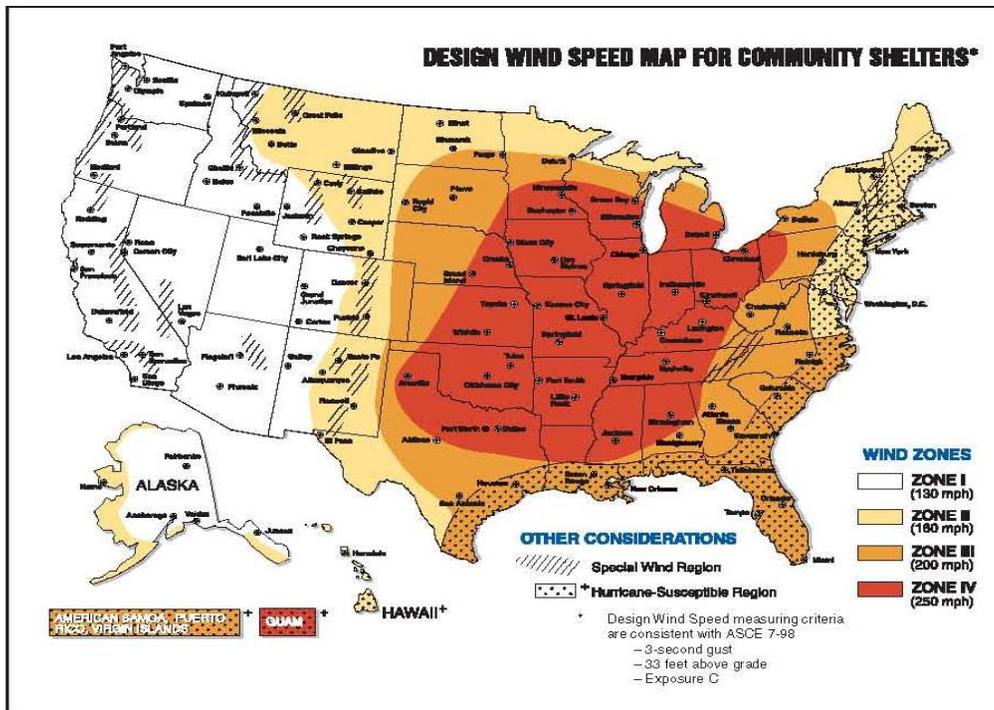
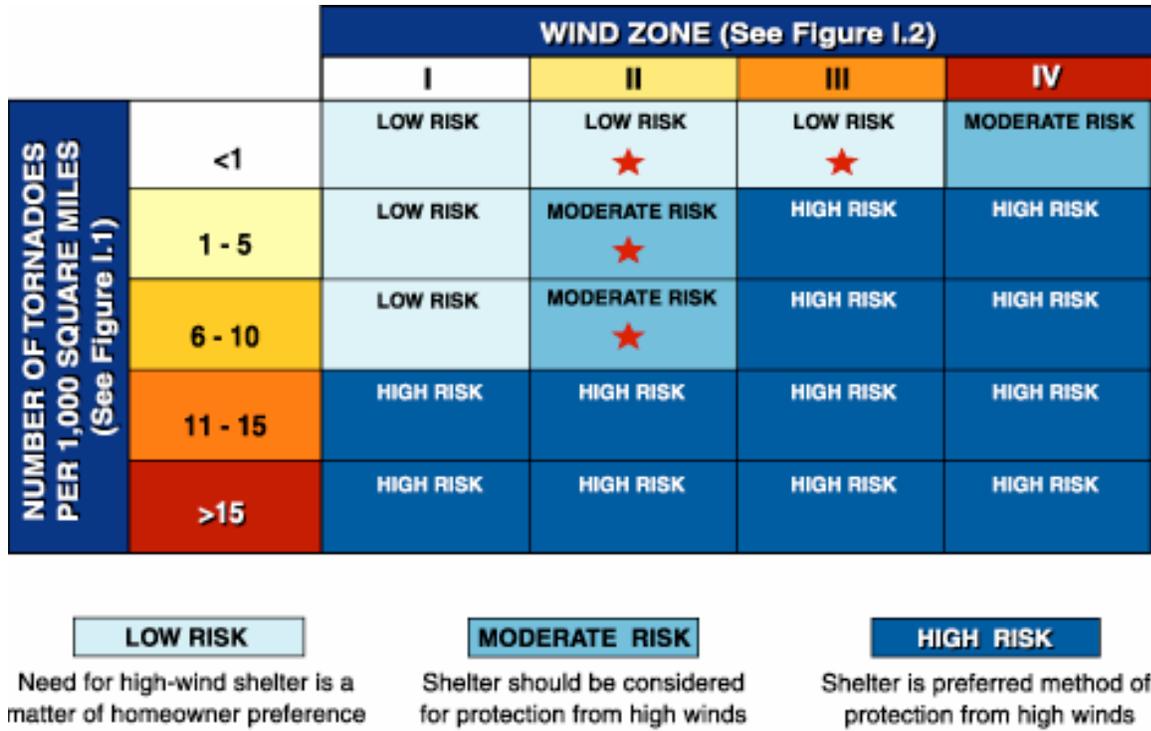


Figure 17: Tornado Activity in the United States



Source: ASCE 7-98

Figure 18: Design Wind Speed Map for Community Shelters



★ Shelter is preferred method of protection from high winds if house is in hurricane-susceptible region

**Figure 19: Tornado Risk by Wind Zone**

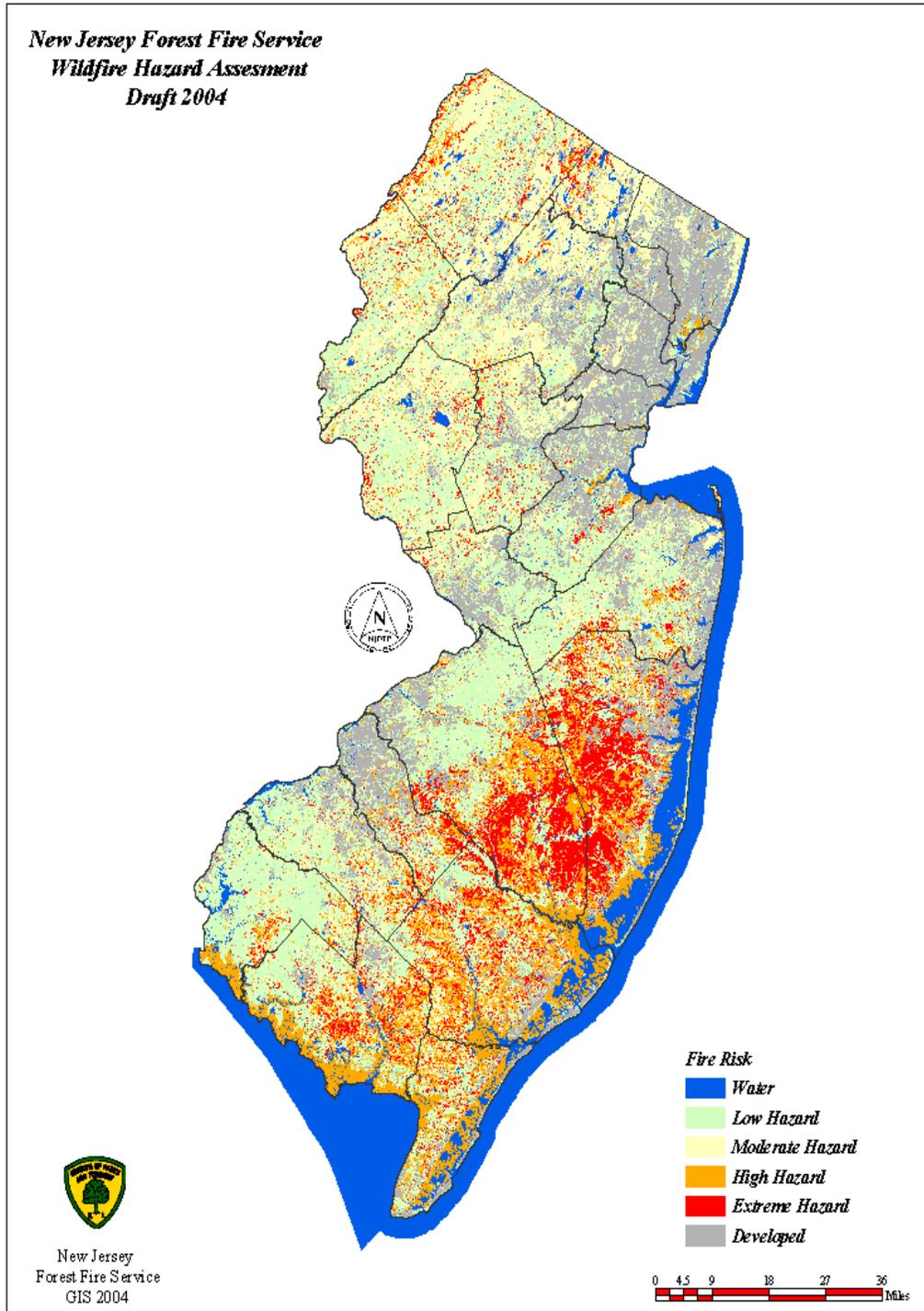
**Wildfire**

Bergen County has a relatively low probability of being affected by wildfires, as indicated by **Figure 20**.<sup>41</sup> The Ramapo Mountain State Forest in Mahwah and Palisades Interstate Park in Fort Lee, Englewood Cliffs, Tenafly and Alpine are considered to be moderate wildfire hazards and the Meadowlands marsh grasses and old landfills are depicted as high hazards. The remainder of the County is developed, lowering the risk of wildfires. Since the Forest Service map was prepared in 2004, a great deal of landfill closure work has occurred in the New Jersey Meadowlands, preparing the land for potential future development in some areas. This further reduces the potential for future wildfires in Bergen County.

Although wildfires can occur at any time during the year, most destructive fires in New Jersey occur during the spring. The

weather conditions provide optimal conditions for the rapid spread of wildfires.

**Tables 14**<sup>42</sup> and **Table 15**<sup>43</sup> are taken from the New Jersey 2007 State Hazard Mitigation Plan. They show the number of fire incidences per year by County and number of acres burned per County, respectively. The number of incidents listed in Tables 14 and 15 includes only those wildfires to which the NJ Forest Fire Service responded to in its designated response area. For the number of fire incidents, Bergen County ranked 17<sup>th</sup> out of 21 counties, with an average of 6.5 fires per year from 1996-2006. Ocean County ranked first, with an average of 288.9 fires per year. Bergen County ranked 16<sup>th</sup> for number of acres burned, with an average of 31 per year from 1996-2006. Burlington County ranked first, with an average of 1300 acres burned per year.



**Figure 20: New Jersey Wildlife Hazard Assessment**

**Table 14: Number of Fire Incidents per Year by New Jersey County: 1996 - 2006**

County	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Totals	Annual Average	Rank
Atlantic	126	214	224	206	155	232	250	163	127	149	251	2097	190.6	2
Bergen	1	7	8	8	6	13	4	5	5	5	10	72	6.5	17
Burlington	99	121	133	140	88	128	109	64	56	71	102	1111	101.0	6
Camden	55	138	126	145	124	143	103	45	62	76	110	1127	102.5	5
Cape May	59	86	71	84	50	92	80	40	62	52	55	731	66.5	9
Cumberland	93	151	206	173	100	140	102	58	88	111	117	1339	121.7	3
Essex	0	0	0	0	0	0	0	0	1	0	2	3	0.3	20
Gloucester	34	67	53	72	36	73	78	23	28	68	67	599	54.5	11
Hudson	0	0	0	0	0	0	0	0	0	1	0	1	0.1	21
Hunterdon	21	37	28	69	44	66	41	26	14	30	48	424	38.5	14
Mercer				5		4	26	8	1	5	5	54	4.9	18
Middlesex	18	54	50	87	62	106	106	41	35	75	87	721	65.5	10
Monmouth	30	30	34	50	35	75	54	42	32	51	69	502	45.6	12
Morris	62	113	99	139	58	65	87	63	48	53	86	873	79.4	8
Ocean	196	347	304	412	265	374	287	227	213	228	325	3178	288.9	1
Passaic	17	37	50	71	29	61	39	21	13	22	43	403	36.6	15
Salem	22	36	47	24	10	38	37	15	14	16	20	279	25.4	16
Somerset	6	50	17	65	15	50	86	41	20	60	59	469	42.6	13
Sussex	38	137	109	176	85	162	129	102	49	47	101	1135	103.2	4
Union	0	0	0	0	0	0	0	0	2	2	4	8	0.7	19
Warren	33	56	94	129	75	90	144	55	37	107	71	891	81.0	7
Total	910	1681	1653	2055	1237	1912	1762	1039	907	1229	1632	16017	1456.1	

\*The number of incidents includes only those wildfires to which the NJ Forest Fire Service responded to in its designated response area. Numbers are rounded for clarity.

**Table 15: State of NJ Annual Number of Acres Burned\* by Wildfires County: 1996-2006**

County	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Totals	Annual Average	Rank
Atlantic	130	2150	136	188	189	166	206	88	51	55	138	3497	318	3
Bergen	0.25	49	42	103	8	98	10	2	13	5	12	342	31	16
Burlington	130	282	121	12857	340	215	57	26	22	26	225	14301	1300	1
Camden	61	265	220	171	283	279	806	382	34	404	106	3011	274	4
Cape May	33	69	30	54	178	60	32	26	23	51	57	613	56	12
Cumberland	149	138	222	290	514	994	78	50	52	119	182	2788	253	5
Essex	0	0	0	0	0	0	0	0	0.25	0	21	21.25	2	18
Gloucester	44	134	117	173	36	110	111	12	8	359	114	1218	111	8
Hudson	0	0	0	0	0	0	0	0	0	25	0	25	2	18
Hunterdon	7	38	44	108	12	30	21	7	14	10	68	359	33	14
Mercer	0	0	0	4	0	60	19	1	.25	2	2	88.25	8	17
Middlesex	26	99	145	196	78	279	118	124	38	117	796	2016	183	6
Monmouth	81	22	30	33	20	30	24	18	35	26	35	354	32	15
Morris	58	422	37	102	25	52	63	42	25	56	64	946	86	9
Ocean	136	1023	138	712	123	1806	4089	109	141	95	240	8612	783	2
Passaic	32	18	35	77	16	24	16	32	3	14	106	373	34	13
Salem	58	74	62	37	40	19	30	6	17	13	486	842	77	10
Somerset	2	30	6	164	5	43	32	9	9	26	19	345	31	16
Sussex	17	69	62	84	99	165	112	28	15	45	106	802	73	11
Union	0	0	0	0	0	0	0	0	0.5	.75	1	2	0	19
Warren	51	23	20	1058	98	32	43	6	19	66	28	1444	131	7
Total	885	2755	1331	16223	1875	4296	5661	880	469	1460	2668	42000	3818	

**Hurricane/ Tropical Storm**

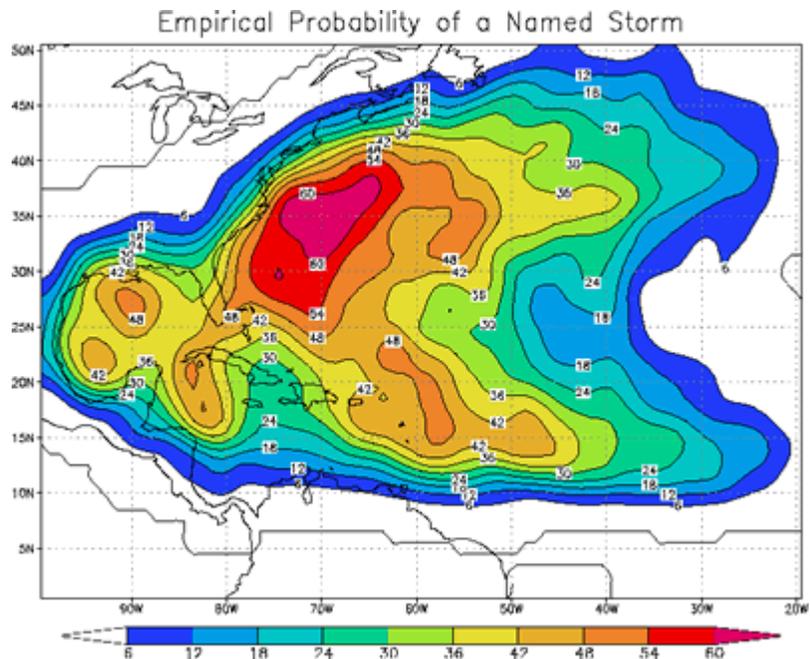
The combination of warm ocean water, humid air and consistent winds contributes to the formation of tropical cyclones – low-pressure systems of circulating winds, clouds and thunderstorms – over the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. As they gain strength, these cyclones are

classified as tropical depressions, tropical storms, or hurricanes. The Saffir-Simpson Hurricane Scale rates hurricane strengths, from Category 1 to Category 5. Hurricane season normally runs from June 1 through November 30 – or beyond, as the world saw during the record-setting 2005 season. The peak potential for hurricane and tropical

storm activity in New Jersey runs from mid-August through the end of October.<sup>44</sup>

- **Tropical Storm:** winds 39-73 mph
- **Category 1 Hurricane:** Winds 74-95 mph (64-82 kt). No real damage to buildings. Damage to unanchored mobile homes. Some damage to poorly constructed signs. Also, some coastal flooding and minor pier damage. Examples: Irene (1999) and Allison (1995).
- **Category 2 Hurricane:** Winds 96-110 mph (83-95 kt). Some damage to roofs, doors, and windows. Considerable damage to mobile homes. Flooding damage to piers and small craft in unprotected moorings, and moorings may be broken. Some trees blown down. Examples: Bonnie (1998), Georges (FL & LA- 1998), and Gloria (1985).
- **Category 3 Hurricane:** Winds 111-130 mph (96-113 kt). Some structural damage to small residences and utility buildings. Large trees blown down. Mobile homes and poorly built signs destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain may be flooded well inland. Examples: Keith (2000), Fran (1996), Opal (1995), Alicia (1983) and Betsy (1965).
- **Category 4 Hurricane:** Winds 131-155 mph (114-135 kt). More extensive curtain wall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland. Examples: Hugo (1989) and Donna (1960).

- **Category 5 Hurricane:** Winds 156 mph and up (135+ kt): Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required. Examples: Andrew (FL-1992), Camille (1969) and Labor Day (1935-formal naming of Atlantic Basin hurricanes began in 1950).



**Figure 21: Empirical Probability of a Named Storm**

**Figure 21** indicates the probability of a tropical storm or hurricane affecting a particular area sometime during the June to November hurricane season.<sup>45</sup> The years 1944 to 1999 are utilized in the analysis along with counted hits when a storm or hurricane was within about 100 miles (165 km). For example, people living in New Orleans, Louisiana have about a 40% chance (the green-orange color) per year of experiencing a strike by a tropical storm or

hurricane. For the United States, the locations that have the highest chances of a tropical storm or hurricane occurrence are Miami, Florida with a 48% chance and Cape Hatteras, North Carolina with a 48% chance. Just outside of the United States, San Juan, Puerto Rico has a 42% chance of a tropical storm or hurricane occurring.<sup>46</sup>

In the recent past, New Jersey has been hit by tropical storms or hurricanes. **Figure 22** shows historical hurricane tracks since 1971.<sup>47</sup> Most recently in September 1999, Hurricane Floyd was responsible for \$4.5 billion in damages and 57 deaths in the United States, 6 of those in New Jersey. Floyd was downgraded to a Tropical Storm as it reached New Jersey but it still dumped anywhere from 5-14 inches of rain throughout New Jersey causing massive flooding and power outages. Bergen County suffered \$17.5 million in damages from Floyd. According to the Stevens Institute of Technology, over 35 new peaks of records were set, mostly in the Hackensack, Saddle, Elizabeth, Rahway and Raritan River basins. Bergen County is highly susceptible to the flooding and power outages from these storms because much of the County lies in the Hackensack River Valley as well as having an eastern border with the Hudson River.

The probability of Bergen County being struck by a tropical storm or hurricane is difficult to predict. Because much of Bergen County is developed, the vulnerability is extremely high if an event were to occur. Tropical storms and hurricanes do not need to have a direct path over Bergen County to affect the residents. **Table 16** shows the potential magnitude of impact that may occur if a tropical storm or hurricane were to hit the area.<sup>48</sup> **Table 16** is taken from the New Jersey Hurricane Evacuation Study (HES) and **Figure 23** (in

four panels, also below) contains a County map showing the limits of potential tidal flooding from Categories 1 through 4 hurricanes as calculated by the National Weather Service-National Hurricane Center's SLOSH Model. Each map shows the limits of potential flooding from Category 1-4 hurricanes and the numbers of housing units in the Category 1-4 inundation areas. This information is provided in order to facilitate the drawing or re-drawing of evacuation zones by county and municipal emergency management officials.

Hurricanes have also been evaluated based not on return interval or annual probability of occurrence, but rather by category. A Category 1 event in NJ would predominantly impact the Hackensack Meadowlands District and the Hackensack River communities in general, up to the Oradell Reservoir in Oradell, NJ. However, while the Hudson River area communities in NJ are marginally impacted, even up to a Category 4, both the Passaic River communities and communities around Overpeck Creek, a tributary of the Hackensack River, are affected. Specifically, the impacts in Table 15 are expanded to the Borough of Ridgefield, the Borough of Leonia, the Borough of Palisades Park, and the City of Englewood. The largest number of housing units impacted (> 1,000) is within the Borough of Edgewater and the Borough of Little Ferry. Note that a "Category 3" event produces surge elevations similar to a "100-year" event.

Per the USGS (Fact Sheet 2005-3121, October 2005), there is a high probability of 20-40 hurricanes reaching the NJ area in the next 100 years.<sup>49</sup> Additionally, per the Colorado State University Department of Atmospheric Science (April 9, 2008 report), there is a 31% chance (annually) of a

Category 3, 4 or 5 event impacting the East Coast and a 44% chance (annually) of a Category 1 or 2 event. Global temperature

increase does not seem to be modifying these probabilities.<sup>50</sup>



**Figure 22: Historical Hurricane Tracks**

Rec	YEAR	MONTH	DAY	STORM NAME	WIND SPEED(KTS)	PRESSURE(MB)	CATEGORY
<a href="#">1</a>	1971	8	28	DORIA	50	993	Tropical Storm
<a href="#">2</a>	1971	8	28	DORIA	45	997	Tropical Storm
<a href="#">3</a>	1972	6	22	AGNES	60	977	Tropical Storm
<a href="#">4</a>	1972	6	22	AGNES	55	980	Tropical Storm
<a href="#">5</a>	1976	8	10	BELLE	80	977	Cat 1
<a href="#">6</a>	1976	8	10	BELLE	60	983	Tropical Storm
<a href="#">7</a>	1985	9	27	GLORIA	85	951	Cat 2
<a href="#">8</a>	1988	8	29	CHRIS	20	1010	Tropical Depression
<a href="#">9</a>	1988	8	30	CHRIS	20	1008	Tropical Depression
<a href="#">10</a>	1994	8	18	BERYL	15	1010	Tropical Depression
<a href="#">11</a>	1994	8	18	BERYL	15	1010	Tropical Depression
<a href="#">12</a>	1996	7	13	BERTHA	60	994	Tropical Storm
<a href="#">13</a>	1996	7	13	BERTHA	60	994	Tropical Storm
<a href="#">14</a>	1999	9	16	FLOYD	60	974	Tropical Storm
<a href="#">15</a>	1999	9	17	FLOYD	50	980	Tropical Storm
<a href="#">16</a>	2000	9	19	GORDON	25	1008	Extratropical
<a href="#">17</a>	2000	9	20	GORDON	25	1007	Extratropical

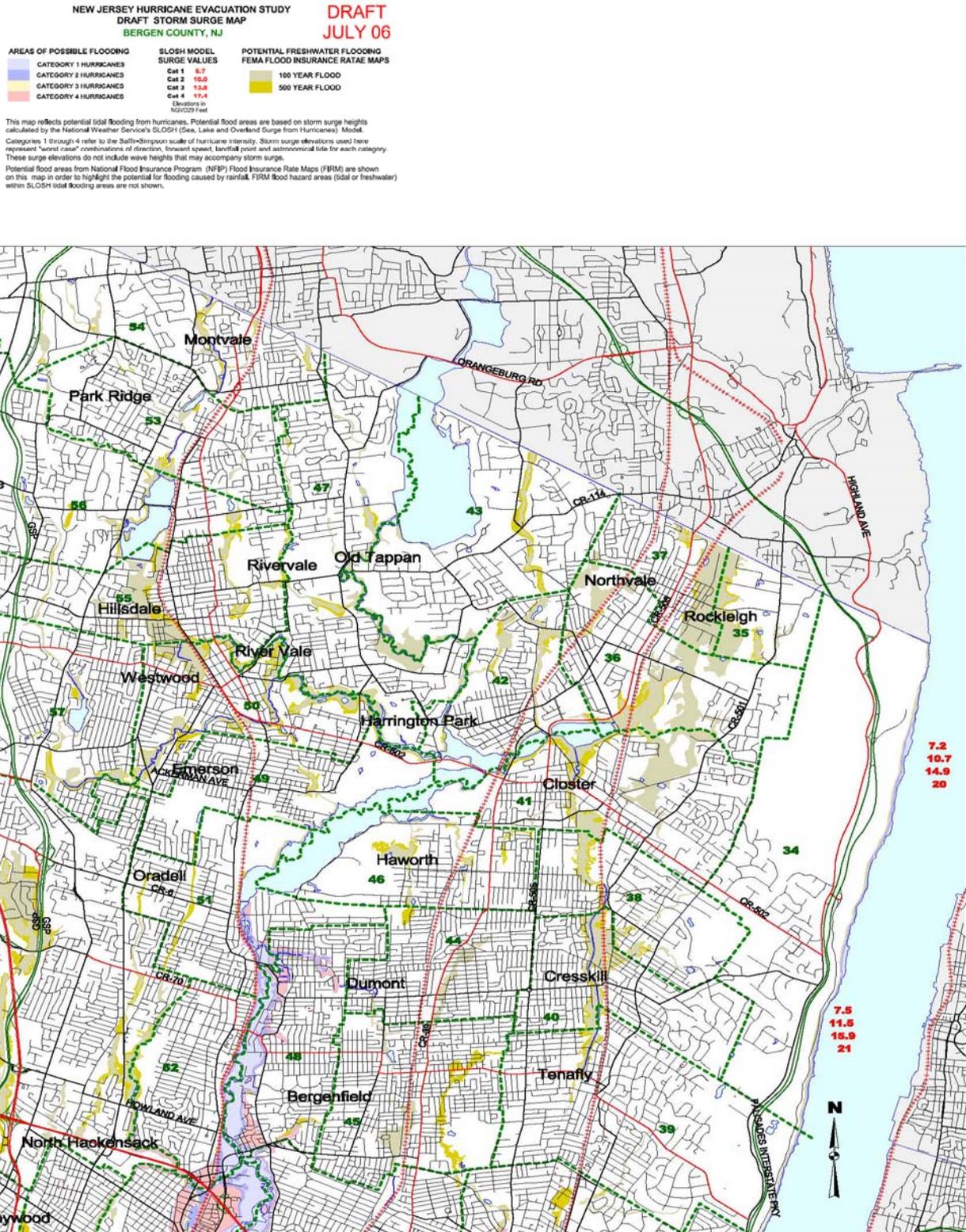
Source: NOAA Coastal Services Center, Historical Hurricane Tracks

**Table 16: Bergen County Vulnerable Housing Data**

BERGEN COUNTY VULNERABLE HOUSING UNIT DATA							
	PERMANENTLY OCCUPIED HOUSING UNITS <sup>1</sup>				MOBILE HOMES <sup>2</sup>		TOTAL HU
	CAT 1	CAT 2	CAT 3	CAT 4	OCCUPIED	TOTAL	
1 Fairview Boro	4	3	40	72	0	0	5,070
2 Cliffside Park Boro	0	0	0	0	0	0	10,340
3 Edgewater Boro	1,737	100	182	97	8	8	5,702
4 Fort Lee Boro	0	0	0	0	7	7	16,028
5 Englewood Cliffs Boro	0	0	0	0	0	0	1,889
6 Ridgefield Boro	29	19	21	119	6	6	4,124
7 Palisades Park Boro	23	24	82	218	0	0	6,609
8 Leonia Boro	70	58	99	147	0	0	3,345
9 Englewood City	356	252	164	782	42	42	9,607
10 North Arlington Boro	24	82	107	146	0	0	6,519
11 Lyndhurst Twp	89	1,037	481	592	0	0	8,113
12 Rutherford Boro	168	91	144	677	0	0	7,228
13 East Rutherford Boro	28	26	46	632	0	0	3,753
14 Carlstadt Boro	170	6	66	113	147	158	2,687
15 Moonachie Boro	844	28	0	0	229	245	895
16 Little Ferry Boro	3,343	196	66	301	0	0	4,216
17 Wood-Ridge Boro	44	32	2	0	0	0	3,071
18 Wallington Boro	425	599	624	633	0	0	4,907
19 Ridgefield Park Village	565	178	51	296	6	6	5,134
20 Teterboro Boro	2	4	1	0	0	0	9
21 Hasbrouck Heights Boro	0	141	34	46	6	6	4,789
22 South Hackensack Twp-SE	0	0	0	0	0	0	0
23 South Hackensack Twp-N	40	461	187	327	0	0	1,054
24 South Hackensack Twp-WV	6	0	1	2	0	0	27
25 Bogota Boro	25	22	16	114	0	0	2,915
26 Garfield City	16	63	114	416	7	7	11,715
27 Lodi Boro	117	5	17	69	230	305	9,977
28 Hackensack City	403	1,112	457	4,299	8	8	18,925
29 Teaneck Twp	234	119	62	482	13	13	13,430
30 Elmwood Park Boro	0	0	0	0	16	16	7,338
31 Saddle Brook Twp	0	0	0	0	0	0	5,161
32 Rochelle Park Twp	0	0	0	0	0	0	2,118
33 Maywood Boro	0	0	0	0	8	8	3,813
34 Alpine Boro	0	0	0	0	0	0	737
35 Rockleigh Boro	0	0	0	0	0	0	80
36 Norwood Boro	0	0	0	0	0	0	1,885
37 Northvale Boro	0	0	0	0	6	6	1,515
38 Demarest Boro	0	0	0	0	0	0	1,634
39 Tenafly Boro	0	0	0	0	17	17	4,887
40 Cresskill Boro	0	0	0	0	8	8	2,695
41 Closter Boro	0	0	0	0	10	10	2,872
42 Harrington Park Boro	0	0	0	0	0	0	1,577
43 Old Tappan Boro	0	0	0	0	0	0	1,902
44 Dumont Boro	0	0	0	5	0	0	6,335
45 Bergenfield Boro	0	0	0	0	0	0	9,292
46 Haworth Boro	0	0	0	0	0	0	1,144
47 River Vale Twp	0	0	0	0	0	0	3,311
48 New Milford Boro	311	66	57	320	10	10	6,443
49 Emerson Boro	0	0	0	0	0	0	2,415
50 Westwood Boro	0	0	0	0	0	0	4,612
51 Oradell Boro	0	0	0	12	0	0	2,812
52 River Edge Boro	91	16	2	41	0	0	4,191
53 Park Ridge Boro	0	0	0	0	0	0	3,268
54 Montvale Boro	0	0	0	0	0	0	2,589
55 Hillsdale Boro	0	0	0	0	6	6	3,504
56 Woodcliff Lake Boro	0	0	0	0	0	0	1,904
57 Washington Twp	0	0	0	0	0	0	3,304
58 Paramus Boro	0	0	0	10	7	7	8,337
59 Saddle River Boro	0	0	0	0	4	4	1,196
60 Upper Saddle River Boro	0	0	0	0	6	6	2,524
61 Ho-Ho-Kus Boro	0	0	0	0	0	0	1,466
62 Ridgewood Village	0	0	0	0	11	11	8,848
63 Fair Lawn Boro	0	0	0	0	0	0	12,131
64 Waldwick Boro	0	0	0	0	5	5	3,496
65 Glen Rock Boro	0	0	0	0	0	0	4,026
66 Allendale Boro	0	0	0	0	0	0	2,143
67 Midland Park Boro	0	0	0	0	0	0	2,645
68 Ramsey Boro	0	0	0	0	9	9	5,407
69 Wyckoff Twp	0	0	0	0	0	0	5,638
70 Mahwah Twp	0	0	0	0	131	131	9,651
71 Franklin Lakes Boro	0	0	0	0	6	6	3,419
72 Oakland Boro	0	0	0	0	0	0	4,323
<b>TOTALS</b>	<b>9,164</b>	<b>4,740</b>	<b>3,123</b>	<b>10,968</b>	<b>969</b>	<b>1,071</b>	<b>340,666</b>

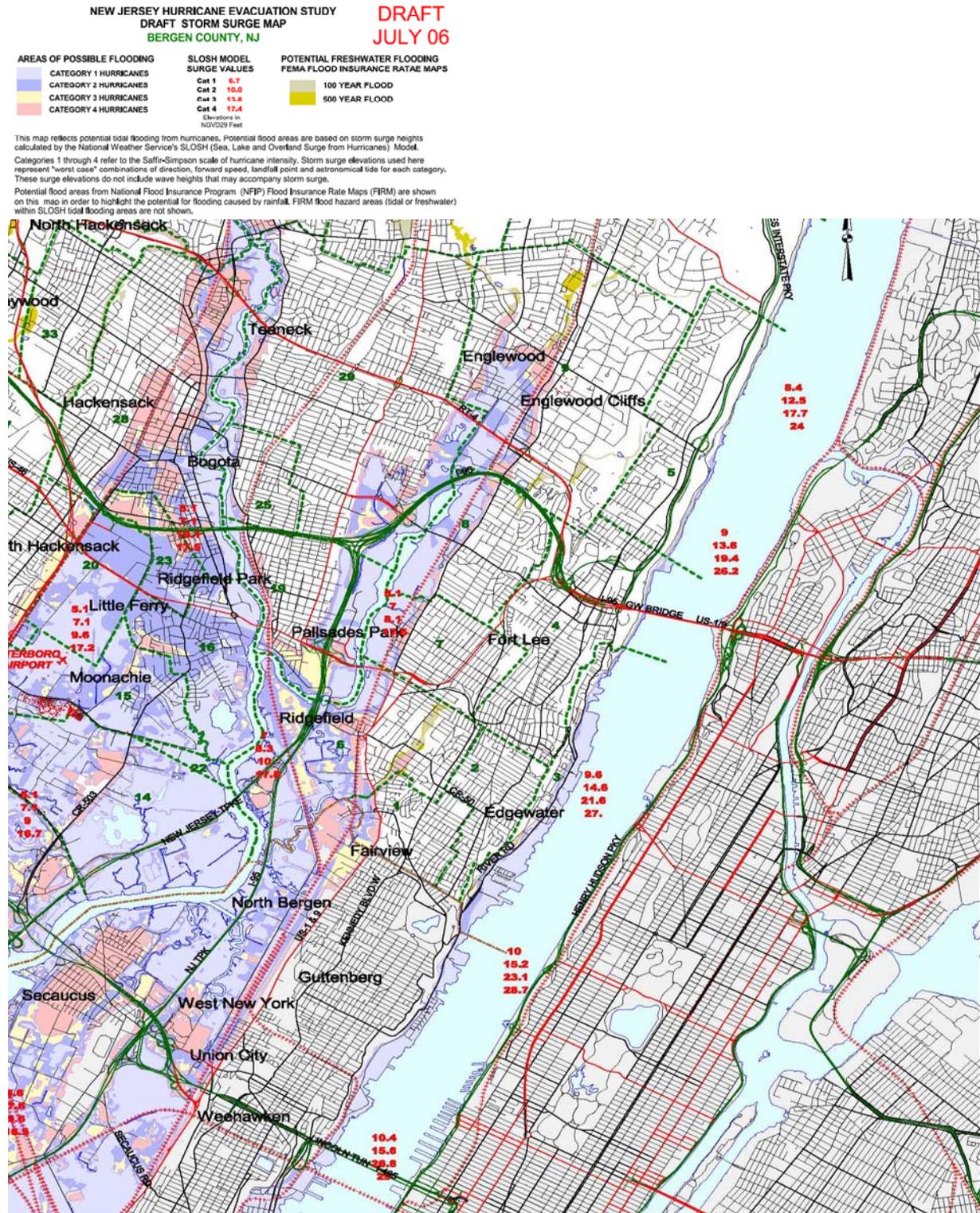
<sup>1</sup> Category 2 through 4 units are in addition to preceding category(ies).  
<sup>2</sup> Mobile homes can be seasonal housing units and vice versa.





**Figure 24 (Panel #2): New Jersey Hurricane Evacuation Study Draft Storm Surge Map-  
Bergen County**





**Figure 26 (Panel #4): New Jersey Hurricane Evacuation Study Draft Storm Surge Map- Bergen County**

### **3.7 Assessing Vulnerability: Identifying Critical Facilities**

This Plan contains extensive information regarding the critical facilities identified by the 70 Bergen County municipalities. A detailed discussion of all critical facilities in each municipality, and to the degree to which each is vulnerable to the natural hazards identified in this plan, is included in this Plan.

Identified critical facilities may include structures such as:

- municipal buildings;
- police and fire stations;
- rescue squads;
- emergency operation centers ;
- shelters;
- schools;
- hospitals;
- transportation systems;
- utilities (power plants, substations, power lines, gas lines);
- oil facilities;
- hazardous material facilities;
- dams;
- communication networks;
- public works;
- detention centers;
- water supplies;
- wastewater facilities;
- roads and bridges;
- airports;
- rail terminals; and
- nursing/care centers.

Maps identifying the critical facilities for each Bergen County municipality, as well as a table listing critical facilities and their vulnerability by municipality are included in **Appendix G**. **Appendix H** contains summary maps of the county that depict the critical facilities in the municipalities and their vulnerability to the various natural hazards described in this plan including

drought, earthquakes, flooding, hailstorms, high winds, landslides, major fires, winter storms, storm surges, and subsidence.

The current version of this Plan does not identify all existing structures within each municipality which may be vulnerable to the identified natural hazards. The collection of this data is described in further detail and included as an action item in the mitigation strategy section of the Plan.

The current version of this Plan does not identify all future buildings, infrastructure, or critical facilities within each municipality which may be vulnerable to the identified natural hazards. The collection of this data is described in further detail and included as an action item in the mitigation strategy section of the Plan.

### **3.8 Identifying Impacts**

Each Bergen County municipality was provided the opportunity to submit one or more Recent Event Analysis forms. These forms describe actual hazards experienced by the municipality, the magnitude of the event, community reaction, costs of the disaster, and mitigation initiatives in place before and after the event. These forms are included as **Appendix I**.

The current version of the Plan does not include data regarding natural hazard impacts to all buildings in each jurisdiction. The collection of this data is described in further detail and included as an action item in the mitigation strategy section of the Plan.

### **3.9 Repetitive Losses and Severe Repetitive Losses**

According to FEMA, a Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance

Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. Currently there are over 122,000 RL properties nationwide.<sup>51</sup> **Table 17** on the following page highlights the repetitively flooded properties in Bergen County. The information for this table was acquired from FEMA and is dated 12/31/06.

The definition of severe repetitive loss (SRL) was established in section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. According to FEMA, an SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- (a) That has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or
- (b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.<sup>52</sup> Severe repetitive loss properties in Bergen County are listed in **Table 18**.

**Table 17: Severe Repetitive Loss Properties, Bergen County**

<b>SRL Properties by Municipality</b>	<b># of SRL Properties</b>	<b># of NFIP Claims</b>	<b>Cumulative \$ of Paid NFIP Claims</b>
Allendale	1	5	\$121,522
Closter	1	4	\$93,650
Hillsdale	3	20	\$591,978
Lodi	1	10	\$265,954
New Milford	2	11	\$540,717
Oakland	9	41	\$1,323,709
Ridgefield	1	4	\$92,763
River Edge	1	4	\$162,098
Rutherford	1	5	\$54,198
Westwood	6	35	\$1,007,880
Wyckoff	1	5	\$264,395
<b>Bergen County Total</b>	<b>27</b>	<b>144</b>	<b>\$4,518,894</b>

**Table 18: FEMA Repetitive Losses, Bergen County**

County Name	ID #	Community Name	Comm ID Number	Building Payments	Contents Payments	Total Payments	Average Payment	# of Losses	# of Properties
Bergen	3	Allendale, Borough Of	340019	\$ 86,344.25	\$ 14,066.65	\$ 100,140.90	\$ 17,489.17	7	2
Bergen	3	Bergenfield, Borough Of	340020	\$ 6,755.00	\$ 8,438.20	\$ 15,193.20	\$ 3,038.64	5	2
Bergen	3	Bogota, Borough Of	340021	\$ 171,705.85	\$ 51,650.28	\$ 223,356.13	\$ 24,817.35	9	2
Bergen	3	Carlstadt, Borough Of	340022	\$ 257,604.22	\$ 48,275.50	\$ 305,879.72	\$ 11,328.88	27	2
Bergen	3	Closter, Borough Of	340023	\$ 53,791.57	\$ 17,845.86	\$ 71,637.43	\$ 7,959.71	9	3
Bergen	3	Dumont, Borough Of	340026	\$ 306.00	\$ 6,478.00	\$ 6,784.00	\$ 2,261.33	3	1
Bergen	3	Edgewater, Borough Of	340029	\$ 131,368.99	\$ 63,420.99	\$ 194,789.98	\$ 19,479.00	10	4
Bergen	3	Elmwood Park, Borough Of	340500	\$ 5,623.43	\$ 16,372.00	\$ 21,995.43	\$ 5,498.86	4	2
Bergen	3	Emerson, Borough Of	340030	\$ 8,110.95	\$ 29,175.07	\$ 37,286.02	\$ 9,321.50	4	2
Bergen	3	Englewood, City Of	340031	\$ 65,323.31	\$ 195,985.68	\$ 261,308.99	\$ 12,443.29	21	8
Bergen	3	Fair Lawn, Borough Of	340033	\$ 11,377.44	\$ 8,055.00	\$ 19,432.44	\$ 4,858.11	4	2
Bergen	3	Fairview, Borough Of	340034	\$ 27,354.04	\$ 186,512.25	\$ 213,866.29	\$ 21,386.63	10	3
Bergen	3	Franklin Lakes, Borough Of	340036	\$ 4,814.04	\$ 6,121.45	\$ 10,935.49	\$ 5,467.75	2	1
Bergen	3	Garfield, City Of	340037	\$ 49,200.00	\$ 16,732.62	\$ 65,932.62	\$ 13,186.52	5	2
Bergen	3	Hackensack Meadowlands Commission	340570	\$ 274,196.04	\$ 1,942,929.17	\$ 2,217,125.21	\$ 40,311.37	55	12
Bergen	3	Hackensack, City Of	340039	\$ 359,846.31	\$ 115,202.17	\$ 475,048.48	\$ 21,593.11	22	7
Bergen	3	Harrington Park, Borough Of	340040	\$ -	\$ 405,000.00	\$ 405,000.00	\$ 101,250.00	4	1
Bergen	3	Hasbrouck Heights, Borough Of	340041	\$ 30,606.53	\$ 71,252.27	\$ 101,858.80	\$ 20,371.76	5	2
Bergen	3	Haworth, Borough Of	340042	\$ -	\$ 47,058.00	\$ 47,058.00	\$ 23,529.00	2	1
Bergen	3	Hillsdale, Borough Of	340043	\$ 812,999.81	\$ 109,329.44	\$ 922,329.25	\$ 16,769.62	55	15
Bergen	3	Ho-Ho-Kus, Borough Of	340044	\$ 8,026.43	\$ -	\$ 8,026.43	\$ 4,013.22	2	1
Bergen	3	Little Ferry, Borough Of	340046	\$ 243,216.03	\$ 52,561.16	\$ 295,777.19	\$ 8,450.78	35	16
Bergen	3	Lodi, Borough Of	340047	\$ 1,748,793.78	\$ 2,687,281.48	\$ 4,436,075.26	\$ 27,215.19	163	43
Bergen	3	Lyndhurst, Township Of	340048	\$ 40,426.29	\$ 12,225.00	\$ 52,651.29	\$ 6,581.41	8	4
Bergen	3	Mahwah, Township Of	340049	\$ 346,832.19	\$ 51,977.72	\$ 398,809.91	\$ 19,940.50	20	9
Bergen	3	Maywood, Borough Of	340050	\$ 29,030.99	\$ 1,426.54	\$ 30,457.53	\$ 7,614.38	4	2
Bergen	3	Moonachie, Borough Of	340053	\$ 270,605.88	\$ 1,238,238.15	\$ 1,508,844.03	\$ 188,605.50	8	2
Bergen	3	New Milford, Borough Of	340054	\$ 649,614.97	\$ 160,731.26	\$ 810,346.23	\$ 12,466.87	65	21
Bergen	3	Norwood, Borough Of	340057	\$ 8,291.10	\$ 10,299.45	\$ 18,590.55	\$ 4,647.64	4	2
Bergen	3	Oakland, Borough Of	345309	\$ 2,034,291.85	\$ 509,095.06	\$ 2,543,386.91	\$ 15,699.92	162	54
Bergen	3	Old Tappan, Borough Of	340059	\$ 40,827.99	\$ 7,890.59	\$ 48,718.58	\$ 6,089.82	8	2

County Name	ID #	Community Name	Comm ID Number	Building Payments	Contents Payments	Total Payments	Average Payment	# of Losses	# of Properties
Bergen	3	Palisades Park, Borough Of	340061	\$ 6,738.22	\$ 1,084,415.26	\$ 1,091,153.48	\$ 109,115.35	10	2
Bergen	3	Paramus, Borough Of	340062	\$ 24,711.33	\$ 23,993.01	\$ 48,704.34	\$ 4,058.70	12	5
Bergen	3	Ridgefield Park, Village Of	340066	\$ 107,071.67	\$ 23,621.87	\$ 130,693.54	\$ 10,053.35	13	5
Bergen	3	Ridgefield, Borough Of	340065	\$ 65,828.13	\$ 7,237.25	\$ 73,065.38	\$ 14,613.08	5	2
Bergen	3	Ridgewood, Village Of	340067	\$ 30,439.34	\$ 2,800.00	\$ 33,239.34	\$ 6,647.87	5	2
Bergen	3	River Edge, Borough Of	340068	\$ 47,152.47	\$ 38,466.63	\$ 85,619.10	\$ 21,404.78	4	2
Bergen	3	River Vale, Township Of	340069	\$ 225,317.55	\$ 168,555.73	\$ 393,873.28	\$ 21,881.85	18	4
Bergen	3	Rochelle Park, Township Of	340070	\$ 88,878.31	\$ 7,800.00	\$ 96,678.31	\$ 16,113.05	6	3
Bergen	3	Rutherford, Borough Of	340072	\$ 56,031.30	\$ 8,547.64	\$ 64,578.94	\$ 6,457.89	10	4
Bergen	3	Saddle Brook, Township Of	340074	\$ 9,973.26	\$ 2,077.39	\$ 12,050.65	\$ 3,012.66	4	2
Bergen	3	Saddle River, Borough Of	340073	\$ 85,769.31	\$ 370.00	\$ 86,139.31	\$ 14,356.55	6	2
Bergen	3	South Hackensack, Township Of	340515	\$ 62,925.40	\$ 86,340.46	\$ 149,265.86	\$ 74,632.93	2	1
Bergen	3	Teaneck, Township Of	340075	\$ 10,800.33	\$ 23,651.60	\$ 34,451.93	\$ 5,741.99	6	3
Bergen	3	Tenafly, Borough Of	340076	\$ 23,341.70	\$ -	\$ 23,341.70	\$ 5,835.43	4	2
Bergen	3	Upper Saddle River, Borough Of	340077	\$ 20,116.95	\$ 4,323.00	\$ 24,439.95	\$ 6,109.99	4	2
Bergen	3	Washington, Township Of	340080	\$ 26,236.12	\$ -	\$ 26,236.12	\$ 4,372.69	6	2
Bergen	3	Westwood, Borough Of	340081	\$ 818,209.74	\$ 233,030.83	\$ 1,051,240.57	\$ 17,817.64	59	16
Bergen	3	Woodcliff Lake, Borough Of	340082	\$ 78,509.53	\$ 38,079.99	\$ 116,589.52	\$ 29,147.38	4	2
Bergen	3	Wyckoff, Township Of	340084	\$ 80,789.34	\$ 44,834.00	\$ 125,623.34	\$ 31,405.84	4	1

*Note: The data contained on this report contains repetitive loss properties as well as mitigated properties (properties that are no longer repetitive)*

### **3.10 Assessing Vulnerability to Hazards by Jurisdiction**

This section provides a detailed discussion of all critical facilities in each municipality and to the degree to which each is vulnerable to the natural hazards identified in this plan.

**Table 19**, Facility Vulnerability Assessment: Ranking Factors contains the rankings used for each hazard, detailed by municipality. **Appendix G** contains a table entitled, Vulnerability Assessment of Critical Facilities, which details the ranking of each critical facility by hazard and by municipality. County-wide maps detailing critical facilities and their vulnerability to hazards are also located in **Appendix H**.

#### **Bergen County**

Bergen County has identified nine critical facilities, as follows:

1. Bergen County Police Headquarters and Garage (Hackensack)
2. Bergen County DPW Operations (Hackensack)
3. Bergen County Jail Annex (Hackensack)
4. One Bergen County Plaza (Hackensack)
5. Bergen County Administration Garage (Hackensack)
6. Bergen County Justice Center (Hackensack)
7. Bergen County Office of Emergency Management (Paramus)
8. Bergen County Medical Examiner's Office (Paramus)
9. Bergen County Animal Center (Teterboro)

The vulnerability assessment of these critical facilities can be found under the municipality in which they are located.

#### **Allendale Borough**

The Borough of Allendale has three critical facilities. The Allendale DPW is slightly vulnerable to high winds, meaning that the wall opening size or lack of protection may cause window or door failure; external equipment is also vulnerable. The DPW structure is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the DPW or economic losses would be moderate.

The Allendale Water Department is slightly vulnerable to high winds, the wall opening size or lack of protection may cause window or door failure; external equipment is also vulnerable. The Water Department is located in a flood plain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the Water Department or economic losses would be moderate.

The Brookside School is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. The School is in a flood plain or flood prone area and has experienced significant flood damage in the past. This property may also be a NFIP repetitive loss property. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the School. Economic losses due to such a storm would be substantial.

#### **Alpine Borough**

The Borough of Alpine has identified 15 critical facilities. The Alpine Department of Public Works and Fire Department are slightly vulnerable to high winds due to wall

opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

The Alpine Public School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the School. Economic losses due to such a storm would be moderate.

The American Tower Corporation and Alpine Tower Corporation are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

Closter Dock Road (Bergen County Route 502) from start to end is vulnerable to winter storms, as they may pose a health/safety risk to up to 25% of the population in the vicinity of this roadway. Economic losses due to such a storm would be moderate.

Hillside Avenue (Route 6) from start to end is vulnerable to winter storms, as they may pose a health/safety risk to up to 25% of the population in the vicinity of this roadway. Economic losses due to such a storm would be moderate.

The Alpine Municipal Hall/Police Department/EOC is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

The Public Water Storage Tanks (5 and 9 million gallons) are not vulnerable to any natural hazards.

The T-Mobile Cellular Tower is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

US Route 9W- Mile Posts 5.4 and 11.1 are vulnerable to winter storms, as they may pose a health/safety risk to up to 25% of the population in the vicinity of US Route 9W, or economic losses would be moderate.

### **Bergenfield Borough**

The Borough of Bergenfield has identified seven critical facilities. The Alert Fire Company and Bergen Field High School are each slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. These facilities are vulnerable to winter storms, as they may pose a health/safety risk to up to 25% of the population in the vicinity of the structures. Economic losses due to such a storm would be moderate.

The Bergenfield Municipal Building is located in a floodplain or flood prone area and has experienced some limited flood damage in the past.

The Bergenfield Ambulance Corps is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

The No. 2 Fire Company, Prospect Fire Company No. 1 and Roy W. Brown Middle

School are each slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. These facilities are vulnerable to winter storms, as they may pose a health/safety risk to up to 25% of the population in the vicinity of the structures. Economic losses due to such a storm would be moderate.

### **Bogota Borough**

The Borough of Bogota has identified one critical facility, the Amerada Hess Storage Facility. This facility is located in a flood plain or flood prone area and has experienced some limited flood damage in the past. It is also located in a storm surge zone for a Category 3 hurricane, or it is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the storage facility. Economic losses due to such a storm would be moderate.

### **Carlstadt Borough**

The Borough of Carlstadt has identified 11 critical facilities. The Altra facility is located in a floodplain or flood prone area but has no prior history of flood damage. It is located in a Category 2 or 2 hurricane surge zone, or well inside a designated tsunami risk zone, or has experienced prior surge/tsunami damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Carlstadt Civic Center and Ambulance HQ is not vulnerable to any natural hazards.

Carlstadt Pump Stations #1 and #2 are not vulnerable to any natural hazards.

The Carlstadt Town Hall Complex is not vulnerable to any natural hazards.

Lincoln School and Lindbergh School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The schools are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the schools. Economic losses due to such a storm would be moderate.

Sandcastle Day Care is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Stop & Shop #831 is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This store is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the store, or economic losses would be substantial.

Sun Chemical is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The facility is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current

earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Washington School is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

### **Cliffside Park Borough**

The Borough of Cliffside Park has identified 11 critical facilities. The Cliffside Park Borough Hall is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Cliffside Park High School is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the high school. Economic losses due to such a storm would be substantial.

The Cliffside Park Housing Authority is served by a water supply that is likely to fail under moderate drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Cliffside Park Library and Public Works Department are served by a water supply that is likely to fail under severe drought conditions. Winter storms may

pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Epiphany Church is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The church is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the high school. Economic losses due to such a storm would be substantial.

PS#3, PS#4, PS#5 and PS#6 are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these schools. Economic losses due to such a storm would be moderate.

The Verizon Sub-station is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the sub-station, or economic losses would be moderate.

### **Closter Borough**

The Borough of Closter has identified 10 critical facilities. The Closter Borough Hall is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external

equipment is vulnerable. This facility is located in a flood plain or flood prone area and has experienced some limited flood damage in the past.

The Closter DPW Headquarters is located in a floodplain or flood prone area but has no prior history of flood damage.

The Closter EMS Headquarters is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Closter Fire Headquarters is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Hillside School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Rockland Electric Substation is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. Winter storms may

pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Spectrum for Living and Spectrum for Living- VanSciver are each located in a floodplain or flood prone area but neither has a prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Tenakill School is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Verizon Center Office is not vulnerable to any natural hazards.

### **Cresskill Borough**

The Borough of Cresskill has identified five critical facilities. The Cresskill Ambulance Station is located in a floodplain or flood prone area but has no prior history of flood damage.

Cresskill High School is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Electric Substation, Cresskill Fire Station and Cresskill Public Works Building are located in a floodplain or flood prone area but have no prior history of flood damage.

**Demarest Borough**

The Borough of Demarest has identified 24 critical facilities. The Academy of Holy Angels Shelter and School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The school is served by a water supply that is likely to fail under severe drought conditions. The school meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Anderson Avenue from start to end meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Anderson Avenue is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the roadway. Economic losses due to such a storm would be moderate.

The Demarest Borough Hall is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

County Road from start to end meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. County Road is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a

health/safety risk to up to 25% of the population in the vicinity of the roadway. Economic losses due to such a storm would be moderate.

County Road School and Demarest Cooperative Nursery are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. These schools are served by a water supply that is likely to fail under severe drought conditions. These schools meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these schools. Economic losses due to such a storm would be moderate.

The Demarest Ambulance Corps is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The facility is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Demarest DPW is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The DPW is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms

may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Demarest Fire Department is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The facility is served by a water supply that is likely to fail under severe drought conditions. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Demarest Middle School and Shelter is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The school is served by a water supply that is likely to fail under severe drought conditions. The school meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Demarest Police Department is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the

population in the vicinity of the police department, or economic losses would be moderate.

Hardenburgh Avenue from start to end meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Hardenburgh Avenue is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the roadway. Economic losses due to such a storm would be moderate.

The Hardenburgh Avenue Bridge meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The bridge is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the bridge, or economic losses would be moderate.

The Hardenburgh Avenue Dam is in a floodplain or flood prone area and has experienced significant flood damage, or the structure is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the dam, or economic losses would be moderate.

Knickerbocker Road from start to end is located in a floodplain or flood prone area but has no prior history of flood damage.

Luther Lee Emerson School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The school is

served by a water supply that is likely to fail under severe drought conditions. The school meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Northern Valley Catholic Academy is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The school is served by a water supply that is likely to fail under severe drought conditions. The school meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Northern Valley Regional High School and Shelter is vulnerable to high winds due to wall opening size or lack of protection, roof configuration, and/or several nearby trees; high essential external equipment is vulnerable. The school is served by a water supply that is likely to fail under severe drought conditions. The school meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Piermont Road from start to end meets the current code, and is not close to heavily

vegetated areas, but access and/or separation from nearby structures increase fire risk. Piermont Road is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the roadway. Economic losses due to such a storm would be moderate.

### **Dumont Borough**

The Borough of Dumont has identified 21 critical facilities. The Dumont Borough Hall is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the Borough Hall or economic losses would be moderate.

The Dumont Central Office is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the central office or economic losses would be moderate.

The Dumont DPW Building is located in a floodplain or flood prone area but has no prior history of flood damage.

Dumont Fire Cos. #1, #2, #3 are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the fire stations or economic losses would be moderate.

Dumont High School is vulnerable to winter storms, which may pose a health/safety risk to 25-50% of the population in the vicinity of the high school. Economic losses due to such a storm would be substantial.

The Dumont Independent Hose Co. is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the fire station or economic losses would be moderate.

The Dumont Police Department and Volunteer Ambulance Corp are located in a floodplain or flood prone area and have experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities or economic losses would be moderate.

Grant, Honiss, and Lincoln Schools are vulnerable to winter storms, which may pose a health/safety risk to 25-50% of the population in the vicinity of these schools. Economic losses due to such a storm would be substantial.

PSE&G Dumont Substation- Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the substation or economic losses would be moderate.

The Pump Stations at 1<sup>st</sup> Street and 2<sup>nd</sup> Street are not vulnerable to any natural hazards.

The Pump Stations at Concord Street, Lafayette Street, Wareham Road and White Beeches Drive are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these pump stations, or economic losses would be moderate.

The Selzer School is vulnerable to winter storms, which may pose a health/safety risk to 25-50% of the population in the vicinity of the school. Economic losses due to such a storm would be substantial.

### **East Rutherford Borough**

The Borough of East Rutherford has identified 22 critical facilities. The Alfred Faust Intermediate School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The school is located in a floodplain or flood prone area but has no prior history of flood damage. The school is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. It is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Boiling Springs Gardens is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Continental Airlines Arena is located in an area considered as low earthquake risk or

has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the arena, or economic losses would be moderate.

The East Rutherford Building Department is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The building department is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The East Rutherford Department of Public Works is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The DPW is located in a floodplain or flood prone area and has experienced limited flood damage in the past. The DPW is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. The DPW is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the DPW, or economic losses would be moderate.

The East Rutherford Fire Department at Grove Street is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The fire station is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the station, or economic losses would be moderate.

The East Rutherford Fire Department-Station #13 is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The station is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the station, or economic losses would be moderate.

The East Rutherford Fire Department-Carlton Hill Firehouse is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The firehouse is located in a floodplain or flood prone area and has experienced limited flood damage in the past. The firehouse is also located in an area

considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. It is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the firehouse. Economic losses due to such a storm would be moderate.

The East Rutherford Municipal Building is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The municipal building is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the building. Economic losses due to such a storm would be moderate.

The East Rutherford Police Headquarters is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The police headquarters is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The East Rutherford Sewage Authority Lift Station is located in a floodplain or flood prone area but has no prior history of flood damage. The facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. The lift station is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage.

The East Rutherford Sewage Authority Pump Station is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The station is located in a floodplain or flood prone area but has no prior history of flood damage. The pump station is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. It is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the pump station, or economic losses would be moderate.

The Federal Reserve Bank is located in a floodplain or flood prone area but has no prior history of flood damage. The facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. The bank is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the

population in the vicinity of the bank, or economic losses would be moderate.

Giants Stadium is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the stadium, or economic losses would be moderate.

Henry Beacon Regional High School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The high school is located in a floodplain or flood prone area but has no prior history of flood damage. The school is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. It is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the high school. Economic losses due to such a storm would be moderate.

McKenzie School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The school is located in a floodplain or flood prone area but has no prior history of flood damage. The school is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes.

Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Meadowlands Race Track is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the track, or economic losses would be moderate.

The NJSEA Fire Station is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The fire station is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the fire station, or economic losses would be moderate.

The PSE&G Substation is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. The substation is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The PSE&G Switching Station is located in a floodplain or flood prone area but has no prior history of flood damage. The facility is also located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

St. Joseph's Church School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The school is also located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Williams Gas Pipeline Valve Station is located in a floodplain or flood prone area but has no prior history of flood damage. The facility is also located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. The station is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the station, or economic losses would be moderate.

### **Edgewater Borough**

The Borough of Edgewater has identified 27 critical facilities. The American Legion Hall is located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the hall, or economic losses would be moderate.

The Colony Community Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The community center is also located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the center. Economic losses due to such a storm would be moderate.

The Edgewater DPW and DPW Annex are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. They meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The DPW and DPW Annex are in a floodplain or flood prone area and have experienced some limited flood damage in the past. The facilities are also located in an

area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Edgewater Community Center meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The center is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the center. Economic losses due to such a storm would be moderate.

The Edgewater Library meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The department is located in a floodplain or flood prone area but has no prior history of flood damage. The facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the library. Economic losses due to such a storm would be moderate.

The Edgewater Municipal Building meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The building is located in a floodplain or flood prone area but has no prior history of flood damage. The municipal building is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current

earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the municipal building. Economic losses due to such a storm would be moderate.

The Edgewater Fire Department is located in a floodplain or flood prone area but has no prior history of flood damage.

The Edgewater Post Office is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Edgewater Senior Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The center is located in a floodplain or flood prone area but has no prior history of flood damage. The center is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Edgewater Volunteer First Aid Squad meets the current code, and is not close to

heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The squad is in a floodplain or flood prone area and has experienced some limited flood damage in the past. The facility is also located in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the squad. Economic losses due to such a storm would be moderate.

The Edgewater Volunteer Fire Department Co. #1 is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the firehouse. Economic losses due to such a storm would be moderate.

The EVG School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The school is located in a floodplain or flood prone area but has no prior history of flood damage. The school is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

First Presbyterian Church is slightly vulnerable to high winds due to wall opening size or lack of protection. In

addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the church. Economic losses due to such a storm would be moderate.

George Washington School is in a floodplain or flood prone area and has experienced some limited flood damage in the past. The school is also located in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Grand Cove Marina is located in a floodplain or flood prone area but has no prior history of flood damage. The marina is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the marina. Economic losses due to such a storm would be moderate.

Hess Oil is located in a floodplain or flood prone area but has no prior history of flood damage. The facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Holy Rosary Church meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The church is located in a floodplain or flood prone area but has no prior history of flood damage. The church is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the church. Economic losses due to such a storm would be moderate.

The Main Sewer Plant is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It does not meet the current code, and is in or adjacent to large vegetated areas, and has inadequate access and/or separation from other structures. The plant is located in a floodplain or flood prone area but has no prior history of flood damage. The plant is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the sewer plant. Economic losses due to such a storm would be moderate.

Mitsuwa is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The facility is located in a floodplain or flood prone area but has no prior history of flood damage. The facility is also located in

an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Montessori School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The school is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Palisade Learning Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility is served by a water supply that is likely to fail under severe drought conditions. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is in a floodplain or flood prone area and has experienced some limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Prime Time Learning Center is slightly vulnerable to high winds due to wall

opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The school is located in a floodplain or flood prone area but has no prior history of flood damage. The school is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

S/E Sewer Plant is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is in a floodplain or flood prone area and has experienced some limited flood damage in the past. This facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Sunrise Assisted Living is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from

nearby structures increase fire risk. This facility is in a floodplain or flood prone area and has experienced some limited flood damage in the past. This facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Transco Gas Pipeline meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The pipeline is located in an area considered as moderate earthquake risk, and has not been constructed/ retrofitted to comply with current earthquake codes.

Waterford Towers is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The facility is in a floodplain or flood prone area and has experienced some limited flood damage in the past. The facility is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

#### **Elmwood Park Borough**

The Borough of Elmwood Park has identified 23 critical facilities. The Elmwood Park 16<sup>th</sup> Avenue School is vulnerable to

winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Elmwood Park DPW Building/Yard is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Elmwood Park Fire Co. #1, #2, #3 and #4 are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the firehouses. Economic losses due to such a storm would be moderate.

The Elmwood Park Gantner Avenue and Gilbert Avenue Schools are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the schools. Economic losses due to such a storm would be moderate.

The Elmwood Park Memorial High School is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the high school. Economic losses due to such a storm would be moderate.

The Elmwood Park Police Department/Borough Hall is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Elmwood Park Recreation Center is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the

population in the vicinity of the recreation center. Economic losses due to such a storm would be moderate.

The Elmwood Park Volunteer Ambulance Corp. is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Elmwood Park Water Distribution Center meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The New Jersey Believers Church and Presbyterian Church are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these churches, or economic losses would be moderate.

Prime Energy Co-Generation is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Parkview Avenue and Martha Avenue Sewer Pumping Stations are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Slater Avenue and Market Street Pumping Stations are not vulnerable to any natural hazards.

The River Drive Pumping Station is located in a floodplain or flood prone area but has no prior history of flood damage.

St. Leo Church and School is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the church and school. Economic losses due to such a storm would be moderate.

### **Emerson Borough**

The Borough of Emerson has identified 11 critical facilities. The Public Service Gas Metering Station is not vulnerable to any natural hazards.

The Emerson Borough Hall/Police Station/EOC and Emerson Fire House are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Armenian Home and the Villano Elementary School are vulnerable to high winds due to wall opening size/ lack of protection which may cause window/door failure; essential external equipment is vulnerable. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Assumption Academy School, the Emerson Department of Public Works, and the Gardens at Emerson are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Emerson Health Care, Emerson Junior & Senior High School, and Memorial School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

### **Englewood City**

The City of Englewood has identified 26 critical facilities. The Ability School is not vulnerable to any natural hazards.

The Actor Funds Nursing Home, the Bergen Family Center, and the City of Englewood Public Library are not vulnerable to any natural hazards.

The Cleveland Elementary School, the Donal Quarles Elementary School, and the Dwight Morrow High School/Englewood Academies are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may

cause window or door failure, and essential external equipment is vulnerable.

The Elizabeth Morrow School, the Englemoor Nursing Home, Englewood Hospital and the Englewood City Hall are not vulnerable to any natural hazards.

The Englewood Field Club is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

The Englewood Fire Department and Police Department are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

The Infant Senior Sharing Project, Metropolitan Medical Associates, the Montessori Early Learning Center, and the Moriah School are not vulnerable to any natural hazards.

The Russell Major Liberty School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

Saddle Acres Day Care, Vincent K. Tibbs, the Westside Infant Day Care, and the Yeshiva School of Englewood are not vulnerable to any natural hazards.

The Winton White Stadium is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable.

### **Englewood Cliffs Borough**

The Borough of Englewood Cliffs has identified 21 critical facilities. The Borough Hall Court and Police Facility is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Citibank is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk.

CNBC is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Communication Tower is very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings can be expected to fail. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility.

Economic losses due to such a storm would be moderate.

The Englewood Cliffs Department of Public Works and Englewood Cliffs Fire Department are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Japanese Children's Society is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The North Cliffs School is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The PSE&G Substation is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the

vicinity of this facility. Economic losses due to such a storm would be moderate.

The Chestnut Street, Hollywood Avenue Jane Drive, Lyncrest Road, and Roberts Road Pump Stations are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The pump stations are in a known floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

St. Michael's Villa is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility is in an area considered as low earthquake risk, or has been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

St. Peter's College is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The college is in an area considered as low earthquake risk, or has

been constructed/ retrofitted to comply with the current earthquake building codes. The college is on a sloping or waterside site with moderate vulnerability to landslide or erosion, and/or is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the college. Economic losses due to such a storm would be moderate.

Unilever Best Foods is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is in a known floodplain or flood prone area, but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Unilever Best Foods NA is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The United Water Tower is vulnerable to high winds due to wall opening size/lack of protection, roof configuration and/or several nearby trees; essential external equipment is vulnerable. Winter storms may pose a

health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Upper School is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Englewood Cliffs Volunteer Ambulance Corps is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window or door failure, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Fair Lawn Borough**

The Borough of Fair Lawn has identified 70 critical facilities. The Board of Education Maintenance Facility, The Fair Lawn Ambulance Corps, the Fair Lawn Police/PBA Building, the Fair Lawn Cadmus House, the Fair Lawn Community Center and the Fair Lawn Community School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities.

Economic losses due to such a storm would be moderate.

The Broadway Train Station is not vulnerable to any natural hazards.

The Fair Lawn DPW Complex and Fair Lawn Parks Building are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These structures are in a known floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Fire Companies #1, 2 and 4, the Fair Lawn High School, the Fair Lawn Municipal Building/Police Department and the Fair Lawn Rescue Squad are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Fair Lawn Fire Co. #3 is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility.

Economic losses due to such a storm would be moderate.

The Fair Lawn Memorial Pool is in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property.

The Fair Lawn Public Library and Senior Center are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These facilities are located in a storm surge area for a category 4 or 5 hurricane, or are located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Brennan Court Sewer Facility, the Fair Lawn Water facility #28, and the Williams Transco Gas Pipeline are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Sewer Facilities at Chittenden Road and Mandon Place, the Fair Lawn Walsh pool, and the Gordon Place Water Tower are not vulnerable to any natural hazards.

The Fair Lawn Sewer Facilities at Canger Place, River Road and Saddle River Road are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external

equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These facilities are in a floodplain or flood prone area but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Water Department and the Water Facilities #10, 14, 5 and 8 are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Fisher Scientific, the Forest School, the Lyncrest School, and the Maple Glen Nursing Home are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Water Facilities #2, 7 and the facility at Dunderhook Road are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25%

of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Water Facilities #15, 17 and the facility at Wagaraw Road are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These facilities are in a floodplain or flood prone area but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Water Facilities #12, 25, 9, and the facility at 11<sup>th</sup> Street are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The PSE&G Substations at Legion, Nevins Road and Warren Point and the Radburn Train Station at Pollitt Drive are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Fair Lawn Water Facility #11 is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under severe drought conditions.

The Fair Lawn Water Facility #16 is served by a water supply that is likely to fail under severe drought conditions. This facility is in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Fair Lawn Water Facility #19 is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is in a floodplain or flood prone area but has no prior history of flood damage. It is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Medco Health Systems, the Milnes School, The Radburn School and Nabisco Kraft Foods are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a

health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

St. Anne's Church, St. Anne's School, Valley Hospital Renal Care Center, the Warren Pint School, and Westmoreland School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Memorial Junior High School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This school is served by a water supply that is likely to fail under severe drought conditions. The school is in a flood plain or flood prone area and has experienced significant flood damage in the past. This property may also be a NFIP repetitive loss property. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the school. Economic losses due to such a storm would be substantial.

The Parks and Recreation Garage is located in a flood plain or flood prone area and has experienced significant flood damage in the past. This property may also be a NFIP repetitive loss property. The garage is in an area considered as low earthquake risk or has been constructed /retrofitted to comply

with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Thomas Jefferson Middle School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The school is served by a water supply that is likely to fail under severe drought conditions. The school is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

Well House is located in a floodplain or flood prone area and has experienced some limited flood damage in the past. This facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes.

### **Fairview Borough**

The Borough of Fairview has identified one critical facility. The Department of Public Works is served by a water supply that is likely to fail under severe drought conditions. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. It is located in a floodplain or flood prone area and has experienced some limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility.

Economic losses due to such a storm would be moderate.

### **Fort Lee Borough**

The Borough of Fort Lee has identified 47 critical facilities. The 12<sup>th</sup> Street Pump Station, The DPW, Fort Lee High School, the Jewish Community Center, and the OEM Office are in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes.

505 North Avenue, the Church of the Good Shepard and the Fort Lee Borough Hall are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes.

The Advent Lutheran Church, the Board of Education, the Judge Moor House, and the Madonna Chapel are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The George Washington Bridge, the Holy Trinity Church and School, and the Madonna Church and School, and the New Synagogue of Fort Lee are in an area considered as low earthquake risk or have

been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Firehouse #3 and the Fort Lee Range are not vulnerable to any natural hazards.

Firehouse #1, the Ambulance Corp., and Public School #2 - Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Port Authority, the Post Office, the Public Library, the Horizon Road Pump Station, the Stillwell Avenue Pump Station, the Senior Citizens Center, the Verizon Substation and the Youth Center are in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes.

The Lewis Cole Middle School and the Palisades Terrace Pump Station are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Bluff Road Pump Station is in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Firehouse #2 is in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms pose a health/safety risk to more than 50% of the population in the vicinity of this facility. Economic losses due to such a storm would extend beyond the impact area/timeframe.

Firehouse #4 is in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Fort Lee Historical Park is in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone.

The Fort Lee Parking Authority is in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. It is located in a storm surge area for a category

4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone.

The Police Department, Public School #1, and the Malcolm Towers Senior Housing are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Parks and Recreation Office is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes.

The PSE&G Substation is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The substation meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. These facilities are in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the

vicinity of the facility. Economic losses due to such a storm would be moderate.

Public School #2 is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Public School #3 is in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

The Valley Street Pump Station is in a flood plain or flood prone area but has no prior history of flood damage. It is located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes.

The Main Street Pump Station is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. It is located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Recreation Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and

essential external equipment is likely to be damaged. The center is located in a flood plain or flood prone area but has no prior history of flood damage. It is located in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

### **Franklin Lakes Borough**

The Borough of Franklin Lakes has identified 14 critical facilities. The Fire Headquarters, High Mountain Road School and Southside Firehouse are not vulnerable to any natural hazards.

Becton Dickson and Co. meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Colonial Road School, Woodside Avenue Grammar School and Franklin Avenue Middle School are each served by a water supply that is likely to fail under severe drought conditions. These schools are each located in an area considered as moderate earthquake risk, and have not been constructed/ retrofitted to comply with current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of each of the schools. Economic losses due to such a storm would be moderate.

The Franklin Lakes DPW and Police Department are each slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may

cause window/door failure, and essential external equipment is likely to be damaged. Each are served by a water supply that is likely to fail under severe drought conditions. These facilities are each located in an area considered as moderate earthquake risk, and have not been constructed/ retrofitted to comply with current earthquake codes.

The Franklin Lakes Borough Hall is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Franklin Lakes Public Library is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of the library, or possible economic losses would be substantial.

The Franklin Lakes Volunteer Ambulance Building meets the current code and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The facility is located in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Medco Health Solutions is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause

window/door failure, and essential external equipment is likely to be damaged. This facility served by a water supply that is likely to fail under severe drought conditions. The facility is located in an area considered as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

Ramapo Regional High School is located in an area considered as moderate earthquake risk, and have not been constructed/ retrofitted to comply with current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the high school. Economic losses due to such a storm would be moderate.

**Garfield City**

The City of Garfield has identified 43 critical facilities. The following critical facilities are not vulnerable to any natural hazards:

1. Belmont Gardens
2. Garfield Boys & Girls Club
3. Garfield DPW
4. Garfield Health Department
5. Garfield Public Safety Building
6. Garfield Recreation Center
7. Garfield Senior Center
8. Garfield Water Works Botany Street Pump Station
9. Garfield Water Works Water Storage Tanks
10. Garfield Water Works Well 1A
11. Daniel P. Conte Court Complex
12. Federation of Multicultural Programs of NJ
13. Garfield City Hall
14. Garfield Communications Building

15. Garfield Fire Companies #1, 2, 3 and 5
16. Garfield Police Department
17. Garfield Senior Housing
18. Garfield Volunteer Ambulance Corp.
19. Golden Age Tower
20. Muscarelle Day Care Center
21. NIPD-NJ Group Home
22. Northeast Christian Academy
23. PSCH Group Home
24. The YMCA/Bright Beginnings Day Care Center

Garfield Fire Company #4 is located in a floodplain or flood prone area, but has no prior history of flood damage.

Garfield High School, Garfield Middle School, and the Pre-School Annex are each vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of each of the schools. Economic losses due to such a storm would be moderate.

The following public schools in Garfield are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of each of the schools. Economic losses due to such a storm would be moderate:

1. Public School #4
2. Public School #4 Annex
3. Public School #5
4. Public School #6
5. Public School #7
6. Public School #8
7. Public School #10

The PSE&G Electric Substation is vulnerable to high winds due to wall opening size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. This facility is located in a floodplain or flood prone area and has

experience d limited flood damage in the past. The substation is located in a category 1 or 2 hurricane surge zone, or well inside a designated tsunami risk zone, or has experienced prior surge/tsunami damage.

The Reed Academy is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of the school. Economic losses due to such a storm would be moderate.

### **Glen Rock Borough**

The Borough of Glen Rock has identified two critical facilities. The Municipal Complex is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the facility. Economic losses due to such a storm would be moderate.

The Ridgewood Pollution Plant is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The plant is located in a floodplain or flood prone area, and has experienced limited flood damage in the past. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of the plant. Economic losses due to such a storm would be moderate.

### **Hackensack City**

The City of Hackensack has identified five critical facilities. Additionally, Bergen County has identified six critical facilities located in the City of Hackensack. These will be discussed first, followed by the critical facilities identified by the City of Hackensack.

The Bergen County Administrative Garage is located in a floodplain or flood prone area, and has and has experienced limited flood damage in the past. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

One Bergen County Plaza is located in a flood plain or flood prone area but has no prior history of flood damage. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

The Bergen County DPW Operations facility, the Bergen County Jail Annex, the Bergen County Justice Center and the Bergen County Police Headquarters and Garage are each located in a floodplain or flood prone area and each has experienced significant flood damage, or the property is an NFIP repetitive loss property. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

Ever Ready Oil is located in a flood plain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

PSE&G is located in a floodplain or flood prone area, and has and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Hackensack Department of Public Works and PSE&G Substation are each located in a flood plain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of each of these facilities. Economic losses due to such a storm would be moderate.

Regent Care is located in a flood plain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Harrington Park Borough**

The Borough of Harrington Park has identified eight critical facilities. The Community Church and Shelter, and Our Lady of Victories Church and Shelter are not vulnerable to any natural hazards.

The Harrington Park DPW Building is served by a water supply that is likely to fail under sever drought conditions. The facility is located in a floodplain or flood prone area that has experienced some limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Harrington Park Fire & Ambulance Building and Police Station are each vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Harrington Park Municipal Building is located in a floodplain or flood prone area that has experienced some limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Harrington Park Public School and Shelter, and St. Andrew's Church are each vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of each of these facilities. Economic losses due to such a storm would be moderate.

### **Hasbrouck Heights Borough**

The Borough of Hasbrouck Heights has identified 12 critical facilities. The following critical facilities are not vulnerable to any natural hazards:

1. Corpus Christi School
2. Euclid School
3. Hasbrouck Heights Junior/Senior High School
4. Hasbrouck Heights Municipal Building (and shelter)
5. Hasbrouck Heights Public Safety Building
6. Kathy Dunn Cultural Center
7. Lincoln School
8. Methodist Nursery School
9. New World Montessori School

The Franklin Sewage Pumping Station is vulnerable to high winds due to wall opening size/lack of protection, roof

configuration and/or several nearby trees, and essential external equipment is vulnerable. It is served by a water supply that is likely to fail under severe drought conditions. The facility is located in a floodplain or flood prone area that has experienced some limited flood damage in the past.

The Hasbrouck Heights DPW Yard located in a floodplain or flood prone area that has experienced some limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The PSE&G Power Substation is in a floodplain or flood prone area but has no prior history of flood damage.

### **Haworth Borough**

The Borough of Haworth has identified seven critical facilities. The Haworth Ambulance Corps is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. It meets current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The facility is located in a floodplain or flood prone area, and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Haworth DPW Buildings #1 and 2 each meet current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. These facilities are located in a

floodplain or flood prone area, and have experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of each of these facilities. Economic losses due to such a storm would be moderate.

The Haworth Fire Station is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. It is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Haworth Municipal Complex is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility is served by a water supply that is likely to fail under conditions of severe drought. It meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The structure is in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. It is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Haworth School is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The United Water Treatment Facility and Reservoir meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The structure is in a floodplain or flood prone area but has no prior history of flood damage. It is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to greater than 50% of the population in the vicinity of this facility. Economic losses due to such a storm would extend beyond impact area/timeframe.

#### **Hillsdale Borough**

The Borough of Hillsdale has identified three critical facilities. The Hillsdale DPW is served by a water supply that is likely to fail under conditions of severe drought. The structure is in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The PSE&G Electric Substation The structure is in a floodplain or flood prone area but has no prior history of flood damage. It is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this

facility. Economic losses due to such a storm would be moderate.

The Woodcliff Lake Dam meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility's water supply is predicted to fail under moderate drought conditions, or significant water supply problems have been experienced. The dam is in a floodplain or flood prone area and has experienced limited flood damage in the past. It is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with soils prone to landslide or erosion, and/or is in a potential avalanche runout zone; with no history of damage.

#### **Ho-Ho-Kus Borough**

The Borough of Ho-Ho-Kus has identified 30 critical facilities. The Bogert Road Sewer Station, the Bogert Road Well #2, the Verizon Switching Station and the Hollywood Avenue Well #1 are each located in a floodplain or flood prone area and have experienced limited flood damage in the past. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

The Brookview Sewer Station, Cellular Tower, DPW Facility, and Ho-Ho-Kus Wells #4 and #5 are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of each of these facilities. Economic losses due to such a storm would be moderate.

The Ho-Ho-Kus Ambulance Corps and the Ho-Ho-Kus Borough Hall are each vulnerable to high wind due to wall opening

size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. The facilities are located in a floodplain or flood prone area but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Monitoring Station and the Mill Road Bridge are located in a floodplain or flood prone area and have experienced significant flood damage, or the property is a NFIP repetitive loss property.

The Northwest Bergen Pump Station and the Railroad Viaduct are in a flood plain or flood prone area, and have experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Radio Communications Facility, Train Station and Fire Alarm Audio System, and Sheridan Avenue Well #6 are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The ECLC School and the Ho-Ho-Kus Public School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

The Ho-Ho-Kus Fire Department and Ho-Ho-Kus Police Department are each vulnerable to high wind due to wall opening size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. The facilities are located in a floodplain or flood prone area but have no prior history of flood damage. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

The Community Church is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The church is located in a floodplain or flood prone area but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Brewster Dams are located in a floodplain or flood prone area but have no prior history of flood damage.

The Fiber Optic Phone Trunk Station is located in a floodplain or flood prone area but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Hermitage is vulnerable to high winds due to wall opening size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. This facility does not meet the current fire code, is in/ adjacent to large vegetated areas, and has inadequate access

and/or separation from other structures. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Ho-Ho-Kus Inn is vulnerable to high winds due to wall opening size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. The structure is in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Maple Avenue Bridge is in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

St. Bartholomew's Episcopal Church is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Water Storage System is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the

vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Leonia Borough**

The Borough of Leonia has identified eight critical facilities. The following critical facilities are not vulnerable to any natural hazards:

1. Borough Hall
2. Leonia Recreation/Shelter
3. Leonia Senior Housing
4. Public Safety Complex

The Anna C. Scott School, the Leonia Middle School, and the St. John's School are each vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Leonia High School is located in a flood plain or flood prone area, but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Little Ferry Borough**

The Borough of Little Ferry has identified 18 critical facilities. The Bergen County Utilities Authority is located in a flood plain or flood prone area, but has no prior history of flood damage. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. The facility is also on a sloping or waterside site with moderate vulnerability to landslide or erosion, and/or is near but not in an avalanche runout zone.

The Early Learners Child Center meets the current code, and is not close to heavily vegetated areas, but access and/or separation

from nearby structures increases fire risk. The structure is in a floodplain or flood prone area but has no prior history of flood damage. It is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Eckel Road Pump Station is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Little Ferry DPW is vulnerable to high wind due to wall opening size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Little Ferry Hose Co. Fire Department is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures

increases fire risk. The structure is in a floodplain or flood prone area but has no prior history of flood damage. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Little Ferry Library is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The library is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Little Ferry Municipal Building is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. The facility is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a

health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Little Ferry Nursery School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The structure is in a floodplain or flood prone area but has no prior history of flood damage. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

The Little Ferry Public Safety Building is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Losen Slote Drain Station meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The facility is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is a

NFIP repetitive loss property. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone.

The Maiden Lane Drain Station, the Union Avenue Pump Station, the Williams Street Drainage Station and the Main & Franklin Pump Station are each located in a flood plain or flood prone area and has experienced limited flood damage in the past. The facility is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of each of these facilities. Economic losses due to such a storm would be moderate.

The Main Street Pump Station is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The facility is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage. The pump station is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of each of these facilities. Economic losses due to such a storm would be moderate.

The Memorial School and Washington School are each slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. Each structure

is in a floodplain or flood prone area but has no prior history of flood damage. The facilities are located in a storm surge area for a category 4 or 5 hurricane, or are located at the edge of a designated tsunami risk zone. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

Public Service Electric is in a floodplain or flood prone area but has no prior history of flood damage. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Scientific Design is vulnerable to high wind due to wall opening size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The facility is located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Willow Lake Pump Station is in a floodplain or flood prone area but has no prior history of flood damage. The facility is located in a storm surge area for a category

4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. The pump station is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Yankee Propane meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Depyster Creek Pump Station is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. The pump station is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility.

Economic losses due to such a storm would be moderate.

The Little Ferry Hook & Ladder Fire Department meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone.

### **Lodi Borough**

The Borough of Lodi has identified six critical facilities. The DPW Yard is vulnerable to high wind due to wall opening size/lack of protection, roof configuration and/or several nearby trees, and essential external equipment is vulnerable. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The facility is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Lodi Borough Hall is located in a flood plain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Lodi FD Engine 614 is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the

population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Lodi Fire Headquarters is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The LVAC-Lodi EMS Headquarters is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The structure is in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Washington School is very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings can be expected to fail. The facility is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

**Lyndhurst Township**

The Township of Lyndhurst has identified 18 critical facilities. The following critical facilities are not vulnerable to any natural hazards:

1. Carucci Apartments for Seniors
2. First Care Medical Center
3. Lyndhurst Fire Department
4. Lyndhurst High School
5. Lyndhurst Police Emergency Squad
6. Omega Plastics
7. Polyurethane Specialties of Delaware
8. Sacred Heart School
9. Sacred Heart Social Center
10. South Bergen Jointure Commission
11. Lyndhurst Parks Dept. and DPW
12. Lyndhurst Police Department
13. Lyndhurst Senior Center
14. Lyndhurst Town Hall

The Lyndhurst Pump Stations 31, 2, 3 and 4 are each located in a floodplain or flood prone area, but have no prior history of flood damage. These facilities are each located in a Category 1 or 2 hurricane surge zone, or well inside a designated tsunami risk zone, or have experienced prior surge/tsunami damage.

**Mahwah Township**

The Township of Mahwah has identified 28 critical facilities. The Betsy Ross School and Stryker Orthopedics are each served by a water supply that is likely to fail under sever drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Deerhaven Road is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes.

The Mahwah DPW is meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The DPW is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Ford Water Wells #4 is located in a floodplain or flood prone area, but have no prior history of flood damage. This facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. The facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone.

The George Washington School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under sever drought conditions. The school is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

International Crossroads is served by a water supply that is likely to fail under sever drought conditions. This facility meets the

current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Joyce Kilmer School is served by a water supply that is likely to fail under severe drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The school is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes.

The Lenape Meadow School and Ramsey Fuel Oil each meet the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. These facilities are located in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Mahwah Ambulance Co #1, #4, and the Mahwah Fire Company #2, 4 and 5 slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are each in an area considered as moderate earthquake risk and have not been

constructed/ retrofitted to comply with the current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Mahwah Fire Co #3 slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is in an area considered as moderate earthquake risk and has not been constructed/ retrofitted to comply with the current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Mahwah Fire Co #1 meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is in an area considered as moderate earthquake risk and has not been constructed/ retrofitted to comply with the current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Mahwah High School is served by a water supply that is likely to fail under severe drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. The school is located in an area considered as low earthquake risk or has been

constructed /retrofitted to comply with the current earthquake building codes. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

Mahwah Police Department is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Mahwah Public Works Garage is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. It is located in a floodplain or flood prone area, but has no prior history of flood damage. This facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Route 202 at Brook Street and Franklin Street are located in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes.

Ramapo College is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under sever drought

conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Mahwah Town Hall is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes.

The UPS Data Center is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes.

Youngs Road, Glen Gray Road and Halifax Road are located in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes.

### **Maywood Borough**

The Borough of Maywood has identified one critical facility. The Senior Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Midland Park Borough**

The Borough of Midland Park has identified 11 critical facilities. The Midland Park Borough Hall/Police Headquarters, Midland Park High School, Mill Gardens Assisted Living, and Midland Park Ambulance Corps are each slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Midland Park DPW Garage is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. It is located in a floodplain or flood prone area, but has no prior history of flood damage. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone.

The DEP Dam is served by a water supply that is likely to fail under sever drought conditions. It is located in a floodplain or flood prone area, but has no prior history of flood damage. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone.

The Godwin School and Highland School are each slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These schools meet the current code, and are not close to heavily vegetated areas, but

access and/or separation from nearby structures increases fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Kentshire Apartments are each slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. They are located in a floodplain or flood prone area, but have no prior history of flood damage. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Verizon/T-Mobile Cell Towers are each located in a flood plain or flood prone area and have experienced limited flood damage in the past.

### **Montvale Borough**

The Borough of Montvale has identified one critical facility. The Orange/Rockland Electric Substation is located in a floodplain or flood prone area, but has no prior history of flood damage. This facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Moonachie Borough**

The Borough of Moonachie has identified 11 critical facilities. The Civic Center is

slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Concord Street and Lincoln Place Pump Stations and Crest Foam are located in a flood plain or flood prone area and have experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Moonachie DPW is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Moonachie Avenue and Moonachie Road Pump Stations are located in a flood plain or flood prone area and have experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Moonachie Fire Department is in a flood plain or flood prone area and has experienced significant flood damage in the past. This property may also be a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility.

Economic losses due to such a storm would be moderate.

The Municipal Building is located in a flood plain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Moonachie First Aid Squad and Robert L. Craig School are located in a flood plain or flood prone area and have experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

#### **New Milford Borough**

The Borough of New Milford has identified 22 critical facilities. Ascension School-Transfiguration Academy, the B.F. Gibbs Public School, and the Berkley Street School are vulnerable to winter storms, which may pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

The New Bridge Road Bridge is not vulnerable to any natural hazards.

The Institute for Educational Achievement and the New Milford Middle School are vulnerable to winter storms, which may pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

New Bridge Road is located in a flood plain or flood prone area but has no prior history of flood damage. The roadway is located in a storm surge zone for a Category 3

hurricane, or it is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The New Milford DPW is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The DPW facility is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

St. Joseph's School (upper grades), the Solomon Schechter Day School of Bergen County, and the Hovnanian Armenian School of NJ are vulnerable to winter storms, which may pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

The New Milford High School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The high school is located in an area considered as low earthquake risk or has been constructed

/retrofitted to comply with the current earthquake building codes. The high school is located in a storm surge zone for a Category 3 hurricane, or it is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

The PSE&G Substation and Electric Switching Station is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The station is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

The New Milford Municipal Building is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The New Milford Volunteer Ambulance Corps is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk.

The New Milford Volunteer Fire Department Company #1 and #2 are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged.

River Road is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. It is located in a floodplain or flood prone area, but has no prior history of flood damage. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

The Sunbridge Care and Rehabilitation Center is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The United Water Resource Landscaping Yard is meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The yard is located in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes.

### **North Arlington Borough**

The Borough of North Arlington has identified 12 critical facilities. The Daniel Morris Firehouse #1 meets the current code,

and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. The facility is on a sloping/waterside site with soils prone to landslide or erosion, and/or is in a potential avalanche runout zone; with no history of damage. It is also located in a storm surge zone for a Category 3 hurricane, or it is located just inside a designated tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Jefferson School, North Arlington High School, and North Arlington Middle School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These schools meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk.

The North Arlington Borough Hall/Police Station is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. This facility is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The North Arlington DPW and North Arlington/Lyndhurst Joint Waster Water are located in a flood plain or flood prone area

and have experienced limited flood damage in the past. These facilities are each located in a storm surge zone for a Category 3 hurricane, or it is located just inside a designated tsunami risk zone, but has no prior damage. These facilities are on sloping/waterside sites with moderate vulnerability to landslide or erosion, and/or are near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The North Arlington Health and Senior Center is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. This facility is served by a water supply that is likely to fail under moderate drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The PSE&G Power Sub-Station (North Arlington) is served by a water supply that is likely to fail under severe drought conditions. This facility is located in a flood plain or flood prone area and has experienced limited flood damage in the past. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is located in a storm surge zone for a Category 3 hurricane, or it is located just inside a designated tsunami risk zone, but has no prior damage. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or

it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

St. Paul's Church is served by a water supply that is likely to fail under severe drought conditions. The church is vulnerable to winter storms, which may pose a health/safety risk to 25-50% of the population in the vicinity of these facilities, or possible economic losses would be substantial.

The Washington School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The school is served by a water supply that is likely to fail under moderate drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Williams Transco Natural Gas Pipeline is located in a floodplain or flood prone area, but has no prior history of flood damage.

#### **Northvale Borough**

The Borough of Northvale has identified 10 critical facilities. The following critical facilities are not vulnerable to any natural hazards:

1. Northvale Borough Hall
2. Northvale Fire Department
3. Northvale Police Department

4. Northvale Volunteer Ambulance Corps
5. Spectrum for Living
6. Tennessee Gas Pipeline

The BCUA Sanitary Sewer Pump Station and Northvale Sanitary Pump Station meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. These facilities are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Thomas Jefferson School is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

#### **Norwood Borough**

The Borough of Norwood has identified eight critical facilities. Buckingham at Norwood-Care and Rehab Center, the Norwood Ambulance Building and the Norwood Borough Hall are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Norwood Fire House is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility meets the current code, and is not close to heavily vegetated areas, but access

and/or separation from nearby structures increases fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Norwood DPW, Police Station, Police Station-EOC and Norwood Public School are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

#### **Oakland Borough**

The Borough of Oakland has identified six critical facilities. None of the following critical facilities are vulnerable to natural hazards:

- Oakland DPW Facility
- Oakland Fire Department Station #1
- Oakland Fire Department Station #2
- Oakland First Aid Squad
- Oakland Municipal Building
- Oakland Police Headquarters

#### **Old Tappan Borough**

The Borough of Old Tappan has identified 35 critical facilities. The Bank of America, Kearny Federal Savings Bank, KinderCare Learning Center, and T. Baldwin Demarest School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These facilities are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk

to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Old Tappan Sewer Pump Stations #2, 3, 4, 5 and 6 are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Bi-State Plaza Shopping Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The center is served by a water supply that is likely to fail under severe drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the center. Economic losses due to such a storm would be substantial.

The Old Tappan Sewer Pump Station #1 is in a flood plain or flood prone area and has experienced limited flood damage in the past. This facility is are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Charles Dewolf Middle School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The school is served by a water supply that is likely to fail under severe drought conditions. The school is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Korean Presbyterian Church of the Palisades, the Old Tappan Senior Housing, the Old Tappan DPW, the Old Tappan First Aid Corps and the Old Tappan Fire Headquarters are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. These facilities are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Lake Tappan is served by a water supply that is likely to fail under severe drought conditions. This facility is located in a floodplain or flood prone area, and has

experienced limited flood damage in the past. This facility is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Lake Tappan Dam is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facility is served by a water supply that is likely to fail under severe drought conditions. This facility is in a floodplain or flood prone area but has no prior flood damage. The facility is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. The facility is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Northern Valley Regional High School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The school is served by a water supply that is likely to fail under severe drought conditions. The school is in an area considered as low earthquake risk or has

been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the School. Economic losses due to such a storm would be substantial.

The Tennessee Gas Pipeline and the Williams Transco Gas Pipeline are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are located in a floodplain or flood prone area, but have no prior history of flood damage. These facilities are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. These facilities are on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or are near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Old Tappan Borough Hall is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under severe drought conditions. This facility is in a floodplain or flood prone area but has no prior flood damage. This facility is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the

vicinity of this facility. Economic losses due to such a storm would be moderate.

The Old Tappan Exxon is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The school is served by a water supply that is likely to fail under severe drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is in a floodplain or flood prone area but has no prior flood damage. These facilities are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Old Tappan Public Library, Prince of Peach Church, St. Pius X Church, Tom's Automotive Specialists, and Trinity Reformed Church are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. These facilities are in an area considered as low earthquake risk or have been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these

facilities. Economic losses due to such a storm would be moderate.

The Old Tappan Police Headquarters is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. The Police HQ is served by a water supply that is likely to fail under severe drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. This facility is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of this facility. Economic losses due to such a storm would be substantial.

Pearson Publishing is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under severe drought conditions. This facility is in an area considered as low earthquake risk or has been constructed /retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Rockland Electric (Con Ed) Substation is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated

areas, but access and/or separation from nearby structures increases fire risk. This facility is in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of this facility. Economic losses due to such a storm would be substantial.

Sunrise Assisted Living is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. This facility is served by a water supply that is likely to fail under moderate drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increases fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Oradell Borough**

The Borough of Oradell has identified five critical facilities. The Oradell Fire Headquarters is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Oradell Public Works is in a flood plain or flood prone area and has experienced significant flood damage in the past. This property may also be a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the

population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The New Jersey Transit Bus Garage is located in a flood plain or flood prone area and has experienced significant flood damage in the past. This facility is located in an area considered as high earthquake risk and has not been constructed/retrofitted to comply with the current earthquake codes. This property may also be a NFIP repetitive loss property. This facility is located in a storm surge zone for a Category 3 hurricane, or it is located just inside a designated tsunami risk zone, but has no prior damage.

The Oradell Police Headquarters and EOC are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of these facilities. Economic losses due to such a storm would be substantial.

The PSE&G Gas Distribution Facility is in a flood plain or flood prone area and has experienced significant flood damage in the past. This property may also be a NFIP repetitive loss property. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of this facility. Economic losses due to such a storm would be substantial.

### **Palisades Park Borough**

The Borough of Palisades Park has identified 15 critical facilities. The Palisades Park Board of Education, Palisades Park Borough Hall, Central Bible Church and First Presbyterian Church are served by a water supply that is likely to fail under moderate drought conditions. Winter

storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Palisades Park DPW and Time Warner cable are served by a water supply that is likely to fail under moderate drought conditions. These facilities are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Palisades Park Ambulance Corps, Grace Lutheran Church, Korean Presbyterian Church, Lindbergh Elementary School and Notre Dame Interparochial School are served by a water supply that is likely to fail under moderate drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Palisades Park Fire House, Senior Center, Palisades Park Jr/Sr High School and St. Nichols Pre-School are served by a water supply that is likely to fail under moderate drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

**Paramus Borough**

The Borough of Paramus has identified 32 critical facilities. Additionally, Bergen County has identified two critical facilities located in the Borough of Paramus. These will be discussed first, followed by the critical facilities identified by the Borough of Paramus.

The Bergen County Medical Examiner’s Office is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

The Bergen County Office of Emergency Management is located in a floodplain or flood prone area and has experienced limited flood damage in the past.

The following critical facilities are not vulnerable to any natural hazards:

1. Radio Antenna/Repeater Site (Fairview & Carlough)
2. Radio Antenna/Repeater Site (Garden State Plaza)
3. Radio Antenna/Repeater Site (Police HQ)
4. Radio Antenna/Repeater Site (Rescue Bldg)
5. Sewer Pump Station (Prospect Street)
6. Sewer Pump Station (Route 17)

The Paramus Ambulance Building, Emergency Operations Center, and Fire Station Companies #1, 2, 3 and 4 are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged.

The Arcola Power Substation, Orchard Hills Power Substation and Paramus Park Power Substation are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities meet the current code, and are not close to heavily vegetated areas, but

access and/or separation from nearby structures increase fire risk. These facilities are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Paramus Borough Hall, Police Headquarters and Rescue Squad are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged.

The Paramus DPW and Radio Antenna/Repeater Site (US Cable) are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are located in a floodplain or flood prone area, but have no prior history of flood damage.

The Bergen Regional Medical Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The medical center meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Radio Antenna/Repeater Sites at GW Cemetery, PFD #1, PFD #2 and PFD #4 are

slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged.

The Sewer Pump Stations at Grove Street and Southcrest Drive are located in a floodplain or flood prone area and have experienced limited flood damage in the past.

The Spring Valley Road Power Substation and Woodland Ave Power Substation are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. These facilities are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Sewer Pump Station at Dunderhook Road is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a floodplain or flood prone area and has experienced limited flood damage in the past.

The Sunrise Assisted Living Center is served by a water supply that is likely to fail under moderate drought conditions. This facility is located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current

earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Park Ridge Borough**

The Borough of Park Ridge has identified six critical facilities. The Park Ridge Borough Hall, DPW/Water/Electric and Fire Department are each located in a floodplain or flood prone area, but have no prior history of flood damage. These facilities are each located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes.

The Park Ridge High School is located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes.

The Park Ridge Police Headquarters/Triboro Radio EOC and Triboro Ambulance are each located in a floodplain or flood prone area, but have no prior history of flood damage. These facilities are each located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes.

### **Ramsey Borough**

The Borough of Ramsey has identified nine critical facilities. The Ramsey Ambulance Corps is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under moderate drought conditions. This facility is located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes.

Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Eric Smith School and Shelter, The Ramsey Fire Department, the Ramsey Rescue Squad and Ramsey High School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Ramsey DPW Garage and Ramsey Police Department are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facilities are located in an area considered as moderate earthquake risk, and has not been constructed/retrofitted to comply with current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Ramsey Municipal Building is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This

facility is located in an area considered as moderate earthquake risk, and has not been constructed/ retrofitted to comply with current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Ramsey Public Library is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The library meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area, but has no prior history of flood damage. This facility is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Ridgefield Borough**

The Borough of Ridgefield has identified 24 critical facilities. The English Neighborhood Reform Church, Ridgefield Ambulance Corps, and Ridgefield DPW are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The PSE&G Generating Station and PSE&G Substation are located in a floodplain or flood prone area, but have no prior history of flood damage.

Ridgefield Fire Houses #1 and #2 are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Ridgefield Borough Hall is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Ridgefield Community Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Ridgefield Fire House #3 is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Ridgefield Memorial High School, Ridgefield Bergen Boulevard School, Shaler Boulevard School, and Slocum Skews School are vulnerable to winter storms,

which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The United Water Tanks and Transcontinental Pipeline are not vulnerable to any natural hazards.

The Freight Railroad (all) is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The New Jersey Turnpike, and NJ State Highway 46 (all) meet the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Wolf Creek Culverts (all) are located in a flood plain or flood prone area and have experienced limited flood damage in the past. The culverts are on a sloping or waterside site highly vulnerable to landslide or erosion, and/or are in a predicted avalanche runout zone, or have a history of such damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

### **Ridgefield Park Village**

The Village of Ridgefield has identified 19 critical facilities. Active Chemical Co. #4, Friendship Hook & Ladder Co. #1, and Hazelton Truck Co. #2 are vulnerable to

high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. The facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Callahan Chemical Co. and Dowling Fuel Co. are vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. These facilities are located in a floodplain or flood prone area, but have no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Knights of Columbus, Elks Club and Police Department, Municipal Building, OEC are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Hose Co. #1, Overpeck Engine Co. #2, and Westview Hose Co. #3 are vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. The facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk.

Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Ridgefield Park Grant School, High School, Lincoln School, Roosevelt School and St. Francis School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The EMS, Rescue, Fire Chiefs Backup EOC is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The NYS&W Fuel Depot is very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings can be expected to fail. This facility does not meet current fire code, is in/ adjacent to large vegetated areas, and has inadequate access and/or separation from other structures. This facility is located in a floodplain or flood prone area, but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this

facility. Economic losses due to such a storm would be moderate.

The Ridgefield Park DPW is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a floodplain or flood prone area, but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Ridgewood Village**

The Village of Ridgewood has identified 14 critical facilities. The Carr Water Well System Building is located in a floodplain or flood prone area, and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Ridgewood Fire Dept. Headquarters, Parks Building and Water Building are each located in a floodplain or flood prone area but none of the facilities has a prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Ridgewood Village Hall/Police Station is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility.

Economic losses due to such a storm would be moderate.

The Sewer Pump Stations at Bellair Road, Franklin Turnpike and Lake Avenue are each located in a floodplain or flood prone area but none of the facilities has a prior history of flood damage.

The Water Well Pumps at Grove Street, Lakeview Drive, Linwood & Northern Parkway, Ridgewood Avenue, Saddle River Road and Spring Street are located in a floodplain or flood prone area, and have experienced limited flood damage in the past.

### **River Edge Borough**

The Borough of River Edge has identified 11 critical facilities. Cherry Hill School is not vulnerable to any natural hazards.

The River Dell Middle School, River Edge Ambulance Corps and River Edge Police Department are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

PSE&G and the River Edge Fire Dept. Co. #2 are each located in a floodplain or flood prone area, and have experienced limited flood damage in the past.

Roosevelt School, St. Peter's School and Yeshiva of NJ are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The River Edge Municipal Building is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause

window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Von Steuben House is located in a floodplain or flood prone area, and has experienced limited flood damage in the past. This facility is located in a storm surge zone for a Category 3 hurricane or is located at the edge of a tsunami risk zone, but has no prior damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **River Vale Township**

The Township of River Vale has identified 10 critical facilities. The Ambulance Corps, Police Headquarters, Public Works Garage and South Fire Station are each located in a floodplain or flood prone area but have no prior history of flood damage.

The Holdrum Middle School, Roberge School and Woodside School are not vulnerable to any natural hazards.

Lake Tappan, the North Fire Station and the Town Hall are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

### **Rochelle Park Township**

The Township of Rochelle Park has identified five critical facilities. The Bristol Manor Nursing Home, Fire/EMS/DPW

Headquarters and Ramada Inn are located in a floodplain or flood prone area and have experienced significant flood damage, or the property is a NFIP repetitive loss property. These facilities are located in an area considered as moderate earthquake risk, and has not been constructed/ retrofitted to comply with current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Township Offices/EOC and Police/EOC are located in a floodplain or flood prone area and have experienced significant flood damage, or the property is a NFIP repetitive loss property. These facilities are located in an area considered as moderate earthquake risk, and have not been constructed/ retrofitted to comply with current earthquake codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

#### **Rockleigh Borough**

The Borough of Rockleigh has identified one critical facility. The Jewish Home is not vulnerable to any natural hazards.

#### **Rutherford Borough**

The Borough of Rutherford has identified one critical facility. The Rutherford Police Headquarters and Emergency Operations Center (EOC) is has equipment or services that could be damaged by large hail, but operation of the facility would not be disrupted. The facility could suffer some damage or minor operational disruption from a winter storm.

#### **Saddle Brook Township**

The Township of Saddle Brook has identified four critical facilities. The

Brookwood Convalescent Home, the Kessler Institute and St. Philips School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The facilities are each located in a floodplain or flood prone area and each has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Saddle Brook High School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a floodplain or flood prone area, and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

#### **Saddle River Borough**

The Borough of Saddle River has identified six critical facilities. The Brighton Gardens Assisted Care Facility, Saddle River Day School and Saddle River Municipal Building are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities.

Economic losses due to such a storm would be moderate.

The Saddle River Public Safety Complex, Wandell School and Villa Marie Assisted Care Facility are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

### **South Hackensack Township**

The Township of South Hackensack has identified ten critical facilities. Calicooneck Road is very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings can be expected to fail. This facility is served by a water supply that is likely to fail under severe drought conditions. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Grove Street Sewage Station and Saddle River Avenue Sewage Station are each located in a floodplain or flood prone area, and each has experienced limited flood damage in the past. These facilities are located in a storm surge area for a category 4 or 5 hurricane, or are located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of

these facilities. Economic losses due to such a storm would be moderate.

The J. Josephson Company is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a floodplain or flood prone area, but has no prior history of flood damage. It is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Leuning Street is very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings can be expected to fail. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area, and each has experienced limited flood damage in the past. Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

Phillips Avenue is very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings can be expected to fail. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is served by a water supply that is likely to fail under severe drought conditions. This facility is located in a floodplain or flood prone area, and each has

experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Restaurant Depot meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area, but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The US Post Office is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a floodplain or flood prone area, but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Vreeland Avenue is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is located in a floodplain or flood prone area, and each has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Wesley Street is very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings

can be expected to fail. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area, and each has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Teaneck Township**

The Township of Teaneck has identified six critical facilities. The DPW Yard does not meet the current code, and is in or adjacent to large vegetated areas, and has inadequate access and/or separation from other structures. The plant is located in a floodplain or flood prone area and has experienced limited flood damage in the past. The plant is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes.

The Teaneck Fire Department Headquarters does not meet the current code, is in/adjacent to vegetated areas, with access limitations/structure separation that make fire suppression difficult. The plant is also located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Holy Name Hospital is served by a water supply that is likely to fail under severe drought conditions. The hospital is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building

codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Teaneck Municipal Building is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. It does not meet the current code, and is in or adjacent to large vegetated areas, and has inadequate access and/or separation from other structures. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Teaneck Police Headquarters does not meet the current code, and is in or adjacent to large vegetated areas, and has inadequate access and/or separation from other structures. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Pump Station is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. This facility is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone.

### **Tenafly Borough**

The Borough of Tenafly has identified 20 critical facilities. The Franciscan Sisters Convent, Lubavich on the Palisades, Tenafly Borough Hall and Richard Street Sewage Pump Station are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the

vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Cell Tower is located in a floodplain or flood prone area but has no prior history of flood damage.

The Country Manor Nursing Home is in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Fiber Optic Network is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

J. Spencer Smith Elementary School, Jewish Community Center on the Palisades, Malcolm Mackay Elementary School and Ralph Maugham Elementary School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Tenafly Fire Department and Volunteer Ambulance Corps are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The SMA Fathers African Mission, Tenafly High School, Tenafly Middle School and Walter Stillman Elementary School are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Verizon Switching Center is not vulnerable to any natural hazards.

The Tenafly DPW is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Tenafly Police Department is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Teterboro Borough**

The Borough of Teterboro has identified five critical facilities. Additionally, Bergen County has identified one critical facility located in the Borough of Teterboro. This will be discussed first, followed by the critical facilities identified by the Borough of Teterboro.

The Bergen County Animal Center is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is an NFIP repetitive loss property.

Winter storms pose a health/safety risk to 25-50% of the population in the vicinity of this facility, or possible economic losses would be substantial.

The Bergen Technical High School, Teterboro Municipal Building and Teterboro Airport are located in a floodplain or flood prone area and have experienced limited flood damage in the past. These facilities are located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Public Works Facility is located in a floodplain or flood prone area and has experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Sewer & Storm Water Pumping Station is located in a floodplain or flood prone area and has experienced limited flood damage in the past. These facilities are located in an area considered as low earthquake risk or has been constructed/retrofitted to comply with the current earthquake building codes.

### **Upper Saddle River Borough**

The Borough of Upper Saddle River has identified one critical facility. The Municipal Complex is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Waldwick Borough**

The Borough of Waldwick has identified 33 critical facilities. The following critical facilities are not vulnerable to any natural hazards:

1. PSE&G Substation
2. Traphagen Grammar School
3. Waldwick Ambulance Corps
4. Well (Hopper Avenue)
5. Well (Malcolm Street)
6. Well (Schuler Avenue)
7. Well (W. Prospect Street.)
8. Well (Whites Lane)

The 7<sup>th</sup> Day Adventist School, Borough Administration Building, Company #2 Fire House, Crescent Grammar School and Emergency Operations Center are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Building Block Child Center, Department of Public Works, Rainbow Corners Cooperative Nursery, Forum School Small World Day Care Center, and Waldwick Middle/High School (Shelter) are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Crescent Avenue from start to end is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

Franklin Turnpike from start to end meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Little School is served by a water supply that is likely to fail under severe draught conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Northwest Bergen Utilities Authority is located in a floodplain or flood prone area and has experienced significant flood damage, or the property is a NFIP repetitive loss property.

Route 17 (start) is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Route 17 (end) is vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Village School and White Pond Dam are located in a floodplain or food prone area and have experienced limited flood damage in the past. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Waldwick Fire Company #1, Waldwick Middle/High School and Police Headquarters are vulnerable to winter storms, which may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Waldwick Train Station meets current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk.

### **Wallington Borough**

The Borough of Wallington has identified one critical facility. Farmland Dairies meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Washington Township**

The Township of Washington has identified 10 critical facilities. The Township of Washington Police Department and Police Department Communications are vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. The facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Immaculate Heart Academy, Jesse F. George School and Washington School are

each on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or are near but not in an avalanche runout zone. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Washington DPW, Municipal Building and Volunteer Ambulance Corps are vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Washington Volunteer Fire Department is vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. The fire department meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is on a sloping/waterside site with soils prone to landslide or erosion, and/or is in a potential avalanche runout zone; with no history of damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Westwood Jr./Sr. High School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility meets the current code, and is not

close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. This facility is located in a floodplain or flood prone area but has no prior history of flood damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Westwood Borough**

The Borough of Westwood has identified one critical facility. The Ketler School is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. The school is served by a water supply that is likely to fail under severe drought conditions. The facility is located in a floodplain or flood prone area that has experienced some limited flood damage in the past. These facilities are located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the School. Economic losses due to such a storm would be substantial.

### **Woodcliff Lake Borough**

The Borough of Woodcliff Lake has identified three critical facilities. The DPW Garage and Recycling Center is not vulnerable to any natural hazards.

The Borough Complex/Police and Fire Department are vulnerable to high winds, due to wall opening size or lack of protection, roof configuration and or several nearby trees, and essential external equipment is vulnerable. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities.

Economic losses due to such a storm would be moderate.

The Woodcliff Lake Reservoir Dam is located in a floodplain or flood prone area and has experienced limited flood damage in the past. The dam is on a sloping/waterside site with moderate vulnerability to landslide or erosion, and/or it is near but not in an avalanche runout zone.

### **Wood-Ridge Borough**

The Borough of Wood-Ridge has identified nine critical facilities. The Pump Stations at 10<sup>th</sup> Street, Anderson Avenue, and Arnot Place are located in a floodplain or flood prone area and has experienced limited flood damage in the past. These facilities are located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes.

Assumption Church, Assumption School, Catherine E. Doyle School and Wood-Ridge High School meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. These facilities are located in an area considered as low earthquake risk or have been constructed/retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Wood-Ridge Borough Hall is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility meets the current code, and is not close to heavily vegetated areas, but access

and/or separation from nearby structures increase fire risk. This facility is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Wood-Ridge DPW meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. The facility is located in a floodplain or flood prone area that has experienced some limited flood damage in the past. This facility is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. The facility is located in a category 1 or 2 hurricane surge zone, or well inside a designated tsunami risk zone, or has experienced prior surge/tsunami damage. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

### **Wyckoff Township**

The Township of Wyckoff has identified 14 critical facilities. The Christian Health Center is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility meets the current code, and is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to 25-50% of the population in the vicinity of the School. Economic losses due to such a storm would be substantial.

The Coolidge School, Eisenhower School and Wyckoff Public Library are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are served by a water supply that is likely to fail under severe drought conditions. These facilities meet the current code, and are not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Lincoln School, Washington School and Wyckoff YMCA are served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Sicomac School is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Town Hall/Police Department/ Communication Tower, Wyckoff Ambulance Corps Building, are slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. These facilities are located in an area considered

as low earthquake risk or have been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

Wyckoff Fire Co. #1 and #2 are served by a water supply that is likely to fail under severe drought conditions. These facilities are located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of these facilities. Economic losses due to such a storm would be moderate.

The Wyckoff DPW Building is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under severe drought conditions. Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

The Wyckoff Fire Co. #3 is slightly vulnerable to high winds due to wall opening size or lack of protection. In addition, high winds may cause window/door failure, and essential external equipment is likely to be damaged. This facility is served by a water supply that is likely to fail under severe drought conditions. This facility is located in an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes.

Winter storms may pose a health/safety risk to up to 25% of the population in the vicinity of this facility. Economic losses due to such a storm would be moderate.

**Table 19: Facility Vulnerability Assessment: Ranking Factors****Vulnerability to Flooding**

0	Structure is known to not be located in a flood plain or flood prone area
1	Structure is in a floodplain or flood prone area but has no prior history of flood damage
2	Structure is in a floodplain or flood prone area and has experienced some limited flood damage in the past
3	Structure is in a floodplain or flood prone area and has experienced significant flood damage or the property is an NFIP repetitive loss property

**Vulnerability to Storm Surge**

0	Structure is known to not be located in a storm surge or tsunami inundation area
1	Structure is located in a storm surge area for a category 4 or 5 hurricane, or is located at the edge of a designated tsunami risk zone
2	Located in a storm surge zone for a Category 3 hurricane or is located just inside a designated tsunami risk zone, but has no prior damage
3	Located in a Category 1 or 2 hurricane surge zone, or well inside a designated tsunami risk zone, or has experienced prior surge/tsunami damage

**Vulnerability to Drought**

0	The facility is served by a water supply that is known to be adequate under drought conditions
1	The facility is served by a water supply that is likely to fail under severe drought conditions
2	The facility is served by a water supply that is likely to fail under moderate drought conditions
3	Facility's water supply is predicted to fail under moderate drought conditions or significant water supply problems have been experienced

**Subject to Winter Storm Disruption**

0	The facility would not suffer any damage or operational disruption from a winter storm
1	The facility could suffer some damage or minor operational disruption from a winter storm
2	The facility has suffered damages or significant operational disruption from past winter storms
3	Facility has suffered damages or significant disruption from past storms which has had serious community economic or health consequences

**Subject to Earthquake**

0	The facility is not located in an area considered to have any significant risk of earthquake
1	In an area considered as low earthquake risk or has been constructed/ retrofitted to comply with the current earthquake building codes
2	In an area considered as moderate earthquake risk and has not been constructed/ retrofitted to comply with the current earthquake codes.
3	In an area considered as high earthquake risk and has not been constructed/ retrofitted to comply with the current earthquake codes

**Subject to Landslide/Mudslide**

0	Facility is located on a site not considered vulnerable to landslide, erosion or avalanche
1	Facility is on sloping or waterside site with moderate vulnerable to landslide or erosion, and/or is near but not in an avalanche runout zone

2	On a sloping/waterside site with soils prone to landslide or erosion, and/or is in potential avalanche runout zone; with no history of damage
3	On a sloping or waterside site highly vulnerable to landslide or erosion, is in a predicted avalanche runout zone, or has history of such damage

**Vulnerability to High Winds**

0	Facility is not vulnerable due to construction type, roof configuration & wall opening size or protection; no nearby trees
1	Wall opening size/lack of protection may cause window/door failure &/or with few nearby trees; essential external equipment is vulnerable
2	Vulnerable due to wall opening size/lack of protection, roof configuration, &/or several nearby trees; essential external equipment is vulnerable
3	Very likely to be damaged or destroyed in a high wind, because it is a mobile or fragile structure, or wall openings can be expected to fail

**Vulnerability to Major Fire**

0	Meets the current fire code, has adequate separation from other structures and good access, and is not close to heavily vegetated areas
1	Meets the current code, is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk
2	Does not meet current fire code, is in/adjacent to large vegetated areas, and has inadequate access and/or separation from other structures
3	Does not meet the current code, is in/adjacent to vegetated areas, with access limitations/structure separation make fire suppression difficult

**Vulnerable to Subsidence**

0	The facility is not located over geologic formations with any potential for subsidence and the site is in an area free of expansive soils.
1	Over formations with limited potential subsidence or expansive soils may be present, and there is no previous damage from these hazards
2	Over formations of known potential for subsidence or site is likely to have expansive soils, but there is no history of this type of damage
3	Over formations of known potential for subsidence or the site has expansive soils and there is a history in the area of this type of damage

**Vulnerability to Hail Storms**

0	The construction of the facility has no surfaces or equipment that are likely to be damaged by large hail
1	The facility has equipment or surfaces that could be damaged by large hail, but operation of the facility would not be disrupted
2	The facility has equipment or surfaces that would be damaged by large hail, and operation of the facility may be disrupted
3	Facility's equipment/surfaces would be damaged by large hail, and operations would be disrupted, or, it has significant past hail damage

Rankings that pertain to municipal vulnerability data are detailed in **Appendix H**.

## 4. Mitigation Strategy

Bergen County's mitigation strategy consisted of identifying and prioritizing mitigation projects that were consistent with the goals and objectives of the plan. Upon refinement of the list of proposed mitigation projects, an enhanced scope was developed for each individual project proposal.

Bergen County's mitigation strategy was a four-step process that began with the solicitation of public input regarding potential projects in each of the 70 municipalities as well as the county at-large.

### 4.1 Stakeholder Engagement: Identifying Mitigation Projects and Brainstorming

The NJMC and Bergen County Police OEM met with the Emergency Management Coordinators representing Bergen County municipalities, key stakeholders, and the general public on several occasions to discuss the need to identify potential hazard mitigation projects and how to do so at the local level. NJMC provided a form entitled Stakeholder Engagement: Identifying Mitigation Projects, to enable the gathering of data in a consistent format (see **Appendix J**). Municipalities collected information regarding potential mitigation sites in a wide variety of outreach opportunities including, but not limited to:

- Forms available at town halls, libraries, schools, stores, etc.
- Speaking engagements with civic groups where forms were handed out and collected
- Forms on municipal websites
- Log from telephone calls previously received

- Municipal OEM records

In total, 416 projects were identified within Bergen County and all 70 municipalities within the county. No project was considered to be unacceptable for submission at this initial stage.

The NJMC took the 418 potential mitigation projects that were identified during stakeholder engagement and evaluated them to determine if they addressed one of the five goals of this plan noted in Chapter 1:

Goal 1: Protect and promote public health and safety;

Goal 2: Safeguard critical public facilities and infrastructure;

Goal 3: Protect public and private property;

Goal 4: Promote economic vitality in Bergen County and its 70 constituent municipalities;

Goal 5: Preserve the natural environment and promote human health.

The projects were checked to determine if each project addressed one of the natural hazards detailed in Chapter 3: drought, earthquake, extreme heat, extreme cold/snow/ice, riverine/stormwater flooding, coastal flooding, hurricane, landslide, wildfire, or high winds/tornado.

A table was developed that included a project code number, the hazards and goals addressed, and a description of a proposed mitigation measure, (see **Appendix K, Brainstorming**).

While not all proposals were found to be viable, they were retained as the evaluation moved forward to step 3.

### 4.2 STAPLEE Evaluation

Bergen County chose to use the STAPLEE method of evaluation to rank potential mitigation projects to determine which may

be worthy of consideration for implementation. It was determined at the onset that the highest ranking project for each municipality and the top three projects submitted by Bergen County would proceed to Step 4 of this process. In the event of equal ranking, all proposed projects of equal ranking would be advanced for further consideration.

The STAPLEE process reviewed each project proposal offered by stakeholders per municipality based on 23 criteria related to social, technical, administrative, political, legal, economic, and environmental aspects. The criteria addressed included:

**S - Social**

- Community Acceptance
- Effect on Segment of Population

**T - Technical**

- Technically Feasible
- Long-Term Solution
- Secondary Impact

**A - Administrative**

- Staffing
- Funding Allocation
- Maintenance/Operations

**P - Political**

- Political Support
- Local Champion
- Public Support

**L - Legal**

- State Authority
- Existing Local Authority
- Potential Legal Challenge

**E - Economic**

- Benefit of Action
- Cost of Action
- Contributes to Economic Goals
- Outside Funding Required

**E - Environmental**

- Effect: Land and/or Water
- Effect: Endangered Species
- Effect: HAZMAT/Waste Site

- Consistent with Environmental Goals
- Consistent with Federal Laws

Each criterion for each project received a value as follows:

- + Favorable (= +1)
- Un-Favorable (= -1)
- 0 Not Applicable (= 0)

The values were totaled for each project and the highest ranking project for each municipality was carried forward for further consideration as previously explained. The completed STAPLEE Evaluation forms are included in **Appendix L**.

**4.3 Implementation Strategy**

Step 3 of the Mitigation Strategy, known as the Implementation Strategy, addressed only the top ranking projects for Bergen County and the local municipalities as prioritized by the STAPLEE Evaluation results in Step 2.

For each of the proposed mitigation projects, details are provided including the hazard(s) addressed by the project, implementation sponsor, estimated project duration, estimated cost, and the funding source. **Table 20** contains the Implementation Strategy.

**Table 20: Implementation Strategy**

<b>IMPLEMENTATION STRATEGY</b>									
<b>Project Number</b>	<b>Proposed Mitigation Project</b>	<b>Hazard</b>	<b>Implementation Sponsor</b>	<b>Applies to Community Assets (Existing/New)</b>	<b>Existing Local Planning Mechanism through which action will be implemented</b>	<b>Estimated Project Duration*</b>	<b>Estimated Cost</b>	<b>Funding Source**</b>	<b>Priority (from STAPLEE)</b>
200-007*	Establish a Community Emergency Response Team (CERT)	ALL Hazards	Bergen County	Existing	Master Plan	3 months	TBD	Bergen County	12
200-038*	Evaluate/modify/adopt new: floodplain development regulations Evaluate/modify/adopt new: hillside development regulations Evaluate/modify/adopt new: open space regulations and protected lands Evaluate/modify/adopt new: waterfront setback regulations Evaluate/modify/adopt new: storm water management regulations Evaluate/modify/adopt new: Stream dumping regulations Evaluate/modify/adopt new: subdivision and development regulations	Riverine & Stormwater Flooding	Bergen County	Existing	Drainage Ordinance Zoning Ordinance Zoning Ordinance Zoning Ordinance Drainage Ordinance Drainage Ordinance Zoning Ordinance	1 year	\$325,000	PDMP/HMGP	12
200-047*	Evaluate/acquire hazard-prone structures (Voluntary)	Riverine & Stormwater Flooding	Bergen County	Existing	Master Plan	6 months	\$370,000/ \$444,060 per structure	PDMP/HMGP; DEP Local Match	16
200-052*	Educate public regarding potential retrofits for privately owned land	All Hazards	Bergen County	Existing	Master Plan	6 months	\$75,000	PDMP/HMGP	12
200-066*	Develop a cadre of volunteer staff to assist with project assessment, development and execution of mitigation projects.	All Hazards	Bergen County	Existing	Master Plan	1 month	\$500 annually	PDMP/HMGP	12
201-001*	Allendale and Ho-Ho-Kus Brook needs to be dredged	Riverine & Stormwater Flooding	Allendale Borough	Existing	Capital Improvement Plan	7 months	TBD	PDMP/HMGP	5
202-002*	Annual Inspection of Bridges, Culverts, and Retention Basins (Alpine)	Windstorms & Tornadoes, Riverine & Stormwater Flooding	Alpine Borough	Existing	Master Plan	4 months	\$150,000 annually	PDMP/HMGP	7
202-003	Emergency Power - Primary Shelter (800 AMP, Diesel Generator) at Alpine School, 500 Hillside Ave. Est.- \$91,000	Loss of Utilities (Electric)	Alpine Borough	Existing	Capital Improvement Plan	TBD	\$91,000	PDMP/HMGP	7
203-001	Improve all Stormwater Control: (Brooks, Streams, Storm drains) (Bergenfield)	Riverine & Stormwater Flooding	Bergenfield Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	8
203-006*	Remove shopping carts, branches, silt, and sand from Hirshfeld Brook to prevent mosquito breeding, West Nile Virus, and Malaria (see attached sheet for details)	Riverine & Stormwater Flooding	Bergenfield Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	11
203-013*	Repair drainage at Veterans Memorial Park, Bergenfield NJ. (Park graded to drain N to Wildrose. Current several vaults but not connected to sewer) Water pools at basketball court and drains onto properties on Wildrose. Flooding from on most rainstorms. Solution: Build bypass or attach to sewer	Riverine & Stormwater Flooding	Bergenfield Borough	Existing	Capital Improvement Plan	8 months	TBD	PDMP/HMGP	11

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203-009	General flooding of homes & property in the east side of Bergenfield by the main channel of the Metzler's Brook and tributary. Proposal is to widen the stream channel of the brooks. Also proposed is constructing at least three stable, open channel flood retention basins. This brook presents a hazard to both life and property to hundreds of Bergenfield households during heavy rain. There are hundreds of street stormwater basins that enter this stream from the boroughs of Bergenfield, Dumont, and Cresskill, and Tenafly. Regional problem.	Riverine & Stormwater Flooding	Bergenfield Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	8
203-014	Increase size of sewer pipes on New Bridge Rd and Windsor Road in Bergenfield NJ. Roads flood during major storms and back up flooding occurs on adjacent properties.	Riverine & Stormwater Flooding	Bergenfield Borough	Existing	Capital Improvement Plan	1 year	TBD	TBD	8
204-001	Clearing creek of debris, contain roadway on original right of way with flood wall containment. Improve weir size and strength to hold more debris at Elm Ave & River RD. Est.- \$300,000	Riverine & Stormwater Flooding	Bogota Borough	Existing	Capital Improvement Plan	TBD	\$300,000	PDMP/HMGP	-
204-002*	Clearing debris along ditch, roadway containment along above roadway, removal of silt filled debris in ditch, replace culvert in Olsen Park with one with clapper valve type to stop reverse flow of water into Recreation field in both public park and Board of Education fields.	Riverine & Stormwater Flooding	Bogota Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	11
205-001*	Conversion of borough-wide communication system from wideband to narrow band to meet FCC requirements and permit simultaneous transmission of dispatch and detailed information to all emergency service departments at police dispatch desk at headquarters with necessary infrastructure throughout borough of Carlstadt. Est. \$500,000	Loss of Utilities (Electric)	Carlstadt Borough	Existing	Capital Improvement Plan	TBD	\$500,000	PDMP/HMGP	8
205-002	Emergency warning siren system for town-wide audible alert at various locations throughout the borough of Carlstadt. Est. \$75,000	Loss of Utilities (Electric)	Carlstadt Borough	Existing	Capital Improvement Plan	TBD	\$75,000	PDMP/HMGP	-
205-003	Acquisition of property for, and construction of, state of the art public safety facility adjacent to existing Carlstadt Municipal building. Est. Property \$600,000 and Design and construction of facility \$1,250,000	Loss of Utilities (Electric)	Carlstadt Borough	New	Capital Improvement Plan	TBD	\$1,250,000	PDMP/HMGP	-
205-004	Ambulance Vehicle for Carlstadt. Est. \$175,000	N/A	Carlstadt Borough	New	Capital Improvement Plan	TBD	\$175,000	PDMP/HMGP	-
206-001*	Emergency Power at 525 Palisade Ave, Borough Hall, EOC. Est. \$225,000	Loss of Utilities (Electric)	Cliffside Park Borough	Existing	Capital Improvement Plan	TBD	\$225,000	PDMP/HMGP	7
206-002	Emergency Pumps Kits in Borough of Cliffside Est. \$1,500	Loss of Utilities (Electric)	Cliffside Park Borough	Existing	Capital Improvement Plan	TBD	\$1,500	PDMP/HMGP	-
206-003*	Emergency Power Shelters at Riverview and Palisade, 420 Oakdene Ave, 370 Palisade Ave	Loss of Utilities (Electric)	Cliffside Park Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	7
207-001*	The two schools, Tenakill and Hillside need backup power. The borough also needs small back up power for all traffic lights on evacuation route as all lights are non-functional during blackout.	Loss of Utilities (Electric), Riverine & Stormwater Flooding	Closter Borough	Existing	Master Plan	1 year	TBD	PDMP/HMGP	7
207-002	Any major flash flood or heavy rain floods two streets, Piermont Rd. and Homans Ave. Borough has to close streets and then clean streets at end of flood. (Closter)	Riverine & Stormwater Flooding	Closter Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	-
207-003*	Stream cleaning on East side of (Closter) needs to be completed.	Riverine & Stormwater Flooding	Closter Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	7
207-004	Removal of critical infrastructure radio, 911, phone systems from basement of borough hall due to flooding at 295 Closter Dock Rd.	ALL Hazards	Closter Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	8
207-005	Flood control measures for property, 50 Brokerson Ave.	Riverine & Stormwater Flooding	Closter Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	-
207-006	Emergency generator for school building used for Emergency Shelter, 340 Hormans Ave	Loss of Utilities (Electric)	Closter Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	7
207-007	Waterway enlarging, 1.5 miles from W73.952502 N40.967229 to W73.953708 N40.982640	Riverine & Stormwater Flooding	Closter Borough	Existing	Capital Improvement Plan	TBD	\$3-5 million	PDMP/HMGP	2
207-008	Waterway clearing, 1.5 miles from W73.952502 N40.967229 to W73.953708 N40.982641	Riverine & Stormwater Flooding	Closter Borough	Existing	Capital Improvement Plan	TBD	\$3-5 million	PDMP/HMGP	11
208-001	Dredging of the Tenakill Brook, Est.- \$1,000,000	Riverine & Stormwater Flooding	Cresskill Borough	Existing	Capital Improvement Plan	TBD	\$1,000,000	TBD	3

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209-001	Secondary railroad track crossing for emergency vehicle access, east and west at Old County Court and Wakelee Drive	Loss of Utilities (Electric)	Demarest Borough	Existing	Capital Improvement Plan	TBD	\$75,000	PDMP/HMGP	-
209-002	Generator for E.O.C. at Wakelee Drive	Loss of Utilities (Electric)	Demarest Borough	Existing	Capital Improvement Plan	TBD	\$50,000	PDMP/HMGP	7
210-004*	Have towns clean debris and leaves from sewers and storm drains at least 3 times a year (especially after a flood).	Riverine & Stormwater Flooding	Dumont Borough	Existing	Capital Improvement Plan	6 weeks annually	\$20,000 annually	PDMP/HMGP	11
210-005*	Barbara Road & Hickory have two storm drains but cannot handle heavy rains. Water in driveways and front yards. (Additional Inlets)	Riverine & Stormwater Flooding	Dumont Borough	Existing	Capital Improvement Plan	1 month for study; 1 week annually	\$10,000 for study; \$3,000 annually	PDMP/HMGP	11
210-010*	Brook and sewers need to be kept clean (30 Davis Ave.)	Riverine & Stormwater Flooding	Dumont Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	11
211-001*	Complete cleanout of the entire length of the Flashers Brook throughout the community and into adjacent communities. (Elmwood Park)	Riverine & Stormwater Flooding	Elmwood Park Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	7
212-001	Emergency Power (generator) at 107 Carlton Ave, ERFD Station No. 2. Est.-\$95,000	Loss of Utilities (Electric)	East Rutherford Borough	Existing	Capital Improvement Plan	1 year	\$95,000	PDMP/HMGP	7
212-002	Emergency Power (generator) at 312 Grove St., ERFD/EMS Station No. 1. Est.-\$95,000	Loss of Utilities (Electric)	East Rutherford Borough	Existing	Capital Improvement Plan	1 year	\$95,000	PDMP/HMGP	7
212-003	Emergency Power (generator) at 37 Vreeland Ave, Primary Shelter. Est.-\$95,000	Loss of Utilities (Electric)	East Rutherford Borough	Existing	Capital Improvement Plan	1 year	\$95,000	PDMP/HMGP	7
213-002	Generator for backup shelter at EOC School at 251 Undercliff Ave. Est.- \$60,000	Loss of Utilities (Electric)	Edgewater Borough	Existing	Capital Improvement Plan	1 year	\$60,000	PDMP/HMGP	7
213-003	Debris cleanup for runoff from Palisades (Flooding Problem) at 40°49'43.56N, 73°58'30.23W. Est.- \$15,000	Riverine & Stormwater Flooding	Edgewater Borough	Existing	Capital Improvement Plan	TBD	\$15,000	PDMP/HMGP	7
213-004	Generator & Interior update for 3rd Shelter at Former Unoccupied School at River Ave. Est.-\$80,000	Loss of Utilities (Electric)	Edgewater Borough	Existing	Capital Improvement Plan	1 year	\$80,000	PDMP/HMGP	7
214-001*	Additional drainage projects in neighborhoods listed (Emerson)	Northeasters & Severe Winter Storm, Riverine & Stormwater Flooding	Emerson Borough	Existing	Capital Improvement Plan	4 months	\$40,000	PDMP/HMGP	-
215-001	Emergency generator: Emergency power Upgrade for 9-1-1 and communications operation at 75 S. Van Brunt St. Est. \$35,000	Loss of Utilities (Electric)	Englewood City	Existing	Capital Improvement Plan	TBD	\$35,000	PDMP/HMGP	7
215-002	Emergency generator: Emergency power to operate shelter facilities in an emergency at Englewood Public Schools (7 designated shelters). Est. \$210,000	Loss of Utilities (Electric)	Englewood City	Existing	Capital Improvement Plan	TBD	\$210,000	PDMP/HMGP	7
215-003	Emergency stop: Affix each electric traffic controlled intersection with a fold down sign Est. \$6,500	Loss of Utilities (Electric)	Englewood City	Existing	Capital Improvement Plan	2 months	\$6,500	PDMP/HMGP	14
215-004	Improve storm drainage (Severe storm flooding) at Forest Ave & Dean St. Florence Est. \$225,000	Riverine & Stormwater Flooding	Englewood City	Existing	Capital Improvement Plan	TBD	\$225,000	PDMP/HMGP	11
216-001	Generators for shelter at 143 Charlotte Place, Upper School. Est.-\$125,000	Loss of Utilities (Electric)	Englewood Cliffs Borough	Existing	Capital Improvement Plan	TBD	\$125,000	PDMP/HMGP	7
216-002	Generators for shelter at 642 Floyd St., N. Cliffs School. Est.-\$125,000	Loss of Utilities (Electric)	Englewood Cliffs Borough	Existing	Capital Improvement Plan	TBD	\$125,000	PDMP/HMGP	7
216-003	Generators for pump station at Lyncrest Road Station. Est.-\$20,000	Loss of Utilities (Electric)	Englewood Cliffs Borough	Existing	Capital Improvement Plan	TBD	\$20,000	PDMP/HMGP	7
216-004	Generators for pump station at Jane Dr Station. Est.-\$20,000	Loss of Utilities (Electric)	Englewood Cliffs Borough	Existing	Capital Improvement Plan	TBD	\$20,000	PDMP/HMGP	7
216-005	Generators for pump station at Roberts Road Station. Est.-\$20,000	Loss of Utilities (Electric)	Englewood Cliffs Borough	Existing	Capital Improvement Plan	TBD	\$20,000	PDMP/HMGP	7
216-006	Expansion of storm drainage south of Palisades Ave. Est.-\$1,000,000	Riverine & Stormwater Flooding	Englewood Cliffs Borough	Existing	Capital Improvement Plan	1-2 years	\$1,000,000	PDMP/HMGP	11

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217-001	Property acquisition for conversion to Open Space from willing seller; Est. \$421,900	Riverine & Stormwater Flooding	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$421,900	PDMP/HMGP	-
217-002	Flood gauges for the Passaic River with connectivity to the borough's website; Est. \$35,000	Riverine & Stormwater Flooding	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$35,000	PDMP/HMGP	6
217-003	Repair electrical power panel damage at Memorial Park raise electrical panels, install one (1) new 400 amp electrical distribution panel, install one (1) new 400 amp circuit breaker, install new 400 amp single phase electrical service, raise the existing electrical service and equipment 3 1/2 feet higher to bring it out of the flood plain area; Est. \$19,804	Riverine & Stormwater Flooding	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$19,804	PDMP/HMGP	-
217-004	Install 3 Onyx air operated pinch valves, Series DAC on the pool pump and storm drain overflow lines to prevent Passaic River from backing up into Memorial Pool through the effluent line; Est. \$50,000	Loss of Utilities (Electric)	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$50,000	PDMP/HMGP	-
217-005	Replace one (1) close couples Fairbanks Morse pump motor with a new Fairbanks Morse submersible pump (present pump is 30+ years old, is in a pit and each time area floods, motor has to be replaced and worked on); Est. \$30,000	Riverine & Stormwater Flooding	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$30,000	PDMP/HMGP	-
217-006	Prospect Street Sewer Pump Station: convert the 2 compartment stations to 1 complete wet well, install two (2) new submersible pumps and bring all controls above ground and into an aluminum traffic control box above flood plain area; Est. \$100,000	Riverine & Stormwater Flooding	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$100,000	PDMP/HMGP	13
217-007	Passaic Valley Water Pump Station: install one (1) new 180kw emergency generator to operate water pump station in the event of an emergency; Est. \$140,000	Riverine & Stormwater Flooding	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$140,000	PDMP/HMGP	7
217-008	Plaza Road Sewer Pump Station: install a 3rd submersible pump in the dry well, install new piping into the pump discharge header, install a line stop and a bypass into our own system in the event of a flooding condition we do not have to bypass pump into a neighboring municipality; Est. \$100,000	Riverine & Stormwater Flooding	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$100,000	PDMP/HMGP	13
217-009	South Siphon Sewer Pump Station: install one (1) bypass pump permanently at the station (on the platform) which will allow us to bypass the station and pump effluent to the river in order to prevent the flooding of our sanitary sewer system when the Passaic River floods the sanitary sewer system out; Est. \$100,000	Loss of Utilities (Electric)	Fair Lawn Borough	Existing	Capital Improvement Plan	1 year	\$100,000	PDMP/HMGP	13
217-010	Saddle Rider Rd. Sewer Pump Station: install one (1) bypass pump permanently at the station (on the platform) which will allow us to bypass the station and pump effluent to the river in order to prevent the flooding of our sanitary sewer system when the Saddle River floods the sanitary sewer system out; Est. \$100,000	Loss of Utilities (Electric)	Fair Lawn Borough	Existing	Capital Improvement Plan	TBD	\$100,000	PDMP/HMGP	13
218-001	Flood Study: Bellman's Creek Flood Gate at 790 Fairview Ave, Fairview DPW Garage.	Riverine & Stormwater Flooding	Fairview Borough	Existing	Capital Improvement Plan	8 months	\$38,000	PDMP/HMGP	7
218-002	Study of Early Warning System: 59 Anderson Ave., 4th & Walker St. 290 Sedire Ave.	ALL Hazards	Fairview Borough	Existing	Capital Improvement Plan	3 months	\$20,000	PDMP/HMGP	6
219-001	Need additional backup snow removal equipment (Fort Lee)	Northeasters & Severe Winter Storm	Fort Lee Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	3
219-002	Need additional backup generators to power traffic lights to relieve police officers. (Fort Lee)	Loss of Utilities (Electric)	Fort Lee Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	10
219-004	Establish a CERT Team at Borough of Fort Lee High Rises	ALL Hazards	Fort Lee Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	12
219-005	Study: Traffic light power conversion to allow generator power at major intersections within the borough	Loss of Utilities (Electric)	Fort Lee Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	-
219-006	Ongoing maintenance plan to inspect all city owned storm sewers and remove debris	Riverine & Stormwater Flooding	Fort Lee Borough	Existing	Master Plan	TBD	TBD	PDMP/HMGP	10
220-001	Emergency Power Generator at Bender Court, Est.- \$22,000	Loss of Utilities (Electric)	Franklin Lakes Borough	Existing	Capital Improvement Plan	TBD	\$22,000	PDMP/HMGP	7
220-002	Lightning Warning System at Vichiconti Way, Est.- \$20,000	Loss of Utilities (Electric), Lightning	Franklin Lakes Borough	Existing	Capital Improvement Plan	TBD	\$20,000	PDMP/HMGP	12

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220-003	Dam Warning System at 40°59'15.36"N, 74°13'21.29W, Est.- \$250,000	Riverine & Stormwater Flooding	Franklin Lakes Borough	Existing	Capital Improvement Plan	TBD	\$250,000	PDMP/HMGP	12
221-002*	Placing stop signs permanently at all intersections to be opened during power outages. (Garfield)	Loss of Utilities (Electric)	Garfield City	Existing	Capital Improvement Plan	2 months	TBD	PDMP/HMGP	14
221-003*	Snow emergency route ordinance: making it mandatory to park off certain roads during snowfall so roads could be cleared for emergency vehicles. (Garfield)	Northeasters & Severe Winter Storm	Garfield City	Existing	Master Plan	3 months	TBD	PDMP/HMGP	14
222-001*	More Dredging (Glen Rock)	Riverine & Stormwater Flooding, Northeasters & Severe Winter Storm	Glen Rock Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	5
222-002	Rerouting water drainage from train overpass to mitigate flooding that results in 3-5 feet of water on roadway at Maple Ave, south of Rock RD under Bergenline	Riverine & Stormwater Flooding	Glen Rock Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	11
222-003	Installing back-up communication and paging equipment to mitigate delay in response when current system fails or is overloaded, 1 Harding Plaza, Glen Rock, Est.\$65,000	Loss of Utilities (Electric)	Glen Rock Borough	Existing	Capital Improvement Plan	TBD	\$65,000	PDMP/HMGP	-
222-004	Educate public about all hazards, personal preparedness, sheltering in place and evacuation by means of open events at Glen Rock town hall meetings. Est. \$25,000	ALL Hazards	Glen Rock Borough	Existing	Capital Improvement Plan	TBD	\$25,000	PDMP/HMGP	12
222-005	Provide emergency information devices to each home in Glen Rock for instructions during emergencies, Est. \$60,000	ALL Hazards	Glen Rock Borough	Existing	Capital Improvement Plan	TBD	\$60,000	PDMP/HMGP	8
223-004	Remove debris from all city owned storm sewers	Riverine & Stormwater Flooding	Hackensack City	Existing	Capital Improvement Plan	6 months	\$100,000	PDMP/HMGP	11
223-005	Remove debris that prevents flow from all city owned Pump Stations	Riverine & Stormwater Flooding	Hackensack City	Existing	Capital Improvement Plan	1 year	\$200,000	PDMP/HMGP	11
223-013*	Prepare, print, and distribute a Natural Hazard Mitigation Planning Community Guide for residents. A step by step guide to deal with multiple natural hazards and to minimize future losses. This should also be available on municipal website.	ALL Hazards	Hackensack City	N/A	N/A	6 months	\$12,000	PDMP/HMGP	12
224-001	Emergency Generator for Municipal Shelter at Harrington Park Public School. Est. \$20,000	Loss of Utilities (Electric)	Harrington Park Borough	Existing	Capital Improvement Plan	1 year	\$20,000	PDMP/HMGP	7
225-001*	Pumping stations at Franklin Ave and Rt. 17 need back up Power (Hasbrouck Heights)	Riverine & Stormwater Flooding	Hasbrouck Heights Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	10
226-001	Replace pipe culvert at Pleasant Lane stream crossing. Pleasant Lane @ LOT 8 Block 1502 & Lot 25 Block 1500 (tax map sheet 15). Estimated cost \$30,000.	Riverine & Stormwater Flooding	Haworth Borough	Existing	Capital Improvement Plan	TBD	\$30,000	PDMP/HMGP	-
226-002	Replace pipe culvert at Prospect Avenue stream crossing. Located at Prospect Ave Lot 1 Block 1507 and Lot 8 Block 1502 (tax map sheet 15). Estimated cost is \$30,000.	Riverine & Stormwater Flooding	Haworth Borough	Existing	Capital Improvement Plan	TBD	\$30,000	PDMP/HMGP	-
226-003	Replace damaged foot bridge & clear debris @ the Crescent stream crossing Lot 1 Block 1001 and Lot 1 Block 912. Estimated cost is \$30,000.	Riverine & Stormwater Flooding	Haworth Borough	Existing	Capital Improvement Plan	1 year	\$30,000	PDMP/HMGP	11
226-004	Clear debris from stream at municipal center from Haworth Ave south to the foot bridge. Estimated cost is \$14,500.	Riverine & Stormwater Flooding	Haworth Borough	Existing	Capital Improvement Plan	TBD	\$14,500	PDMP/HMGP	11
226-005	Emergency Response Center located at the DPW garage on Park Street. Estimated cost is \$9,750.	ALL Hazards	Haworth Borough	Existing	Capital Improvement Plan	TBD	\$9,750	PDMP/HMGP	-
226-006	Emergency Response Center located at the Municipal Bldg at Municipal Center on Haworth Avenue. Estimated cost is \$9,750.	ALL Hazards	Haworth Borough	Existing	Capital Improvement Plan	TBD	\$9,750	PDMP/HMGP	-
227-001*	Acquire and clear destroyed structures. Acquire to prevent construction of lots in floodplains. (Hillsdale) (VOLUNTARY)	Riverine & Stormwater Flooding	Hillsdale Borough	Existing	Capital Improvement Plan/ Master Plan	6 months	\$370,000/ \$444,060 per structure	PDMP/HMGP; DEP Local Match	19
227-002	Build retaining walls for borough library. (Hillsdale) (Non-Flood Control)	Riverine & Stormwater Flooding	Hillsdale Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	9
227-003	Enlarge 3 bridges and culverts. (Hillsdale)	Riverine & Stormwater Flooding	Hillsdale Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	7
227-004	Keep debris clear from brooks to reduce backup. (Hillsdale)	Riverine & Stormwater Flooding	Hillsdale Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	7

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228-001*	Expand Ho-Ho-Kus detention system by 13.5 million gallons	Riverine & Stormwater Flooding	Ho-Ho-Kus Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	11
228-010*	Lower field on East side of Stream to handle an additional 13.5 million gallons of stormwater. (Same as 228-001)	Riverine & Stormwater Flooding	Ho-Ho-Kus Borough	Existing	Capital Improvement Plan	6 months	TBD	PDMP/HMGP	11
228-017*	Radio Transmission must be redesigned for all departments	Riverine & Stormwater Flooding	Ho-Ho-Kus Borough	Existing	Capital Improvement Plan	2 years	TBD	PDMP/HMGP	11
229-003*	Emergency generator for 105,000 sq. ft Leonia High School: 100 Christie Heights, Leonia, NJ 07605	Loss of Utilities (Electric)	Leonia Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	7
229-004*	Emergency generator for 105,000 sq. ft Leonia Middle School: 500 Broad Ave, Leonia, NJ 07605	Loss of Utilities (Electric)	Leonia Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	7
229-006	Open drainage ditch between Leonia High School Athletic field and railroad: 100 Christie Heights, Leonia, NJ 07605. Ditch serves all of Leonia North of Christie Heights	Riverine & Stormwater Flooding	Leonia Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	5
230-001*	Pump Stations on Hackensack River (Little Ferry)	Riverine & Stormwater Flooding	Little Ferry Borough	Existing	Capital Improvement Plan	2 years	TBD	PDMP/HMGP	-
231-001	Obtain barricades and storage facilities to preposition barricades in flood prone roadways and areas. Location in various local and county roads predisposed to urban and riverine flooding. Estimated cost \$51,768.	Riverine & Stormwater Flooding	Lodi Borough	Existing	Capital Improvement Plan	TBD	\$51,768	PDMP/HMGP	-
231-002	Maintenance and inspection of all stormwater sewers and brooks and remove all debris as required. This will be done throughout the borough. Estimated cost \$50,000.	Riverine & Stormwater Flooding	Lodi Borough	Existing	Capital Improvement Plan	1 month	\$50,000	PDMP/HMGP	11
231-003	Flood water current diverters installed at Memorial Park. Estimated cost \$1,000,000.	Riverine & Stormwater Flooding	Lodi Borough	Existing	Capital Improvement Plan	TBD	\$1,000,000	PDMP/HMGP	-
231-004	Slope stabilization and retaining wall at Harrison and Farnham Avenue slopes. Estimated cost is \$30,000,000.	Landslides and Erosion	Lodi Borough	Existing	Capital Improvement Plan	TBD	\$30,000,000	PDMP/HMGP	0
232-002	Build up embankment of Passaic River	Riverine & Stormwater Flooding	Lyndhurst Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	2
232-004	Change in slope coming off Route 3 East onto Rutherford Ave near Riverside Ave	Riverine & Stormwater Flooding	Lyndhurst Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	-6
232-005*	Clean out storm sewer system pipes (clay in the area of Riverside Ave and Forest Ave leading to Passaic River).	Riverine & Stormwater Flooding	Lyndhurst Township	Existing	Capital Improvement Plan	4 weeks annually	\$18,000	PDMP/HMGP	11
233-009*	Acquisition of 2 homes on Catherine Ave and 2 homes on Alexandra Ct. (Voluntary)	Riverine & Stormwater Flooding	Mahwah Township	Existing	Capital Improvement Plan/ Master Plan	6 months	\$370,000/ \$444,060 per structure	PDMP/HMGP: NJDEP Local Match	16
233-007	Ramapo River from N.Y. State to Oakland (Removal of Debris)	Riverine & Stormwater Flooding	Mahwah Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	11
233-004	Study: Repair and upgrade on Winter's Pond Dam	Riverine & Stormwater Flooding	Mahwah Township	Existing	Master Plan	TBD	TBD	PDMP/HMGP	7
233-005	Study: Silver Creek Dam upgrade	Riverine & Stormwater Flooding	Mahwah Township	Existing	Master Plan	TBD	TBD	PDMP/HMGP	7
234-001	Emergency Power for Department of Public Works Facility - currently non-existent. 100 East Hunter Ave Maywood, NJ. Estimated cost \$45,000.	ALL Hazards	Maywood Borough	Existing	Capital Improvement Plan	TBD	\$45,000	PDMP/HMGP	6
234-002	Emergency Power for Fire Station #2 utilized as alternate EOC and backup emergency services communications. 30 West Hunter Ave Maywood, NJ. Estimated cost \$40,000.	Loss of Utilities (Electric)	Maywood Borough	Existing	Capital Improvement Plan	1 year	\$40,000	PDMP/HMGP	7
235-001*	Clearing, widening, and rebuilding of the walls of the stream through the Ridgewood Water Control Center on Godwin Ave in Midland Park (Midland Park)	Riverine & Stormwater Flooding	Midland Park Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	-
236-001*	Pascack Brook - Gabion Walls	Riverine & Stormwater Flooding	Montvale Borough	Existing	Capital Improvement Plan	10 months	TBD	PDMP/HMGP	9
236-006	Replacement of gabion wall system with the installation of permanent floodwall system in the Pascack Brook to prevent recurring damage to the sanitary sewer system. Est-\$250,000 -\$500,000	Riverine & Stormwater Flooding	Montvale Borough	Existing	Capital Improvement Plan	TBD	\$250,000- \$500,000	PDMP/HMGP	4

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237-001*	Acquisition of newer salt spreaders (Moonachie)	Northeasters & Severe Winter Storm	Moonachie Borough	Existing	Capital Improvement Plan	1 month	TBD	PDMP/HMGP	14
238-002	Inspect and clear, as necessary, storm drainage system flowing into the river near Roosevelt Avenue and New Bridge Road in New Milford.	Riverine & Stormwater Flooding	New Milford Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	11
238-034	Buying homes too close to the river, with owner's permission	Landslides and Erosion	New Milford Borough	Existing	Capital Improvement Plan/ Master Plan	TBD	TBD	PDMP/HMGP	7
238-035*	Bank Stabilization measures need to be put in place i.e. planting trees and shrubs and/or other ecological means of harmonious coexistence with the river	Landslides and Erosion	New Milford Borough	Existing	Capital Improvement Plan	6 months to 1 year	TBD	PDMP/HMGP	15
238-043	Feeder brooks should be cleared of debris on a regular planned schedule	Riverine & Stormwater Flooding	New Milford Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	11
239-002	Borough wide maintenance plan to inspect all catch basins and storm sewers, remove debris that may restrict flow Est = \$25,000	Riverine & Stormwater Flooding	North Arlington Borough	Existing	Capital Improvement Plan	TBD	\$25,000	PDMP/HMGP	10
239-003	Upgrade police emergency management generator at 214 Ridge Road, in North Arlington, to ensure operation during power failure Est = \$125,000	Loss of Utilities (Electric)	North Arlington Borough	Existing	Capital Improvement Plan	TBD	\$125,000	PDMP/HMGP	7
239-004	Borough wide audio warning system Est = \$750,000	ALL Hazards	North Arlington Borough	Existing	Capital Improvement Plan	TBD	\$750,000	PDMP/HMGP	-
239-005	River bank stabilization measures along the length of the river: Planting trees, shrubs, and other ecological means that co-exist with the river Est = \$200,000	Landslides and Erosion	North Arlington Borough	Existing	Capital Improvement Plan	TBD	\$200,000	PDMP/HMGP	4
239-006	Upgrades to the pumping stations to remove rain water that floods homes on Geraldine Road Est = \$250,000	Riverine & Stormwater Flooding	North Arlington Borough	Existing	Capital Improvement Plan	2 years	\$250,000	PDMP/HMGP	13
239-007	Installation of an emergency generator at the DPW building on 1 Disposal Road Est = \$200,000	Loss of Utilities (Electric)	North Arlington Borough	Existing	Capital Improvement Plan	TBD	\$200,000	PDMP/HMGP	6
240-001	Install an Emergency Generator at EOC at 116 Paras Ave, Est.- \$40,000	Loss of Utilities (Electric)	Northvale Borough	Existing	Capital Improvement Plan	1 year	\$40,000	PDMP/HMGP	7
241-001	Emergency generator to supply power to our primary shelter, Norwood Public School, Long. - 73.961028 Lat. 40.996037, Est = \$17,500	Loss of Utilities (Electric)	Norwood Borough	Existing	Capital Improvement Plan	1 year	\$17,500	PDMP/HMGP	7
242-001*	River has been dredged, dam control project underway. Possibly redirect runoff from the highway. Create more efficient means of controlling the water level in Crystal Lake. (Oakland)	Riverine & Stormwater Flooding	Oakland Borough	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	3
243-001*	Stream Clearance. Culvert type bridge should be replaced with a higher bridge to prevent the blockage of the existing stream. (Old Tappan)	Riverine & Stormwater Flooding	Old Tappan Borough	Existing	Capital Improvement Plan	2 years	TBD	PDMP/HMGP	-
244-001*	Flood warning system. (Oradell)	Riverine & Stormwater Flooding	Oradell Borough	New	Capital Improvement Plan	6 months to 1 year	\$300,000	PDMP/HMGP	12
244-004	Rebuilding of culverts (Oradell)	Riverine & Stormwater Flooding	Oradell Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	6
244-005	Widening of drainage ditches, small streams. (Oradell)	Riverine & Stormwater Flooding	Oradell Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	-4
245-001*	Dredging of outfalls to Overpeck Creek	Riverine & Stormwater Flooding	Palisades Park Borough	Existing	Capital Improvement Plan	2 years	TBD	PDMP/HMGP	11
245-002*	Install larger storm drains in various low lying areas of town (Cost estimates available upon request)	Riverine & Stormwater Flooding	Palisades Park Borough	Existing	Capital Improvement Plan	1 to 2 years	TBD	PDMP/HMGP	11
245-003	Need additional backup snow removal equipment	Northeasters & Severe Winter Storm	Palisades Park Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	8
246-001	Replace the emergency generator at Police HQ that houses Paramus Communications Center and the Public Safety Answering Point (PSAP) for 7 municipalities at 1 Carlough Drive (40°55'32.13"N, 74°04'06.04"W) Est.-\$35,000	Loss of Utilities (Electric)	Paramus Borough	Existing	Capital Improvement Plan	1 year	\$35,000	PDMP/HMGP	7
246-002	Installation of an emergency generator at Paramus High School, our primary congregate care shelter at 99 Century RD. Est.-\$200,000	Loss of Utilities (Electric)	Paramus Borough	New	Capital Improvement Plan	1 year	\$200,000	PDMP/HMGP	7

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246-003	Installation of an emergency generator at Paramus Fire Station #2 at 238 Spring Valley RD (40°55'59.21"N, 74°03'12.81"W) Est.- \$35,000	Loss of Utilities (Electric)	Paramus Borough	New	Capital Improvement Plan	1 year	\$35,000	PDMP/HMGP	7
246-004	Installation of water-tight doors at all sewer pump stations: Prospect St. Pump Station (40°55'32.53"N, 74°04'25.26"W), Route 17 Pump Station (40°55'08.06"N, 74°04'05.70"W), Southcrest St. Pump Station (40°54'48.54"N, 74°04'30.38"W), Dunderhook RD Pump Station (40°56'51.50"N, 74°05'38.85"W), Grove St. Pump Station (40°57'43.69"N, 74°05'36.59"W) Est.- \$15,000	Riverine & Stormwater Flooding	Paramus Borough	New	Capital Improvement Plan	TBD	\$15,000	PDMP/HMGP	6
246-005	Installation of a Flood Protection System at the Prospect St. Pump Station (40°55'32.53"N, 74°04'25.26"W) and the Grove St. Pump (40°57'43.69"N, 74°05'36.59"W) Station	Riverine & Stormwater Flooding	Paramus Borough	New	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	6
247-001	Establish a Community Emergency Response Team (CERT) - trailer equipment and clothing. The trailer would be located at the Borough of Park Ridge Office of Emergency Management 55 Park Avenue Park Ridge, NJ. Estimated cost \$10,000.	ALL Hazards	Park Ridge Borough	Existing	Capital Improvement Plan	TBD	\$10,000	PDMP/HMGP	12
247-002	Mill Pond Dam Restoration located on Mill Road in Park Ridge. Estimated cost \$900,000.	Riverine & Stormwater Flooding/ Landslides and Erosion	Park Ridge Borough	Existing	Capital Improvement Plan	TBD	\$900,000	PDMP/HMGP	7
247-003	Bank stabilization measures needed to be put in place including the installation of boulders in the bank and the removal of trees with exposed roots due to erosion located at Pascack Brook and Echo Glen Brook on Mill Road/ Colony Avenue. Estimated cost \$700,000.	Landslides and Erosion	Park Ridge Borough	Existing	Capital Improvement Plan	TBD	\$700,000	PDMP/HMGP	4
247-004	Radio communications/ interoperable communications initiative - Office of Emergency Management owns only one portable radio and is seeking to improve communications through acquisition of portable radio equipment. Located in the OEM in Park Ridge. Estimated cost is \$6,167.	ALL Hazards	Park Ridge Borough	Existing	Capital Improvement Plan	TBD	\$6,167	PDMP/HMGP	-
247-005	Mobile EOC Vehicle Restoration - OEM currently does not have mobile EOC; to acquire town-owned vehicle; funds to be used for conversion/ restoration. Located in OEM in Park Ridge. Estimated cost is \$10,000.	ALL Hazards	Park Ridge Borough	Existing	Capital Improvement Plan	TBD	\$10,000	PDMP/HMGP	-
248-001	Prune trees that cause power disruptions (Ramsey)	Loss of Utilities	Ramsey Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	-
248-002	A more comprehensive mitigation study has been completed by Ramsey to protect the water system. The state office of counter terrorism has been involved. (Ramsey)	Riverine & Stormwater Flooding	Ramsey Borough	Existing	Master Plan	TBD	TBD	PDMP/HMGP	-
248-003*	Study: Improve drainage in affected areas (Ramsey) (Church St. & Island Ave)	Riverine & Stormwater Flooding	Ramsey Borough	Existing	Master Plan	8 months	\$36,000	PDMP/HMGP	7
249-001*	Removal of two large trees that are in a precarious position on the bank of Wolf Creek south of Lancaster Rd. The trees in question are dead.	Riverine & Stormwater Flooding	Ridgefield Borough	Existing	Capital Improvement Plan	2 to 4 weeks	\$400 to \$1,000 per tree	PDMP/HMGP	15
250-002	Clean and dredge drainage stream from Rt. 80 to Southern end at Overpeck Creek. Runs along west side of Route 95. Causes flooding on several village streets.	Riverine & Stormwater Flooding	Ridgefield Park Village	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	5
250-003*	Provide for Engineering review of Bergen Turnpike, Hackensack River (Overpeck Creek) to eliminate serious flooding.	Riverine & Stormwater Flooding	Ridgefield Park Village	Existing	Master Plan	1 to 2 years	TBD	PDMP/HMGP	7
251-001	Study: Reconstruction of village hall. Construction of new police annex. (Ridgewood)	ALL Hazards	Ridgewood Village	Existing	Master Plan	4 months	\$15,000	PDMP/HMGP	7
252-002	Increase drainage on main roads (River Edge)	Riverine & Stormwater Flooding	River Edge Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	8
252-009*	Relocate DPW office to higher areas on DPW property; install and raise generator (River Edge)	Riverine & Stormwater Flooding	River Edge Borough	Existing	Capital Improvement Plan	1 to 2 years	TBD	PDMP/HMGP	12
252-011	Install check valves in control water back up by stormwater pipe from Hackensack River. (River Edge)	Riverine & Stormwater Flooding	River Edge Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	8
253-002	Overhauling trees/limbs (Elimination) Above and along roadways (River Vale)	Loss of Utilities (Electric), Lightning	River Vale Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	3
253-004	Constant flooding on InterGlen Ave. and River Vale Rd. by Holdrum School. (River Vale). Possible solutions more sewer; change of grading	Riverine & Stormwater Flooding	River Vale Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	9

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253-010*	Ongoing maintenance plan to inspect the river for fallen trees etc. that would stop flow of water	Riverine & Stormwater Flooding	River Vale Township	N/A	N/A	1 month annually	TBD	PDMP/HMGP	10
254-006*	Backflow prevention (Rochelle Park) (Create Ordinance)	Riverine & Stormwater Flooding	Rochelle Park Township	Existing	Capital Improvement Plan	3 months	\$60,000	PDMP/HMGP	7
255-001	Emergency power for shelter/Firehouse at 26 Rockleigh Rd. Est-\$12,000	Loss of Utilities (Electric)	Rockleigh Borough	Existing	Capital Improvement Plan	TBD	\$12,000	PDMP/HMGP	7
255-002	Bank/Stream cleanup at Sparkill Creek. Est.-\$125,000	Riverine & Stormwater Flooding	Rockleigh Borough	Existing	Capital Improvement Plan	1 year	\$125,000	PDMP/HMGP	11
255-003	Dam improvement/ Fixing at 20 Rockleigh Rd. Est.-\$150,000	Riverine & Stormwater Flooding	Rockleigh Borough	Existing	Capital Improvement Plan	TBD	\$150,000	PDMP/HMGP	7
255-004	Vegetative Management/ Wildfire Management at Rockleigh Woods. Est.- \$200,000	Major Fire (Urban/Wildfires)	Rockleigh Borough	New	Capital Improvement Plan	TBD	\$200,000	PDMP/HMGP	-
256-001*	Emergency community alerting system (Reverse 911). (Rutherford)	ALL Hazards	Rutherford Borough	Existing	Capital Improvement Plan	4 months	TBD	PDMP/HMGP	6
257-001	Saddle River dredging; Extensive dredging project to eliminate flooding	Riverine & Stormwater Flooding	Saddle Brook Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	5
257-002*	Study the reconfiguration of Saddle River Ave Bridge so debris flows unobstructed	Riverine & Stormwater Flooding	Saddle Brook Township	Existing	Master Plan	3 months	\$90,000	PDMP/HMGP	7
257-004	The Saddle River needs to be dredged. (Saddle Brook)	Riverine & Stormwater Flooding	Saddle Brook Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	5
258-001	Study and evaluate evacuation route surveillance system at the intersection of Rt 17 and East Allendale Rd. The system could be fed to the Saddle River Police communications center, NJDOT and County of Bergen Police Communications. Allows for the agencies to obtain live information when any disaster strikes the area north of the RT4/ Rt 17 interchange and provide early warning and intervention to all affected or to be affected communities.	ALL Hazards	Saddle River Borough	Existing	Capital Improvement Plan	6 months	\$50,000	PDMP/HMGP	6
259-002	Dredge both River Ditches - Jet and clean line along Green Street under Route 80	Riverine & Stormwater Flooding	South Hackensack Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	3
259-003	Redesign or elevate Saddle River Bridge at Saddle River Ave & Marcelles (Marsellus?) Place	Riverine & Stormwater Flooding	South Hackensack Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	7
259-004	Elevation of the Sewer Ejector Station at Saddle River Ave. Garfield Park Section	Riverine & Stormwater Flooding	South Hackensack Township	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	8
260-001*	Belle Ave. Drainage Improvements: Installation of Larger and Additional Storm Drains (Teaneck)	Riverine & Stormwater Flooding	Teaneck Township	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	8
260-002*	Farby Ct. Drainage Improvements: Installation of Larger and Additional Storm Drains (Teaneck)	Riverine & Stormwater Flooding	Teaneck Township	Existing	Capital Improvement Plan	2 year	TBD	PDMP/HMGP	8
260-007*	Storm Surge destroying sewers: Replace broken sewers	Riverine & Stormwater Flooding	Teaneck Township	Existing	Capital Improvement Plan	3 year	TBD	PDMP/HMGP	8
261-002	Replace sewer main at Dean Drive (area of Inness Road) to relieve flooding	Riverine & Stormwater Flooding	Tenafly Borough	Existing	Capital Improvement Plan	1 year	\$550,000	PDMP/HMGP	11
262-001	Stormwater pump station, removal of stormwater at Industrial Ave, Est. 4.8 million	Riverine & Stormwater Flooding	Teterboro Borough	Existing	Capital Improvement Plan	TBD	\$4,500,000	PDMP/HMGP	8
262-002	West Riser ditch clean up from train station along tracks/Industrial Ave to Franklin Ave Bridge airport along perimeter Est \$200,000	Riverine & Stormwater Flooding	Teterboro Borough	Existing	Capital Improvement Plan	TBD	\$200,000	PDMP/HMGP	11
262-003	Dredge West Riser ditch clean from train station along tracks/Industrial Ave to Franklin Ave Bridge airport along perimeter Est \$200,001	Riverine & Stormwater Flooding	Teterboro Borough	Existing	Capital Improvement Plan	TBD	\$200,001	PDMP/HMGP	2
263-001	Install Emergency Electric Generator at School Shelter, 392 West Saddle River RD, Upper Saddle River, Est. \$125, 000	Loss of Utilities (Electric)	Upper Saddle River Borough	Existing	Capital Improvement Plan	1 year	\$125,000	PDMP/HMGP	7
264-001	Rehabilitate White's Pond Dam at Hopper Ave (Lat:794,900, Long: 2,146,700) Est.- \$125,000	Riverine & Stormwater Flooding	Waldwick Borough	Existing	Capital Improvement Plan	TBD	\$125,000	PDMP/HMGP	7

Natural Hazard Mitigation Plan

Bergen County, New Jersey

265-001	Emergency Power - EOC - Emergency Services Bldg at 178 Maple Avenue, Wallington. Est: \$60,000	Loss of Utilities (Electric)	Wallington Borough	Existing	Capital Improvement Plan	1 year	\$60,000	PDMP/HMGP	7
266-001*	Study: Replacement of earth and dam (Washington Twp.)	Riverine & Stormwater Flooding	Washington Township	Existing	Master Plan	6 months	\$70,000	PDMP/HMGP	7
266-005*	Install back-up power generator at municipal complex/police headquarters due to loss of electrical power failure	Loss of Utilities (Electric)	Washington Township	Existing	Capital Improvement Plan	1 year	TBD	PDMP/HMGP	7
266-004	Fix/Repair or replace existing town wide siren system to alert fire personnel of fire calls and to alert citizens in times of emergencies and/or school closings	ALL Hazards	Washington Township	Existing	Master Plan	TBD	TBD	PDMP/HMGP	6
267-001	Engineering study of channel stabilization: 18" Cast Iron and 20" clay sanitary sewer trunk line is exposed and bowed. Study retaining wall at Pascack Brook, Westwood Ave, near Park Place.	Riverine & Stormwater Flooding	Westwood Borough	Existing	Capital Improvement Plan	1 year	\$50,000	PDMP/HMGP	7
267-002	Engineering study of channel stabilization: 18" Cast Iron plus 20" clay sanitary sewer trunk line is exposed plus bowed at Pascack Brook, Westwood Ave, near Park Place.	Riverine & Stormwater Flooding	Westwood Borough	Existing	Capital Improvement Plan	9 months	\$38,000	PDMP/HMGP	7
267-003	Musquapsink Brook, repair 15" high pressure line at 1st Ave & near Bogert Ave. 2nd location Prospect Ave. near Goodwin Terrace Est. \$40,000	Riverine & Stormwater Flooding	Westwood Borough	Existing	Capital Improvement Plan	TBD	\$40,000	PDMP/HMGP	-
268-001	Install folding stop signs at 7 intersections in Woodcliff Lake: Kinderkamack Rd and Prospect Ave, Woodcliff Ave. and Pascack Rd., Glen Rd. and Parkway Exit 171 (3-way), Glen Rd. and Chestnut Ridge (5 way intersection), Chestnut Ridge and County Rd., Chestnut Ridge and Tice Blvd., Chesnut Ridge Rd. and Woodmont Drive.	Loss of Utilities (Electric)	Woodcliff Lake Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	14
269-001	Tree removal. Aggressive pruning (Wood-Ridge)	Loss of Utilities (Electric), Riverine & Stormwater Flooding	Wood-Ridge Borough	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	-
269-002*	Engineering study of capacity of stormwater system in area of Anderson Ave. (Wood-Ridge)	Riverine & Stormwater Flooding	Wood-Ridge Borough	Existing	Master Plan	TBD	TBD	PDMP/HMGP	8
270-001	Emergency Power at Larkin House, 380 Godwin Ave. \$30,000	Loss of Utilities (Electric)	Wyckoff Township	Existing	Capital Improvement Plan	1 year	\$30,000	PDMP/HMGP	7
NJMC-001*	Restoration of the Kane Track Levee to protect Carlstadt, Little Ferry, South Hackensack, and Moonachie (Design, Permitting, and Construction)	Riverine & Stormwater Flooding	NJMC	Existing	Capital Improvement Plan	2 years	\$6,000,000	FMA	10
NJMC-002*	Restoration and Upgrade of the West Riser Tide Gates (Design, Permitting, and Construction)	Riverine & Stormwater Flooding	NJMC	Existing	Capital Improvement Plan	13 months	\$1,350,000	PDMP/HMGP	7
NJMC-003*	Restoration and Upgrade of the Peach Island Creek Tide Gates (Design, Permitting, and Construction)	Riverine & Stormwater Flooding	NJMC	Existing	Capital Improvement Plan	13 months	\$652,000	PDMP/HMGP	7
NJMC-005*	Rutherford/E. Rutherford Drainage System Restoration (Construction Only)	Riverine & Stormwater Flooding	NJMC	Existing	Capital Improvement Plan	6 months	\$3,500,000	PDMP/HMGP	7
NJMC-006*	Implement the Remainder of the NJMC Floodplain Management Plan (Design, Permitting, and Construction)	All Natural Hazards	NJMC	Existing	Capital Improvement Plan & Master Plan	5 years	\$10,481,000	PDMP/HMGP	7
NJMC-007	The NJMC will work with the 70 Bergen County municipalities to identify existing buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of existing vulnerable structures and infrastructure, the NJMC will provide mapping/GIS assistance to digitize this information.	All Natural Hazards	NJMC	Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	10
NJMC-008	The NJMC will work with the 70 Bergen County municipalities to identify future buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of future vulnerable structures and infrastructure, the NJMC will provide mapping/GIS assistance to digitize this information.	All Natural Hazards	NJMC	New	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	10
NJMC-009	The NJMC will work with the 70 Bergen County municipalities to describe/quantify potential natural hazard impacts to the buildings in each jurisdiction. This information will be described either in terms of dollar value or percentages of damage.	All Natural Hazards	NJMC	New & Existing	Capital Improvement Plan	TBD	TBD	PDMP/HMGP	10

#### **4.4 Project Scope Development**

Step 4, Project Scope Development, embellished the information provided in the Implementation Strategy table. **Appendix M** contains additional data pertaining to the proposed mitigation project including goals of the Bergen County plan that the mitigation addresses, an action plan, cost estimates with targeted funding sources, an estimated timetable, and responsible parties to carry out the proposed task.

In addition, there are several County-wide mitigation actions that cover every Bergen County municipality, and several that are Hackensack Meadowlands District-wide. The NJMC District includes 10 Bergen County municipalities: Carlstadt, East Rutherford, Little Ferry, Lyndhurst, Moonachie, North Arlington, Ridgefield, Rutherford, South Hackensack, and Teterboro.

#### **4.5 Mitigation Actions by Jurisdiction**

As required by FEMA, per 44 CFR Part 201.6 (c)(3)(iv), “for multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.” This Plan contains Bergen County-wide actions, New Jersey Meadowlands Commission (NJMC) actions, and actions for individual Bergen County municipalities. These mitigation actions are prioritized in the **Table 18**, Implementation Strategy, and described in detail in **Appendix M**, *Project Scope Development*. Each of the 70 Bergen County municipalities proposed mitigation actions for inclusion in this Plan.

Several county-wide mitigations actions were developed to address data deficiencies noted by FEMA in the current version of the Plan. The mitigation action(s) proposed include gathering data regarding existing and planned buildings in each municipality that might be vulnerable to identified natural hazards. Also addressed in this manner was the collection of data regarding specific impacts to all structures within each municipality. **Table 18**, Implementation Strategy, and **Appendix M**, *Project Scope Development* provide further details on these mitigation strategies.

## 5. Plan Maintenance

Chapter 5 discusses the manner by which the Bergen County Natural Hazard Mitigation Plan will continue to be implemented and maintained over time.

### 5.1 Plan Monitoring

As required by FEMA, per 44 CFR Part 201.6 (c)(4)(I), "the plan maintenance process shall include a section describing the method and schedule for monitoring, evaluating and updating within a 5-year cycle." To meet the above requirement most effectively, the BCOEM, in coordination with the designated project contacts, will prepare Semi-Annual Work Progress Reports for each mitigation project within the Plan. These reports will be added to the appendix of the Plan and to the BCOEM website ([www.bcoem.org](http://www.bcoem.org)) to provide the County, the respective community members and any funding agencies with project updates.

Progress Reports shall closely mirror *FEMA How-To #4 (FEMA 386-4) Worksheet #1, Progress Report*. These reports will convey the following information:

- Hazard mitigation actions for which the agency is responsible;
- Supporting agencies/ entity/ individual responsible for the project;
- Measurable objectives regarding the various stages of work and associated timelines/ schedules;
- Identified resources that must be acquired for project completion, sources for such resources and plans to obtain said resources;
- Identified permits and/ or approvals necessary for project completion;

- How the project will be conducted by the responsible organization/ entity / individual;
- To whom each duty within the project will be assigned (staff, contractors, volunteers, etc.);
- Current status of the project; and
- Challenges that may hinder project completion.

### 5.2 Plan Evaluation

BCOEM, the NJMC, and representatives from the 70 municipalities will meet semi-annually to review the Plan. At each semi-annual meeting, a progress report for each mitigation project in the Plan will be presented to the municipalities by BCOEM. Evaluation Meetings will be held within one month of the due date of the progress reports.

Along with reviewing the progress reports, BCOEM will use the Evaluation Meetings to reach out to communities for new project ideas and to encourage stakeholders to step forward and lead new hazard mitigation efforts. These meetings will also serve as the outreach for those municipalities who did not submit proposed mitigation actions for the first version of the plan. The "Stakeholder Engagement" sheets will be circulated, as done previously during the development of the Plan, to the 70 community representatives.

Lastly, the overall Plan will be evaluated at each of these meetings with the following questions:

- Do the goals and objectives of the existing Plan adequately address both current and expected conditions and challenges?
- Has the nature and/ or magnitude of hazards, risks and/ or vulnerability changed?

- Are the current resources sufficient for implementing the Plan?
- Are there any challenges that stand in the way of carrying out the Plan: technical, political, legal, environmental, operational, coordination with agencies/people who must work together to accomplish the task, etc?
- Have the objectives that were already completed achieved their desired outcomes and are there any related projects that should be modified accordingly?
- Have all entities, such as state government departments, participated as proposed?
- What can be done to improve the way the Plan is executed?
- Have new projects been sought and are new projects being adequately assessed and promoted?

Minutes of each Evaluation Meeting will be e-mailed to all municipal contacts and attached to the appendices of the Plan. Minutes will be posted on the BCOEM website ([www.bcoem.org](http://www.bcoem.org)). A request for new projects and comments, with contact information and editable forms will also be posted on the site.

### **5.3 Plan Updates**

As per 44 CFR Part 201.6 (d)(2) and 201.6 (d)(3), the Plan will be reviewed and revised as needed, and submitted to the State Hazard Mitigation Officer for initial review and coordination within five years of approval of the Plan by FEMA (and during 5-year cycles thereafter).

As discussed above, the BCOEM will monitor, evaluate and update the Plan every 6 months. Additionally, every 2 years, the BCOEM will organize and host a public outreach workshop in each of the four plan

regions with the dual purpose of explaining the plan to the attendees and soliciting new mitigation projects and ideas for improving existing projects. The following questions will be addressed at the public workshops and throughout the Bi-Annual Hazard Mitigation Plan Update:

- Have hazards, vulnerability, or risks changed such that the goals, objectives, and/or projects should be modified?
- Are additional information, technology, or funding sources available to the BCOEM to perform more accurate vulnerability/risk assessments?
- Does the Plan adequately address current and future risks?

Public workshops will be advertised via the BCOEM, local newspapers, and local CERT programs. The minutes and results of the Bi-Annual Hazard Mitigation Plan Update Workshops will be posted on the BCOEM website and hard copies of Plan updates will be available at the local OEM offices. Postings will include any provided presentations and hand-outs.

### **5.4 Incorporation of Plan Elements into Existing Planning Mechanisms**

As per 44 CFR Part 201.6 (c)(4)(iii), “The plan shall include] a process by which local governments incorporate the requirements of the mitigation plan into other municipal/county planning mechanisms, such as comprehensive or capital improvement plans, when appropriate.”

As deemed appropriate, it is expected that each municipality within Bergen County will develop a Hazard Mitigation Leadership Team or Coordinator responsible for monitoring the incorporation of the goals, objectives, and recommendations of the Plan

into any related plans, ordinances, and studies of the respective municipalities. At a minimum, updates to and/or development of any or all of the documents or studies in **Table 21** below shall require a review by the above team. The outcome of these reviews and the actions recommended shall be incorporated into the Semi-Annual Work Progress Report.

**Table 21: Documents and Studies to be Reviewed**

Comprehensive Plan
Growth Management Plan
Capital Improvement Plan/Program
Flood Damage Prevention Ordinance
Floodplain Management Plan
Flood Insurance Studies or Engineering Studies for Streams
Hazard Vulnerability Analysis
Emergency Management Plan
Zoning Ordinance
Building Code
Critical Facilities Maps
Existing Land Use Maps
Elevation Certificates
State Hazard Mitigation Plan
HAZUS Modeling

The development of a Hazard Mitigation Leadership Team is at the discretion of each municipality and is dependent upon size of the municipality and the number of applicable plans and ordinances. In some municipalities, this task may be accomplished by a Coordinator that assumes this task amongst his or her other job duties.

**5.5 Anticipated Maintenance Schedule**

**Table 22** provides an anticipated schedule of maintenance for the Bergen County Hazard Mitigation Plan:

**Table 22: Bergen County Plan Maintenance Schedule**

Date	Action
October 2008	Formal Approval of the Plan by FEMA-Region II
April 2009	Semi-Annual Work Progress Report Due
May 2009	Semi-Annual HM Plan Evaluation Meeting
October 2009	Semi-Annual Work Progress Report Due
November 2009	Semi-Annual HM Plan Evaluation Meeting
April 2010	Semi-Annual Work Progress Report Due
May 2010	Semi-Annual HM Plan Evaluation Meeting
October 2010	Semi-Annual Work Progress Report Due
November 2010	Bi-Annual Hazard Mitigation Plan Update Workshop
November 2010	Semi-Annual HM Plan Evaluation Meeting (joint meeting with above)
April 2011	Semi-Annual Work Progress Report Due
May 2011	Semi-Annual HM Plan Evaluation Meeting
October 2011	Semi-Annual Work Progress Report Due
November 2011	Semi-Annual HM Plan Evaluation Meeting
April 2012	Semi-Annual Work Progress Report Due
May 2012	Semi-Annual HM Plan Evaluation Meeting
October 2012	Semi-Annual Work Progress Report Due
November 2012	Semi-Annual HM Plan Evaluation Meeting
November 2012	Bi-Annual Hazard Mitigation Plan Update Workshop (joint meeting with above)
April 2013	Semi-Annual Work Progress Report Due
May 2013	Semi-Annual HM Plan Evaluation Meeting
December 2013	Submit Updated Plan to NJ State OEM for Year-5 review
January 2014	Resume / Modify 5-year Schedule of Plan Maintenance, Evaluation and Update

## 6. Affirmation of Adoption

In accordance with FEMA requirements for multi-jurisdictional mitigation planning, it is the intention that Bergen County, the NJMC, and all constituent municipalities of the county, adopt resolutions approving the Bergen County Natural Hazard Mitigation Plan. The draft resolution that was provided to the Bergen County municipalities as a template is located on the following page. The official resolution of the Bergen County Board of Chosen Freeholders is attached as **Appendix N**. Official copies of all municipal resolutions received are on file at the Bergen County Office of Emergency Management.

**Resolution of the Mayor and Council of the **Name of Municipality**  
Adopting the Bergen County Hazard Mitigation Plan**

WHEREAS, the Bergen County Hazard Mitigation Plan has been prepared in accordance with Title 44 Part 201.6 of the Code of Federal Regulations (CFR) pertaining to the requirements for mitigation planning under the Federal Emergency Management Agency (FEMA); and

WHEREAS, the **Name of Municipality**, participated in the preparation of Bergen County's multi-jurisdictional plan; and

WHEREAS, the **Name of Municipality** is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, the **Name of Municipality** has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the **Town** Council that the **Name of Municipality** adopts the Bergen County Hazard Mitigation Plan as this jurisdiction's Multi- Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this **XX day of December, 2007** at the meeting of the **Town** Council.

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(Mayor)  
**Name of Municipality**  
**Address of Municipality**

## **Appendix A**

***NJMC Resolution No. 05-123  
Authorizing the NJMC to Enter  
into an Agreement with Bergen  
County to Prepare a Multi-  
Jurisdiction Mitigation Plan***

**RESOLUTION AUTHORIZING THE  
NEW JERSEY MEADOWLANDS COMMISSION TO ENTER INTO AN  
AGREEMENT WITH THE COUNTY OF BERGEN TO PREPARE A  
COUNTY- WIDE, MULTI-JURISDICTIONAL,  
PRE-DISASTER MITIGATION PLAN**

**WHEREAS**, The County of Bergen has requested the assistance of the New Jersey Meadowlands Commission in preparing a county-wide, multi-jurisdictional, pre-disaster mitigation plan; and

**WHEREAS**, the Federal Emergency Management Agency (FEMA), in accordance with the Disaster Mitigation Act of 2000 (44 CFR Parts 201 & 206), mandated that all jurisdictions (municipalities and counties) develop comprehensive all-hazard mitigation plans by November 1, 2003; and

**WHEREAS**, jurisdictions that complete a comprehensive mitigation plan will be eligible for federal Hazard Mitigation Grant funding following a presidentially declared disaster; and

**WHEREAS**, FEMA's goal is to lessen the impact of funding for repetitive losses during a disaster; and

**WHEREAS**, FEMA has authorized the development of county-based all-hazard, multi-jurisdictional, hazard mitigation plans to comply with this requirement; and

**WHEREAS**, FEMA and the New Jersey Office of Emergency Management (NJOEM) have granted permission to the Bergen County Office of Emergency Management (BCOEM) to develop a plan for Bergen County and all of its constituent municipalities; and

**WHEREAS**, all constituent municipalities have agreed to participate in this endeavor; and

**WHEREAS**, the NJMC has the technical expertise and resource capability to complete a comprehensive hazard mitigation plan which would ensure the eligibility of funding for Bergen County and its constituent municipalities in the event of a disaster declaration.

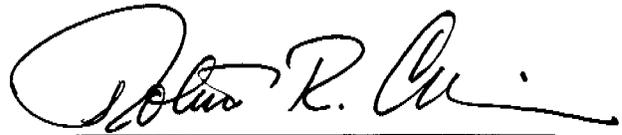
**NOW, THEREFORE, BE IT RESOLVED**, that the New Jersey Meadowlands Commission hereby agrees to apply on behalf of The County of Bergen for FY 2006 Pre-Disaster Mitigation Program grant monies available from the Federal Emergency Management Agency. Additionally, the NJMC assumes responsibility for the preparation of the grant and the development of a hazard mitigation plan for Bergen County. Lastly, the NJMC will lead the coordination of the solicitation of input from Bergen County and constituent municipal officials.

The foregoing Resolution was adopted by Commission vote.



Charles A. Richman  
Acting Chairman

I hereby certify the foregoing to be a true copy of the Resolution adopted by the New Jersey Meadowlands Commission at its meeting of November 21, 2005.



Robert R. Ceberio  
Secretary

Resolution No. 05-123

## **Appendix B**

***Bergen County Board of  
Chosen Freeholders Resolution  
No. 05-1900 Supporting NJMC's  
Preparation of the Bergen  
County Multi-Jurisdictional  
Natural Hazard Mitigation Plan***

12/28/2005 10:30 FAX 201 599 6091

Bergen County OEM

002/005

12-28-2005 11:13am From-

T-310 P.002/005 F-246



2005 BERGEN COUNTY BOARD OF CHOSEN FREEHOLDERS RESOLUTION

Table with columns: MEMBERS, AYE, NAY, ABSTAIN, ABSENT. Rows include CALABRESE, CARROLL, GANZ, PADILLA, RANDALL, VAINIERI HUTTLE, McPHERSON CHAIRWOMAN, and TOTALS.

Resolution No. 1900
Date: December 21, 2005
Page: 1 of 4
Subject: Natural Hazard Mitigation Plan
Purpose: New Jersey Meadowlands Commission's Application on Behalf of County of Bergen
Account No.
Contract No.
Dollar Amount: No cost to County
Prepared By: Sgt. Barry Leventhal

Offered by: McPHERSON
Seconded by: GANZ
Approved by: [Signature]

Certified as a true copy of a Resolution adopted by the Board of Chosen Freeholders on above date at a Regular Meeting by:

[Signature: Valerie Coniglio]

VALERIE CONIGLIO, Clerk, Board of Chosen Freeholders, Bergen County, New Jersey

FREEHOLDER'S RESOLUTION AUTHORIZING THE COUNTY OF BERGEN IN THEIR SUPPORT OF THE NEW JERSEY MEADOWLANDS COMMISSION'S PREPARATION OF A COUNTY-WIDE, MULTI-JURISDICTIONAL, NATURAL HAZARD MITIGATION PLAN

WHEREAS, The County of Bergen Office of Emergency Management (BOEM) and Bergen County Department of Public Works and Engineering have requested the assistance of the New Jersey Meadowlands Commission (NJMC) in preparing a county-wide, multi-jurisdictional natural hazard mitigation plan; and

12/28/2005 10:30 FAX 201 599 6091

Bergen County OEM

003/005

12-28-2005 11:13am From-

T-310 P.003/005 F-246

1900-2

**WHEREAS**, the Federal Emergency Management Agency (FEMA), in accordance with the Disaster Mitigation Act of 2000 (44 CFR Parts 201 & 206), mandated that all jurisdictions (municipalities and counties) develop comprehensive natural hazard mitigation plans by November 1, 2003; and

**WHEREAS**, jurisdictions that complete a comprehensive natural hazard mitigation plan will be eligible for federal Hazard Mitigation Grant funding following a presidentially declared disaster, and

**WHEREAS**, FEMA's goal is to lessen the impact of funding for repetitive losses during a disaster; specifically natural disasters such as flooding

**WHEREAS**, FEMA has authorized the development of county-based natural hazard, multi-jurisdictional, natural hazard mitigation plans to comply with this requirement; and

**WHEREAS**, FEMA and the New Jersey Office of Emergency Management (NJOEM) have granted permission to New Jersey Meadowlands Commission to develop a plan for Bergen County and all of its constituent municipalities; and

**WHEREAS**, the NJMC has the technical expertise and resource capability to complete a comprehensive natural hazard mitigation plan which would ensure the eligibility of funding for Bergen County and its constituent municipalities in the event of a disaster declaration.

**WHEREAS**, Flooding is the most significant and repetitive type of natural disaster that has historically impacted Bergen County. The NJMC has a successful history in the area of land use management and flood plain management planning.

**WHEREAS**, the County of Bergen on behalf of all 70 municipalities has required the assistance of the New Jersey Meadowlands Commission in preparing a county-wide, multi-jurisdictional, natural hazard mitigation plan; and

**WHEREAS**, The New Jersey Meadowlands Commission by their resolution # 05-123 agreed to apply on behalf of the County of Bergen for Federal Year 2006 Pre-Disaster Mitigation Program grant monies available from the Federal Emergency Management Agency. The NJMC will assume responsibility for the preparation of the grant and the development of a natural hazard mitigation plan for Bergen County. Lastly, the NJMC will lead the coordination of the solicitation of input from Bergen County and constituent municipal officials.

**NOW THEREFORE**, this Board directs the Office of Emergency Management to take all necessary steps to cooperate and assist the NJMC and all municipal constituents with the development of the county-wide, multi-jurisdictional, natural hazard mitigation plan.

## **Appendix C**

***Joint Agreement for Preparation  
of Grant Application and  
Development of Multi-  
Jurisdictional Natural Hazard  
Mitigation Plan for Bergen  
County by the NJMC***

MEMORANDUM OF UNDERSTANDING  
BY AND BETWEEN  
THE COUNTY OF BERGEN  
AND  
THE NEW JERSEY MEADOWLANDS COMMISSION  
REGARDING THE PREPARATION OF A FEDERAL EMERGENCY  
MANAGEMENT AGENCY (FEMA) GRANT APPLICATION AND THE  
DEVELOPMENT OF A NATURAL HAZARD MULTI-JURISDICTIONAL  
PRE-DISASTER MITIGATION PLAN FOR BERGEN COUNTY BY THE NEW  
JERSEY MEADOWLANDS COMMISSION

THIS AGREEMENT is made January 19, 2006, by and between:

THE COUNTY OF BERGEN, a public body having offices at One Bergen County Plaza, Hackensack, New Jersey 07601, hereinafter referred to as "Bergen County";

AND

THE NEW JERSEY MEADOWLANDS COMMISSION, a body politic and corporate of the State of New Jersey, hereinafter referred to as the "NJMC."

WITNESSETH:

WHEREAS, the Federal Emergency Management Agency (FEMA), in accordance with the Disaster Mitigation Act of 2000 (44 CFR parts 201 & 206) mandated that all jurisdictions (municipalities and counties) develop comprehensive natural hazard mitigation plans by November 01, 2003; and

WHEREAS, jurisdictions that complete a comprehensive mitigation plan are then eligible for federal Hazard Mitigation Grant funding following a presidentially-declared disaster; and

WHEREAS, FEMA has authorized the development of county-based multi-jurisdictional natural hazard mitigation plans to comply with this requirement; and

WHEREAS, Bergen County has requested the assistance of the NJMC in preparing a county-wide, multi-jurisdictional, pre-disaster mitigation plan; and

WHEREAS, FEMA and the New Jersey Office of Emergency Management (NJOEM) have granted permission to the Bergen County Office of Emergency

Management (BCOEM) to develop a plan for Bergen County and all of its constituent municipalities; and

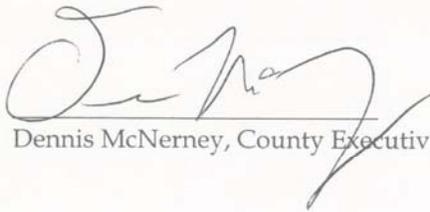
**WHEREAS**, all constituent municipalities have agreed to participate in this endeavor; and

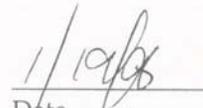
**WHEREAS**, the NJMC has the technical expertise and resource capability to complete the comprehensive natural hazard mitigation plan, which would ensure the eligibility of funding for Bergen County and its constituent municipalities in the event of a disaster declaration.

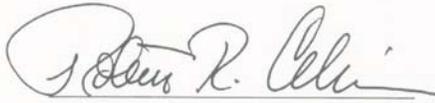
**NOW, THEREFORE**, Bergen County and the NJMC agree as follows:

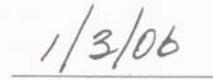
1. The NJMC shall prepare and submit an application on behalf of Bergen County for FY 2006 Pre-Disaster Mitigation Program grant monies available from the Federal Emergency Management Agency, which application shall be reviewed and approved by Bergen County prior to submission.
2. The NJMC shall develop a natural hazard, multi jurisdictional, pre-disaster mitigation plan for Bergen County.
3. The NJMC will lead the coordination of the solicitation of input from Bergen County and constituent municipal officials.
4. Bergen County shall cooperate fully and lend its support to the NJMC in the preparation of the grant application and the plan.

APPROVED:

  
Dennis McNerney, County Executive

  
Date

  
Robert R. Ceberio, Executive Director  
New Jersey Meadowlands Commission

  
Date

# Appendix D

***3-22-06 Mitigation Plan  
Workshop Presentation***



# Bergen County Multi-Jurisdictional Natural Hazard Mitigation Plan: **Mitigation Planning Workshop**

Bergen County Office of Emergency Management  
New Jersey Meadowlands Commission

*Presented By:*

*Nicholas Agnoli, P.E.*

*Plan Coordinator*

*March 22, 2006*



## Workshop Agenda

- ➔ Welcome and Introduction (9:00)
- ➔ Status of Information Received to Date
- ➔ Upcoming Deadlines
- ➔ Mitigation Planning District Assignments (Draft)
- ➔ Revised Form Overview
- ➔ Breakout Groups
- ➔ Lunch
- ➔ Dismissal (12:30)



## Status of Information Received to Date

**Mitigation 20/20** paperwork from the following 23 towns was either lost or not submitted to Stevens:

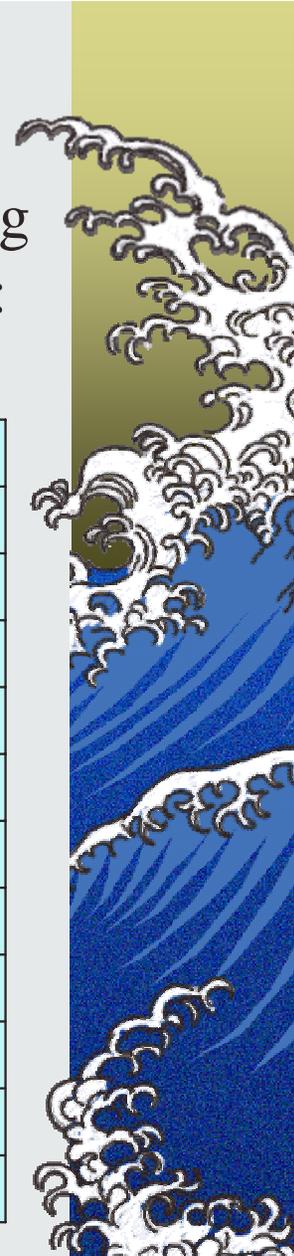
Bogota	Moonachie
Demarest	Northvale
Dumont	Park Ridge
East Rutherford	Saddle Brook
Englewood	Saddle River
Garfield	Teaneck
Harrington Park	Tenafly
Leonia	Waldwick
Lodi	Wallington
Lyndhurst	Woodridge
Maywood	Wyckoff
Montvale	



## Status of Information Received to Date

**Recent Event Analysis** paperwork from the following 34 towns was either lost or not submitted to Stevens:

Bogota	Lodi	Teaneck
Demarest	Lyndhurst	Tenaflly
Dumont	Maywood	Teterboro
East Rutherford	Montvale	Upper Saddle River
Englewood	Moonachie	Waldwick
Englewood Cliffs	Northvale	Wallington
Fairlawn	Norwood	Washington
Fairview	Park Ridge	Woodcliff Lake
Garfield	Ridgefield	Wood-Ridge
Harrington Park	Rockleigh	Wyckoff
Leonia	Saddle Brook	
Little Ferry	Saddle River	

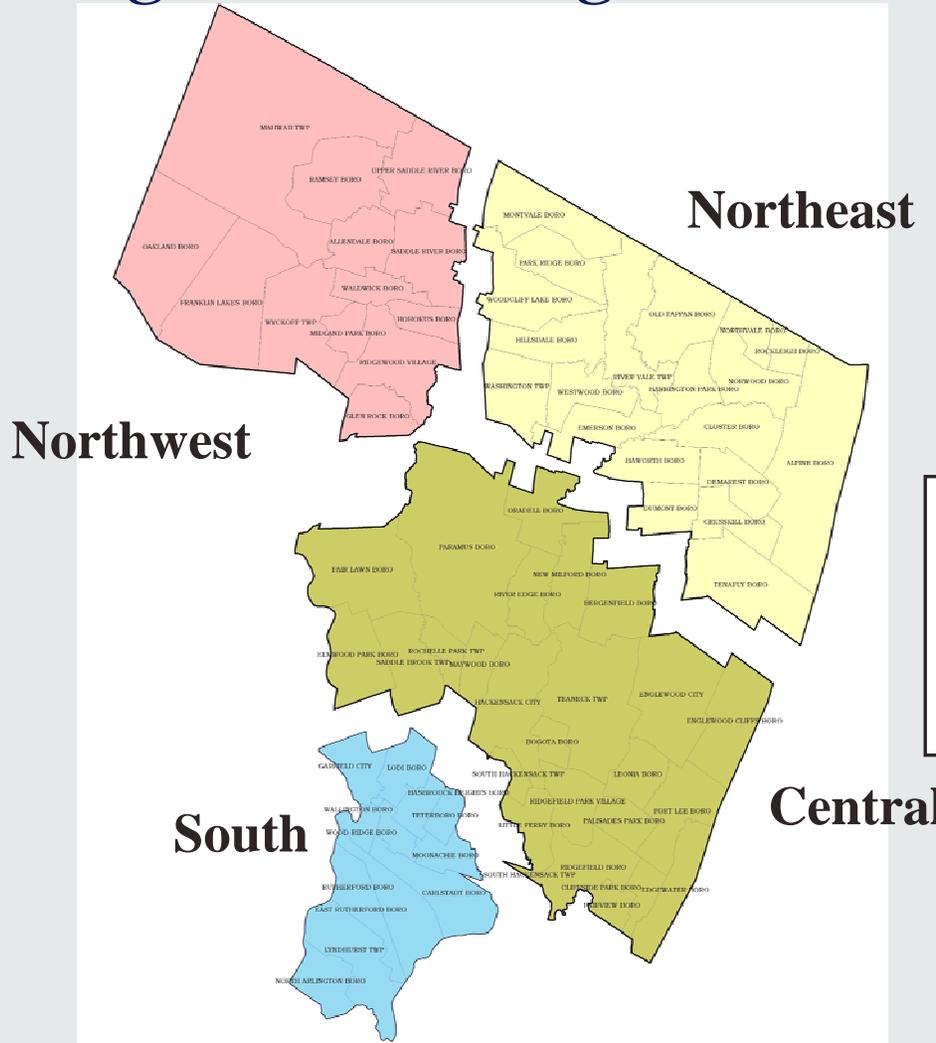


## Upcoming Deadlines

- ➔ The NJMC and BCOEM must have all data (see below) from those interested in taking part by 5/1/2006. We can not grant extensions.
- ➔ Review letters will be sent from 5/1/2006 to 5/30/2006 requesting additional information or deeming a submission complete:
  - ➔ Recent Event Analyses
  - ➔ Repetitive Loss Properties
  - ➔ Neighborhoods / Problem Areas
  - ➔ Critical Facilities
  - ➔ Mitigation 20/20 Forms (updated)
- ➔ Follow-up letters will be sent, as necessary, following QA/QC by NJMC.

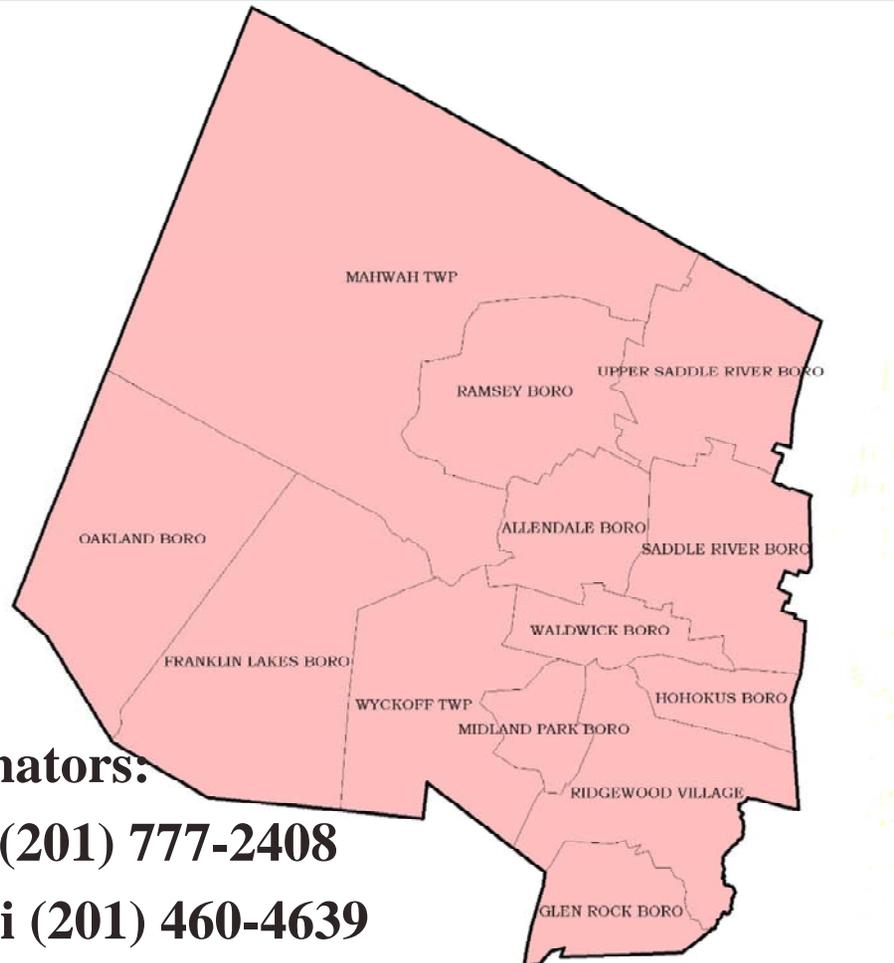


# Mitigation Planning District Assignments



# Mitigation Planning District Assignments

## Northwest



### District Coordinators:

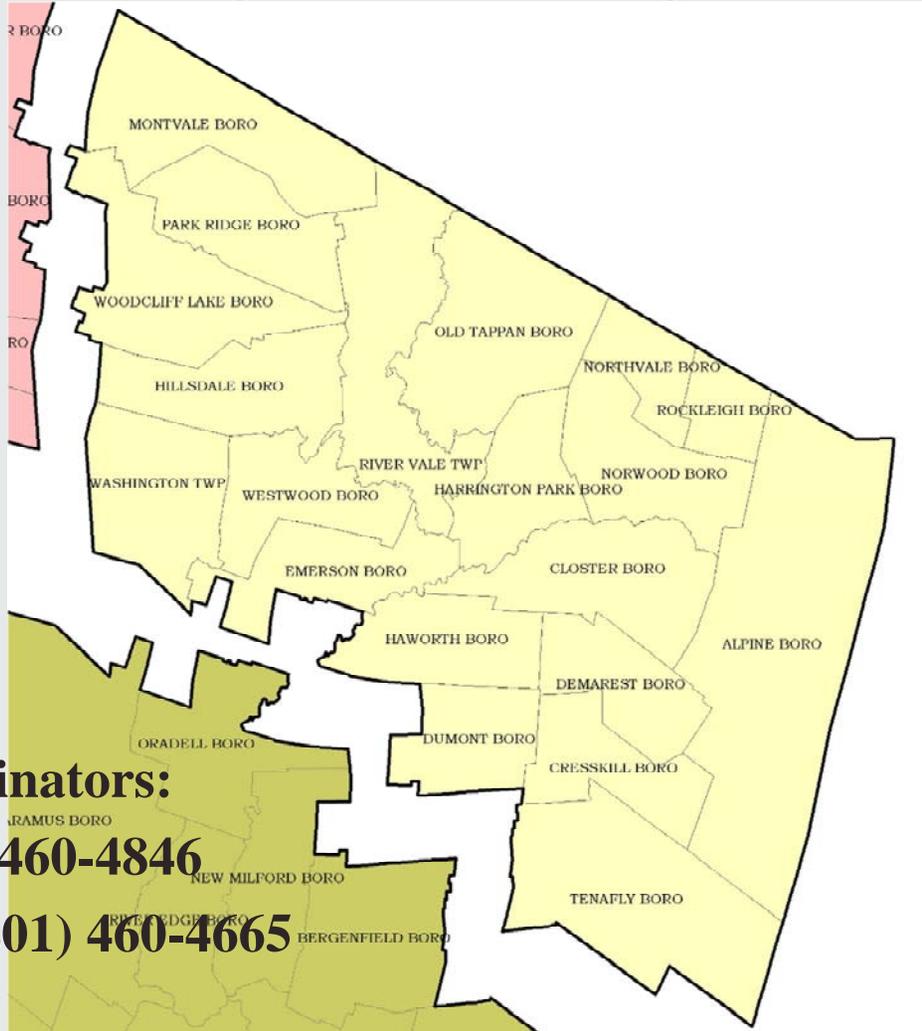
**Larry Scorzelli (201) 777-2408**

**Ralph Venturini (201) 460-4639**



# Mitigation Planning District Assignments

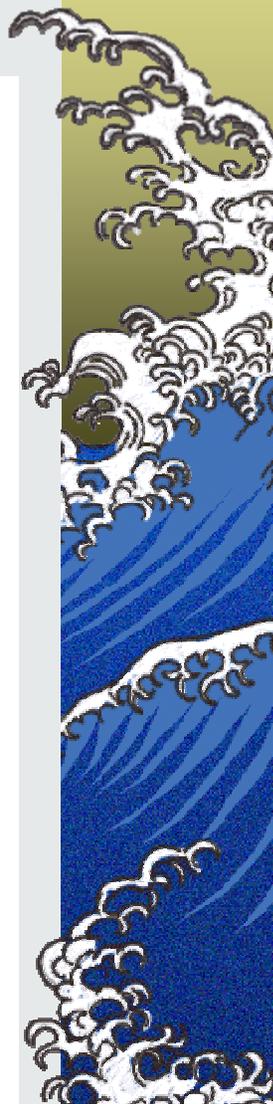
## Northeast



### District Coordinators:

**Wai Lee (201) 460-4846**

**Carl Leppin (201) 460-4665**



# Mitigation Planning District Assignments

## Central



### District Coordinators:

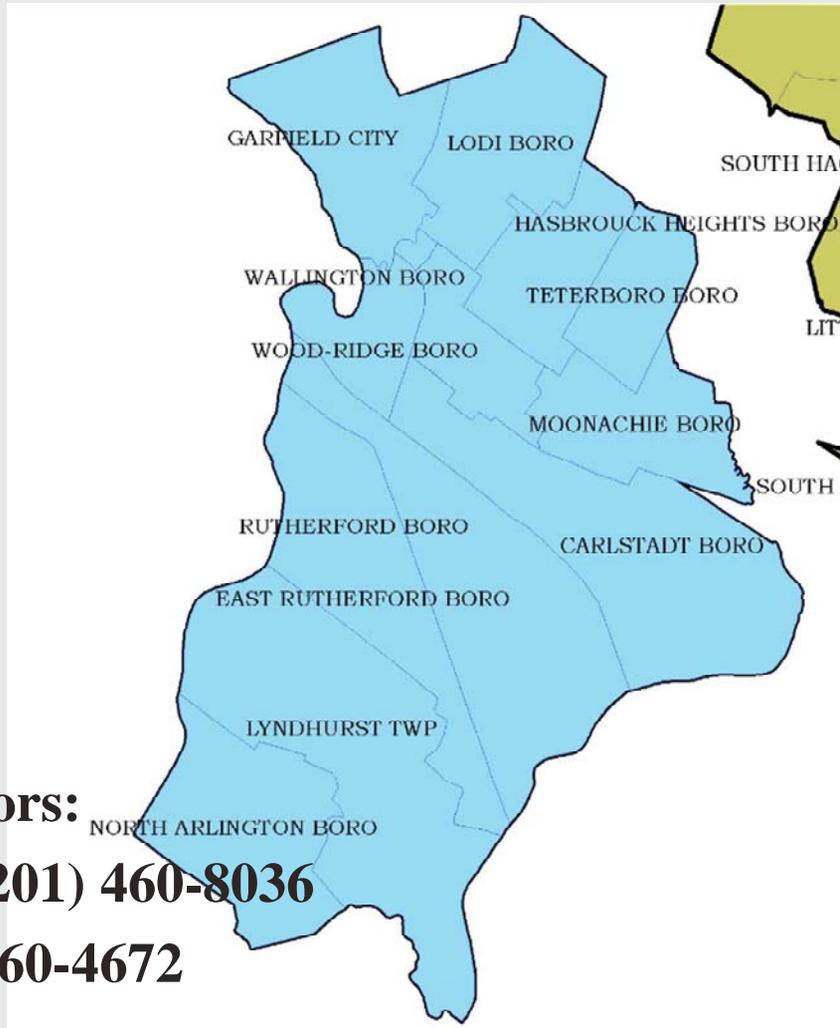
**Brandon Alviano (201) 460-4616**

**Mark Skerbetz (201) 460-8132**



# Mitigation Planning District Assignments

## South



### District Coordinators:

**Cheryl Rezendes (201) 460-8036**

**Mia Petrou (201) 460-4672**

## Revised Form Overview

### Neighborhood and Facility Assessment Form (Formerly “Mitigation 20/20 Form”)

- ➔ Please take out your handouts
- ➔ “Socioeconomic Factors”
- ➔ “Codes and Ordinances”
- ➔ “Land Use”
- ➔ “Natural Hazards Affecting Jurisdiction”
- ➔ “Neighborhood / Problem Area Profiles”
  - ➔ Make as many copies as you need
  - ➔ “Vulnerability Assessment”
  - ➔ “Critical Facilities”
    - ➔ Again, make as many copies as necessary
    - ➔ Review Larry’s list of Critical Facilities
    - ➔ “Vulnerability Assessment”



## Revised Form Overview

### Definition of “Critical Facilities”

- ➔ FEMA 322 states that “A **critical facility** is a structure that, if flooded, would present an immediate threat to life, public health, and safety. Critical facilities include hospitals, facilities that produce toxic materials, and emergency operations centers.”
- ➔ The related regulation at 44 CFR § 206.226 states that “The facility provides **critical services**, which include power, water, sewer services, wastewater treatment, communications, emergency medical care, fire department services, emergency rescue, and nursing homes.”



## Revised Form Overview

### Recent Event Analysis Form (One For Each Event)

- Please take out your handouts
- Identify the primary natural hazard
- Photos, maps, and other supporting documents
- Define secondary natural hazard
- PDD
- Rate magnitude
- Estimate costs\*
- Evaluate mitigation effectiveness
- Define needs highlighted
- Current mitigation initiatives



## Revised Form Overview

### Recent Event Analysis Forms – Estimate Costs\*

#### → Direct Damage

→ Immediate, first-order damage, the result of a natural disaster with no intervening effect or mechanism between act and outcome, and are usually easily recognizable

#### → Indirect Damage

→ Indirect damage tends to be delayed and may be difficult to recognize and is often a cumulative or cascading result of many combined disasters.



## Revised Form Overview

### Repetitive Loss Property Documentation Form

- ➔ A structure for which two or more losses of more than \$1,000 (building and contents combined) have been paid during the most recent 10-year period.
- ➔ This information in the Meadowlands District can be obtained from your Planning District Coordinator.
- ➔ Outside the District, this information is available from your NFIP Coordinator:
  - ➔ Mr. John Scordato  
Bureau of Dam Safety and Flood Control – NJDEP  
P.O. Box 419  
Trenton, NJ 08652  
(609) 292-2296  
(609) 984-1908(FAX)  
[john.scordato@dep.state.nj.us](mailto:john.scordato@dep.state.nj.us)



## Breakout Groups

- ➔ Short break
- ➔ Begin completion of each form
- ➔ Utilize your District Coordinator for any questions
- ➔ Frequently asked questions (“FAQs”) will be distributed following the meeting to assist others
- ➔ Break for lunch



# Appendix E

***5-29-06 New Jersey State Police  
Hazard Mitigation Workshop  
Fact Sheet***



## Hazard Mitigation Goals, Objectives and Strategy

Mitigation is sustained action taken to reduce or eliminate the long-term risk to human life and property from natural or manmade hazards and their effects. The Disaster Mitigation Act of 2000 requires a State Hazard Disaster Mitigation Plan be in place before any FEMA grant funds can be awarded.

The State of New Jersey completed a All Hazards Pre-Disaster Mitigation Plan and received FEMA approval in April 2005. To further that end, FEMA and NJ OEM has worked to get the planning process underway as quickly as possible while at the same time, get as many actual mitigation projects completed with funds available before eligibility ran out. Five mitigation goals were detailed in the New Jersey State Mitigation Plan. The Plan was, adopted in April 2005 and the goals and objectives remain the same. Simply stated they are:

Goal	Objective
<p><b>1. To protect life through</b></p>	<ul style="list-style-type: none"> <li>○ Improved warning and emergency communications systems.</li> <li>○ Effectively addressing laws and regulations that speak to hazard mitigation issues.</li> <li>○ Reducing the impacts of hazards on vulnerable populations.</li> <li>○ Strengthen State and local building code enforcement.</li> <li>○ Training emergency responders</li> </ul>
<p><b>2. To protect property through</b></p>	<ul style="list-style-type: none"> <li>○ Protecting critical State facility assets.</li> <li>○ Protecting critical non-state owned facility assets.</li> <li>○ Reducing repetitive losses</li> </ul>
<p><b>3. To promote a sustainable economy by</b></p>	<ul style="list-style-type: none"> <li>○ Providing incentives for mitigation planning and actions.</li> <li>○ Forming partnerships to leverage and share resources for mitigation</li> <li>○ Ensuring continuity of critical business operations</li> </ul>
<p><b>4. To protect the environment by</b></p>	<ul style="list-style-type: none"> <li>○ Implementing hazard mitigation policies to protect the environment.</li> </ul>
<p><b>5. To increase public preparedness through</b></p>	<ul style="list-style-type: none"> <li>○ Improved public awareness and preparedness for natural hazards and the risks they pose.</li> <li>○ Improved hazard Information data bases and maps</li> <li>○ Enhanced community outreach.</li> <li>○ Increased development of local mitigation planning.</li> </ul>

**MITIGATION STRATEGY:** To accomplish the mitigation goals New Jersey will use a three prong strategy:

1. Recognize flooding as the major disaster threat facing the state and use acquisition between a voluntary seller and a public agency as the primary means to accomplish all of the goals and objectives.
2. Offer, as a secondary means of accomplishing the state goals, assistance in the elevation of homes where or when acquisition is not an option.
3. Work with both county and municipal governments that have an approved local mitigation plan and those whose plans are nearing completion to develop sound and beneficial projects to alleviate the impacts of all natural disasters, not limited to flooding alone.

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**For more information Contact:** New Jersey Office of Emergency Management, Division of State Police  
P. O. Box 7068, West Trenton, NJ 08628-0068

**SFC Paul Miller, State Hazard Mitigation Officer**

Telephone: (609) 963-6963

Fax: (609) 530-3649

Email: [LPP4476@gw.njsp.org](mailto:LPP4476@gw.njsp.org)



# FACT SHEET

## FEMA Grant programs administered by NJOEM Hazard Mitigation

The Federal Emergency Management Agency (FEMA) is part of the United States Department of Homeland Security. FEMA's Mitigation Grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages. Currently, FEMA administers the following grant programs:

- The Hazard Mitigation Grant Program (HMGP)
- The Flood Mitigation Assistance (FMA) program,
- The Pre-Disaster Mitigation (PDM) program
- The Repetitive Flood Claims (RFC) program.
- The Severe Repetitive Loss (SRL) program will be added in FY 2007.

The RFC and SRL grant programs are designed to reduce or eliminate the long-term risk of flooding to NFIP-insured structures, and thereby reduce the number of claims paid from the National Flood Insurance Fund (NFIF).



### Hazard Mitigation Grant Program (HMGP)

[www.fema.gov/government/grant/hmgp/index.shtm](http://www.fema.gov/government/grant/hmgp/index.shtm)

Hazard Mitigation Grant Program funds are available following a Presidential disaster declaration. Eligible applicants include States, local governments, Indian Tribal governments, and some Private Non-Profit organizations. Communities may apply for HMGP assistance on behalf of affected individuals and businesses, and all funds must be used to reduce or eliminate losses from future disasters. Examples of projects include:

- Elevating flood-prone homes or businesses;
- Acquiring (and either demolishing or relocating) flood-prone homes from willing owners and returning the property to open space;
- Retrofitting buildings to minimize damage from high winds, flooding, earthquakes, and other hazards; and
- Implementing minor flood control projects to protect critical facilities.

HMGP provides up to 7.5 percent of total Disaster Assistance funds for mitigation measures to be implemented during the immediate recovery after a disaster. Grant applications are submitted to the State, which sets mitigation priorities and awards grants based on available funding and State criteria. FEMA conducts the final eligibility review to ensure that all projects are compliant with Federal regulations, including the Federal law that requires States and communities to have FEMA-approved mitigation plans in place prior to receipt of HMGP project funds. A mitigation plan must identify hazards, assess community needs, and describe a community-wide strategy for reducing risks associated with natural disasters.

### Flood Mitigation Assistance (FMA)

[www.fema.gov/government/grant/fma/index.shtm](http://www.fema.gov/government/grant/fma/index.shtm)

The Flood Mitigation Assistance program provides funding to States and communities for measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP). The program provides grants for mitigation planning and projects with a goal of reducing claims under the NFIP.

- Planning grants are used to assess flood risks and develop Flood Mitigation Plans to reduce the risks; and
- Project grants are used to implement mitigation activities that reduce flood losses to NFIP-insured properties by elevating, acquiring, and demolishing or relocating NFIP-insured buildings. Project grants are available to NFIP-participating communities that have a Flood Mitigation Plan in place.

Reducing the number of repetitive loss structures insured by the NFIP is a key priority for the FMA program. Repetitive loss structures are those that have sustained two or more flood losses within a period of ten years, with each loss resulting in a flood insurance claim payment exceeding \$1000.

## The Status of Hazard Mitigation Projects in New Jersey

2006 Mitigation Project Grants				
Government	Funding Source	FEMA Funds	Other Funds	Total
* Harmony Acquisitions	FMA	674,640	224,880	899,520
Wayne Acquisitions	FMA	5,749,500	1,016,500	7,666,000
* Harmony Acquisitions	HMGP	858,900	286,300	1,145,200
Harmony Elevations	HMGP	372,300	124,100	496,400
* Pohatcong Acquisitions	HMGP	366,550	121,850	487,400
Fairfield Elevations	HMGP	103,073	64,358	257,431
* Carneys Point Flood Control	PDM	1,221,069	407,023	1,628,092
Little Falls Acquisition	RFC	1,900,000	0	1,900,000
<b>8 Projects under 4 FEMA Funding Programs Totaling</b>		<b>11,246,032</b>	<b>2,245,011</b>	<b>14,480,043</b>

\* Completed

2007 Mitigation Project Grants				
Government	Funding Source	FEMA Funds	Other Funds	Total
Brigantine City Pump Station	FMA	750,000	250,000	1,000,000
Harmony Township Acquisitions	FMA	2,200,000	733,000	2,933,000
Little Falls Acquisitions	RFC	1,500,000	0	1,500,000
Frenchtown Acquisitions	RFC	1,000,000	0	1,000,000
Lambertville Flood Control	HMGP	150,000	50,000	200,000
<b>4 Projects under 2 FEMA Funding Programs Totaling</b>		<b>5,600,000</b>	<b>1,033,000</b>	<b>6,433,200</b>

Summary of 2006 and 2007 Mitigation Project Grants				
2006 – 8 Projects Approved	FMA, RFC, PDM & HMGP	11,246,032	2,245,011	14,480,043
2007 – 5 Projects Approved/	FMA, RFC & HMGP	5,600,000	1,033,000	6,433,200
<b>17 Counties preparing All Hazard Plans and 4 Counties Preparing FMA Plans</b>		<b>16,846,032</b>	<b>3,278,011</b>	<b>20,913,243</b>

**For more information Contact:** New Jersey Office of Emergency Management, Division of State Police  
P. O. Box 7068, West Trenton, NJ 08628-0068

**SFC Paul Miller, State Hazard Mitigation Officer**  
Telephone: (609) 963-6963 Fax: (609) 530-3649 Email: [LPP4476@gw.njsp.org](mailto:LPP4476@gw.njsp.org)



## A Natural Hazard Mitigation “Project” Saves Money

**The 2005 Multihazard Mitigation Council Study\* “shows that money spent on reducing the risk of natural hazards is a sound investment. On average, a dollar spent by on hazard mitigation (actions to reduce disaster losses) provides about \$4 in future benefits.”**

\*The two-volume study report is available for free download at: <http://www.nibs.org/MMC/mmchome.html>.

### **Hard Projects – Physical measures to avoid or reduce damage resulting from disasters:**

- Acquiring, elevating, or relocating buildings, lifelines or other structures threatened by floods
- Strengthening buildings and lifelines to resist flooding, earthquake or wind force
- Improve drainage and land conditions

### **Soft Projects – Activities that lead to policies, practices, and other activities to reduce risks:**

- Assessing hazards, vulnerability, and risk
- Conducting planning to identify, mitigation efforts, policies, and practices and set priorities
- Educating decision-makers and building constituencies
- Facilitating the selection, design, funding of mitigation projects

### **Goal Oriented Projects – Develop hazard mitigation benefits that:**

- Reduce direct property damage (e.g., buildings, contents, bridges, pipelines)
- Reduce direct business interruption loss (e.g., damages to industrial, commercial, and retail facilities)
- Reduce indirect business interruption loss (e.g., ordinary economic “ripple” effects)
- Reduce non-market environmental damage (e.g., wetlands, parks, wildlife)
- Reduce other non-market damage (e.g., historic sites)
- Reduce societal losses (e.g., casualties, homelessness)
- Reduce need for emergency response (e.g., ambulance service, fire protection)

### **Projects, described in the report, that work include:**

- Structural improvement to a specific public facilities to reduce or prevent damage
- Community-wide or system-wide improvement projects
- Purchase and demolish homes in flood prone area
- Elevation or relocation of repetitively flood damaged homes
- Construction of disaster resistant safe rooms and shelters
- Road grading and drainage improvement projects to reduce the effects of flooding
- Construction of detention and retention basins as part of a storm water management program
- Education programs to increase the public’s awareness of hazards, mitigation and preparedness
- Improving communications and transmission of emergency information
- Installation of automated hazard mitigation information systems, early flood warning systems and gauges
- Tree trimming and removal programs to reduce the loss of property and facilitate emergency response
- Installation of bulkheads to reduce flood damage and business losses
- Construction of flood control projects – berms, levees, and dikes
- Development of local hazard mitigation plans

### **FEMA Hazard Mitigation funding available through NJ Office of Emergency Management**

- **Hazard Mitigation Grant Program** (Post disaster program)
- **Repetitive Flood Claim Program**
- **Flood Mitigation Assistance Program** (Pre disaster program)
- **Pre Disaster Mitigation Program – Competitive** (Pre disaster program)

**For more information Contact:** New Jersey Office of Emergency Management, Division of State Police  
P. O. Box 7068, West Trenton, NJ 08628-0068

**SFC Paul Miller, State Hazard Mitigation Officer**

Telephone: (609) 963-6963

Fax: (609) 530-3649

Email: [LPP4476@gw.nisp.org](mailto:LPP4476@gw.nisp.org)

# **Appendix F**

## ***Record of Review***

# **Appendix G**

## ***Critical Facilities Maps by Municipality***

# Appendix H

## ***County-wide Critical Facilities Vulnerability Maps***

# **Appendix I**

## ***Recent Event Analyses***

# Appendix J

## ***Stakeholder Engagement: Identifying Mitigation Projects***

## Bergen County Hazard Mitigation Plan Stakeholder Engagement: Identifying Mitigation Projects

Stakeholder Name, Phone #, Email Address & Organization Represented	Hazard the Project Mitigates	Project Description	Stakeholder is willing to help (Yes / No)
Judy Ballerine PSE&G 201-330-6590 <a href="mailto:judith.ballerine@pseg.com">judith.ballerine@pseg.com</a>	Aerial Photos During Emergencies	To determine path and levels of flood to enable larger mitigation of flood relief control - update or use with county system	
		Dredge HS River, clean shore lines and stabilize river bank Clear stabilize stream banks	
Captain Joseph P. Kickey 201-330-2045 <a href="mailto:CAPTJPK@COMCAST.NET">CAPTJPK@COMCAST.NET</a> Secaucus O.E.M.			
Ira Marks 201-794-5390 <a href="mailto:OEM@FAIRLAWN.ORG">OEM@FAIRLAWN.ORG</a> FAIR LAWN OEM			
Robert B. Ryan 201-445-9064 <a href="mailto:rbngan72@optonline.net">rbngan72@optonline.net</a>		Small Pox vaccinations in conjunction BD of health, CERTs Personnel	

Jim Darnovc			
Guttenberg Police			
6008 PAM A.C.			
201-868-3300			
Robert Kugler	River	The Saddle River needs dredging to mitigate flooding during rainstorms. Several other communities that border the Saddle River also experience flooding which causes many homes and businesses to experience costly losses. We need to fund an	YES
201-587-2928	(Coastal)		
<a href="mailto:chief@saddlebrookpd.com">chief@saddlebrookpd.com</a>	Flooding		
SB Office of Emergency Mgt.			
		extensive dredging project to eliminate flooding along the Saddle River communities.	
Raymond Roe			
Mahwah OEM			
<a href="mailto:RROE@Mahwahtwp.org">RROE@ Mahwahtwp.org</a>			
Lt. Michael J. Conner			
201-387-5000			
<a href="mailto:Mconner@dumontpolice.org">Mconner@dumontpolice.org</a>			
Dumont Police Dept.			
Saverio V. Fasciano			
201-664-1140			
<a href="mailto:savierof@optonline.net">savierof@optonline.net</a>			
Twp. Of Washington Police/OEM			

Maryann Trommelen	Special Needs Population	Work w/ municipalities to identify vulnerable populations and emergency services which may be needed (food, medications, power, physical assistance) Eey- emergency communications systems	
973-904-3621			
<a href="mailto:pcoem@passaiccountynj.org">pcoem@passaiccountynj.org</a>			
Joe Clemeati		Belle Avenue Drainage Improvements Farby Ct. Drainage Improvements Stream Bank stabilization project	
Twp. Teaneck			
201-837-4840			
Michael J. Ward	Flooding	Several Ditches in need of cleaning and redone to eliminate standing water which leads to disease Saddle River Avenue bridge- reconfigure bridge so debris flows through unobstructed	
201-697-5244			
<a href="http://michaelshocmteaul.com">michaelshocmteaul.com</a>			
		Both projects would benefit several communities along the ditches	

# **Appendix K**

## ***Brainstorming***

<b>BRAINSTORMING: STEP 2</b>							
<b>Project I.D.</b>	<b>Hazard Addressed</b>	<b>Goals Addressed</b>					<b>Description</b>
200-001	Infectious Epidemic	1				5	Small Pox Vaccinations
200-002	ALL Hazards	1	2			5	Identify special needs populations and required emergency services
200-003	Riverine & Stormwater Flooding, Infectious Epidemic	1		3		5	Clean and redo ditches to eliminate standing water
200-004	Riverine & Stormwater Flooding	1	2	3	4		Provide relief to Route 17 detention system
200-005	Riverine & Stormwater Flooding	1		3	4	5	Mitigate Backflow of Sanitary Sewer
200-006	Riverine & Stormwater Flooding	1	2	3	4		Survey first floor elevations of homes in/near floodplains (2-19)
200-007	ALL Hazards	1	2	3	4		Establish a Community Emergency Response Team (CERT)
200-008	N/A						Replace all lights in public buildings with compact florescent bulbs
200-009	N/A						Partner with private sector to offer reduced-cost florescent bulbs to all citizens for home and business use
200-010	N/A						Partner with private sector to offer reduced-cost water heater blankets/installation to all citizens
200-011	N/A						Tire pressure check/fill stations to lower GHG emissions, improve energy efficiency, decrease local pollution and lower financial costs for all city/public/private vehicles
200-012	N/A						Analyze/estimate/adopt 1990 carbon emissions level
200-013	Extreme Heat, Extreme Cold/Snow/Ice	1					Develop heating/cooling stations with adequate capacity and resources
200-014	N/A						Save lives and reduce suffering that may occur as a result of Extreme Heat and/or Extreme Cold events.
200-015	Major Fire (Urban/Wildfires), Lightning	1	2	3	4	5	Learn options for mitigating exposure to fires spreading among row homes.
200-016	Windstorms and Tornadoes	1		3		5	Educate, involve & empower community children to help us mitigate our town's exposure to wind-borne debris.
200-017	N/A						Save lives, reduce suffering and mitigate economic impacts of potential Infectious Epidemic and Pandemic Influenza events: Gel & Respirators
200-018	N/A						Save lives, reduce suffering and mitigate economic impacts of potential Infectious Epidemic and Pandemic Influenza events: Develop distance learning strategies
200-019	ALL Hazards	1					Identify persons at increased risk, including: poor, elderly, infirmed, visitors without a local social network, etc.
200-020	ALL Hazards	1	2				Develop a communication system to be used during all types of hazard events.
200-021	ALL Hazards	1	2				Implement early-warning siren system for all hazard types.
200-022	Riverine & Stormwater Flooding, Major Fire, Windstorms, Earthquake			3		5	Conduct fuel oil survey/study to determine locations of all fuel oil tanks and educate owners regarding mitigation measures.
200-023	ALL Hazards	1	2				Construct/install portable & permanent emergency communications bulletin boards at strategic locations throughout town (particularly helpful during power outages).
200-024	ALL Hazards		2	3	4		Create, install and maintain backup data systems for all critical facilities
200-025	Riverine & Stormwater Flooding, Major Fire, Windstorms, Earthquake			3		5	City-wide campaign to eradicate fuel oil tanks in floodplain and secure tanks above flood plain
200-026	Earthquake	1		3			Anchor shelves, water heaters, bookcases, etc., to walls in schools, libraries, homes and offices
200-027	Riverine & Stormwater Flooding	1	2	3	4	5	Educate property owners re: Flood insurance: including the creation of GIS maps w/# of NFIP policy holders by city block, illustrating flood plain and historic flood zones
200-028	ALL Hazards	1	2	3	4	5	Promote land use planning based on hazards
200-029	Riverine Stormwater Flooding & Earthquake	1		3	4		Strengthen parapet walls on old masonry buildings
200-030	Earthquake	1	2	3	4		Retrofit highway overpasses to withstand earthquakes
200-031	Riverine & Stormwater Flooding	1	2	3	4		Elevate structures above the floodplain
200-032	ALL Hazards	1		3			Strictly investigate and enforce building codes and standards
200-033	Major Fire (Urban/Wildfires)	1		3			Promote the use of fire-retardant materials in new construction
200-034	ALL Hazards	1		3			Evaluate/study building codes and recommend revisions/new codes specific to hazard mitigation
200-035	ALL Hazards	1		3			Create and ratify new building codes
200-036	N/A						Evaluate/Study/Create/Ratify New coastal zone management regulations
200-037	N/A						Analyze existing easements and propose/adopt new to mitigate hazards
200-038	Riverine & Stormwater Flooding	1	2	3	4	5	Evaluate/modify/adopt new: floodplain development regulations
200-039	N/A						Evaluate/modify/adopt new: floodplain zoning regulations
200-040	Landslide & Erosion	1		3		5	Evaluate/modify/adopt new: hillside development regulations
200-041	Riverine & Stormwater Flooding	1		3	4	5	Evaluate/modify/adopt new: open space regulations and protected lands
200-042	Riverine & Stormwater Flooding	1		3		5	Evaluate/modify/adopt new: waterfront setback regulations

200-043	N/A						Evaluate/modify/adopt new: special use permit requirements/procedures
200-044	Riverine & Stormwater Flooding	1	2	3	4	5	Evaluate/modify/adopt new: storm water management regulations
200-045	ALL Hazards	1	2	3	4	5	Evaluate/modify/adopt new: subdivision and development regulations
200-046	N/A						Evaluate/modify/adopt new: transfer of development rights
200-047	Riverine & Stormwater Flooding	1		3	4	5	Evaluate/acquire hazard-prone structures
200-048	Riverine & Stormwater Flooding	1		3	4		Construction of barriers to protect flood-prone structures regarding floating debris/ice
200-049	N/A						Elevation of flood-prone structures
200-050	Riverine & Stormwater Flooding	1		3			Relocation of structures threatened by hazards
200-051	ALL Hazards	1	2	3			Evaluate structural retrofits for critical facilities (e.g., reinforcement, flood-proofing, storm shutters, bracing, etc.)
200-052	ALL Hazards	1		3			Educate public regarding potential retrofits for privately owned structures
200-053	N/A						Evaluate/modify/adopt new requirements for disclosure of hazard impact vulnerability and history in real estate transactions
200-054	Riverine & Stormwater Flooding, Windstorms & Tornadoes					5	Restore wetlands/dunes/beaches/etc
200-055	N/A						Evaluate/modify/adopt new: Sediment and erosion control regulations
200-056	Riverine & Stormwater Flooding, Landslides & Erosion	1	2	3	4		Restore stream/watercourse corridors & water control structures
200-057	Riverine & Stormwater Flooding					5	Evaluate/modify/adopt new: Stream dumping regulations
200-058	Riverine & Stormwater Flooding, Major Fire (Urban/Wildfires)					5	Evaluate/modify/adopt new: Urban forestry and landscape management regulations and municipal practices
200-059	Multi-Hazard					5	Evaluate/modify/adopt new: Wetlands development regulations
200-060	ALL Hazards	1	2	3	4		Evaluate/upgrade/acquire new hazard warning systems (community sirens, NOAA weather radios, etc)
200-061	Multi-Hazard	1	2	3	4	5	Evaluate hazard due to Dams & Reservoirs within & outside the municipality (regarding failure and/or management practices)
200-062	N/A						Evaluate hazard due to Levees and Floodwalls within & outside the municipality (regarding failure and/or upgrades/modifications)
200-063	ALL Hazards	1		3			Evaluate potential benefits of safe rooms and shelters and educate public regarding recommendations & options
200-064	Multi-Hazard	1		3			Evaluate potential of seawalls/bulk-heads/etc. for hazard mitigation
200-065	N/A						Develop hazard profiles for manmade and technological hazards.
200-066	ALL Hazards	1	2	3	4	5	Develop a cadre of volunteer staff to assist with project assessment, development and execution of mitigation projects.
200-070	Riverine & Stormwater Flooding			3			Aerial Photos during Emergency to determine path and levels of flood to enable larger mitigation of flood relief control. Update or use with county system.
200-071	N/A						Dredge HS River. Clean shore line and stabilize river bank.
200-072	Landslides & Erosion			3			Clear and stabilize stream banks.
201-001	Riverine & Stormwater Flooding	1		3			Allendale and Ho-ho-kus Brook needs to be dredged
201-002	N/A						The bridge and the brook at Allendale water and DPW at the New Street need to be widened
201-003	N/A						Gain approval for dredging brooks (Allendale and Ho-ho-kus)
202-001	Northeasters & Severe Winter Storm	1	2				Sufficient notice and forecast duration (Alpine)
202-002	Windstorms & Tornadoes, Riverine & Stormwater Flooding	1	2	3			Annual Inspection of Bridges, Culverts, and Retention Basins (Alpine)
202-003	Loss of Utilities (Electric)	1		3			Emergency Power - Primary Shelter (800 AMP, Diesel Generator) at Alpine School, 500 Hillside Ave. Est.- \$91,000
203-001	Riverine & Stormwater Flooding	1	2	3			Improve all Stormwater Control: (Brooks, Streams, Storm drains) (Bergenfield)
203-002	Riverine & Stormwater Flooding	1		3			Metzler Brook passes through the eastern portion of the municipality. Brook is very narrow in many areas causing flooding. It cannot handle the water flow. Borough of Bergenfield conducted a study in 2005. Project should build upon work already done.
203-003	Riverine & Stormwater Flooding	1		3			Dig a trench on the three properties (surrounding 8 Gallagher Court) so that excess water can runoff into the stream (includes county-owned property)
203-004	Riverine & Stormwater Flooding	1		3			Create a higher wall from the stream (behind 8 Gallagher Court) so as not to have flooding from the stream encroach on the 2 properties(includes county-owned property)
203-005	N/A	1		3			Remove footbridge on Hirshfeld Brook located on former Lieby property-now deeded to Old South Presbyterian Church.
203-006	Riverine & Stormwater Flooding, Infectious Disease	1		3		5	Remove shopping carts, branches, silt, and sand from Hirshfeld Brook to prevent mosquito breeding, West Nile Virus, and Malaria (see attached sheet for details)
203-007	Riverine & Stormwater Flooding	1		3			Entire garage becomes flooded as well as backyard & basement. The flooding begins at Cooper's Pond flow into brook. The Army Corp of Engineers built a cement wall to protect home on Central Ave but never addressed flooding issues still resulting. Problem has been addressed with the Mayor & Borough Administrator with no response from either. FEMA has been notified, however, no response. I do have pictures of flooded property if required.

203-008	Riverine & Stormwater Flooding	1		3			Home is rear of building. 155 & 169 Washington Ave, Bergenfield. In heavy rain rear yard flood & ruins material in shed. There is no way water can leave area. This has been happening for the last two years. I would appreciate if this could be looked into.
203-009	Riverine & Stormwater Flooding	1		3			General flooding of homes & property in the east side of Bergenfield by the main channel of the Metzler's Brook and tributary. I wish to present a project to the Commission to widen the stream channel of the brooks. I also propose to explain the need of constructing at least three stable, open channel flood retention basins. This brook presents a hazard to both life and property to hundreds of Bergenfield households during heavy rain. There are hundreds of street stormwater basins that enter this stream from the boroughs of Bergenfield, Dumont, and Cresskill, and Tenafly. This is a regional problem. I wish to give my personal presentation to the commission. I have researched this and can supply current and historic maps and text and flood and pre-flood photos. Please call or write me.
203-010	Riverine & Stormwater Flooding	1		3			Deepen Metzler's Creek at Bradley Footbridge (diagram included)
203-011	Riverine & Stormwater Flooding	1		3			Hirschfield Brook was widened in 1968 to alleviate flooding up stream which helped a little. Factories, parking lots and storm sewer runoff has made the condition worse because of the amount of water from recent rains. The huge concrete pedestrian bridge on what is now property owned by Old South Church on Church Street is a main bottle neck that was never removed. The water in the twelve foot wide brook cannot readily flow though the six foot wide opening in the sand bridge. This causes back pressure which results in silt and sand drop out and builds up reducing the seven foot depth to only five foot.
203-012	N/A						When there is no rain for a week or so in the summer the silt and sand of the Hirschfield Brook becomes little puddles. It then becomes the perfect area to breed mosquitoes which it has done very well. In the last four years we have seen and been bitten by more mosquitoes than in the last forty-five years.
203-013	Riverine & Stormwater Flooding	1		3			Repair drainage at Veterans Memorial Park, Bergenfield NJ. (Park graded to drain N to Wildrose. Current several vaults but not connected to sewer) Water pools at basketball court and drains onto properties on Wildrose. Flooding from on most rainstorms. Solution: Build bypass or attach to sewer
203-014	Riverine & Stormwater Flooding	1		3			Increase size of sewer pipes on New Bridge Rd and Windsor Road in Bergenfield NJ. Flood Road on major storms and back up flooding on adjacent properties.
204-001	Riverine & Stormwater Flooding	1		3			Clearing creek of debris, contain roadway on original right of way with flood wall containment. Improve weir size and strength to hold more debris at Elm Ave & River RD. Est.-\$300,000
204-002	Riverine & Stormwater Flooding	1		3			Clearing debris along ditch, roadway containment along above roadway, removal of silt filled debris in ditch, replace culvert in Olsen Park with on with clapper valve type to stop reverse flow of water into Recreation field in both public park and Board of Education fields.
205-001	Loss of Utilities (Electric)	1	2		4		Conversion of borough-wide communication system from wideband to narrow band to meet FCC requirements and permit simultaneous transmission of dispatch and detailed information to all emergency service departments at police dispatch desk at headquarters with necessary infrastructure throughout borough of Carlstadt. Est. \$500,000
205-002	Loss of Utilities (Electric)	1	2		4		Emergency warning siren system for town-wide audible alert at various locations throughout the borough of Carlstadt. Est. \$75,000
205-003	Loss of Utilities (Electric)	1	2		4		Acquisition of property for, and construction of, state of the art public safety facility adjacent to existing Carlstadt Municipal building. Est. Property \$600,000 and Design and construction of facility \$1,250,000
205-004	N/A						Ambulance Vehicle for Carlstadt. Est. \$175,000
206-001	Loss of Utilities (Electric)	1	2		4		Emergency Power at 525 Palisade Ave, Borough Hall, EOC. Est. \$225,000
206-002	Loss of Utilities (Electric)	1	2	3	4		Emergency Pumps Kits in Borough of Cliffside Est. \$1,500
206-003	Loss of Utilities (Electric)	1	2		4		Emergency Power Shelters at Riverview and Palisade, 420 Oakdene Ave, 370 Palisade Ave
207-001	Loss of Utilities (Electric)	1	2	3	4		The two schools, Tenakill and Hillside need backup power. The borough also needs small back up power for all traffic lights as all lights are non-functional during blackout.
207-002	Riverine & Stormwater Flooding	1		3	4		Any major flash flood or heavy rain floods two streets, Piermont Rd. and Homans Ave. Borough has close streets and then clean streets at end of flood. (Closter)
207-003	Riverine & Stormwater Flooding	1		3		5	Stream cleaning on East side of (Closter) needs to be completed.
207-004	Riverine & Stormwater Flooding	1		3			Removal of critical infrastructure radio, 911, phone systems from basement of borough hall due to flooding at 295 Closter Dock Rd.
207-005	Riverine & Stormwater Flooding	1		3			Flood control measures for property, 50 Brokerson Ave.
207-006	Loss of Utilities (Electric)	1	2	3	4		Emergency generator for school building used for Emergency Shelter, 340 Hormans Ave. Est.-\$250,000
207-007	Riverine & Stormwater Flooding	1		3			Waterway enlarging, 1.5 miles from W73.952502 N40.967229 to W73.953708 N40.982640. Est.-\$3 million-\$5 million

207-008	Riverine & Stormwater Flooding	1		3			Waterway clearing, 1.5 miles from W73.952502 N40.967229 to W73.953708 N40.982640. Est.-\$3 million-\$5 million
208-001	Riverine & Stormwater Flooding	1		3			Dredging of the Tenakill Brook, Est.- \$1,000,000
209-001	ALL Hazards	1		3			Secondary railroad track crossing for emergency vehicle access, east and west at Old County Court and Wakelee Drive
209-002	Loss of Utilities (Electric)	1	2		4		Generator for E.O.C. at Wakelee Drive
210-001	Loss of Utilities (Electric), Riverine & Stormwater Flooding	1	2	3	4		Loss of power to (Dumont) demonstrated how critical the need for back up power is to cover pump stations. Also back up power needed for borough owned traffic lights.
210-002	Riverine & Stormwater Flooding	1		3			Clean, reinforce and repair storm drains
210-003	Riverine & Stormwater Flooding	1		3			Avoid paving grass and park areas that absorb rain
210-004	Riverine & Stormwater Flooding	1		3			Have towns clean debris and leaves from sewers and storm drains at least 3 times a year (especially after a flood)
210-005	Riverine & Stormwater Flooding	1		3			Barbara Road & Hickory have two storm drains but cannot handle heavy rains. Water comes halfway up my driveway & covers front yard. I keep "my" storm drain cleared. Have called when heavy items like a rug are in drain & I can't get it out.
210-006	Riverine & Stormwater Flooding			3			Curb on Hickory along my property have eroded. Snow ploughs tend to push snow on my corner- slowly chipping away at the curb.
210-007	Riverine & Stormwater Flooding	1		3		5	After heavy rains there is flooding behind my house which remains there 3-4 days and I worry that it could breed mosquitoes.
210-008	Riverine & Stormwater Flooding	1		3			Davies Ave. flooded after 57 years
210-009	Riverine & Stormwater Flooding	1		3			Land erosion cost me taxes for land cannot use
210-010	Riverine & Stormwater Flooding	1		3			Brook in my backyard, brook could be kept clean and sewers
210-011	Riverine & Stormwater Flooding	1		3			Backyard floods during rainstorms because of 15" drainage pipe that runs over to Manhattan Terr. Both the town engineer & building inspector are aware of this problem. Pipe runs through the backyards of properties located on Bedford Rd.
211-001	Riverine & Stormwater Flooding	1		3		5	Complete cleanout of the entire length of the flashers brook throughout the community and into adjacent communities. (Elmwood Park)
212-001	Loss of Utilities (Electric)	1	2		4		Emergency Power (generator) at 107 Carlton Ave, ERFD Station No. 2. Est.-\$95,000
212-002	Loss of Utilities (Electric)	1	2		4		Emergency Power (generator) at 312 Grove St., ERFD/EMS Station No. 1. Est.-\$95,000
212-003	Loss of Utilities (Electric)	1	2		4		Emergency Power (generator) at 37 Vreeland Ave, Primary Shelter. Est.-\$95,000
213-001	N/A						Borough has upgraded Storm/Sewer System and much of the waterfront properties have been developed in a way to accommodate storm situations.
213-002	Loss of Utilities (Electric)	1		3			Generator for backup shelter at EOC School at 251 Undercliff Ave. Est.- \$60,000
213-003	Riverine & Stormwater Flooding	1		3			Debris cleanup for runoff from Palisades (Flooding Problem) at 40°49'43.56N, 73°58'30.23W. Est.- \$15,000
213-004	Loss of Utilities (Electric)	1		3			Generator & Interior update for 3rd Shelter at Former Unoccupied School at River Ave. Est.- \$80,000
214-001	Northeasters & Severe Winter Storm, Riverine & Stormwater Flooding	1		3			Additional drainage projects in neighborhoods listed (Emerson)
215-001	Loss of Utilities (Electric)	1	2		4		Emergency generator: Emergency power Upgrade for 9-1-1 and communications operation at 75 S. Van Brunt St. Est. \$35,000
215-002	Loss of Utilities (Electric)	1	2		4		Emergency generator: Emergency power to operate shelter facilities in an emergency at Englewood Public Schools (7 designated shelters). Est. \$210,000
215-003	Loss of Utilities (Electric)	1	2	3	4		Emergency stop: Affix each electric traffic controlled intersection with a fold down sign Est. \$6,500
215-004	Riverine & Stormwater Flooding	1	2	3	4		Improve storm drainage (Severe storm flooding) at Forest Ave & Dean St. Florence Est. \$225,000
216-001	Loss of Utilities (Electric)	1	2		4		Generators for shelter at 143 Charlotte Place, Upper School. Est.-\$125,000
216-002	Loss of Utilities (Electric)	1	2		4		Generators for shelter at 642 Floyd St., N. Cliffs School. Est.-\$125,000
216-003	Loss of Utilities (Electric)	1	2	3	4		Generators for pump station at Lyncrest Road Station. Est.- \$20,000
216-004	Loss of Utilities (Electric)	1	2	3	4		Generators for pump station at Jane Drive Station. Est.- \$20,000
216-005	Loss of Utilities (Electric)	1	2	3	4		Generators for pump station at Roberts Road Station. Est.- \$20,000
216-006	Riverine & Stormwater Flooding	1	2	3	4		Expansion of storm drainage south of Palisades Ave. Est.- \$1,000,000
217-001	Riverine & Stormwater Flooding	1	2	3		5	Property acquisition for conversion to Open Space from willing seller; Est. \$421,900
217-002	Riverine & Stormwater Flooding	1	2	3		5	Flood gauges for the Passaic River with connectivity to the borough's website; Est. \$35,000
217-003	Loss of Utilities (Electric)	1	2	3			Repair electrical power panel damage at Memorial Park raise electrical panels, install one (1) new 400 amp electrical distribution panel, install one (1) new 400 amp circuit breaker, install new 400 amp single phase electrical service, raise the existing electrical service and equipment 3 1/2 feet higher to bring it out of the flood plain area; Est. \$19,804
217-004	Riverine & Stormwater Flooding	1	2	3	4	5	Install 3 Onyx air operated pinch valves, Series DAC on the pool pump and storm drain overflow lines to prevent Passaic River from backing up into Memorial Pool through the effluent line; Est. \$50,000

217-005	Riverine & Stormwater Flooding	1	2	3		Replace one (1) close couples Fairbanks Morse pump motor with a new Fairbanks Morse submersible pump (present pump is 30+ years old, is in a pit and each time area floods, motor has to be replaced and worked on); Est. \$30,000
217-006	Riverine & Stormwater Flooding	1	2	3		5 Prospect Street Sewer Pump Station: convert the 2 compartment stations to 1 complete wet well, install two (2) new submersible pumps and bring all controls above ground and into an aluminum traffic control box above flood plain area; Est. \$100,000
217-007	Riverine & Stormwater Flooding	1	2	3		5 Passaic Valley Water Pump Station: install one (1) new 180kw emergency generator to operate water pump station in the event of an emergency; Est. \$140,000
217-008	Riverine & Stormwater Flooding	1	2	3		5 Plaza Road Sewer Pump Station: install a 3rd submersible pump in the dry well, install new piping into the pump discharge header, install a line stop and a bypass into our own system in the event of a flooding condition we do not have to bypass pump into a neighboring municipality; Est. \$100,000
217-009	Riverine & Stormwater Flooding	1	2	3		5 South Siphon Sewer Pump Station: install one (1) bypass pump permanently at the station (on the platform) which will allow us to bypass the station and pump effluent to the river in order to prevent the flooding of our sanitary sewer system when the Passaic River floods the sanitary sewer system out; Est. \$100,000
217-010	Riverine & Stormwater Flooding	1	2	3		5 Saddle Rider Rd. Sewer Pump Station: install one (1) bypass pump permanently at the station (on the platform) which will allow us to bypass the station and pump effluent to the river in order to prevent the flooding of our sanitary sewer system when the Saddle River floods the sanitary sewer system out; Est. \$100,000
218-001	Riverine & Stormwater Flooding	1	2	3		Flood Study: Bellman's Creek Flood Gate at 790 Fairview Ave, Fairview DPW Garage.
218-002	ALL Hazards	1		3		Study of Early Warning System: 59 Anderson Ave., 4th & Walker St. 290 Sedire Ave.
219-001	Northeasters & Severe Winter Storm	1	2	3		Need additional backup snow removal equipment (Fort Lee)
219-002	Loss of Utilities (Electric)	1	2	3		Need additional backup generators to power traffic lights to relieve police officers. (Fort Lee)
219-003	N/A					Need additional back up snow removal equipment (Fort Lee)
219-004	ALL Hazards	1	2	3	4	Establish a CERT Team at Borough of Fort Lee High Rises
219-005	Loss of Utilities (Electric)	1	2	3	4	Study: Traffic light power conversion to allow generator power at major intersections within the borough
219-006	Riverine & Stormwater Flooding	1		3		Ongoing maintenance plan to inspect all city owned storm sewers and remove debris
220-001	Loss of Utilities (Electric)	1		3		Emergency Power Generator at Bender Court, Est.- \$22,000
220-002	Loss of Utilities (Electric), Lightning	1	2	3		Lightning Warning System at Vichiconti Way, Est.- \$20,000
220-003	Riverine & Stormwater Flooding	1	2	3		Dam Warning System at 40°59'15.36"N, 74°13'21.29W, Est.- \$250,000
221-001	Loss of Utilities (Electric)	1	2	3		Back up power to traffic signals at major intersections, solar or portable generator. (Garfield)
221-002	Loss of Utilities (Electric)	1	2			Placing stop signs permanently at all intersections to be opened during power outages. (Garfield)
221-003	Northeasters & Severe Winter Storm	1		3		Snow emergency route ordinance: making it mandatory to park off certain roads during snowfall so roads could be cleared for emergency vehicles. (Garfield)
222-001	Riverine & Stormwater Flooding, Northeasters & Severe Winter Storm	1		3		5 More Dredging (Glen Rock)
222-002	Riverine & Stormwater Flooding	1	2	3	4	Rerouting water drainage from train overpass to mitigate flooding that results in 3-5 feet of water on roadway at Maple Ave, south of Rock RD under Bergenline
222-003	Loss of Utilities (Electric)	1	2		4	Installing back-up communication and paging equipment to mitigate delay in response when current system fails or is overloaded, 1 Harding Plaza, Glen Rock, Est.\$65,000
222-004	ALL Hazards	1	2	3	4	5 Educate public about all hazards, personal preparedness, sheltering in place and evacuation by means of open events at Glen Rock town hall meetings. Est. \$25,000
222-005	ALL Hazards	1	2	3	4	5 Provide emergency information devices to each home in Glen Rock for instructions during emergencies, Est. \$60,000
223-001	ALL Hazards	1				Integrate CERT with all Public safety personnel (paid and volunteer) with a coordinated ID card to include all homeland security specialties or areas
223-002	Riverine & Stormwater Flooding	1		3		Dredge Coles Brook (North) for depth; provide water control walls
223-003	Riverine & Stormwater Flooding	1		3		Dredge Riser Ditch (Parallels Green St) for depth; provide better water control
223-004	Riverine & Stormwater Flooding	1		3		Remove debris from all city owned storm sewers
223-005	Riverine & Stormwater Flooding	1		3		Remove debris that prevents flow from all city owned Pump Stations
223-006	N/A					Trim all large, city owned trees before they fall on wires or block roadways
223-007	Riverine & Stormwater Flooding	1		3		Dredge the Hackensack portion of the Riser ditch from Lodi St. to Rt. 80
223-008	Riverine & Stormwater Flooding	1		3		Clean out Coles Brook
223-009	Riverine & Stormwater Flooding	1		3		Diesel Powered Stormwater Pump at Brosses Creek Stormwater Pump Station
223-010	Northeasters & Severe Winter Storm	1				Construction of 15,00 Ton salt shed
223-011	Riverine & Stormwater Flooding	1		3		Purchase and reestablishment f a GIS system to better document and track stormwater and sanitary problems
223-012	Riverine & Stormwater Flooding	1				Purchase of Several FEMA trailers for emergency housing and command staging

223-013	ALL Hazards	1	2	3	4	5	Prepare, print, and distribute a Natural Hazard Mitigation Planning Community Guide for residents. A step by step guide to deal with multiple natural hazards and to minimize future losses. This should also be available on municipal website.
224-001	Loss of Utilities (Electric)	1	2		4		Emergency Generator for Municipal Shelter at Harrington Park Public School. Est. \$20,000
225-001	Riverine & Stormwater Flooding	1	2	3			Pumping stations at Franklin Ave and Rt. 17 need back up Power (Hasbrouck Heights)
226-001	Riverine & Stormwater Flooding	1		3			Replace pipe culvert at Pleasant Lane stream crossing. Pleasant Lane @ LOT 8 Block 1502 & Lot 25 Block 1500 (tax map sheet 15). Estimated cost \$30,000.
226-002	Riverine & Stormwater Flooding	1		3			Replace pipe culvert at Prospect Avenue stream crossing. Located at Prospect Ave Lot 1 Block 1507 and Lot 8 Block 1502 (tax map sheet 15). Estimated cost is \$30,000.
226-003	Riverine & Stormwater Flooding	1	2	3			Replace damaged foot bridge & clear debris @ the Crescent stream crossing Lot 1 Block 1001 and Lot 1 Block 912. Estimated cost is \$30,000.
226-004	Riverine & Stormwater Flooding	1		3			Clear debris from stream at municipal center from Haworth Ave south to the foot bridge. Estimated cost is \$14,500.
226-005	ALL Hazards	1	2	3	4	5	Emergency Response Center located at the DPW garage on Park Street. Estimated cost is \$9,750.
226-006	ALL Hazards	1	2	3	4	5	Emergency Response Center located at the Municipal Bldg at Municipal Center on Haworth Avenue. Estimated cost is \$9,750.
227-001	Riverine & Stormwater Flooding	1		3		5	Acquire and clear destroyed structures. Acquire to prevent construction of lots in floodplains. (Hillsdale)
227-002	Riverine & Stormwater Flooding	1		3			Build retaining walls for borough library. (Hillsdale)
227-003	Riverine & Stormwater Flooding	1		3			Enlarge 3 bridges and culverts. (Hillsdale)
227-004	Riverine & Stormwater Flooding	1		3		5	Keep debris clear from brooks to reduce backup. (Hillsdale)
228-001	Riverine & Stormwater Flooding	1		3			Expand Ho-ho-kus detention system by 3.5 million gallons
228-002	Infectious Epidemic	1				5	Reduce infectious bug growth in Ho-ho-kus
228-003	Loss of Utilities (Electric)	1	2				Additional generator capacity is required for (Verizon) cell phone system and backup radio operation. (Ho-ho-kus)
228-004	Loss of Utilities (Electric)	1	2	3			Transmission problems with cell phones and radios: Transfer switches requested for two shelters for back up electric generators. (Ho-ho-kus)
228-005	Drought, Major Fire (Urban/Wildfires)	1	2	3			Increase water department storage capacity to meet fire fighting capacity in case of demand during droughts. (Ho-ho-kus)
228-006	Earthquake	1					Review to be sure building codes are current. (Ho-ho-kus)
228-007	Northeasters & Severe Winter Storm	1	2	3			Review snow removal techniques, equipment, and identification of fire hydrants. (Ho-ho-kus)
228-008	Northeasters & Severe Winter Storm	1	2	3			Borough hall needs generator capabilities, bobcat machine for snow and ice removal. (Ho-ho-kus)
228-009	Riverine & Stormwater Flooding	1		3			Clean Tributary #1 to the Saddle River from Hollywood Ave to Route 17.
228-010	Riverine & Stormwater Flooding	1		3			Lower field on East side of Stream to handle an additional 13.5 million gallons of stormwater.
228-011	Riverine & Stormwater Flooding	1		3			Clean tributary #1 to the Saddle River. Home and basement floods because stream does not flow. Clean from Hollywood Ave to Route 17.
228-012	Riverine & Stormwater Flooding	1		3			Clean and reestablish stream bed of the Zabriski Brook between Lakewood Ave and Warren Ave. Almost every major storm flooding and unhealthy conditions develop in addition to flooding of basements.
228-013	Riverine & Stormwater Flooding	1		3			Ho-ho-kus brook requires a major clean out. This major stream is heavy with debris. Clean out should be from the railroad viaduct to Ridgewood line
228-014	Riverine & Stormwater Flooding	1		3			Rebuild Mill Road Bridge
228-015	Riverine & Stormwater Flooding	1					Relocate gas and water mains
228-016	Riverine & Stormwater Flooding	1		3			Improve emergency electric generation for fire, police, DPW
228-017	Riverine & Stormwater Flooding	1		3			Radio Transmission must be redesigned for all departments
229-001	Windstorms & Tornadoes, Loss of Utilities (Electric)	1	2	3	4	5	Continue the pruning of branches surrounding power lines to prevent loss of power. (Leonia)
229-002	Riverine & Stormwater Flooding			3			Flooding of athletic field of Leonia High School: 100 Christie Heights, Leonia, NJ 07605
229-003	Loss of Utilities (Electric)	1	2	3			Emergency generator for 105,000 sq. ft Leonia High School: 100 Christie Heights, Leonia, NJ 07605
229-004	Loss of Utilities (Electric)	1	2	3			Emergency generator for 105,000 sq. ft Leonia Middle School: 500 Broad Ave, Leonia, NJ 07605
229-005	N/A						570 Grand Ave. to 542 Grand Ave., Leonia: Constant groundwater seepage
229-006	Riverine & Stormwater Flooding	1		3			Open drainage ditch between Leonia High School Athletic field and railroad: 100 Christie Heights, Leonia, NJ 07605. Ditch serves all of Leonia North of Christie Heights
229-007	Northeasters & Severe Winter Storm	1	2	3	4		Adequate salt supply needs to be maintained late into season.
230-001	Riverine & Stormwater Flooding	1		3			Pump Stations on Hackensack River (Little Ferry)
231-001	Riverine & Stormwater Flooding	1	2	3			Obtain barricades and storage facilities to preposition barricades in flood prone roadways and areas. Location in various local and county roads predisposed to urban and riverine flooding. Estimated cost \$51,768.
231-002	Riverine & Stormwater Flooding	1	2	3			Maintenance and inspection of all stormwater sewers and brooks and remove all debris as required. This will be done throughout the borough. Estimated cost \$50,000.
231-003	Riverine & Stormwater Flooding	1	2	3			Flood water current diverters installed at Memorial Park. Estimated cost \$1,000,000.

231-004	Landslides and Erosion	1	2	3			Slope stabilization and retaining wall at Harrison and Farnham Avenue slopes. Estimated cost is \$30,000,000.
232-001	Riverine & Stormwater Flooding	1	2	3			Early alert system, future changes to building codes for residents in the affected area to reduce damage from possible future floods. (Lyndhurst)
232-002	Riverine & Stormwater Flooding	1		3			Build up embankment of Passaic River
232-003	Riverine & Stormwater Flooding	1		3			Dredge Passaic River
232-004	Riverine & Stormwater Flooding	1		3			Change in slope coming off Rt#3 East onto Rutherford Ave near Riverside Ave
232-005	Riverine & Stormwater Flooding	1		3			Clean out storm sewer system pipes (clay in the area of Riverside Ave and Forest Ave leading to Passaic River)
233-001	Riverine & Stormwater Flooding	1		3			Need for major work in area to change flow patterns and construction of detention area (Mahwah)
233-002	Riverine & Stormwater Flooding	1		3			Cragmere Storm Water Drainage
233-003	Riverine & Stormwater Flooding	1		3			Winter's Pond and Masonic Brook Dredging
233-004	Riverine & Stormwater Flooding	1	2	3			Repair and upgrade on Winter's Pond Dam
233-005	Riverine & Stormwater Flooding	1	2	3			Silver Creek Dam upgrade
233-006	Riverine & Stormwater Flooding	1		3			Deerhaven Road and Bridge over brook mitigation to avoid undermining
233-007	Riverine & Stormwater Flooding	1		3			Ramapo River from N.Y. State to Oakland (Removal of Debris)
233-008	N/A						Alignment of Masonic Brook and Mahwah River near Brook St. under Rt. 202 (See plan by Army Corp)
233-009	Riverine & Stormwater Flooding	1			4	5	Acquisition of 2 homes on Catherine Ave and 2 homes on Alexandra Ct.
233-010	Earthquakes	1					Addition of a second water main to Fardale section of town to provide an alternate source of water
233-011	Loss of Utilities (Water, Electric)	1				5	Install Emergency Generator to water wells 17 and 18
234-001	ALL Hazards	1	2				Emergency Power for Department of Public Works Facility - currently non-existent. 100 East Hunter Ave Maywood, NJ. Estimated cost \$45,000.
234-002	Loss of Utilities (Electric)	1	2				Emergency Power for Fire Station #2 utilized as alternate EOC and backup emergency services communications. 30 West Hunter Ave Maywood, NJ. Estimated cost \$40,000.
235-001	Riverine & Stormwater Flooding	1		3	4		Clearing, widening, and rebuilding of the walls of the stream through the Ridgewood Water Control Center on Godwin Ave in Midland Park (Midland Park)
236-001	Riverine & Stormwater Flooding	1		3			Pascack Brook - Gabion Walls
236-002	Loss of Utilities (Gas)						Tennessee Gas Transmission at Grand Ave in Montvale
236-003	Loss of Utilities (Gas)						Williams Gas Transmission at Kinderkamack Road
236-004	Loss of Utilities (Electric)						Orange and Rockland Electric Co at Kinderkamack Rd, Craig Rd, and Grand Ave (Electric Power Substations)
236-005	Loss of Utilities (Evacuation)						Indian Point Power Plant, 50 mile radius, any natural hazard causing utility loss or requiring potential evacuation
236-006	Riverine & Stormwater Flooding	1	2	3	4		Replacement of gabion wall system with the installation of permanent floodwall system in the Pascack Brook to prevent recurring damage to the sanitary sewer system. Est-\$250,000 - \$500,000
237-001	Northeasters & Severe Winter Storm	1	2	3	4		Acquisition of newer salt spreaders (Moonachie)
238-001	Loss of Utilities (Electric)	1		3			Lack of adequate emergency back up generators, lack of residential notification system, lack of boats (New Milford)
238-002	Riverine & Stormwater Flooding	1		3			Inspect and clear, as necessary, storm drainage system flowing into the river near Roosevelt Avenue and New Bridge Road in New Milford.
238-003	Riverine & Stormwater Flooding	1		3			Conduct stormwater survey to determine causes of flooding near Roosevelt Avenue and New Bridge Road in New Milford.
238-004	Riverine & Stormwater Flooding	1		3			Determine if French Creek in New Milford is under capacity and widen the stream accordingly.
238-005	Riverine & Stormwater Flooding					5	Preserve open space in the area and slow down development.
238-006	Riverine & Stormwater Flooding	1	2	3			Mandate to United Water: Ensure surge capacity reservoirs (room to accommodate 6-8" of rainfall over 12 hrs), sluice gate opening- must alert mayors of towns along the river when emptied space is feared to fall below 8" then below 4", Publicize equivalence of rainfall to level increase in reservoirs. Post data near sluice gates
238-007	Riverine & Stormwater Flooding	1		3			Dredging, riverbank stabilizing: immediate start on reservoirs down-hill of ordeal, without waiting for various studies. Use the dredged material for stabilizing, starting from low-lying areas.
238-008	Riverine & Stormwater Flooding	1					Marsh Lands: Learning from New Orleans experience, encroachment of these must be diligently avoided and subjected to public scrutiny. Effective mosquito control measures to put in place
238-009	ALL Hazards	1					Relief Operations: At all rescue points transport must be assured to shelters/private homes within a radius of 2 miles, wait not to exceed 1/2 hr, council members should get personally involved
238-010	Riverine & Stormwater Flooding	1	2	3			Flood alerts: apart from the generalized alerts, the advisories should be specific on likelihood of gates opening for additional rainfall of 2" (prepare for evacuation), subsequently for additional rainfall of 1" (mandatory evacuation)
238-011	N/A						Dredge Hackensack River
238-012	Riverine & Stormwater Flooding	1	2	3			Flood control dam- downstream i.e. Lack Hackensack Project which we have heard about for at least 30 years
238-013	N/A						Make United Water responsible for flood control
238-014	Riverine & Stormwater Flooding	1	2	3			Reservoir restructure

238-015	N/A						River Dredging
238-016	Riverine & Stormwater Flooding						Bank Stabilization
238-017	Riverine & Stormwater Flooding					5	Digest and cleaning Hackensack River
238-018	N/A						Not give permission to water company to open gate
238-019	Riverine & Stormwater Flooding	1		3			Stop United Water from opening the dam and flooding us. I have lived in Dorchester Manor for 37 yrs and twice in the last 8 yrs United Water has flooded us.
238-020	Riverine & Stormwater Flooding	1		3			Replace storm sewers and culvert at New Bridge Road and Old New Bridge Road
238-021	Riverine & Stormwater Flooding	1		3			Widen and deepen French Creek Plus divert some storm sewer run-off through new piping to be run under park opposite of Sanzari's Inn
238-022	N/A						Dredge Hackensack River to remove excess silt and reestablish normal draft of river/reestablish river banks (Newspaper article included)
238-023	Riverine & Stormwater Flooding, Landslides and Erosion	1		3			Remove all built up material, including silt, from bottom of Hirschfield Brook in New Milford.
238-024	Riverine & Stormwater Flooding	1		3			Resupport the original margins of Hirschfield Brook by various means such as Rip-rapping, cribbing, etc. thus permitting unrestricted flow of water from other towns located upstream
238-025	Riverine & Stormwater Flooding	1		3			various improvement to Hirschfield Brook such as Bank Stabilization, channel widening, dredging, etc.
238-026	Riverine & Stormwater Flooding	1		3			Expansion of Boulevard Bridge, New Milford, to let water have unrestricted flow.
238-027	Riverine & Stormwater Flooding						Improved storm drainage
238-028	N/A						Water company should release water prior to storm
238-029	Riverine & Stormwater Flooding	1		3			Devise a formula that will indicate the y gallons of water that will enter the reservoir when x inches of rain are forecast.
238-030	Riverine & Stormwater Flooding	1		3			Gauge the current level of the reservoir and determine the impact of the influx of y gallons
238-031	Riverine & Stormwater Flooding	1		3			Once determined begin releasing water into the Hackensack River. Since this river is tidal, consult a low tide chart so that the water may be release when the tide is going out. There are 2 low tides daily.
238-032	Riverine & Stormwater Flooding	1		3			If 10% of the influx listed above could be released in each of the low tides in each day before the storm, there would be minimal flooding and the reservoir would still be filled.
238-033	Riverine & Stormwater Flooding	1		3			The storm drains would be able to operate during the storm because the reservoir floodgates would be closed
238-034	Landslides and Erosion	1			4	5	Buying homes too close to the river, with owner's permission
238-035	Landslides and Erosion	1		3			Bank Stabilization measures put in place i.e. planting trees and shrubs and/or other ecological means of harmonious coexistence with the river
238-036	Riverine & Stormwater Flooding					5	Improved Storm Drainage
238-037	Riverine & Stormwater Flooding					5	Floodgates should be controlled better (Can river be diverted?)
238-038	Riverine & Stormwater Flooding	1		3			Reservoir Dredging
238-039	Riverine & Stormwater Flooding	1		3			Better management of water release from reservoir
238-040	N/A						Federal review of United Water
238-041	Riverine & Stormwater Flooding	1		3			Desilt all tributaries' feeding the Hackensack River
238-042	Riverine & Stormwater Flooding	1		3			Improve the River flow to allow excess water to flow away from these flooded areas
238-043	Riverine & Stormwater Flooding	1		3			Feeder brooks should be cleared of debris on a regular planned schedule
238-044	Riverine & Stormwater Flooding	1		3			Bank stabilization for prevention and limiting silting. This will permit or allow a more efficient movement of water
238-045	Riverine & Stormwater Flooding	1				5	Prevention of additional building in flood prone areas, therefore preserving open space and providing additional flood water storage
238-046	N/A						If the original Flood Mitigation Plan, dated March 2002, had been implemented, rather than restudies, at an additional expense, funds would have been conserved, and then maybe the flooding problem would have been less damaging during the April 2007 flooding
238-047	N/A						Have all future studies progress at a more rapid pace. The most recent was very drawn out, because as a NM Mayor stated on many occasions, the town is waiting for a new mitigation report, because it was necessary for the topography to be studied in detail. The study, we were told, was delayed because aerial photographs were delayed because of too much foliage, therefore having to wait until all leaves from the trees were gone
238-048	N/A						Both 2002 and 2006 studies parallel each other, so the recommendations should be acted upon, rather than authorizing any additional studies, thereby saving funds, and applying the save funds, for corrective actions
238-049	N/A						Application of Riverine and Stormwater Flooding, Landslides and Erosion, Windstorms and Tornadoes, Hailstorms, Hurricanes and Tropical Storms, Northeasters and Severe Winter Storms, Hazardous Material, and Loss of Utilities (Electric).
238-050	N/A						Make use of all interested persons, with first hand information, who have previously publicly volunteered to be on an advisory committee/board. Volunteers were never asked to provide first hand experiences.
239-001	Riverine & Stormwater Flooding, Hurricanes and Tropical Storms	1	2	3	4		The North Arlington High School Field house sustained foundation erosion that must be repaired. The erosion was due to a wash out of the soil by Hurricane Floyd.

239-002	Riverine & Stormwater Flooding	1	2	3	4	Borough wide maintenance plan to inspect all catch basins and storm sewers, remove debris that may restrict flow Est = \$25,000	
239-003	Loss of Utilities (Electric)	1	2	3		Upgrade police emergency management generator at 214 Ridge Road, in North Arlington, to ensure operation during power failure Est = \$125,000	
239-004	ALL Hazards	1	2	3		Borough wide audio warning system Est = \$750,000	
239-005	Landslides and Erosion	1		3		River bank stabilization measures along the length of the river: Planting trees, shrubs, and other ecological means that co-exist with the river Est = \$200,000	
239-006	Riverine & Stormwater Flooding	1	2	3		Upgrades to the pumping stations to remove rain water that floods homes on Geraldine Road Est = \$250,000	
239-007	Loss of Utilities (Electric)	1	2	3		Installation of an emergency generator at the DPW building on 1 Disposal Road Est = \$200,000	
240-001	Loss of Utilities (Electric)	1	2	3		Install an Emergency Generator at EOC at 116 Paras Ave, Est.- \$40,000	
241-001	Loss of Utilities (Electric)	1	2	3		Emergency generator to supply power to our primary shelter, Norwood Public School, Long. -73.961028 Lat. 40.996037, Est = \$17,500	
242-001	Riverine & Stormwater Flooding			3		River has been dredged, dam control project underway. Possibly redirect runoff from the highway. Create more efficient means of controlling the water level in Crystal Lake. (Oakland)	
243-001	Riverine & Stormwater Flooding			3	5	Stream Clearance. Culvert type bridge should be replaced with a higher bridge to prevent the blockage of the existing stream. (Old Tappan)	
244-001	Riverine & Stormwater Flooding	1	2	3	4	Flood warning system. Relocation of equipment, rebuilding of culverts, widening of drainage ditches, small streams. (Oradell)	
244-003	Riverine & Stormwater Flooding	1	2	3	4	Relocation of equipment (Oradell)	
244-004	Riverine & Stormwater Flooding	1	2	3	4	Rebuilding of culverts (Oradell)	
244-005	Riverine & Stormwater Flooding	1	2	3	4	Widening of drainage ditches, small streams. (Oradell)	
245-001	Riverine & Stormwater Flooding	1		3		Dredging of outfalls to Overpeck Creek	
245-002	Riverine & Stormwater Flooding	1		3		Install larger storm drains at various low lying areas of town (Cost estimates available upon request)	
245-003	Northeasters & Severe Winter Storm	1		3		Need additional backup snow removal equipment	
246-001	Loss of Utilities (Electric)	1	2			Replace the emergency generator at Police HQ that houses Paramus Communications Center and the Public Safety Answering Point (PSAP) for 7 municipalities at 1 Carlough Drive (40°55'32.13"N, 74°04'06.04"W) Est.-\$35,000	
246-002	Loss of Utilities (Electric)	1	2			Installation of an emergency generator at Paramus High School, our primary congregate care shelter at 99 Century RD. Est.-\$200,000	
246-003	Loss of Utilities (Electric)	1	2			Installation of an emergency generator at Paramus Fire Station #2 at 238 Spring Valley RD (40°55'59.21"N, 74°03'12.81"W) Est.- \$35,000	
246-004	Riverine & Stormwater Flooding	1	2	3	4	Installation of water-tight doors at all sewer pump stations: Prospect St. Pump Station (40°55'32.53"N, 74°04'25.26"W), Route 17 Pump Station (40°55'08.06"N, 74°04'05.70"W), Southcrest St. Pump Station (40°54'48.54"N, 74°04'30.38"W), Dunderhook RD Pump Station (40°56'51.50"N, 74°05'38.85"W), Grove St. Pump Station (40°57'43.69"N, 74°05'36.59"W) Est.-\$15,000	
246-005	Riverine & Stormwater Flooding	1	2	3	4	Installation of a Flood Protection System at the Prospect St. Pump Station (40°55'32.53"N, 74°04'25.26"W) and the Grove St. Pump (40°57'43.69"N, 74°05'36.59"W) Station	
247-001	ALL Hazards	1	2	3	4	5	Establish a Community Emergency Response Team (CERT) - trailer equipment and clothing. The trailer would be located at the Borough of Park Ridge Office of Emergency Management 55 Park Avenue Park Ridge, NJ. Estimated cost \$10,000.
247-002	Riverine & Stormwater Flooding/ Landslides and Erosion	1	2	3			Mill Pond Dam Restoration located on Mill Road in Park Ridge. Estimated cost \$900,000.
247-003	Landslides and Erosion	1	2	3			Bank stabilization measures needed to be put in place including the installation of boulders in the bank and the removal of trees with exposed roots due to erosion located at Pascack Brook and Echo Glen Brook on Mill Road/ Colony Avenue. Estimated cost \$700,000.
247-004	ALL Hazards	1			4		Radio communications/ interoperable communications initiative - Office of Emergency Management owns only one portable radio and is seeking to improve communications through acquisition of portable radio equipment. Located in the OEM in Park Ridge. Estimated cost is \$6,167.
247-005	ALL Hazards	1			4		Mobile EOC Vehicle Restoration - OEM currently does not have mobile EOC; to acquire town-owned vehicle; funds to be used for conversion/ restoration. Located in OEM in Park Ridge. Estimated cost is \$10,000.
248-001	Loss of Utilities	1	2	3	4	5	Prune trees that cause power disruptions (Ramsey)
248-002	Riverine & Stormwater Flooding	1	2	3		5	A more comprehensive mitigation study has been completed by Ramsey to protect the water system. The state office of counter terrorism has been involved. (Ramsey)
248-003	Riverine & Stormwater Flooding	1		3			Improve drainage in effected areas (Ramsey)
249-001	Riverine & Stormwater Flooding	1		3			Removal of two large trees that are in a precarious position on the bank of Wolf Creek south of Lancaster Rd. The trees in question are dead.
250-001	Loss of Utilities (Electric)	1	2	3			Back up generator ordered for back up EOC. Updated all radios in back up EOC. (Ridgefield Park)
250-002	Riverine & Stormwater Flooding	1		3			Clean and dredge drainage stream from Rt. 80 to Southern end at Overpeck Creek. Runs along west side of Route 95.

						Causes flooding on several village streets.	
250-003	Riverine & Stormwater Flooding	1		3		Provide for Engineering review of Bergen Turnpike, Hackensack River (Overpeck Creek) to eliminate serious flooding.	
251-001	ALL Hazards	1	2			Reconstruction of village hall. Construction of new police annex. (Ridgewood)	
252-001	Riverine & Stormwater Flooding	1		3		Dredge Hackensack River (River Edge)	
252-002	Landslides and Erosion	1		3		Increase drainage on main roads (River Edge)	
252-003	Major Fire (Urban/Wildfire)	1		3		Increase funding for firefighting training and equipment (River Edge)	
252-004	N/A					Improve education and awareness for a terrorist attack (River Edge)	
252-005	N/A					Concerned about possible tornados which has not been in area, but they are (River Edge)	
252-006	Landslides & Erosion, Riverine & Stormwater Flooding	1		3		Storm surge/flooding - widen and/or dredge Hackensack River. Elevate pressure at reservoir dams. (River Edge)	
252-007	Drought	1				Drought - conserve use of water around town (River Edge)	
252-008	N/A					Dredging Hackensack River (River Edge)	
252-009	Riverine & Stormwater Flooding	1	2	3		Relocate DPW office to higher areas on DPW property (River Edge)	
252-010	Riverine & Stormwater Flooding	1	2	3		Establish early warning system from water co. basin to release (River Edge)	
252-011	Riverine & Stormwater Flooding			3		Install check valves in control water back up by pipe from Hackensack River. (River Edge)	
252-012	N/A					Dredge the Hackensack River and clear debris along shore line (River Edge)	
252-013	Riverine & Stormwater Flooding	1	2	3		Install and raise generator (River Edge)	
253-001	N/A					Still have same flooding problems. (River Vale)	
253-002	Loss of Utilities (Electric), Lightning	1	2	3		Identify and cut overhanging trees/limbs (Elimination) Above and along roadways. (River Vale)	
253-003	Loss of Utilities (Electric)	1	2	3	4	Add an additional power feed/circuit for the south end of River Vale. The areas around the center of town experience frequent power outages. (River Vale)	
253-004	Riverine & Stormwater Flooding	1		3		Not sure best way to solve this problem (more sewer; change of grading) but InterGlen Ave. floods constantly, as does River Vale Rd. by Holdrum School. (River Vale)	
253-005	Riverine & Stormwater Flooding	1		3		Develop "wall" to prevent overflow of Hackensack River on to Baylor massacle park of red oak/white birch. (River Vale)	
253-006	N/A					We can use our newly renovated club house for shelter. It has bathrooms; kitchen; one great room with couches and chairs. (River Vale)	
253-007	N/A					I have a flats boat, coast guard captains license, flats boat is for shallow water. (River Vale)	
253-008	Riverine & Stormwater Flooding	1		3		Desilt, clean, and possibly Hackensack River at Harriot Ave bridge in Harrington Pike to eliminate bottleneck at bridge which backs up to River Vale Streets	
253-009	Riverine & Stormwater Flooding	1		3	4	Enforce illegal dumping of debris which would wash into river and cause damming	
253-010	Riverine & Stormwater Flooding	1		3	4	Ongoing maintenance plan to inspect the river for fallen trees etc. that would stop flow of water	
253-011	Loss of Utilities (Water, Electric)	1				Initiate a program to help seniors unable to get needed supplies. For example, bottle water, flashlights, and battery operated lamps. Through a recent census identify those residents that may need assistance. Set volunteer program to check out and assist those who need or would like assistance	
253-012	Riverine & Stormwater Flooding	1		3		United Water should reinforce the dam at Lake Tappan so the only runoff into the Hackensack river is normal spill over. 74 homes were damaged from the rush of water in the Hackensack river in River Vale.	
253-013	Loss of Utilities (Electric)	1		3		Trim tree branches resting on near utility lines.	
253-014	Riverine & Stormwater Flooding	1		3		Keep storm drains clear (clean out periodically)	
253-015	Riverine & Stormwater Flooding	1		3		Keep water beds clean (clean out periodically)	
254-001	Riverine & Stormwater Flooding	1		3	4	Reconstruct at higher elevation above base flood elevation. ( Rochelle Park)	
254-002	Riverine & Stormwater Flooding			3		Structure Elevation/ Slab (Rochelle Park)	
254-003	Riverine & Stormwater Flooding			3		Structure Elevation/ Basement (Rochelle Park)	
254-004	Riverine & Stormwater Flooding	1		3		Utility Elevation/ Slab (Rochelle Park)	
254-005	Riverine & Stormwater Flooding	1		3		Utility Elevation/ Basement (Rochelle Park)	
254-006	Riverine & Stormwater Flooding	1		3		Backflow prevention (Rochelle Park)	
255-001	Loss of Utilities (Electric)	1	2	3	4	Emergency power for shelter/Firehouse at 26 Rockleigh Rd. Est-\$12,000	
255-002	Riverine & Stormwater Flooding	1	2	3		Bank/Stream cleanup at Sparkill Creek. Est.-\$125,000	
255-003	Riverine & Stormwater Flooding	1	2	3		Dam improvement/ Fixing at 20 Rockleigh Rd. Est.-\$150,000	
255-004	Major Fire (Urban/Wildfires)	1	2	3	4	5	Vegetative Management/ Wildfire Management at Rockleigh Woods. Est.- \$200,000
256-001	ALL Hazards	1	2			Emergency community alerting system (Reverse 911). (Rutherford)	
257-001	Riverine & Stormwater Flooding	1		3	4	5	Saddle River dredging; Extensive dredging project to eliminate flooding
257-002	Riverine & Stormwater Flooding			3		5	Reconfigure Saddle River Ave bridge so debris flows unobstructed
257-003	Riverine & Stormwater Flooding	1		3			Survey and remove trees from Saddle River from North to South
257-004	Riverine & Stormwater Flooding	1		3			The Saddle River needs to be dredged. (Saddle Brook)

258-001	ALL Hazards	1	2	3	4	5	Study and evaluate evacuation route surveillance system at the intersection of Rt 17 and East Allendale Rd. The system could be fed to the Saddle River Police communications center, NJDOT and County of Bergen Police Communications. Allows for the agencies to obtain live information when any disaster strikes the area north of the RT4/ Rt 17 interchange and provide early warning and intervention to all affected or to be affected communities.
259-001	N/A						Same flooding Problems. (South Hackensack)
259-002	Riverine & Stormwater Flooding	1	2	3			Dredge both River Ditches - Jet and clean line along Green Street under Route 80
259-003	Riverine & Stormwater Flooding	1	2	3			Redesign or elevate Saddle River Bridge at Saddle River Ave & Marcelles (Marsellus) Place ?
259-004	Riverine & Stormwater Flooding	1	2	3			Elevation of the Sewer Ejector Station at Saddle River Ave. Garfield Park Section
260-001	Riverine & Stormwater Flooding	1		3	4	5	Belle Ave. Drainage Improvements (Teaneck)
260-002	Riverine & Stormwater Flooding	1		3	4	5	Farby Ct. Drainage Improvements (Teaneck)
260-003	Landslides & Erosion	1		3			Stream Bank Stabilization Project (Teaneck)
260-004	N/A						Contamination of Hirshfeld Brook from rail disaster on CSZ line: Remove contaminants from site
260-005	Riverine & Stormwater Flooding			3			Flooding on Hackensack River Greenway: Restore trails and markers in the event they are destroyed by flooding
260-006	Hurricanes and Tropical Storms			3		5	Tree destruction after hurricane: Remove trees in parks and along roadways and replant new trees
260-007	Storm Surge	1		3			Storm Surge destroying sewers: Replace broken sewers
261-001	N/A						Planning a new police facility. (Tenafly)
<b>261-002</b>	<b>Riverine &amp; Stormwater Flooding</b>	<b>1</b>		<b>3</b>			<b>Replace sewer main at Dean Drive (area of Inness Road) to relieve flooding</b>
262-001	Riverine & Stormwater Flooding	1	2	3	4		Stormwater pump station, removal of stormwater at Industrial Ave Est. 4.8 million
262-002	Riverine & Stormwater Flooding	1	2	3	4		West Riser ditch clean up and dredging from train station along tracks/Industrial Ave to Franklin Ave Bridge airport along perimeter Est \$200,000
263-001	Loss of Utilities (Electric)	1	2	3	4		Install Emergency Electric Generator at School Shelter, 392 West Saddle River RD, Upper Saddle River, Est. \$125, 000
264-001	Riverine & Stormwater Flooding	1		3			Rehabilitate White's Pond Dam at Hopper Ave (Lat:794,900, Long: 2,146,700) Est.- \$125,000
265-001	Loss of Utilities (Electric)	1	2	3	4		Emergency Power - EOC - Emergency Services Bldg at 178 Maple Avenue, Wallington. Est: \$60,000
266-001	Riverine & Stormwater Flooding	1		3			Replacement of earth and dam (Washington Twp.)
266-002	Riverine & Stormwater Flooding	1		3			Dredge Washington Lake (also referred to as Schlegal Lake). Install proper dam and debris collection boom at stream
266-003	Riverine & Stormwater Flooding; Landslides & Erosion	1		3			Install retaining walls along stream banks to eliminate further land erosion when streams water level rises during storms
266-004	ALL Hazards	1		3			Fix/Repair or replace existing town wide siren system to alert fire personnel of fire calls and to alert citizens in times of emergencies an/or school closings
266-005	Loss of Utilities (Electric)	1		3			Install back-up power generator at municipal complex/police headquarters due to loss of electrical power failure
266-006	Riverine & Stormwater Flooding	1		3			Dredging of lake. (Washington Twp.)
266-007	Riverine & Stormwater Flooding	1		3			Two bridges over county roads had to be replaced. (Washington Twp.)
267-001	Riverine & Stormwater Flooding	1	2	3	4		Engineering study of channel stabilization: 18" Cast Iron and 20" clay sanitary sewer trunk line is exposed and bowed. Study retaining wall at Pascack Brook, Westwood Ave, near Park Place.
267-002	Riverine & Stormwater Flooding	1	2	3	4		Engineering study of channel stabilization: 18" Cast Iron plus 20" clay sanitary sewer trunk line is exposed plus bowed at Pascack Brook, Westwood Ave, near Park Place.
267-003	Riverine & Stormwater Flooding	1	2	3	4		Musquapsink Brook, repair 15" high pressure line at 1st Ave & near Bogert Ave. 2nd location Prospect Ave. near Goodwin Terrace
268-001	Loss of Utilities (Electric)	1	2	3	4		Install folding stop signs at 7 intersections in Woodcliff Lake: Kinderkamack Rd and Prospect Ave, Woodcliff Ave. and Pascack Rd., Glen Rd. and Parkway Exit 171 (3-way), Glen Rd. and Chestnut Ridge (5 way intersection), Chestnut Ridge and County Rd., Chestnut Ridge and Tice Blvd., Chesnut Ridge Rd. and Woodmont Drive.
269-001	Loss of Utilities (Electric), Riverine & Stormwater Flooding	1		3			Tree removal. Aggressive pruning, engineering study of capacity of stormwater system in area of Anderson Ave. (Wood-Ridge)
269-002	Riverine & Stormwater Flooding	1		3			Engineering study of capacity of stormwater system in area of Anderson Ave. (Wood-Ridge)
270-001	Loss of Utilities (Electric)	1	2	3	4		Emergency Power at Larkin House, 380 Godwin Ave. \$30,000
NJMC-001	Riverine & Stormwater Flooding	1	2	3	4		Restoration of the Kane Tract Levee to protect Carlstadt, Little Ferry, South Hackensack, and Moonachie
NJMC-002	Riverine & Stormwater Flooding	1	2	3	4	5	Restoration and Upgrade of the West Riser Tide Gates
NJMC-003	Riverine & Stormwater Flooding	1	2	3	4	5	Restoration and Upgrade of the Peach Island Creek Tide Gates
NJMC-005	Riverine & Stormwater Flooding	1	2	3	4	5	Rutherford/E. Rutherford Drainage System Restoration
NJMC-006	All Natural Hazards	1	2	3	4	5	Implement the Remainder of the NJMC Floodplain Management Plan
NJMC-007	All Natural Hazards	1	2	3	4	5	The NJMC will work with the 70 Bergen County municipalities to identify existing buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of existing vulnerable structures and infrastructure, the NJMC will provide mapping/GIS

						assistance to digitize this information.	
NJMC-008	All Natural Hazards	1	2	3	4	5	The NJMC will work with the 70 Bergen County municipalities to identify future buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of future vulnerable structures and infrastructure, the NJMC will provide mapping/GIS assistance to digitize this information.
NJMC-009	All Natural Hazards	1	2	3	4	5	The NJMC will work with the 70 Bergen County municipalities to describe/quantify potential natural hazard impacts to the buildings in each jurisdiction. This information will be described either in terms of dollar value or percentages of damage.

# **Appendix L**

## ***STAPLEE Evaluation***

		STAPLEE Evaluation Criteria																				TOTAL			
		+ = Favorable										- = Un--Favorable					O = Not Applicable								
		S		T			A			P		L		E			E								
		Social		Technical			Administrative			Political		Legal		Economic			Environmental								
Project I.D.	Proposed Mitigation Projects	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect: Land/ and/or Water	Effect: Endangered Species	Effect: HAZMAT/ Waste Site	Consistent with Environmental Goals	Consistent w/ Federal Laws	
		200-001	Small Pox Vaccinations	+	+	+	+	-	-	-	0	+	+	+	+	+	-	+			-	0	0	0	0
200-002	Identify special needs populations and required emergency services	+	+	+	+	0	-	-	-	+	+	+	+	+	-	+			-	0	0	0	0	0	5
200-003	Clean and redo ditches to eliminate standing water	+	+	+	-	-	-	-	-	+	+	+	+	+	-	+			-	+	0	0	+	+	5
200-004	Provide relief to Route 17 drainage system	+	+	+	+	-	-	+	+	+	+	+	+	0	-	+			-	+	0	0	+	+	11
200-005	Mitigate Backflow of Sanitary Sewer	+	+	+	+	+	-	-	-	-	+	+	-	+	-	+			-	+	0	0	+	+	5
200-006	Survey first floor elevations of homes in/near floodplains (2-19)	-	0	+	-	-	-	-	0	+	-	-	0	+	-	0			-	0	0	0	0	0	-6
200-007	Establish a Community Emergency Response Team (CERT)	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+			+	0	0	0	0	0	12
200-013	Develop heating/cooling stations with adequate capacity and resources	+	+	+	+	0	-	-	-	+	+	+	+	+	-	0			-	0	0	0	0	0	4
200-015	Learn options for mitigating exposure to fires spreading among row homes.	+	+	+	-	0	+	-	0	+	+	+	0	+	0	+			+	0	0	0	0	0	8
200-016	Educate, involve & empower community to help mitigate our town's exposure to wind-borne debris.	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+			+	0	0	0	0	0	12
200-019	Identify persons at increased risk, including: poor, elderly, infirmed, visitors without a local social network, etc.	+	+	+	+	0	-	-	-	+	+	+	+	+	-	+			-	0	0	0	0	0	5
200-020	Develop a communication system to be used during all types of hazard events. Implement early-warning system for all hazard types.	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	0	0	0	0	0	6

200-022	Conduct fuel oil survey/study to determine locations of all fuel oil tanks and educate owners regarding mitigation measures.	Not Applicable																							
200-023	Construct/install portable & permanent emergency communications bulletin boards at strategic locations throughout town (particularly helpful during power outages).	+	+	+	-	+	+	-	-	+	+	+	0	+	+	0			-	0	0	0	0	0	6
200-024	Create, install and maintain backup data systems for all critical facilities	+	+	+	+	+	-	-	-	+	+	+	0	+	+	+			-	0	0	0	0	0	7
200-025	City-wide campaign to eradicate fuel oil tanks in floodplain and secure tanks above flood plain	-	+	+	+	+	+	-	+	-	+	-	0	+	-	0			-	+	+	+	+	+	7
200-026	Anchor shelves, water heaters, bookcases, etc., to walls in schools, libraries, homes and offices	+	+	+	+	+	+	-	0	+	+	+	0	+	+	+			+	0	0	0	0	0	11
200-027	Educate property owners re: Flood insurance: including the creation of GIS maps w/# of NFIP policy holders by city block, illustrating flood plain and historic flood zones	+	+	+	-	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	0	0	3
200-028	Promote land use planning based on hazards	+	0	+	+	-	0	+	0	+	+	+	+	+	-	+			+	0	0	0	0	0	9
200-029	Strengthen parapet walls on old masonry buildings	+	+	+	+	+	0	-	+	+	+	+	0	+	+	0			-	0	0	0	0	0	9
200-030	Retrofit highway overpasses to withstand earthquakes	+	+	+	+	+	0	0	0	+	+	+	+	0	+	+			-	0	0	0	0	0	10
200-031	Elevate structures above the floodplain	+	+	+	+	-	0	0	0	+	+	0	+	+	+	+			-	0	0	0	0	0	8
200-032	Strictly investigate and enforce building codes and standards	Not Applicable																							
200-033	Promote the use of fire-retardant materials in new construction	Not Applicable																							
200-034	Evaluate/study building codes and recommend revisions/new codes specific to hazard mitigation	Not Applicable																							
200-035	Create and ratify new building codes	Not Applicable																							
200-038	Evaluate/modify/adopt new: floodplain development regulations Evaluate/modify/adopt new: hillside development regulations Evaluate/modify/adopt new: open space regulations and protected lands Evaluate/modify/adopt new: waterfront setback regulations	+	-	+	+	+	+	-	0	+	+	+	+	+	-	+			+	+	0	0	+	+	12



200-070	Aerial Photos during Emergency to determine path and levels of flood to enable larger mitigation of flood relief control. Update or use with county system.	+	+	+	0	+	-	-	0	+	+	+	0	+	+	+			-	0	0	0	0	0	7
200-072	Clear and stabilize stream banks.	+	+	+	-	-	-	-	-	+	+	+	+	-	-	0			-	-	0	0	-	-	-4
200-073	Study the feasibility/benefit of improving lower Hackensack (below Oradell)	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			-	0	0	0	0	0	5
201-001	Allendale and Ho-ho-kus Brook needs to be dredged	+	+	+	-	-	0	-	-	+	+	+	0	+	-	+			-	+	0	0	+	+	5
202-001	Sufficient notice and forecast duration (Alpine)	Not Applicable - Already Addressed																							
202-002	Annual Inspection of Bridges, Culverts, and Retention Basins (Alpine)	+	+	+	0	+	-	-	0	+	+	+	0	+	+	+			-	0	0	0	0	0	7
202-003	Emergency Power - Primary Shelter (800 AMP, Diesel Generator) at Alpine School, 500 Hillside Ave. Est.- \$91,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
203-001	Improve all Stormwater Control: (Brooks, Streams, Storm drains) (Bergenfield)	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	+	0	0	+	+	8
203-002	Metzler Brook passes through the eastern portion of the municipality. Brook is very narrow in many areas causing flooding. It cannot handle the water flow. Borough of Bergenfield conducted a study in 2005. Project should build upon work already done.	Not Applicable																							
203-003	Dig a trench on the three properties (surrounding 8 Gallagher Court) so that excess water can runoff into the stream (includes county-owned property)	-	+	+	+	-	+	-	-	-	-	-	+	-	-	+			-	0	0	0	0	0	-4
203-004	Create a higher wall from the stream (behind 8 Gallagher Court) so as not to have flooding from the stream encroach on the 2 properties(includes county-owned property)	-	+	+	+	-	+	-	-	-	-	-	+	-	-	+			-	0	0	0	0	0	-4
203-005	Remove footbridge on Hirshfeld Brook located on former Lieby property-now deeded to Old South Presbyterian Church.	-	+	+	+	+	+	-	+	-	-	-	+	-	-	0			+	0	0	0	0	0	1
203-006	Remove shopping carts, branches, silt, and sand from Hirshfeld Brook to prevent mosquito breeding, West Nile Virus, and Malaria (see attached sheet for details)	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11

203-007	Entire garage becomes flooded as well as backyard & basement. The flooding begins at Cooper's Pond flow into brook. The Army Corp of Engineers built a cement wall to protect home on Central Ave but never addressed flooding issues still resulting. Problem has been addressed with the Mayor & Borough Administrator with no response from either. FEMA has been notified, however, no response. I do have pictures of flooded property if required.	Not Applicable - Not a Mitigation Project																							
203-008	Home is rear of building. 155 & 169 Washington Ave, Bergenfield. In heavy rain rear yard flood & ruins material in shed. There is no way water can leave area. This has been happening for the last two years. I would appreciate if this could be looked into.	Not Applicable - Not a Mitigation Project																							
203-009	General flooding of homes & property in the east side of Bergenfield by the main channel of the Metzler's Brook and tributary. I wish to present a project to the Commission to widen the stream channel of the brooks. I also propose to explain the need of constructing at least three stable, open channel flood retention basins. This brook presents a hazard to both life and property to hundreds of Bergenfield households during heavy rain. There are hundreds of street stormwater basins that enter this stream from the boroughs of Bergenfield, Dumont, and Cresskill, and Tenafly. This is a regional problem. I wish to give my personal presentation to the commission. I have researched this and can supply current and historic maps and text and flood and pre-flood photos. Please call or write me.	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	+	0	0	0	+	8
203-010	Deepen Metzler's Creek at Bradley Footbridge (diagram included)	+	+	+	-	+	-	-	-	-	+	-	+	+	-	0			+	0	0	0	0	0	-1

203-011	Hirschfield Brook was widened in 1968 to alleviate flooding up stream which helped a little. Factories, parking lots and storm sewer runoff has made the condition worse because of the amount of water from recent rains. The huge concrete pedestrian bridge on what is now property owned by Old South Church on Church Street is a main bottle neck that was never removed. The water in the twelve foot wide brook cannot readily flow though the six foot wide opening in the sand bridge. This causes back pressure which results in silt and sand drop out and builds up reducing the seven foot depth to only five foot.	-	+	+	+	+	+	-	+	-	-	-	+	-	-	0			+	0	0	0	0	0	1
203-013	Repair drainage at Veterans Memorial Park, Bergenfield NJ. (Park graded to drain N to Wildrose. Current several vaults but not connected to sewer) Water pools at basketball court and drains onto properties on Wildrose. Flooding from on most rainstorms. Solution: Build bypass or attach to sewer	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
203-014	Increase size of sewer pipes on New Bridge Rd and Windsor Road in Bergenfield NJ. Flood Road on major storms and back up flooding on adjacent properties.	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	+	0	0	+	+	8
204-001	Clearing creek of debris, contain roadway on original right of way with flood wall containment. Improve weir size and strength to hold more debris at Elm Ave & River RD. Est.- \$300,000	Not Applicable - More Information Needed																							
204-002	Clearing debris along ditch, roadway containment along above roadway, removal of silt filled debris in ditch, replace culvert in Olsen Park with one with clapper valve type to stop reverse flow of water into Recreation field in both public park and Board of Education fields.	+	+	+	-	+	+	+	1	+	+	+	1	+	+	+			-	+	0	0	0	0	11

205-001	Conversion of borough-wide communication system from wideband to narrow band to meet FCC requirements and permit simultaneous transmission of dispatch and detailed information to all emergency service departments at police dispatch desk at headquarters with necessary infrastructure throughout borough of Carlstadt. Est. \$500,000	+	+	+	+	0	0	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	8
205-002	Emergency warning siren system for town-wide audible alert at various locations throughout the borough of Carlstadt. Est. \$75,000	Not Applicable - Requires further review of means for alert; alternative technologies available																							
205-003	Acquisition of property for, and construction of, state of the art public safety facility adjacent to existing Carlstadt Municipal building. Est. Property \$600,000 and Design and construction of facility \$1,250,000	Not Applicable - Not a Mitigation Project																							
205-004	Ambulance Vehicle for Carlstadt. Est. \$175,000	Not Applicable - Not a Mitigation Project																							
206-001	Emergency Power at 525 Palisade Ave, Borough Hall, EOC. Est. \$225,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
206-002	Emergency Pumps Kits in Borough of Cliffside Est. \$1,500	Not Applicable - More Information Needed																							
206-003	Emergency Power for Shelters at Riverview and Palisade, 420 Oakdene Ave, 370 Palisade Ave Est. \$15,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
207-001	The two schools, Tenakill and Hillside need backup power. The borough also needs small back up power for all traffic lights on evacuation route as all lights are non-functional during blackout.	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
207-002	Any major flash flood or heavy rain floods two streets, Piermont Rd. and Homans Ave. Borough has close streets and then clean streets at end of flood. (Closter)	Not Applicable																							
207-003	Stream cleaning on East side of (Closter) needs to be completed.	+	+	+	0	+	-	-	0	+	+	+	0	+	+	+			-	0	0	0	0	0	7
207-004	Removal of critical infrastructure radio, 911, phone systems from basement of borough hall due to flooding at 295 Closter Dock Rd.	+	+	+	+	0	0	-	0	+	+	+	0	+	+	+			-	0	0	0	0	0	8
207-005	Flood control measures for property, 50 Brokerson Ave.	Not Applicable - More Information Needed																							

207-006	Emergency generator for school building used for Emergency Shelter, 340 Hormans Ave	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
207-007	Waterway enlarging, 1.5 miles from W73.952502 N40.967229 to W73.953708 N40.982640	+	+	+	-	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	2
207-008	Waterway clearing, 1.5 miles from W73.952502 N40.967229 to W73.953708 N40.982640	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
208-001	Dredging of the Tenakill Brook, Est.- \$1,000,000	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	0	0	3
209-001	Secondary railroad track crossing for emergency vehicle access, east and west at Old County Court and Wakelee Drive	Not Applicable																							
209-002	Generator for E.O.C. at Wakelee Drive	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
210-001	Loss of power to (Dumont) demonstrated how critical the need for back up power is to cover pump stations. Also back up power needed for borough owned traffic lights.	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
210-002	Clean, reinforce and repair storm drains	+	+	+	-	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	0	0	8
210-003	Avoid paving grass and park areas that absorb rain	Not Applicable - Not a Mitigation Project																							
210-004	Have towns clean debris and leaves from sewers and storm drains at least 3 times a year (especially after a flood)	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
210-005	Barbara Road & Hickory have two storm drains but cannot handle heavy rains. Water comes halfway up my driveway & covers front yard. I keep "my" storm drain cleared. Have called when heavy items like a rug are in drain & I can't get it out. (Additional Inlets)	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
210-006	Curb on Hickory along my property have eroded. Snow ploughs tend to push snow on my corner- slowly chipping away at the curb.	Not Applicable - Not a Mitigation Project																							
210-007	After heavy rains there is flooding behind my house which remains there 3-4 days and I worry that it could breed mosquitoes.	Not Applicable - Private Property																							
210-008	Evaluate Davies Ave. flooded after 57 years	+	+	+	0	0	-	-	0	+	+	+	+	+	+	+			-	0	0	0	0	0	7
210-009	Land erosion cost me taxes for land cannot use	+	+	+	-	-	-	-	-	+	+	+	+	-	-	0			-	-	0	0	-	-	-4
210-010	Brook in my backyard, brook could be kept clean and sewers	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11



216-001	Generators for shelter at 143 Charlotte Place, Upper School. Est.-\$125,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
216-002	Generators for shelter at 642 Floyd St., N. Cliffs School. Est.-\$125,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
216-003	Generators for pump station at Lyncrest Road Station. Est.-\$20,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
216-004	Generators for pump station at Jane Drive Station. Est.-\$20,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
216-005	Generators for pump station at Roberts Road Station. Est.-\$20,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
216-006	Expansion of storm drainage south of Palisades Ave. Est.-\$1,000,000	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
217-001	Property acquisition for conversion to Open Space from willing seller; Est. \$421,900	Not Applicable - Not a Mitigation Project																							
217-002	Flood gauges for the Passaic River with connectivity to the borough's website; Est. \$35,000	+	+	+	-	0	0	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	6
217-003	Repair electrical power panel damage at Memorial Park raise electrical panels, install one (1) new 400 amp electrical distribution panel, install one (1) new 400 amp circuit breaker, install new 400 amp single phase electrical service, raise the existing electrical service and equipment 3 1/2 feet higher to bring it out of the flood plain area; Est. \$19,804	Not Applicable - Not a Mitigation Project																							
217-004	Install 3 Onyx air operated pinch valves, Series DAC on the pool pump and storm drain overflow lines to prevent Passaic River from backing up into Memorial Pool through the effluent line; Est. \$50,000	Not Applicable - Not a Mitigation Project																							
217-005	Replace one (1) close couples Fairbanks Morse pump motor with a new Fairbanks Morse submersible pump (present pump is 30+ years old, is in a pit and each time area floods, motor has to be replaced and worked on); Est. \$30,000	Not Applicable - More Information Needed																							
217-006	Prospect Street Sewer Pump Station: convert the 2 compartment stations to 1 complete wet well, install two (2) new submersible pumps and bring	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+			-	+	0	0	+	+	13



219-005	Study: Traffic light power conversion to allow generator power at major intersections within the borough	Already Addressed - Reference Project #219-002																							
219-006	Ongoing maintenance plan to inspect all city owned storm sewers and remove debris	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	10
220-001	Emergency Power Generator at Bender Court, Est.- \$22,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
220-002	Lightning Warning System at Vichiconti Way, Est.- \$20,000	+	-	+	+	+	+	-	0	+	+	+	+	+	-	+			+	+	0	0	+	+	12
220-003	Dam Warning System at 40°59'15.36"N, 74°13'21.29W, Est.- \$250,000	+	-	+	+	+	+	-	0	+	+	+	+	+	-	+			+	+	0	0	+	+	12
221-001	Back up power to traffic signals at major intersections, solar or portable generator. (Garfield)	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	10
221-002	Placing stop signs permanently at all intersections to be opened during power outages. (Garfield)	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+			+	0	0	0	0	0	14
221-003	Snow emergency route ordinance: making it mandatory to park off certain roads during snowfall so roads could be cleared for emergency vehicles. (Garfield)	+	+	0	+	+	+	+	0	+	+	+	+	+	+	+			+	0	0	0	0	0	14
222-001	More Dredging (Glen Rock)	+	+	+	-	-	0	-	-	+	+	+	0	+	-	+			-	+	0	0	+	+	5
222-002	Rerouting water drainage from train overpass to mitigate flooding that results in 3-5 feet of water on roadway at Maple Ave, south of Rock RD under Bergenline	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
222-003	Installing back-up communication and paging equipment to mitigate delay in response when current system fails or is overloaded, 1 Harding Plaza, Glen Rock, Est.\$65,000	Not Applicable - Not a Mitigation Project																							
222-004	Educate public about all hazards, personal preparedness, sheltering in place and evacuation by means of open events at Glen Rock town hall meetings. Est. \$25,000	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+			+	0	0	0	0	0	12
222-005	Provide emergency information devices to each home in Glen Rock for instructions during emergencies, Est. \$60,000	+	+	+	0	+	+	-	-	+	+	+	0	+	+	+			-	0	0	0	0	0	8
223-001	Integrate CERT with all Public safety personnel (paid and volunteer) with a coordinated ID card to include all homeland security specialties or areas	Not Applicable - Not a Mitigation Project																							
223-002	Dredge Coles Brook (North) for depth	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3

223-003	Dredge Riser Ditch (Parallels Green St) for depth; provide better water control	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
223-004	Remove debris from all city owned storm sewers	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
223-005	Remove debris that prevents flow from all city owned Pump Stations	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
223-007	Dredge the Hackensack portion of the Riser ditch from Lodi St. to Rt. 80	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
223-008	Clean out Coles Brook	+	+	+	0	+	-	-	0	+	+	+	0	+	+	+			-	0	0	0	0	0	7
223-009	Diesel Powered Stormwater Pump at Blosses Creek Stormwater Pump Station	+	+	+	-	-	-	-	-	+	+	-	-	+	-	+			-	-	0	0	-	0	-4
223-010	Construction of 15,000 Ton salt shed	+	+	+	-	-	-	-	0	-	+	-	+	+	-	+			-	-	0	0	-	0	-3
223-011	Purchase and reestablishment of a GIS system to better document and track stormwater and sanitary problems	Not Applicable - Not a Mitigation Project																							
223-012	Purchase of Several FEMA trailers for emergency housing and command staging	Not Applicable - Not a Mitigation Project																							
223-013	Prepare, print, and distribute a Natural Hazard Mitigation Planning Community Guide for residents. A step by step guide to deal with multiple natural hazards and to minimize future losses. This should also be available on municipal website.	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+			+	0	0	0	0	0	12
223-014	Coles Brook (North): provide water control walls	+	+	+	-	-	-	-	-	+	+	+	+	-	-	0			-	-	0	0	-	-	-4
224-001	Emergency Generator for Municipal Shelter at Harrington Park Public School. Est. \$20,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
225-001	Pumping stations at Franklin Ave and Rt. 17 need back up Power (Hasbrouck Heights)	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	10
226-001	Replace pipe culvert at Pleasant Lane stream crossing. Pleasant Lane @ LOT 8 Block 1502 & Lot 25 Block 1500 (tax map sheet 15). Estimated cost \$30,000.	Not Applicable - Not a Mitigation Project																							
226-002	Replace pipe culvert at Prospect Avenue stream crossing. Located at Prospect Ave Lot 1 Block 1507 and Lot 8 Block 1502 (tax map sheet 15). Estimated cost is \$30,000.	Not Applicable - Not a Mitigation Project																							
226-003	Replace damaged foot bridge & clear debris @ the Crescent stream crossing Lot 1 Block 1001 and Lot 1 Block 912. Estimated	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11



228-010	Lower field on East side of Stream to handle an additional 13.5 million gallons of stormwater. (Same as 228-001)	+	+	+	+	+	+	-	-	+	+	+	+	+	-	+			-	+	0	0	+	+	11
228-011	Clean tributary #1 to the Saddle River. Home and basement floods because stream does not flow. Clean from Hollywood Ave to Route 17.	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
228-012	Clean and reestablish stream bed of the Zabriski Brook between Lakewood Ave and Warren Ave. Almost every major storm flooding and unhealthy conditions develop in addition to flooding of basements.	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
228-013	Ho-ho-kus brook requires a major clean out. This major stream is heavy with debris. Clean out should be from the railroad viaduct to Ridgewood line	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
228-014	Rebuild Mill Road Bridge	Not Applicable - Not a Mitigation Project																							
228-015	Relocate gas and water mains	Not Applicable - Not a Mitigation Project																							
228-016	Improve emergency electric generation for DPW	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	10
228-017	Radio Transmission must be redesigned for all departments	+	+	+	+	+	+	-	0	+	+	+	+	+	+	+			-	0	0	0	0	0	11
229-001	Continue the pruning of branches surrounding power lines to prevent loss of power. (Leonia)	Not Applicable																							
229-002	Flooding of athletic field of Leonia High School: 100 Christie Heights, Leonia, NJ 07605	Not Applicable - Not a Mitigation Project																							
229-003	Emergency generator for 105,000 sq. ft Leonia High School: 100 Christie Heights, Leonia, NJ 07605	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
229-004	Emergency generator for 105,000 sq. ft Leonia Middle School: 500 Broad Ave, Leonia, NJ 07605	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
229-005	570 Grand Ave. to 542 Grand Ave., Leonia: Constant groundwater seepage	Not Applicable - Not a Mitigation Project																							
229-006	Open drainage ditch between Leonia High School Athletic field and railroad: 100 Christie Heights, Leonia, NJ 07605. Ditch serves all of Leonia North of Christie Heights	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
229-007	Adequate salt supply needs to be maintained late into season.	Not Applicable - Not a Mitigation Project																							
230-001	Pump Stations on Hackensack River (Little Ferry)	Not Applicable - More Information Needed																							

231-001	Obtain barricades and storage facilities to preposition barricades in flood prone roadways and areas. Location in various local and county roads predisposed to urban and riverine flooding. Estimated cost \$51,768.	Not Applicable - Not a Mitigation Project																							
231-002	Maintenance and inspection of all stormwater sewers and brooks and remove all debris as required. This will be done throughout the borough. Estimated cost \$50,000.	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
231-003	Flood water current diverters installed at Memorial Park. Estimated cost \$1,000,000.	Not Applicable - More Information Needed																							
231-004	Slope stabilization and retaining wall at Harrison and Farnham Avenue slopes. Estimated cost is \$30,000,000.	-	+	+	+	-	0	-	-	+	+	-	0	+	-	+			-	0	0	0	0	0	0
232-001	Early alert system, future changes to building codes for residents in the affected area to reduce damage from possible future floods. (Lyndhurst)	Not Applicable - Already Addressed																							
232-002	Build up embankment of Passaic River	+	+	+	+	-	-	-	-	+	+	-	+	+	-	+			-	0	0	0	0	0	2
232-004	Change in slope coming off Rt#3 East onto Rutherford Ave near Riverside Ave	-	-	-	+	-	-	-	0	-	+	-	+	+	-	0			-	0	0	0	0	0	-6
232-005	Clean out storm sewer system pipes (clay in the area of Riverside Ave and Forest Ave leading to Passaic River	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
233-001	Need for major work in area to change flow patterns and construction of detention area (Mahwah)	Not Applicable - More Information Needed																							
233-002	Cragmere Storm Water Drainage	Not Applicable - Not a Mitigation Project																							
233-003	Winter's Pond and Masonic Brook Dredging	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
233-004	Study: Repair and upgrade on Winter's Pond Dam	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
233-005	Study: Silver Creek Dam upgrade	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
233-006	Deerhaven Road and Bridge over brook mitigation to avoid undermining	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	0	5
233-007	Ramapo River from N.Y. State to Oakland (Removal of Debris)	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
233-009	Acquisition of 2 homes on Catherine Ave and 2 homes on Alexandra Ct. (Voluntary)	+	+	+	+	+	+	+	+	+	+	+	0	+	+	+			-	+	0	0	+	+	16
233-010	Addition of a second water main to Fardale section of town to provide an alternate source of	Not Applicable - Not a Mitigation Project																							

	water																								
233-011	Install Emergency Generator to water wells 17 and 18	Not Applicable - Private Sector																							
234-001	Emergency Power for Department of Public Works Facility - currently non-existent. 100 East Hunter Ave Maywood, NJ. Estimated cost \$45,000.	+	0	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	6
234-002	Emergency Power for Fire Station #2 utilized as alternate EOC and backup emergency services communications. 30 West Hunter Ave Maywood, NJ. Estimated cost \$40,000.	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
235-001	Clearing, widening, and rebuilding of the walls of the stream through the Ridgewood Water Control Center on Godwin Ave in Midland Park (Midland Park)	Not Applicable																				0			
236-001	Pascack Brook - Gabion Walls	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+			-	+	0	0	0	0	9
236-002	Tennessee Gas Transmission at Grand Ave in Montvale	Not Applicable - Private Sector																							
236-003	Williams Gas Transmission at Kinderkamack Road	Not Applicable - Private Sector																							
236-004	Orange and Rockland Electric Co at Kinderkamack Rd, Craig Rd, and Grand Ave (Electric Power Substations)	Not Applicable - Private Sector																							
236-005	Indian Point Power Plant, 50 mile radius, any natural hazard causing utility loss or requiring potential evacuation	Not Applicable - Already Addressed																							
236-006	Replacement of gabion wall system with the installation of permanent floodwall system in the Pascack Brook to prevent recurring damage to the sanitary sewer system. Est-\$250,000 - \$500,000	+	+	+	+	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	4
237-001	Acquisition of newer salt spreaders (Moonachie)	+	+	0	+	+	+	+	0	+	+	+	+	+	+	+			+	0	0	0	0	0	14
238-001	Lack of adequate emergency back up generators (New Milford)	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
238-002	Inspect and clear, as necessary, storm drainage system flowing into the river near Roosevelt Avenue and New Bridge Road in New Milford.	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
238-003	Conduct stormwater survey to determine causes of flooding near Roosevelt Avenue and New Bridge Road in New Milford.	+	+	+	0	0	-	-	0	+	+	+	+	+	+	+			-	0	0	0	0	0	7

238-004	Determine if French Creek in New Milford is under capacity and modify the stream accordingly.	+	+	+	+	+	-	-	0	+	+	+	+	+	-	+			-	0	0	0	0	0	0	7
238-005	Preserve open space in the area and slow down development.	Not Applicable - Not a Mitigation Project																								
238-006	Mandate to United Water: Ensure surge capacity reservoirs (room to accommodate 6-8" of rainfall over 12 hrs), sluice gate opening-must alert mayors of towns along the river when emptied space is feared to fall below 8" then below 4", Publicize equivalence of rainfall to level increase in reservoirs. Post data near sluice gates	Not Applicable - Cannot use federal money to mandate a private sector																								
238-007	Dredging, riverbank stabilizing: immediate start on reservoirs down-hill of Oradell, without waiting for various studies. Use the dredged material for stabilizing, starting from low-lying areas.	Not Applicable - Cannot use federal money to mandate a private sector																								
238-008	Marsh Lands: Learning from New Orleans experience, encroachment of these must be diligently avoided and subjected to public scrutiny. Effective mosquito control measures to put in place	Not Applicable - Not a Mitigation Project																								
238-009	Relief Operations: At all rescue points transport must be assured to shelters/private homes within a radius of 2 miles, wait not to exceed 1/2 hr, council members should get personally involved	+	+	-	-	+	-	-	-	-	+	-	+	+	-	0			-	0	0	0	0	0	0	-3
238-010	Flood alerts: apart from the generalized alerts, the advisories should be specific on likelihood of gates opening for additional rainfall of 2" (prepare for evacuation), subsequently for additional rainfall of 1" (mandatory evacuation)	Not Applicable - Already Addressed																								
238-012	Flood control dam- downstream i.e. Lake Hackensack Project which we have heard about for at least 30 years	-	+	+	+	+	-	-	-	-	+	-	+	0	-	+			-	-	0	0	-	+	-2	
238-014	Reservoir restructure	Not Applicable - More Information Needed																								
238-016	Bank Stabilization	Not Applicable - More Information Needed																								
238-017	Digest and cleaning Hackensack River	Not Applicable - More Information Needed																								

238-019	Stop United Water from opening the dam and flooding us. I have lived in Dorchester Manor for 37 yrs and twice in the last 8 yrs United Water has flooded us.	Not Applicable - Already Addressed by 238-046																							
238-020	Replace storm sewers and culvert at New Bridge Road and Old New Bridge Road	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+			-	+	0	0	0	0	9
238-021	Widen and deepen French Creek Plus divert some storm sewer run-off through new piping to be run under park opposite of Sanzari's Inn	+	+	+	-	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	2
238-022	Dredge Hackensack River to remove excess silt and reestablish normal draft of river/reestablish river banks (Newspaper article included)	Not Applicable - No Authority																							
238-023	Remove all built up material, including silt, from bottom of Hirschfield Brook in New Milford.	+	+	+	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3	
238-024	Resupport the original margins of Hirschfield Brook by various means such as Rip-rapping, cribbing, etc. thus permitting unrestricted flow of water from other towns located upstream	+	+	+	+	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	4
238-025	Various improvement to Hirschfield Brook such as Bank Stabilization, channel widening, dredging, etc.	+	+	+	+	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	4
238-026	Study the expansion of Boulevard Bridge, New Milford, to let water have unrestricted flow.	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
238-027	Improved storm drainage	Not Applicable - No Location																							
238-029	Devise a formula that will indicate the y gallons of water that will enter the reservoir when x inches of rain are forecast.	Not Applicable - Addressed by 238-046																							
238-030	Gauge the current level of the reservoir and determine the impact of the influx of y gallons	Not Applicable - Addressed by 238-046																							
238-031	Once determined begin releasing water into the Hackensack River. Since this river is tidal, consult a low tide chart so that the water may be release when the tide is going out. There are 2 low tides daily.	Not Applicable - Addressed by 238-046																							
238-032	If 10% of the influx listed above could be released in each of the low tides in each day before the storm, there would be minimal flooding and the reservoir would	Not Applicable - Addressed by 238-046																							

	still be filled.																								
238-033	The storm drains would be able to operate during the storm because the reservoir floodgates would be closed	Not Applicable - Addressed by 238-046																							
238-034	Buying homes too close to the river, with owner's permission	+	+	+	+	+	+	+	+	+	+	+	+	0	+	+			-	+	0	0	+	+	16
238-035	Bank Stabilization measures put in place i.e. planting trees and shrubs and/or other ecological means of harmonious coexistence with the river	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+			+	+	0	0	+	+	15
238-038	Reservoir Dredging	Not Applicable - Addressed by 238-046																							
238-039	Better management of water release from reservoir	Not Applicable - Addressed by 238-047																							
238-041	Desilt all tributaries' feeding the Hackensack River	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
238-042	Improve the River flow to allow excess water to flow away from these flooded areas	Not Applicable - Not a Mitigation Project																							
238-043	Feeder brooks should be cleared of debris on a regular planned schedule	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
238-044	Bank stabilization for prevention and limiting silting. This will permit or allow a more efficient movement of water	+	+	+	+	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	4
238-045	Prevention of additional building in flood prone areas, therefore preserving open space and providing additional flood water storage	Not Applicable																							
238-046	Perform feasibility study on modifying Oradell Dam operations to control flooding during major storms and tidal surges.	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			-	0	0	0	0	0	5
238-047	If the original Flood Mitigation Plan, dated March 2002, had been implemented, rather than restudies, at an additional expense, funds would have been conserved, and then maybe the flooding problem would have been less damaging during the April 2007 flooding	Not Applicable - Not a Mitigation Project																							

238-048	Have all future studies progress at a more rapid pace. The most recent was very drawn out, because as a NM Mayor stated on many occasions, the town is waiting for a new mitigation report, because it was necessary for the topography to be studied in detail. The study, we were told, was delayed because aerial photographs were delayed because of too much foliage, therefore having to wait until all leaves from the trees were gone	Not Applicable - Not a Mitigation Project																							
238-049	Both 2002 and 2006 studies parallel each other, so the recommendations should be acted upon, rather than authorizing any additional studies, thereby saving funds, and applying the save funds, for corrective actions	Not Applicable - Not a Mitigation Project																							
238-050	Application of Riverine and Stormwater Flooding, Landslides and Erosion, Windstorms and Tornadoes, Hailstorms, Hurricanes and Tropical Storms, Northeasters and Severe Winter Storms, Hazardous Material, and Loss of Utilities (Electric).	Not Applicable - Not a Mitigation Project																							
238-051	Make use of all interested persons, with first hand information, who have previously publicly volunteered to be on an advisory committee/board. Volunteers were never asked to provide first hand experiences.	Not Applicable - Not a Mitigation Project																							
238-052	Lack of boats (New Milford)	+	+	+	0	+	+	-	-	+	+	+	+	+	-	+			-	0	0	0	0	0	7
239-002	Borough wide maintenance plan to inspect all catch basins and storm sewers, remove debris that may restrict flow Est = \$25,000	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	10
239-003	Upgrade police emergency management generator at 214 Ridge Road, in North Arlington, to ensure operation during power failure Est = \$125,000	+	+	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	7
239-004	Borough wide audio warning system Est = \$750,000	Not Applicable - Requires further review of means for alert; alternative technologies available																							
239-005	River bank stabilization measures along the length of the river: Planting trees, shrubs, and other ecological means that co-exist with the river Est = \$200,000	+	+	+	+	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	4

239-006	Upgrades to the pumping stations to remove rain water that floods homes on Geraldine Road Est = \$250,000	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+			-	+	0	0	+	+	13
239-007	Installation of an emergency generator at the DPW building on 1 Disposal Road Est = \$200,000	+	0	+	+	+	-	-	-	+	+	+	0	+	-	+			-	0	0	0	+	+	6
240-001	Install an Emergency Generator at EOC at 116 Paras Ave, Est.- \$40,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
241-001	Emergency generator to supply power to our primary shelter, Norwood Public School, Long. - 73.961028 Lat. 40.996037, Est = \$17,500	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
242-001	River has been dredged, dam control project underway. Possibly redirect runoff from the highway. Create more efficient means of controlling the water level in Crystal Lake. (Oakland)	+	+	+	+	-	-	-	0	+	+	+	0	+	-	0			-	0	0	0	0	0	3
243-001	Stream Clearance. Culvert type bridge should be replaced with a higher bridge to prevent the blockage of the existing stream. (Old Tappan)	Not Applicable - Already Addressed																							
244-001	Flood warning system. (Oradell)	+	-	+	+	+	+	-	0	+	+	+	+	+	-	+			+	+	0	0	+	+	12
244-003	Relocation of equipment (Oradell)	Not Applicable - More Information Needed																							
244-004	Rebuilding of culverts (Oradell)	+	+	+	+	-	-	-	+	+	+	-	+	+	+	0			-	-	0	0	+	+	6
244-005	Widening of drainage ditches, small streams. (Oradell)	-	+	+	+	-	+	-	-	-	-	-	+	-	-	+			-	0	0	0	0	0	-4
245-001	Dredging of outfalls to Overpeck Creek	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
245-002	Install larger storm drains at various low lying areas of town (Cost estimates available upon request)	+	+	+	-	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	0	0	8
245-003	Need additional backup snow removal equipment	+	+	0	+	0	0	-	-	-	+	-	+	+	+	+			-	0	0	0	0	0	3
246-001	Replace the emergency generator at Police HQ that houses Paramus Communications Center and the Public Safety Answering Point (PSAP) for 7 municipalities at 1 Carlough Drive (40°55'32.13"N, 74°04'06.04"W) Est.-\$35,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
246-002	Installation of an emergency generator at Paramus High School, our primary congregate care shelter at 99 Century RD. Est.-\$200,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7

246-003	Installation of an emergency generator at Paramus Fire Station #2 at 238 Spring Valley RD (40°55'59.21"N, 74°03'12.81"W) Est.- \$35,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
246-004	Installation of water-tight doors at all sewer pump stations: Prospect St. Pump Station (40°55'32.53"N, 74°04'25.26"W), Route 17 Pump Station (40°55'08.06"N, 74°04'05.70"W), Southcrest St. Pump Station (40°54'48.54"N, 74°04'30.38"W), Dunderhook RD Pump Station (40°56'51.50"N, 74°05'38.85"W), Grove St. Pump Station (40°57'43.69"N, 74°05'36.59"W) Est.-\$15,000	+	+	+	-	+	0	-	-	+	+	+	0	+	+	+			-	0	0	0	0	0	6
246-005	Installation of a Flood Protection System at the Prospect St. Pump Station (40°55'32.53"N, 74°04'25.26"W) and the Grove St. Pump (40°57'43.69"N, 74°05'36.59"W) Station	+	+	+	-	+	0	-	-	+	+	+	0	+	+	+			-	0	0	0	0	0	6
247-001	Establish a Community Emergency Response Team (CERT) - trailer equipment and clothing. The trailer would be located at the Borough of Park Ridge Office of Emergency Management 55 Park Avenue Park Ridge, NJ. Estimated cost \$10,000.	+	+	+	+	+	+	-	+	+	+	+	+	-	+			+	0	0	0	0	0	12	
247-002	Study for Mill Pond Dam Restoration located on Mill Road in Park Ridge. Estimated cost \$900,000.	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	7	
247-003	Bank stabilization measures needed to be put in place including the installation of boulders in the bank and the removal of trees with exposed roots due to erosion located at Pascack Brook and Echo Glen Brook on Mill Road/ Colony Avenue. Estimated cost \$700,000.	+	+	+	+	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	4
247-004	Radio communications/ interoperable communications initiative - Office of Emergency Management owns only one portable radio and is seeking to improve communications through acquisition of portable radio equipment. Located in the OEM in Park Ridge. Estimated cost is \$6,167.	Not Applicable: Not a Mitigation Project																							

247-005	Mobile EOC Vehicle Restoration - OEM currently does not have mobile EOC; to acquire town-owned vehicle; funds to be used for conversion/ restoration. Located in OEM in Park Ridge. Estimated cost is \$10,000.	Not Applicable: Not a Mitigation Project																							
248-001	Prune trees that cause power disruptions (Ramsey)	Not Applicable																							
248-002	A more comprehensive mitigation study has been completed by Ramsey to protect the water system. The state office of counter terrorism has been involved. (Ramsey)	Not Applicable																							
248-003	Study: Improve drainage in affected areas (Ramsey) (Church St. & Island Ave)	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
249-001	Removal of two large trees that are in a precarious position on the bank of Wolf Creek south of Lancaster Rd. The trees in question are dead.	+	+	+	+	+	+	0	+	+	+	+	+	+	+			+	0	0	0	0	0	15	
250-001	Back up generator ordered for back up EOC. Updated all radios in back up EOC. (Ridgefield Park)	Not Applicable - Already Addressed																							
250-002	Clean and dredge drainage stream from Rt. 80 to Southern end at Overpeck Creek. Runs along west side of Route 95. Causes flooding on several village streets.	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
250-003	Provide for Engineering review of Bergen Turnpike, Hackensack River (Overpeck Creek) to eliminate serious flooding.	+	+	+	0	0	-	-	0	+	+	+	+	+	+	+			-	0	0	0	0	0	7
251-001	Study: Reconstruction of village hall. Construction of new police annex. (Ridgewood)	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
252-001	Dredge Hackensack River (River Edge)	Not Applicable																							
252-002	Increase drainage on main roads (River Edge)	+	+	+	-	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	0	0	8
252-003	Increase funding for firefighting training and equipment (River Edge)	Not Applicable																							
252-006	Storm surge/flooding - widen and/or dredge Hackensack River. Elevate pressure at reservoir dams. (River Edge)	+	+	+	-	-	-	-	-	+	+	+	+	-	-	0			-	-	0	0	-	-	-4
252-007	Drought - conserve use of water around town (River Edge)	Not Applicable -Not a Mitigation Project																							
252-009	Relocate DPW office to higher areas on DPW property; install and raise generator (River Edge)	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+			-	+	0	+	+	+	12

252-010	Establish early warning system from water co. basin to release (River Edge)	+	+	+	-	-	-	-	-	+	+	+	0	+	-	+			-	-	-	0	0	0	-1
252-011	Install check valves in control water back up by stormwater pipe from Hackensack River. (River Edge)	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+			-	0	0	0	0	0	8
253-002	Overhauling trees/limbs (Elimination) Above and along roadways.(River Vale)	+	+	+	-	+	-	-	-	+	+	+	+	+	-	0			-	0	0	0	0	0	3
253-003	Add an additional power feed/circuit for the south end of River Vale. The areas around the center of town experience frequent power outages. (River Vale)	Not Applicable - Private																							
253-004	Not sure best way to solve this problem (more sewer; change of grading) but InterGlen Ave. floods constantly, as does River Vale Rd. by Holdrum School. (River Vale)	+	+	+	+	+	-	-	0	+	+	+	+	+	+	+			-	-	0	0	-	+	9
253-005	Develop "wall" to prevent overflow of Hackensack River on to Baylor massacle park of red oak/white birch. (River Vale)	+	-	+	+	-	-	-	0	+	+	+	+	+	-	+			-	-	0	0	-	+	2
253-008	Desilt, clean, and possibly Hackensack River at Harriot Ave bridge in Harrington Pike to eliminate bottleneck at bridge which backs up to River Vale Streets	Not Applicable - No Authority																							
253-009	Enforce illegal dumping of debris which would wash into river and cause damming	Not Applicable - No Authority																							
253-010	Ongoing maintenance plan to inspect the river for fallen trees etc. that would stop flow of water	+	+	+	0	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	+	0	10
253-011	Initiate a program to help senators unable to get needed supplies. For example, bottle water, flashlights, and battery operated lamps. Through a recent census identify those residents that may need assistance. Set volunteer program to check out and assist those who need or would like assistance	Not Applicable - Not a Mitigation Project																							
253-013	Trim tree branches resting on near utility lines.	Not Applicable - No Authority																							
253-014	Keep storm drains clear (clean out periodically)	Not Applicable - Not a Mitigation Project. DEP requires																							
253-015	Keep water beds clean (clean out periodically)	Not Applicable - Not a Mitigation Project. DEP requires																							
254-001	Reconstruct at higher elevation above base flood elevation.	Not Applicable - Existing Regulations																							

	(Rochelle Park)																								
254-002	Structure Elevation/ Slab (Rochelle Park)	Not Applicable - Existing Regulations																							
254-003	Structure Elevation/ Basement (Rochelle Park)	Not Applicable - Existing Regulations																							
254-004	Utility Elevation/ Slab (Rochelle Park)	Not Applicable - Existing Regulations																							
254-005	Utility Elevation/ Basement (Rochelle Park)	Not Applicable - Existing Regulations																							
254-006	Backflow prevention (Rochelle Park) (Create Ordinance)	+	+	0	+	0	-	-	0	+	+	+	+	+	-	+			+	0	0	0	0	0	7
255-001	Emergency power for shelter/Firehouse at 26 Rockleigh Rd. Est-\$12,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
255-002	Bank/Stream cleanup at Sparkill Creek. Est.-\$125,000	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
255-003	Dam improvement/ Fixing at 20 Rockleigh Rd. Est.-\$150,000	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
255-004	Vegetative Management/ Wildfire Management at Rockleigh Woods. Est.- \$200,000	Not Applicable - More Information Needed																							
256-001	Emergency community alerting system (Reverse 911). (Rutherford)	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	0	0	0	0	0	6
257-001	Saddle River dredging; Extensive dredging project to eliminate flooding	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
257-002	Study the reconfiguration of Saddle River Ave Bridge so debris flows unobstructed	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
257-004	The Saddle River needs to be dredged. (Saddle Brook)	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
258-001	Study and evaluate evacuation route surveillance system at the intersection of Rt 17 and East Allendale Rd. The system could be fed to the Saddle River Police communications center, NJDOT and County of Bergen Police Communications. Allows for the agencies to obtain live information when any disaster strikes the area north of the RT4/ Rt 17 interchange and provide early warning and intervention to all affected or to be affected communities.	+	+	+	-	0	0	+	-	+	+	+	0	+	+	+			-	0	0	0	0	0	6
259-002	Dredge both River Ditches - Jet and clean line along Green Street under Route 80	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
259-003	Study: Redesign or elevate Saddle River Bridge at Saddle River Ave & Marcelles (Marsellus?) Place	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7

259-004	Elevation of the Sewer Ejector Station at Saddle River Ave. Garfield Park Section	+	0	+	+	+	-	-	0	+	+	+	+	+	+	+			-	0	0	0	0	0	8
260-001	Belle Ave. Drainage Improvements: Installation of Larger and Additional Storm Drains (Teaneck)	+	+	+	-	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	0	0	8
260-002	Farby Ct. Drainage Improvements: Installation of Larger and Additional Storm Drains (Teaneck)	+	+	+	-	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	0	0	8
260-003	Stream Bank Stabilization Project: Public Works Yard affronts the Hackensack River (Teaneck)	+	+	+	+	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	4
260-004	Contamination of Hirshfeld Brook from rail disaster on CSZ line: Remove contaminants from site	Not Applicable - Not a Natural Hazard Mitigation Project																							
260-005	Flooding on Hackensack River Greenway: Restore trails and markers in the event they are destroyed by flooding	Not Applicable - Not a Mitigation Project																							
260-006	Tree destruction after hurricane: Remove trees in parks and along roadways and replant new trees	Not Applicable - Not a Mitigation Project. Debris Removal																							
260-007	Storm Surge destroying sewers: Replace broken sewers	+	+	+	-	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	0	0	8
261-002	Replace sewer main at Dean Drive (area of Inness Road) to relieve flooding	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
262-001	Stormwater pump station, removal of stormwater at Industrial Ave Est. 4.8 million	+	+	+	-	+	-	-	0	+	+	+	+	+	+	+			-	+	0	0	0	0	8
262-002	West Riser ditch clean up from train station along tracks/ Industrial Ave to Franklin Ave Bridge airport along perimeter	+	+	+	-	+	+	+	0	+	+	+	0	+	+	+			-	+	0	0	0	0	11
262-003	Dredge West Riser ditch from train station along tracks/Industrial Ave to Franklin Ave Bridge airport along perimeter Est \$200,000	+	+	+	-	-	-	-	-	+	+	+	+	+	-	+			-	-	0	0	0	+	2
263-001	Install Emergency Electric Generator at School Shelter, 392 West Saddle River RD, Upper Saddle River, Est. \$125, 000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
264-001	Rehabilitate White's Pond Dam at Hopper Ave (Lat:794,900, Long: 2,146,700) Est.- \$125,000	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
265-001	Emergency Power - EOC - Emergency Services Bldg at 178 Maple Avenue, Wallington. Est: \$60,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7

266-001	Study: Replacement of earth and dam (Washington Twp.)	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
266-002	Study: Dredge Washington Lake (also referred to as Schlegal Lake). Install proper dam and debris collection boom at stream	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
266-003	Install retaining walls along stream banks to eliminate further land erosion when streams water level rises during storms	+	-	+	+	-	-	-	0	+	+	+	+	+	-	+			-	-	0	0	-	+	2
266-004	Fix/Repair or replace existing town wide siren system to alert fire personnel of fire calls and to alert citizens in times of emergencies an/or school closings	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	0	0	0	0	0	6
266-005	Install back-up power generator at municipal complex/police headquarters due to loss of electrical power failure	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
266-006	Dredging of lake. (Washington Twp.)	+	+	+	-	-	-	-	-	-	+	+	+	+	-	+			-	+	0	0	+	+	3
266-007	Two bridges over county roads had to be replaced. (Washington Twp.)	Not Applicable - Not a Natural Hazard Mitigation Project																							
267-001	Engineering study of channel stabilization: 18" Cast Iron and 20" clay sanitary sewer trunk line is exposed and bowed. Study retaining wall at Pascack Brook, Westwood Ave, near Park Place.	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
267-002	Engineering study of channel stabilization: 18" Cast Iron plus 20" clay sanitary sewer trunk line is exposed plus bowed at Pascack Brook, Westwood Ave, near Park Place.	+	0	+	0	0	-	-	0	+	+	+	+	+	+	0			+	0	0	0	0	0	7
267-003	Musquapsink Brook, repair 15" high pressure line at 1st Ave & near Bogert Ave. 2nd location Prospect Ave. near Goodwin Terrace Est. \$40,000	Not Applicable - Not a Mitigation Project																							
268-001	Install folding stop signs at 7 intersections in Woodcliff Lake: Kinderkamack Rd and Prospect Ave, Woodcliff Ave. and Pascack Rd., Glen Rd. and Parkway Exit 171 (3-way), Glen Rd. and Chestnut Ridge (5 way intersection), Chestnut Ridge and County Rd., Chestnut Ridge and Tice Blvd., Chesnut Ridge Rd. and Woodmont Drive.	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+			+	0	0	0	0	0	14
269-001	Tree removal. Aggressive pruning (Wood-Ridge)	Not Applicable - No Jurisdiction																							

269-002	Engineering study of capacity of stormwater system in area of Anderson Ave. (Wood-Ridge)	+	0	+	0	0	-	-	0	+	+	+	+	+	+	+			+	0	0	0	0	0	8
270-001	Emergency Power at Larkin House, 380 Godwin Ave. Est.-\$30,000	+	+	+	+	+	-	-	0	+	+	+	-	+	-	+			-	0	0	0	+	+	7
NJMC-001	Restoration of the Kane Track Levee to protect Carlstadt, Little Ferry, South Hackensack, and Moonachie	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+			-	+	0	0	0	+	10
NJMC-002	Restoration and Upgrade of the West Riser Tide Gates	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	+	0	0	0	0	7
NJMC-003	Restoration and Upgrade of the Peach Island Creek Tide Gates	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	+	0	0	0	0	7
NJMC-005	Rutherford/E. Rutherford Drainage System Restoration	+	+	+	0	+	-	-	0	+	+	+	0	+	+	+			-	0	0	0	0	0	7
NJMC-006	Implement the Remainder of the NJMC Floodplain Management Plan	+	+	+	+	+	-	-	-	+	+	+	+	+	-	+			-	+	0	0	0	0	7
NJMC-007	The NJMC will work with the 70 Bergen County municipalities to identify existing buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of existing vulnerable structures and infrastructure, the NJMC will provide mapping/GIS assistance to digitize this information.	+	+	+	+	0	-	0	+	+	+	+	+	+	0	+			0	0	0	0	0	0	10
NJMC-008	The NJMC will work with the 70 Bergen County municipalities to identify future buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of future vulnerable structures and infrastructure, the NJMC will provide mapping/GIS assistance to digitize this information.	+	+	+	+	0	-	0	+	+	+	+	+	+	0	+			0	0	0	0	0	0	10
NJMC-009	The NJMC will work with the 70 Bergen County municipalities to describe/quantify potential natural hazard impacts to the buildings in each jurisdiction. This information will be described either in terms of dollar value or percentages of damage.	+	+	+	+	0	-	0	+	+	+	+	+	+	0	+			0	0	0	0	0	0	10

# Appendix M

## *Project Scope Development*

**Project Name: Establish a Community Emergency Response Team (CERT)**  
**Project Number: 200-007 - Bergen County - No CF**  
**Hazard Addressed: All Hazards**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

Objective

To provide the citizens of Bergen County with emergency personnel trained in preparedness, response and recovery related to natural disasters.

Action

Bergen County will need to provide training, equipment and deployment support to organize and maintain a CERT team. Additionally, the County would conduct large-scale exercises with the various municipal CERT teams to prepare for a major disaster.

Responsible Departments

Bergen County Office of Emergency Management.

Time Frame

It is estimated that it will require three (3) months to organize a county-wide CERT team following the securing of funds for training and equipment.

Cost

To be determined. This figure is dependent upon how Bergen County and its individual municipalities choose to share the burden. For example, if existing CERT teams offer to share their resources, the cost will be substantially lower than if Bergen County must obtain new facilities and resources.

Cost/Benefit

The Mitigation Planning Team prioritized this action using the STAPLEE criteria. This proposed project scored a 12 on a scale of +21 to -21. This action stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Bergen County should apply for Pre-Disaster Mitigation Program grant funds. Provided the County receives 75% of the necessary funding, Bergen County's annual budget would provide the 25% match required.

**Project Name: Evaluate, modify, and adopt new regulations in Bergen County**

**Project Number: 200-038 - Bergen County- No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

To ensure that regulations throughout Bergen County are up-to-date with Federal, State and local standards, in conformity with the goals and objectives of the Plan, and capable of providing the people and infrastructure of Bergen County with protection from riverine and stormwater flooding.

Action

Evaluate, modify, and adopt new regulations for Bergen County for the following fields:

- Floodplain Development
- Hillside Development
- Open Space and Protected Lands
- Waterfront Setback
- Stormwater Management
- Stream Dumping
- Subdivision and Development

Responsible Departments

Bergen County

Time Frame

It is estimated that it should require one year of third-party study to completely review and comment on the above regulations once funds are made available.

Cost

Consulting services: \$325,000

Cost/Benefit

The Mitigation Planning Team prioritized this action using the STAPLEE criteria. This project scored a 12 on a scale of +21 to -21. This action stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Bergen County should apply for Pre-Disaster Mitigation Program grant funds. Provided the County receives 75% of the necessary funding, Bergen County's annual budget would provide the 25% match required.

**Project Name: Evaluate and acquire, on a voluntary basis, hazard-prone structures**

**Project Number: 200-047- Bergen County- No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

#### Objective

This action aims to minimize the number of structures prone to repetitive losses from flooding.

#### Action

The first step is the analysis of existing repetitive loss structures to determine which buildings are the greatest impacted, including differentiating "Severe Repetitive Loss" areas. Once the structures are ranked by financial impact and likelihood of additional loss, Bergen County can facilitate negotiations with the NJDEP for voluntary buyout.

#### Responsible Departments

Bergen County, NJ Department of Environmental Protection

#### Time Frame

It is estimated that it should require six months to acquire the properties of the owners wishing to participate, once funds are made available.

#### Cost

\$370,000 per Repetitive Loss property (based on 75% of the 2006 median home value in Bergen County)

\$444,060 per Severe Repetitive Loss property (based on 90% of the above value)

#### Cost/Benefit

The Mitigation Planning Team prioritized this action using the STAPLEE criteria; this project scored a 16 on a scale of +21 to -21. This action stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

Bergen County should apply for Flood Mitigation Assistance and Severe Repetitive Loss (SRL) program assistance. NJDEP should be contacted to assist with the non-Federal share of the projects.

**Project Name: Educate public regarding potential retrofits for privately owned land**

**Project Number: 200-052- Bergen County- No CF**

**Hazard Addressed: All Hazards**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

This project aims to educate the public on how to alter existing structures with retrofits to withstand the effects of the natural hazards and ultimately reduce their vulnerability to repetitive losses.

Action

Methods for retrofitting structures to withstand the most common hazards in the county must be determined. Means of relaying the information to the public must be decided for estimating purposes. A brochure describing retrofitting hazard-prone properties would be written and distributed to each residential property in Bergen County.

Responsible Departments

Bergen County

Time Frame

It is estimated that it should require six months to prepare and distribute these brochures once funds are made available.

Cost

Consulting services: \$75,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This action stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Bergen County should apply for the Pre-Disaster Mitigation Program. Provided the County receives 75% of the necessary funding, Bergen County's annual budget would provide the 25% match required.

**Project Name: Develop volunteer staff to assist with mitigation projects**

**Project Number: 200-066- Bergen County- No CF**

**Hazard Addressed: All Hazards**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

The project aims to develop a list of contacts within the Bergen County community to assist with the mitigation project assessment, development, and execution.

Action

Bergen County employees will publicize the need for volunteers to assist in the mitigation efforts and operate as a point of contact for the various communities. A functional communication network should be established by email or telephone. Bergen county and the volunteers should meet on a regular monthly basis.

Responsible Departments

Bergen County

Time Frame

It is estimated that it should require one month establishing a group of volunteers. From that point on, it will be an open process of gaining new volunteers while others choose to leave.

Cost

Administrative costs: \$500 annually

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Bergen County should apply for the Pre-Disaster Mitigation Program grant funds. Provided the County receives 75% of the necessary funding, Bergen County's annual budget would provide the 25% match required.

**Project Name: Dredging Allendale and Ho-Ho-Kus Brook**  
**Project Number: 201-001- Allendale- CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

This project aims to increase the flow capacity of Allendale and Ho-Ho-Kus Brook by removing sediment and debris to aid in flood prevention.

Action

The Borough of Allendale will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Borough of Allendale

Time Frame

It is estimated that it should require one year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

Cost

TBD - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 5 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

Borough of Allendale should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Allendale's annual budget would provide the 25% match required.

**Project Name: Annual Inspection of Bridges, Culverts, and Retention Basins**  
**Project Number: 202-002- Alpine - CF**  
**Hazard Addressed: Windstorms and Tornadoes, Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

To ensure bridges, culverts, and retention basins, as well as other stormwater control structures in Alpine are fully operational and properly maintained.

Action

A list of existing bridges, culverts, retention basins, and any stormwater control structures must be inventoried before an inspection program can be implemented.

Responsible Departments

Borough of Alpine

Time Frame

It is estimated that it would require four months annually for the inspection program once funds are made available.

Cost

Consulting services: \$150,000 per year

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Alpine should apply for the Pre-Disaster Mitigation Program. Provided the Borough receives 75% of the necessary funding, Alpine's annual budget would provide the 25% match required.

**Project Name: Provide Backup Power for Shelter**  
**Project Number: 202-003 – Alpine - CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed

- Protect and Promote Public Health and Safety

- Protect Public and Private Property

Objective

Provide Alpine School, the Borough's primary shelter, with emergency back-up power.

Action

Incorporate the 800 AMP, Diesel generator with the existing system and conduct future maintenance.

Responsible Departments

Borough of Alpine

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

\$91,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Alpine should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Alpine's annual budget would provide the 25% match required

**Project Name: Hirshfield Brook Clean-out**

**Project Number: 203-006- Bergenfield - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

Objective

To eliminate stagnant water and restore steady flow by removing excessive debris in Hirshfield Brook which will reduce the risk of disease and promote water quality.

Action

The Borough of Bergenfield will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the

capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

#### Responsible Departments

Borough of Bergenfield

#### Time Frame

It is estimated that it should require one year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

#### Cost

**TBD** - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

#### Cost/Benefit

The Mitigation Planning Team prioritized this action using the STAPLE+E criteria; this action scored an 11 on a scale of +21 to -21. This action stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Bergenfield should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Bergenfield's annual budget would provide the 25% match required.

**Project Name: Repair drainage at Veterans Memorial Park, Bergenfield NJ**

**Project Number: 203-013 -Bergenfield - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

#### Objective

Protect Wildrose Avenue and its properties from flood damage as a result of the stormwater runoff from Veterans Memorial Park.

#### Action

Once a hydrologic and hydraulic analysis for the existing drainage system of Wildrose Avenue and Veterans Memorial Park is completed, an engineered solution will be determined to best remedy the flooding situation.

#### Responsible Departments

Borough of Bergenfield

Time Frame

It is estimated that it should require eight months once funds are made available.

Cost

**TBD** - The construction cost of the project cannot be determined until the design of the project is completed.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLE+E criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Bergenfield should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Bergenfield's annual budget would provide the 25% match required.

**Project Name: Ditch Debris Removal and Culvert Replacement**

**Project Number: 204-002 – Bogota – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

This project aims to aid in flood prevention by removing sediment and debris from a ditch as well as to prevent backflow at Olsen Park by installing a new culvert with a clapper valve.

Action

The Borough of Bogota will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the creek and the contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Borough of Bogota

Time Frame

It is estimated that it should require one (1) year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

#### Cost

TBD - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

#### Targeted Funding Source(s)

Borough of Bogota should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Bogota's annual budget would provide the 25% match required.

**Project Name: Conversion of Radio Communication Transmission System**

**Project Number: 205-001 – Carlstadt - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Promote Economic Vitality

#### Objective

To increase communication abilities, permitting simultaneous transmission of dispatch and detailed information to all emergency service departments.

#### Action

Convert communication system from wideband to narrowband to meet FCC requirements and permit simultaneous transmission of dispatch and detailed information to all emergency service departments.

#### Responsible Departments

Borough of Carlstadt

#### Time Frame

It is estimated that it should require six (6) months once funds are made available for project completion.

#### Cost

\$500,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 8 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Carlstadt should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Carlstadt's annual budget would provide the 25% match required.

**Project Name: Provide an Emergency Generator to the Borough Hall**

**Project Number: 206-001 – Cliffside Park - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Promote Economic Vitality

### Objective

Provide back-up power to the Borough of Cliffside Park's municipal complex/police headquarters with emergency generator(s) in the case of a power outage.

### Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

### Responsible Departments

Borough of Cliffside Park

### Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

### Cost

\$225,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Cliffside Park should apply for the Pre-Disaster Mitigation Program. Provided the Township receives 75% of the necessary funding, Cliffside Park's annual budget would provide the 25% match required.

**Project Name: Provide Backup Power for Shelters**

**Project Number: 206-003 – Cliffside Park - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Promote Economic Vitality

#### Objective

Provide Cliffside Park emergency shelters with back-up power.

#### Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

#### Responsible Departments

Borough of Cliffside Park

#### Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

#### Cost

TBD – The project cost cannot be determined until the sizes of the generators are calculated.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Cliffside Park should apply for the Pre-Disaster Mitigation Program. Provided the Township receives 75% of the necessary funding, Cliffside Park's annual budget would provide the 25% match required.

**Project Name: Provide backup power for schools and evacuation route**

**Project Number: 207-001- Closter - CF**

**Hazard Addressed: Loss of Utilities (Electric), Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

### Objective

Provide Tenakill and Hillside schools with emergency back-up power. To provide all traffic lights on the evacuation route with emergency back-up power.

### Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be design prior to installation and future maintenance.

### Responsible Departments

Borough of Closter

### Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

### Cost

TBD – The project cost cannot be determined until the sizes of the generators are calculated.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 8 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Closter should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Closter's annual budget would provide the 25% match required

**Project Name: East Closter Stream Cleaning**

**Project Number: 207-003 - Closter - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

### Objective

Reduce stagnant water and promote steady flow by removing excessive debris in the streams on the east side of Closter, as a result, reducing the risk of disease, flooding, and promoting water quality.

#### Action

The Borough of Closter will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

#### Responsible Departments

Borough of Closter

#### Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

#### Cost

**TBD** - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

#### Targeted Funding Source(s)

Borough of Closter should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Closter's annual budget would provide the 25% match required.

#### **Project Name: Waterway Clearing**

#### **Project Number: 207-008 – Closter – No CF**

#### **Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

#### Objective

Remove debris and increase the capacity of the stream to prevent flooding of the surrounding properties.

#### Action

The Borough of Closter will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

#### Responsible Departments

Borough of Closter

#### Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

#### Cost

\$3-5 million

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Closter should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Closter's annual budget would provide the 25% match required.

**Project Name: Dredging of the Tenakill Brook**

**Project Number: 208-001 – Cresskill – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

#### Objective

Remove debris and increase the capacity of the brook to prevent flooding of the surrounding properties.

### Action

The Borough of Closter will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

### Responsible Departments

Borough of Cresskill

### Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

### Cost

\$1 million

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 3 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Cresskill should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Cresskill's annual budget would provide the 25% match required.

### **Project Name: Provide Backup Power for Emergency Operating Center**

**Project Number: 209-002 – Demarest - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Promote Economic Vitality

### Objective

Provide Emergency Operating Center with emergency back-up power.

### Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Borough of Demarest

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

\$50,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Demarest should apply for the Pre-Disaster Mitigation Program. Provided the Borough receives 75% of the necessary funding, Demarest's annual budget would provide the 25% match required.

**Project Name: Improve Drainage Maintenance**

**Project Number: 210-004 - Dumont - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

The purpose of this project is to perform continual maintenance on inlets and culverts from clogging with debris.

Action

An effective maintenance plan must be devised for the continual upkeep on the inlets and culverts before project implementation.

Responsible Departments

Borough of Dumont

Time Frame

It is estimated that it should require an additional 6 weeks annually once funds are made available to ensure that the stormwater drainage system is kept clear of debris.

Cost

Consulting services: \$20,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLE+E criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Borough of Dumont should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Dumont's annual budget would provide the 25% match required.

**Project Name: Improve and Maintain of Barbara Road & Hickory Drainage**

**Project Number: 210-005- Dumont - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

### Objective

Prevent flooding of Barbara Road and Hickory by keeping stormwater drainage inlets clear of debris and performing a drainage study to ensure capacity adequacy.

### Action

An effective maintenance plan must be devised for the continual upkeep on the inlets before project implementation. Furthermore, a hydrologic and hydraulic analysis of the existing stormwater system should be evaluated to determine the capacity adequacy and if any part of the existing drainage system is ineffective.

### Responsible Departments

Borough of Dumont

### Time Frame

It is estimated that it should require one (1) week annually once funds are made for the maintenance plan implementation and approximately one (1) month for the hydrologic and hydraulic analysis.

### Cost

Consulting services: \$3000 annually for maintenance plan implementation  
\$10,000 for hydrologic and hydraulic analysis

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Borough of Dumont should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Dumont's annual budget would provide the 25% match required.

**Project Name: Improve Maintenance of Brook and Drainage at 30 Daves Avenue**

**Project Number: 210-010- Dumont - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

### Objective

The purpose of this project is for the maintenance of the brook and sewers near 30 Davies Road.

### Action

The Borough of Dumont will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

### Responsible Departments

Borough of Dumont

### Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

### Cost

**TBD** - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Borough of Dumont should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Dumont's annual budget would provide the 25% match required.

**Project Name: Flashers Brook Clean-out**  
**Project Number: 211-001- Elmwood Park - CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

Objective

The purpose of this project is for the maintenance of Flashers Brook.

Action

The Borough of Elmwood Park will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Borough of Elmwood Park

Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

Cost

**TBD** - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

Borough of Elmwood Park should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Elmwood Park's annual budget would provide the 25% match required.

**Project Name: Install an Emergency Power Generator at ERFD Station No. 2**  
**Project Number: 212-001 – East Rutherford - CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Promote Economic Vitality

Objective

To provide East Rutherford Fire Department Station Number 2 with emergency backup power.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Borough of East Rutherford

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The cost of the generators is estimated to be \$95,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

East Rutherford Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, East Rutherford's annual budget would provide the 25% match required.

**Project Name: Install an Emergency Power Generator at ERFD/EMS Station No. 1**  
**Project Number: 212-002 – East Rutherford - CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

- Promote Economic Vitality

Objective

To provide East Rutherford Fire Department Station Number 1 with emergency backup power.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Borough of East Rutherford

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The cost of the generators is estimated to be \$95,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

East Rutherford Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, East Rutherford's annual budget would provide the 25% match required.

**Project Name: Install an Emergency Power Generator**

**Project Number: 212-003 – East Rutherford - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Promote Economic Vitality

Objective

To provide a primary shelter at 37 Vreeland Avenue with emergency backup power.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments  
Borough of East Rutherford

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The cost of the generators is estimated to be \$95,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

East Rutherford Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, East Rutherford's annual budget would provide the 25% match required.

**Project Name: Install a Generator for Backup Shelter**

**Project Number: 213-002 – Edgewater - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

To provide Edgewater Borough with backup power for an emergency shelter.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Edgewater Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The cost of the generators is estimated to be \$60,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Edgewater Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Edgewater's annual budget would provide the 25% match required.

**Project Name: Debris Cleanup from Palisades Cliff**  
**Project Number: 213-003 – Edgewater – No CF**  
**Hazard Addressed: Riverine & Stormwater Flooding.**

### Goals Addressed:

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

### Objective

Remove all debris and increase the capacity of the stream to prevent flooding of the surrounding properties.

### Action

Edgewater Borough will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

### Responsible Departments

Edgewater Borough

### Time Frame

TBD - A time frame for the project cannot be determined at this time.

### Cost

The cost of cleaning the debris is estimated to be \$15,000. Engineering costs may vary.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Edgewater Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Edgewater's annual budget would provide the 25% match required.

**Project Name: Install Generator for 3<sup>rd</sup> Shelter in Edgewater**

**Project Number: 213-004 – Edgewater - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

To provide Edgewater Borough with backup power for a third emergency shelter.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Edgewater Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The cost of the generators is estimated to be \$80,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Edgewater Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Edgewater's annual budget would provide the 25% match required.

**Project Name: Additional Drainage Projects in Emerson**  
**Project Number: 214-001- Emerson - No CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

The purpose of this project is to analyze the need for drainage projects in Emerson Borough.

Action

A hydrologic and hydraulic study of the existing drainage system in the Borough of Emerson would need to be analyzed to determine the capacity adequacy. Once the study is completed, the Borough will rank the projects for mitigation implementation.

Responsible Departments

Borough of Emerson

Time Frame

It is estimated that it should require four months once funds are made available to complete the hydrologic and hydraulic analysis including the project rankings.

Cost

Consulting services: \$40,000

Cost/Benefit

The Mitigation Planning Team attempted to prioritize this project using the STAPLEE criteria. This project scored a 7 on a scale of +21 to -21. This action stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

Borough of Emerson should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Emerson's annual budget would provide the 25% match required.

**Project Name: Install Folding Stop Signs at all Electric Traffic Controlled Intersections**  
**Project Number: 215-003 –Englewood – No CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

- Promote Economic Vitality

#### Objective

Maintain safe traffic operation at intersections during power outages by providing folding stop signs throughout the city.

#### Action

The City of Englewood must determine how many folding stop signs will be needed prior to purchasing and installation. Additionally, the public should be informed on how the signs work and when the signs are to be obeyed.

#### Responsible Departments

City of Englewood

#### Time Frame

It is estimated that it will require 2 months, once funds are made available, to purchase and install all the stop signs.

#### Cost

Approximately \$6,500.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 14 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The City of Englewood should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Englewood's annual budget would provide the 25% match required.

**Project Name: Expansion of Storm Drain System South of Palisades Avenue**

**Project Number: 216-006 – Englewood Cliffs – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

#### Objective

Prevent flooding and debris build-up by installing new pipes and related stormwater control structures throughout any existing deficient drainage system.

### Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process. Englewood Cliffs will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements.

### Responsible Departments

Englewood Cliffs Borough

### Time Frame

It is estimated that it should require one (1) to two (2) years for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

### Cost

The estimated cost is \$1,000,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Edgewood Cliffs Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Edgewood Cliff's annual budget would provide the 25% match required.

**Project Name: Prospect Street Sewer Pump Station Improvements**

**Project Number: 217-006 – Fair Lawn - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

### Objective

Improve the drainage and pumping capabilities as well as elevate all necessary controls above the flood plain area.

### Action

Convert the two compartment stations into one complete wet well, install two (2) new submersible pumps and bring all controls above ground and into an aluminum traffic control box above the flood plain area.

Responsible Departments

Fair Lawn Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

The estimated cost is \$100,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 13 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Fair Lawn Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Fair Lawn's annual budget would provide the 25% match required.

**Project Name: Plaza Road Sewer Pump Improvement**

**Project Number: 217-008 – Fair Lawn – CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

Objective

Improve the drainage and pumping capabilities to prevent flooding and backflow.

Action

Install a third submersible pump in the dry well and install new piping into the pump discharge header. Additionally, install a line stop and a bypass in the Fair Lawn system so that in the event of a flooding condition, stormwater can be bypassed to a neighboring municipality.

Responsible Departments

Fair Lawn Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

The estimated cost is \$100,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 13 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Fair Lawn Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Fair Lawn's annual budget would provide the 25% match required.

**Project Name: South Siphon Sewer Pump Station Improvements**

**Project Number: 217-009 – Fair Lawn - CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

Objective

Improve the drainage and pumping capabilities to prevent flooding and backflow.

Action

Install one bypass pump permanently at the station (on the platform) which will allow Fair Lawn to bypass the station and pump effluent to the river in order to prevent the flooding of the Borough's sanitary sewer system when the Passaic River floods the sanitary sewer system out.

Responsible Departments

Fair Lawn Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

The estimated cost is \$100,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 13 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Fair Lawn Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Fair Lawn's annual budget would provide the 25% match required.

**Project Name: Saddle Rider Road Sewer Pump Station Improvements**

**Project Number: 217-010 – Fair Lawn - CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

Objective

Improve the drainage and pumping capabilities to prevent flooding and backflow.

Action

Install one bypass pump permanently at the station (on the platform) which will allow Fair Lawn to bypass the station and pump effluent to the river in order to prevent the flooding of the Borough's sanitary sewer system when the Saddle River floods the sanitary sewer system out.

Responsible Departments

Fair Lawn Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

The estimated cost is \$100,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 13 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Fair Lawn Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Fair Lawn's annual budget would provide the 25% match required.

**Project Name: Flood Study: Bellman's Creek Flood Gate at 790 Fairview Ave, Fairview DPW Garage**

**Project Number: 218-001 – Fairview – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

Objective

Study existing drainage conditions of Bellman's Creek Flood Gate at 790 Fairview Avenue in the Borough of Fairview in order to propose new drainage improvements.

Action

A hydrologic and hydraulic analysis of the existing flood gate and drainage system at 790 Fairview Avenue in the Borough of Fairview is required prior to mitigation projects.

Responsible Departments

Borough of Fairview

Time Frame

It is estimated that it should require eight (8) months once funds are made available for project completion.

Cost

Consulting services: \$38,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Fairview should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Fairview's annual budget would provide the 25% match required.

**Project Name: Backup Generators for Traffic Lights**  
**Project Number: 219-002- Fort Lee - CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

Acquire back-up generators to power traffic lights.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be design prior to installation and future maintenance.

Responsible Departments

Borough of Fort Lee

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

TBD – The project cost cannot be determined until the sizes of the generators are designed.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 10 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Borough of Fort Lee should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Fort Lee's annual budget would provide the 25% match required

**Project Name: Establish a Community Emergency Response Team (CERT) in the Borough of Fort Lee**

**Project Number: 219-004 – Fort Lee - No CF**

**Hazard Addressed: All Hazards**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

### Objective

To provide the citizens of the Borough of Fort Lee with emergency personnel trained in preparedness, response and recovery related to natural disasters.

### Action

Fort Lee will need to provide training, equipment and deployment support to organize and maintain a CERT team. Additionally, the Borough would conduct exercises to prepare for a major disaster.

### Responsible Departments

Fort Lee Borough

### Time Frame

TBD - A time frame for the project cannot be determined at this time.

### Cost

TBD - This is dependent upon the necessary resources and if Fort Lee is able to utilize the borough's existing equipment and resources.

### Cost/Benefit

The Mitigation Planning Team prioritized this action using the STAPLEE criteria. This proposed project scored a 12 on a scale of +21 to -21. This action stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Fort Lee should apply for Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Fort Lee's annual budget would provide the 25% match required.

### **Project Name: Lightning Warning System**

**Project Number: 220-002 - Franklin Lakes – No CF**

**Hazard Addressed: Loss of Utilities (Electric), Lightning**

### Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

### Objective

A lightning warning system operates to help reduce injury and loss of life in the event of an oncoming lightning strike. The system will collect data on environmental changes at various locations and convey it to base units to be monitored by the Borough. The information provided will offer early detection of hazardous conditions so the public can be notified and emergency action be taken.

### Action

A network of sensors will be set up around the Borough to collect data and simultaneously relay it to their base stations. After receipt of data, not only can it be utilized as a warning system, it can be used for further analysis and planning for weather studies, calibration of computer models, and design of other detection devices.

### Responsible Departments

Franklin Lakes Borough

### Time Frame

TBD - A time frame for the project cannot be determined at this time.

### Cost

Approximately \$20,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Franklin Lakes should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Franklin Lake's annual budget would provide the 25% match required.

### **Project Name: Dam Warning System**

**Project Number: 220-003 – Franklin Lakes – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

### Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

### Objective

A dam warning system operates to aid on two fronts. First, the system will help reduce injury and loss of life in the event of dam failure. Early warning can expedite any necessary emergency response actions. Secondly, the system will collect and record data regarding critical parameters within the environment affecting the dam and its surrounding areas.

### Action

Gauges and sensors will be set up on the dam as well as in upstream and downstream areas to best monitor the area for hazardous conditions. The sensors will collect data and simultaneously relay it to computer base stations used by emergency personnel. In addition to providing early

warning of a hazard, the system can also be utilized for further analysis and planning such as in weather studies, calibration of computer models, and design of other detection devices.

Responsible Departments

Franklin Lakes Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

Approximately \$250,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Franklin Lakes should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Franklin Lake's annual budget would provide the 25% match required.

**Project Name: Place Folding Stop Signs at All Intersections**

**Project Number: 221-002- Garfield - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

Maintain safe traffic operation at intersections during power outages by providing folding stop signs throughout the city.

Action

The City of Garfield must determine how many folding stop signs will be needed prior to purchasing and installation. Additionally, the public should be informed on how the signs work and when the signs are to be obeyed.

Responsible Departments

City of Garfield

Time Frame

It is estimated that it will require 2 months, once funds are made available, to purchase and install all the stop signs.

Cost

TBD – The project cost cannot be determined until the numbers of signs are determined.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 14 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The City of Garfield should apply for the Pre-Disaster Mitigation Program grant funds. Provided the City receives 75% of the necessary funding, Garfield’s annual budget would provide the 25% match required

**Project Name: No Parking on Emergency Route during Snowfall**

**Project Number: 221-003- Garfield - No CF**

**Hazard Addressed: Northeasters & Severe Winter Storm**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Revise city ordinances to include keeping emergency routes free of vehicles during snowfall.

Action

The City of Garfield must determine which routes are critical for emergency vehicles. No parking shall be allowed during snowfall in order for snow-plows and salt spreaders to remove the snow in a fast-efficient manner. Pending the city’s approval of this motion, appropriate no parking signs shall be installed.

Responsible Departments

City of Garfield

Time Frame

It is estimated that it should require 3 months, once funds are made available, for project implementation.

Cost

TBD – The project cost cannot be determined until the numbers of signs are determined.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 14 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The City of Garfield should apply for the Pre-Disaster Mitigation Program grant funds. Provided the City receives 75% of the necessary funding, Garfield would provide the 25% match required

**Project Name: Dredging**

**Project Number: 222-001- Glen Rock - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

Objective

To eliminate stagnant water and restore steady flow by removing excessive debris throughout Glen Rock's waterways which will reduce the risk of disease and promote water quality.

Action

The Borough of Glen Rock will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Borough of Glen Rock

Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

Cost

[TBD](#) - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 5 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Glen Rock should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Glen Rock's annual budget would provide the 25% match required.

**Project Name: Emergency Preparedness Education Program**  
**Project Number: 222-004 – Glen Rock – No CF**  
**Hazard Addressed: All Hazards**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

This project aims to educate the public about all hazards, personal preparedness, sheltering in place and evacuation procedures.

Action

Based on the scope of the program, the appropriate personnel must be appointed and the necessary resources provided to them. Plans for how the program will be conducted must be developed as well as the means of advertising the program to the public. Conducting sessions in the form of open events at the Glen Rock town hall meetings will allow for the best turnout.

Responsible Departments

Glen Rock Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

Approximately \$25,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Glen Rock should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Glen Rock's annual budget would provide the 25% match required.

**Project Name: Natural Hazard Mitigation Planning Community Guide**

**Project Number: 223-013- Hackensack - No CF**

**Hazard Addressed: All Hazards**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

This project aims to educate the public on how to be sufficiently prepared in all natural hazards and steps/precautions to take after a natural disaster occurrence.

Action

Preventive measures and steps to be taken after a natural hazard must be determined. Means of relaying the information to the public must also be decided upon, for example, pamphlets delivered to each property in the county. This manual on important safety information would then have to be written and distributed. This should also be available on the municipal website.

Responsible Departments

City of Hackensack

Time Frame

It is estimated that it should require six months to prepare and distribute these manuals once funds are made available.

Cost

Consulting services: \$12,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The City of Hackensack should apply for the Pre-Disaster Mitigation Program grant funds. Provided the City receives 75% of the necessary funding, Hackensack's annual budget would provide the 25% match required.

**Project Name: Emergency Generator for Shelter**  
**Project Number: 224-001 – Harrington Park - CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

This project aims to provide emergency power to Harrington Park Public School which is utilized as the municipality's shelter in the case of an emergency.

Action

A study must be conducted to determine the size of the generator needed and the most efficient way to incorporate it into the existing system. Personnel must be knowledgeable of the generator's operation and maintenance requirements before installation.

Responsible Departments

Harrington Park Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

Approximately \$20,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Harrington Park should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Harrington Park's annual budget would provide the 25% match required.

**Project Name: Backup Power for Pump Stations at Franklin Ave and Rt. 17**  
**Project Number: 225-001- Hasbrouck Heights - CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety

- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

Acquire back-up generators to power pump stations.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be design prior to installation and future maintenance.

Responsible Departments

Borough of Hasbrouck Heights

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

TBD – The project cost cannot be determined until the sizes of the generators are designed

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLE+E criteria; this project scored a 10 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Hasbrouck Heights should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Hasbrouck Heights’ annual budget would provide the 25% match required.

**Project Name: Replace Damaged Foot Bridge and Clear Debris**

**Project Number: 226-003 – Haworth – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

This project aims to replace the damaged foot bridge and clear debris at the Crescent stream crossing in order to reduce stagnant water and promote steady flow by removing excessive debris which, as a result, reduces the risk of disease, flooding, and promotes water quality.

Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. The Borough of Haworth will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements.

#### Responsible Departments

Haworth Borough

#### Time Frame

It is estimated that it should require one year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

#### Cost

Approximately \$30,000

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Haworth should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Haworth's annual budget would provide the 25% match required.

#### **Project Name: Stream Debris Clearing**

**Project Number: 226-004 – Haworth – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed:

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

#### Objective

Reduce stagnant water and promote steady flow by removing excessive debris in the streams on the east side of Closter, as a result, reducing the risk of disease, flooding, and promoting water quality.

#### Action

The Borough of Haworth will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the stream and its contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project,

downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

#### Responsible Departments

Haworth Borough

#### Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

#### Cost

Approximately \$14,500

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Haworth should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Haworth's annual budget would provide the 25% match required.

#### **Project Name: Voluntary Floodplain Structure Acquisition**

#### **Project Number: 227-001- Hillsdale- No CF**

#### **Hazard Addressed: Riverine and Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

#### Objective

This project aims to prevent the development of parcel lots in the floodplain by acquiring destroyed structures and/or parcel lots within the floodplain.

#### Action

An assessment of parcel lots within the floodplain must be determined prior to notifying the property owners regarding this voluntary mitigation project. If a property owner voluntarily decides to take part in this project, the Borough of Hillsdale will assess the property value and begins the process of the property buyout.

#### Responsible Departments

Borough of Hillsdale and NJ Department of Environmental Protection

### Time Frame,

It is estimated that it should require six months to acquire the properties of the owners willing to participate once funds are made available.

### Cost

\$370,000 per Repetitive Loss property (based on 75% of the 2006 median home value in Bergen County)

\$444,060 per Severe Repetitive Loss property (based on 90% of the above value)

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 19 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Hillsdale should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, the NJDEP would provide the 25% match required.

**Project Name: Expand Ho-Ho-Kus detention system by 13.5 million gallons**

**Project Number: 228-001 - Ho-Ho-Kus - CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

### Objective

To expand Ho-Ho-Kus's detention system by 13.5 million gallons which will enable the system to handle stormwater runoff from recent development as well as for any future development?

### Action

A hydrologic and hydraulic study of the contributing drainage areas would need to be analyzed to determine the capacity of the proposed system. The Borough of Ho-Ho-Kus will need to verify with NJDEP regarding the required environmental permits. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

### Responsible Departments

Borough of Ho-Ho-Kus

### Time Frame

It is estimated that it should require two year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

#### Cost

TBD – the construction phase of the project cannot be determined at this time.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

Borough of Ho-Ho-Kus should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Ho-Ho-Kus' annual budget would provide the 25% match required.

**Project Name: Lower field on East side of stream to handle an additional 13.5 million gallons of stormwater.**

**Project Number: 228-010 - Ho-Ho-Kus - CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

#### Objective

A hydrologic and hydraulic study of the contributing drainage areas would need to be analyzed to determine the capacity of the proposed system. The Borough of Ho-Ho-Kus will need to verify with NJDEP regarding the required environmental permits. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

#### Responsible Departments

Borough of Ho-Ho-Kus

#### Time Frame

It is estimated that it should require two year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

#### Cost

TBD – the construction phase of the project cannot be determined at this time.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Ho-Ho-Kus should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Ho-Ho-Kus' annual budget would provide the 25% match required.

**Project Name: Radio transmission must be redesigned for all departments.**

**Project Number: 228-017 - Ho-Ho-Kus - CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

To increase communications between departments by re-designing radio transmissions for all departments.

Action

Devise a plan for which departments can use the radio system, design the system, acquire all licenses that are required, and purchase radios for all departments.

Responsible Departments

Borough of Ho-Ho-Kus

Time Frame

It is estimated that it should require six (6) months once funds are made available for project completion.

Cost

TBD – the acquisition cost of the project cannot be determined at this time.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Ho-Ho-Kus should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Ho-Ho-Kus' annual budget would provide the 25% match required.

**Project Name: Install an Emergency Generator for Leonia High School**  
**Project Number: 229-003 - Leonia - CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

Provide back-up power to Leonia High School with emergency generator(s) in the case of a power outage.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be design prior to installation and future maintenance.

Responsible Departments

Borough of Leonia

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

TBD – The project cost cannot be determined until the sizes of the generators are calculated.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Leonia should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Leonia's annual budget would provide the 25% match required.

**Project Name: Install an Emergency Generator for Leonia Middle School**

**Project Number: 229-004 - Leonia - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

Provide back-up power to Leonia Middle School with emergency generator(s) in the case of a power outage.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be design prior to installation and future maintenance.

Responsible Departments

Borough of Leonia

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

TBD – The project cost cannot be determined until the sizes of the generators are calculated.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Leonia should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Leonia’s annual budget would provide the 25% match required.

**Project Name: Pump Stations on Hackensack River**

**Project Number: 230-001 - Little Ferry - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Construct pump stations in Little Ferry to alleviate flooding.

Action

A hydrologic and hydraulic study of the contributing drainage areas would need to be analyzed to determine the capacity of the proposed pump system. The Borough of Little Ferry will need to verify with NJDEP regarding the required environmental permits. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Borough of Little Ferry

Time Frame

It is estimated that it should require two year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

Cost

TBD - The construction of the pump systems cannot be determined until the pump system design is complete.

Cost/Benefit

Not enough information has been provided at this time to determine the extent of the benefits compared to the costs.

Targeted Funding Source(s)

The Borough of Little Ferry should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Little Ferry's annual budget would provide the 25% match required.

**Project Name: Maintenance and Inspection of All Stormwater Sewers and Brooks**

**Project Number: 231-002 – Lodi – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

Establish an inspection/maintenance program of all the stormwater sewers and brooks within the Borough of Lodi.

Action

Conduct a preliminary inspection of affected areas to determine the total number of personnel needed and inspections per year. Assemble a team of inspectors and other employees as needed to develop and implement the maintenance plan. The team shall establish the dates/seasons for inspections, actions needed for removal of debris, and necessary equipment. All work may be done either internally by coordinating between township offices or contracted to outside agencies depending on available resources.

Responsible Departments

Lodi Borough

### Time Frame

It is estimated that it should require one (1) month annually once funds are made available.

### Cost

Approximately \$50,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Lodi should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Lodi's annual budget would provide the 25% match required.

**Project Name: Storm Sewer System Clean-Out in Area of Riverside Avenue and Forest Avenue**

**Project Number: 232-005 - Lyndhurst - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

### Objective

The purpose of the project is to keep the stormwater drainage system functional by keeping inlets and culverts clear of debris.

### Action

An effective maintenance plan must be devised for the continual upkeep on the inlets before project implementation.

### Responsible Departments

Township of Lyndhurst

### Time Frame

It is estimated that it should require four (4) weeks annually once funds are made for the maintenance plan implementation.

### Cost

Consulting services: \$18,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Township of Lyndhurst should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Lyndhurst’s annual budget would provide the 25% match required.

**Project Name: Acquisition of Homes on Catherine Avenue and Alexandra Court (Mahwah)**

**Project Number: 233-009 - Mahwah - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

This action aims to minimize the number of homes prone to repetitive losses from flooding and the hazards created by allowing the structures to flood.

Action

The first step is the analysis of existing repetitive loss structures to determine which buildings are the greatest impacted on Catherine Avenue and Alexandra Court, including differentiating “Severe Repetitive Loss” areas. Once the structures are ranked by financial impact and likelihood of additional loss, Bergen County can facilitate negotiations with the NJDEP for voluntary buyout.

Responsible Departments

Township of Mahwah and NJ Department of Environmental Protection

Time Frame

It is estimated that it should require six months to acquire the properties of the owners wishing to participate, once funds are made available.

Cost

\$370,000 per Repetitive Loss property (based on 75% of the 2006 median home value in Bergen County)

\$444,060 per Severe Repetitive Loss property (based on 90% of the above value)

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 16 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Township of Mahwah should apply for Flood Mitigation Assistance and Severe Repetitive Loss (SRL) program assistance. NJDEP should be contacted to assist with the non-Federal share of the projects.

**Project Name: Emergency Power for Alternate EOC**

**Project Number: 234-002 –Maywood - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

This project aims to provide emergency power to Fire Station No. 2, the alternate emergency operations center, in Maywood Borough.

Action

A study must be conducted to determine the size of the generator needed and the most efficient way to incorporate it into the existing system. Personnel must be knowledgeable of the generator's operation and maintenance requirements before installation.

Responsible Departments

Maywood Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

Approximately \$40,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Maywood should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Maywood's annual budget would provide the 25% match required.

**Project Name: Stream Clearing and Widening on Godwin Avenue at Ridgewood Water Control Center**

**Project Number: 235-001 - Midland Park - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Promote Economic Vitality

Objective

Remove all debris and increase the capacity of the stream to prevent flooding of the surrounding properties.

Action

The Borough of Midland Park will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Borough of Midland Park

Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

Cost

TBD - The volume of sediment and debris removal cannot be determined until the design of the project is completed.

Cost/Benefit

Not enough information has been provided at this time to determine the extent of the benefits compared to the costs.

Targeted Funding Source(s)

The Borough of Midland Park should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Midland Park's annual budget would provide the 25% match required.

**Project Name: Pascack Brook - Gabion Walls**  
**Project Number: 236-001 - Montvale- No CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Prevent soil erosion along the banks of Pascack Brook.

Action

An assessment of erosion-prone areas must be determined within the Borough of Montvale. Preliminary assessment will include the severity of erosion problem, site conditions, and possible mitigation solution. Additionally, the NJDEP should be notified to determine if any environmental permits are required. Once the preliminary assessment is complete, the design of slope stabilization can be initiated with the intent of construction once NJDEP environmental permits are granted.

Responsible Departments

Borough of Montvale

Time Frame

It is estimated that it should require approximately ten (10) months for project completion.

Cost

TBD

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 9 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Montvale should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Montvale's annual budget would provide the 25% match required.

**Project Name: Installation of Permanent Floodwall System**

**Project Number: 236-006 –Montvale – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

- Protect Public and Private Property
- Promote Economic Vitality

#### Objective

This project aims to help prevent damage to the sanitary sewer system by replacing the existing gabion wall with a permanent floodwall system.

#### Action

An assessment of erosion-prone areas must be determined within the Borough of Montvale. Preliminary assessment will include the severity of erosion problem, site conditions, and possible mitigation solution. Additionally, the NJDEP should be notified to determine if any environmental permits are required. Once the preliminary assessment is complete, the design of slope stabilization can be initiated with the intent of construction once NJDEP environmental permits are granted.

#### Responsible Departments

Montvale Borough

#### Time Frame

TBD - A time frame for the project cannot be determined at this time.

#### Cost

Approximately \$250,000 - \$500,000

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 4 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Montvale should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Montvale's annual budget would provide the 25% match required.

**Project Name: Acquisition of New Salt Spreaders**

**Project Number: 237-001 - Moonachie - No CF**

**Hazard Addressed: Northeasters & Severe Winter Storm**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

#### Objective

The purpose of this project is to purchase new salt spreaders for the Borough of Moonachie.

Action

Acquisition of new salt spreaders.

Responsible Departments

Borough of Moonachie

Time Frame

It is estimated that it should require one (1) month for the acquisition once funds are made available.

Cost

TBD – the acquisition cost cannot be determined at this time.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 14 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s) The Borough of Moonachie should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Moonachie’s annual budget would provide the 25% match required.

**Project Name: Green Stream Bank Stabilization**

**Project Number: 238-035 - New Milford - No CF**

**Hazard Addressed: Landslides and Erosion**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

The project is to prevent unnecessary stream bank erosion with the use of vegetation or a combination of vegetation and other structural methods of stabilization. Erosion is natural but excess erosion can pollute water supplies, cover fish habitat, and threaten property.

Action

An assessment of erosion-prone areas must be determined within the Borough of New Milford. Preliminary assessment will include the severity of erosion problem, site conditions, and possible mitigation solution. Additionally, the NJDEP should be notified to determine if any environmental permits are required.

Responsible Departments

Borough of New Milford

Time Frame

It is estimated that it should require approximately six (6) months to one (1) year for project implementation.

Cost  
TBD

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 15 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of New Milford should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, New Milford's annual budget would provide the 25% match required.

**Project Name: Upgrades to Pump Stations on Geraldine Road**  
**Project Number: 239-006 – North Arlington – No CF**  
**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

Improve the drainage and pumping capabilities to prevent flooding and backflow on Geraldine Road.

Action

A hydrologic and hydraulic study of the contributing drainage areas would need to be analyzed to determine the capacity of the pump system. North Arlington will need to verify with NJDEP regarding the required environmental permits. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

North Arlington Borough

Time Frame

It is estimated that it should require two years once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

### Cost

The estimated cost is \$250,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 13 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

North Arlington Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, North Arlington's annual budget would provide the 25% match required.

### **Project Name: Installation of an Emergency Generator at EOC**

**Project Number: 240-001 – Northvale - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

### Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

### Objective

Provide backup power to EOC building in Northvale.

### Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

### Responsible Departments

Northvale Borough

### Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

### Cost

The estimated cost is \$40,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

North Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Northvale's annual budget would provide the 25% match required.

**Project Name: Installation of an Emergency Generator at Primary Shelter**

**Project Number: 241-001 – Norwood - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

Provide backup power to Norwood Public School, Norwood's primary emergency shelter.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Norwood Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The estimated cost is \$17,500.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Norwood Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Norwood's annual budget would provide the 25% match required.

**Project Name: Crystal Lake Water Level Control**

**Project Number: 242-001 - Oakland - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed

- Protect Public and Private Property

### Objective

Control the water levels of Crystal Lake and prevent flooding in the area of Crystal Lake.

### Action

A hydrologic and hydraulic analysis of the Crystal Lake's watershed will be assessed prior to a feasibility assessment on mitigation projects.

### Responsible Departments

Borough of Oakland

### Time Frame

It is estimated that it should require one year once funds are made available for project completion.

### Cost

Consulting services: \$90,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 3 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Oakland should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Oakland's annual budget would provide the 25% match required.

**Project Name: Stream clearance. Culvert Type Bridge should be replaced with a higher bridge to prevent the blockage of the existing stream (Old Tappan).**

**Project Number: 243-001 - Old Tappan - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

### Goals Addressed

- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

### Objective

To prevent the restriction of flow of the stream by raising the bridge to a higher elevation. By raising the bridge, we could also lift the roadway out of the flood zone which will prevent flooding and road closures during a severe storm.

### Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid

process. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. The Borough of Old Tappan will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements.

#### Responsible Departments

Borough of Old Tappan

#### Time Frame

It is estimated that it should require two (2) years for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

#### Cost

TBD - The construction cost of the project cannot be determined at this time.

#### Cost/Benefit

Not enough information has been provided at this time to determine the extent of the benefits compared to the costs.

#### Targeted Funding Source(s)

The Borough of Old Tappan should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Old Tappan's annual budget would provide the 25% match required.

**Project Name: Flood Warning system (Oradell).**

**Project Number: 244-001 - Oradell - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

#### Objective

A flood warning system operates to help reduce loss of life and damages in a severe flood. The system will provide "real-time" information on rainfall, stormwater runoff, and weather conditions throughout Oradell Borough to offer early detection of hazardous conditions so the public can be notified and emergency response can be taken. The data collected can be used to issue flash flood warnings and other weather advisories.

#### Action

A network of gauges will be set up around the Borough including, but not limited to, automatic rain gauges, water level gauges, and automatic weather stations. The gauges report data automatically by radio to computer base stations. After adequate data is collected, the data can be used for further analysis and planning, such as in floodplain studies, calibration of computer

models, and design of flood control devices. (Taken from Fort Collins, CO flood warning system, www.fcgov.com)

Responsible Departments

Borough of Oradell

Time Frame

It is estimated that it should require six (6) months to one (1) year for the project completion.

Cost

Consulting services: \$300,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Oradell should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Oradell's annual budget would provide the 25% match required.

**Project Name: Dredging of outfalls to Overpeck Creek.**

**Project Number: 245-001 - Palisades Park - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

To increase the flow of Overpeck Creek to aid in flood prevention.

Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. The Borough of Palisades Park will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements.

Responsible Departments

Borough of Palisades Park

Time Frame

It is estimated that it should require two (2) years for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

#### Cost

TBD - The construction cost of the project cannot be determined at this time.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Palisades Park should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Palisades Park's annual budget would provide the 25% match required.

**Project Name: Install larger storm drains at various low lying areas of town**

**Project Number: 245-002 - Palisades Park - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

#### Objective

To install larger storm drains and sewers at various low lying areas of Palisades Park Borough. The replacement of smaller storm drains would aid in better drainage in these specific areas thus reducing flash flooding.

#### Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. The Borough of Palisades Park will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements.

#### Responsible Departments

Borough of Palisades Park

#### Time Frame

It is estimated that it should require one (1) to two (2) years for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

#### Cost

TBD - The construction cost of the project cannot be determined at this time.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Palisades Park should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Palisades Park's annual budget would provide the 25% match required.

**Project Name: Replacement of an Emergency Generator at Police Headquarters**

**Project Number: 246-001 – Paramus - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

Provide backup power to the Paramus Police Headquarters that houses Paramus Communications Center and the Public Safety Answering Point (PSAP) for 7 municipalities.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Paramus Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The estimated cost is \$35,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Paramus Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Paramus's annual budget would provide the 25% match required.

**Project Name: Installation of an Emergency Generator at Primary Shelter**

**Project Number: 246-002 – Paramus - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

Provide backup power to Paramus High School, a primary congregate care shelter located at 99 Century Road.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Paramus Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The estimated cost is \$200,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Paramus Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Paramus's annual budget would provide the 25% match required.

**Project Name: Install an Emergency Generator at Paramus Fire Station No. 2**

**Project Number: 246-003 – Paramus - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

Provide backup power to the Paramus Fire Station No. 2.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Paramus Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The estimated cost is \$35,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Paramus Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Paramus’s annual budget would provide the 25% match required.

**Project Name: Establish a Community Emergency Response Team (CERT)**

**Project Number: 247-001 – Park Ridge – No CF**

**Hazard Addressed: All Hazards**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

Provide the citizens of Park Ridge Borough with emergency personnel trained in preparedness, response and recovery related to natural disasters.

Action

Park Ridge Borough will need to provide training, equipment and deployment support to organize and maintain a CERT team. Additionally, they would conduct large-scale exercises with the various municipal CERT teams to prepare for a major disaster.

Responsible Departments

Park Ridge Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

The estimated cost is \$10,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Park Ridge Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Park Ridge's annual budget would provide the 25% match required.

**Project Name: Study Drainage Improvements at Church Street and Island Avenue**

**Project Number: 248-003 - Ramsey - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Study existing drainage conditions at Church Street and Island Avenue in the Borough of Ramsey in order to propose new drainage improvements.

Action

A hydrologic and hydraulic analysis of the existing drainage system at Church Street and Island Avenue in the Borough of Ramsey is required prior to mitigation projects.

Responsible Departments

Borough of Ramsey

Time Frame

It is estimated that it should require eight (8) months once funds are made available for project completion.

#### Cost

Consulting services: \$30,000

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Ramsey should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Ramsey's annual budget would provide the 25% match required.

**Project Name: Removal of two large trees that are in a precarious position on the bank of Wolf Creek south of Lancaster Road.**

**Project Number: 249-001 - Ridgefield - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

#### Objective

To remove two large trees on the bank of Wolf Creek that appear to be unstable and are a potential threat to the safety of residents in the Borough of Ridgefield.

#### Action

Retain professional services to safely remove any potential tree hazards to local residence.

#### Responsible Departments

Borough of Ridgefield

#### Time Frame

It is estimated that it should require two (2) to four (4) weeks for project completion.

#### Cost

Professional services: \$400 to \$1,000 per tree

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 15 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Ridgefield should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Ridgefield's annual budget would provide the 25% match required.

**Project Name: Provide for engineering review of Bergen Turnpike, Hackensack River (Overpeck Creek) to eliminate serious flooding.**

**Project Number: 250-003 - Ridgefield Park - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

### Objective

To eliminate the severe flooding of the Hackensack River (Overpeck Creek) onto Bergen Turnpike in Ridgefield Park.

### Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. The Borough of Palisades Park will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements.

### Responsible Departments

Village of Ridgefield Park

### Time Frame

It is estimated that it should require one (1) to two (2) years for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

### Cost

TBD - The construction cost of the project cannot be determined at this time.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Village of Ridgefield Park should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Village receives 75% of the necessary funding, Ridgefield Park's annual budget would provide the 25% match required.

**Project Name: Study Reconstruction of Village Hall and Construction of New Police Annex**  
**Project Number: 251-001 - Ridgewood - CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

Objective

Conduct a study to determine the need of reconstructing the village hall and constructing a new police annex.

Action

Perform a building assessment of the current facility to determine if there are any major building deficiencies and if additional space is required for optimal office efficiency.

Responsible Departments

Village of Ridgewood

Time Frame

It is estimated that it should require four (4) months once funds are made available for project completion.

Cost

Consulting services: \$15,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

The Village of Ridgewood should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Village receives 75% of the necessary funding, Ridgewood's annual budget would provide the 25% match required.

**Project Name: Relocate DPW office to higher areas on DPW property; install and raise generator (River Edge).**

**Project Number: 252-009 - River Edge - CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

### Objective

To relocate River Edge's DPW office to a higher elevation thus removing the office from the flood zone and eliminating the flooding problem. Additionally, an installation of back-up power generator is required.

### Action

A detailed site design including all necessary building and environmental permits are required prior to project implementation.

### Responsible Departments

Borough of River Edge

### Time Frame

It is estimated that it should require one (1) to two (2) years for the project completion.

### Cost

More information is needed on the DPW office to provide an accurate cost estimate.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 12 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of River Edge should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, River Edge's annual budget would provide the 25% match required.

**Project Name: River Maintenance and Inspection Plan**

**Project Number: 253-010 - River Vale - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

### Objective

Establish an inspection/maintenance program of the Hackensack River within the Township of River Vale.

### Action

Conduct a preliminary inspection of affected areas to determine the total number of personnel needed and inspections per year. Assemble a team of inspectors and other employees as needed to develop and implement the maintenance plan. The team shall establish the dates/seasons for inspections, actions needed for removal of debris, and necessary equipment. All work may be

done either internally by coordinating between township offices or contracted to outside agencies depending on available resources.

Responsible Departments

Township of River Vale

Time Frame

It is estimated that it should require one (1) month annually once funds are made available.

Cost

TBD – The project cost cannot be determined at this time due to the unknown amounts of debris removal.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 10 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Township of River Vale should apply for the Pre-Disaster Mitigation Program. Provided the Township receives 75% of the necessary funding, River Vale’s annual budget would provide the 25% match required.

**Project Name: Backflow Prevention**

**Project Number: 254-006 - Rochelle Park - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Perform a feasibility assessment against possible backflow prevention to all existing stormwater system.

Action

An assessment of existing stormwater outfalls are required to determine where possible backflow is occurring. The assessment will include the cause of backflow and mitigating solutions.

Responsible Departments

Township of Rochelle Park

Time Frame

It is estimated that it should require approximately three (3) months once funds are made available for project completion.

### Cost

Consulting services: \$60,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Township of Rochelle Park should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Rochelle Park's annual budget would provide the 25% match required.

**Project Name: Clean-up at Sparkill Creek**

**Project Number: 255-002 – Rockleigh – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

### Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

### Objective

Reduce stagnant water and promote steady flow by removing excessive debris in the stream and as a result, reducing the risk of disease, flooding, and promoting water quality.

### Action

Rockleigh Borough will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

### Responsible Departments

Rockleigh Borough

### Time Frame

It is estimated that it should require one year once funds are made available for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction/dredging of the project.

### Cost

The estimated cost is \$125,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Rockleigh Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Rockleigh's annual budget would provide the 25% match required.

**Project Name: Establish an Emergency Community Alert Team (ECAT)**

**Project Number: 256-001 - Rutherford - No CF**

**Hazard Addressed: All Hazards**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure

### Objective

Form an ECAT and develop a system to better convey information to and from the community regarding any current or potential hazards that may affect them. Utilizing various methods, the community can be warned ahead of time, receive status updates, and ask for assistance in the event of an emergency.

### Action

In conjunction with the Rutherford OEM and other emergency personnel from the Borough, establish an ECAT to notify important hazard information to the public. Responsibilities of people involved can be modeled from the Public Information Officers (PIO) of the National Incident Management Services (NIMS). The following are possible mediums for the dissemination of information to the public:

- 1) Emergency website postings
- 2) Email alerts
- 3) Emergency Alert System (EAS) radio messages
- 4) Media – TV, newspapers, etc.
- 5) Loudspeakers

### Responsible Departments

Borough of Rutherford

### Time Frame

It is estimated that it should require approximately four (4) months once funds are made available for project completion.

### Cost

TBD

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 6 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Borough of Rutherford should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Rutherford's annual budget would provide the 25% match required.

**Project Name: Study of Saddle River Avenue Bridge**  
**Project Number: 257-002 - Saddle Brook - No CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

### Objective

A feasibility assessment of the reconfiguration of the Saddle River Avenue Bridge to determine if there is any flow restriction along the river.

### Action

A hydrologic and hydraulic analysis of the Saddle River Avenue Bridge will need to be assessed prior to the feasibility assessment of the reconfiguration.

### Responsible Departments

Township of Saddle Brook

### Time Frame

It is estimated that it should require approximately three (3) months once funds are made available for project completion.

### Cost

Consulting services: \$90,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Township of Saddle Brook should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Saddle Brook's annual budget would provide the 25% match required.

**Project Name: Study and evaluate an evacuation route surveillance system.**  
**Project Number: 258-001 – Saddle River - No CF**  
**Hazard Addressed: All Hazards**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

This study aims to investigate the use of a surveillance system to monitor the evacuation routes in Saddle River.

Action

The first step is the analysis of the evacuation route to determine which areas may be most hazard-prone. Once the problem areas are studied, a variety of surveillance systems are to be evaluated as to which provides the best coverage economically as well as technologically. The best system shall be proposed for implementation.

Responsible Departments

Saddle River Borough

Time Frame

It is estimated that it should require six months, once funds are made available, to study the route and complete an evaluation of various surveillance systems.

Cost

\$50,000

Cost/Benefit

The Mitigation Planning Team prioritized this action using the STAPLEE criteria; this project scored a 6 on a scale of +21 to -21. This action stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Township of Saddle River should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Saddle River's annual budget would provide the 25% match required.

**Project Name: Elevate Sewer Ejector Station**  
**Project Number: 259-004 – South Hackensack - CF**  
**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

Bring the sewer ejector station to a higher elevation and out of the flood zone, making it more beneficial during severe storms and reducing the chance of it being flooded.

Action

A detailed site design including all necessary building and environmental permits are required prior to project implementation.

Responsible Departments

South Hackensack Township

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

TBD - More information is needed to provide an accurate cost estimate.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 8 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

South Hackensack Township should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, South Hackensack's annual budget would provide the 25% match required.

**Project Name: Belle Avenue Drainage Improvements**

**Project Number: 260-001 - Teaneck - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

Improve the drainage system located at Belle Avenue to convey a larger amount of stormwater runoff away from the affected area.

### Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

### Responsible Departments

Township of Teaneck

### Time Frame

It is estimated that it should require one year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

### Cost

TBD - The construction cost of the project cannot be determined at this time.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 8 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Township of Teaneck should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Teaneck's annual budget would provide the 25% match required.

### **Project Name: Farby Court Drainage Improvements**

### **Project Number: 260-002 - Teaneck - No CF**

### **Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

### Objective

Improve the drainage system located at Farby Court to convey a larger amount of stormwater runoff away from the affected area.

### Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments  
Township of Teaneck

Time Frame

It is estimated that it should require one year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

Cost

TBD - The construction cost of the project cannot be determined at this time.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 8 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Township of Teaneck should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Teaneck's annual budget would provide the 25% match required.

**Project Name: Repair and Replacement of Destroyed Storm Sewers**

**Project Number: 260-007 - Teaneck - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Prevent flooding and debris build-up by installing new pipes and related stormwater control structures throughout any existing deficient drainage system.

Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Township of Teaneck

Time Frame

It is estimated that it should require one year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

Cost

TBD - The construction cost of the project cannot be determined at this time.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 8 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Township of Teaneck should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Teaneck's annual budget would provide the 25% match required.

**Project Name: Replace sewer main at Dean Drive (area of Inness Road) to relieve flooding**

**Project Number: 261-002 – Tenafly – No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property
- Preserve Our Natural Environment and Promote Human Health

#### Objective

Relieve a chronic flooding issue by replacing the sewer main at Dean Drive, near Inness Road.

#### Action

Once a hydrologic and hydraulic analysis for the existing drainage system for Dean Drive and Inness Road is completed, an engineered solution will be determined to best remedy the flooding situation.

#### Responsible Departments

Borough of Tenafly

#### Time Frame

It is estimated that this project should require 1 year once funds are made available.

#### Cost

**TBD** - The construction cost of the project cannot be determined until the design of the project is completed.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLE+E criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Borough of Tenafly should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Tenafly's annual budget would provide the 25% match required.

**Project Name: West Riser Ditch Clean-up**  
**Project Number: 262-002 – Teterboro – No CF**  
**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property

Objective

Reduce stagnant water and promote steady flow by removing excessive debris in the streams and, as a result, reducing the risk of disease, flooding, and promoting water quality.

Action

Teterboro Borough will need to verify with NJDEP regarding the required environmental permits and the need of site access agreements. A hydrologic and hydraulic study of the brooks and their contributing drainage areas would need to be analyzed to determine the capacity of the existing drainage system. To ensure no adverse effects would occur from the project, downstream of the proposed project will be investigated. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Teterboro Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

The estimated cost is \$200,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 11 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Teterboro Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Teterboro's annual budget would provide the 25% match required.

**Project Name: Install an Emergency Electric Generator at the Primary Shelter**  
**Project Number: 263-001 – Upper Saddle River - CF**  
**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

Objective

To provide a backup power to a shelter located at 392 West Saddle River Road.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be design prior to installation and future maintenance.

Responsible Departments

Upper Saddle River Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

The estimated cost is \$125,000 for the generator.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

Upper Saddle River Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Upper Saddle River's annual budget would provide the 25% match required.

**Project Name: Rehabilitate White's Pond Dam**  
**Project Number: 264-001 – Waldwick – No CF**  
**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed:

- Protect and Promote Public Health and Safety

- Protect Public and Private Property

#### Objective

Ensure structural stability and seepage resistance of dam and the surrounding earthen area.

#### Action

A structural stability analysis of the dam is required to determine any major deficiencies. Once the stability analysis is complete, a feasibility assessment will be needed for mitigation projects.

#### Responsible Departments

Waldwick Borough

#### Time Frame

TBD - A time frame for the project cannot be determined at this time.

#### Cost

The estimated cost is \$125,000.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

Waldwick Borough should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Waldwick's annual budget would provide the 25% match required.

#### **Project Name: Emergency Power for EOC**

#### **Project Number: 265-001 – Wallington - CF**

#### **Hazard Addressed: Loss of Utilities (Electric)**

#### Goals Addressed:

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

#### Objective

This project aims to provide the Wallington Emergency Services building with emergency back-up power.

#### Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments

Wallington Borough

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

Approximately \$60,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Wallington should apply for the Pre-Disaster Mitigation Program grant funds. Providing the Borough receives 75% of the necessary funding, Wallington's annual budget would provide the 25% match required.

**Project Name: Study Replacement of Earth and Dam**

**Project Number: 266-001 - Washington Township - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Ensure structural stability and seepage resistance of dam and the surrounding earthen area.

Action

A structural stability analysis of the dam is required to determine any major deficiencies. Once the stability analysis is complete, a feasibility assessment will be needed for mitigation projects.

Responsible Departments

Township of Washington

Time Frame

It is estimated that it should require approximately six (6) months once funds are made available for project completion.

Cost

Consulting services: \$70,000

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Township of Washington should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Township receives 75% of the necessary funding, Washington's annual budget would provide the 25% match required.

### **Project Name: Provide an Emergency Generator to the Municipal Complex/Police Headquarters**

**Project Number: 266-005 - Washington Township - CF**

**Hazard Addressed: Loss of Utilities (Electric)**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

### Objective

Provide back-up power to the Township of Washington's municipal complex/police headquarters with emergency generator(s) in the case of a power outage.

### Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be design prior to installation and future maintenance.

### Responsible Departments

Township of Washington

### Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

### Cost

TBD – The project cost cannot be determined until the sizes of the generators are calculated.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

The Township of Washington should apply for the Pre-Disaster Mitigation Program. Provided the Township receives 75% of the necessary funding, Washington's annual budget would provide the 25% match required.

**Project Name: Engineering study of channel stabilization: 18" Cast Iron and 20" clay sanitary sewer trunk line is exposed and bowed. Study retaining wall at Pascack Brook, Westwood Ave, near Park Place**

**Project Number: 267-001 - Westwood - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

#### Objective

To study bank stabilization on Pascack Brook to reduce the exposure of the sanitary sewer line and the resulting pressure. Additionally study the condition of the retaining wall that hat location.

#### Action

This project involves locating portions of the sanitary line threatened by exposure, sagging, and breaking as a result of the eroding bank of the Pascack Brook. Multiple repair projects for the bank should be proposed and compared. The retaining wall at this location but also be studied to determine its condition and integrity.

#### Responsible Departments

Township of Westwood

#### Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

#### Cost

The estimated cost is \$50,000.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The Township of Westwood should apply for the Pre-Disaster Mitigation Program. Provided the Township receives 75% of the necessary funding, Westwood's annual budget would provide the 25% match required.

**Project Name: Engineering study of channel stabilization: 18" Cast Iron plus 20" clay sanitary sewer trunk line is exposed plus bowed at Pascack Brook, Westwood Ave, near Park Place.**

**Project Number: 267-002 - Westwood - No CF**

**Hazard Addressed: Riverine & Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

Objective

To study bank stabilization on Pascack Brook to reduce the exposure of the sanitary sewer line and the resulting pressure.

Action

This project involves locating portions of the sanitary line threatened by exposure, sagging, and breaking as a result of the eroding bank of the Pascack Brook. Multiple repair projects for the bank should be proposed and compared.

Responsible Departments

Township of Westwood

Time Frame

It is estimated that it should require nine months for project implementation once funds are made available.

Cost

The estimated cost is \$38,000.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Township of Westwood should apply for the Pre-Disaster Mitigation Program. Provided the Township receives 75% of the necessary funding, Westwood's annual budget would provide the 25% match required.

**Project Name: Install Folding Stop Signs at Intersections**

**Project Number: 268-001 – Woodcliff Lake – No CF**

**Hazard Addressed: Loss of Utilities (Electric)**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

Objective

Maintain safe traffic operation at intersections during power outages by providing folding stop signs at certain intersections in Woodcliff Lake.

Action

The Borough of Woodcliff Lake must determine how many folding stop signs will be needed prior to purchasing and installation. Additionally, the public should be informed on how the signs work and when the signs are to be obeyed. The stop signs are to be installed at the following intersections: Kinderkamack Road and Prospect Avenue, Woodcliff Avenue and Pascack Road, Glen Road and Parkway Exit 171 (3-way), Glen Road and Chestnut Ridge Road (5-way), Chestnut Ridge Road and County Road, Chestnut Ridge Road and Tice Boulevard, Chesnut Ridge Road and Woodmont Drive.

Responsible Departments

Woodcliff Lake Borough

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

TBD – The project cost cannot be determined until the numbers of signs are determined.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 14 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The City of Garfield should apply for the Pre-Disaster Mitigation Program grant funds. Provided the City receives 75% of the necessary funding, Garfield’s annual budget would provide the 25% match required

**Project Name: Anderson Avenue Study of Storm Sewer Capacity**

**Project Number: 269-002 - Wood-Ridge - CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Protect Public and Private Property

Objective

Improve the drainage system located at Anderson Avenue by conducting a study of the drainage system capacity and suggesting necessary changes.

Action

A hydrologic and hydraulic analysis will be required to determine the capacity adequacy of the existing Anderson Avenue drainage system. Once the hydrologic and hydraulic study is complete, an engineering solution would need to be designed and incorporated into bid documents for the public bid process.

Responsible Departments

Borough of Wood-Ridge

Time Frame

It is estimated that it should require one year for the hydrologic and hydraulic study, design including the environmental permits, the public bid process, and the construction of the project.

Cost

TBD - The construction cost of the project cannot be determined at this time.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored an 8 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Wood-Ridge should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Wood-Ridge's annual budget would provide the 25% match required.

**Project Name: Emergency Power at Larkin House, 380 Godwin Ave. \$30,000**

**Project Number: 270-001- Wyckoff – No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

Objective

Provide the Larkin House, used for public meetings, with emergency back-up power.

Action

The sizing of the back-up generators and how to incorporate the generators with the existing system need to be designed prior to installation and future maintenance.

Responsible Departments  
Borough of Wyckoff

Time Frame

It is estimated that it should require one year for project implementation once funds are made available.

Cost

\$30,000

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

Targeted Funding Source(s)

The Borough of Wyckoff should apply for the Pre-Disaster Mitigation Program grant funds. Provided the Borough receives 75% of the necessary funding, Wyckoff's annual budget would provide the 25% match required

**Project Name: Restoration of the Kane Tract Levee to protect the Boroughs of Carlstadt, Little Ferry, South Hackensack, and Moonachie**  
**Project Number: NJMC-001 - Various municipalities - No CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality

Objective

To reduce flooding in the Boroughs of Carlstadt, Little Ferry, South Hackensack, and Moonachie that results from both rainfall events as well as tide surges up to the 25-year event.

Action

Restore the Kane Tract Levee. The levee is approximately 7,800 linear feet and was constructed in the 1930s in an ill-fated attempt to reduce the local mosquito population. It also served to prevent tidal flooding of the adjacent low-lying areas, encouraging industrial development. The levee system is essential but in a poor and rapidly deteriorating condition.

The proposed earthen replacement system would be built to meet U.S. Army Corps of Engineers standards, having a drivable 12-foot wide crest, 2:1 (horizontal: vertical) side slopes, and engineered soil core. The crest would also serve as a nature trail as the Kane Tract is now a 587-acre Natural Area with views of the Hackensack River and New York City skyline.

### Responsible Departments

New Jersey Meadowlands Commission

### Time Frame

It is estimated that it will take two (2) years for project completion, once funds are made available.

### Cost

The estimated cost for the in-house and contracted design, permitting, as well as construction of this project, is \$6,000,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 10 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

### Targeted Funding Source(s)

The New Jersey Meadowlands Commission (“NJMC”) should apply for the Pre-Disaster Mitigation Program grant funds or the Hazard Mitigation Grant Program grant funds, as applicable. Provided the NJMC receives 75% of the necessary funding, the NJMC would provide the 25% match required.

### **Project Name: Restoration and Upgrade of the West Riser Tide Gates**

**Project Number: NJMC-002 - Moonachie - No CF**

**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

### Objective

The purpose of this project is to restore and upgrade the tide gates located at the tidal terminus of Berry’s Creek, in the Borough of Moonachie, Bergen County, NJ. The tide gates separate the brackish Berry’s Creek, a tributary of the Hackensack River, from the West Riser Ditch, a fluvial system serving several communities and Teterboro Airport.

### Action

The proposed project is the replacement of the existing sheet-pile cutoff wall with a corrosion resistant sheet wall (coated metal sheeting or vinyl sheeting), the preparation of an hydrologic and hydraulic evaluation of the local watershed for proper tide gate sizing, the installation of rubber duck-bill tide gate valves, and the construction of local berms to reduce the probability of short-circuiting of the tidal barrier.

The proposed cutoff wall will terminate at one foot above the 25-year flood surge elevation to provide both protection and freeboard. Above the sheeting will be a catwalk to allow both the safe maintenance and safe inspection of the structure. A hinged, plastic trash rack system will be installed on the upstream side to prevent the clogging of the tide gates and the passage of garbage into the Hackensack River estuary, and to lengthen the maintenance cycle.

Scour control will be installed at the downstream end of the tide gates and shall be designed for a maximum head condition on the upstream side of the tidal barrier and a mean low water tail condition. This conservative assumption will result in a maximum discharge velocity design condition and thus, a long-lasting scour control barrier.

Lastly, the system will be designed to allow for the future addition of a low-head, large capacity pump station. In the interim, a concrete pad with gravel access path will be installed to allow for the eased placement of temporary, diesel-powered pumps.

The environmental impacts will be significantly minimized by following the original footprint. All disturbed areas will be planted with native vegetation. Sheeting will be placed either by barge or by local dewatering and will not significantly impact the local channel ecology. Any excavated material will be tested prior to proper disposal.

#### Responsible Departments

New Jersey Meadowlands Commission

#### Time Frame

It is estimated that it should require thirteen (13) months for project completion once funds are made available.

#### Cost

The estimated cost for the in-house and contracted design and permitting, as well as construction, of this project is \$1,350,000.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

#### Targeted Funding Source(s)

The New Jersey Meadowlands Commission ("NJMC") should apply for the Pre-Disaster Mitigation Program grant funds or the Hazard Mitigation Grant Program grant funds, as applicable. Provided the NJMC receives 75% of the necessary funding, the NJMC would provide the 25% match required.

**Project Name: Restoration and Upgrade of the Peach Island Tide Gates**  
**Project Number: NJMC-003 - Carlstadt - No CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

The purpose of this project is to restore and upgrade the tide gates located on Block 122, Lot 8.01, in the Borough of Carlstadt, Bergen County.

Action

The proposed project is the preparation of a hydrologic and hydraulic evaluation of the local watershed that would lead to the replacement of the four (4) existing 60-inch corrugated metal pipes (CMP) and associated metal flap tide gates with the installation of rubber duck-bill tide gate valves, and the construction of local berms to reduce the probability of the short-circuiting of the tidal barrier.

The tide gate's embankment will be raised to prevent its overtopping by the 25-year storm surge (5.72 feet NAVD88). The compacted, engineered soil will be a silty-sand ("SM") soil mix due to both its excellent compaction properties and strength. Protection from the 100-year storm event is nearly impossible for the area since the majority of the Meadowlands District is significantly below the FEMA special flood hazard area (100-year flood elevation, 7.12 feet NAVD88). Plastic trash racks with fenced, corrosion resistant aluminum catwalks and paved walkways will be incorporated into the design to allow simple and safe access. Electrical power and lighting will be provided to illuminate the area in case of emergency, night time repairs, and/or rainy conditions.

Scour control will be installed at the downstream (tide) end of the tide gates and shall be designed for a maximum head condition on the upstream side of the tidal barrier and a mean low water tail condition. This conservative assumption will result in a maximum discharge velocity design condition and thus, a long-lasting scour control barrier. Upstream scour control will be designed to handle local entrance velocity at peak flow condition.

Lastly, the system will be designed to allow for the future addition of a low-head, large capacity pump station/system. In the interim, a concrete pad, with paved access path, will be installed to allow for the placement of temporary, diesel-powered pumps.

Responsible Departments

New Jersey Meadowlands Commission

Time Frame

It is estimated that it should require approximately thirteen (13) months for project completion once funds are made available.

#### Cost

The estimated cost for the in-house and contracted design and permitting, as well as construction, of this project is \$652,000.

#### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

#### Targeted Funding Source(s)

The New Jersey Meadowlands Commission (“NJMC”) should apply for the Pre-Disaster Mitigation Program grant funds or the Hazard Mitigation Grant Program grant funds, as applicable. Provided the NJMC receives 75% of the necessary funding, the NJMC would provide the 25% match required.

**Project Name: Rutherford/East Rutherford Drainage System Restoration**  
**Project Number: NJMC-005 - Rutherford and East Rutherford - No CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

#### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

#### Objective

Reduce flooding on Route 17 and the adjacent industrial properties in East Rutherford and Rutherford.

#### Action

Per designs developed by the U.S. Army Corps of Engineers and NJMC consultants, restore the functionality of the 1.5 mile man-made drainage ditch networks on both sides of the NJ Transit Bergen County Line railroad right-of-way. The drainage ditches serve to drain Route 17 and local industrial parks. Restoration would include enlarging the ditches to 15 feet wide at their bases and stabilizing the side slopes with vegetation and bio mats. Approximately 25,500 CY of removed sediment would be tested and disposed of at the NJMC’s Landfill 1-E.

NJDEP, Army Corps and NJ Transit permits have already been acquired. Additionally, the design drawings and construction documents are 100% complete.

#### Responsible Departments

New Jersey Meadowlands Commission

### Time Frame

It is estimated that it should require six (6) months for project completion, once funds are made available.

### Cost

The estimated cost for the construction phase of this project is \$3,500,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

### Targeted Funding Source(s)

The New Jersey Meadowlands Commission (“NJMC”) should apply for the Pre-Disaster Mitigation Program grant funds or the Hazard Mitigation Grant Program grant funds, as applicable. Provided the NJMC receives 75% of the necessary funding, the NJMC would provide the 25% match required.

**Project Name: Implement the remainder of the NJMC Floodplain Management Plan**  
**Project Number: NJMC-006 - Various municipalities - CF**  
**Hazard Addressed: Riverine and Stormwater Flooding**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

### Objective

Complete the “Extreme Priority” projects identified in both the Hackensack Meadowlands Floodplain Management Plan and Five Year (2007-2012) NJMC Water Resources Engineering Program Strategic Plan that have not already been addressed.

### Action

Based on extensive outreach, the NJMC worked with the municipalities in its jurisdiction to develop a ranked list of necessary flood control (mitigation) projects. Approximately 31 projects were selected in 2005. Of those 31 projects, 14 still require funding for design, permitting and/or construction. The projects include tide gate installation and/or upgrade, the installation and/or upgrade of pump stations, roadway drainage system improvements, drainage system investigations and modeling, drainage ditch cleanout, as well as continued monitoring of the aging flood control infrastructure.

### Responsible Departments

New Jersey Meadowlands Commission

### Time Frame

It is estimated that it should require five (5) years for project completion, once funds are made available.

### Cost

The estimated cost for the in-house and contracted design and permitting, and/or construction of these projects is \$10,481,000.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 7 on a scale of +21 to -21. This project stands to provide sufficient benefits for the associated costs.

### Targeted Funding Source(s)

The New Jersey Meadowlands Commission (“NJMC”) should apply for the Pre-Disaster Mitigation Program grant funds or the Hazard Mitigation Grant Program grant funds, as applicable. Provided the NJMC receives 75% of the necessary funding, the NJMC would provide the 25% match required.

**Project Name: Identify Existing Infrastructure in Hazard Areas within Bergen County**

**Project Number: NJMC-007 – New Jersey Meadowlands Commission – No CF**

**Hazard Addressed: All Hazards**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

### Objective

Identify existing structures and infrastructure that may be vulnerable to various hazards within Bergen County.

### Action

The NJMC will work with the 70 Bergen County municipalities to identify existing buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of existing vulnerable structures and infrastructure, the NJMC will provide mapping/GIS assistance to digitize this information.

### Responsible Departments

NJMC

### Time Frame

TBD - A time frame for the project cannot be determined at this time.

### Cost

TBD – The project cost cannot be determined at this time.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 10 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

### Targeted Funding Source(s)

Additional funding not required.

**Project Name: Identify Future Infrastructure in Hazard Areas within Bergen County**

**Project Number: NJMC-008 - New Jersey Meadowlands Commission – No CF**

**Hazard Addressed: All Hazards**

### Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

### Objective

Identify future structures and infrastructure that may be vulnerable to various hazards within Bergen County.

### Action

The NJMC will work with the 70 Bergen County municipalities to identify future buildings and infrastructure located in identified hazard areas. Once the municipalities have identified the location of future vulnerable structures and infrastructure, the NJMC will provide mapping/GIS assistance to digitize this information.

### Responsible Departments

NJMC

### Time Frame

TBD - A time frame for the project cannot be determined at this time.

### Cost

TBD – The project cost cannot be determined at this time.

### Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 10 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)  
Additional funding not required.

**Project Name: Evaluate Potential Hazard Impacts to Infrastructure within Bergen County**  
**Project Number: NJMC-009 - New Jersey Meadowlands Commission – No CF**  
**Hazard Addressed: All Hazards**

Goals Addressed

- Protect and Promote Public Health and Safety
- Safeguard Critical Public Facilities and Infrastructure
- Protect Public and Private Property
- Promote Economic Vitality
- Preserve Our Natural Environment and Promote Human Health

Objective

Identify and analyze the impacts of natural hazards on vulnerable structures and infrastructure within Bergen County.

Action

The NJMC will work with the 70 Bergen County municipalities to describe/quantify potential natural hazard impacts to the buildings in each jurisdiction. This information will be described either in terms of dollar value or percentages of damage.

Responsible Departments

NJMC

Time Frame

TBD - A time frame for the project cannot be determined at this time.

Cost

TBD – The project cost cannot be determined at this time.

Cost/Benefit

The Mitigation Planning Team prioritized this project using the STAPLEE criteria; this project scored a 10 on a scale of +21 to -21. This project stands to provide significant benefits for the associated costs.

Targeted Funding Source(s)  
Additional funding not required.

# Appendix N

## *Municipal Codes*

## Municipal Codes

The following table lists the municipal codes used by the Plan Development Team to identify municipalities in Bergen County. There are several locations throughout the Plan where a code may be the sole identifier for a mitigation project; please refer to this table to identify the municipality.

#	MUNICIPALITY
201	Allendale Borough
202	Alpine Borough
203	Bergenfield Borough
204	Bogota Borough
205	Carlstadt Borough
206	Cliffside Park Borough
207	Closter Borough
208	Cresskill Borough
209	Demarest Borough
210	Dumont Borough
212	East Rutherford Borough
213	Edgewater Borough
211	Elmwood Park Borough
214	Emerson Borough
215	Englewood City
216	Englewood Cliffs Borough
217	Fair Lawn Borough
218	Fairview Borough
219	Fort Lee Borough
220	Franklin Lakes Borough
221	Garfield City
222	Glen Rock Borough
223	Hackensack City
224	Harrington Park Borough
225	Hasbrouck Heights Borough
226	Haworth Borough
227	Hillsdale Borough
228	Ho-Ho-Kus Borough
229	Leonia Borough
230	Little Ferry Borough
231	Lodi Borough
232	Lyndhurst Township
233	Mahwah Township
234	Maywood Borough
235	Midland Park Borough
236	Montvale Borough
237	Moonachie Borough
238	New Milford Borough
239	North Arlington Borough
240	Northvale Borough
241	Norwood Borough
242	Oakland Borough
243	Old Tappan Borough
244	Oradell Borough
245	Palisades Park Borough
246	Paramus Borough
247	Park Ridge Borough
248	Ramsey Borough
249	Ridgefield Borough
250	Ridgefield Park Village
251	Ridgewood Village
252	River Edge Borough
253	River Vale Township
254	Rochelle Park Township
255	Rockleigh Borough
256	Rutherford Borough
257	Saddle Brook Township
258	Saddle River Borough
259	South Hackensack Township
260	Teaneck Township
261	Tenafly Borough
262	Teterboro Borough
263	Upper Saddle River Borough
264	Waldwick Borough

265	Wallington Borough
266	Washington Township
267	Westwood Borough
268	Woodcliff Lake Borough

269	Wood-Ridge Borough
270	Wyckoff Township
	Bergen County

# Appendix O

## *References*

## References

For ease of reading, many references have been included throughout the Bergen County Natural Hazard Mitigation Plan. In addition, the following bibliography is provided for some of the more major maps and references utilized. In addition, reference and links that were available in the Mitigation Plan Tool Kit dated 9-06 and the electronic 2002-2006 FEMA How-To Guides provided a great service in the development of this Plan.

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<sup>1</sup> United States Census, 2005.

<sup>2</sup> “New Jersey Counties,” New Jersey Meadowlands Commission, 2007.

<sup>3</sup> FEMA, Disaster Mitigation Act of 2000.  
<http://www.fema.gov/library/viewRecord.do?id=1935>

<sup>4</sup> Bergen County Municipalities, New Jersey Meadowlands Commission, 2007.

<sup>5</sup> “Paramus, New Jersey,” City-Data.com, 2007. ([www.city-data.com](http://www.city-data.com))

<sup>6</sup> “Physiographic Provinces of New Jersey,” New Jersey Geological Survey.

<sup>7</sup> "Geologic Map of New Jersey." Map. NJDEP, Div of Science, Research & Technology, Geologic, Survey. 1999.

<sup>8</sup> “Land Use & Land Cover of Bergen County,” New Jersey Department of Environmental Protection (NJDEP), 2002.

<sup>9</sup> “Bergen County Major Roadways,” New Jersey Meadowlands Commission, 2007.

<sup>10</sup> Cushman and Wakefield, Market Beat-Northern New Jersey Office Report 2008.  
<http://www.cushwake.com>

<sup>11</sup> Division of State Police, Department of Law and Public Safety, Building a Safer New Jersey, the State of New Jersey Hazard Mitigation Plan, 2005.

<sup>12</sup> “Areas Prone to Natural Sinkhole Development,” New Jersey Office of Emergency Management

<sup>13</sup> “Bergen County Historical Hail Events,” NOAA Satellite and Information Service, National Climatic Data Center, US Department of Commerce. <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>

<sup>14</sup> United States Geological Survey Glossary, <http://landslides.usgs.gov/learning/glossary.php#e>

<sup>15</sup> "Swelling Clays Map of the Conterminous United States" by W. Olive, A. Chleborad, C. Frahme, J. Shlocker, R. Schneider and R. Schuster. It was published in 1989 as Map I-1940 in

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the United States Geological Survey (USGS) Miscellaneous Investigations Series.  
[http://www.surevoid.com/surevoid\\_web/menus/menu\\_maps\\_cons.html](http://www.surevoid.com/surevoid_web/menus/menu_maps_cons.html)

<sup>16</sup> Flood Insurance Study, Bergen County, New Jersey. FEMA. September 20, 2005. Flood Insurance Study Number 34003CV001A.

<sup>17</sup> “FEMA 2006 FIRM 100- and 500-Year Flood Bergen County Municipalities, State of New Jersey,” New Jersey Meadowlands Commission, 2006.

<sup>18</sup> Ibid

<sup>19</sup> “New Jersey Drought Periods.” Northeast Regional Climate Center, Cornell University, 2006.  
[www.nrcc.cornell.edu/drought/NJ\\_drought\\_periods.html](http://www.nrcc.cornell.edu/drought/NJ_drought_periods.html)

<sup>20</sup> “New Jersey Drought Summary.” Northeast Regional Climate Center, Cornell University.  
[www.nrcc.cornell.edu/drought/NJ\\_pdsi\\_smry.html](http://www.nrcc.cornell.edu/drought/NJ_pdsi_smry.html)

<sup>21</sup> NJDEP Drought Information Resource, <http://njdrought.org>

<sup>22</sup> “Record High Temperatures in the United States by State,” NOAA, 2003.

<sup>23</sup> “NWS Wind chill Chart,” NOAA National Weather Service, 2001.  
<http://www.weather.gov/om/windchill/index.shtml>

<sup>24</sup> “Snowfall Summary for the Northeast,” Cornell University.  
[http://www.nrcc.cornell.edu/snow\\_records.html](http://www.nrcc.cornell.edu/snow_records.html)

<sup>25</sup> New Jersey Geological Survey, – Information Circular; Predicting Earthquake Damage in New Jersey; 2003; [www.njgeology.org](http://www.njgeology.org)

<sup>26</sup> “Approximate Relationship between Magnitude and Intensity” New Jersey Office of Emergency Management. [http://www.state.nj.us/njoem/opb\\_earmeasure.html](http://www.state.nj.us/njoem/opb_earmeasure.html)

<sup>27</sup> “Earthquake Epicenters.” New York State Emergency Management Office. Data: New York State Geological Survey: National Institute of Building Sciences.

<sup>28</sup> Peak Acceleration (%G) with 10% Probability of Exceedence in 50 Years.” USGS Map, 2008.  
[http://earthquake.usgs.gov/research/hazmaps/products\\_data/2008/maps/ceus/ceus.10pc50.pga.jpg](http://earthquake.usgs.gov/research/hazmaps/products_data/2008/maps/ceus/ceus.10pc50.pga.jpg)

<sup>29</sup> FEMA HAZUS-MH Guide, [http://www.fema.gov/plan/prevent/hazus/hz\\_overview.shtm](http://www.fema.gov/plan/prevent/hazus/hz_overview.shtm)

<sup>30</sup> *Earthquake Risks and Mitigation in the New York/New Jersey/Connecticut Region, 1999-2003*. The New York City Area Consortium for Earthquake Loss Mitigation.  
<http://nycem.org/techdocs/FinalReport/03-SP02p.pdf>

- 
- <sup>31</sup> Earthquake Loss Estimation Study for Bergen County, December 2000.  
[http://www.state.nj.us/dep/njgs/enviroed/freedwn/bergen\\_hazus.pdf](http://www.state.nj.us/dep/njgs/enviroed/freedwn/bergen_hazus.pdf)
- <sup>32</sup> (Abridged from *Seismicity of the United States, 1568-1989* (Revised), by Carl W. Stover and Jerry L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington: 1993,  
<http://earthquake.usgs.gov/regional/states.php?region=New%20Jersey>
- <sup>33</sup> “Landslides in New Jersey,” NJDEP, New Jersey Geological Survey, 2006.  
(<http://nj.gov/dep/njgs/geodata/dgs06-3md.htm>)
- <sup>34</sup> “Landslide Susceptibility /Incidence for the State of New Jersey,” NJDEP, New Jersey Geological Survey. (<http://nj.gov/dep/njgs/geodata/dgs06-3md.htm>)
- <sup>35</sup> American Meteorological Society Glossary.  
<http://amsglossary.allenpress.com/glossary/search?id=tornado1>
- <sup>36</sup> “Fujita Scale.” <http://www.tornadoproject.com/fscale/fscale.htm>.
- <sup>37</sup> State of New Jersey 2007 State Hazard Mitigation Plan, New Jersey Office of Emergency Management.
- <sup>38</sup> FEMA website. [http://www.fema.gov/plan/prevent/saferoom/tsfs02\\_torn\\_activity.shtm](http://www.fema.gov/plan/prevent/saferoom/tsfs02_torn_activity.shtm)
- <sup>39</sup> “Design Wind Speed Map for Community Shelters.” FEMA, Design and Construction Guidance for Community Shelters, July 2000.  
<http://www.fema.gov/library/viewRecord.do?id=1657>
- <sup>40</sup> “Tornado Activity vs. Wind Zones.” FEMA, Design and Construction Guidance for Community Shelters, July 2000.
- <sup>41</sup> “Fire History,” New Jersey Forest Fire Service, April 2006. NJDEP Division of Parks and Forestry. [http://www.state.nj.us/dep/parksandforests/fire/fire\\_history.htm](http://www.state.nj.us/dep/parksandforests/fire/fire_history.htm)
- <sup>42</sup> “Number of Fire Incidents per Year by New Jersey County: 1996 to 2006,” New Jersey 2007 State Hazard Mitigation Plan.
- <sup>43</sup> “State of New Jersey Annual Number of Acres Burned\* by Wildfires County: 1996 - 2006,” New Jersey 2007 State Hazard Mitigation Plan.
- <sup>44</sup> New Jersey Office of Emergency Management.  
<http://www.state.nj.us/njoem/plan/hurricanes.html>
- <sup>45</sup> “Saffir Simpson Hurricane Scale,” NOAA National Weather Service.  
[http://www.nhc.noaa.gov/HAW2/english/basics/saffir\\_simpson.shtml](http://www.nhc.noaa.gov/HAW2/english/basics/saffir_simpson.shtml)

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<sup>46</sup> Source: The Atlantic Oceanographic and Meteorological Laboratory, Frequently Asked Questions- G#12.

<sup>47</sup> “Historical Hurricane Tracks,” NOAA Coastal Services Center. All storms (Cat. 1-5, Trop Storm, Depression, Extratropical) within 65 miles of Lyndhurst, NJ, since 1975.  
<http://maps.csc.noaa.gov/hurricanes/viewer.html>

<sup>48</sup> New Jersey Hurricane Evacuation Study (HES) Draft Maps and Data, United States Army Corps of Engineers. <http://www.nap.usace.army.mil/HES/nj/index.html>

<sup>49</sup> United State Geological Survey Fact Sheet, 2005-3121. <http://pubs.usgs.gov/fs/2005/3121/>

<sup>50</sup> Ibid.

<sup>51</sup> FEMA, National Flood Insurance Program: Frequently Asked Questions.  
[http://www.fema.gov/txt/rebuild/repetitive\\_loss\\_faqs.txt](http://www.fema.gov/txt/rebuild/repetitive_loss_faqs.txt)

<sup>52</sup> FEMA, Severe Repetitive Loss Pilot Program Guidance, January 14, 2008.