

Appendix

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

prepared by:



Sussex County, New Jersey
Division of Emergency Management

Draft – September 3, 2010

This page is intentionally blank.

Appendices

Table of Contents

Appendix A Acronyms

Appendix B Sources

- B.1 Sources for Planning Process (Section 2)
- B.2 Sources for Hazard Identification, Profiling, and Ranking (Section 3)
- B.3 Sources for Risk Assessment (Section 4)
- B.4 Sources for Capabilities Assessment (Section 5)

Appendix C Planning Process

- C.1 Meetings and Working Sessions
- C.2 Public Involvement
- C.3 Correspondence

Appendix D STAPLEE Analysis of Mitigation Actions

- D.1 Sussex County
- D.2 Municipalities

Appendix E Adoption Resolutions

- E.1 Sussex County
- E.2 Municipalities

Appendix F Approval Letters

- F.1 Sussex County
- F.2 Municipalities

DRAFT

This page is intentionally blank.

Appendix A

Acronyms

AEL	Annual Estimated Loss
BCA:	Benefit-Cost Analysis
BFE:	Base Flood Elevation
CDBG:	Community Development Block Grant Program
CERCLIS:	Comprehensive Environmental Response, Compensation, and Liability Information System
CIP	Capital Improvement Program
CRS:	Community Rating System
DFIRM:	Digital Flood Insurance Rate Map
DMA 2000:	Disaster Mitigation Act of 2000
EAP	Emergency Action Plan
EF-Scale:	Enhanced Fujita Scale
EOC	Emergency Operations Center
EPA:	Environmental Protection Agency
EPCRA:	Emergency Planning and Community Right-to-know Act
ERNS:	Emergency Response Notification System
ESF:	Emergency Support Function
FEMA:	Federal Emergency Management Agency
FIRM:	Flood Insurance Rate Map
FIS:	Flood Insurance Study
FMA:	Flood Mitigation Assistance
FRCC:	Fire Regime Condition Classes
FRG:	Fire Regime Group
F-Scale:	Fujita Tornado Scale
GACES:	Governor's Advisory Council on Emergency Services
GIS:	Geographic Information System
HAZUS:	Hazards US
HAZUS MH	Hazards US Multi-Hazard
HIRA:	Hazard Identification and Risk Assessment
HMGP:	Hazard Mitigation Grant Program
HMP:	Hazard Mitigation Plan
HMSC:	Hazard Mitigation Steering Committee

HMWG:	Hazard Mitigation Working Group
IBC:	International Building Code
IFR:	Interim Final Rule
IRC:	International Residential Code
NCDC:	National Climatic Data Center
NDRR:	Northern Delaware River Region
NDSP:	National Dam Safety Program
NEHRP	National Earthquake Hazards Reduction Program
NFIP:	National Flood Insurance Program
NJAC:	New Jersey Administrative Code
NJCF:	New Jersey Conservation Foundation
NJDA:	New Jersey Department of Agriculture
NJDEP:	New Jersey Department of Environmental Protection
NJDCA:	New Jersey Department of Community Affairs
NJDOT:	New Jersey Department of Transportation
NJDRP:	New Jersey Development and Redevelopment Plan
NJFS	New Jersey Forest Fire Service
NJGIN:	New Jersey Geographic Information Network
NJGS:	New Jersey Geologic Survey
NJOEM:	New Jersey Office of Emergency Management
NJTP:	New Jersey Turnpike
NOAA:	National Oceanic Atmospheric Administration
NWS:	National Weather Service
OEM:	Office of Emergency Management
OMB	Office of Management and Budget
PA:	Public Assistance Grant Program
PDM:	Pre-Disaster Mitigation Grant Program
PW:	Project Worksheet
RCRA:	Resource Conservation and Recovery Act
RFC:	Repetitive Flood Claims
RL:	Repetitive Loss
RTK:	Right-To-Know Network
RTKHSL:	Right to Know Hazardous Substance List
SARA:	Superfund Amendments and Reauthorization Act

SF:	Square Feet
SFHA:	Special Flood Hazard Area
SHMPU:	State Hazard Mitigation Plan Update
SHMT:	State Hazard Mitigation Team
SLOSH:	Sea Lake and Overland Surges from Hurricanes Model
SPCC:	Spill Prevention, Control, and Countermeasure
SRL:	Severe Repetitive Loss Grant Program
STAPLEE:	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
SCDEM:	Sussex County Division of Emergency Management
TCPA:	Toxic Catastrophe Prevention Act
TIP:	Transportation Improvement Program
TRI:	Toxic Release Inventory
TSD:	Treatment Storage Disposal
UASI:	Urban Area Security Initiative
UCC:	Uniform Construction Code
USACE:	United States Army Corp of Engineers
USDOT:	United States Department of Transportation
USGS:	United States Geologic Survey
WRDA:	Water Resources Development Act
WTP:	Water Treatment Plan

This page is intentionally blank.

Appendix B

Sources

B.1 Sources for Planning Process (Section 2)

- FEMA. Mitigation Planning Guidance (386 Series). Available on the web at: http://www.fema.gov/plan/mitplanning/planning_resources.shtm
- FEMA Region II “Tool Kit”
http://www.fema.gov/about/regions/regionii/toolkit_table.shtm

B.2 Sources for Hazard Identification, Profiling, and Ranking (Section 3)

Overview of Sussex County’s History of Hazards

- Federal Emergency Management Agency (FEMA). Disaster Declarations database. Available on the web at: <http://www.fema.gov/news/disasters.fema>
- Hazards & Vulnerability Research Institute.(SHELDUS) Available on the web at: <http://www.sheldus.org>
- National Oceanic and Atmospheric Administration (NOAA)/National Climatic Data Center (NCDC) database. History and description of major hazard events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwwcgi.dll?wwevent~storms>
- NOAA/NCDC database. Retrieved from <http://www.ncdc.noaa.gov/oa/climateresearch.html>
- New Jersey Office of Emergency Management (OEM). Summary of Presidentially Declared Disasters 1992 -2000. Available on the web at: http://www.nj.gov/oem/county/press_1992pres.html
- Public Entity Risk Institute. Presidential Disaster Declarations. Available on the web at: <http://www.peripresdecusa.org/mainframe.htm>

Dam Failure

- NJDEP’s Dam Safety & Flood Control retrieved from <http://www.state.nj.us/dep/damsafety/faq.htm>
- New Jersey Department of Environmental Protection (NJDEP)-Department of Dam Safety and Flood Control. History of dam failure events. Available on the web at: <http://www.nj.gov/dep/damsafety/>
- NJDEP-Department of Dam Safety and Flood Control. Sussex County dam inventory.
- Stanford University. Retrieved from <http://npdp.stanford.edu/index.html>
- Consequence Assessment for USACE Risk Estimates “presentation by Jason Needham, P.E. Senior Consequence Specialist with USACR Risk Management Center on May 25, 2010

Drought

- Consequence Assessment for USACE Risk Estimates “presentation by Jason Needham, P.E. Senior Consequence Specialist with USACR Risk Management Center on May 25, 2010
- Glossary of Meteorology (1959)
- GIS data from NJDEP’s NJ Geological Survey’s Digital Geodata Series from May 2004. Retrieved from <http://www.njgeology.org/geodata/dgs00-1.htm>
- NJDEP, <http://www.state.nj.us/dep/gis/lulc2002statablescounty.htm>
- NOAA/NCDC database. History of Sussex County drought events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- Office of the New Jersey State Climatologist at Rutgers University. Available on the web at: <http://climate.rutgers.edu/stateclim/>

Earthquake/Geological

- FEMA 366: Estimated Annualized Earthquake Losses for the United States (April 2008). Retrieved from <http://www.fema.gov/library/viewRecord.do?id=3265>
- New Jersey Geological Survey (NJGS). Earthquake Risk in New Jersey. Available on the web at: <http://www.state.nj.us/dep/njgs/enviroed/eqrisk.htm>
- NJDEP - New Jersey Geological Survey - DGS04-1 Earthquakes Epicentered in New Jersey <http://www.state.nj.us/dep/njgs/geodata/dgs04-1.htm#image>
- NJDEP’s Land Use Management & NJ Geological Survey’s study *Earthquake Risk in New Jersey* (1998, Revised 2005). Retrieved from <http://www.state.nj.us/dep/njgs/enviroed/freedwn/e-quake.pdf>
- Sykes et al., Lamont-Doherty Earth Observatory of Columbia University, Palisades, New York 10964 (June 29, 2007) *Observations and Tectonic Settings of Historic and Instrumentally Located Earthquakes in the Greater New York City-Philadelphia Area*. Retrieved from <http://www.ldeo.columbia.edu/files/sykespdf.pdf>
- United States Geological Survey (USGS). Earthquake History in New Jersey. Available on the web at: http://earthquake.usgs.gov/regional/states/new_jersey/history.php
- USGS. Retrieved from <http://earthquake.usgs.gov/hazards/products/conterminous/2008/maps/>
- USGS. Retrieved from http://earthquake.usgs.gov/learn/topics/mag_vs_int.php
- US Geological Survey (USGS). Retrieved from <http://earthquake.usgs.gov/learn/topics/mercalli.php>

Flood

- Delaware River Basin Commission (DRBC). Delaware River Basin Map. Available on the web at: <http://www.state.nj.us/drbc/edweb/maps.htm>
- Delaware River Basin Commission's *Multi-Jurisdictional Flood Mitigation Plan for Municipalities in the Non-tidal, New Jersey Section of the Delaware River Basin*, November 2008, p57. Retrieved from http://www.state.nj.us/drbc/Flood_Website/NJmitigation/index.htm
- FEMA. Disaster Declarations database. Available on the web at: <http://www.fema.gov/news/disasters.fema>
- FEMA's *Preliminary Flood Insurance Study for Sussex County, New Jersey*, August 31, 2009, p8
- FEMA. DFIRM Preliminary data.
- FEMA Repetitive Losses Queried May 10, 2010.
- FEMA. Flood zone designations. Available on the web at: [FEMA Flood Zone Designations](#)
- FEMA.SFHA Retrieved from <http://www.floodsmart.gov/floodsmart/pages/faqs/what-is-a-special-flood-hazard-area.jsp>
- NOAA/NCDC database. History of Sussex County flood events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- NJDEP, Flood Control Section, Bureau of Dam Safety and Flood Control. Retrieved from <http://nj.gov/dep/floodcontrol/about.htm#mapping>
- NJDEP. Retrieved from <http://www.nj.gov/dep/greenacres/>
- NJ Flood Mitigation Task Force. Retrieved from <http://www.njflood.org/current.html>
- USGS *Large Floods in the United States: Where They Happen and Why Circular 1245*, 2003, p1. Retrieved from <http://pubs.usgs.gov/circ/2003/circ1245/pdf/circ1245.pdf>
- USGS *Flood Hazards – A National Threat Circular*. Retrieved from <http://pubs.usgs.gov/fs/2006/3026/2006-3026.pdf>

Hazardous Materials–Release

- Environmental Protection Agency. Retrieved from <http://www.epa.gov/compliance/resources/newsletters/civil/enfalert/nitrates.pdf>
- FEMA. Hazardous material related Federal Disaster Declarations. Available on the web at: <http://www.fema.gov/news/disasters.fema>
- GIS Hazardous Material site data from HAZUS MR4
PHSA. Retrieved from <https://hazmatonline.phmsa.dot.gov/IncidentReportsSearch/>
- Right-to-Know TRI. Retrieved from <http://www.rtknet.org/node/630>

- Office of Hazardous Materials Safety: United States Department of Transportation. Hazardous Materials Incident Data. Available on the web at: <http://hazmat.dot.gov/pubs/inc/data/2007/2007frm.htm>

High Winds–Straight-Line Winds

- NOAA. Coastal Service Center-Historic Hurricane Tracks Database. Available on the web at: <http://maps.csc.noaa.gov/hurricanes/viewer.html>
- NOAA, National Hurricane Center (NHC). Retrieved from <http://www.nhc.noaa.gov/aboutgloss.shtml#h>
- NOAA/NCDC database. History of Sussex County hurricane and high wind events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- NOAA, from http://www.noaa.gov/features/03_protecting/noreasters.html

High Winds–Tornadoes

- FEMA. Tornado Activity in the United States. Available on the web at: http://www.fema.gov/plan/prevent/saferoom/tsfs02_torn_activity.shtm
- Bureau of the Census. Retrieved from <http://factfinder.census.gov>
- NOAA. National Weather Service. Enhanced Fujita Scale. Available on the web at: <http://www.spc.noaa.gov/efscale/>
- NOAA. GIS data retrieved from <http://www.spc.ncep.noaa.gov/gis/svrgis/>
- NOAA. National Weather Service. Fujita Tornado Measurement Scale.
- NOAA/NCDC database. History of Sussex County tornado events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>

Landslide

- Landslide data came from NJDEP – New Jersey Geological Survey – DGS06-3 Landslides in New Jersey <http://www.state.nj.us/dep/njgs/geodata/dgs06-3.htm>
- NJDEP Landslide GIS Data retrieved from <http://www.nj.gov/dep/njgs/geodata/dgs06-3.htm>
- NJGS. New Jersey Landslide Susceptibility and Population. Available on the web at: <http://www.state.nj.us/dep/njgs/geodata/index.htm#geogrphy>
- USGS Fact Sheet 2004-3072 Landslide Types and Processes retrieved from <http://pubs.usgs.gov/fs/2004/3072/>

Losses, Crops

- NOAA/NCDC database. History of Sussex County drought events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>

Severe Weather–Summer

- NOAA/NCDC database. History of Sussex County extreme temperature events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- NOAA. Retrieved from <http://www.weather.gov/om/heat/heatindex.shtml>
- NOAA NWS. Retrieved from http://www.weather.gov/os/brochures/heat_wave.shtml

Severe Weather–Winter

- NOAA. National Weather Service. Winter storm event history for Sussex County.
- NOAA/NCDC database. History of Sussex County winter weather events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- NOAA. Retrieved from <http://www.crh.noaa.gov/lx/?n=winterday>
- Office of the New Jersey State Climatologist at Rutgers University. Available on the web at: <http://climate.rutgers.edu/stateclim/>
- SHELDUS 7.0, NCDC, and NWS's NESIS from http://www.ncdc.noaa.gov/snow-and-ice/nesis.php?sort=nesis_asc#rankings

Wildfire

2007 NJ State Hazard Mitigation Plan pg 66-67.

- NOAA/NCDC database. History of Sussex County wildfire events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- NJDEP's New Jersey Forest Fire Service. GIS Data retrieved from <http://www.state.nj.us/dep/gis/njfh.html#HUN>
- The Wildland Urban Interface in the United States. Ecological Applications 15:799-805. Retrieved from http://silvis.forest.wisc.edu/projects/WUI_Main.asp

B.3 Sources for Risk Assessment (Section 4)

Overview of Sussex County's Assets & Development Trends

- GIS data from NJ Office of Smart Growth, 2010 NJDRP. Retrieved from <http://www.nj.gov/dca/divisions/osg/plan/df.html#gis>
- HAZUS-MH MR4, Patch 2 Analysis completed June 2010
- HAZUS-MH MR4 Technical and User Manuals
- January 2010 Final Draft of NJ State Development and Redevelopment Plan, p31-38. Plan retrieved from <http://www.nj.gov/dca/divisions/osg/plan/df.html>
- NJDEP. Sussex County Land Use Land Cover data. Available on the web at: <http://www.princeton.edu/~geolib/gis/njluse.html>
- NJOIT, OGIS January 2009. GIS data retrieved from <http://www.state.nj.us/dep/gis/>

Dam Failure Risk in Sussex County

- NJDEP–Department of Dam Safety and Flood Control. Sussex County dam inventory. Spring, 2008.
- US Census Bureau. 2000 US Census data for Sussex County.

Earthquake Risk in Sussex County

- FEMA, *FEMA 366: Estimated Annualized Earthquake Losses for the United States* (April 2008). Retrieved from <http://www.fema.gov/library/viewRecord.do?id=3265>
- HAZUS-MH MR4, Patch 2 Earthquake Analysis completed June 2010
- NJDEP's NJGS from <http://www.state.nj.us/dep/njgs/enviroed/hazus.htm>

Flood Risk in Sussex County

- FEMA. Disaster Declarations database. Available on the web at: <http://www.fema.gov/news/disasters.fema>
- HAZUS-MH MR4, Patch 2 Flood Analysis completed June 2010
- NJDEP. Sussex County Land Use Land Cover data. Available on the web at: <http://www.princeton.edu/~geolib/gis/njluse.html>
- NOAA/NCDC database. History of Sussex County flood events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- USGS's National Elevation Dataset from <http://seamless.usgs.gov/>

High Wind Risk in Sussex County

- HAZUS-MH MR4, Patch 2 Flood Analysis completed June 2010

Severe Weather - Winter Risk in Sussex County

- NOAA/NCDC database. History of Sussex County winter weather events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- SHELDUS 7.0 and NCDC
- US Census Bureau. 2000 US Census data for Sussex County.

Wildfire Risk in Sussex County

- SHELDUS 7.0 and NCDC
- FRCC Guidebook Version 1.3.0, June 2008, p113. Retrieved from www.frcc.gov
- LANDFIRE data. <http://www.landfire.gov>
- LANDFIRE MFRI layer. U.S. Department of Interior, Geological Survey. GIS data retrieved from <http://landfire.cr.usgs.gov/viewer/>
- NOAA/NCDC database. History of Sussex County wildfire events. Available on the web at: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>
- Population and Household data from 2000 U.S. Census Bureau
- WUI 2000 GIS data retrieved from <http://silvis.forest.wisc.edu/Library/WUIDefinitions.asp>

B.4 Sources for Capabilities Assessment (Section 5)

- NJOEM. New Jersey State Hazard Mitigation Plan Update, 2008. Available on the web at: <http://www.state.nj.us/njoem/mitigation-plan08.html>
- FEMA. Community Status Book. Available on the web at: <http://www.fema.gov/fema/csb.shtm>
- FEMA. Community Rating System Eligible Communities. Available on the web at: <http://www.fema.gov/pdf/nfip/manual200805/19crs.pdf>

DRAFT

This page is intentionally blank.

Appendix C

Planning Process

Contents of this Appendix

- C.1 Meetings and Working Sessions
- C.2 Public Process
- C.3 Correspondence

C.1 Meetings and Working Sessions

On the following pages are copies of agendas, sign-in sheets, presentation materials, and meeting notes where appropriate for the following meetings and working sessions:

- January 26, 2010 NDRR Steering Committee Kick-Off Meeting
- February 1, 2010 LEPC Project Kick-Off Meeting
- February 17, 2010 OEM Coordinators Kick-Off Meeting
- March 10, 2010 NDRR Steering Committee Meeting
- May 12, 2010 NDRR Steering Committee Meeting
- May 18, 2010 HMWG Meeting
- June 1st, 2nd, 2010 Mitigation Actions Interview Workshop
- June 2, 2010 HMWG Meeting
- June 9, 2010 NDRR Steering Committee Meeting
- July 14, 2010 NDRR Steering Committee Meeting
- July 15, 2010 HMWG Meeting

DRAFT

This page is intentionally blank.

Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan

Work-in-Progress Review Materials

Submitted to:
NDRR Steering Committee

Submitted by:



January 26, 2010

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting – Agenda
January 26, 2010**

1. Introductions

- a. Northern Delaware River Region (NDRR) or Northern Delaware Valley Region (NDVR)
- b. Contact information

2. Steering Committee / Working Groups

- a. “Planning Committee” versus Steering Committee and County Working Groups
- b. Steering Committee
- c. County Working Groups
- d. NJOEM / FEMA Region II

3. Work Plan / General Schedule

- a. Regional Plan or County Plans
- b. JLWA Proposal Work Plan
- c. Draft General Schedule
- d. PDM Grant Period of Performance
- e. Steering Committee Meeting Schedule

4. Next Steps

- a. Collect and compile existing data and information (Tasks A.2 and A.3)
- b. Conduct initial briefings for Local Coordinators / County Working Groups (Tasks A.4 and A.5) including coordination with on-going COOP/COG Planning in Mercer County
- c. Refine work plan and general schedule (Task A.6)
- d. Produce press releases and website postings (Task A.7)
- e. Initiate hazard identification and profiles (Tasks B.1 and B.2)
- f. Produce and distribute capability assessment survey (Tasks A.4.a and C.2)

5. Data and Information

- a. GIS Capabilities
- b. “Wish list” intent / content / distribution to counties and communities (via initial briefings)
- c. Capability assessment intent / content / distribution to counties and communities (via website)
- d. Follow-up contacts
- e. Data transfers – sharepoint website(s)

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting – Agenda
January 26, 2010**

6. Initial Local Coordinator / County Working Group Briefings

- a. Presentation content (example: Union County NJ HMP)
- b. Schedule options
- c. Logistics

7. Project Administration

- a. Submittals to Sussex County Department of Purchasing
- b. Resolution / Contract Agreement
- c. Monthly Progress Report intent / content
- d. Invoice format / process
- e. In-Kind / Force Account Services tracking

8. Action Items

NDRR NJ All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting - Sign-up Sheet

January 26, 2010

Name	Title	Organization	Address	Phone	Fax	E-mail
Stuart Wallace	Technical Consultant	James Lee Witt Associates	PO Box 29 / 213 West High Street; Shepherdstown, WV 25443	225.303.6588		swallace@wittassociates.com
Skip Danielson	OEM Director	Sussex Co	39 High St. Newton NJ 07860	973-579 0380 ext. 2200	973-579 0384 Cell 973 296-3571	edanielson@ sussexcountysheriff.com
Albert Krause	Senior Planner	Warren Co Planning	165 CR 5195 Belvidere, NJ	908-475 6532		akrause@co.warren.nj.us
WILLIAM HUNT "BILL"	WC EMERGENCY MANAGEMENT PLANNER	WARREN CO. OEM	1024 RWTE 57 WASHINGTON NJ 07882	908 835-2070	908 835-2063	whunt@co.warren.nj.us
Lawrene Fleming	OEM Coordinator	Hunterdon County	201 Cherryville Rd. Flemington, NJ 08822	908-788- 1196	908- 782- 0057	lfleming@co.hunterdon.nj.us
Peter Dannen		James Lee Witt Associates	310 West Centre St. Woodbury N.J. 08096	609-922- 5593		pdannen@wittassociates.com
ROBERT Ricker		JLWA	7 Maple Ln Suite 100 Mt. Arlington NJ 07856	973 886 0160	973 288 1617	rricker@wittassociates.com
Frank Whentley	WC OEM Coordinator	Warren Cty	1024 Rt 57 Washington NJ	908 835 2051	908 835 2063	fwhentley@co.warren.nj.us
WILLIAM DUFFY	Deputy OEM COORDINATOR	MERCER COUNTY	350 LAWRENCE - STATION RD LAWRENCEVILLE NJ 08648	609-610 6573 CELL 609-799 8868 OFFICE	609- 799- 7067 FAX	WILLBDUFFY@AOL.COM

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

TASK A - PLANNING AND ORGANIZATION

The following task descriptions are based in part on FEMA Publication 386-1, *Getting Started: Building Support for Mitigation Planning*.

1. **Draft Work Plan and General Schedule:** The Consultant Team will prepare a detailed Draft Work Plan and General Schedule for development of the *Northern Delaware Valley Regional Hazard Mitigation Plan Project* (NDVR NJ HMP) with deliverables and milestones for progress monitoring.
2. **Document Review:** The Consultant Team will review existing relevant documents provided by the client agency, herein referred to as "*Northern Delaware Valley Region (NDVR)*" as background for the planning effort including any and all local mitigation strategies completed by incorporated jurisdictions (if any), a copy of the State of New Jersey's Mitigation Strategy, and other relevant documents as appropriate.
3. **Additional Resource/Reference Materials:** The Consultant Team will prepare a list of additional resources and reference materials that, if available, would be beneficial to the planning effort. The list will be provided to the NDVR in advance of the Project Kick-Off Meeting (see Task A.5).

Note: It is assumed that The NDVR will either obtain or arrange for the Consultant Team to obtain GIS information at no cost in commonly used formats directly from the appropriate County or State department(s) before or at the Project Kick-off Meeting (Task A.5).]

4. **Recommendations:** The Consultant Team will review the NDVR's progress to date regarding "Planning and Organization" and prepare recommendations to assist the NDVR in refining their efforts (per FEMA 386-1) including:
 - a) Assess Community Support. Based on a review of the membership on the NDVR's hazard mitigation planning committee or team, herein referred to as the "*Planning Committee*", and consistent with Task A.4.c), the Consultant Team will prepare a list of other entities or members of the community that may need to be included in the public participation process.
 - b) Build the Planning Committee. Based on a review of the local agencies and departments included in the Planning Committee, the Consultant Team will prepare a list of other NDVR departments and municipal representatives that may need to be included. As part of this initial effort, the Consultant Team will also prepare a survey to be completed by the departments and organizations represented on the Planning Committee that will yield information to be used in the Capability Assessment (see Task C.2).

Note: FEMA Region II and the New Jersey Office of Emergency Management (NJOEM) are both considered as "advisors" for the planning process. It is assumed this means both entities will be invited and encouraged to have a representative attend and participate in all meetings and work sessions related to the development of this plan.

- c) Engage the Public. The Consultant Team will assist the NDVR in developing a strategy for public participation including specific attention to the following elements as identified in FEMA 386-1, Step Three:
 - Identify the Public – to ensure as broad a level of participation as possible;
 - Organize Public Participation Activities – to make the most effective use of the NDVR and consultant resources; and
 - Develop a Public Education Campaign – focusing on the best way to reach each type of stakeholder. This work will include identifying roles and responsibilities for the Consultant Team as well as the NDVR.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

Note: The public participation portion of the project is important to gaining FEMA's approval but also can play a large role in the plan's ultimate success. It is also assumed that members of the Planning Committee will have good ideas about what will work best to involve the public in the planning process. However, we will not be able to meet with the Planning Committee until the work is under way. Therefore, for workload estimating purposes only, the following level of involvement by the consultant team is assumed that the Consultant Team will prepare for and conduct six (6) public meetings / workshops during the development of the plan corresponding to the "Public Participation Opportunities" mentioned in Tasks B.6, C.5 and C.8. This quantity is based on conducting four (4) identical meetings / workshops in different locations around the NDVR for each identified task. The locations will be determined and arranged for by the NDVR. Preparations for and after each public meeting / workshop will include:

- *Posters with Meeting/Workshop announcements / Text for Press Releases*
- *Meeting agendas*
- *Sign-up sheets*
- *Comment forms to collect participant feedback (in addition to any comments provided during the meeting / workshop)*
- *Summary handouts of issues to be covered at each meeting (in formats suitable for posting by the NDVR on appropriate NDVR county website(s))*
- *Exhibits and/or MS PowerPoint presentations as appropriate to the issues to be covered at each meeting (in formats suitable for posting by NDVR counties on appropriate NDVR county website(s))*
- *Summary of comments made by participants, formatted for response by the NDVR and/or the Planning Committee as part of the final NDVR NJ HMP).*

For the first "Public Participation Opportunity" (Task A.7), no formal presentations are anticipated but development of content for press releases and website postings should be included in the eventual Fee Breakdown.

As part of the Consultant Team's preparations for Planning Committee Progress & Coordination Meetings (see Tasks A.5, B.5, C.4 and C.7), a draft version of the information to be shared with the public will be included for Planning Committee review and approval prior to any public releases in any format.

Note: To comply with the requirements of DMA 2000, and to ensure a more actionable and successful plan implementation, JLWA recommends that the work effort provide opportunities for all municipalities within the NDVR as well as adjacent communities to comment on the plan. We will work with the Planning Committee to identify contacts in adjacent communities and counties to meet this requirement.

5. **Project Kick-off Meeting:** The Consultant Team will prepare for and conduct a Project Kick-off Meeting with the Planning Committee to discuss
 - Draft Work Plan and General Schedule
 - Additional Resource/Reference Materials
 - Recommendations regarding the NDVR's Planning and Organization Efforts

Note: This is the first of five (5) Planning & Coordination Meetings to be held with the NDVR and/or the Planning Committee. It is assumed that all of these meetings will be at least four (4) hours in duration. Of that time, no more than 1 or 2 hours will be taken up with presentations by the Consultant Team. The rest of the time will be devoted to Planning Committee working sessions. When possible, to save on travel costs, scheduling of public participation activities will be coordinated with these meetings.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

Note: It is assumed that the NDVR will be responsible for logistics for all meetings and coordination with the Planning Committee members regarding the date, time and location for the Project Kick-off Meeting. An agenda item for this first meeting will include identifying dates and locations for subsequent Planning Committee meeting(s) and other related aspects of the project.

Note: Preparations for the Project Kick-off Meeting by the Consultant Team will include producing and distributing an information package to Planning Committee members including agendas and copies of all materials to be discussed at the meeting. A draft of the information package for this first meeting will be submitted to the NDVR for review at least ten (10) working days prior to the meeting date. It is assumed that the NDVR will provide any comments within three (3) working days and that the Consultant Team will then be able to prepare the revised information packages for transmittal at least five (5) working days prior to the meeting date. An effort will be made to set review and distribution timeframes for subsequent meetings so that Planning Committee members will receive information packages at least ten (10) working days prior to meeting dates. Follow-up efforts for each of these meetings will include minutes of the meeting for distribution to all attendees and to include as an appendix in the NDVR NJ HMP.

6. **Work Plan and General Schedule:** Based on comments from the NDVR and / or the Planning Committee at the Project Kick-off Meeting, the Consultant Team will prepare a final Work Plan and General Schedule.
7. **Public Participation Opportunity #1:** Per the note included with Task A.4.c), the specific nature of the public participation program will be worked out as part of the initial efforts on the project. Regardless of the format of that effort, this is a point in the process where it will be beneficial to focus public attention on the proposed planning process, desired results and opportunities for public participation. It is assumed that this initial step can be accomplished through press releases and web site postings and that a formal meeting will not be required.

Note: This is the first of at least four (4) Public Participation Opportunities identified in this Work Plan. As noted above, these are primarily useful at this point for cost estimating purposes and are subject to change based on the results of Task A.4.c).

Deliverables and Milestones – Task A

- Draft Work Plan and General Schedule
- Memorandum re: Additional Resource/Reference Materials
- Memorandum re: the NDVR's Planning and Organization Recommendations
- Project Kick-off Meeting / Progress & Coordination Meeting #1
- Public Participation Opportunity #1
- Work Plan and General Schedule

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

TASK B - IDENTIFYING HAZARDS AND ESTIMATING LOSSES

The following task descriptions are based in part on FEMA Publications 386-2, 386-6 and 386-7, *Understanding Your Risks: Identifying Hazards and Estimating Losses, Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning*, and *Integrating Manmade Hazards into Hazard Mitigation Planning*, respectively.

Note: During this project, concurrent studies and planning efforts may yield additional data and results that could be utilized in this plan. To avoid duplication of efforts to the extent possible, the Consultant Team will confer with the NDVR at the start of the work under Task B and periodically through the work effort to determine whether to proceed with the efforts described below or to incorporate results from others that will be available in a timely manner. However, once an authorized task is underway or completed, the Consultant Team will not be able to incorporate data or information from others without the possibility of incurring additional costs. The Consultant Team will indicate any such situations at the time in advance of starting any such work effort.

1. **Identify Hazards:** The hazards to be included in this planning effort include natural hazards under the following general categories:
 - Weather-related Hazards: hurricanes, flooding, tornadoes, high winds, hail, ice storms, landslides, wildfires, and drought.
 - Seismic-related Hazards: surface faulting, ground shaking, liquefaction, and landslides; and the following man-made hazards (consistent with FEMA 386-7):
 - Technological Hazards: dam failures, and hazardous materials releases.

As an on-going effort throughout the project, the Consultant Team will also compile a list of additional natural or man-made hazards that could be considered in future updates of the Plan based on the Consultant Team's observations, input from the Planning Committee and comments received from interested parties.

2. **Profile Hazards:** The natural hazards listed in Task B.1 will be profiled by the Consultant Team using available data to determine the historical occurrences and the extent/magnitude and probability of occurrence for the study area. Dam failure will utilize any existing inundation maps or studies to identify areas potentially at risk. Hazardous materials releases will be profiled for discrete sources of releases using the most current available version of the Environmental Protection Agency's Toxic Release Inventory (EPA TRI). Releases along transportation corridors, in the absence of detailed historic data on accident rates for intervals of highways and rail corridors, will be projected using standard offsets from main corridors to enable determinations of the potential affected populations in the following tasks.
3. **Inventory Assets:** the Consultant Team will use existing data sources to create an inventory of assets that are exposed to the hazards identified and profiled in the preceding tasks. The inventory will be organized under the following four (4) categories:
 - publicly owned / operated facilities;
 - publicly owned / operated critical facilities;
 - private sector properties; and
 - private sector buildings with un-reinforced masonry, "soft stories", or tilt-up construction.

Note: It is assumed that this planning effort will focus primarily on publicly owned and operated "critical facilities" (see definition in the next Note). Inventory efforts related to the entire listing of public facilities will be conducted to screen for any additional facilities that should be considered as prime candidates for mitigation actions as part of this plan. The process will include overlays of listed public owned / operated facilities with the hazard profile information from Task B.2. It is assumed that location information for these facilities will be provided by the NDVR.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

Note: "Critical facilities" refers to:

- *critical government and emergency management facilities like police, fire and EMS stations;*
- *utility corridors and facilities;*
- *transportation infrastructure; and*
- *schools, hospitals and locations where sensitive populations reside or congregate.*

The information contained in these lists will be verified by field visit and supplemented by observations as deemed appropriate by the Consultant Team to conduct loss estimates. The Consultant Team will also prepare a questionnaire for distribution by the NDVR to critical facility managers to supplement existing data and the Consultant Team observations.

Note: Inventory for all "private sector" structures will be compiled from existing available data to be provided by the NDVR, the Planning Committee or as available from public documents and websites (such as the US Census, the National Flood Insurance Program repetitive loss property listings, etc.). However, it is assumed that specific building locations and attributes for private sector structures will not be available for use during this study.

Note: The Consultant Team will integrate considerations for designated historic properties and cultural resources into the plan, per FEMA 386-6. However, as indicated in the preceding note regarding private sector structures, identification of these properties and resources will also be based on information compiled from existing available data to be provided by the NDVR, the Planning Committee or as available from public documents and websites (such as the local historical society).

4. **Estimate Losses:** the Consultant Team will use the results of Tasks B.2 and B.3 to develop estimates of losses to existing assets for the identified hazards.

Note: Depending on the available data, these estimates may be either qualitative or quantitative. Qualitative estimates will be stated as relative losses anticipated and are usually expressed in terms like high, moderate and low vulnerability or risk. Quantitative estimates can be expressed as the losses expected from a specific event (like a "100-year" flood) or, if sufficient data is available, as annualized monetized losses that would be expected for a given hazard type.

Based on available data, losses for **existing assets** will be estimated and then accumulated for four (4) different components:

- Casualties
- Physical damage to structures
- Damage to contents
- Loss of function or use

Note: For each hazard type, the methodology for estimating losses will be documented as part of the process along with tabulated and mapped results showing the relative vulnerability and/or risk. However, it is assumed that for this portion of the work, the estimates will be developed via GIS and/or tabular techniques.

5. **Progress & Coordination Meeting #2:** The Consultant Team will prepare for and conduct a Progress & Coordination Meeting with the Planning Committee (2nd of 5 meetings) to:
 - Discuss results of the Hazard Identification, Profiling and Loss Estimations;
 - Develop initial Planning Committee priorities based on relative impacts of the various hazards (i.e., Preliminary Goals and Objectives);
 - Review and approve content of potential public participation activities; and
 - Review remaining steps in the Work Plan and General Schedule to set additional meeting dates and revisions as needed.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

6. **Public Participation Opportunity #2:** This is a point in the process where it will be beneficial to focus public attention on the results of the work so far. In this way, we can keep interested parties informed about the direction of the project and also allow for these same partners to provide comments and any additional information that can refine the analyses.

Deliverables and Milestones – Task B

- Hazard Identification
- Hazard Profiles
- Asset Inventory
- Loss Estimation for Identified Assets
- Progress & Coordination Meeting #2
- Public Participation Opportunity #2
- Updates and/or revisions to Work Plan and General Schedule (only as determined necessary)

Note: Mapping and report text for the first four bulleted items will be formatted as sections or subsections to be included in the Draft, Final Draft and Final versions of the Plan (see Task C.10).

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

TASK C - IDENTIFYING MITIGATION ACTIONS AND IMPLEMENTATION STRATEGIES

The following task descriptions are based in part on FEMA Publication 386-3, *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies*.

Note: In all of the following, efforts will be made to associate results with specific local jurisdictions included in the overall planning effort. The plan itself will include an appendix for each community listing the relevant parts of the results of all these tasks.

1. **Develop Mitigation Goals and Objectives:** Based on input from the Planning Committee and interested parties regarding the results of Task B, and in consideration of work already accomplished in the *State of New Jersey Hazard Mitigation Plan*, the Consultant Team will prepare a draft listing of goals and objectives. This list will be provided to the Planning Committee members for review prior to Task C.4.
2. **Capability Assessment:** Using the results of the Capability Assessment Survey (see Task A.4.b)), the Consultant Team will prepare a draft NDVR Capability Assessment focusing on the NDVR and the agencies, organizations, and municipalities comprising the Planning Committee. The assessment will also include a summary of NJOEM capabilities as they relate to supporting mitigation activities by the NDVR. However, the primary focus will be on local capabilities in terms of an:
 - Inventory of the NDVR mission, programs, policies and existing plans as they relate to hazard mitigation and reducing risk; and
 - The capacity of the NDVR to carry out these efforts in terms of human, technological and financial resources.
3. **Identify and Prioritize Mitigation Actions:** Based on conceptual goals and objectives expressed by the Planning Committee and the County, the Consultant Team will prepare and provide the following to the Planning Committee members prior to Task C.4:
 - Preliminary Mitigation Actions List; and
 - Proposed Evaluation Criteria for Prioritizing Mitigation Actions

Note: Mitigation actions will generally be categorized per FEMA 386-3 as follows:

- *Prevention;*
- *Property Protection;*
- *Public Education and Awareness;*
- *Natural Resource Protection;*
- *Emergency Services; and*
- *Structural Projects.*

Note: Evaluation criteria will be based on the STAPLE(E) criteria per FEMA 386-3 including the following seven (7) categories:

- *Social*
- *Technical*
- *Administrative*
- *Political*
- *Legal*
- *Economic*
- *Environmental*

These general categories will be refined to include consistency with existing plans and land development ordinances.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

4. **Progress & Coordination Meeting #3:** The Consultant Team will prepare for and conduct a Progress & Coordination Meeting with the Planning Committee (3rd of 5 meetings) to:
 - Review and approve Goals and Objectives List;
 - Discuss the Consultant Team Preliminary Mitigation Actions List and Evaluation Criteria;
 - Determine Draft version of Planning Committee Prioritized Mitigation Actions List; and
 - Review and approve content of potential public participation activities.
5. **Public Participation Opportunity #3:** At this juncture, public review of the Planning Committee's Goals and Objectives and Draft Prioritized Mitigation Actions List is recommended for the same reasons as previous public participation opportunity milestones; to ensure continued support from interested parties and to make sure the Planning Committee's priorities are reflective of the community.
6. **Prepare an Implementation Strategy:** Based on input from the Planning Committee and interested parties regarding the Draft Mitigation Actions List, the Consultant Team will prepare and provide a Preliminary Implementation Strategy to the Planning Committee members prior to Task C.7. The Preliminary Implementation Strategy will reflect priorities for mitigation actions previously discussed but also include information regarding responsible agencies and parties for carrying out the implementation of the NDVR NJ HMP, prerequisites for the work to begin, generalized cost estimates and implementation timetables (where appropriate), funding opportunities, and proposed measures for gauging success.
7. **Progress & Coordination Meeting #4:** The Consultant Team will prepare for and conduct a Progress & Coordination Meeting with the Planning Committee (4th of 5 meetings) to:
 - Discuss the Consultant Team Preliminary Implementation Strategy; and
 - Determine Draft version of Planning Committee Implementation Strategy.
8. **Public Participation Opportunity #4:** As a final formal opportunity, public review of the Planning Committee's Draft Implementation Strategy should be conducted at this point in time.

Note: After this point, arrangements for the public to review draft documentation for the NDVR NJ HMP can be made through the NDVR website and/or by placing record copies in public libraries and other accessible locations. Also, the meeting(s) where elected officials will consider and adopt the plan are open meetings and it is assumed that members of the public will have additional opportunities to voice support or concern at those meetings.

9. **Document the Mitigation Planning Process:** the Consultant Team will prepare documentation for review by NDVR and designated members of the Planning Committee as follows:
 - a) Planning Committee Draft - Northern Delaware Valley Regional Hazard Mitigation Plan – This initial version of the NDVR NJ HMP will be a compilation of previous documents produced and reviewed as deliverables under Task A and B along with the Goals, Objectives, Mitigation Actions and Implementation Strategy prepared under Task C. This will also incorporate all additional text necessary to meet DMA 2000 local mitigation plan requirements as administered by NJOEM and FEMA Region II. This document will need to be reviewed by the NDVR and/or the Planning Committee and any necessary revisions made prior to Task C.10.b.

The main sections for the document are assumed to include:

- Plan Adoption
- Planning Process
- Capability Assessment
- Hazards
- Hazard Profiles
- Vulnerability Assessments – Asset Inventories

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

- Loss Estimates – Existing Assets
- Loss Estimates – Future Development Trends
- Mitigation Goals and Objectives
- Mitigation Actions
- Implementation Strategy
- Plan Maintenance

Note: It is assumed that comments from all NDVR reviewers for all NDVR NJ HMP documents will be compiled before transmittal to the Consultant Team.

- b) NJOEM / FEMA Draft – Northern Delaware Valley Regional Hazard Mitigation Plan – Based on NDVR review comments, this version of the plan will be prepared for formal submittal to NJOEM and FEMA Region 2.

Note: If there are substantial comments from the NDVR and/or the Planning Committee that need to be addressed before the plan can be submittal to NJOEM and FEMA, a “pre-NJOEM/FEMA Draft” document will be prepared by the Consultant Team for the NDVR review to confirm that all issues have been adequately addressed.

- c) Final Draft – Northern Delaware Valley Regional Hazard Mitigation Plan – NJOEM and FEMA Region II comments will be reviewed with NDVR to determine how to respond. The Consultant Team will support the NDVR efforts to negotiate any areas of contention or disagreement between the NDVR and NJOEM and/or FEMA Region II staff regarding the review comments. Once agreement is reached for how to proceed, the Consultant Team will produce the Final Draft NDVR NJ HMP for final review by the NDVR. It is assumed that part of this process may involve resubmittal of sections or small passages of text to NJOEM and/or FEMA (after review by the NDVR) to confirm that all comments have been adequately addressed.
- d) Final Northern Delaware Valley Regional Hazard Mitigation Plan – the Consultant Team will prepare the final edition of the plan for adoption by all involved jurisdictions and approval by NJOEM and FEMA Region II.

Deliverables and Milestones – Task C

- Mitigation Goals and Objectives
- Capability Assessment
- Mitigation Actions List and Evaluation Criteria
- Implementation Strategy
- Progress & Coordination Meetings #3 and #4
- Public Participation Opportunities #3 and #4
- Planning Committee Draft The NDVR Multi-Jurisdictional Hazard Mitigation Plan
- NJOEM / FEMA Draft Northern Delaware Valley Regional Hazard Mitigation Plan
- Final Draft Northern Delaware Valley Regional Hazard Mitigation Plan
- Final Northern Delaware Valley Regional Hazard Mitigation Plan

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
JLWA Proposal Work Plan
January 26, 2010**

TASK D - IMPLEMENTING THE HAZARD MITIGATION PLAN

The following task descriptions are based in part on FEMA Publications 386-4, *Bringing the Plan to Life: Implementing the Hazard Mitigation Plan*.

1. **Recommendations:** the Consultant Team will prepare recommendations for how to proceed with implementation of the NDVR NJ HMP including the following specific areas:
 - a) Adopt the Mitigation Plan. The Consultant Team will review the NDVR's Draft Resolution and make any recommendations as necessary to complete the document.
 - b) Implement the Plan Recommendations. The Consultant Team will provide the final version of the NDVR NJ HMP Implementation Strategy in a spreadsheet format (MS Excel) that will allow the NDVR to segregate actions according to responsible parties but also lend itself to the development of detailed implementation timelines and work schedules by the responsible parties.
 - c) Evaluate Your Planning Results: The Consultant Team will adapt worksheets from FEMA 386-4 for use by The NDVR and the Planning Committee in the future for monitoring and evaluating the NDVR NJ HMP after adoption and approval by NJOEM and FEMA.
2. **Project Close-out Meeting:** The Consultant Team will prepare for and conduct a final Progress & Coordination Meeting with the Planning Committee (5th of 5 meetings) to:
 - Discuss the Consultant Team Recommendations regarding Implementation for the NDVR NJ HMP; and
 - Hand-off of all remaining deliverables including digital files for all documents produced under this contract.

Deliverables and Milestones – Task D

- Recommendations regarding NDVR NJ HMP Implementation Strategy
- Digital Deliverables
- Project Close-out Meeting / Progress & Coordination Meeting #5

TASK E - PREPARING FEMA DOCUMENTATION

In addition to the previously mentioned tasks, the Consultant Team will prepare all required documentation to meet FEMA requirements associated with this planning activity, to include completion of quarterly reports up until the point of project submission (according to the timelines as outlined by the Agency and as agreed to by The NDVR) and preparation of letters, etc., to accompany submission packets and responses related to the plan when ready for review and approval by FEMA.

Deliverables and Milestones – Task E

- Quarterly reports during the term of the project
- Completed submission / transmittal packet cover letters, etc., to accompany plan materials to FEMA

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Data and Information "wish list"
January 26, 2010**

The following is a list of data and information that would be helpful during the development of the Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan. It is important to note that James Lee Witt Associates assumes that much of this data or information either does not exist or is not available. However, anything that can be located and provided to us will assist in the process. Highlighted items in particular would be helpful in the process of understanding the issues related to each community. Conversely, this list should not be considered as exhaustive; any data or information that are of a similar nature or focus as the examples shown below would likely be of interest.

A. Data regarding the community

1. Floodplain mapping and / or studies including Digital Flood Insurance Rate Maps (DFIRMs) if available, inundation maps from past hazard events
2. Any existing lists of self- or state- identified critical facilities including HSIP (Homeland Security Infrastructure Protection) lists that were developed over the past few year
3. Digital base maps with political boundaries (including special districts like schools, utilities, etc.), water features, roads (by use classification and ownership), topography, soils, physical geography, etc.
4. Studies, etc. (from organizations such as chamber of commerce, regional and/or local economic development authorities or councils of governments) that provide insight into development trends / patterns / rates (this could also include permit data from building departments in the various jurisdictions)

B. Data regarding public infrastructure

1. Insurance records (private, self-insured, State compilations, etc.) and/or any other records re: damages sustained from past hazard events including date, source of damages (i.e., hazard type), description and amount of damages to facilities, contents and length of time the facility was out of service
2. Any past mitigation projects completed or currently contemplated for facilities (including any related engineering studies)
3. Utility line locations, size / capacity, and type (above and below ground including party responsible for maintenance)
4. Sewer and water systems (including pump stations and any supporting infrastructure)
5. Flood management and pumping systems

C. Data regarding individual structures (public and private ownership)

1. Insurance records (private, self-insured, State compilations, etc.) and/or any other records re: damages sustained from past hazard events including date, source of damages (i.e., hazard type), description and amount of damages to structures, contents and length of time the structure was out of service
2. Any past mitigation projects completed or currently contemplated for structures (including any related engineering studies)
3. Street address
4. Exact location (latitude/longitude and/or distinct planimetric feature in GIS)
5. Ownership
6. Age / date of construction

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Data and Information “wish list”
January 26, 2010**

7. Construction type (i.e., wood frame, un-reinforced masonry, etc.)
8. Construction details (i.e., hazard specific information regarding flood proofing features, wind rating of windows)
9. First floor elevation
10. Number of floors
11. Square footage (total and floor by floor if available)
12. Assessed value
13. Market value
14. Replacement value
15. Use, e.g., in general land use categories such as “office / commercial”, “single-family residential”, etc. but also designating facilities that would be considered critical facilities (which may include facilities included in A.4 above) such as police stations, fire stations, EMS facilities, hospitals, communications towers, etc.)
16. Occupancy (e.g., rated capacity per Fire Marshall for public and commercial buildings, etc.)
17. Contents in terms of what, where and value (obvious things that would be good to know is the location of electrical equipment relative to flood elevations for the presence of hazardous materials, etc.)
18. Estimates of annual operating budgets of public operations / facilities
19. Current status (i.e., occupied, unoccupied, inhabitable, etc.)

D. Other Plans and Studies

1. Emergency Operations Plans, Continuity of Operations, Business Continuity Plans, Evacuation Plans etc.
2. Regional, County and/or Municipal Comprehensive Land Use and/or Zoning Plans and/or Maps

E. Miscellaneous information

1. Locations of facilities (and known transportation routes) that store or handle hazardous materials (some of which may show up as part of content listings for existing structures above per B.15).
2. Any demographic surveys or studies that would provide more current information about residents and/or property values than the 2000 US Census.

#	Question	Potential Responses				
1	Today's Date					
2	Respondent's information					
	Name					
	Position or Title					
	Agency					
	Jurisdiction					
	Email Address					
	Phone Number					
3	How many of your staff have training or expertise directly relevant to hazard mitigation? (Includes working with FEMA grants or generally working to reduce exposure to hazards, but NOT emergency response.)					
4	How many staff are devoted to operating, updating, and maintaining your GIS?					
5	What hazard-mitigation purposes, specifically, is GIS data used for?					
6	Please indicate your familiarity with the following FEMA mitigation funding sources:					
	PA					
	Stafford Act					
	PDM					
	FMA					
	SRL					
	RFC					
7	Please indicate whether your municipality has received funding from the following FEMA mitigation funding sources:					
	PA					
	Stafford Act					
	PDM					
	FMA					
	SRL					
	RFC					
8	How much total federal, state, and local funding was spent in your municipality on hazard mitigation activities from 1998-2009					
9	Does someone in your office have experience with hazard mitigation grants					
	Grant writing					
	Grant administration					
10	Please indicate your municipality's accessibility to the following potential funding sources for hazard mitigation projects					
	General Fund	1	2	3	4	5
	Utility fees	1	2	3	4	5
	CDBG	1	2	3	4	5
	CIP	1	2	3	4	5
	HMGP	1	2	3	4	5
	Local open-space	1	2	3	4	5
	Local Match	1	2	3	4	5
	Improvement Authority	1	2	3	4	5
	Other	1	2	3	4	5
11	Does your municipality have an active hazard mitigation program	Yes	No			
12	Please list any completed or current mitigation projects in your municipality					
	Program or project					
	Description					
	Implementing Agency					
15	Please list other offices/agencies within your municipality with your office works directly in order to plan and/or implement hazard mitigation					
	Department of Environmental Protection					
	Planning Department					
	Department of Public Works					
	Building Department					
	Office of Emergency Management					
	Other					

#	Question	Potential Responses			
17	Does your municipality have a hazard mitigation or flood mitigation plan?	Yes	No	Don't Know	
18	In regards to your capital improvement program				
	Are hazard mitigation projects generally considered as part of the CIP process?	Yes	No	Don't Know	
	Are CIP projects systematically assess for hazard mitigation implications?	Yes	No	Don't Know	
	How often is the CIP updated				
	Please describe				
19	Does your municipality have a Flood Plan Management program	Yes	No	Don't Know	
20	What department or agency administers floodplain management in your municipality?				
	Department of Environmental Protection				
	Planning Department				
	Department of Public Works				
	Building Department				
	Office of Emergency Management				
	Other				
21	Does your municipality have Certified Floodplain Manager (CFM)?				
22	Does your municipality participate in the National Flood Insurance Program (NFIP)				
	Who is the community's designated Floodplain Administrator				
	How is the Floodplain Administrator involved in the Plan				
23	Does your municipality use funds through Green Acres or Blue Acres programs	Yes	No	Don't Know	
24	What department or agency administers Blue/Green Acres funds in your municipality?				
	Department of Environmental Protection				
	Planning Department				
	Department of Public Works				
	Building Department				
	Office of Emergency Management				
	Other				
25	Does your municipality have a master plan	Yes	No	Don't Know	
	When was the master plan last updated				
26	Does your municipality have a zoning ordinance	Yes	No	Don't Know	
	When was the zoning ordinance last updated				
27	Does your municipality have a subdivision ordinance				
	When was the subdivision ordinance last updated				
28	Does your municipality have public education programs related to hazard mitigation				
	of a general nature related to flood or other hazards	Yes	No	Don't Know	
	that provide site-specific hazard information to property owners or perspective property owners	Yes	No	Don't Know	
29	Do you have any other comments, questions, or concerns regarding this survey or hazard mitigation?				

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan SharePoint Site Instructions

To allow for transfers of large documents without using e-mail, JLWA uses a shared website and the following procedures.

For the NDRR PDM Plan, we will be utilizing a SharePoint site that is only accessible to JLWA staff and any agency members working on the project. The website is:

<http://sharepoint.jlwitt.com/NDVR>

The following outlines the procedures for using the SharePoint site to download or upload a document:

1. Sign in with the following:

user name = NDVRuser
password = jlwandr3
2. If you need to download a particular document, you must first select the folder where the document is located (this will be identified by the JLWA Project Manager at the time).
3. After finding the document within the appropriate folder, LEFT click on the document title and download it to your computer.
4. If you need to upload a document, go to the appropriate folder (again, this will be identified by the JLWA Project Manager at the time).
5. Select "Upload Document" which is the second option along the blue ribbon on the top of the page. Follow the instructions to upload your document.

Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan

Participating County Kickoff Meeting –
January 26, 2010

prepared for:

Sussex County

Office of Emergency Management

by



NDRR All-Hazards Pre-Disaster Mitigation Plan

Agenda

- Introductions
- Hazard Mitigation Planning Overview
- General Schedule
- Work-in-Progress
- Next Steps
- Force Account / In-Kind Services
- Next Meeting / Action Items

NDRR All-Hazards Pre-Disaster Mitigation Plan

Introductions

- NDRR Steering Committee
- Sussex County Office of Emergency Management
- Sussex County Hazard Mitigation Planning Working Group
- Participating LEPC Members
- Special Districts and Organizations
- James Lee Witt Associates

NDRR All-Hazards Pre-Disaster Mitigation Plan

Introductions

- Name, Position, Organization
- Previous Experience in Hazard Mitigation Planning or Implementation?

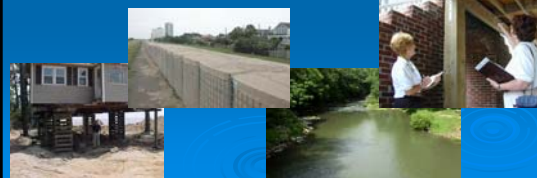
NDRR All-Hazards Pre-Disaster Mitigation Plan

Hazard Mitigation Planning Overview

NDRR All-Hazards Pre-Disaster Mitigation Plan


What is “Hazard Mitigation”?

Any measures undertaken to reduce risks posed by natural and/or manmade hazards on a place and its population.





NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?



Hazard mitigation measures can include **projects that limit the extent of hazards** like levees, floodwalls, building safe rooms...

NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?




... **projects that move or protect assets** like acquisition, elevation, or retrofit of buildings...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?

... **regulatory practices** like enacting or enforcing building codes, permits, or land use policies...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?

... **training and educational programs** for communities and local agencies...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is a “Hazard Mitigation Plan”?

- **Hazard Mitigation Plan:**
A plan to reduce a community’s risk and exposure to disasters

... which is different from an ...

- **Emergency Operations Plan (EOP):**
A plan to guide a community’s response to an emergency or disaster

NDRR All-Hazards Pre-Disaster Mitigation Plan

What is a “Hazard Mitigation Plan”?

- A Hazard Mitigation Plan is typically written before hazard events occur (**pre-disaster**)
- Hazard mitigation projects can be implemented either before or after a disaster (**pre-disaster** or **post-disaster**).

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

This graphic shows the process recommended by FEMA.

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

organize resources

From the start, communities should focus the resources needed for a successful mitigation planning process. Essential steps include identifying and organizing interested members of the community as well as the technical expertise required during the planning process.

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

assess risks

Next, communities need to identify the characteristics and potential consequences of natural hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be for important community assets.

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

develop a mitigation plan

Armed with an understanding of the risks posed by natural hazards, communities need to determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a natural hazard mitigation plan and strategy for implementation.

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

implement the plan and monitor progress

Communities can bring the plan to life in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operation of the local government. To ensure the success of an on-going program, it is critical that the plan remains effective. Thus, it is important to conduct periodic evaluations and make revisions as needed.

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

It all boils down to **two basic questions**:

1. What hazards present the greatest risk to the County and its citizens?
2. What are the most effective ways to reduce those risks?

NDRR All-Hazards Pre-Disaster Mitigation Plan

Project Types Overview

Potential Mitigation Projects

“Soft” mitigation projects include mitigation activities such as:

- building code enforcement
- land development regulations
- public education
- studies and plans
- etc.



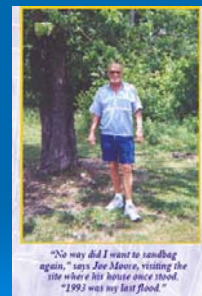
Potential Mitigation Projects

“Hard” mitigation projects or “property protection” construction activities:

- acquisition / elevation / mitigation reconstruction of structures
- retrofits for high wind loads such as installing hurricane shutters
- improving drainage
- etc.

Acquisition

- Most cost-effective mitigation measure.
- Permanently removes vulnerable property from the floodplain.
- The structure is demolished or relocated and the land is dedicated as open space in perpetuity.
- Requires willing sellers and communities.



Taken from Missouri Beyond Program 2002

Elevation

- Raising a structure above the Base Flood Elevation.
- Building size, structural integrity, and type of foundation must be considered.
- There are different types of elevation which can be used depending on the structure.



Top Picture: A house in Miami in the process of being elevated.
Bottom Picture: That same house once completed.
Taken from FEMA, Above the Flood, 2000

Mitigation Reconstruction

- Pilot program funded under Disaster Declarations 1603 and 1607 (Hurricanes Katrina and Rita)
- If acquisition and elevation are not feasible then a structure may be demolished and reconstructed at the same location meeting current construction codes and standards.

Hardening or Retrofitting of Critical Facilities

- Potential Projects for public buildings, hospitals and health care facilities, utilities, police stations, fire stations, emergency operations center, jails and detention centers, and schools:
 - Install shutters or impact resistant glass on windows
 - Strengthen the doors.
 - Install hurricane straps and clips to strengthen roof.
 - Bolt walls to foundation.
 - Relocate utility lines underground.
 - Elevate the heating, ventilating and cooling (HVAC) equipment, such as furnace and hot water heater.

Hardening or Retrofitting of Critical Facilities

- Install shutters or impact resistant glass on windows



Accordion Shutters



Roll-Down Shutters



Colonial Shutters



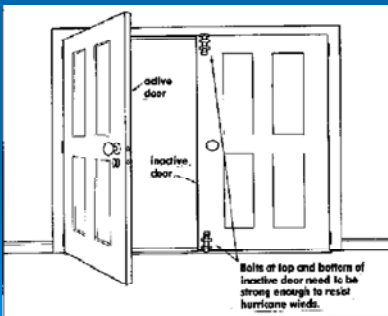
Impact Resistant Glass



Corrugated Metal Panel

Hardening or Retrofitting of Critical Facilities

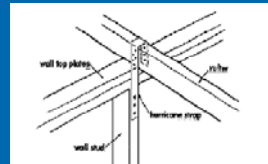
- Strengthen the doors.



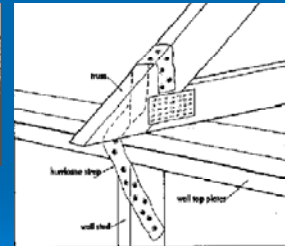
From Against the Wind

Hardening or Retrofitting of Critical Facilities

- Install hurricane straps and clips to strengthen roof.



From Against the Wind



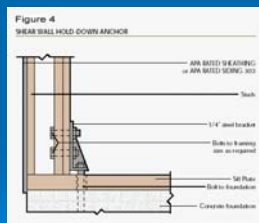
From Against the Wind



From The Advocate

Hardening or Retrofitting of Critical Facilities

- Bolt walls to foundation.



From www.townparkconstruction.com

Hardening or Retrofitting of Critical Facilities

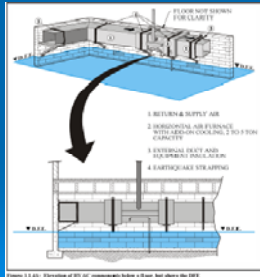
- Relocate utility lines underground.



Fallen utility lines after Wilma. From www.galtmile.com

Hardening or Retrofitting of Critical Facilities

- Elevate the heating, ventilating and cooling (HVAC) equipment, such as furnace and hot water heater.



From FEMA, *Protecting Building Utilities*

Hardening or Retrofitting of Critical Facilities

- Potential projects for pump stations, water control facilities, water treatment and delivery systems, power generation facilities, sewage collection and treatment facilities:
 - Install backflow valves.
 - Elevate the generators and pumps.
 - Anchor fuel tanks.
 - Eliminate infiltration problems with underground utility systems.

Drainage Improvements

- Creating detention/retention ponds and reservoirs.
- Building floodwalls and diversions.
- Constructing storm sewers and increasing culvert capacity.
- Maintenance is not an eligible project.



Detention Pond in North Carolina



A culvert

Wet Floodproofing

- Modifying uninhabited portions of the structure to allow floodwaters to enter without causing significant damage.
- Materials must be water resistant.
- Not practical for most slab-on-grade structures with living space near ground level.
- Does not reduce damage from high velocity floods.
- Only appropriate in limited situations.



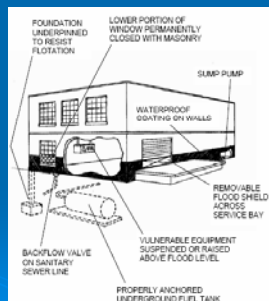
Elevated Appliances from www.louisianafloods.org



From www.louisianafloods.org

Dry Floodproofing

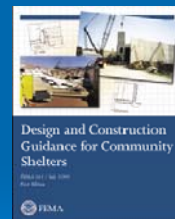
- Making the structure watertight below the level that needs flood protection.
- Requires sealing the walls and providing waterproof closures for any openings such as doors.
- Effective for low duration flooding with depths under 3 feet.
- Not effective for high velocity flooding.



From FEMA, *Protecting Your Business from Flooding*

Community Shelters

- A structure built to withstand extreme winds and flying debris from tornadoes, hurricanes, and other storms that is accessible to the public.
- Guidelines can be found in FEMA 361.
- The shelter cannot be used for anything else.



Next Steps

- Hazard Profiling
- Asset Inventories – Critical Facilities
- Capability Assessment Survey
- Loss Estimates

NDRR All-Hazards Pre-Disaster Mitigation Plan

Force Account / In-Kind Services Documentation

Northern Delaware River Region, 10 All-Hazards Pre-Disaster Mitigation Plan - Force Account & In-Kind Services Tracking Sheet

Grant Number: _____

Name: _____

County: _____

Municipality: _____

Reporting Period: January 2010

Labor	M							M							M							Total	Rate	Subtotal Labor Cost							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21				22	23	24	25	26	27	28
Description																															
Project Coordination																															
Data Collection																															
County Working Group Meeting(s)																															
Community Meeting(s)																															
Document Review																															
Other																															
Other																															
Hours per Day	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$0.00	\$0.00	

Expenses (attach receipts)

Description	Cost
_____	\$0.00
_____	\$0.00
_____	\$0.00
Subtotal Expenses	\$0.00

Summary

Subtotal Labor Cost	\$0.00
Subtotal Expenses	\$0.00
Total Labor Cost and Expenses	\$0.00

Next Meeting(s)

- NDRR Steering Committee Meetings
- Kickoff Meetings for Participating Counties and Municipalities

NDRR All-Hazards Pre-Disaster Mitigation Plan

Comments and Questions

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Monthly Progress Report Format
January 26, 2010**

The following summarizes progress by James Lee Witt Associates for the development of the Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan for the period of [month(s)], [year]:

Work Accomplished during this period:

[JLWA to insert bullet list of work accomplished per the Scope of Work description including estimated percent complete for insertion in Invoice column marked "Percent Complete this Invoice"]

Problems encountered during this period (and proposed resolution):

[JLWA to insert summary description of any unanticipated problems encountered during this period including implications for project completion and proposed methods to resolve problems.]

Note: Any problems of this kind will be immediately report to Sussex County OEM at the time they occur and no resolutions that have implications for budgets or time schedule will be undertaken without written authorization.]

Work that is anticipated to be completed during the next reporting period, [month(s)], [year]:

[JLWA to insert bulleted list of work tasks to be undertaken and/or completed during the next month per the SOW]

**NDRR, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Invoice Format**

January 26 2010

This invoice covers work completed by James Lee Witt Associates for the period [month, year].

Task Description	Contract Amount	Previous Percent Complete	Percent Complete this Invoice	Percent Complete to date	Amount Complete to date
A Planning and Organization	\$39,479	0%	0%	0%	\$0
B Identifying Hazards & Estimating Losses	\$132,330	0%	0%	0%	\$0
C Mitigation Actions & Implementation Strategies	\$182,121	0%	0%	0%	\$0
D Implementing the Hazard Mitigation Plan	\$14,174	0%	0%	0%	\$0
E FEMA Documentation Expenses	\$7,941 \$8,955	0%	0%	0%	\$0
Totals	\$385,000	0%	0%	0%	\$0

Note: Values to be inserted in this column will be supported by descriptions provided in monthly progress reports.

Total Amount Complete to Date	\$0
less previous invoices	\$0
Total Due this Invoice	\$0

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Sussex County Working Group Meeting – Agenda
February 1, 2010**

1. Introductions

- a. Northern Delaware River Region (NDRR) or Northern Delaware Valley Region (NDVR)
- b. Contact information

2. Hazard Mitigation Planning Overview

- a. Power Point

3. Work-in-Progress/Next Steps

- a. Public Participation
- b. Data Requests (“wish lists”)
- c. Hazard Identification

4. Force Account/In-Kind Services

- a. Skip Danielson

5. Action Items

- a. JLWA to supply Force Account Forms
- b. “Wish list” intent / content / distribution to counties and communities (via initial briefings)
- c. Capability assessment intent / content / distribution to counties and communities (via website)
- d. Data transfers – SharePoint website(s)

SIGN IN SHEET

SUBJECT: LEPC Meeting

PRESENTER: Sussex County OEM

LOCATION: Sussex County Sheriff's Conference Room

DATE: February 1, 2010 **TIME:** 10:00 AM

NAME (PRINT)	MUNICIPALITY/AGENCY
SGT George Arnot	SCSO OEM
Jim Humblin	FRP+M
Robert B. Nicholas III	Spanta-Eastern Purpene Corp.
CAMELIA BUCCARI	MERCK
Kashad Shabaka-Burns	ATCA Morris/Sussex Sup. Court
John Jackson	SC Skyway MOB
Amy Conry	SCOEM
SKIP DANIELSON	SCOEM
Donna Basile	(ECHERING CORPORATION) MERCK
JOHN SWANSON	HOPATCONG B/D/COUNTY CHIEFS ASS.
Anthony Kozlowski	Strawton Po.
KATHA ARNOLD	SUSSEX/CTI
WALTER H. CRAMP	SUSSEX COUNTY
James McDonald	Sussex County Health/Hazmat
Raymond Lockwood	Newton Memorial Hospital
Robert Lutz	SHERIFF
ROBERT STEPHEN	RACES
Dan. J. Van	SLPRU
Mark Toback (Rosalie Lammle)	SCIS / Sussex Co Supt
Bob Dunphy	WSUS, WUNT
Herb Yardley	HEALTH
Virgi Rome	SCSO

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Project Overview
February 1, 2010

The Northern Delaware River Region (NDRR), comprised of Hunterdon, Mercer, Sussex and Warren Counties, has initiated a project to develop an all-hazards pre-disaster mitigation plan. The intent of the plan is to identify projects to implement at the county and municipal level that can reduce or eliminate the impacts of natural and selected man-made hazards.

The hazards that will be addressed by the Plan include:

- Hurricanes
- Flooding
- Tornado
- High winds
- Hail
- Ice storms
- Landslides
- Wildfires
- Drought
- Seismic/Geological
- Dam failure
- Hazardous materials release

The NDRR has contracted with James Lee Witt Associates (JLWA) to provide support for this planning process. Over the next several months, JLWA will be working with the counties and their constituent municipalities to develop the Plan.

Attached are four (4) documents that include the following information:

- **Example Hazard Mitigation Project List** – illustrating types of projects that have been included in other hazard mitigation plans in the State of New Jersey. A list like this will be developed for each participating municipality in the Plan.
- **General Schedule** (as of January 26, 2010) – showing a tentative timeline for the major work tasks in the project. Key dates for municipalities include Task A.5 where JLWA will be holding introductory meetings with Local Coordinators and Task C.3 where JLWA will be meeting with individual municipalities to identify and document viable hazard mitigation projects.
- **Data and Information “wish list”** – identifying information, that if available, will help in the development of the Plan
- **Capability Assessment Survey Draft Questions** – including questions that will be asked of each municipality via a web-based survey.

You will be included in future notices and meetings regarding this Plan. However, if you have questions or are able to start providing information to JLWA, please contact:

Pete Dennen
James Lee Witt Associates

(609) 922-5593
pdennen@wittassociate.com

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
1	Acquisition of 23 homes	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	PDM, HMGP, FMA, RFC, SRL	High
2	Elevation of repetitive loss property	Flood	Existing	County Mitigation Plan/Flood Plain Management	Township OEM	1-2 years from plan adoption date	\$350,000	Pre-Disaster Mitigation Program (75%) and local match (open space program) (25%)	High Emergency Services Response affected.
3	Apartment Complex waterproofing electrics	Flood	Existing	NA	Apartment Complex	1 year	\$100,000	Private	Medium
4	Elevate critical facility (hospital)	Flood	Existing	NFIP participation	NFIP coordinator	2 years	\$50,000	FMA, PDM, HMGP	High
5	Relocation of Township EOC	Flood	Existing	Township EOP	Township OEM	1-2 years from plan adoption date	3.4million	HMGP	High
6	Feasibility determination/ project design for drainage for Fire/Police and EOC	Flood	Existing	Capital Improvement Plan	Municipality	1 to 2 years	TBD	PDM	High
7	Engineering/drainage study to assess options for reducing flooding	Flood	NA	NA	Municipal Administrator	1 year	\$150,000	PDM (assuming project feasibility), Capital Improvements	High
8	Repair and retrofit of Main Street Dam	Dam Failure	Existing	Local Mitigation Plan	Unknown Ownership of abandoned water control facility.	2 years from plan adoption date	TBD	TBD	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
9	Propose regionalized coordination of dam releases / Develop Standard Operating Procedures	Dam Failure	NA	NA	County OEM	6 months	Staff Time	Department Budget	High
10	Hardening/Retrofitting and generator for EOC	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
11	Hardening/Retrofitting, burying utility lines for FIRE/EMS	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
12	Harden Memorial School to FEMA 361 Standards	Wind	New	Capital Improvement Plan	School Board	2 years	TBD by Engineer / Architect	HMGP, PDM, Capital Improvements	High
13	Envelope hardening, securing external infrastructure, securing roof ballast and public outreach and education programs of Senior Citizen Complex.	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
14	Shelter enclosure/wind screen to protect critical response equipment at Municipal Marina	Wind	Existing	None	Municipality	6 months	\$100,000	General fund	Medium to High
15	Backup power (generator) and/or utility protective measures for Memorial School	All	New	Hazard Mitigation Plan	Municipal OEM	2 years	\$50,000	HMGP (5% initiative), PDM	High
16	Check valves for sanitation system (non-maintenance-related costs only)	Flood	Existing	Capital Improvement Plan	Municipal Public Works Department (sewer)	2 years from plan adoption date	\$10,000	HMGP, PDM	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
17	Develop "All Hazards" public education and outreach program for hazard mitigation and preparedness	All	NA	Hazard Mitigation Plan	County and Municipal OEM	1 year	Staff Time	Department Budget	High
18	Building Code update	Seismic and wind	New	Building Code Ordinance	Municipal Code Enforcement	3 years	staff time	Department budget	Medium
19	Work with County and Flood Commission to dredge Cranberry Bogs to increase holding capacity	Flood	Existing	NA	County/ Flood Commission	1 year	TBD by Engineer	County/ Flood Commission	High
20	Eliminate sanitary sewer infiltration and manhole rehabilitation near Snuff Mill (non-maintenance costs only)	Flood	Existing	Capital Improvement Plan	Municipal Department of Public Works/ Engineering	1 to 2 years	\$200,000-\$500,000	PDM, USDA Infrastructure Grant	Low
21	Based on jurisdiction determination work with NJDOT to eliminate flooding	Flood	Existing	Storm Water Management	Municipal Department of Public Works	Based on jurisdiction determination	TBD	HMGP, PDM, FMA	High
22	Notification System such as reverse 911 and/or warning sirens	All	NA	Capital Improvement Plan/ Hazard Mitigation Plan	Municipal OEM	1 to 2 years	Dependent upon type of system	HMGP (5% initiative)	High
23	Storm sewer improvements	Flood	Existing	Capital Improvement Plan	Municipal Administrator	1 year	\$200,000	HMGP, PDM, FMA, Capital Improvements	High
24	Evaluation/analysis of Detention Basin Dam	Flood	Existing	Unknown	Township	1 Year	TBD	PDM (assuming project feasibility)	Medium

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
25	Feasibility study for drainage at 9-1-1 switch for eastern seaboard)	Flood	Existing	None	Verizon	1 year	\$100,000	Private, PDM (assuming project feasibility)	Medium
26	Dune stabilization and replenishment	Storm Surge	Existing		Municipal OEM and Engineering Department	2 years	\$500,000	PDM, FMA, local space program funds	Medium
27	Stream bank stabilization to protect mobile home facility	Flood	Existing	Existing	Township	2 years from plan adoption date	\$500,000		High
28	Construction of barrier around Water/Sewage facilities	Flood	Existing	Floodplain Management Plan	Township	1 year	TBD	HMGP, FMA, PDM	High
29	Floodproofing and Harden/Retrofit Shelter Elementary School	Flood, Wind	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
30	Reconstruction of culvert (non-maintenance related costs only)	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
31	Dredging of Smith's Creek from the Municipal Marina	Flood	Existing	Unknown	Township	1 year	TBD	USDA	Medium
32	Construction of berm and tide gate	Flood	New	Unknown	Township	1 year	TBD	HMGP, PDM	High

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Data and Information “wish list”
February 1, 2010**

The following is a list of data and information that would be helpful during the development of the Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan. It is important to note that James Lee Witt Associates assumes that much of this data or information either does not exist or is not available. However, anything that can be located and provided to us will assist in the process. Highlighted items in particular would be helpful in the process of understanding the issues related to each community. Conversely, this list should not be considered as exhaustive; any data or information that are of a similar nature or focus as the examples shown below would likely be of interest.

A. Data regarding the community

1. Floodplain mapping and / or studies including Digital Flood Insurance Rate Maps (DFIRMs) if available, inundation maps from past hazard events
2. Any existing lists of self- or state- identified critical facilities including HSIP (Homeland Security Infrastructure Protection) lists that were developed over the past few year
3. Digital base maps with political boundaries (including special districts like schools, utilities, etc.), water features, roads (by use classification and ownership), topography, soils, physical geography, etc.
4. Studies, etc. (from organizations such as chamber of commerce, regional and/or local economic development authorities or councils of governments) that provide insight into development trends / patterns / rates (this could also include permit data from building departments in the various jurisdictions)

B. Data regarding public infrastructure

1. Insurance records (private, self-insured, State compilations, etc.) and/or any other records re: damages sustained from past hazard events including date, source of damages (i.e., hazard type), description and amount of damages to facilities, contents and length of time the facility was out of service
2. Any past mitigation projects completed or currently contemplated for facilities (including any related engineering studies)
3. Utility line locations, size / capacity, and type (above and below ground including party responsible for maintenance)
4. Sewer and water systems (including pump stations and any supporting infrastructure)
5. Flood management and pumping systems

C. Data regarding individual structures (public and private ownership)

1. Insurance records (private, self-insured, State compilations, etc.) and/or any other records re: damages sustained from past hazard events including date, source of damages (i.e., hazard type), description and amount of damages to structures, contents and length of time the structure was out of service
2. Any past mitigation projects completed or currently contemplated for structures (including any related engineering studies)
3. Street address
4. Exact location (latitude/longitude and/or distinct planimetric feature in GIS)
5. Ownership
6. Age / date of construction

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Data and Information “wish list”
February 1, 2010**

7. Construction type (i.e., wood frame, un-reinforced masonry, etc.)
8. Construction details (i.e., hazard specific information regarding flood proofing features, wind rating of windows)
9. First floor elevation
10. Number of floors
11. Square footage (total and floor by floor if available)
12. Assessed value
13. Market value
14. Replacement value
15. Use, e.g., in general land use categories such as “office / commercial”, “single-family residential”, etc. but also designating facilities that would be considered critical facilities (which may include facilities included in A.4 above) such as police stations, fire stations, EMS facilities, hospitals, communications towers, etc.)
16. Occupancy (e.g., rated capacity per Fire Marshall for public and commercial buildings, etc.)
17. Contents in terms of what, where and value (obvious things that would be good to know is the location of electrical equipment relative to flood elevations for the presence of hazardous materials, etc.)
18. Estimates of annual operating budgets of public operations / facilities
19. Current status (i.e., occupied, unoccupied, inhabitable, etc.)

D. Other Plans and Studies

1. Emergency Operations Plans, Continuity of Operations, Business Continuity Plans, Evacuation Plans etc.
2. Regional, County and/or Municipal Comprehensive Land Use and/or Zoning Plans and/or Maps

E. Miscellaneous information

1. Locations of facilities (and known transportation routes) that store or handle hazardous materials (some of which may show up as part of content listings for existing structures above per B.15).
2. Any demographic surveys or studies that would provide more current information about residents and/or property values than the 2000 US Census.

#	Question	Potential Responses				
1	Today's Date					
2	Respondent's information					
	Name					
	Position or Title					
	Agency					
	Jurisdiction					
	Email Address					
	Phone Number					
3	How many of your staff have training or expertise directly relevant to hazard mitigation? (Includes working with FEMA grants or generally working to reduce exposure to hazards, but NOT emergency response.)					
4	How many staff are devoted to operating, updating, and maintaining your GIS?					
5	What hazard-mitigation purposes, specifically, is GIS data used for?					
6	Please indicate your familiarity with the following FEMA mitigation funding sources:					
	PA					
	Stafford Act					
	PDM					
	FMA					
	SRL					
	RFC					
7	Please indicate whether your municipality has received funding from the following FEMA mitigation funding sources:					
	PA					
	Stafford Act					
	PDM					
	FMA					
	SRL					
	RFC					
8	How much total federal, state, and local funding was spent in your municipality on hazard mitigation activities from 1998-2009					
9	Does someone in your office have experience with hazard mitigation grants					
	Grant writing					
	Grant administration					
10	Please indicate your municipality's accessibility to the following potential funding sources for hazard mitigation projects					
	General Fund	1	2	3	4	5
	Utility fees	1	2	3	4	5
	CDBG	1	2	3	4	5
	CIP	1	2	3	4	5
	HMGP	1	2	3	4	5
	Local open-space	1	2	3	4	5
	Local Match	1	2	3	4	5
	Improvement Authority	1	2	3	4	5
	Other	1	2	3	4	5
11	Does your municipality have an active hazard mitigation program	Yes	No			
12	Please list any completed or current mitigation projects in your municipality					
	Program or project					
	Description					
	Implementing Agency					
15	Please list other offices/agencies within your municipality with your office works directly in order to plan and/or implement hazard mitigation					
	Department of Environmental Protection					
	Planning Department					
	Department of Public Works					
	Building Department					
	Office of Emergency Management					
	Other					

#	Question	Potential Responses			
17	Does your municipality have a hazard mitigation or flood mitigation plan?	Yes	No	Don't Know	
18	In regards to your capital improvement program				
	Are hazard mitigation projects generally considered as part of the CIP process?	Yes	No	Don't Know	
	Are CIP projects systematically assess for hazard mitigation implications?	Yes	No	Don't Know	
	How often is the CIP updated				
	Please describe				
19	Does your municipality have a Flood Plan Management program	Yes	No	Don't Know	
20	What department or agency administers floodplain management in your municipality?				
	Department of Environmental Protection				
	Planning Department				
	Department of Public Works				
	Building Department				
	Office of Emergency Management				
	Other				
21	Does your municipality have Certified Floodplain Manager (CFM)?				
22	Does your municipality participate in the National Flood Insurance Program (NFIP)				
	Who is the community's designated Floodplain Administrator				
	How is the Floodplain Administrator involved in the Plan				
23	Does your municipality use funds through Green Acres or Blue Acres programs	Yes	No	Don't Know	
24	What department or agency administers Blue/Green Acres funds in your municipality?				
	Department of Environmental Protection				
	Planning Department				
	Department of Public Works				
	Building Department				
	Office of Emergency Management				
	Other				
25	Does your municipality have a master plan	Yes	No	Don't Know	
	When was the master plan last updated				
26	Does your municipality have a zoning ordinance	Yes	No	Don't Know	
	When was the zoning ordinance last updated				
27	Does your municipality have a subdivision ordinance				
	When was the subdivision ordinance last updated				
28	Does your municipality have public education programs related to hazard mitigation				
	of a general nature related to flood or other hazards	Yes	No	Don't Know	
	that provide site-specific hazard information to property owners or perspective property owners	Yes	No	Don't Know	
29	Do you have any other comments, questions, or concerns regarding this survey or hazard mitigation?				

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan SharePoint Site Instructions

To allow for transfers of large documents without using e-mail, JLWA uses a shared website and the following procedures.

For the NDRR PDM Plan, we will be utilizing a SharePoint site that is only accessible to JLWA staff and any agency members working on the project. The website is:

: <http://sharepoint.jlwitt.com/NDRR>

The following outlines the procedures for using the SharePoint site to download or upload a document:

1. Sign in with the following:

user name = NDRRuser
password = jlwandrr3
2. If you need to download a particular document, you must first select the folder where the document is located (this will be identified by the JLWA Project Manager at the time).
3. After finding the document within the appropriate folder, LEFT click on the document title and download it to your computer.
4. If you need to upload a document, go to the appropriate folder (again, this will be identified by the JLWA Project Manager at the time).
5. Select "Upload Document" which is the second option along the blue ribbon on the top of the page. Follow the instructions to upload your document.

Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan

Participating County Kickoff Meeting -
February 1, 2010

prepared for:

Sussex County

Office of Emergency Management

by



NDRR All-Hazards Pre-Disaster Mitigation Plan

Agenda

- Introductions
- Benefits & Costs of Participation
- Hazard Mitigation Planning Overview
- Municipal Participation
- General Schedule
- Work-in-Progress
- Next Steps
- Force Account / In-Kind Services
- Next Meeting / Action Items

NDRR All-Hazards Pre-Disaster Mitigation Plan

Introductions

- NDRR Steering Committee
- Sussex County Office of Emergency Management
- Sussex County Hazard Mitigation Planning Working Group
- Participating LEPC Members
- Special Districts and Organizations
- James Lee Witt Associates

NDRR All-Hazards Pre-Disaster Mitigation Plan

Introductions

- Name, Position, Organization
- Previous Experience in Hazard Mitigation Planning or Implementation?

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits & Costs of Participation

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits of Participation

- Understanding risks to your communities from natural hazards.
- Identifying and documenting projects to reduce identified risks.
- Describing an implementation strategy for projects including potential funding sources.

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits of Participation

- Every \$1 spent on Mitigation saves \$4 in Recovery*
- From 1955-2005, mitigation measures prevented 220 deaths and 4,700 injuries*
- For every eligible \$1 spent by local communities on FEMA-funded grant projects, the Federal government contributes \$3 to \$9.

* Source: The Multihazard Mitigation Council, "Hazard Mitigation Saves," 2005 an independent review of FEMA mitigation activities

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits of Participation

- Opportunities to improve local insurance ratings = lower flood insurance premiums
- Minimal financial investment:
 - Planning process is 75% paid for by Federal funds
 - Local and County portion will be covered through "force-account" or "in-kind" services

NDRR All-Hazards Pre-Disaster Mitigation Plan

Costs of Not Participating

- The State Hazard Mitigation Plan MUST incorporate all information for all local hazard mitigation plans prior to a mandatory 2011 update. If not incorporated, no communities in the state will be eligible for PA Categories C thru G.
- Annually:
 - Pre-Disaster Mitigation Program (PDM) Funding Not Available
 - Flood Mitigation Assistance (FMA) Program Funding Not Available
 - Severe Repetitive Loss (SRL) & Repetitive Flood Claim (RFC) Program Funding Not Available


NDRR All-Hazards Pre-Disaster Mitigation Plan

Hazard Mitigation Planning Overview

NDRR All-Hazards Pre-Disaster Mitigation Plan

What is "Hazard Mitigation"?

Any measures undertaken to reduce risks posed by natural and/or manmade hazards on a place and its population.



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is "Hazard Mitigation"?

Hazard mitigation measures can include **projects that limit the extent of hazards** like levees, floodwalls, building safe rooms...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?


... **projects that move or protect assets** like acquisition, elevation, or retrofit of buildings...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?

... **regulatory practices** like enacting or enforcing building codes, permits, or land use policies...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?

... **training and educational programs** for communities and local agencies...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is a “Hazard Mitigation Plan”?

- **Hazard Mitigation Plan:**
A plan to reduce a community’s risk and exposure to disasters
- ... which is different from an ...
- **Emergency Operations Plan (EOP):**
A plan to guide a community’s response to an emergency or disaster

NDRR All-Hazards Pre-Disaster Mitigation Plan


What is a “Hazard Mitigation Plan”?

- A Hazard Mitigation Plan is typically written before hazard events occur (**pre-disaster**)
- Hazard mitigation projects can be implemented either before or after a disaster (**pre-disaster** or **post-disaster**).

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

This graphic shows the process recommended by FEMA.




NDRR All-Hazards Pre-Disaster Mitigation Plan



How is the Plan Developed?

organize resources

From the start, communities should focus the resources needed for a successful mitigation planning process. Essential steps include identifying and organizing interested members of the community as well as the technical expertise required during the planning process.




implement the plan and monitor progress

NDRR All-Hazards Pre-Disaster Mitigation Plan


How is the Plan Developed?

organize resources




assess risks

Next, communities need to identify the characteristics and potential consequences of natural hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be for important community assets.




implement the plan and monitor progress



NDRR All-Hazards Pre-Disaster Mitigation Plan


How is the Plan Developed?

organize resources




develop a mitigation plan

Armed with an understanding of the risks posed by natural hazards, communities need to determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a natural hazard mitigation plan and strategy for implementation.




implement the plan and monitor progress




NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

organize resources




assess risks



implement the plan and monitor progress

Communities can bring the plan to life in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operation of the local government. To ensure the success of an on-going program, it is critical that the plan remains effective. Thus, it is important to conduct periodic evaluations and make revisions as needed.



NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

It all boils down to **two basic questions:**

1. What hazards present the greatest risk to the County and its citizens?
2. What are the most effective ways to reduce those risks?

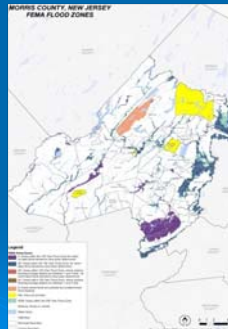
NDRR All-Hazards Pre-Disaster Mitigation Plan

Risk Assessment

Risk Assessment

Risk is assessed in several ways:

- Exposure of assets to hazards that occur in predictable areas - such as **flood** (per FEMA FIRM maps)...



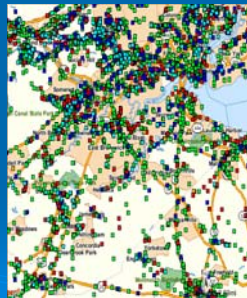
Risk Assessment

...or a manmade hazard like **dam failure**...



Risk Assessment

...or a technological hazard like **hazardous materials releases**.



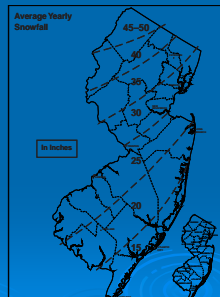
Risk Assessment

- Patterns of past damages - such as repetitive **flood** damage claims under the National Flood Insurance Program (NFIP).



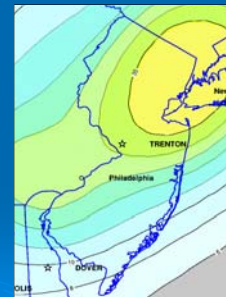
Risk Assessment

- Exposure to events of predictable magnitudes that can cause building failures - such as such as snow loads from **winter storms**...



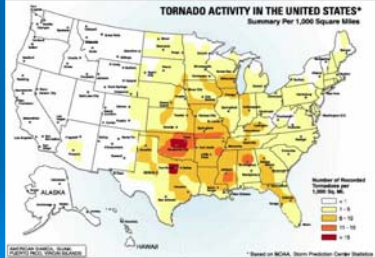
Risk Assessment

...or **earthquakes**...



Risk Assessment

...and **high winds**



NDRR All-Hazards Pre-Disaster Mitigation Plan

Project Types Overview

Potential Mitigation Projects

“Soft” mitigation projects include mitigation activities such as:

- building code enforcement
- land development regulations
- public education
- studies and plans
- etc.



Potential Mitigation Projects

“Hard” mitigation projects or “property protection” construction activities:

- acquisition / elevation / mitigation reconstruction of structures
- retrofits for high wind loads such as installing hurricane shutters
- improving drainage
- etc.

Acquisition

- Most cost-effective mitigation measure.
- Permanently removes vulnerable property from the floodplain.
- The structure is demolished or relocated and the land is dedicated as open space in perpetuity.
- Requires willing sellers and communities.



Taken from Missouri Buyout Program 2002

Elevation

- Raising a structure above the Base Flood Elevation.
- Building size, structural integrity, and type of foundation must be considered.
- There are different types of elevation which can be used depending on the structure.



Top Picture: A house in Miami in the process of being elevated.
Bottom Picture: That same house once completed.
Taken from FEMA, Above 99 Flood, 2000

Mitigation Reconstruction

- Pilot program funded under Disaster Declarations 1603 and 1607 (Hurricanes Katrina and Rita)
- If acquisition and elevation are not feasible then a structure may be demolished and reconstructed at the same location meeting current construction codes and standards.

Hardening or Retrofitting of Critical Facilities

- Potential Projects for public buildings, hospitals and health care facilities, utilities, police stations, fire stations, emergency operations center, jails and detention centers, and schools:
 - Install shutters or impact resistant glass on windows
 - Strengthen the doors.
 - Install hurricane straps and clips to strengthen roof.
 - Bolt walls to foundation.
 - Relocate utility lines underground.
 - Elevate the heating, ventilating and cooling (HVAC) equipment, such as furnace and hot water heater.

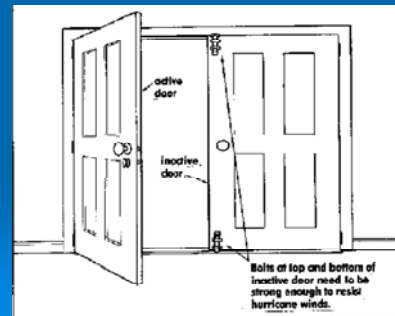
Hardening or Retrofitting of Critical Facilities

- Install shutters or impact resistant glass on windows



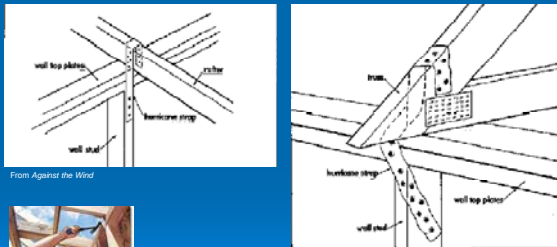
Hardening or Retrofitting of Critical Facilities

- Strengthen the doors.



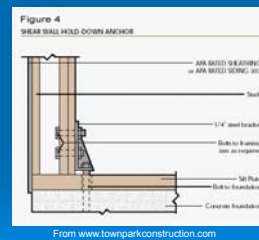
Hardening or Retrofitting of Critical Facilities

- Install hurricane straps and clips to strengthen roof.



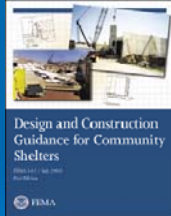
Hardening or Retrofitting of Critical Facilities

- Bolt walls to foundation.



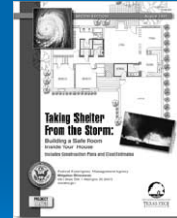
Community Shelters

- A structure built to withstand extreme winds and flying debris from tornadoes, hurricanes, and other storms that is accessible to the public.
- Guidelines can be found in FEMA 361.
- The shelter cannot be used for anything else.



Safe Rooms

- Can be built on-site, or manufactured.
- Can be installed in new or existing homes.
- Must have adequate ventilation.
- Must be securely anchored to the foundation and structurally isolated from the main structure.
- Can be on the first floor, in a basement, or outside.
- Guidelines are outlined in FEMA Publication 320



5% Initiative Mitigation Projects

5% Initiative Projects eligible for funding can include new, unproven mitigation techniques and technologies where benefits are not proven or not clearly measurable:

- Generators; or
- Disaster warning equipment and systems.

NDRR All-Hazards Pre-Disaster Mitigation Plan

Municipal Participation

NDRR All-Hazards Pre-Disaster Mitigation Plan

Municipal Participation

➤ Need assistance with:

- Responding to data and document requests
- Completing on-line Capability Assessment
- Reviewing and editing Critical Facility inventories
- Project identification and prioritization

NDRR All-Hazards Pre-Disaster Mitigation Plan

Municipal Participation

➤ Need assistance with:

- Attendance at regularly scheduled local Mitigation coordination meetings
- A commitment to read plan materials and to participate in the joint planning process
- Plan adoption (at the end of the process)

Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan - Force Account & In-Kind Services Tracking Sheet

Grant Number:

Name:
 County:
 Municipality:
 Reporting Period: **January 2010**

Labor

Description	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	total
	4	5	6	7	8	11	12	13	14	15	18	19	20	21	22	25	26	27	28	29	
Project Coordination																					0.0
Data Collection																					0.0
County Working Group Meeting(s)																					0.0
Community Meeting(s)																					0.0
Document Review																					0.0
Other _____																					0.0
Other _____																					0.0
Other _____																					0.0
																					Total Hours
Hours per Day	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Rate
\$0.00
Subtotal Labor Cost
\$0.00

Expenses (attach receipts)

Description	Cost
<input type="text"/>	\$0.00
<input type="text"/>	\$0.00
<input type="text"/>	\$0.00
Subtotal Expenses	\$0.00

Summary

Subtotal Labor Cost \$0.00
Subtotal Expenses \$0.00
Total Labor Cost and Expenses \$0.00

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Sussex County OEM Coordinators Roll-out Meeting– Agenda
February 17, 2010**

1. Introductions

- a. Northern Delaware River Region (NDRR) or Northern Delaware Valley Region (NDVR)
- b. Contact information

2. Hazard Mitigation Planning Overview

- a. Power Point

3. Work-in-Progress/Next Steps

- a. Public Participation
- b. Data Requests (“wish lists”)
- c. Hazard Identification

4. Force Account/In-Kind Services

- a. Skip Danielson

5. Action Items

- a. JLWA to supply Force Account Forms
- b. “Wish list” intent / content / distribution to counties and communities (via initial briefings)
- c. Capability assessment intent / content / distribution to counties and communities (via website)
- d. Data transfers – SharePoint website(s)

SIGN IN SHEET

SUBJECT: Quarterly Municipal EMC & All Hazards Mitigation Kickoff Meeting

PRESENTER: Sussex County OEM & James Lee Witt Associates

LOCATION: Newton #1 Firehouse

DATE: Feb. 17, 2010 **TIME:** 7:00 p.m.

NAME (PRINT)	MUNICIPALITY/AGENCY
WILLIAM O'KEEFE	GREEN TWP.
RICHARD PUMPHREY	FRANKLIN TWP
SKIP DANIELSON	S. C. OEM
JEFFREY R. NAFFIS	SPARTIA TWP PD. / OEM
WILLIAM HICKENSEN	HARDYSTON TWP.
ROY C. WHERRY	VERNON
DENNIS HARRINGTON	FRANKLIN
ROBERT HAFFNER	HOPATCONG
JOHN SWANSON	HOPATCONG
KEN TEEB	NEWTON
JOHN RICHARDSON SR	FREDON
Ed Wajez	Newton
Ed Wajez	Hampton
Floyd Southard Jr	SUSSEX BOROUGH
JOE KONOWIWSKI	WANTAGE TWP
TIM BONEARDY	WANTAGE
Ed. VANDER BERG	WANTAGE
JAMES M'CRACKEN	FREDON
SCOTT DANIELSON	ANDOVER BORO
JAKE LITZ	SUSSEX BORO
ROBERT REBAVICH	SUSSEX BORO
Wayne Anthony	STANHOPE OEM

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Project Overview

The Northern Delaware River Region (NDRR), comprised of Hunterdon, Mercer, Sussex and Warren Counties, has initiated a project to develop an all-hazards pre-disaster mitigation plan. The intent of the plan is to identify projects to implement at the county and municipal level that can reduce or eliminate the impacts of natural and selected man-made hazards.

The hazards that will be addressed by the Plan include:

- Hurricanes
- Flooding
- Tornado
- High winds
- Hail
- Ice storms
- Landslides
- Wildfires
- Drought
- Seismic/Geological
- Dam failure
- Hazardous materials release

The NDRR has contracted with James Lee Witt Associates (JLWA) to provide support for this planning process. Over the next several months, JLWA will be working with the counties and their constituent municipalities to develop the Plan.

Attached are four (4) documents that include the following information:

- **Example Hazard Mitigation Project List** – illustrating types of projects that have been included in other hazard mitigation plans in the State of New Jersey. A list like this will be developed for each participating municipality in the Plan.
- **General Schedule** (as of January 26, 2010) – showing a tentative timeline for the major work tasks in the project. Key dates for municipalities include Task A.5 where JLWA will be holding introductory meetings with Local Coordinators and Task C.3 where JLWA will be meeting with individual municipalities to identify and document viable hazard mitigation projects.
- **Data and Information “wish list”** – identifying information, that if available, will help in the development of the Plan
- **Capability Assessment Survey Draft Questions** – including questions that will be asked of each municipality via a web-based survey.

You will be included in future notices and meetings regarding this Plan. However, if you have questions or are able to start providing information to JLWA, please contact:

Pete Dennen
James Lee Witt Associates

(609) 922-5593
pdennen@wittassociate.com

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
1	Acquisition of 23 homes	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	PDM, HMGP, FMA, RFC, SRL	High
2	Elevation of repetitive loss property	Flood	Existing	County Mitigation Plan/Flood Plain Management	Township OEM	1-2 years from plan adoption date	\$350,000	Pre-Disaster Mitigation Program (75%) and local match (open space program) (25%)	High Emergency Services Response affected.
3	Apartment Complex waterproofing electrics	Flood	Existing	NA	Apartment Complex	1 year	\$100,000	Private	Medium
4	Elevate critical facility (hospital)	Flood	Existing	NFIP participation	NFIP coordinator	2 years	\$50,000	FMA, PDM, HMGP	High
5	Relocation of Township EOC	Flood	Existing	Township EOP	Township OEM	1-2 years from plan adoption date	3.4million	HMGP	High
6	Feasibility determination/ project design for drainage for Fire/Police and EOC	Flood	Existing	Capital Improvement Plan	Municipality	1 to 2 years	TBD	PDM	High
7	Engineering/drainage study to assess options for reducing flooding	Flood	NA	NA	Municipal Administrator	1 year	\$150,000	PDM (assuming project feasibility), Capital Improvements	High
8	Repair and retrofit of Main Street Dam	Dam Failure	Existing	Local Mitigation Plan	Unknown Ownership of abandoned water control facility.	2 years from plan adoption date	TBD	TBD	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
9	Propose regionalized coordination of dam releases / Develop Standard Operating Procedures	Dam Failure	NA	NA	County OEM	6 months	Staff Time	Department Budget	High
10	Hardening/Retrofitting and generator for EOC	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
11	Hardening/Retrofitting, burying utility lines for FIRE/EMS	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
12	Harden Memorial School to FEMA 361 Standards	Wind	New	Capital Improvement Plan	School Board	2 years	TBD by Engineer / Architect	HMGP, PDM, Capital Improvements	High
13	Envelope hardening, securing external infrastructure, securing roof ballast and public outreach and education programs of Senior Citizen Complex.	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
14	Shelter enclosure/wind screen to protect critical response equipment at Municipal Marina	Wind	Existing	None	Municipality	6 months	\$100,000	General fund	Medium to High
15	Backup power (generator) and/or utility protective measures for Memorial School	All	New	Hazard Mitigation Plan	Municipal OEM	2 years	\$50,000	HMGP (5% initiative), PDM	High
16	Check valves for sanitation system (non-maintenance-related costs only)	Flood	Existing	Capital Improvement Plan	Municipal Public Works Department (sewer)	2 years from plan adoption date	\$10,000	HMGP, PDM	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
17	Develop "All Hazards" public education and outreach program for hazard mitigation and preparedness	All	NA	Hazard Mitigation Plan	County and Municipal OEM	1 year	Staff Time	Department Budget	High
18	Building Code update	Seismic and wind	New	Building Code Ordinance	Municipal Code Enforcement	3 years	staff time	Department budget	Medium
19	Work with County and Flood Commission to dredge Cranberry Bogs to increase holding capacity	Flood	Existing	NA	County/ Flood Commission	1 year	TBD by Engineer	County/ Flood Commission	High
20	Eliminate sanitary sewer infiltration and manhole rehabilitation near Snuff Mill (non-maintenance costs only)	Flood	Existing	Capital Improvement Plan	Municipal Department of Public Works/ Engineering	1 to 2 years	\$200,000-\$500,000	PDM, USDA Infrastructure Grant	Low
21	Based on jurisdiction determination work with NJDOT to eliminate flooding	Flood	Existing	Storm Water Management	Municipal Department of Public Works	Based on jurisdiction determination	TBD	HMGP, PDM, FMA	High
22	Notification System such as reverse 911 and/or warning sirens	All	NA	Capital Improvement Plan/ Hazard Mitigation Plan	Municipal OEM	1 to 2 years	Dependent upon type of system	HMGP (5% initiative)	High
23	Storm sewer improvements	Flood	Existing	Capital Improvement Plan	Municipal Administrator	1 year	\$200,000	HMGP, PDM, FMA, Capital Improvements	High
24	Evaluation/analysis of Detention Basin Dam	Flood	Existing	Unknown	Township	1 Year	TBD	PDM (assuming project feasibility)	Medium

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
25	Feasibility study for drainage at 9-1-1 switch for eastern seaboard)	Flood	Existing	None	Verizon	1 year	\$100,000	Private, PDM (assuming project feasibility)	Medium
26	Dune stabilization and replenishment	Storm Surge	Existing		Municipal OEM and Engineering Department	2 years	\$500,000	PDM, FMA, local space program funds	Medium
27	Stream bank stabilization to protect mobile home facility	Flood	Existing	Existing	Township	2 years from plan adoption date	\$500,000		High
28	Construction of barrier around Water/Sewage facilities	Flood	Existing	Floodplain Management Plan	Township	1 year	TBD	HMGP, FMA, PDM	High
29	Floodproofing and Harden/Retrofit Shelter Elementary School	Flood, Wind	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
30	Reconstruction of culvert (non-maintenance related costs only)	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
31	Dredging of Smith's Creek from the Municipal Marina	Flood	Existing	Unknown	Township	1 year	TBD	USDA	Medium
32	Construction of berm and tide gate	Flood	New	Unknown	Township	1 year	TBD	HMGP, PDM	High

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Data and Information “wish list”

The following is a list of data and information that would be helpful during the development of the Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan. It is important to note that James Lee Witt Associates assumes that much of this data or information either does not exist or is not available. However, anything that can be located and provided to us will assist in the process. Highlighted items in particular would be helpful in the process of understanding the issues related to each community. Conversely, this list should not be considered as exhaustive; any data or information that are of a similar nature or focus as the examples shown below would likely be of interest.

A. Data regarding the community

1. Floodplain mapping and / or studies including Digital Flood Insurance Rate Maps (DFIRMs) if available, inundation maps from past hazard events
2. Any existing lists of self- or state- identified critical facilities including HSIP (Homeland Security Infrastructure Protection) lists that were developed over the past few year
3. Digital base maps with political boundaries (including special districts like schools, utilities, etc.), water features, roads (by use classification and ownership), topography, soils, physical geography, etc.
4. Studies, etc. (from organizations such as chamber of commerce, regional and/or local economic development authorities or councils of governments) that provide insight into development trends / patterns / rates (this could also include permit data from building departments in the various jurisdictions)

B. Data regarding public infrastructure

1. Insurance records (private, self-insured, State compilations, etc.) and/or any other records re: damages sustained from past hazard events including date, source of damages (i.e., hazard type), description and amount of damages to facilities, contents and length of time the facility was out of service
2. Any past mitigation projects completed or currently contemplated for facilities (including any related engineering studies)
3. Utility line locations, size / capacity, and type (above and below ground including party responsible for maintenance)
4. Sewer and water systems (including pump stations and any supporting infrastructure)
5. Flood management and pumping systems

C. Data regarding individual structures (public and private ownership)

1. Insurance records (private, self-insured, State compilations, etc.) and/or any other records re: damages sustained from past hazard events including date, source of damages (i.e., hazard type), description and amount of damages to structures, contents and length of time the structure was out of service
2. Any past mitigation projects completed or currently contemplated for structures (including any related engineering studies)
3. Street address
4. Exact location (latitude/longitude and/or distinct planimetric feature in GIS)
5. Ownership
6. Age / date of construction
7. Construction type (i.e., wood frame, un-reinforced masonry, etc.)

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Data and Information “wish list”

8. Construction details (i.e., hazard specific information regarding flood proofing features, wind rating of windows)
9. First floor elevation
10. Number of floors
11. Square footage (total and floor by floor if available)
12. Assessed value
13. Market value
14. Replacement value
15. Use, e.g., in general land use categories such as “office / commercial”, “single-family residential”, etc. but also designating facilities that would be considered critical facilities (which may include facilities included in A.4 above) such as police stations, fire stations, EMS facilities, hospitals, communications towers, etc.)
16. Occupancy (e.g., rated capacity per Fire Marshall for public and commercial buildings, etc.)
17. Contents in terms of what, where and value (obvious things that would be good to know is the location of electrical equipment relative to flood elevations for the presence of hazardous materials, etc.)
18. Estimates of annual operating budgets of public operations / facilities
19. Current status (i.e., occupied, unoccupied, inhabitable, etc.)

D. Other Plans and Studies

1. Emergency Operations Plans, Continuity of Operations, Business Continuity Plans, Evacuation Plans etc.
2. Regional, County and/or Municipal Comprehensive Land Use and/or Zoning Plans and/or Maps

E. Miscellaneous information

1. Locations of facilities (and known transportation routes) that store or handle hazardous materials (some of which may show up as part of content listings for existing structures above per B.15).
2. Any demographic surveys or studies that would provide more current information about residents and/or property values than the 2000 US Census.

#	Question	Potential Responses				
1	Today's Date					
2	Name					
	Position or Title					
	Agency					
	Jurisdiction					
	Email Address					
	Phone Number					
3	How many of your staff have training or expertise directly relevant to hazard mitigation? (Includes working with FEMA grants or generally working to reduce exposure to hazards, but NOT emergency response.)					
4	How many staff are devoted to operating, updating, and maintaining your GIS?					
5	What hazard-mitigation purposes, specifically, is GIS data used for?					
6	Please indicate your familiarity with the following FEMA mitigation funding sources:					
	PA					
	Stafford Act					
	PDM					
	FMA					
	SRL					
	RFC					
7	Please indicate whether your municipality has received funding from the following FEMA mitigation funding sources:					
	PA					
	Stafford Act					
	PDM					
	FMA					
	SRL					
	RFC					
8	How much total federal, state, and local funding was spent in your municipality on hazard mitigation activities from 1998-2009					
9	Does someone in your office have experience with hazard mitigation grants					
	Grant writing					
	Grant administration					
10	Please indicate your municipality's accessibility to the following potential funding sources for hazard mitigation projects					
	General Fund	1	2	3	4	5
	Utility fees	1	2	3	4	5
	CDBG	1	2	3	4	5
	CIP	1	2	3	4	5
	HMGP	1	2	3	4	5
	Local open-space	1	2	3	4	5
	Local Match	1	2	3	4	5
	Improvement Authority	1	2	3	4	5
	Other	1	2	3	4	5
11	Does your municipality have an active hazard mitigation program	Yes	No			
12	Please list any completed or current mitigation projects in your municipality					
	Program or project					
	Description					
	Implementing Agency					
15	Please list other offices/agencies within your municipality with your office works directly in order to plan and/or implement hazard mitigation					
	Department of Environmental Protection					
	Planning Department					
	Department of Public Works					
	Building Department					
	Office of Emergency Management					
	Other					

#	Question	Potential Responses			
17	Does your municipality have a hazard mitigation or flood mitigation plan?	Yes	No	Don't Know	
18	In regards to your capital improvement program				
	Are hazard mitigation projects generally considered as part of the CIP process?	Yes	No	Don't Know	
	Are CIP projects systematically assess for hazard mitigation implications?	Yes	No	Don't Know	
	How often is the CIP updated				
	Please describe				
19	Does your municipality have a Flood Plan Management program	Yes	No	Don't Know	
20	What department or agency administers floodplain management in your municipality?				
	Department of Environmental Protection				
	Planning Department				
	Department of Public Works				
	Building Department				
	Office of Emergency Management				
	Other				
21	Does your municipality have Certified Floodplain Manager (CFM)?				
22	Does your municipality participate in the National Flood Insurance Program (NFIP)				
	Who is the community's designated Floodplain Administrator				
	How is the Floodplain Administrator involved in the Plan				
23	Does your municipality use funds through Green Acres or Blue Acres programs	Yes	No	Don't Know	
24	What department or agency administers Blue/Green Acres funds in your municipality?				
	Department of Environmental Protection				
	Planning Department				
	Department of Public Works				
	Building Department				
	Office of Emergency Management				
	Other				
25	Does your municipality have a master plan	Yes	No	Don't Know	
	When was the master plan last updated				
26	Does your municipality have a zoning ordinance	Yes	No	Don't Know	
	When was the zoning ordinance last updated				
27	Does your municipality have a subdivision ordinance				
	When was the subdivision ordinance last updated				
28	Does your municipality have public education programs related to hazard mitigation				
	of a general nature related to flood or other hazards	Yes	No	Don't Know	
	that provide site-specific hazard information to property owners or perspective property owners	Yes	No	Don't Know	
29	Do you have any other comments, questions, or concerns regarding this survey or hazard mitigation?				

Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan

OEM Coordinators Kickoff Meeting -
February 17, 2010

prepared for:

Sussex County

Office of Emergency Management

by



NDRR All-Hazards Pre-Disaster Mitigation Plan

Agenda

- Introductions
- Benefits & Costs of Participation
- Hazard Mitigation Planning Overview
- Municipal Participation
- General Schedule
- Work-in-Progress
- Next Steps
- Force Account / In-Kind Services
- Next Meeting / Action Items

NDRR All-Hazards Pre-Disaster Mitigation Plan

Introductions

- NDRR Steering Committee
- Sussex County Office of Emergency Management
- Sussex County Hazard Mitigation Planning Working Group
- Participating LEPC Members
- Special Districts and Organizations
- James Lee Witt Associates

NDRR All-Hazards Pre-Disaster Mitigation Plan

Introductions

- Name, Position, Organization
- Previous Experience in Hazard Mitigation Planning or Implementation?

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits & Costs of Participation

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits of Participation

- Understanding risks to your communities from natural hazards.
- Identifying and documenting projects to reduce identified risks.
- Describing an implementation strategy for projects including potential funding sources.

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits of Participation

- Every \$1 spent on Mitigation saves \$4 in Recovery*
- From 1955-2005, mitigation measures prevented 220 deaths and 4,700 injuries*
- For every eligible \$1 spent by local communities on FEMA-funded grant projects, the Federal government contributes \$3 to \$9.

* Source: The Multihazard Mitigation Council, "Hazard Mitigation Saves," 2005 an independent review of FEMA mitigation activities

NDRR All-Hazards Pre-Disaster Mitigation Plan

Benefits of Participation

- Opportunities to improve local insurance ratings = lower flood insurance premiums
- Minimal financial investment:
 - Planning process is 75% paid for by Federal funds
 - Local and County portion will be covered through "force-account" or "in-kind" services

NDRR All-Hazards Pre-Disaster Mitigation Plan

Costs of Not Participating

- The State Hazard Mitigation Plan MUST incorporate all information for all local hazard mitigation plans prior to a mandatory 2011 update. If not incorporated, no communities in the state will be eligible for PA Categories C thru G.
- Annually:
 - Pre-Disaster Mitigation Program (PDM) Funding Not Available
 - Flood Mitigation Assistance (FMA) Program Funding Not Available
 - Severe Repetitive Loss (SRL) & Repetitive Flood Claim (RFC) Program Funding Not Available


NDRR All-Hazards Pre-Disaster Mitigation Plan

Hazard Mitigation Planning Overview

NDRR All-Hazards Pre-Disaster Mitigation Plan

What is "Hazard Mitigation"?

Any measures undertaken to reduce risks posed by natural and/or manmade hazards on a place and its population.



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is "Hazard Mitigation"?

Hazard mitigation measures can include **projects that limit the extent of hazards** like levees, floodwalls, building safe rooms...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?


... **projects that move or protect assets** like acquisition, elevation, or retrofit of buildings...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?

... **regulatory practices** like enacting or enforcing building codes, permits, or land use policies...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is “Hazard Mitigation”?

... **training and educational programs** for communities and local agencies...



NDRR All-Hazards Pre-Disaster Mitigation Plan

What is a “Hazard Mitigation Plan”?

- **Hazard Mitigation Plan:**
A plan to reduce a community’s risk and exposure to disasters

... which is different from an ...

- **Emergency Operations Plan (EOP):**
A plan to guide a community’s response to an emergency or disaster

NDRR All-Hazards Pre-Disaster Mitigation Plan


What is a “Hazard Mitigation Plan”?

- A Hazard Mitigation Plan is typically written before hazard events occur (**pre-disaster**)
- Hazard mitigation projects can be implemented either before or after a disaster (**pre-disaster** or **post-disaster**).

NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

This graphic shows the process recommended by FEMA.




NDRR All-Hazards Pre-Disaster Mitigation Plan



How is the Plan Developed?

organize resources

From the start, communities should focus the resources needed for a successful mitigation planning process. Essential steps include identifying and organizing interested members of the community as well as the technical expertise required during the planning process.




implement the plan and monitor progress

NDRR All-Hazards Pre-Disaster Mitigation Plan


How is the Plan Developed?

organize resources




assess risks

Next, communities need to identify the characteristics and potential consequences of natural hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be for important community assets.




implement the plan and monitor progress



NDRR All-Hazards Pre-Disaster Mitigation Plan


How is the Plan Developed?

organize resources




develop a mitigation plan

Armed with an understanding of the risks posed by natural hazards, communities need to determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a natural hazard mitigation plan and strategy for implementation.




implement the plan and monitor progress




NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

organize resources




assess risks



implement the plan and monitor progress

Communities can bring the plan to life in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operation of the local government. To ensure the success of an on-going program, it is critical that the plan remains effective. Thus, it is important to conduct periodic evaluations and make revisions as needed.



NDRR All-Hazards Pre-Disaster Mitigation Plan

How is the Plan Developed?

It all boils down to **two basic questions**:

1. What hazards present the greatest risk to the County and its citizens?
2. What are the most effective ways to reduce those risks?

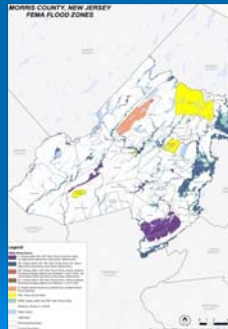
NDRR All-Hazards Pre-Disaster Mitigation Plan

Risk Assessment

Risk Assessment

Risk is assessed in several ways:

- Exposure of assets to hazards that occur in predictable areas - such as **flood** (per FEMA FIRM maps)...



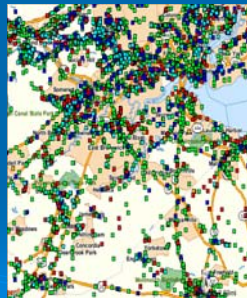
Risk Assessment

...or a manmade hazard like **dam failure**...



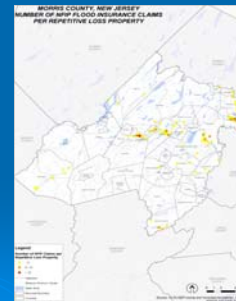
Risk Assessment

...or a technological hazard like **hazardous materials releases**.



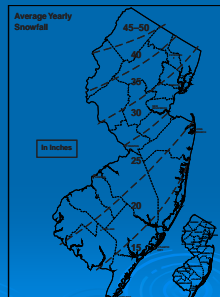
Risk Assessment

- Patterns of past damages - such as repetitive **flood** damage claims under the National Flood Insurance Program (NFIP).



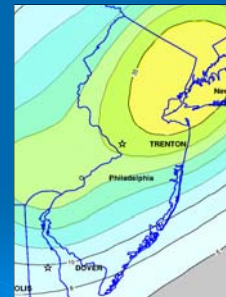
Risk Assessment

- Exposure to events of predictable magnitudes that can cause building failures - such as such as snow loads from **winter storms**...



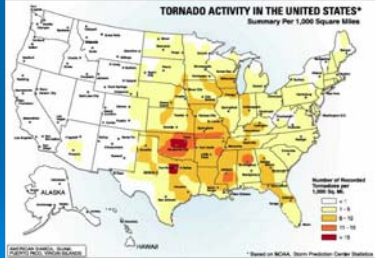
Risk Assessment

...or **earthquakes**...



Risk Assessment

...and **high winds**



NDRR All-Hazards Pre-Disaster Mitigation Plan

Project Types Overview

Potential Mitigation Projects

“Soft” mitigation projects include mitigation activities such as:

- building code enforcement
- land development regulations
- public education
- studies and plans
- etc.



Potential Mitigation Projects

“Hard” mitigation projects or “property protection” construction activities:

- acquisition / elevation / mitigation reconstruction of structures
- retrofits for high wind loads such as installing hurricane shutters
- improving drainage
- etc.

Acquisition

- Most cost-effective mitigation measure.
- Permanently removes vulnerable property from the floodplain.
- The structure is demolished or relocated and the land is dedicated as open space in perpetuity.
- Requires willing sellers and communities.



Taken from Missouri Buyout Program 2009

Elevation

- Raising a structure above the Base Flood Elevation.
- Building size, structural integrity, and type of foundation must be considered.
- There are different types of elevation which can be used depending on the structure.



Top Picture: A house in Miami in the process of being elevated.
Bottom Picture: That same house once completed.
Taken from FEMA, Above 99 Flood, 2000

Mitigation Reconstruction

- Pilot program funded under Disaster Declarations 1603 and 1607 (Hurricanes Katrina and Rita)
- If acquisition and elevation are not feasible then a structure may be demolished and reconstructed at the same location meeting current construction codes and standards.

Hardening or Retrofitting of Critical Facilities

- Potential Projects for public buildings, hospitals and health care facilities, utilities, police stations, fire stations, emergency operations center, jails and detention centers, and schools:
 - Install shutters or impact resistant glass on windows
 - Strengthen the doors.
 - Install hurricane straps and clips to strengthen roof.
 - Bolt walls to foundation.
 - Relocate utility lines underground.
 - Elevate the heating, ventilating and cooling (HVAC) equipment, such as furnace and hot water heater.

Hardening or Retrofitting of Critical Facilities

- Install shutters or impact resistant glass on windows



Accordion Shutters



Roll-Down Shutters



Colonial Shutters



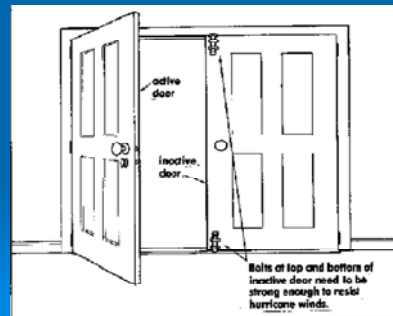
Impact Resistant Glass



Corrugated Metal Panel

Hardening or Retrofitting of Critical Facilities

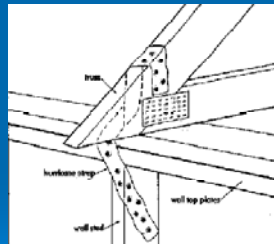
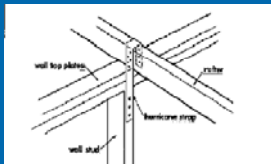
- Strengthen the doors.



From Against the Wind

Hardening or Retrofitting of Critical Facilities

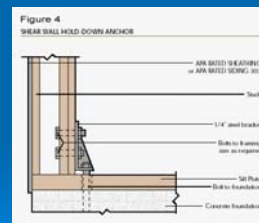
- Install hurricane straps and clips to strengthen roof.



From The Advocate

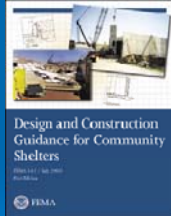
Hardening or Retrofitting of Critical Facilities

- Bolt walls to foundation.



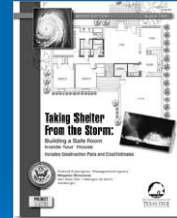
Community Shelters

- A structure built to withstand extreme winds and flying debris from tornadoes, hurricanes, and other storms that is accessible to the public.
- Guidelines can be found in FEMA 361.
- The shelter cannot be used for anything else.



Safe Rooms

- Can be built on-site, or manufactured.
- Can be installed in new or existing homes.
- Must have adequate ventilation.
- Must be securely anchored to the foundation and structurally isolated from the main structure.
- Can be on the first floor, in a basement, or outside.
- Guidelines are outlined in FEMA Publication 320



5% Initiative Mitigation Projects

5% Initiative Projects eligible for funding can include new, unproven mitigation techniques and technologies where benefits are not proven or not clearly measurable:

- Generators; or
- Disaster warning equipment and systems.

NDRR All-Hazards Pre-Disaster Mitigation Plan

Municipal Participation

NDRR All-Hazards Pre-Disaster Mitigation Plan

Municipal Participation

➤ Need assistance with:

- Responding to data and document requests
- Completing on-line Capability Assessment
- Reviewing and editing Critical Facility inventories
- Project identification and prioritization

NDRR All-Hazards Pre-Disaster Mitigation Plan

Municipal Participation

➤ Need assistance with:

- Attendance at regularly scheduled local Mitigation coordination meetings
- A commitment to read plan materials and to participate in the joint planning process
- Plan adoption (at the end of the process)

Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan

Work-in-Progress Review Materials

Submitted to:
NDRR Steering Committee

Submitted by:



March 10, 2010

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting – Agenda
March 10, 2010**

1. Work Plan / General Schedule

- a. General Schedule Update
- b. Steering Committee Meeting Schedule
- c. County Working Groups Meeting Schedules
- d. Participating Municipalities Interviews

2. Steering Committee / Working Groups / Participating Municipalities

- a. Steering Committee Roster
- b. County Working Groups Rosters
- c. Participating Municipalities – Points of Contact Lists

3. Work – in – Progress Reviews

- a. SharePoint
- b. County Working Group Kick-off Meetings
- c. Data Requests – Timeline
- d. Preliminary Hazard Identification
- e. Capability Assessment – On-Line Survey Content
- f. Capability Assessment – On-Line Survey Distribution Lists
- g. Plan Outline

4. Public Involvement / Participation

- a. Press Releases / Website Postings
- b. Public Meetings

5. Next Steps

- a. Repetitive Loss / Severe Repetitive Loss
- b. Hazard Profiling
- c. Asset / Critical Facilities Inventories
- d. Capability Assessment - Survey Distribution

6. Next Meetings / Action Items

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Roster
March 10, 2010**

Note to NDRR Steering Committee: The following is how Steering Committee members will be listed in the Plans. Please confirm all information is correct.

Northern Delaware River Region Hazard Mitigation Steering Committee (HMSC) Members

Name	Title	Organization
Eskil (Skip) Danielson	Director, Sussex County Office of Emergency Management; Coordinator, NDRR Steering Committee	Sussex County Office of Emergency Management
Laurene Fleming	County Coordinator of Emergency Management	Hunterdon County Office of Emergency Management
William Duffy	Deputy Coordinator, Mercer County Office of Emergency Management	Mercer County Deputy Office of Emergency Management
Frank Wheatly	Coordinator, Warren County Office of Emergency Management	Warren County Office of Emergency Management

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
 Hunterdon County Participating Municipalities
 March 10, 2010**

Note to NDRR Steering Committee: Please provide the following information for your participating municipalities for inclusion in the Plan. In addition, we will need e-mail addresses and phone numbers for the POCs but that information will not be included in the Plan.

Hunterdon County Participating Municipalities and Points of Contact

Municipality	Name	Title
Alexandria Township		
Bethlehem Township		
Bloomsbury Borough		
Califon Borough		
Clinton Town		
Clinton Township		
Delaware Township		
East Amwell Township		
Flemington Borough		
Franklin Township		
Frenchtown Borough		
Glen Gardner Borough		
Hampton Borough		
High Bridge Borough		
Holland Township		
Kingwood Township		
Lambertville City		
Lebanon Borough		
Lebanon Township		
Milford Borough		
Raritan Township		
Readington Township		
Stockton Borough		
Tewksbury Township		
Union Township		
West Amwell Township		

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
 Mercer County Participating Municipalities
 March 10, 2010**

Note to NDRR Steering Committee: Please provide the following information for your participating municipalities for inclusion in the Plan. In addition, we will need e-mail addresses and phone numbers for the POCs but that information will not be included in the Plan.

Mercer County Participating Municipalities and Points of Contact

Municipality	Name	Title
East Windsor Township		
Ewing Township		
Hamilton Township		
Hightstown Borough		
Hopewell Borough		
Hopewell Township		
Lawrence Township		
Pennington Borough		
Princeton Borough		
Princeton Township		
Robbinsville Township		
Trenton City		
West Windsor Township		

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
 Sussex County Participating Municipalities
 March 10, 2010**

Note to NDRR Steering Committee: Please provide the following information for your participating municipalities for inclusion in the Plan. In addition, we will need e-mail addresses and phone numbers for the POCs but that information will not be included in the Plan.

Sussex County Participating Municipalities and Points of Contact

Municipality	Name	Title
Andover Borough		
Andover Township		
Branchville Borough		
Byram Township		
Frankford Township		
Franklin Borough		
Fredon Township		
Green Township		
Hamburg Borough		
Hampton Township		
Hardyston Township		
Hopatcong Borough		
Lafayette Township		
Montague Township		
Newton Town		
Ogdensburg Borough		
Sandyston Township		
Sparta Township		
Stanhope Borough		
Stillwater Township		
Sussex Borough		
Vernon Township		
Walpack Township		
Wantage Township		

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Warren County Participating Municipalities
March 10, 2010**

Note to NDRR Steering Committee: Please provide the following information for your participating municipalities for inclusion in the Plan. In addition, we will need e-mail addresses and phone numbers for the POCs but that information will not be included in the Plan.

Warren County Participating Municipalities and Points of Contact

Municipality	Name	Title
Allamuchy Township		
Alpha Borough		
Belvidere Township		
Blairstown Township		
Franklin Township		
Frelinghuysen Township		
Greenwich Township		
Hackettstown Town		
Hardwick Township		
Harmony Township		
Hope Township		
Independence Township		
Knowlton Township		
Liberty Township		
Lopatcong Township		
Mansfield Township		
Oxford Township		
Phillipsburg Town		
Pohatcong Township		
Washington Borough		
Washington Township		
White Township		

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Preliminary Hazard List
March 10, 2010**

Note to NDRR Steering Committee: The table shown at the bottom of this page is a preliminary version of what will be included in the Plan. The point of this tabulation is to identify which hazards are relevant to the NDRR Counties and will be profiled in the Plan.

You will note that the names of some of these hazards differ from the way they were listed in the RFP. The main reason is to provide names that conform to the New Jersey State Hazard Mitigation Plan and current FEMA terminology. The following provides the translation for these names so you can see where these issues will be addressed in the Plan:

Hazard in RFP	Hazard(s) in Table
Hurricanes	Flood, High Wind – Straight Line Winds
Hail	Severe Weather - Summer
Ice Storms	Severe Weather - Winter
Seismic / Geological	Earthquake / Geological

In addition, we would like to add references to hazards identified in the County EOPs as well and are asking each of you to provide us with your current EOP or at least provide us with any hazard identification information from these documents.

Hazard List, XX County

Hazard	Type (1)	NDRR PDM Application	XX EOP	Mitigation 20/20	NJ SHMPU (2)	NDRR RFP (3)	Profiled in XX HMP?
Dam Failure	T					✓	✓
Drought	N	✓		✓	✓	✓	✓
Earthquake/Geological (4)	N			✓		✓	✓
Flood (5)	N	✓		✓	✓	✓	✓
Hazardous Materials Release	T			✓		✓	✓
High Wind–Straight-Line Winds (6)	N			✓	✓	✓	✓
High Wind–Tornado	N	✓			✓	✓	✓
Severe Weather - Summer	N			✓		✓	✓
Severe Weather - Winter	N	✓			✓	✓	✓
Landslide (non-seismic)	N			✓	✓	✓	✓
Wildfire	N	✓		✓	✓	✓	✓

Notes:

- (1) Type Legend: N = Natural; T = Technological/Manmade.
- (2) NJSHMPU = State of New Jersey Hazard Mitigation Plan
- (3) Hazards indicated as likely candidates to include in planning for XX County per Northern Delaware River Region Request for Proposals (RFP).
- (4) Earthquake/Geological includes effects of surface faulting, ground shaking, earthquake induced landslides, and liquefaction.
- (5) Includes tidal, flash, and riverine flooding
- (6) High Wind—Straight-Line Winds includes winds due to hurricanes, tropical storms, nor'easters, coastal storms, and other severe storms, excluding tornados.

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Capability Assessment Survey
March 10, 2010**

Note to NDRR Steering Committee: The following two (2) pages consist of a spreadsheet that includes questions from the proposed Capability Assessment Survey.

This survey will be administered via web-site to representatives of all the municipalities participating for your Counties. The distribution list is basically the information we are requesting from you regarding the POCs for the participating municipalities. The results are included as part of the Plan and will influence the contents of the Municipal and County Action Items and Implementation Strategies.

Please review these questions and provide any comments or questions at the March 10, 2010 Steering Committee Meeting.

In addition, if possible, JLWA will provide a URL to each of you prior to the Steering Committee Meeting where you can visit the website and see how the survey will be administered.

#	Question	Potential Responses					
General Information							
1	Today's date						
2	Name						
3	Position or title						
4	Agency						
5	Municipality						
6	Email address						
7	Phone number						
Hazard Mitigation Programs							
8	Does your municipality have a hazard mitigation or flood mitigation plan?	Yes	No	Unknown			
9	Has your municipality implemented hazard mitigation projects (include on-going efforts)?	Yes	No	Unknown			
9a	What type of hazards have been mitigated?	Flood	Wind	Fire	Other		
9aa	If "Other", please indicate the type(s) of hazards mitigated:						
9b	Is documentation of implemented hazard mitigation projects available (e.g., grant applications, cost-benefit analysis, project records and close-out documentation, etc.)?	Yes	No	Unknown			
10	Does your agency work with other offices/agencies within your municipality to plan and/or implement hazard mitigation (e.g., Environmental Protection, Public Works, Planning, Engineering, Permits, etc.)?	Yes	No	Unknown			
10a	If yes, please identify agencies:						
11	Does your municipality have public education programs related to hazard mitigation?	Yes	No	Unknown			
12	Does your municipality provide site-specific hazard information to property owners or perspective property owners?	Yes	No	Unknown			
13	Does your municipality participate in the National Flood Insurance Program (NFIP)?	Yes	No	Unknown			
13a	What department or agency administers floodplain management in your municipality (e.g., Environmental Protection, Public Works, Planning, Engineering, Permits, etc.)?						
13b	Who is the community's designated Floodplain Administrator (by title)? Note: If your community participates in the NFIP, there is a designated Floodplain Administrator.						
13c	How is the Floodplain Administrator involved in the development of the Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan?	POC	Working Group	No			
13d	Does your municipality have a Certified Floodplain Manager (CFM)?	Yes	No	Unknown			
Hazard Mitigation Funding							
14	Indicate if you are familiar with any of the following FEMA mitigation funding sources:						
14a	Flood Mitigation Assistance program						
14b	Hazard Mitigation Grant Program						
14c	Pre-Disaster Mitigation program						
14d	Public Assistance program						
14e	Repetitive Flood Claim program						
14f	Severe Repetitive Loss program						
15	Indicate if your municipality has received funding from any of the following FEMA mitigation funding sources:						
15a	Flood Mitigation Assistance program						
15b	Hazard Mitigation Grant Program						
15c	Pre-Disaster Mitigation program						
15d	Public Assistance program						
15e	Repetitive Flood Claim program						
15f	Severe Repetitive Loss program						
15g	How much total federal, state, and local funding was spent in your municipality on hazard mitigation activities from 2000-2009?	\$0	\$1 to \$250K	\$250K to \$500K	\$500K to \$1M	> \$1M	Unknown
16	Does someone in your office have experience with hazard mitigation grant writing?	Yes	No	Unknown			
17	Does someone in your office have experience with hazard mitigation grant administration?	Yes	No	Unknown			
18	Indicate if your municipality uses or has access to the following funding sources:						
18a	General Fund						
18b	Capital Improvements Program						
18c	Utility fees						
18d	Development/impact fees						

#	Question	Potential Responses					
18e	Authority to levy special purpose taxes						
18f	Improvement Authority						
18g	Community Development Block Grant						
18h	State open-space acquisition funds (such as Green Acres or Blue Acres)						
Related Municipal Programs							
19	How often is your municipality's Capital Improvement Program (CIP) updated?						
20	When was the CIP last updated (year)?						
21	How often is your municipality's master plan updated?						
22	When was the master plan last updated (year)?						
23	Does your municipality have a zoning ordinance?	Yes	No	Unknown			
23a	When was the zoning ordinance last updated (year)?						
24	Does your municipality have a subdivision ordinance?	Yes	No	Unknown			
24a	When was the subdivision ordinance last updated (year)?						
Geographic Information System							
25	Does your agency and/or municipality have a GIS department or unit?	Yes	No	Unknown			
25a	How many staff are devoted to operating, updating, and maintaining your Geographic Information System (GIS)?	None	1	>1			
25b	How many of your staff have training or expertise directly relevant to hazard mitigation (Includes working with Federal Emergency Management Agency (FEMA) grants or generally working to reduce exposure to hazards, but NOT emergency response)?	None	1	>1			
25c	What hazard-mitigation purposes, if any, is GIS data used for?						
End							

NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Plan Outline
March 10, 2010

Note to NDRR Steering Committee: The following is a tentative Table of Contents for the Plans under development for your Counties. Please review and provide any comments or questions at the March 10, 2010 Steering Committee Meeting.

Table of Contents

Section 1	Introduction	1-1
	1.1 Overview	
	1.2 Organization of the Plan	
	1.3 Hazards and Risks	
	1.4 Goals, Objectives, and Actions	
	1.5 Planning Process	
	1.6 Adoption and Approval	
Section 2	Planning Process	2-1
	2.1 Interim Final Rule Requirement for the Planning Process	
	2.2 Federal Planning Requirements	
	2.3 The New Jersey State Hazard Mitigation Plan	
	2.4 Description of the Planning Process	
	2.5 Involvement by the Public and Other Interested Parties	
	2.6 Review and Incorporation of Plans, Studies, Reports, and Other Information	
Section 3	Hazard Identification, Profiling and Ranking	3-1
	3.1 Interim Final Rule Requirement for Hazard Identification and Profiling	
	3.2 Geography, Climate, and Population of [XX] County	
	3.2 Hazard Identification	
	3.3 Overview of Type and Location of Hazards That Can Affect [XX] County	
	3.4 Methodology for Identifying Hazards of Concern	
Section 4	Risk Assessment	4-1
	4.1 Interim Final Rule Requirement for Risk Assessment	
	4.2 Overview and Analysis of [XX] County's Vulnerability to Hazards	
	4.3 Estimate of Potential Losses	
	4.4 [XX] County's Critical Facilities Risk Assessment	
	4.5 [XX] County's Future Development Trends	
	4.6 Summary of Risk Assessment	
Section 5	Capability Assessment	5-1
	5.1 Overview and Purpose of Capability Assessment	
	5.2 Methodology	
	5.3 Federal and State Regulations, Plans, and Funding Sources	
	5.4 Capability Assessment for [XX] County	
	5.5 Capability Assessment for Municipalities within [XX] County	
	5.6 Current and Completed Hazard Mitigation Programs and Projects	
	5.7 Summary and Conclusions	

NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan

Plan Outline

March 10, 2010

Section 6 Mitigation Action Plan 6-1

- 6.1 Interim Final Rule Requirement for the Mitigation Action Plan
- 6.2 Mitigation Goals, Objectives, and Actions
- 6.3 Identification and Analysis of Mitigation Actions
- 6.4 Flood Mitigation Projects
- 6.5 Prioritization and Implementation of Mitigation Actions

Section 7 Plan Monitoring and Maintenance 7-1

- 7.1 Interim Final Rule Requirement for Plan Monitoring and Maintenance
- 7.2 Method for Monitoring the Plan
- 7.3 Schedule for Monitoring the Plan
- 7.4 Method and Schedule for Evaluating and Updating the Plan
- 7.5 Circumstances that will Initiate Plan Review and Updates
- 7.6 Other Local Planning Mechanisms
- 7.7 Continued Public Involvement

Appendices

- A Key Terms and Acronyms
- B Sources
- C Planning Process Documentation
- D STAPLEE Analysis of Mitigation Actions
- E Approval Letters
- F Adoption Resolutions

Northern Delaware River Region
All-Hazards Pre-Disaster Mitigation Plan

Work-in-Progress Review Materials

Submitted to:
NDRR Steering Committee

Submitted by:



May 12, 2010

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting – Agenda
May 12, 2010**

1. Project Status and General Schedule

1. Project Status Reports – March & April 2010
2. General Schedule Update
 - Data Collection Issues / Revised Task Completion Dates

2. Capability Assessment Survey

- a. Timeline for Completion: May 10 - 27, 2010
- b. Required Information (Participation of Floodplain Administrators & Plan Update Status)

3. Risk Assessment Methodology

- a. Hazard Prioritization Process (Calculated Priority Risk Index)

4. Next Steps

- a. Complete Capability Assessment (June Steering Committee Meeting)
- b. Complete Risk Assessment (June and July Steering Committee Meetings)
- c. Conduct Working Group / Public Meetings (see item 2 below)
- d. Conduct Municipal & County Department Interviews (see item 3 below)
- e. Prepare Draft Hazard Mitigation Plan (July, August and September Steering Committee Meetings)

5. Working Group / Public Meetings

- a. Scheduled Meetings
 - Sussex County: May 18, 2010
 - Warren County: May 19, 2010
 - Mercer County: May 20, 2010
 - Hunterdon County: to be determined
- b. Draft Presentation

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting – Agenda
May 12, 2010**

6. Municipal & County Department Interviews

- a. Scheduled Meetings
 - Hunterdon County: May 24 & 25, 2010
 - Mercer County: May 26, 2010
 - Sussex County: June 1 & 2, 2010
 - Warren County: June 3 & 4, 2010
- b. Draft Information Package

7. Next Meetings / Action Items

- 1. NDRR Steering Committee Meeting: June 9, 2010 @ 10:00 am ET

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Monthly Progress Report – March 31, 2010**

The following summarizes progress by James Lee Witt Associates (JLWA) for development of the Northern Delaware River Region (NDRR), New Jersey All-Hazards Pre-Disaster Mitigation Plan for the period from March 1, 2010 through March 31, 2010 per tasks described in JLWA's Scope of Work dated December 11, 2009:

Work Completed - March 2010:

- S. Wallace, P. Dennen and R. Ricker prepared for and attended the March 10th Steering Committee meeting at the Warren County OEM.
- P. Dennen and R. Ricker prepared for and conducted Hunterdon County Municipal Kick-off Meeting on March 24th.
- P. Dennen, K. Carty and R. Ricker prepared for and met with L. Fleming of Hunterdon County on March 31st to discuss information needed from Hunterdon County for Hunterdon County for plan development.

Work-in-progress – March 2010:

- Task A.2 Document Review. JLWA continued the process of collecting and analyzing information from the NDRR counties and participating communities.
- Task B.1 Identify Hazards: JLWA continued compiling results from the NJ SHMP Update, the four county EOPs, Mitigation 20/20 forms, etc.
- Task B.2 Profile Hazards and Task B.3 Inventory Assets: JLWA continued work to develop hazard profiles and asset inventories for incorporation into the Plan as part of the risk assessment
- Task C.2 Capability Assessment: JLWA finalized capability assessment for distribution to local coordinators.

Proposed Invoicing – March 2010:

The following represents the percent complete values that, if Sussex County OEM agrees will be invoiced for the reporting period:

Task	Previous % Complete	% Complete-March 2010	% Complete-Project to Date
A	90%	5%	95%
B	5%	10%	15%
C	0%	10%	10%
D	0%	0%	0%
E	0%	0%	0%

Included with this report is a draft invoice for the month of February that reflects the dollar amount corresponding to these percentages.

Problems encountered – March 2010 (and proposed resolution):

- No unanticipated problems were encountered during this period.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Monthly Progress Report – March 31, 2010**

Work anticipated to be completed during the next reporting period, April 2010:

- Complete efforts under Task A.2 including outreach to local communities re: critical facility data gathering
- Complete efforts under Task B.1.
- Continue efforts under Task B.2, B.3, and C.2.
- Prepare for and attend Steering Committee on April 14, 2010 SC Meeting @Warren County OEM

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Monthly Progress Report – April 30, 2010

The following summarizes progress by James Lee Witt Associates (Witt Associates) for development of the Northern Delaware River Region (NDRR), New Jersey All-Hazards Pre-Disaster Mitigation Plan for the period from April 1, 2010 through April 30, 2010 per tasks described in Witt Associates' Scope of Work dated December 11, 2009:

Work Completed - April 2010:

- P Dennen met with Dean Raymond, Mercer County OEM Coordinator on April 14th re: individual HMP coordination meeting in lieu of monthly Steering Committee meeting
- P Dennen met with Skip Danielson, Sussex County OEM Coordinator on April 13th re: individual HMP coordination meeting in lieu of monthly Steering Committee meeting.
- P Dennen met with Frank Wheatley, Warren County OEM Coordinator on April 13th re: individual HMP coordination meeting in lieu of monthly Steering Committee meeting.
- Task B.1 Identify Hazards: Witt Associates completed compiling results from the NJ SHMP Update, the four county EOPs, Mitigation 20/20 forms, etc.

Work-in-progress – April 2010:

- Task A.2 Document Review. Witt Associates continued the process of collecting and analyzing information from the NDRR counties and participating communities.
- Task B.2 Profile Hazards and Task B.3 Inventory Assets: Witt Associates continued work to develop hazard profiles and asset inventories for incorporation into the Plan as part of the risk assessment.
- Task B.3 and B.4 Inventory Assets and Estimate Losses: Witt Associates initiated work to develop methodology for risk assessment based on information received to date including scheduling interviews with municipalities and county departments for end of May and beginning of June
- Task C.2 Capability Assessment: Witt Associates prepared distribution lists to local coordinators for capability assessment.

Proposed Invoicing – April 2010:

The following represents the percent complete values that, if Sussex County OEM agrees will be invoiced for the reporting period:

Task	Previous % Complete	% Complete-April 2010	% Complete-Project to Date
A	95%	0%	95%
B	15%	10%	25%
C	10%	5%	15%
D	0%	0%	0%
E	0%	0%	0%

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Monthly Progress Report – April 30, 2010

Included with this report is a draft invoice for the month of April that reflects the dollar amount corresponding to these percentages.

Problems encountered – April 2010 (and proposed resolution):

- No unanticipated problems were encountered during this period.

Work anticipated to be completed during the next reporting period, May 2010:

- Complete efforts under Task A.2 including outreach to local communities re: critical facility data gathering
- Complete efforts under Task B.1.
- Continue efforts under Task B.2, B.3, B.4, and C.2.
- Prepare for and attend Steering Committee on May 12, 2010 SC Meeting @Warren County OEM
- Tasks B.5 and B.6: Progress & Coordination Meeting #2: Witt Associates will prepare for and conduct meetings with County Working Groups in mid-May.
- Initiate efforts under C.1 Goals and Objectives and C.3 Identify and Prioritize Mitigation Actions including preparing for and conducting interviews with municipalities and county departments for end of May and beginning of June.

9. Hazard Mitigation Programs

13. Does your municipality participate in the National Flood Insurance Program (NFIP)?

Yes

No

Unknown

10. Hazard Mitigation Programs

13a. What department or agency administers floodplain management in your municipality (Environmental Protection, Public Works, Planning, Engineering, Permits, etc.)?

13b. Who is the community's designated Floodplain Administrator (by name and title)?

Note: If your community participates in the NFIP, there is a designated Floodplain Administrator.

13c. How is the Floodplain Administrator involved in the development of the Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan?

Point of Contact

Working Group

Not

12. Related Municipal Programs

19. How often is your municipality's Capital Improvement Program (CIP) updated?

- Annually
- Every 2 years
- 3 to 5 years
- Not on a regular schedule

20. When was the CIP last updated (year)?

21. How often is your municipality's Master Plan updated?

- Annually
- Every 2 years
- 3 to 5 years
- Not on a regular basis

22. When was the Master Plan last updated (year)?

23. Does your municipality have a zoning ordinance?

- Yes
- No
- Unknown

13. Related Municipal Programs

23a. When was the zoning ordinance last updated (year)?

14. Related Municipal Programs

24. Does your municipality have a subdivision ordinance?

Yes

No

Unknown

15. Related Municipal Programs

24a. When was the subdivision ordinance last updated (year)?

Risk Assessment Methodology
Hazard Prioritization
Proposed CPRI Process
May 12, 2010

Methodology for Prioritizing Hazards

- For each hazard:
 - Identify
 - Describe/Locate
 - Historical Overview
 - Use Calculated Priority Risk Index (CPRI) categories and risk levels

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
-------------------	---	------------------------------	---	-----------------------	---	-------------------	---	------

- Brief description of how determined CPRI category values
- Brief justification for inclusion/exclusion of that hazard for further Risk Assessment

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Highly Likely	<ul style="list-style-type: none"> •Frequent events with a well documented history of occurrence. •Event has up to 1 in 1 year chance of occurring. (1/1 = 100%) •History of events is 33%-100% likely per year. 	4	45%
	Likely	<ul style="list-style-type: none"> •Occasional occurrences with at least two or more documented historic events. •Event has up to 1 in 3 years chance of occurring. (1/3 = 33%) •History of events is 20%-33% likely per year. 	3	
	Possibly	<ul style="list-style-type: none"> •Rare occurrences with at least one documented or anecdotal historic event •Event has up to 1 in 5 years chance of occurring. (1/5=20%) •History of events is 10%-20% likely per year. 	2	
	Unlikely	<ul style="list-style-type: none"> •Extremely rare with no documented history of occurrences or events. •Event has up to 1 in 10 years chance of occurring. (1/10=10%) •History of events is 0%-10% likely per year. 	1	
Magnitude /Severity	Catastrophic	<ul style="list-style-type: none"> •Multiple deaths •More than 50% of property is severely damaged •Complete shutdown of facilities for more than 1 month 	4	30%
	Critical	<ul style="list-style-type: none"> •Injuries and/or illnesses result in permanent disability •More than 25% of property is severely damaged •Complete shutdown of critical facilities for at least 14 days 	3	
	Limited	<ul style="list-style-type: none"> •Injuries and/or illnesses do no result in permanent disability •More than 10% of property is severely damaged •Complete shutdown of critical facilities for at least 1 day 	2	
	Negligible	<ul style="list-style-type: none"> •Injuries and/or illnesses are treatable with first aid •Less than 25% of property is severely damaged •Shutdown of critical facilities for 24 hours or less 	1	
Warning Time	Less than 6 Hours	Less than 6 Hours warning time before event occurs	4	15%
	6-12 Hours	6-12 Hours warning time before event occurs	3	
	12-24 Hours	12-24 Hours warning time before event occurs	2	
	24+ Hours	At least 24 Hours warning time before event occurs	1	
Duration	More than 1 week	Event lasts more than 1 week	4	10%
	Less than 1 week	Event lasts less than 1 week	3	
	Less than 1 Day	Event lasts less than 1 day	2	
	Less than 6 Hours	Event lasts less than 6 hours	1	

Profile Methodology: Drought

- Review National Climatic Data Center (NCDC) database for any previous occurrences in county
- Review any NJDEP drought data for any previous or predicted occurrences in county
- Review National Drought Mitigation Center's "Drought Impact Reporter" for previous occurrences
- Magnitude = 1 due to no known deaths or injuries and known to impact county but does not meet requirements of higher magnitudes
- Determine probability of future drought events based on reviewed data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(1 x .30)	+	(1 x .15)	+	(4 x .10)	=	

Profile Methodology: Earthquake/Geological

- Review NJGS Earthquake Risk in NJ report
- Review USGS's 2008 National Seismic Hazard Maps and data
- Review HAZUS & NJ GS historical EQ epicenter data
- Review NJ Statewide Mitigation Plan county totals for EQ hazard extrapolated from M5.5 HAZUS scenario (extrapolation based on 2.9% of total exposure for the county)
- Determine probability of EQ/Geological event and potential magnitude/severity based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(4 x .15)	+	(2 x .10)	=	

Profile Methodology: Flood

- Review National Climatic Data Center (NCDC) database for any previous occurrences in county and deaths/injuries
- Review previous Disaster Declarations for county
- Review Declarations Data for county (PERI, FEMA, NJOEM, NJ State Mitigation Plan)
- Review DRBC Study
- Review Severe Repetitive Loss data
- Utilize DFIRM* data to show location of risk areas based on flood zone designations
- Determine magnitude and probability for each county

*If DFIRM data is not available from FEMA, Q3 or HAZUS generated flood zones will be used.

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(3 x .15)	+	(3 x .10)	=	

Profile Methodology: Hazardous Materials Release

- Review Right to Know Hazardous Substance List (RTKHSL) from State of NJ, EPA's Toxic Release Inventory (TRI), EPA's Enforcement & Compliance History Online (ECHO), and Coastal Services Center's Toxic Release Risk Area
- Review HAZUS MR4 Hazmat Inventory
- Determine probability and magnitude for county based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(4 x .15)	+	(2 x .10)	=	

Profile Methodology: High wind-Straight-line winds

- Review National Climatic Data Center (NCDC) database for any previous occurrences in county (search on thunderstorms, hurricanes, and tropical storms)
- Review Declarations Data for county (PERI, FEMA, NJOEM, NJ State Mitigation Plan)
- Review NOAA’s Hurricane tracks, Wind, and Wind swaths data
- Determine probability and magnitude for county based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(2 x .15)	+	(2 x .10)	=	

Profile Methodology: High wind-Tornadoes

- Review National Climatic Data Center (NCDC) database for any previous occurrences in county
- Review NOAA’s Tornado touchdown points, lift points, and track data
- Determine probability and magnitude for county based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(4 x .15)	+	(1 x .10)	=	

Profile Methodology: Severe Weather – Summer

- Review National Climatic Data Center (NCDC) database for any previous occurrences in county (search ‘Temperature Extremes’)
- Magnitude = 4 as multiple documented deaths due to extreme heat and significant utility outages causing shutdown of some critical facilities
- Determine probability based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(4 x .30)	+	(WT x .15)	+	(D x .10)	=	

Profile Methodology: Severe Weather - Winter

- Review National Climatic Data Center (NCDC) database for any previous occurrences in county (search ‘Temperature Extremes’ & ‘Snow & Ice’)
- Determine probability and magnitude for county based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(WT x .15)	+	(D x .10)	=	

Profile Methodology: Landslides

- Review USGS's landslide susceptibility data
- Review NJ Geological Survey Landslide Incidence data (historical)
- Determine probability and magnitude for county based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(4 x .15)	+	(2 x .10)	=	

Profile Methodology: Wildfire

- Review National Climatic Data Center (NCDC) database for any previous occurrences in county
- Review NJ Mitigation Plan Wildfire data
- Review land type percentage for county
- Determine probability and magnitude for county based on data

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
(P x .45)	+	(M x .30)	+	(4 x .15)	+	(1 x .10)	=	

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Sussex County Working Group Meeting – Agenda
May 18, 2010**

1. Introductions

- a. Northern Delaware River Region Steering Committee
- b. County Hazard Mitigation Working Group

2. Hazard Mitigation Planning Overview

- a. Power Point

3. Work-in-Progress/Next Steps

- a. Public Participation
- b. Data Requests (“wish lists”)
- c. Mitigation Action Interviews

4. Action Items

- a. JLWA to supply Force Account Forms
- b. “Wish list” intent / content / distribution to counties and communities (via initial briefings)
- c. Mitigation Action Interview package review prior to scheduled interviews

5. Next Meeting

- a. June 1st and 2nd: Municipal Mitigation Action Interviews

NDRR NJ All-Hazards Pre-Disaster Mitigation Plan
Working Group Meeting /Public Meeting - Sign-up Sheet

May 18, 2010

Name	Title	Organization	Address	Phone	Fax	E-mail
William J. VARDAPANE JR	CHIEF OF POLICE	OLDENSBURG POLICE	PO Box 45 OLDENSBURG, NJ 07439	973 827 3160 CELL 973 362 5775	973 827 0271	Oldenburg Police DEPT @EMBARQMAIL.COM (Lower case letters)
Eric Slate	EMC	Oldenburg	17 Highland AVE Oldenburg NJ 07439	973-919- 8139	973-827 7101	Slateno3@Embarqmail.com
TAMAH Conover	GIS Analyst	SCOGIS	one Spring ST Newton, NJ 07860	(973) 579 0430 x1340		Tconover@sussex.nj.us
Alice Brees	Principal Planner	Sussex County Planning	7 Spring St Newton	579- 0580		abrees@sussex.nj.us
Robert Haffner	Deputy OEM Coord.	Hopatcong Borough	111 Riverstye Rd Hopatcong NJ 07843	973- 398-5000 ext. 247	973- 398-4048	rhaffner@hopatcongpolice.org
Floyd Southard J	Deputy OEM Coord.	Sussex Borough	2 Main St Sussex NJ 07461	973- 534- 7258		Fsouthard@embarqmail.com
JAKE LITTLE	OEM COORD.	SUSSEX BOROUGH	2 MAIN ST. SUSSEX NJ 07461	862- 266- 0278		jakelittle1@YAHOO.COM JAKELITTLE@YAHOO.COM
James McDonald	Chief RRHS	Sussex County Health/Hermet	1 Spring Street Newton NJ 07860	973 579 0370	973 579 9719	jmedonald@sussex.nj.us

NDRR NJ All-Hazards Pre-Disaster Mitigation Plan
 Working Group Meeting /Public Meeting - Sign-up Sheet

May 18, 2010

Name	Title	Organization	Address	Phone	Fax	E-mail
Eskil S. Danielson	Director	S.C. OEM	39 HIGH ST. NEWTON, NJ	973-579-0380	973-579-0389	Edanielson@sussexcountysheriff.com
RICK LOOCK		WIT ASSOC	20 YALE ST CHATHAM NJ 07924	973-635-2748		LOOCK20@OPTONLINE.NJ.
MARK VOGEL	Deputy Coordinator	SCOEM	39 High St Newton, NJ	973-579-0380 x2202	973-579-0389	mvogel@sussexcountysheriff.com
Peter Demer	Senior Planner	James Lee Witt Associates		609-922-5593		pdemer@wittassociates.com

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Overview - Municipal and County Department Interviews

As discussed at a recent Local OEM Coordinators' Meeting, the Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan (the "Plan") currently under development is focused on identifying and documenting viable hazard mitigation projects for each participating municipality. An interview time has been established for your community or department as indicated in the e-mail transmittal that included this overview. The interview will help the planning team identify projects for each participating community.

Prior to your scheduled interview session, there are actions/tasks that need to be addressed:

- Completion of the Capability Assessment Survey (municipalities only)
- Review of the Critical Facilities List
- Review of the Example Hazard Mitigation Project List and Proposed Mitigation Action Table

Capability Assessment Survey - Earlier in May, an e-mail was sent to all participating municipality OEM directors with information regarding this on-line survey. The survey provides important information for development of the Plan. Some items in particular must be completed for participating municipalities to obtain final approval of the Plan later this year from NJOEM and FEMA (e.g., Survey Questions 13, 13a, 13b, 13c, 19, 20, 21, 22, 23, 23a, 24, and 24a).

Critical Facilities List - The critical facilities list has been provided for your review and information verification. If this information was provided and reviewed in support of the recent Delaware River Basin Commission (DRBC) Flood Plan, please confirm there are no changes to the information. Otherwise, please verify the data listed for the facilities with special emphasis on verifying that these facilities are located in your community, that the name and address information is correct and noting if there are other facilities of this type that should be included.

Example Hazard Mitigation Project List and Proposed Mitigation Action Table - The Example Hazard Mitigation Project List was compiled from other hazard mitigation plans for counties in New Jersey and shows the range and type of projects that can be incorporated into the Plan. This table also shows the types of information that will be included in the Northern Delaware River Region Plan for each municipality (although the length of the list for each municipality will likely be shorter).

The Proposed Mitigation Action Table has been prepared for each municipality with potential projects as identified by the FEMA Repetitive Flood Loss List, Severe Repetitive Flood Loss List and the Critical Facilities List.

It is important to note the following regarding the Proposed Mitigation Action Table. The potential project sites and areas indicated here are by no means a complete list of issues for each community nor is it required that you include all of these as projects in the Plan. The potential project sites and actions are good candidates for the type of mitigation actions that will benefit each specific community, but there are likely other areas in the community where problems have been or can be expected that should be considered for inclusion.

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Overview - Municipal and County Department Interviews

Therefore, consider any and all hazard-related issues the community faces and compile a list to be discussed at the interview. For example, good candidates are areas that experience frequent flooding or critical facilities (such as schools, hospitals or elderly care facilities) that are subject to loss of power.

In addition, any projects that have already been identified can be included in this process as long as they have not begun construction. Even if funding sources have been identified, it will be important to document what each municipality has already accomplished or plans to address in the near future.

Finally, please bring any person or persons who you think can contribute to further developing potential hazard mitigation projects. For example, the municipal engineer or public works director often have good working knowledge of problems that have been experienced in the past and may also have potential projects already in mind.

The Proposed Mitigation Action Table includes a sheet of instructions regarding what data each cell in the table represents. However, the main focus prior to the interview session is developing a list of potential projects for the left-hand column.

If you have any questions, please contact your county OEM coordinator or the project consultants via:

Peter Dennen
James Lee Witt Associates
pdennen@wittassociates.com
609.922.5593

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Proposed Mitigation Action Table

The Mitigation Action Table is the cornerstone of the mitigation strategy for each participating municipality. Several action items (potential projects) have already been added to the table. These items were identified through the FEMA Severe Repetitive Flood Loss and Repetitive Flood Loss Lists as well as the Critical Facilities List.

Each cell found within the table requires a specific type of data response per the following descriptions. The initial effort should be identifying the problems and concerns of the community regarding hazard mitigation. James Lee Witt Associates will help identify the additional information as part of the interview process.

1. **Mitigation Action Program or Project:** Project #identifier as well as a description of what the project entails. This includes a general location such as a street name but does not require the exact address. The exact location of flood projects will be needed later in the process, but Witt Associates staff will assist in determining these locations.
2. **Hazard(s) Addressed:** Hazard or hazards the mitigation action will reduce or eliminate. Typically, this entry will reflect at least one of the identified hazards that will be profiled and assessed within the Plan.
3. **Applies to Existing or New Structures:** Identifies if the mitigation action is applicable to a structure already in place or one that is yet to be built.
4. **Existing Local Planning / Implementation Mechanism:** Identifies process within your community that will enable implementation. For example, listing a federal grant program is not the local implementation mechanism; it is a funding source. Entries like “local floodplain management” or “local hazard mitigation” or “capital improvement” would be more appropriate.
5. **Responsible Party:** Identifies appropriate department or individual (by title, not by name) who will be responsible for implementation of the project. Just listing the municipality will not suffice unless the community is small and does not have any operational departments or paid staff that would be considered the responsible parties.
6. **Target Date / Project Duration:** Represents when the project is anticipated to be completed. If this is not practical, the duration of the project should be indicated once the project is initiated.
7. **Estimated Cost (\$):** Best “educated” guess for the overall cost of each mitigation action. If the project does not easily lend itself to a preliminary cost estimate, a range of anticipated costs can be cited.

For example, cost estimate ranges could be represented as:

- <\$250,000
- \$250,000-\$500,000
- \$500,000-\$1,000,000
- >\$1,000,000

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Proposed Mitigation Action Table

8. **Funding Source:** Identifies federal, state and/or local funding sources. The table entries shown below are all federal grants. Witt Associates will help determine if there are any other applicable state or local funding sources.
9. **Priority:** All identified mitigation actions require a priority ranking. In some cases, the communities assign these priorities directly. In addition, this ranking can be developed utilizing a method known by the acronym "STAPLEE." This process is applied after all the mitigation actions have been identified for each community. As needed, Witt Associates will work with the county and municipalities to determine these priority rankings.

On the following pages are the proposed mitigation action sites and/or projects for initial review and use at the scheduled interview.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Proposed Mitigation Action Table**

Proposed Mitigation Actions

Mitigation Action, Program, or Project	Hazard(s) Addressed	Applies to Existing or New Structures	Existing Local Planning/ Implementation Mechanism	Responsible Party	Target Date / Project Duration	Estimated Cost (\$)	Funding Source	Priority
Township								
Project Twp 1: [insert mitigation action, e.g., Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing] of 1 Severe Repetitive Loss property on Wall Street.	Flood	Existing	Floodplain Management	Floodplain Administrator / OEM Coordinator			FMA, PDM-C & HMGP if available	
Project Twp 2: [insert mitigation action, e.g., Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing] of 3 Severe Repetitive Loss properties on Water Street.	Flood	Existing	Floodplain Management	Floodplain Administrator / OEM Coordinator			FMA, PDM-C & HMGP if available	
Project Twp 3: [insert mitigation action, e.g., roof and/or structural hardening, window and door replacements, back-up generators, etc.] of 2 schools located on Oxford Street	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	School Board Administrator			PDM-C & HMGP if available	
Project Twp 4: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of school located on CR519	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	School Board Administrator			PDM-C & HMGP if available	

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Proposed Mitigation Action Table**

Mitigation Action, Program, or Project	Hazard(s) Addressed	Applies to Existing or New Structures	Existing Local Planning/ Implementation Mechanism	Responsible Party	Target Date / Project Duration	Estimated Cost (\$)	Funding Source	Priority
Project Twp 5: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of Police Department building located on Water Street	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	Police Department			PDM-C & HMGP if available	
Project Twp 6: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of Good Will Fire Company located on Water Street.	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	Station Commander			PDM-C & HMGP if available	
Project Twp 7: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of Mountain Lake Fire Company located on Tamarack Road.	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	Station Commander			PDM-C & HMGP if available	
Project Twp 8: [insert public education program related action(s)]	All	Existing and New	Emergency Management	OEM Coordinator			PDM-C & HMGP if available	
Project Twp 9: [insert building code, zoning, or floodplain ordinance revisions and/or upgrade related action(s)]	All	New	Planning & Zoning	OEM Coordinator			PDM-C & HMGP if available	

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
1	Acquisition of 23 homes	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	PDM, HMGP, FMA, RFC, SRL	High
2	Elevation of repetitive loss property	Flood	Existing	County Mitigation Plan/Flood Plain Management	Township OEM	1-2 years from plan adoption date	\$350,000	Pre-Disaster Mitigation Program (75%) and local match (open space program) (25%)	High Emergency Services Response affected.
3	Apartment Complex waterproofing electrics	Flood	Existing	NA	Apartment Complex	1 year	\$100,000	Private	Medium
4	Elevate critical facility (hospital)	Flood	Existing	NFIP participation	NFIP coordinator	2 years	\$50,000	FMA, PDM, HMGP	High
5	Relocation of Township EOC	Flood	Existing	Township EOP	Township OEM	1-2 years from plan adoption date	3.4million	HMGP	High
6	Feasibility determination/ project design for drainage for Fire/Police and EOC	Flood	Existing	Capital Improvement Plan	Municipality	1 to 2 years	TBD	PDM	High
7	Engineering/drainage study to assess options for reducing flooding	Flood	NA	NA	Municipal Administrator	1 year	\$150,000	PDM (assuming project feasibility), Capital Improvements	High
8	Repair and retrofit of Main Street Dam	Dam Failure	Existing	Local Mitigation Plan	Unknown Ownership of abandoned water control facility.	2 years from plan adoption date	TBD	TBD	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
9	Propose regionalized coordination of dam releases / Develop Standard Operating Procedures	Dam Failure	NA	NA	County OEM	6 months	Staff Time	Department Budget	High
10	Hardening/Retrofitting and generator for EOC	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
11	Hardening/Retrofitting, burying utility lines for FIRE/EMS	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
12	Harden Memorial School to FEMA 361 Standards	Wind	New	Capital Improvement Plan	School Board	2 years	TBD by Engineer / Architect	HMGP, PDM, Capital Improvements	High
13	Envelope hardening, securing external infrastructure, securing roof ballast and public outreach and education programs of Senior Citizen Complex.	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
14	Shelter enclosure/wind screen to protect critical response equipment at Municipal Marina	Wind	Existing	None	Municipality	6 months	\$100,000	General fund	Medium to High
15	Backup power (generator) and/or utility protective measures for Memorial School	All	New	Hazard Mitigation Plan	Municipal OEM	2 years	\$50,000	HMGP (5% initiative), PDM	High
16	Check valves for sanitation system (non-maintenance-related costs only)	Flood	Existing	Capital Improvement Plan	Municipal Public Works Department (sewer)	2 years from plan adoption date	\$10,000	HMGP, PDM	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
17	Develop "All Hazards" public education and outreach program for hazard mitigation and preparedness	All	NA	Hazard Mitigation Plan	County and Municipal OEM	1 year	Staff Time	Department Budget	High
18	Building Code update	Seismic and wind	New	Building Code Ordinance	Municipal Code Enforcement	3 years	staff time	Department budget	Medium
19	Work with County and Flood Commission to dredge Cranberry Bogs to increase holding capacity	Flood	Existing	NA	County/ Flood Commission	1 year	TBD by Engineer	County/ Flood Commission	High
20	Eliminate sanitary sewer infiltration and manhole rehabilitation near Snuff Mill (non-maintenance costs only)	Flood	Existing	Capital Improvement Plan	Municipal Department of Public Works/ Engineering	1 to 2 years	\$200,000-\$500,000	PDM, USDA Infrastructure Grant	Low
21	Based on jurisdiction determination work with NJDOT to eliminate flooding	Flood	Existing	Storm Water Management	Municipal Department of Public Works	Based on jurisdiction determination	TBD	HMGP, PDM, FMA	High
22	Notification System such as reverse 911 and/or warning sirens	All	NA	Capital Improvement Plan/ Hazard Mitigation Plan	Municipal OEM	1 to 2 years	Dependent upon type of system	HMGP (5% initiative)	High
23	Storm sewer improvements	Flood	Existing	Capital Improvement Plan	Municipal Administrator	1 year	\$200,000	HMGP, PDM, FMA, Capital Improvements	High
24	Evaluation/analysis of Detention Basin Dam	Flood	Existing	Unknown	Township	1 Year	TBD	PDM (assuming project feasibility)	Medium

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
25	Feasibility study for drainage at 9-1-1 switch for eastern seaboard)	Flood	Existing	None	Verizon	1 year	\$100,000	Private, PDM (assuming project feasibility)	Medium
26	Dune stabilization and replenishment	Storm Surge	Existing		Municipal OEM and Engineering Department	2 years	\$500,000	PDM, FMA, local space program funds	Medium
27	Stream bank stabilization to protect mobile home facility	Flood	Existing	Existing	Township	2 years from plan adoption date	\$500,000		High
28	Construction of barrier around Water/Sewage facilities	Flood	Existing	Floodplain Management Plan	Township	1 year	TBD	HMGP, FMA, PDM	High
29	Floodproofing and Harden/Retrofit Shelter Elementary School	Flood, Wind	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
30	Reconstruction of culvert (non-maintenance related costs only)	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
31	Dredging of Smith's Creek from the Municipal Marina	Flood	Existing	Unknown	Township	1 year	TBD	USDA	Medium
32	Construction of berm and tide gate	Flood	New	Unknown	Township	1 year	TBD	HMGP, PDM	High

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Project Briefing

prepared for:
**Hazard Mitigation Planning Working Group
& Citizens of Sussex County**

prepared by:
**Sussex County
Office of Emergency Management**

May 18th, 2010

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Sussex County and its municipalities are working on a Plan to reduce risks from natural hazards.

This briefing contains:

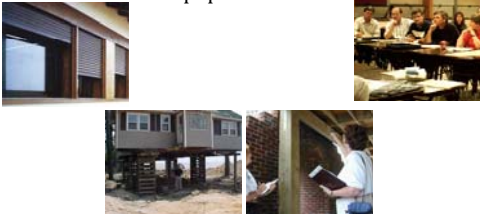
- What is a hazard mitigation plan?
- What are the benefits and costs?
- How is the Plan being developed?
- Municipality and County Department Interviews
- Next steps

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

**What is a
Hazard Mitigation Plan?**


What is "Hazard Mitigation"?

Any measures undertaken to reduce risks posed by natural hazards on a place and its population



What is "Hazard Mitigation"?

Hazard mitigation includes projects that limit the area hazards can impact like floodwalls, window shutters, or safe rooms ...



What is "Hazard Mitigation"?

...projects that move assets out of harm's way like elevating structures, or burying utilities...



What is “Hazard Mitigation”?

...**regulatory practices** like enacting or enforcing building codes, permits, or land use policies...



What is “Hazard Mitigation”?

... and **training / educational programs** for communities and local agencies



What is a “Hazard Mitigation Plan”?

A plan that identifies projects to reduce a community’s risk before disasters occur...

... which is different from an “Emergency Operations Plan” or “EOP”; a plan that identifies procedures to guide a community’s response to an emergency or disaster after it happens

**Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan**

What are the benefits and costs of the Plan?

Benefits of Participating

- Every \$1 spent on mitigation projects saves \$4 in recovery costs*
- From 1955-2005, mitigation measures prevented 220 deaths and 4,700 injuries*
- For every eligible \$1 spent by local communities on FEMA-funded grant projects, the Federal government contributes \$3 to \$9
- Opportunities to improve local insurance ratings = lower flood insurance premiums

* Source: The Multi-hazard Mitigation Council, “Hazard Mitigation Saves” 2005 an independent review of FEMA mitigation activities

Costs of Not Participating

- Pre-disaster hazard mitigation grant programs (PDM, FMA, SRL, RFC) – *Not Eligible*
- Post-disaster mitigation grant programs (PA, HMGP) – *Not Eligible*

Continuing a cycle of destruction and increasingly costly recovery

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

How is the Plan being developed?

How is the Plan Being Developed?

- The Northern Delaware River Region formed with Hunterdon, Mercer, Sussex and Warren Counties
- A Hazard Mitigation Planning Steering Committee was assembled with representatives of all four counties
- Sussex County OEM secured a grant from FEMA to help fund the planning process for all four counties and selected James Lee Witt Associates as the project technical consultant

How is the Plan Being Developed?

Sussex County OEM has been soliciting participation of all the municipalities in the County and organized a Hazard Mitigation Planning Working Group comprised of Local OEM Coordinators and representatives of Sussex County Departments

How is the Plan Being Developed?

The Plan will answer two questions:

- What hazards pose the greatest risk to the County and its citizens?
- What are the most effective measures to reduce those risks?

Hazard Identification

Hazard List, Sussex County

Hazard	Type (1)	Major Post-Disaster Consequences (2)	County EOP (3)	Mitigation 2010 (4)	NJ state/PA (5)	NOR RFP (6)	Priority in Plan? (7)
Dam Failure	T	✓		✓	✓	✓	✓
Drought	N	✓		✓	✓	✓	✓
Earthquake/Geological (4)	N	✓		✓	✓	✓	✓
Flood (5)	N	✓		✓	✓	✓	✓
Hazardous Materials Release	T	✓		✓	✓	✓	✓
High Wind - Straight-Line Winds (5)	N	✓		✓	✓	✓	✓
High Wind - Tornado	N	✓		✓	✓	✓	✓
Severe Weather - Summer	N	✓		✓	✓	✓	✓
Severe Weather - Winter	N	✓		✓	✓	✓	✓
Landslide (non-seismic)	N	✓		✓	✓	✓	✓
Wildfire	N	✓		✓	✓	✓	✓

Notes:
 (1) Type Legend: N = Natural, T = Technological/Menmade
 (2) NJ/PA/RFP = State of New Jersey Hazard Mitigation Plan
 (3) Hazards indicated as likely candidates to include in planning for Sussex County per Northern Delaware River Region Request for Proposals (RFP)
 (4) Earthquake/Geological includes effects of surface faulting, ground shaking, earthquake induced landslides, and liquefaction
 (5) Includes tidal, flash, and riverine flooding
 (6) High Wind - Straight-Line Winds includes winds due to hurricanes, tropical storms, nor'easters, coastal storms, and other severe storms, excluding tornadoes.

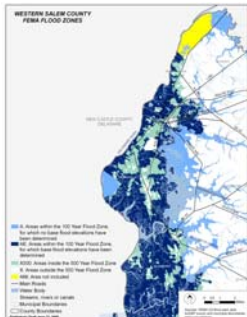
Hazard Prioritization

CPM Category	Degree of Risk			Assigned Mitigation Partner
	Level (8)	Description	Score (9)	
Priority	High to Life	Highly toxic with a well documented history of occurrence. Hazard has up to 100 year chance of occurring (100+ year return period). Probability of occurrence is 20% (100 years per year).	4	
	Life	Substantial occurrence with at least one or more documented historical events. Estimated up to 10 year chance of occurring (100+ year return period). Probability of occurrence is 20% (100 years per year).	3	40%
	Possible	Minor occurrence with at least one documented or probable historical event. Estimated up to 10 year chance of occurring (100+ year return period). Probability of occurrence is 20% (100 years per year).	2	
	Unlikely	Minor occurrence with no documented history of occurrence or events. Estimated up to 10 year chance of occurring (100+ year return period). Probability of occurrence is 20% (100 years per year).	1	
Regional County	Catastrophic	Major event with 100+ year return period. Complete destruction of facilities for more than 1 month.	4	
	Critical	Major event with 100+ year return period. Major damage to facilities for more than 1 month. Complete destruction of facilities for more than 1 month.	3	50%
	Unlikely	Major event with 100+ year return period. Complete destruction of critical facilities for at least 1 day.	2	
	Negligible	Minor event with 100+ year return period. Complete destruction of facilities for at least 1 day.	1	
Sussex County	Less than 10 Years	Less than 10 year warning time before event occurs.	4	
	10-20 Years	10-20 year warning time before event occurs.	3	10%
	20-30 Years	20-30 year warning time before event occurs.	2	
	More than 30 years	More than 30 year warning time before event occurs.	1	
Priority	Less than 1 Day	Less than 1 day warning time before event occurs.	3	50%
	Less than 10 Hours	Less than 10 hour warning time before event occurs.	2	

Hazard Risk Assessment

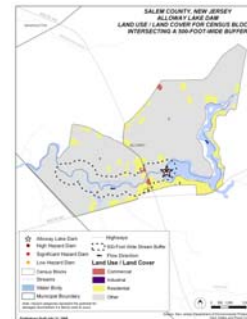
Risk will be assessed in several ways:

- Exposure of assets to hazards that occur in predictable areas - such as **flood** (per FEMA FIRM maps)...



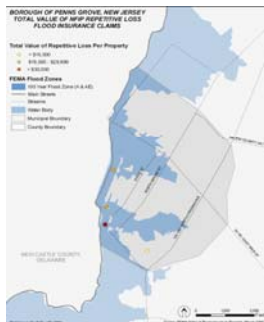
Hazard Risk Assessment

...or **dam failure** (per NJ DEP maps and data)



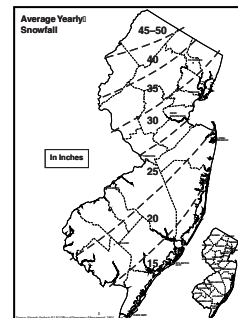
Hazard Risk Assessment

- Patterns of past damages – such as repetitive **flood** damage claims under the National Flood Insurance Program (NFIP).



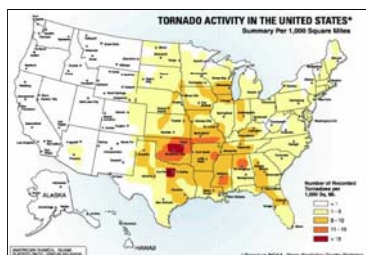
Hazard Risk Assessment

- Exposure of assets to predictable events - that can cause building failures – such as snow loads from **winter storms**...



Hazard Risk Assessment

or **high winds**



Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

Municipality and County Department Interviews

Municipality and County Department Interviews

Why conduct municipal interviews?

- Identify hazard-related community issues affecting residents, property owners and business operations
- Explore and identify potential solutions, i.e., projects for inclusion in the Plan

Municipality and County Department Interviews

What do municipalities have to do?

- Schedule one-hour interview – via County OEM Coordinator
- Complete Capability Assessment – via on-line survey
- Review provided interview related materials – to be sent via e-mail
- Identify problem areas and potential projects

Interview Schedule

Sussex June 1st				
Scheduled Time	Municipality	Person & POC	Municipality	Person & POC
1:00pm				
1:30pm				
2:00pm				
2:30pm				
3:00pm				
3:30pm				
4:00pm				
4:30pm				
5:00pm				
5:30pm				
6:00pm				
6:30pm				
7:00pm				
7:30pm				
8:00pm				
8:30pm				
9:00pm				
9:30pm				
10:00pm				
10:30pm				
11:00pm				
11:30pm				
12:00pm				

Sussex June 2 nd				
Scheduled Time	Municipality	Person & POC	Municipality	Person & POC
1:00pm				
1:30pm				
2:00pm				
2:30pm				
3:00pm				
3:30pm				
4:00pm				
4:30pm				
5:00pm				
5:30pm				
6:00pm				
6:30pm				
7:00pm				
7:30pm				
8:00pm				
8:30pm				
9:00pm				
9:30pm				
10:00pm				
10:30pm				
11:00pm				
11:30pm				
12:00pm				

Capability Assessment

10. Hazard Mitigation Programs

13a. What department or agency administers floodplain management in your municipality (Environmental Protection, Public Works, Planning, Engineering, Permits, etc.)?

13b. Who is the community's designated Floodplain Administrator (by name and title)?
Note: If your community participates in the NFIP, there is a designated Floodplain Administrator.

13c. How is the Floodplain Administrator involved in the development of the Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan?

Point of Contact
 Working Group
 Not

Interview Materials

- Each municipality will receive the following:
 - Overview
 - Critical Facilities List
 - Example Mitigation Projects
 - Proposed Mitigation Actions

Critical Facilities Lists

	A	B	C	D	E	F	G	H
1	Name	Address	City	State	Zip Code	Description	Lat	Long
2	BELVIDERE HIGH	809 OXFORD STREET	BELVIDERE	NJ	07823	Grade Schools (Primary and High Schools)	40.83	-75.07
3	OXFORD STREET	807 OXFORD STREET	BELVIDERE	NJ	07823	Grade Schools (Primary and High Schools)	40.83	-75.07
4	WHITE TWP CONS	565 CR 519	BELVIDERE	NJ	07823	Grade Schools (Primary and High Schools)	40.84	-75.03
5	Warren County Sheriff	413 2nd St # 2	Belvidere	NJ	07823-1528	Sheriff	40.83	-75.08
6	Mountain Lake Fire Company	99 Tamarack RD	Belvidere	NJ	07823	Fire Station	40.85	-74.98
7	Good Will Fire Company	089 Water ST	Belvidere	NJ	07823	Fire Station	40.83	-75.07
8								

Proposed Mitigation Actions

Proposed Mitigation Actions								
Mitigation Action, Program, or Project	Repetitive Flooded	Applies to Existing or New Structures	Existing Level of Flooding/Endorsement Mitigation	Responsible Party	Target Date / Fiscal Year	Estimated Cost (\$)	Funding Source	Priority
Bethlehem Township								
Bethlehem Twp 1: Flood mitigation action, e.g. Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing of 3 Severe Repetitive Loss property on Wal Street.	Flood	Existing	Floodplain Management	Floodplain Administrator / OEM Coordinator			FMA, FEMA-C & IMCP if available	
Bethlehem Twp 2: Flood mitigation action, e.g. Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing of 3 Severe Repetitive Loss properties on Water Street.	Flood	Existing	Floodplain Management	Floodplain Administrator / OEM Coordinator			FMA, FEMA-C & IMCP if available	
Bethlehem Twp 3: Flood mitigation action, e.g. roof and/or structural hardening, window and door replacement, back-up generators, etc. 2 of 7 schools located on Oxford Street.	Severe Weather & Strong Line Winds	Existing	Emergency Management	School Board Administrator			FEMA-C & IMCP if available	
Bethlehem Twp 4: Flood mitigation action, e.g. roof and/or structural hardening, window and door replacement, back-up generators, etc. 2 of 7 schools located on Oxford Street.	Severe Weather & Strong Line Winds	Existing	Emergency Management	School Board Administrator			FEMA-C & IMCP if available	

Project Identification

- Projects are identified per:
 - Problem Areas from the Risk Assessment and as indicated by participating communities
 - Repetitive Flood Loss Properties
 - Critical Facilities



Typical Projects

- Potential hazard mitigation measures are identified by each of the municipalities. Typical action items include:
 - Property Acquisitions
 - Elevation or Relocation of Critical Facilities
 - Drainage Improvements
 - Bridge and Culvert Replacements
 - Flood Proofing of Commercial Properties
 - Upgrading Utilities

Typical Projects

- Hazard mitigation measures identified for municipalities to implement can also include:
 - Engineering studies to determine appropriate actions for specific problems (flood, dam failure, high wind, mine capping)
 - Provision of back-up power generation
 - Provision of early warning systems
 - Building code updates
 - Public awareness programs

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

Next Steps

What's Left To Do?

- Conduct the workshops
- Incorporate identified mitigation actions
- Complete Draft Plan and submit to Working Group for review and comment

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Overview - Municipal and County Department Interviews

As discussed at a recent Local OEM Coordinators' Meeting, the Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan (the "Plan") currently under development is focused on identifying and documenting viable hazard mitigation projects for each participating municipality. An interview time has been established for your community or department as indicated in the e-mail transmittal that included this overview. The interview will help the planning team identify projects for each participating community.

Prior to your scheduled interview session, there are actions/tasks that need to be addressed:

- Completion of the Capability Assessment Survey (municipalities only)
- Review of the Critical Facilities List
- Review of the Example Hazard Mitigation Project List and Proposed Mitigation Action Table

Capability Assessment Survey - Earlier in May, an e-mail was sent to all participating municipality OEM directors with information regarding this on-line survey. The survey provides important information for development of the plan. Some items in particular must be completed for participating municipalities to obtain final approval of the Plan later this year from NJOEM and FEMA (e.g., Survey Questions 13, 13a, 13b, 13c, 19, 20, 21, 22, 23, 23a, 24, and 24a).

Critical Facilities List - The critical facilities list has been provided for your review and information verification. If this information was provided and reviewed in support of the recent Delaware River Basin Commission (DRBC) Flood Plan, please confirm there are no changes to the information. Otherwise, please verify the data listed for the facilities with special emphasis on verifying that these facilities are located in your community, that the name and address information is correct and if there are other facilities of this type that should be included.

Example Hazard Mitigation Project List and Proposed Mitigation Action Table - The Example Hazard Mitigation Project List was compiled from other hazard mitigation plans for counties in New Jersey and shows the range and type of projects that can be incorporated into the Plan. This table also shows the types of information that will be included in the Northern Delaware River Region Plan for each municipality (although the length of the list for each municipality will likely be shorter).

The Proposed Mitigation Action Table has been prepared for each municipality with potential projects as identified by the FEMA Repetitive Flood Loss List, Severe Repetitive Flood Loss List and the Critical Facilities List.

It is important to note the following regarding the Proposed Mitigation Action Table. The potential project sites and areas indicated here is by no means a complete list of issues for each community nor is it required that you include all of these as projects in the Plan. The potential project sites and actions are good candidates for the type of mitigation actions that will benefit each specific community but there are likely other areas in the community where problems have been or can be expected that should be considered for inclusion.

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Overview - Municipal and County Department Interviews

Therefore, consider any and all hazard-related issues the community faces and compile a list to be discussed at the interview. For example, areas that experience frequent flooding or critical facilities (like schools, hospitals or elderly care facilities) that are subject to loss of power are good candidates.

In addition, any projects that have already been identified can be included in this process as long as they have not begun construction. Even if funding sources have been identified, it will be important to document what each municipality has already accomplished or plans to address in the near future.

Finally, please bring any person or persons that you think can contribute to further developing potential hazard mitigation projects. For example, the municipal engineer or public works director often have good working knowledge of problems that have been experienced in the past and may also have potential projects already in mind.

The Proposed Mitigation Action Table includes a sheet of instructions regarding what data each cell in the table represents. However, the main focus prior to the interview session is developing a list of potential projects for the left-hand column.

If you have any questions, please contact your county OEM coordinator or the project consultants via:

Peter Dennen
James Lee Witt Associates
pdennen@wittassociates.com
609.922.5593

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
1	Acquisition of 23 homes	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	PDM, HMGP, FMA, RFC, SRL	High
2	Elevation of repetitive loss property	Flood	Existing	County Mitigation Plan/Flood Plain Management	Township OEM	1-2 years from plan adoption date	\$350,000	Pre-Disaster Mitigation Program (75%) and local match (open space program) (25%)	High Emergency Services Response affected.
3	Apartment Complex waterproofing electrics	Flood	Existing	NA	Apartment Complex	1 year	\$100,000	Private	Medium
4	Elevate critical facility (hospital)	Flood	Existing	NFIP participation	NFIP coordinator	2 years	\$50,000	FMA, PDM, HMGP	High
5	Relocation of Township EOC	Flood	Existing	Township EOP	Township OEM	1-2 years from plan adoption date	3.4million	HMGP	High
6	Feasibility determination/ project design for drainage for Fire/Police and EOC	Flood	Existing	Capital Improvement Plan	Municipality	1 to 2 years	TBD	PDM	High
7	Engineering/drainage study to assess options for reducing flooding	Flood	NA	NA	Municipal Administrator	1 year	\$150,000	PDM (assuming project feasibility), Capital Improvements	High
8	Repair and retrofit of Main Street Dam	Dam Failure	Existing	Local Mitigation Plan	Unknown Ownership of abandoned water control facility.	2 years from plan adoption date	TBD	TBD	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
9	Propose regionalized coordination of dam releases / Develop Standard Operating Procedures	Dam Failure	NA	NA	County OEM	6 months	Staff Time	Department Budget	High
10	Hardening/Retrofitting and generator for EOC	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
11	Hardening/Retrofitting, burying utility lines for FIRE/EMS	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
12	Harden Memorial School to FEMA 361 Standards	Wind	New	Capital Improvement Plan	School Board	2 years	TBD by Engineer / Architect	HMGP, PDM, Capital Improvements	High
13	Envelope hardening, securing external infrastructure, securing roof ballast and public outreach and education programs of Senior Citizen Complex.	Wind	Existing	Unknown	Township	1 year	TBD	HMGP, PDM	High
14	Shelter enclosure/wind screen to protect critical response equipment at Municipal Marina	Wind	Existing	None	Municipality	6 months	\$100,000	General fund	Medium to High
15	Backup power (generator) and/or utility protective measures for Memorial School	All	New	Hazard Mitigation Plan	Municipal OEM	2 years	\$50,000	HMGP (5% initiative), PDM	High
16	Check valves for sanitation system (non-maintenance-related costs only)	Flood	Existing	Capital Improvement Plan	Municipal Public Works Department (sewer)	2 years from plan adoption date	\$10,000	HMGP, PDM	High

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
17	Develop "All Hazards" public education and outreach program for hazard mitigation and preparedness	All	NA	Hazard Mitigation Plan	County and Municipal OEM	1 year	Staff Time	Department Budget	High
18	Building Code update	Seismic and wind	New	Building Code Ordinance	Municipal Code Enforcement	3 years	staff time	Department budget	Medium
19	Work with County and Flood Commission to dredge Cranberry Bogs to increase holding capacity	Flood	Existing	NA	County/ Flood Commission	1 year	TBD by Engineer	County/ Flood Commission	High
20	Eliminate sanitary sewer infiltration and manhole rehabilitation near Snuff Mill (non-maintenance costs only)	Flood	Existing	Capital Improvement Plan	Municipal Department of Public Works/ Engineering	1 to 2 years	\$200,000-\$500,000	PDM, USDA Infrastructure Grant	Low
21	Based on jurisdiction determination work with NJDOT to eliminate flooding	Flood	Existing	Storm Water Management	Municipal Department of Public Works	Based on jurisdiction determination	TBD	HMGP, PDM, FMA	High
22	Notification System such as reverse 911 and/or warning sirens	All	NA	Capital Improvement Plan/ Hazard Mitigation Plan	Municipal OEM	1 to 2 years	Dependent upon type of system	HMGP (5% initiative)	High
23	Storm sewer improvements	Flood	Existing	Capital Improvement Plan	Municipal Administrator	1 year	\$200,000	HMGP, PDM, FMA, Capital Improvements	High
24	Evaluation/analysis of Detention Basin Dam	Flood	Existing	Unknown	Township	1 Year	TBD	PDM (assuming project feasibility)	Medium

**Northern Delaware River Region, NJ All-Hazards Pre-Disaster Mitigation Plan
Example Hazard Mitigation Project List**

	Mitigation action, program or project	Hazard(s) addressed	Existing or new structures	Existing implementation mechanism	Responsible Party	Target Date	Estimated cost (\$)	Funding Source	Priority
25	Feasibility study for drainage at 9-1-1 switch for eastern seaboard)	Flood	Existing	None	Verizon	1 year	\$100,000	Private, PDM (assuming project feasibility)	Medium
26	Dune stabilization and replenishment	Storm Surge	Existing		Municipal OEM and Engineering Department	2 years	\$500,000	PDM, FMA, local space program funds	Medium
27	Stream bank stabilization to protect mobile home facility	Flood	Existing	Existing	Township	2 years from plan adoption date	\$500,000		High
28	Construction of barrier around Water/Sewage facilities	Flood	Existing	Floodplain Management Plan	Township	1 year	TBD	HMGP, FMA, PDM	High
29	Floodproofing and Harden/Retrofit Shelter Elementary School	Flood, Wind	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
30	Reconstruction of culvert (non-maintenance related costs only)	Flood	Existing	Floodplain Management Plan	Township	2 years	TBD	HMGP, PDM	Medium
31	Dredging of Smith's Creek from the Municipal Marina	Flood	Existing	Unknown	Township	1 year	TBD	USDA	Medium
32	Construction of berm and tide gate	Flood	New	Unknown	Township	1 year	TBD	HMGP, PDM	High

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Proposed Mitigation Action Table – Belvidere Township, Warren County, New Jersey

The Mitigation Action Table is the cornerstone of the mitigation strategy for each participating municipality. Several action items (potential projects) have already been added to the table. These items were identified through the FEMA Severe Repetitive Flood Loss and Repetitive Flood Loss Lists as well as the Critical Facilities List.

Each cell found within the table requires a specific type of data response per the following descriptions. The initial effort should be identifying the problems and concerns of the community regarding hazard mitigation. James Lee Witt Associates will help identify the additional information as part of the interview process.

1. **Mitigation Action Program, Project:** Project # identifier as well as a description of what the project entails. This includes a general location such as a street name but does not require the exact address. The exact location of flood projects will be needed later in the process but Witt Associates staff will assist in determining these locations.
2. **Hazard(s) Addressed:** Hazard or hazards the mitigation action will reduce or eliminate. Typically, this entry will reflect at least one of the identified hazards that will be profiled and assessed within the Plan.
3. **Applies to Existing or New Structures:** Identifies if the mitigation action is applicable to a structure already in place or one that is yet to be built.
4. **Existing Local Planning / Implementation Mechanism:** Identifies process within your community that will enable implementation. For example, listing a federal grant program is not the local implementation mechanism; it is a funding source. Entries like “local floodplain management” or “local hazard mitigation” or “capital improvement” would be more appropriate.
5. **Responsible Party:** Identifies appropriate department or individual (by title, not by name) who will be responsible for implementation of the project. Just listing the municipality will not suffice unless the community is small and does not have any operational departments or paid staff that would be considered the responsible parties.
6. **Target Date / Project Duration:** Represents when the project is anticipated to be completed. If this is not practical, the duration of the project should be indicated once the project is initiated.
7. **Estimated Cost (\$):** Best “educated” guess for the overall cost of each mitigation action. If the project does not easily lend itself to a preliminary cost estimate, a range of anticipated costs can be cited.

For example, cost estimate ranges could be represented as:

- < \$250,000
- \$250,000-\$500,000
- \$500,000 - \$1,000,000
- >\$1,000,000

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Proposed Mitigation Action Table – Belvidere Township, Warren County, New Jersey**

8. **Funding Source:** Identifies federal, state and/or local funding sources. The table entries shown below are all federal grants. Witt Associates will help determine if there are any other applicable state or local funding sources.
9. **Priority:** All identified mitigation actions require a priority ranking. In some cases, the communities assign these priorities directly. In addition, this ranking can be developed utilizing a method known by the acronym “STAPLEE”. This process is applied after all the mitigation actions have been identified for each community. As needed, Witt Associates will work with the county and municipalities to determine these priority rankings.

On the following pages are the proposed mitigation action sites and/or projects for initial review and use at the scheduled interview.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Proposed Mitigation Action Table – Belvidere Township, Warren County, New Jersey**

Proposed Mitigation Actions

Mitigation Action, Program, or Project	Hazard(s) Addressed	Applies to Existing or New Structures	Existing Local Planning/ Implementation Mechanism	Responsible Party	Target Date / Project Duration	Estimated Cost (\$)	Funding Source	Priority
Belvidere Township								
Belvidere Twp 1: [insert mitigation action, e.g., Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing] of 1 Severe Repetitive Loss property on Wall Street.	Flood	Existing	Floodplain Management	Floodplain Administrator / OEM Coordinator			FMA, PDM-C & HMGP if available	
Belvidere Twp 2: [insert mitigation action, e.g., Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing] of 3 Severe Repetitive Loss properties on Water Street.	Flood	Existing	Floodplain Management	Floodplain Administrator / OEM Coordinator			FMA, PDM-C & HMGP if available	
Belvidere Twp 3: [insert mitigation action, e.g., roof and/or structural hardening, window and door replacements, back-up generators, etc.] of 2 schools located on Oxford Street	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	School Board Administrator			PDM-C & HMGP if available	
Belvidere Twp 4: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of school located on CR519	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	School Board Administrator			PDM-C & HMGP if available	

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Proposed Mitigation Action Table – Belvidere Township, Warren County, New Jersey**

Mitigation Action, Program, or Project	Hazard(s) Addressed	Applies to Existing or New Structures	Existing Local Planning/ Implementation Mechanism	Responsible Party	Target Date / Project Duration	Estimated Cost (\$)	Funding Source	Priority
Belvidere Twp 5: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of Police Department building located on Water Street	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	Police Department			PDM-C & HMGP if available	
Belvidere Twp 6: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of Good Will Fire Company located on Water Street.	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	Station Commander			PDM-C & HMGP if available	
Belvidere Twp 7: [insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, etc.] of Mountain Lake Fire Company located on Tamarack Road.	Severe Winter Weather & Straight Line Winds	Existing	Emergency Management	Station Commander			PDM-C & HMGP if available	
Belvidere Twp 8: [insert public education program related action(s)]	All	Existing and New	Emergency Management	OEM Coordinator			PDM-C & HMGP if available	
Belvidere Twp 9: [insert building code, zoning, or floodplain ordinance revisions and/or upgrade related action(s)]	All	New	Planning & Zoning	OEM Coordinator			PDM-C & HMGP if available	

Sussex June 1st

Scheduled Time	Session A Municipality	Session A POC	Session B Municipality	Session B POC
9am				
10am				
11am				
1pm				
2pm				
3pm				
4pm				
5pm				
7pm				
8pm				
9pm				
10pm				

Sussex June 2nd

Scheduled Time	Session A Municipality	Session A POC	Session B Municipality	Session B POC
9am				
10am				
11am				
1pm				
2pm				
3pm				
4pm				
5pm				
7pm				
8pm				
9pm				

SIGN IN SHEET

SUBJECT: PDM Update

PRESENTER: Jame Lee Witt

LOCATION: Andover Township #1 Firehouse

DATE: June 2, 2010 TIME: 7:00 p.m.

NAME (PRINT)	MUNICIPALITY/AGENCY
Amy L Coary	Sussex County OEM
Sandy Stov	Sussex County OEM
STAN DUSTKUS	JANDYSFON ORM
Roy Wherry	VERNON OEM
Michael Fernald	Walpack OEM
Rich Humphrey	FRANKFORD OEM
Jeff Lewis	Branchville OEM
WILLIAM HICKERSON	HARDYSTON oem.
JEFF NAKIS	SPARTA TWP OEM / PD
JAKE LITTLE	SUSSEX BORO OEM
Robert Rebaulin	SUSSEX BORO OEM
Floyd Sauthard Jr	Sussex Boro OEM
JOHN RICHARDSON SR	FREDON OEM
Richard Stewart	STANTHOPE OEM
Jim Williams	FRANKLIN OEM
Jim Williams	FRANKLIN OEM
Dan Finkle	NEWTON OEM
Keith Sukennikoff	HAMBURG OEM
Sid Crumy	HAMBURG
Rich Hughes	LAFAYETTE
Jim McCracken	FREDON
Chris V. Rison	FRANKFORD
CHRIS FRANEK	BRANCHVILLE OEM

Northern Delaware River Region
All-Hazards Pre-Disaster Mitigation Plan

Work-in-Progress Review Materials

Submitted to:
Sussex County Office of Emergency Management

Submitted by:



June 9, 2010

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting – Agenda
June 9, 2010**

1. Project Status and General Schedule

- a. Project Status Report – May 2010
- b. General Schedule Update
 - Working Group / Public Meetings - late July

2. Hazard Prioritization

- a. Sections 3.1 – 3.3 Preliminary Draft
- b. Section 3.4 Preliminary Draft / CPRI Results
- c. County OEM Hazard Priorities

3. Municipal Participation Status

- a. Current status
- b. Strategy to address deficiencies

4. Next Steps

- a. Address Municipal Participation deficiencies
- b. Complete Risk Assessment (Section 4)
- c. Prepare Draft Hazard Mitigation Plan (July, August and September Steering Committee Meetings)

5. Next Meetings / Action Items

- a. NDRR Steering Committee Meeting: July 14, 2010 @ 10:00 am ET, Location TBD

Steering Committee Meeting

June 9 2010

Name

Lawrence Fleming

BILL HUNT

Frank Wheatley

STUART WALLACE

WILLIAM DUFFY (Q)

SKIP DANIELSON

Pete Danner

Organization

Huntsdon City OEM

WCOEM

WCOEM

JLWA

MEDICAL OEM

JCOEM

JLWA

Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan Monthly Progress Report – May 31, 2010

The following summarizes progress by James Lee Witt Associates (Witt Associates) for development of the Northern Delaware River Region (NDRR), New Jersey All-Hazards Pre-Disaster Mitigation Plan for the period from May 1, 2010 through May 31, 2010 per tasks described in Witt Associates' Scope of Work dated December 11, 2009:

Work Completed - May 2010:

- S. Wallace and P. Dennen met with the NDRR Steering Committee members on May 12th
- Task A.2 Document Review. Witt Associates completed the process of collecting and analyzing information from the NDRR counties and participating communities
- Task B.2 Profile Hazards: Witt Associates completed work to develop hazard profiles to present to the Steering Committee on June 9th and for incorporation into the Plan as part of the risk assessment
- Tasks B.5 and B.6: Progress & Coordination Meeting #2: Witt Associates prepared for and conducted meetings with County Working Groups in mid-May including:
 - Sussex County on May 18th
 - Warren County on May 19th
 - Mercer Co on May 20th

Work-in-progress – May 2010:

- Task B.3 Inventory Assets and Task B.4 Estimate Losses: Witt Associates continued work to develop asset inventories and loss estimates per approved methodology for incorporation into the Plan as part of the risk assessment.
- Task C.1 Goals and Objectives, Task C.3 Identify and Prioritize Mitigation Actions, Tasks C.4 and C.5: Progress & Coordination Meeting #3 Witt Associates prepared for and conducted interviews with municipalities and county departments at end of May and beginning of June including:
 - Mercer County on May 26th
 - Sussex County on June 1st and 2nd
 - Warren County on June 3rd and 4th
 - Hunterdon County on June 7th and 8th
- Task C.2 Capability Assessment: Witt Associates distributed on-line survey to participating municipalities and began compiling results

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Monthly Progress Report – May 31, 2010**

Proposed Invoicing – May 2010:

The following represents the percent complete values that, if Sussex County OEM agrees will be invoiced for the reporting period:

Task	Previous % Complete	% Complete- May 2010	% Complete- Project to Date
A	95%	0%	95%
B	25%	25%	50%
C	15%	15%	30%
D	0%	0%	0%
E	0%	0%	0%

Included with this report is a draft invoice for the month of May that reflects the dollar amount corresponding to these percentages.

Problems encountered – May 2010 (and proposed resolution):

- No unanticipated problems were encountered during this period.

Work anticipated to be completed during the next reporting period, June 2010:

- Complete efforts under Task B.3, B.4, C.1, C.2., C.3, C.4 and C.5 including conducting remaining interviews with municipalities and county departments at beginning of June
- Initiate work under Tasks C.6 and C.9.a to prepare the Steering Committee Draft All-Hazards Pre-Disaster Mitigation Plan for review at July 14th Steering Committee meeting
- Prepare for and attend Steering Committee on June 9, 2010 SC Meeting @ Hunterdon County OEM

Section 3

Hazard Identification, Profiling and Prioritization

Contents of this Section

- 3.1 IFR Requirement for Hazard Identification
- 3.2 Hazard History and Identification
- 3.3 Hazard Profiles
 - 3.3.1 Dam Failure
 - 3.3.2 Drought
 - 3.3.3 Earthquake / Geological
 - 3.3.4 Flood
 - 3.3.5 Hazardous Materials Release
 - 3.3.6 High Wind – Straight-line Winds
 - 3.3.7 High Wind – Tornado
 - 3.3.8 Landslide (non-seismic)
 - 3.3.9 Severe Weather – Summer
 - 3.3.10 Severe Weather – Winter
 - 3.3.11 Wildfire
- 3.4 Hazard Priorities

3.1 IFR Requirement for Hazard Identification

IFR §201.6(c)(2)(i): [The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

3.2 Hazard History and Identification

Per IFR requirements, and as the first step in the hazard mitigation planning process, Sussex County identified hazards that can impact Sussex County. The following subsections provide an overview of past hazard events in Sussex County and identify the hazards included in the planning process.

Note: The term “planning area” as used in this Plan refers to the geographic limits of Sussex County.

3.2.1 Sussex County's Hazard History

Numerous federal agencies maintain a variety of records regarding losses associated with natural hazards. Unfortunately, no single source offers a definitive accounting of all losses. The Federal Emergency Management Agency (FEMA) maintains records on federal expenditures associated with declared major disasters. The United States Army Corps of Engineers (USACE) and the Natural Resources Conservation Service collect data on losses during the course of some of their ongoing projects and studies. Additionally, the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) database collects and maintains data about natural hazards in summary format.

The University of South Carolina's Hazards & Vulnerability Research Institute has compiled a county-level hazard data set for the U.S. for 18 different natural hazard events types, called the Spatial Hazard Events and Losses Database for the United States (SHELDUS). The data is derived from several existing national data sources, including the NCDC's monthly Storm Data publications and only contains events that had associated loss of life, injuries, or financial damages. The online NCDC database does not include some of the older events before 1973. However, SHELDUS 7.0 includes events derived from NCDC-provided hardcopies as far back as 1960 that are not included in NCDC's online database. The SHELDUS team also chose to manually determine when losses occurred within the queried county or in another location during the same event. When the location of the loss could not be determined based on the event description, SHELDUS methodology calls for the losses to be evenly distributed across the number of counties that were impacted by the event. NCDC combines all losses for an event and they appear for that county when queried, which causes overestimations within counties and duplicated losses across counties. SHELDUS also provides the option of adjusting for inflation. Adjusting for inflation is important when comparing monetary amounts across multiple years in order to standardize losses and to avoid underestimating older damages. SHELDUS only provides data up to 2008.

For these reasons, we have chosen to utilize the SHELDUS database in this Plan for events from 1960-2008 and cross-check them with events in the NCDC database, especially for events from 2008-2010. The data includes occurrences, dates, injuries, deaths, and costs.

According to the SHELDUS and NCDC databases, between 1960 and 2010, Sussex County has experienced the following significant, loss-associated hazard events:

- 84 thunderstorm and high wind events
- 38 winter storms/extreme cold temperature events
- 1 drought
- 12 floods/flash floods
- 7 extreme heat events
- 5 hail storms
- 17 lightning events
- 4 hurricanes or tropical storms
- 0 wildfires
- 2 tornadoes

According to the NCDC and SHELDUS, Sussex County has experienced approximately 43 deaths and 33 injuries from natural hazards in the period from 1960 to 2010.¹ In addition to the events recorded in the NCDC database, other sources identified 14 earthquakes, three significant crop loss events, and 5 impactful landslides². These figures are discussed in more detail in the hazard-specific subsections that follow.

Table 3.2.1-1 provides brief descriptions of particularly significant hazard events occurring in Sussex County’s recent history per the NCDC. This list is not meant to capture every event that has affected the area; rather it lists some of the more significant events that have occurred.

Sussex County has received seven major Presidential Disaster Declarations and seven Emergency Declarations since 1950. Four of the seven major disaster declarations were the result of significant flooding. All of the major and emergency declarations, and one non-declared event, are included as part of the summary in Table 3.2.1-1 below.

Table 3.2.1-1: Recent Declared Emergency and Major Disasters in Sussex County, 1962-2010

Date and Disaster (DR)	Nature of Event
3/09/1962 (DR-124)	SEVERE STORMS, HIGH WINDS, AND FLOODING–Statewide, the event resulted in damages estimated at \$88.4 million (damage estimate adjusted to dollar figures for the year 2003).
8/18/1965 (DR-205)	WATER SHORTAGE–Statewide, the event resulted in damages estimated at \$6.4 million (damage estimate adjusted to dollar figures for the year 2003).
9/04/1971 (DR-310)	HEAVY RAINS AND FLOODING–Statewide, the event resulted in damages estimated at \$55.8 million (damage estimate adjusted to dollar figures for the year 2003).
2/08/1977 (DR-528)	ICE CONDITIONS–Statewide, the event resulted in damages estimated at approximately \$989,000 (damage estimate adjusted to dollar figures for the year 2003).
10/19/1980 (DR-3083)	WATER SHORTAGE (Emergency Declaration)–Statewide, the event resulted in damages estimated at \$5 million (damage estimate adjusted to dollar figures for the year 2003).

¹ Hazards & Vulnerability Research Institute (2009). The Spatial Hazard Events and Losses Database for the United States, Version 7.0 [Online Database]. Columbia, SC: University of South Carolina. Retrieved from <http://www.sheldus.org> NOAA/NCDC database. Retrieved from <http://www.ncdc.noaa.gov/oa/climateresearch.html>

² Crop loss data came from NOAA/NCDC. Earthquake data came from NJDEP - New Jersey Geological Survey - DGS04-1 Earthquakes Epicentered in New Jersey <http://www.state.nj.us/dep/njgs/geodata/dgs04-1.htm#image> Landslide data came from NJDEP – New Jersey Geological Survey – DGS06-3 Landslides in New Jersey <http://www.state.nj.us/dep/njgs/geodata/dgs06-3.htm>

Date and Disaster (DR)	Nature of Event
3/13/1993 (DR-3106)	SEVERE STORMS AND FLOODING (Emergency Declaration)–Event known as the <i>Storm of the Century</i> affected as many as 26 states from Florida to Maine, the Gulf Coast, and the Ohio Valley. One of the most intense nor’easters to ever effect the United States. The <i>Storm of the Century</i> label was given to the event due to the record low pressure, wind speeds, temperature, and snowfall. All 21 counties in New Jersey were included in the Presidentially Declared Disaster.
1/7/1996 (DR-1088)	BLIZZARD—A State of Emergency was declared for the blizzard that hit the state. Road conditions were dangerous due to the high winds and drifts. Both government and contract snow plowing operations were running at a maximum. Local roads were impassable. This blizzard also brought on coastal flooding with the high tides of Sunday evening and Monday morning, and there were reports of damage to dunes and beaches from the heavy wave activity. More than 400 National Guard personnel were activated for transport assistance, primarily for medic missions.
9/18/1999 (DR1295)	HURRICANE FLOYD - This downgraded fall hurricane put the entire eastern seaboard on flood watch, including every county in New Jersey. The storm lasted approximately 18 hours resulting in rainfall totals of between 10-14 inches in some parts of the state.
11/01/2000 (DR-3156)	WEST NILE VIRUS (Emergency Declaration) – Statewide, the event resulted in damages estimated at approximately \$2.9 million (damage estimate adjusted to dollar figures for the year 2003).
9/19/2001 (DR-3169)	FIRES AND EXPLOSIONS (Emergency Declaration) – Statewide, the attacks of September 11, 2001 resulted in damages estimated at approximately \$100 million (damage estimate adjusted to dollar figures for the year 2003).
2/16/2003 (DR-3181)	HEAVY SNOW (Emergency Declaration) – The most powerful storm to affect New Jersey since the blizzard of 1996. The combination of the very cold temperatures and the approach of a strong storm system caused widespread snow to break out, starting before sunrise on Sunday, February 16. Snow continued during Sunday day, heavy at times, and continued into Sunday night. Precipitation continued on Monday, before finally coming to an end on Tuesday. Total snowfall in Sussex County ranged from 16" to 25". New Jersey requested and was granted a Snow Emergency Declaration for all 21 counties. The President's Day snowstorm tied or set records in all 21 New Jersey counties including Sussex County. Statewide, the event resulted in damages estimated at approximately \$30.2 million (damage estimate adjusted to dollar figures for the year 2003).
10/01/2004 (DR-1563)	SEVERE STORMS AND FLOODING - Hurricane Ivan initially made landfall along the Gulf Coast on September 16, 2004 near the border of Alabama and Florida as a Category 4 Hurricane. As the storm moved inland, it weakened and was eventually downgraded to a tropical depression before reaching New Jersey. As a tropical depression, the storm continued to cause extensive damages from heavy rains that totaled up to six inches in some parts of New Jersey. The heavy rains resulted in significant flood damages particularly along the Delaware River. As a result of the event, a Presidentially-declared Disaster was declared on October 1st, 2004, for four Counties in northwestern New Jersey (FEMA DR-1563). The majority of the infrastructure damages occurred in neighboring Warren County where FEMA Public Assistance totaled almost three million dollars.

Date and Disaster (DR)	Nature of Event
4/19/2005 (DR-1588)	SEVERE STORMS AND FLOODING - For the second time within seven months a greater than 50-year storm affected the Delaware River Basin and its tributaries. The crests along the Delaware River were the highest crests since 1955. In many places, it was the second or third highest crest on record for the Delaware River. In Sussex, Warren, Hunterdon, Mercer and Morris Counties, about 1,800 homes and businesses were flooded, 25 homes were destroyed.
7/07/2006 (DR-1653)	SEVERE STORMS AND FLOODING - Beginning on June 23, 2006, portions of northwestern New Jersey were impacted by severe storms and flooding. The severe storms and heavy rains resulted in flooding along the Delaware River. On July 7, 2006 a Presidentially declared Disaster was declared for four counties in northwestern New Jersey.
4/15/2007 (DR-1694)	SEVERE STORMS AND INLAND AND COASTAL FLOODING—A seven-day nor'easter deluged New Jersey with over 9" of rain, causing millions of dollars of damage and killing three residents. Statewide damage was estimated at \$180 million. The nor'easter also brought strong to high winds as well as some snow to the state. Numerous streams and rivers flooded, but the flooding along the Delaware River was minimal. It was the second worst rain storm (not related to a hurricane) in the state's history. The heavy rain and flooding caused several major roads to be closed in Sussex County. The Walkill River flooded in Wantage and the Cold Brook flooded in Sussex. The worst flooding occurred along the Raritan and Passaic River Basins.

Sources: NOAA/NCDC; FEMA; New Jersey Office of Emergency Management and the Public Entity Risk Institute.

3.2.2 Hazard Identification

At the outset of the planning process, the Northern Delaware River Region Steering Committee (NDRR SC) and the Sussex County Hazard Mitigation Working Group (HMWG) identified 11 natural and technological hazards and the risks they pose for the County and its material assets, operations, and staff as the focus of the Plan. These hazards were identified per the experience of the NDRR SC and the HMWG and according to other references (e.g., Mitigation 20/20 data entry forms from participating municipalities, County EOPs, the New Jersey State Hazard Mitigation Plan, etc.). The resulting preliminary hazard list is shown in Table 3.2.2-1.

Table 3.2.2-1: Preliminary Hazard List, Sussex County

Hazard	Type (1)	NDRR PDM Application	County EOP	Mitigation 20/20	NJ SHMPU (2)	NDRR RFP (3)	Profiled in HMP?
Dam Failure	T					✓	✓
Drought	N	✓		✓	✓	✓	✓
Earthquake/Geological (4)	N			✓		✓	✓
Flood (5)	N	✓	✓	✓	✓	✓	✓
Hazardous Materials Release	T		✓	✓		✓	✓
High Wind–Straight-Line Winds (6)	N		✓	✓	✓	✓	✓
High Wind–Tornado	N	✓			✓	✓	✓
Landslide (non-seismic)	N			✓	✓	✓	✓
Severe Weather - Summer	N			✓		✓	✓
Severe Weather - Winter	N	✓	✓		✓	✓	✓
Wildfire	N	✓		✓	✓	✓	✓

Notes:

- (1) Type Legend: N = Natural; T = Technological/Manmade.
- (2) NJSHMPU = State of New Jersey Hazard Mitigation Plan, approved by FEMA in April 2008.
- (3) Hazards indicated as likely candidates to include in planning for Sussex County per Northern Delaware River Region Request for Proposals (RFP).
- (4) Earthquake/Geological includes effects of surface faulting, ground shaking, earthquake induced landslides, and liquefaction.
- (5) Includes tidal, flash, and riverine flooding
- (6) High Wind—Straight-Line Winds includes winds due to hurricanes, tropical storms, nor’easters, coastal storms, and other severe storms, excluding tornados.

The following section profiles the 11 hazards listed above, and includes a description of the hazard, location and extent of the hazard, severity of the hazard, documented impacts on life and property, and past occurrences.

3.3 Hazard Profiles

Per IFR requirements, Sussex County profiled hazards that can impact the County. Each hazard section contains the following subsections:

Description of the Hazard

Definition and description of the hazard, including widely accepted indices and classifications.

Occurrence and Future Probability of Hazard

This is an overview of past significant events from national databases, state, and local sources. Our focus will be on events that caused losses in the form of death, injuries, property damages, and/or crop losses. All dollar amounts have been adjusted to 2010 figures for inflation for easier comparison and rounded to the nearest dollar. Probability of future events based on the number of past events divided by the number of years to obtain a percentage. Any other pertinent information on probability will be considered, including relevant available studies.

Location and Extent of Hazard

Identify geographic area of the County that could potentially be affected by the hazard and its impacts, including maps when possible. Discuss the anticipated degree and severity of potential hazards, such as wind speeds, depth of flooding, peak ground acceleration, etc. Also discuss specific characteristics of the County that may affect the extent of the hazard such as geography, geology, topography, or vegetative cover, and when possible, include maps.

Impact on Life and Property of the Hazard

This is a summary of past event losses of human life, injury, property damages, and crop damages, and the severity of impacts on the County. All dollar amounts have been adjusted to 2010 figures for inflation for easier comparison and rounded to the nearest dollar. Sources include national, state, and local databases and any relevant available studies.

Prioritization and Rationale of the Hazard

In order to summarize the massive amounts of information and provide a level playing field for comparing hazards, each hazard is analysed and the risk to the County is evaluated based on the Calculated Priority Risk Index (CPRI). The purpose of the CPRI is not to replace scientific or local knowledge or to have the final say on a hazard, but to provide the County with a means for looking at the hazards for further vulnerability analysis. Each CPRI is accompanied by a rationale for why that particular hazard will be included or excluded for further exploration in Section 4. In some cases, the County will chose to further review a hazard that has a low CPRI value, and the reasoning for this decision will be provided.

CPRI values are based upon previous event history and hazard definitions, and combine the hazard's probability of future occurrence, magnitude or severity of the hazard's impacts, warning time before an event occurs, and the duration of the event. The categories are shown in Tables 3.3-1 through 3.3-4.

Table 3.3-1: Probability of Future Occurrence Based on Previous Hazard Events

Probability	Index Value	Description
Highly Likely	4	<ul style="list-style-type: none"> • Frequent significant events with a well documented history of occurrence. • Event has up to 1 in 1 year chance of occurring. (1/1 = 100%) • History of events is 33%-100% likely per year.
Likely	3	<ul style="list-style-type: none"> • Occasional significant occurrences with at least two or more documented historic significant events. • Event has up to 1 in 3 years chance of occurring. (1/3 = 33%) • History of events is 20%-33% likely per year.
Possibly	2	<ul style="list-style-type: none"> • Rare significant occurrences with at least one documented or anecdotal historic significant event • Event has up to 1 in 5 years chance of occurring. (1/5=20%) • History of events is 10%-20% likely per year.
Unlikely	1	<ul style="list-style-type: none"> • Extremely rare with no documented history of significant events occurring. • Event has up to 1 in 10 years chance of occurring. (1/10=10%) • History of events is 0%-10% likely per year.

Table 3.3-2: Magnitude/Severity of Potential Impacts Based on Previous Hazard Events

Magnitude/Severity	Index Value	Description
Catastrophic	4	<ul style="list-style-type: none"> • Multiple deaths • More than 50% of property is severely damaged • Complete shutdown of facilities for more than 1 month
Critical	3	<ul style="list-style-type: none"> • Injuries and/or illnesses result in permanent disability • More than 25% of property is severely damaged • Complete shutdown of critical facilities for at least 14 days
Limited	2	<ul style="list-style-type: none"> • Injuries and/or illnesses do not result in permanent disability • More than 10% of property is severely damaged • Complete shutdown of critical facilities for at least 1 day
Negligible	1	<ul style="list-style-type: none"> • Injuries and/or illnesses are treatable with first aid • Less than 25% of property is severely damaged • Shutdown of critical facilities for 24 hours or less

Table 3.3-3: Warning Time of Hazard Event Based on Hazard Definition

Warning Time	Index Value	Description
Less than 6 Hours	4	Less than 6 Hours warning time before event occurs
6-12 Hours	3	6-12 Hours warning time before event occurs
12-24 hours	2	12-24 Hours warning time before event occurs
24+ Hours	1	At least 24 Hours warning time before event occurs

Table 3.3-4: Duration of Hazard Event Based on Hazard Definition

Warning Time	Index Value	Description
More than 1 week	4	Event lasts more than 1 week
Less than 1 week	3	Event lasts less than 1 week
Less than 1 day	2	Event lasts less than 1 day
Less than 6 hours	1	Event lasts less than 6 hours

3.3.1 Dam Failure

Description of the Dam Failure Hazard

According to the New Jersey Department of Environmental Protection (NJDEP), “A dam is any artificial dike, levee or other barrier, together with appurtenant works, which is constructed for the purpose of impounding water on a permanent or temporary basis, that raises the water level five feet or more above the usual, mean, low water height when measured from the downstream toe-of-dam to the emergency spillway crest or, in the absence of an emergency spillway, the top-of-dam.”³

Dams are manmade structures that serve a variety of uses such as flood protection, power production, agricultural, water supply, and to form recreational areas. They are typically constructed of earth, rock, or concrete, and come in all shapes and sizes. Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, and other impacts that can affect lives and property. Dams can fail because water heights or flows are above the capacity the structure was designed for (including flooding), or because the structure failed in some way. Structures fail for many reasons, including lack of maintenance, erosion, seismic events, insufficient design, development or alteration of the floodplain, or improper construction. Concrete/masonry dams usually fail from loss of a section or undermining, while the primary causes of earthen dam failure are overtopping, followed by piping failure, and then foundation failure. Concrete or masonry dams tend to fail suddenly, while earthen dams usually take longer to fail.

Dam safety inspections and monitoring have become important tools in evaluating dam failure risk, ensuring proper maintenance, and prioritizing actions. The ranking of inspections are often based on a classification system according to the potential impact a dam failure or mis-operation would have on nearby populations and property. FEMA utilizes a Hazard Potential Classification System for Dams that categorizes them as Low, Significant, or High as described in Table 3.3.1-1.

³ NJDEP’s Dam Safety & Flood Control retrieved from <http://www.state.nj.us/dep/damsafety/faq.htm>

Table 3.3.1-1: Dam Hazard Potential Classification System

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, Lifeline Losses
Low (L)	None Expected	Low and Generally Limited to Owner
Significant (S)	None Expected	Yes
High (H)	Probable; One or More Expected	Yes

Source: FEMA

See Table 3.3.1-2 for the Dam Class categories that New Jersey utilizes to determine the inspection cycle and type of inspection for dams.

Table 3.3.1-2: New Jersey Dam Classification and Inspection Schedule

Dam Class	Description	Regular Inspection	Formal Inspection
Class I Large Dam (High-Hazard Potential)	Failure of dam may result in probable loss of life and/or extensive property damage.	Annually	Once every 3 years
Class I Dam (High-Hazard Potential)	Failure of dam may result in probable loss of life and/or extensive property damage.	Once every 2 years	Once every 6 years
Class II Dam (Significant-Hazard Potential)	Failure of the dam may result in significant property damage, but loss of life not envisioned.	Once every 2 years	Once every 10 years
Class III Dam (Low-Hazard Potential)	Failure of the dam is not expected to result in loss of life and/or significant property damage.	Once every 4 years	Only as required
Class IV Dam (Small-Dam Low-Hazard Potential)	Failure of the dam is not expected to result in loss of life or significant property damage.	Once every 4 years	Only as required

Source: NJDEP's Dam Safety and Flood Control. Retrieved from <http://www.state.nj.us/dep/damsafety/faq.htm#q7>

Occurrences and Probability of the Dam Failure Hazard

According to the "Flood Mitigation Plan for the Non-tidal, New Jersey Section of the Delaware River Basin" from November 2008, there have not been any catastrophic dam failures in New Jersey. However, there have been an increasing amount of small dam failures. This may be due in part to the age of the dam infrastructure in the state and insufficient maintenance. Stanford University's Department of Civil and Environmental Engineering maintains the National Performance of Dams Program (NPDP) database and website.⁴ The database information is based on a library of dam incident files, including a 1975 and 1988 report from the U.S. Committee on Large Dams, and from reports by users. The level of completion for the records is unknown, but when queried, at least thirty-one dam incidents were listed in Sussex County.

⁴ Stanford University. Retrieved from <http://npdp.stanford.edu/index.html>

Eighteen of these dam incidents occurred at dams that are part of the National Inventory of Dams (NID), with the eleven foot, significant hazard Seneca Lake Dam failing August 12, 2000 due to inflow flood/hydrologic event and the low hazard Tomahawk Lake Dam failing on the same day for unknown reasons. There was an unusually heavy rainfall event on that day, with the storm centered over the townships of Sparta, Hopatcong, and Jefferson. Seneca Lake Dam was inspected on two days later and it was found that there was a 50' wide breach and complete failure of the earthen embankment. Four dams completely failed due to the event, all in Sussex. The other thirteen incidents listed in the NPDP occurred on smaller dams that are not tracked and recorded as thoroughly, but two were dam failures from the same event in 2000; Edison Pond Dam and Furnace Falls Pond Dam.

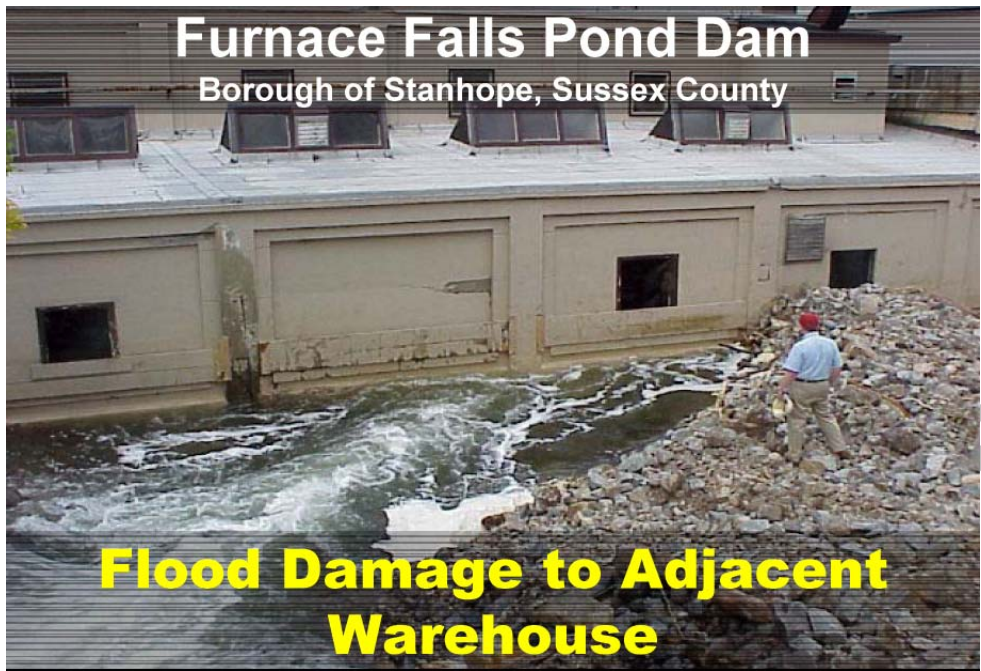
In a presentation at Rowan University in February 2004, the New Jersey Bureau of Dam Safety & Flood Control referenced damages to dams from the August 12, 2000 storm. Figures 3.3.1-1 through 3.3.1-6 exemplifies some of the failures that occurred in a single day.

Figure 3.3.1-1: Seneca Lake Dam Failure Following Heavy Rainfall August 12, 2000



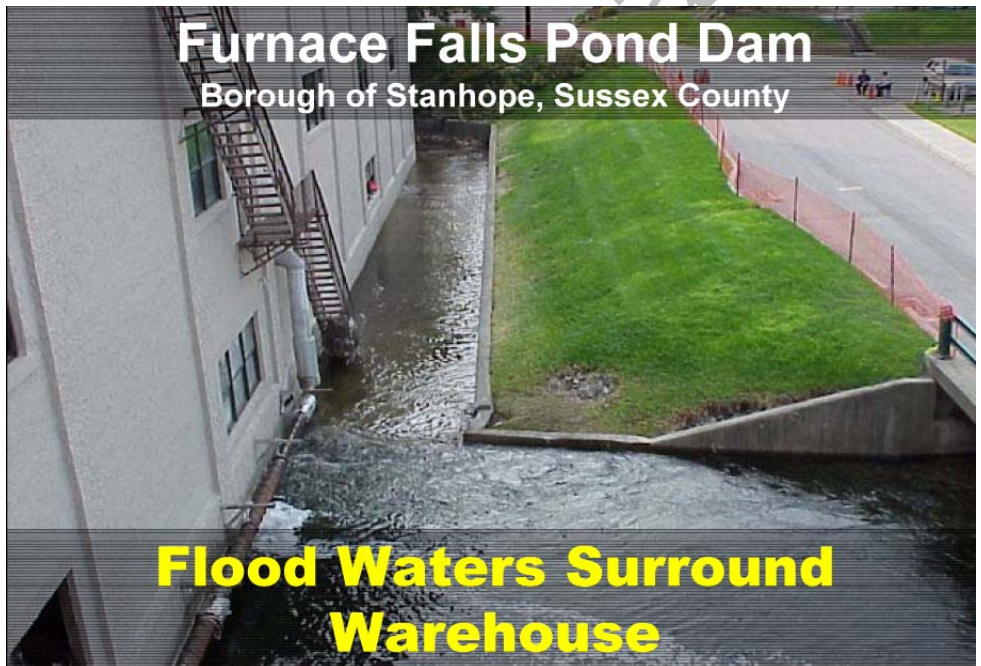
Source: NJDEP's Dam Safety and Flood Control

Figure 3.3.1-2: Furnace Falls Pond Dam Failure Following Heavy Rainfall August 12, 2000



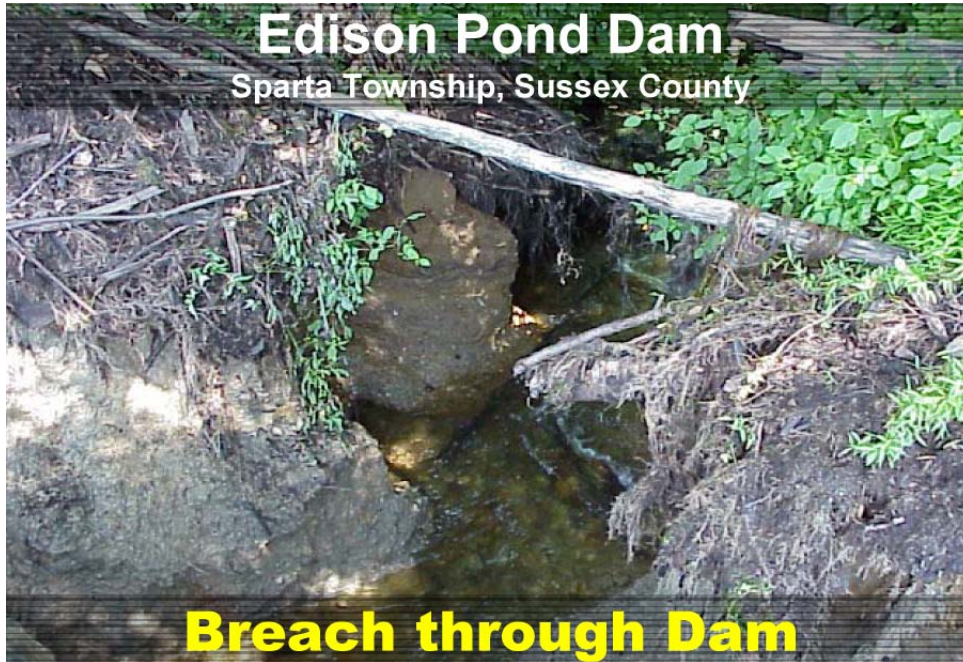
Source: NJDEP's Dam Safety and Flood Control

Figure 3.3.1-3: Furnace Falls Pond Dam Failure Following Heavy Rainfall August 12, 2000



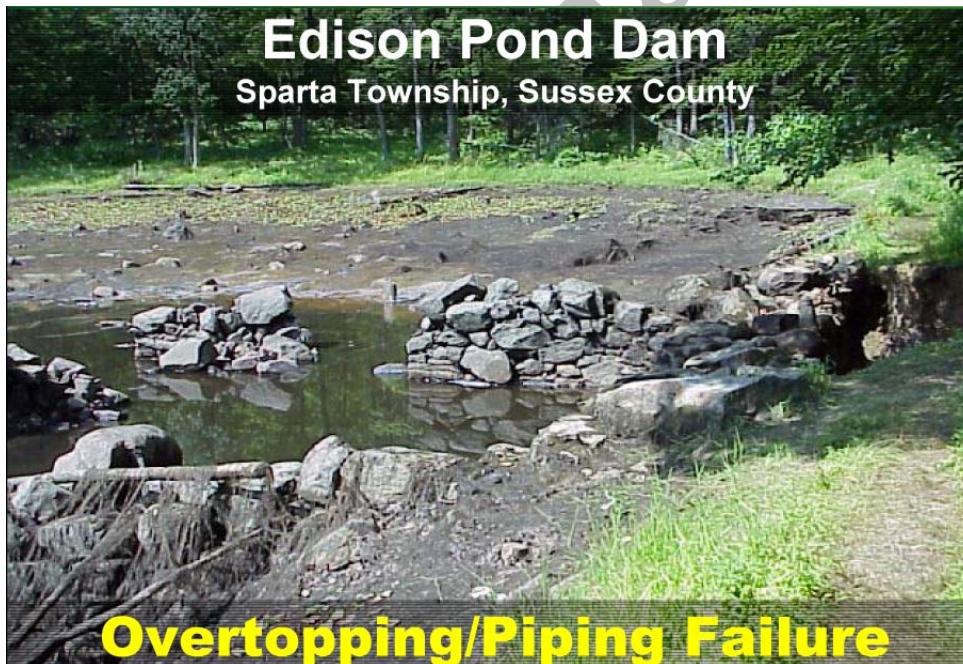
Source: NJDEP's Dam Safety and Flood Control

Figure 3.3.1-4: Edison Pond Dam Failure Following Heavy Rainfall August 12, 2000



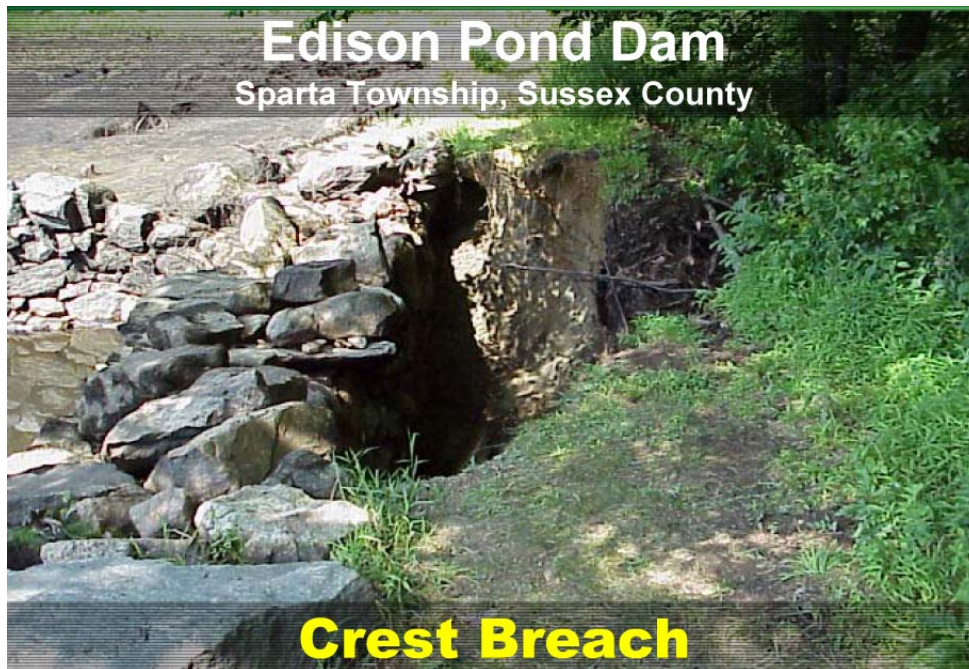
Source: NJDEP's Dam Safety and Flood Control

Figure 3.3.1-5: Edison Pond Dam Failure Following Heavy Rainfall August 12, 2000



Source: NJDEP's Dam Safety and Flood Control

Figure 3.3.1-6: Edison Pond Dam Failure Following Heavy Rainfall August 12, 2000



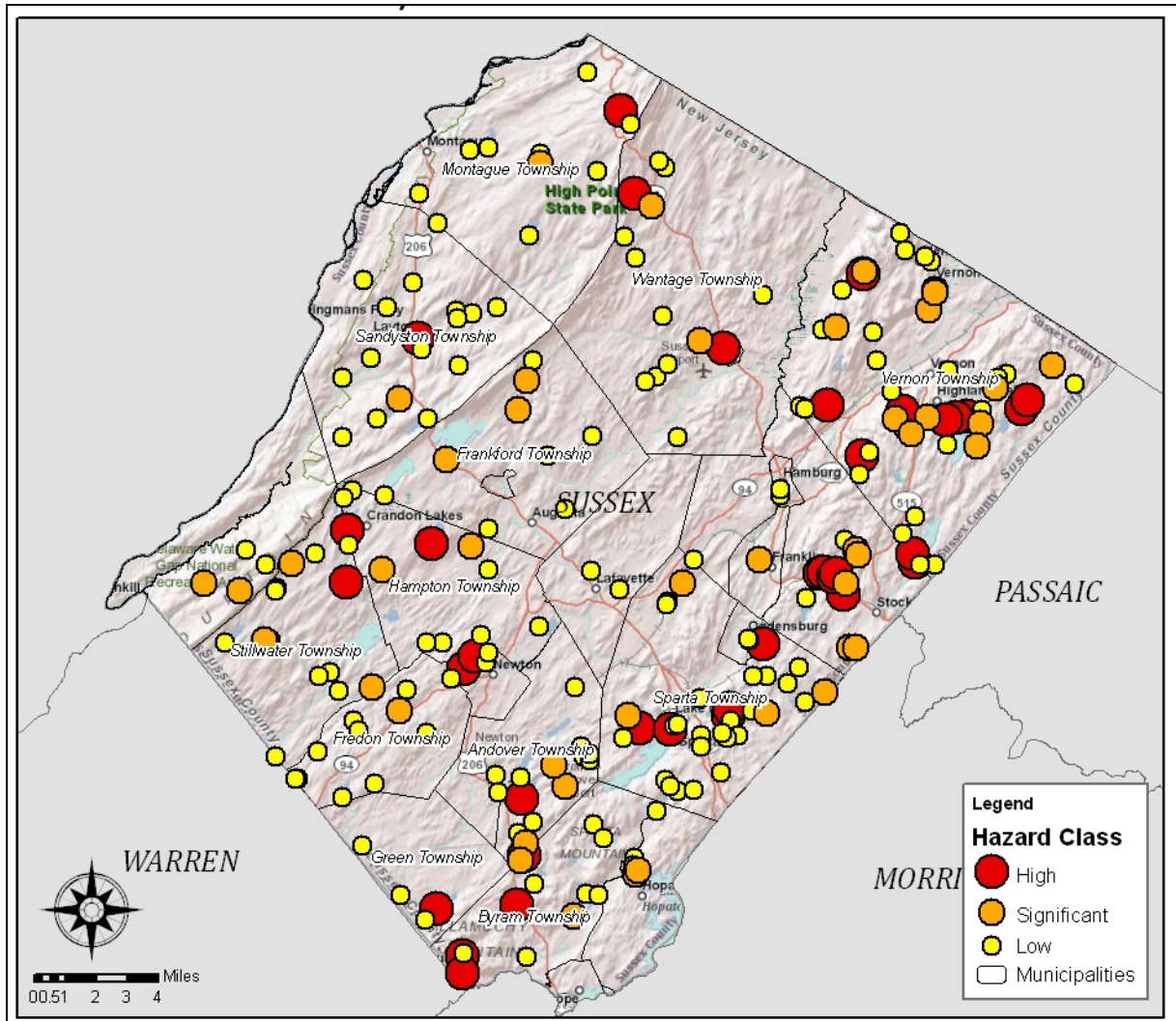
Source: NJDEP's Dam Safety and Flood Control

It is unclear what the losses from these events were, although there were no reports of deaths or injuries. However, unlike natural events, dam failure probability involves manmade structures that have a specific life expectancy and were designed to meet certain situations that may have changed since the time they were designed and built. Based on the National Inventory of Dams data, the dams in Sussex County are an average of seventy-three years old. This does not account for a number of dams, probably older ones, that the build date is unknown. Predicting the likelihood of a future dam failure is extremely difficult, but the probability is that a dam failure is possible.

Location and Extent of the Dam Failure Hazard

In Sussex County, there are 36 high hazard dams, 45 significant hazard dams, and 153 low hazard dams as shown in Figure 3.3.1-2. The high hazard dams are located in Andover Township, Byram Township, Fredon Township, Green Township, Hampton Township, Hardyston Township, Montague Township, Newton Town, Ogdensburg Borough, Sandyston Township, Sparta Township, Stillwater Township, Sussex Borough, Vernon Township, and Wantage Township. If a dam failure were to occur, the magnitude of the event would depend on many factors including the type, size, condition, design, and construction of the structure, type of failure, the amount of water, water velocity, and the growth within the floodplain.

Figure 3.3.1-7: Sussex County Dam Location and Classification



Source: GIS data obtained from NJDEP

Notes:

- (1) Dam inventory may not show some privately owned dams and/or small dams that do not meet certain reporting guidelines.

Impact on Life and Property of the Dam Failure Hazard

Based on a dam’s hazard classification, the expected losses can be inferred. If a high (H) hazard dam failed, it is anticipated that lives would be lost. If a significant (S) hazard dam failed, then significant property losses could be expected. If a low (L) hazard dam failed, then the losses would not be wide-spread or catastrophic. All of the high hazard dams in Sussex County have submitted an Emergency Action Plan to Dam Safety, which should reduce the potential impacts of an event. Emergency Action Plans typically include preventative actions based on the situation, contacts, a list of supplies and resources, and evacuation plans.

Within the U.S. Army Corps of Engineers (USACE) is the Risk Management Center under the Institute for Water Resources. They are working to manage and assess risks for USACE dams and levee systems through screening efforts, periodic assessment, and dam safety analysis. They are utilizing HEC-FIA and LifeSim modeling software in conjunction with the Federal Emergency Management Agency’s (FEMA) HAZUS inventory data to analyze the life safety, economic, and environmental consequences of dam and levee failures.⁵ These assessments are not shared with the public, but are utilized by the USACE and federal agencies to mitigate risks of USACE dams and levees. USACE and FEMA are also working together on efforts to accurately depict risks of flooding behind levees on flood maps. Levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the 1% annual chance flood in order to be shown as flood protecting on FEMA flood maps.

Prioritization and Rationale of the Dam Failure Hazard

Based on operation and maintenance requirements and local knowledge of the dams in Sussex County, the probability of dam failure is “likely” for an index value of 3. The County has a number of aging high and significant hazard dams in the area. The severity or magnitude of the damage from a dam failure could range from critical to negligible. In order to balance these two possibilities, an index value of 2 will be used for the magnitude/severity of dam failure in the County. Although there are some predictive conditions that can be observed from an inspection, most dam failures seem to have “less than 6 hours warning time before an event occurs” for an index value of 4. It should be noted that most dam failures occur as a secondary event to a flooding event, which may give some indication of where and when a failure may occur. A dam failure event would have a short duration, for a classification of “the event lasts less than 6 hours” for an index value of 1.

Table 3.3.1-3: CPRI for Degree of Risk for Dam Failure in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
3 x .45	+	2 x .30	+	4 x .15	+	1 x .10	=	2.65

Although there have been no previously recorded deaths or injuries from dam failures in Sussex County, there has been significant property damage. The average known age of dams in the County is 73 years old, with 36 high hazard dams and 45 significant hazard dams in the County. There have also been 31 reported ‘dam incidents’ in the past. For these reasons, dam failure will be reviewed further in this Plan.

⁵ “Consequence Assessment for USACE Risk Estimates” presentation by Jason Needham, P.E. Senior Consequence Specialist with USACE Risk Management Center on May 25, 2010.

3.3.2 Drought

Description of the Drought Hazard

A drought is defined as “a period of abnormally dry weather sufficiently prolonged for the lack water to cause serious hydrologic imbalance in the affected area.”⁶ Droughts are extended periods of dry weather that cause problems such as crop damage, affects water supplies, and/or increased fire danger. Droughts are often brought on by lack of rainfall or snow over a long period of time, although the amount of time that low precipitation amounts take to impact an area varies in different geographic locations. The Palmer Drought Severity Index (PDSI) is the main classification system used for droughts in the United States and is based on supply and demand. The PDSI assesses total moisture by using temperature and precipitation to compute water supply and demand and soil moisture, and is most effective for long-term predictions. PSDI is also used to describe extended wet conditions using corresponding numbers, with zero representing near normal conditions. NOAA publishes weekly national and regional Palmer Drought maps. There are other indices that can be used for specific situations, ecosystems, or terrain.

Table 3.3.2-1: Palmer Drought Severity Index

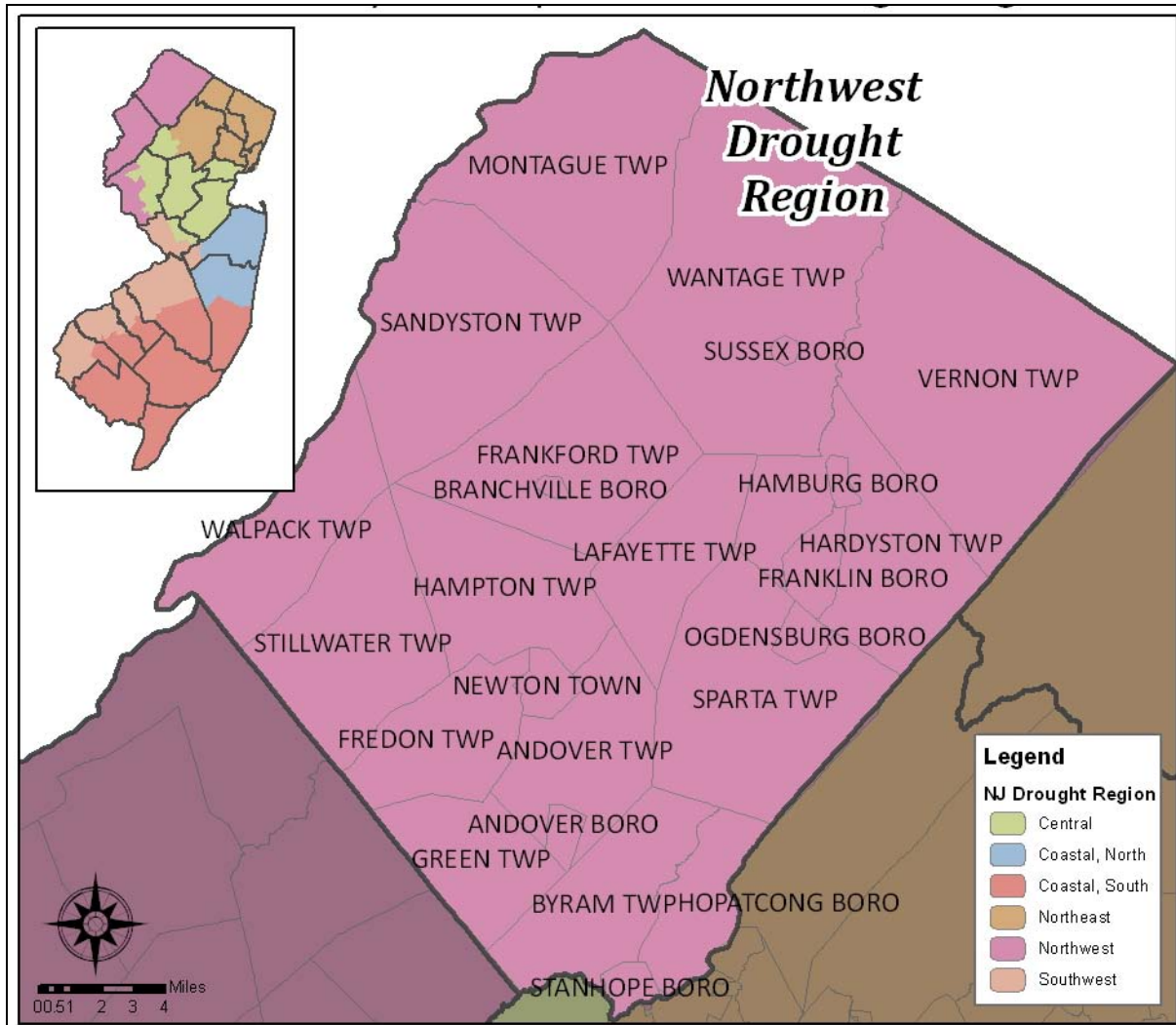
PDSI	Description
4.0 or more	Extremely wet
3.0 to 3.99	Very wet
2.0 to 2.99	Moderately wet
1.0 to 1.99	Slightly wet
0.5 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal
-0.5 to -0.99	Incipient dry spell
-1.0 to -1.99	Mild drought
-2.0 to -2.99	Moderate drought
-3.0 to -3.99	Severe drought
-4.0 or less	Extreme drought

Source: NOAA

The State of New Jersey utilizes auxiliary indices for regional precipitation, stream-flow, reservoir levels, and ground-water levels in addition to the PDSI. The State created six drought regions in order to plan and manage restrictions in separate areas during droughts. The drought regions are grouped based on similar hydrologic characteristics and watershed boundaries and follow municipal boundaries. As seen in Figure 3.3.2-1, Sussex County is in the Northwest Drought Region.

⁶ Glossary of Meteorology (1959)

Figure 3.3.2-1: Sussex County Municipalities and Drought Regions



Source: GIS data from NJDEP's NJ Geological Survey's Digital Geodata Series from May 2004. Retrieved from <http://www.njgeology.org/geodata/dgs00-1.htm>

Occurrence and Future Probability of Drought Hazard

According to a comparison of the SHELDUS and NCDC databases, since 1960 there has been one drought event within Sussex County that resulted in losses. It began on September 1, 1999 and lasted until September 27, 1999 and there was a drought emergency throughout eight New Jersey counties. Agricultural losses throughout the state were estimated at around \$80 million in 1999 monetary values.

Table 3.3.2-2: Significant Drought Events, Sussex County, 1960 - 2010

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
Sussex	9/1/1999 – 9/27/1999	Drought	0	0	\$0	\$6,581,700

Source: SHELDUS 7.0 and NCDC

Notes:

- (1) Property Damage and Crop Damage amounts have been adjusted to 2010 inflation amounts using the average Consumer Price Index from the U.S. Department of Labor’s Bureau of Labor Statistics.

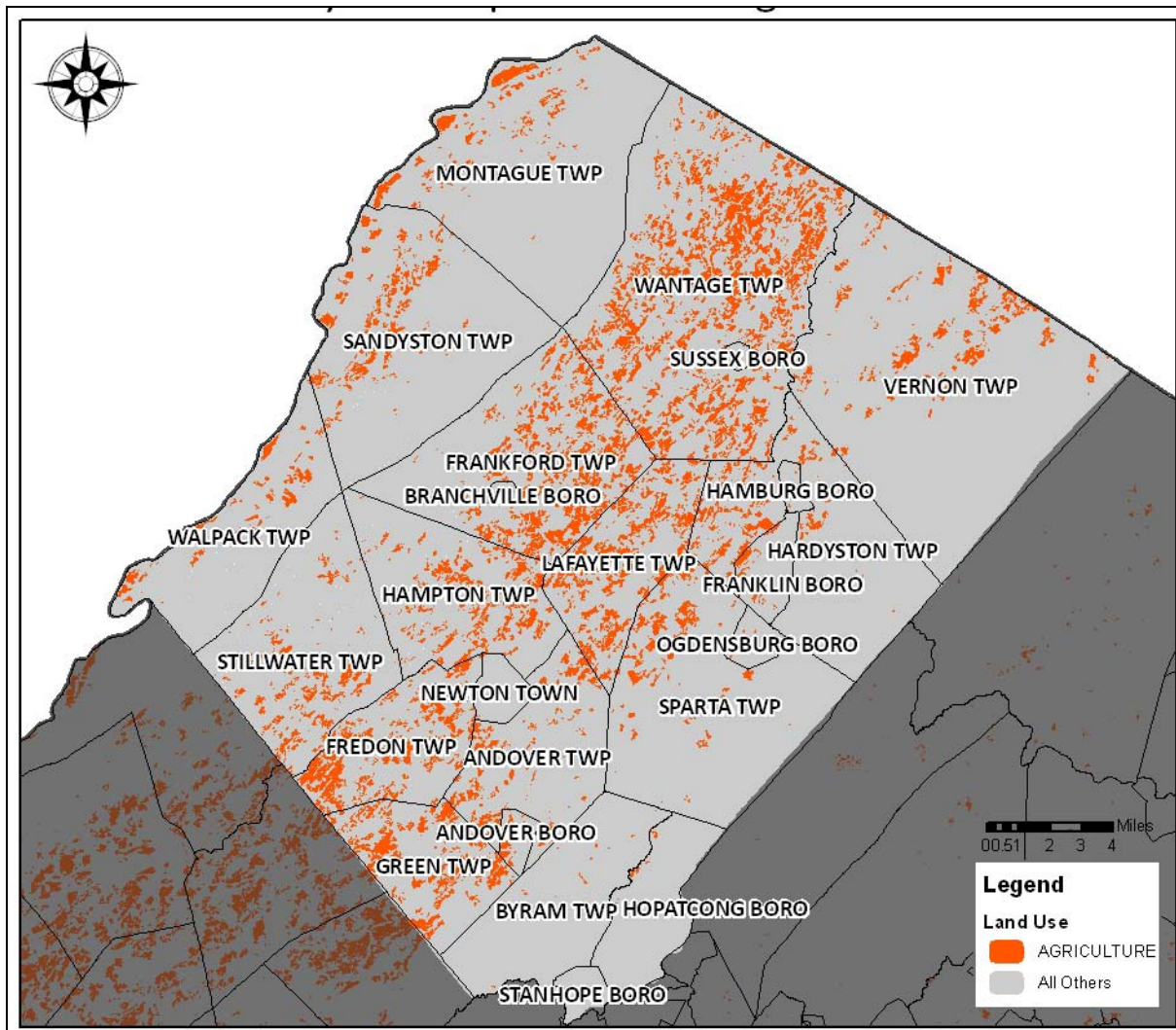
Based on the occurrence of one significant drought event in fifty years, the probability of future loss-causing tornado events in Sussex County is 2% likelihood per year.

Location and Extent of Drought Hazard

The entire County has approximately the same risk for drought. Generally, droughts are a regional phenomena and dependent on the extent of the heat and range of precipitation in the area. Predicting dry spells and therefore potential droughts is very difficult because there are multiple factors involved that are challenging to anticipate including precipitation, pressure and temperature, soil moisture, surface water and other water-related variables. Due to the nature of droughts, agricultural areas are most likely to suffer financial losses during a long-term drought event. Figure 3.3.2-2 shows an overview of the agricultural land use in Sussex County. As of 2002, Sussex County had 38,408 acres of agricultural land, a decrease of 4,791 acres since 1995.⁷

⁷ NJDEP, <http://www.state.nj.us/dep/gis/lulc2002stattablescounty.htm>

Figure 3.3.2-2: Sussex County Municipalities and Agricultural Land Use



Source: GIS data from NJDEP's 2002 Landuse/Landcover dataset. Retrieved from <http://www.state.nj.us/dep/gis/lulc02shp.html>

Impact on Life and Property of the Drought Hazard

According to a comparison of the SHELDUS and NCDL databases, since 1960 there has been one drought event in Sussex County that has resulted in losses. There have been no documented deaths, injuries, or property damages due to droughts during this time in the County. However, the estimated amount of agricultural damage for that single event is more than \$6.58 million in 2010 currency.

Prioritization and Rationale of the Drought Hazard

Since the probability of future significant droughts in the County is 2%, this is considered 'unlikely' for an index value of 1. Based on previous occurrences, the magnitude or severity for anticipated drought hazard impacts is considered 'negligible' because although the estimated agricultural losses were extreme, there was no loss of life, injury, or property damage, for an index value of 1. The warning time for a drought is usually "at least 24 hours before an event occurs" for an index value of 1. Droughts can last for extended periods of time, so the classification would be that "the event lasts more than 1 week" for an index value of 4.

Table 3.3.2-3: CPRI for Degree of Risk for Drought Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
1 x .45	+	1 x .30	+	1 x .15	+	4 x .10	=	1.3

Although droughts can occur in Sussex County, there has been no risk to residents' health and non-agricultural property over the past fifty years. Based on past events, the likelihood of a severe drought event occurring is unlikely, though possible. For these reasons, droughts will not be studied in further detail in this Plan.

3.3.3 Earthquake / Geological

Description of the Earthquake Hazard

An earthquake is a sudden, rapid movement of the earth caused by the breaking and shifting of rock beneath the earth's surface. The earth's surface is broken into shifting slabs or tectonic plates, which continents move along with. At the plate boundaries, the plates interact by sliding past one another, running into one another, or moving away from one another. Sometimes these movements are slow and gradual, at other times the plates are locked together unable to release the accumulating energy. Most active faults are located along or near boundaries between shifting plates, although some are located in the interior of plates (intra-plate earthquakes, such as the New Madrid). Earthquakes occur when rock suddenly moves, or slips, along these faults and accumulated energy is released. This energy causes seismic waves that when strong enough, may be experienced by us as ground shaking. The amount of energy released, combined with the physical environment, will impact the amount of damage to buildings and infrastructure. The main earthquake is often followed by smaller magnitude earthquakes, called aftershocks. Earthquakes may also cause additional hazards such as ground rupture, landslides, avalanches, fires, soil liquefaction, tsunamis, floods, and tidal forces.

There are two main types of scales for measuring earthquakes, intensity and magnitude.

Intensity scales measure the amount of shaking at a particular location, so the intensity of an earthquake will vary depending on the location, although people tend to use the maximum intensity level produced when referring to a particular earthquake. Intensity is determined from effects on people, human structures, and the natural environment. Intensity scales include the Modified Mercalli Scale, shown in Table 3.3.3-1, and the Rossi-Forel Scale.

Magnitude scales measure the energy released or size of the earthquake at its source, so it will not vary based on location. Magnitude is determined from measurements on seismographs. Magnitude scales include the Richter Magnitude (Local Magnitude) and Moment Magnitude. Moment Magnitude Scale is newer and more precise, but more complex to calculate.

Table 3.3.3-1: Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Source: US Geological Survey (USGS). Retrieved from <http://earthquake.usgs.gov/learn/topics/mercalli.php>

Table 3.3.3-2 shows the intensities that are typically observed at locations near the epicenter of earthquakes of different magnitudes.

Table 3.3.3-2: Earthquake Magnitude versus Modified Mercalli Intensity Scale

Magnitude	Typical Maximum Modified Mercalli Intensity
1.0 – 3.0 (Very Minor)	I
3.0 – 3.9 (Minor)	II – III
4.0 – 4.9 (Light)	IV – V
5.0 – 5.9 (Moderate)	VI – VII
6.0 – 6.9 (Strong)	VII – IX
7.0 and Higher (Major to Great)	VIII and Higher

Source: USGS. Retrieved from http://earthquake.usgs.gov/learn/topics/mag_vs_int.php

Occurrence and Future Probability of Earthquake Hazard

According to USGS and NJDEP, New Jersey has been affected by a number of earthquakes to a minor degree, as shown in Table 3.3.3-2

Table 3.3.3-3: Earthquake Events That Have Affected New Jersey

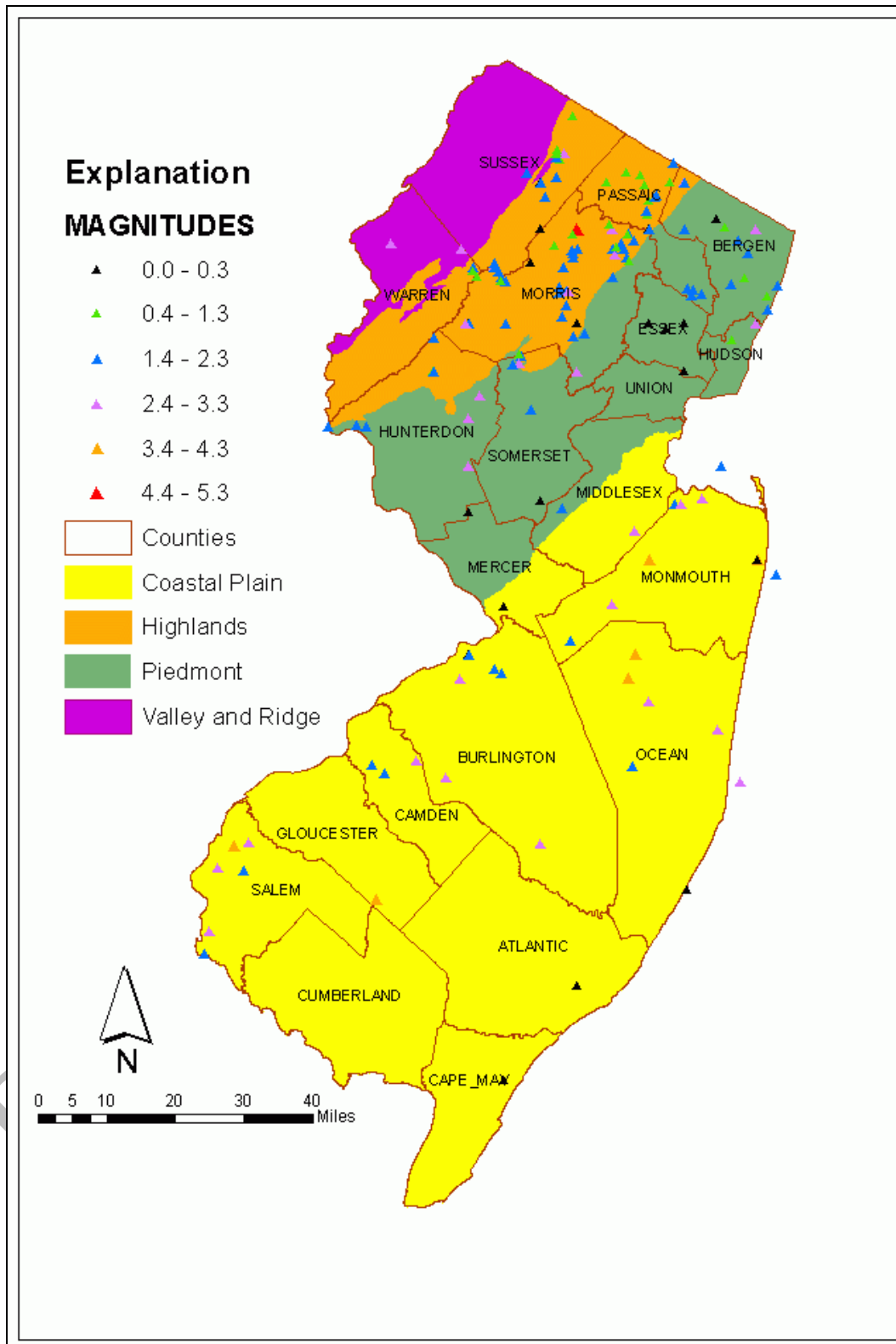
Epicenter Location	Date	Intensity (Max in NJ)	Magnitude	Effects in NJ
Near NYC	12/18/1737	VII	-	Chimneys down in NYC. Felt in Boston, MA and Philadelphia, PA.
Cape Ann, MA	11/18/1755	IV	6.0	Chimneys and brick buildings down in Boston. Caused a tsunami that grounded boats in West Indies.
West of NYC	11/30/1783	VII	5.3	Felt from NH to PA.
New Madrid, Missouri Area	1811 – 1812	IV-V	8.0 to 8.8	Four great earthquakes. Changed course of Mississippi River. Town of New Madrid destroyed. Loss of life low due to sparse settlement. Damage in Chicago.
Riviere-Ouelle, Canada	1860	-	-	Unknown
Wilmington, DE	10/09/1871	VII	-	Chimneys toppled and windows broke in DE. Reported felt in NJ.
NYC	1884	VII	5.5	Toppled chimneys in NYC and NJ. Cracked masonry from Hartford, CT to West Chester, PA. Felt from ME to VA, and eastern OH.
Charleston, SC	1886	IV	7.7	Sixty killed. Over 10,000 chimneys down.
High Bridge, NJ	09/01/1895	VI	-	Felt from ME to VA. In Hunterdon County towns, articles fell from shelves and buildings rocked. Philadelphia reported broken windows.
Moorestown/Riverton, NJ	01/26/1921	V	-	Moderate shaking. Rumbling noise heard.
Asbury Park, NJ	06/01/1927	VII	-	Highest intensity earthquake observed in NJ. Three shocks felt along the coast from Sandy Hook to Toms River. Maximum intensities of VII at Asbury Park and Long Branch, NJ. Several chimneys fell, plaster cracked, and articles thrown from shelves.

Epicenter Location	Date	Intensity (Max in NJ)	Magnitude	Effects in NJ
Lakehurst, NJ	01/24/1933	V	-	Sharp jolt felt over central NJ from Lakehurst to Trenton. Unclear if shock of seismic origin. Lakehurst people rolled out of bed.
Central NJ	08/22/1938	V	-	Caused minor damage at Gloucester City and Hightstown. Glassware broken and furniture moved, some windows broken. Four smaller shocks on August 23 and one on August 27.
Salem County	11/14/1939		-	Disturbance felt from Trenton to Baltimore, MD and from Cape May to Philadelphia. Little to no damage noted.
Rockland County, NY	09/03/1951	VI	-	Northeastern NJ experienced minor effects. Chimneys cracked, windows and dishes broke, and pictures fell at Lebanon and other towns.
Northeastern Philadelphia, PA Area	12/27/1961	V	-	Rumbling sounds and tremor felt in Bordentown and Trenton, where houses shook and windows and dishes rattled.
Burlington County, NJ	12/10/1968	V	2.5	Some broken windows with intensity V effects noted at Camden, Moorestown, Darby, and Philadelphia. Toll booths on Benjamin Franklin and Walt Whitman Bridges from NJ to Philadelphia, PA trembled during shock.
Salem County, NJ	02/28/1973	V	3.8	Moderately strong earthquake cracked plaster at Laurel Springs and Penns Grove and cracked cinder blocks at Harrisonville. Minor damage in areas of DE, MD, and PA.

Source: USGS. Retrieved from http://earthquake.usgs.gov/earthquakes/states/new_jersey/history.php and NJDEP's Land Use Management & NJ Geological Survey's study *Earthquake Risk in New Jersey* (1998, Revised 2005). Retrieved from <http://www.state.nj.us/dep/njgs/enviroed/freedwn/e-quake.pdf>

Figure 3.3.1 shows earthquakes whose epicenter is located in New Jersey from New Jersey Geological Survey Report DGS04-1, *Earthquakes Epicentered in New Jersey* that includes 166 earthquakes. Most were minor events, with magnitudes ranging from 0.4 to 5.3 and depths up to 25 km below sea level. The oldest event in the dataset is from 1783, and there are 21 recorded epicenters within Sussex County, with the highest listed magnitude at 2.8 with a depth of 7.36 km that occurred in 1986 near Tranquility.

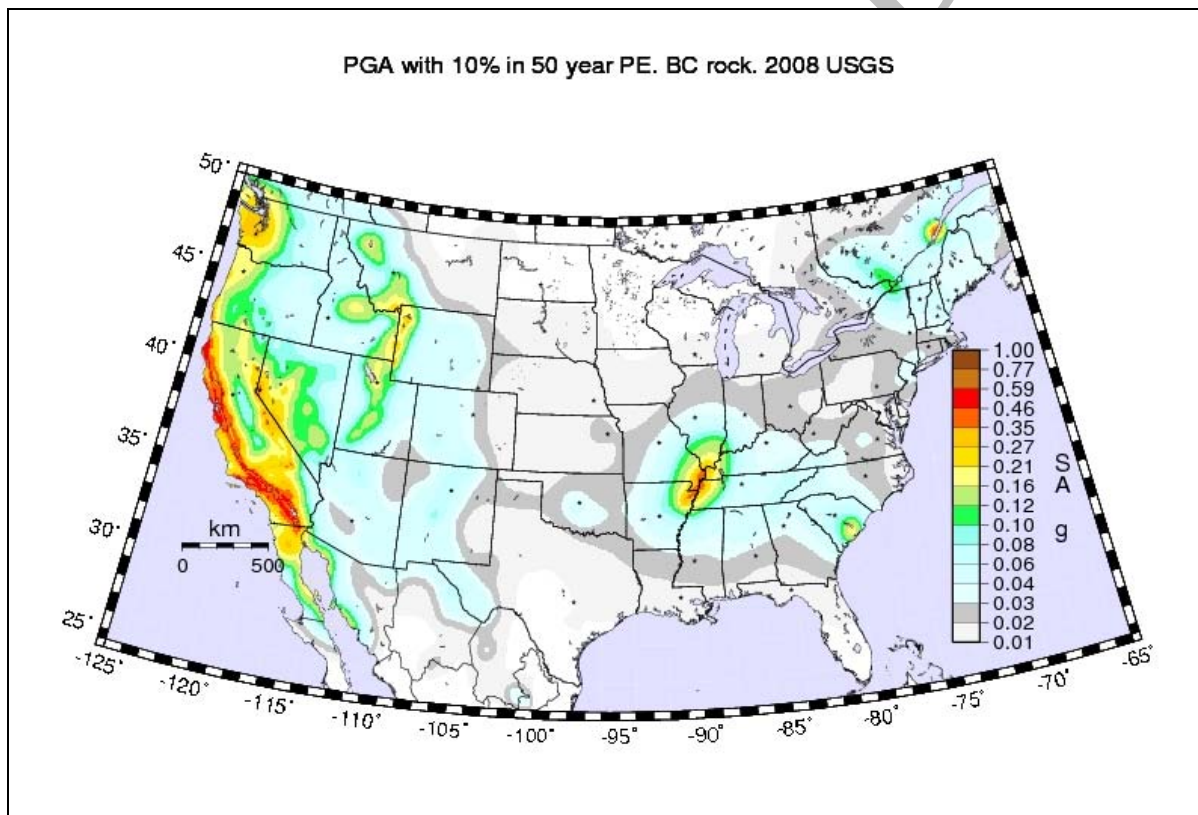
Figure 3.3.3-1: Earthquakes Epicentered in New Jersey



Source: NJDEP. Retrieved from <http://www.state.nj.us/dep/njgs/geodata/dgs04-1.htm>

Figures 3.3.3-2 and 3.3.3-3 depict future earthquake hazard by using contour lines and different colors to show the earthquake ground motions that have a similar probability of being exceeded in 50 years. On a given map, for a given probability of exceedance (10% in Figure 3.3.3-2 and 2% in Figure 3.3.3-3), locations shaken more frequently will have larger ground motions.⁸ The 10% exceedance probability map will show lower ground motions than the 2% exceedance probability map, while the 2% exceedance probability map will be a better depiction of less likely but larger magnitude and/or nearer events. The maps are designed this way so that when building codes are being determined, one can look at the map and see what ground motion level the structures should be able to resist at a specific location. These particular maps are based on peak ground acceleration, which is best used as an index to hazard for short, stiff structures.

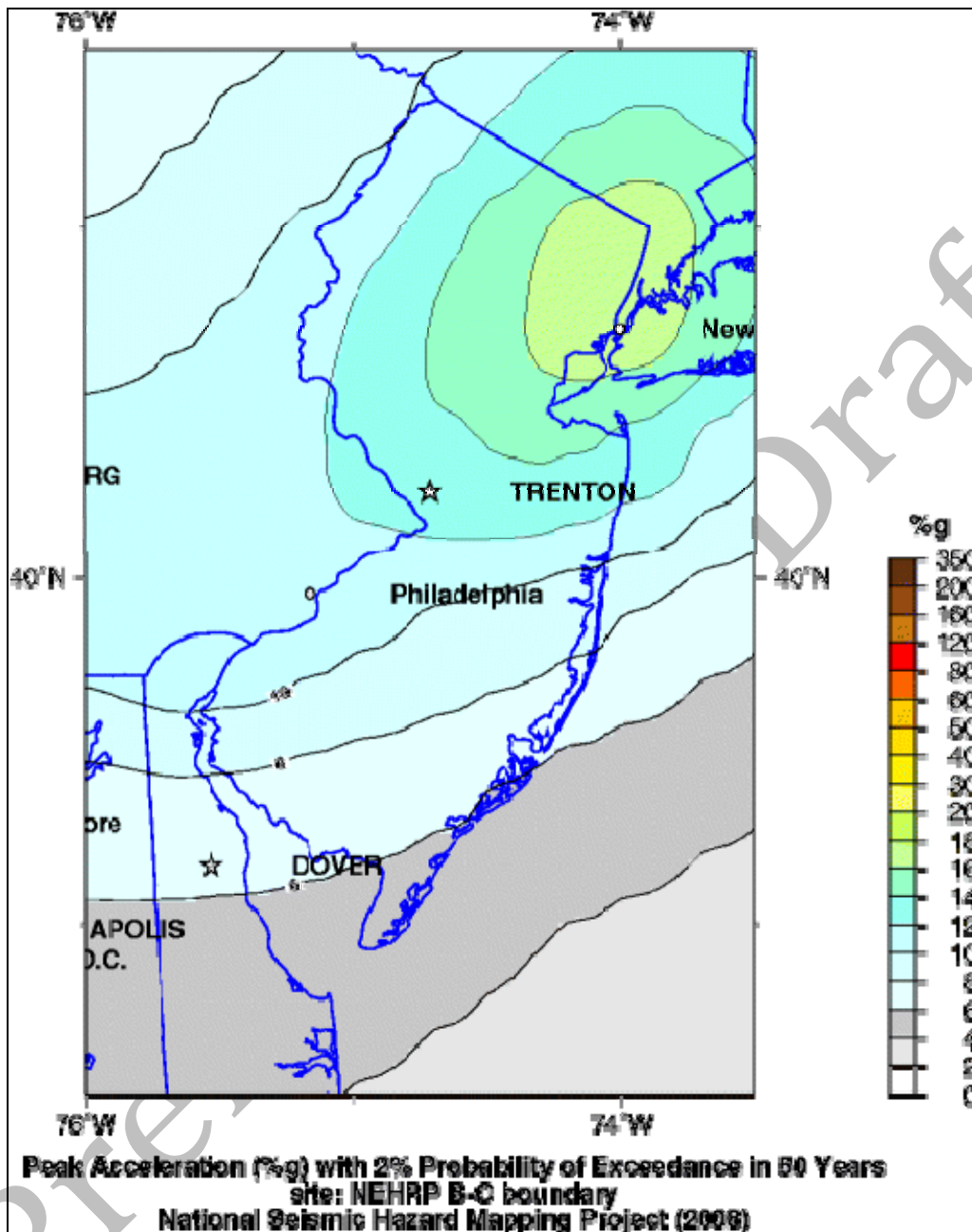
Figure 3.3.3-2: U.S. Seismic Hazard Map (2008) – Return Period 10% in 50 Years



Source: USGS. Retrieved from <http://earthquake.usgs.gov/hazards/products/conterminous/2008/maps/>

⁸ USGS from <http://earthquake.usgs.gov/learn/faq/?faqID=207>

Figure 3.3.3-3: New Jersey Seismic Hazard Map (2008) – Return Period 2% in 50 Years



Source: USGS. Retrieved from http://earthquake.usgs.gov/earthquakes/states/new_jersey/hazards.php

Based on Figures 3.3.3-1 and 3.3.3-2, Sussex County has a great enough peak ground acceleration (%g) that warrants further assessment. According to USGS’s 2009 Earthquake Probability Mapping Tool, and utilizing the center of Sussex County as the location, the probability of future 5.0M earthquakes in the County is approximately 5% probability within a 100 year time span and a 4% probability for an 8.0M within a 100 year time span.⁹ This makes the probability of an earthquake that could affect Sussex County possible.

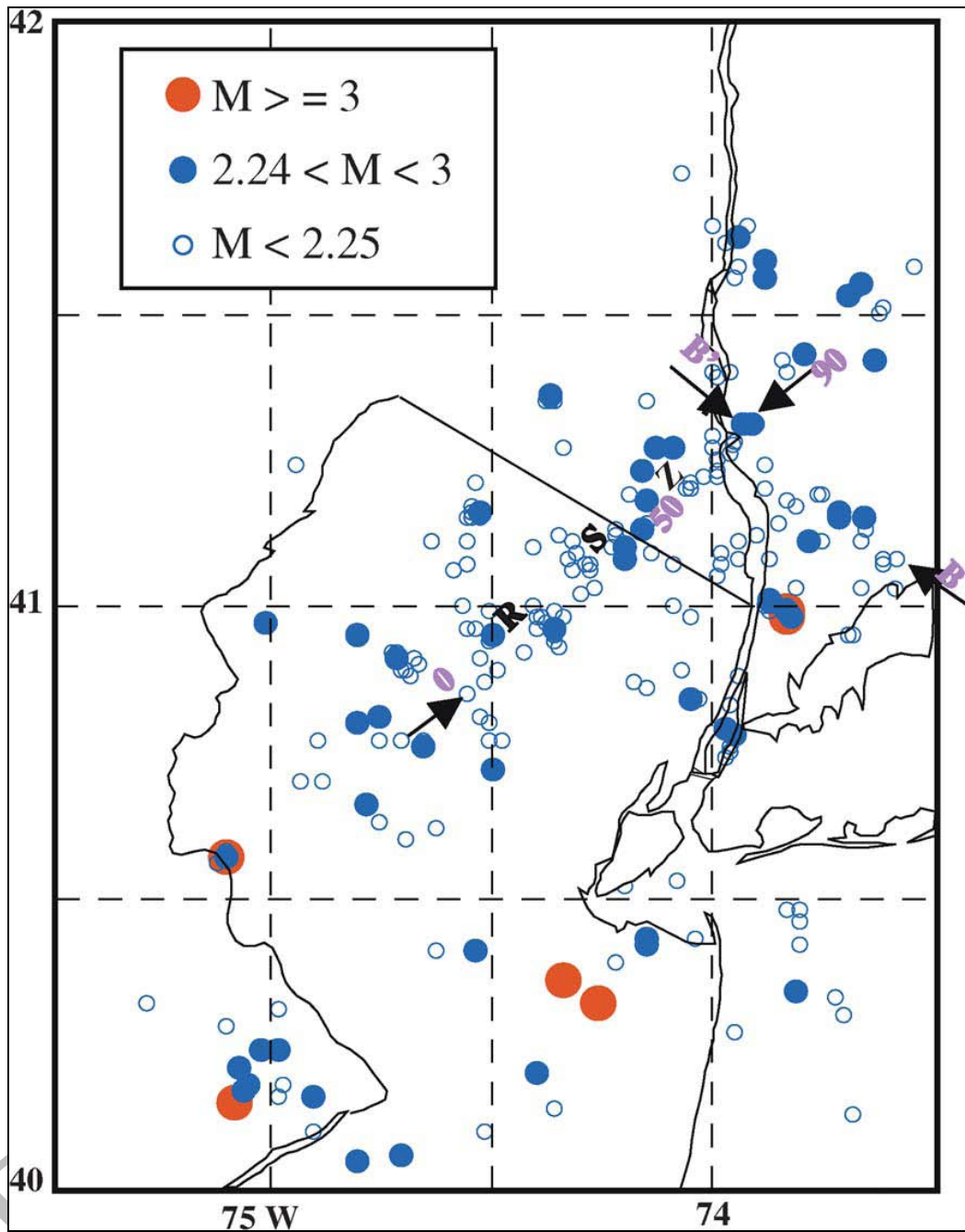
⁹ USGS. Retrieved from <http://geohazards.usgs.gov/eqprob/2009/index.php>

Location and Extent of Earthquake Hazard

The entire county is at risk for the impacts of an earthquake. Fault lines are throughout the state, with the Ramapo Seismic Zone of particular concern. Ramapo runs from New York to New Jersey to Pennsylvania and consists of a braid of smaller fractures, including a set of nearly parallel northwest-southeast faults. A June 2007 study from Lamont-Doherty Earth Observatory of Columbia University by Sykes, et al entitled *Observations and Tectonic Settings of Historic and Instrumentally Located Earthquakes in the Greater New York City-Philadelphia Area* casts faults in the greater New York City area in a new, riskier light. Unlike the existing west coast model concerned with one large obvious fault, they voice concerns about a network of more subtle faults, previously thought to be inactive, that could add up to something big.

Preliminary Draft

Figure 3.3.3-4: Quakes Located By Instruments 1974-2007 with Ramapo Seismic Zone



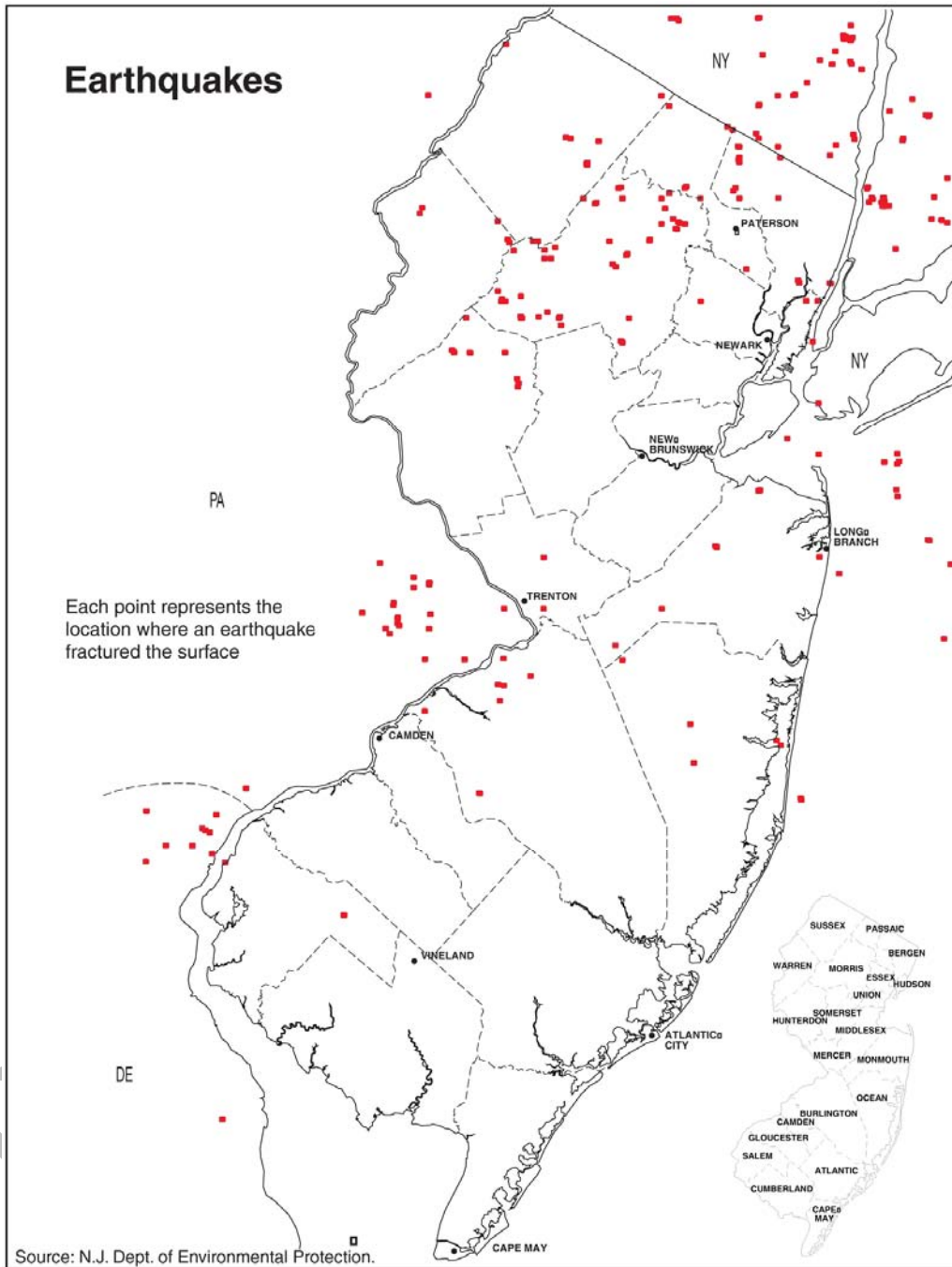
Source: Sykes et al., Lamont-Doherty Earth Observatory of Columbia University, Palisades, New York 10964 (June 29, 2007) *Observations and Tectonic Settings of Historic and Instrumentally Located Earthquakes in the Greater New York City-Philadelphia Area*. Retrieved from <http://www.ldeo.columbia.edu/files/sykespdf.pdf>

Notes:

- (1) Arrows denote approximate southeastern boundary of the Ramapo Seismic Zone and northwest-striking seismic boundary of the Peekskill-Stamford seismic line.

Figure 3.3.3-5 shows points where earthquakes have fractured the surface of the earth over the years. Sussex County has experienced multiple surface fractures in the past.

Figure 3.3.3-5: Map of Surface Fractures from New Jersey Earthquakes



Source: NJDEP.

Impact on Life and Property of the Earthquake Hazard

There are no known deaths or injuries from earthquakes in Sussex County, although there have been reports on multiple occasions of people feeling the effects of earthquakes. If a strong earthquake event were to occur in the region, ground shaking could cause the collapse of buildings and bridges, disrupt utility lines, and/or trigger landslides, avalanches, flash floods, and fires. When earthquakes occur in a populated area, they can cause deaths, injuries, and extensive property damage.

According to NJDEP's study *Earthquake Risk in New Jersey*, an earthquake occurring in the eastern part of the United States could inflict ten times more damage than one occurring west of the Rocky Mountains, due to higher population and density in the east. In New Jersey, structures built before 1977 may have been designed and constructed without seismic considerations. Under the NJ Rehabilitation Subcode there are limited requirements for retrofitting existing buildings for seismic safety, such as when a conversion to a public facility occurs.¹⁰

According to *FEMA 366: Estimated Annualized Earthquake Losses for the United States*¹¹, it is estimated that New Jersey is ranked 14th in the nation for annualized earthquake losses (AEL) of \$39.7 million, with Sussex County's building inventory around \$10 to \$50 billion, and AEL approximately \$0.5 to \$1 million. This study is based on HAZUS-MH MR2 probabilistic analyses utilizing a thick alluvium soil type throughout the nation. See Section 3.4 for a more localized earthquake loss analysis utilizing HAZUS-MH MR4.

Prioritization and Rationale of the Earthquake Hazard

The probability of future significant earthquake in the County is 'possibly' for an index value of 2. The magnitude of a future earthquake is very difficult to predict, however recent studies support that an event could be severe or "catastrophic" for an index value of 4. Earthquakes can occur unexpectedly and therefore the warning time is "less than 6 hours warning time" for an index value of 4. Earthquake duration can vary, but generally "lasts less than 1 day" for an index value of 2.

Table 3.3.3-4: CPRI for Degree of Risk for Earthquake in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
2 x .45	+	4 x .30	+	4 x .15	+	2 x .10	=	2.9

Based on USGS, NJDEP, and Lamont-Doherty Earth Observatory of Columbia University studies, there is a possibility that an earthquake event could occur with a high magnitude that impacts Sussex County severely. For these reasons, earthquakes will be studied in further detail in this Plan.

¹⁰ NJDEP's Land Use Management & NJ Geological Survey's study *Earthquake Risk in New Jersey* (1998, Revised 2005). Retrieved from <http://www.state.nj.us/dep/njgs/enviroed/freedwn/e-quake.pdf>

¹¹ FEMA, *FEMA 366: Estimated Annualized Earthquake Losses for the United States* (April 2008). Retrieved from <http://www.fema.gov/library/viewRecord.do?id=3265>

3.3.4 Flood

Description of the Flood Hazard

In simple terms, a flood is an excess of water on land that is normally dry. Floods are usually caused by weather events that deliver more precipitation to a drainage basin than can be easily absorbed or stored within the basin. Flooding is a significant natural hazard through the United States. Causes include heavy precipitation, snowmelt, ice jams, dam failures, hurricanes, reservoir overflows, and local thunderstorms. Flood waters can bring down structures, topple trees, destroy infrastructure, sweep people and vehicles away, and alter landscapes. Floods can occur quickly and without warning, such as flash floods or floods caused by dam breaks, or can build slowly, becoming more significant over time. There may be a lag time between precipitation and the time when the flood peaks, which in some situations may allow for warning and evacuating populations.

FEMA is responsible for the National Flood Insurance Program (NFIP) which was created in 1968 by Congress to provide a means for property owners to purchase flood insurance if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. As part of the NFIP, FEMA produces Flood Insurance Rate Maps (FIRMs) and Digital FIRM (DFIRM) databases for communities that describe the risk of flooding in different locations. The risk areas are shown using Special Flood Hazard Areas (SFHAs) to show high risk, also referred to as regulatory floodplains. The 1% annual chance flooding areas (often shown on FIRMs as a Zone A or Zone AE) are areas that have a 1 in 100 chance of flooding each year, and are commonly referred to as “100-year recurrence interval floods” or “100-year return period events”, or “base floods”. A recurrence interval is the average time within which the magnitude of a given flood event will be equaled or exceeded one time. But, this does not mean that a flood will only occur once every 100 years, actually they can occur much closer together than 100 years or much further apart; two 100-year flood events can occur in the same week. A home located within a SFHA has a 26% chance of suffering flood damage during the term of a 30-year mortgage.¹²

Areas outside the SFHA are considered to have moderate to low risk of flooding and are not in immediate danger, however they still have a risk of flooding. Another common quantity to describe a flood risk area is .2% annual chance of flooding each year, which is the equivalent as a 500-year recurrence interval flood area and often shown as a Shaded Zone X or 0.2% Annual Chance Flood Hazard Zone on FIRMs. These areas are expected to flood less often than those in the 1% annual chance areas, but this may not always be the case.

SHAs boundaries are based on a number of factors, including flood history, hydrologic and hydraulic factors, topography, and flood control measures. Engineering studies have been completed and are summarized in the accompanying Flood Insurance Study (FIS). The FIS and FIRMs also contain useful information regarding discharges and cross-sections with Base Flood Elevations (BFEs) that can be used by communities for planning purposes and considered when designing building code standards.

¹² FEMA. Retrieved from <http://www.floodsmart.gov/floodsmart/pages/faqs/what-is-a-special-flood-hazard-area.jsp>

In 1972, New Jersey legislature adopted a statute which authorized the Division of Water Policy and Supply (now the NJDEP) to delineate and mark flood hazard areas and to adopt regulations for these areas.¹³ The State developed flood hazard area maps that delineated the New Jersey Flood Hazard Design Flood (NJFHA), based on discharge 25% larger than the 100-year flood discharge. These maps predated the FIRMs. The NJFHA is important because it is the State's regulatory standard. On November 5, 2007, NJDRP adopted new Flood Hazard Area Control Act rules which incorporate more stringent standards for development in flood hazard areas, including a 0% net-fill requirement for all non-tidal flood hazard areas of the State.¹⁴

Occurrence and Future Probability of the Flood Hazard

According to the 2008 *Multi-Jurisdictional Flood Mitigation Plan for Municipalities in the Non-tidal, New Jersey Section of the Delaware River Basin*, there were severe floods on the Delaware River in the County in October 1903, August 1955, and May 1972. The 1955 flood was the worst event recorded on the Delaware River, with an approximate 150-year recurrence interval and between 25 and 99 deaths. This event followed three heavy rain storms and Hurricane Diane. Impacts were minimal, due to limited development in the area.¹⁵

According to a comparison of the SHELDUS and NCDC databases, since 1960 there have been twelve flood events within Sussex County that resulted in losses, shown in Table 3.3.4-1.

Table 3.3.4-1: Significant Flood Events, Sussex County, 1960 - 2010

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
Sussex	7/27/1969	Heavy Rain, Flood	0	0	\$139,293	\$0
Sussex	11/13/1970	Local Flood	0	0	\$1,848	\$0
Sussex	8/2/1973	Rain, Flood	0	0.5	\$2,089,459	\$0
Sussex	11/6/1977	Rain, Flood	0	0	\$8,645,784	\$0
Sussex	1/19/1996	Flood after Blizzard of 1996	0.14	0	\$2,118,017	\$0
Sussex	9/16/1999	Flood	0	0	\$3,290,850	\$0
Sussex	8/12/2000	Flood	0	0	\$211,247,778	\$0
Sussex	9/18/2004	Flash Flood	0	0	\$462,888	\$0
Sussex	9/19/2004	Flood	0	0	\$578,610	\$0
Sussex	4/2/2005	Flood	0	0	\$1,232,312	\$0
Sussex	6/28/2006	Flood	0	0	\$651,386	\$0
Sussex	4/15/2007	Flood	0	0	\$1,053,069	\$0

Source: SHELDUS 7.0 and NCDC

¹³ NJDEP, Flood Control Section, Bureau of Dam Safety and Flood Control. Retrieved from <http://nj.gov/dep/floodcontrol/about.htm#mapping>

¹⁴ NJ Flood Mitigation Task Force. Retrieved from <http://www.njflood.org/current.html>

¹⁵ Delaware River Basin Commission's *Multi-Jurisdictional Flood Mitigation Plan for Municipalities in the Non-tidal, New Jersey Section of the Delaware River Basin*, November 2008, p57. Retrieved from http://www.state.nj.us/drbc/Flood_Website/NJmitigation/index.htm

Notes:

- (1) Property Damage and Crop Damage amounts have been adjusted to 2010 inflation amounts using the average Consumer Price Index from the U.S. Department of Labor's Bureau of Labor Statistics.

The following descriptions of major floods are taken from excerpts from NCDC database, except as stated.

The Blizzard of 1996 paralyzed the east coast with heavy snow and winds from January 6 to 8, with another storm on January 12, then the weather warmed up and heavy rainfall followed, melting the snowpack quickly. According to NCDC, flash flooding began on January 19 which led to larger river flooding through January 21, 1996. Delaware River crested at its highest since 1955, and caused the worst damage. Damage estimates exceeded \$10 million. Hunterdon, Morris, Sussex, and Warren Counties were declared disaster areas. In Sussex County, the worst damage was in Montague, Sandyston, Vernon, and Walpack Townships. Many roads were washed out and bridges damaged. At Montague, the Delaware River crested at 26.6 feet, flood stage is 25 feet.

In September 1999, Hurricane Floyd brought heavy rainfall and winds to the area and caused extensive flooding and damage. According to NCDC, the hurricane is the greatest natural disaster to date to affect the State of New Jersey. Raritan River Basin experienced record breaking flooding, with approximately ten inches. Some water treatment plants were also inundated and many municipalities did not have water or had to boil it, while raw sewage was released and contaminated water in other areas. Structures and property were damaged by floodwaters, roads were flooded, and some areas were cut-off. On a relative basis, the effects of Floyd diminished across Warren and Sussex Counties. Approximately 38,000 homes and businesses lost power. Hardest hit in Sussex County was Byram Township, Frankford Township, Hopatcong, and Newton.

According to the Sussex Preliminary FIS (which can change at any time before going Effective), heavy thunderstorms produced record rainfall amounts in areas of southeastern Sussex County. Total rainfall was more than 14 inches in four days. On the Musconetcong River at the outlet of Lake Hopatcong, peak flows far exceeded the previous record set during the August 1955 flood. Throughout the State, approximately 2,600 people were evacuated. The flood completely destroyed the dams on Seneca Lake, Tomahawk Lake, Furnace Pond, and Edison Pond, and caused damage to many other dams. Several bridges in Sparta Township and Ogdensburg collapsed. A Federal Disaster was declared on August 16.

In mid-September, 2004, the remnants of Hurricane Ivan created heavy rainfall in the upper and middle sections of the Delaware River Valley. Storm total estimates averaged between 2 and 5 inches in Sussex County. The torrential rain caused widespread poor drainage, creek, and river flooding. It was the worst flooding along the Delaware River since 1955. The County was declared a disaster area. Damage was estimated at just over \$1.041 million in 2010 currency in Sussex County alone.

Many of the same areas that flooded in September 2004 were in a similar or worse flood situation in April 2005 when heavy rains were caused by a low pressure system from the Gulf. The flooding was exacerbated by the already wet soil conditions due to heavy rain during the end of March, snowmelt in the Delaware River's upper basin, and full capacity reservoirs in New York. In Sussex, Warren, Hunterdon, Mercer, and Morris Counties about 1,800 homes and businesses were flooded, twenty-five homes were destroyed, and about 4,000 people were

evacuated. Many major roads were closed and about a dozen low-lying bridges were damaged, partially due to debris in the floodwaters. In Sussex County, storm totals averaged three to four inches, with Montague and Sandyston Townships the hardest hit. Flooding problems also occurred in Byram, Hardyston, and Stillwater Townships. Summit Lake Dam leaked but did not fail. Some basements in Newton and Byram Township flooded. Numerous roads were closed. There were no deaths or major injuries. On April 19th, a Major Disaster Declaration was announced for Gloucester, Hunterdon, Mercer, Morris, Sussex, and Warren Counties.

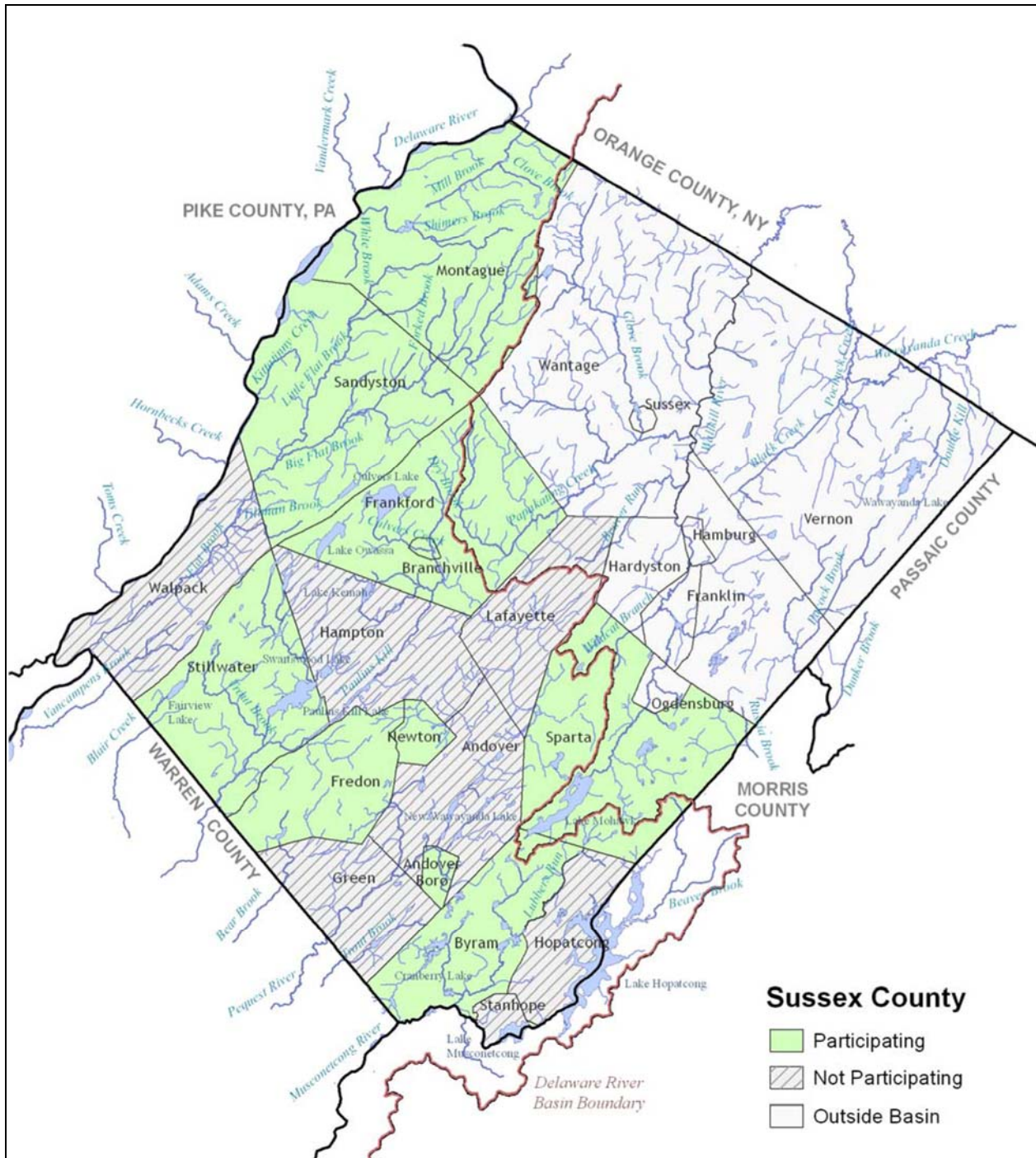
June 28, 2006 flooding occurred throughout the Delaware River Basin following several days of heavy rain. It was the second or third highest crest on record for the Delaware River along Sussex County. The County was declared a disaster area. Event totals in Sussex County averaged four to six inches, but storm totals exceeded ten inches in parts of the Upper Delaware Basin in New York State. Approximately 1250 homes and businesses in the State were damaged and four were destroyed. Many basements had flooding, and there were cases of oil in basements from ruptured tanks. Between Mercer and Sussex Counties ten Delaware River bridges were closed.

Following these three events in 2004, 2005, and 2006, a multi-agency and local partnership formed to produce the *Multi-Jurisdictional Flood Mitigation Plan for Municipalities in the Non-tidal, New Jersey Section of the Delaware River Basin*, which was finalized in November 2008. The goal of the plan is “to make the Delaware River Basin more disaster resilient by reducing long-term risks to loss of life and property damage from flooding. The aim is to empower local communities to mitigate and support a sustainable community plan so that, when confronted by a natural disaster, they will sustain fewer losses and recover more quickly.”¹⁶

Ten Sussex County municipalities, out of the seventeen that were eligible, chose to participate including: Andover, Branchville, Byram Township, Frankford Township, Fredon Township, Montague Township, Newton, Sandyston Township, Sparta Township, and Stillwater Township, shown in green in Figure 3.3.4-1. Only the municipalities within the designated Delaware River Basin were eligible to participate. The Flood Mitigation Plan also contains recommended mitigation actions specific to the local communities that participated in the plan.

¹⁶ Delaware River Basin Commission’s *Multi-Jurisdictional Flood Mitigation Plan for Municipalities in the Non-tidal, New Jersey Section of the Delaware River Basin*, November 2008, p9. Retrieved from http://www.state.nj.us/drbc/Flood_Website/NJmitigation/index.htm

Figure 3.3.4-1: Sussex County Municipalities Participating in the 2008 Multi-Jurisdictional Flood Mitigation Plan for the Non-tidal Section of the Delaware River Basin



Delaware River Basin Commission's *Multi-Jurisdictional Flood Mitigation Plan for Municipalities in the Non-tidal, New Jersey Section of the Delaware River Basin*, November 2008, p243. Retrieved from http://www.state.nj.us/drbc/Flood_Website/NJmitigation/index.htm

Based on the occurrence of 12 significant drought events in fifty years, the probability of future loss-causing flood events in Sussex County is 24% likelihood per year.

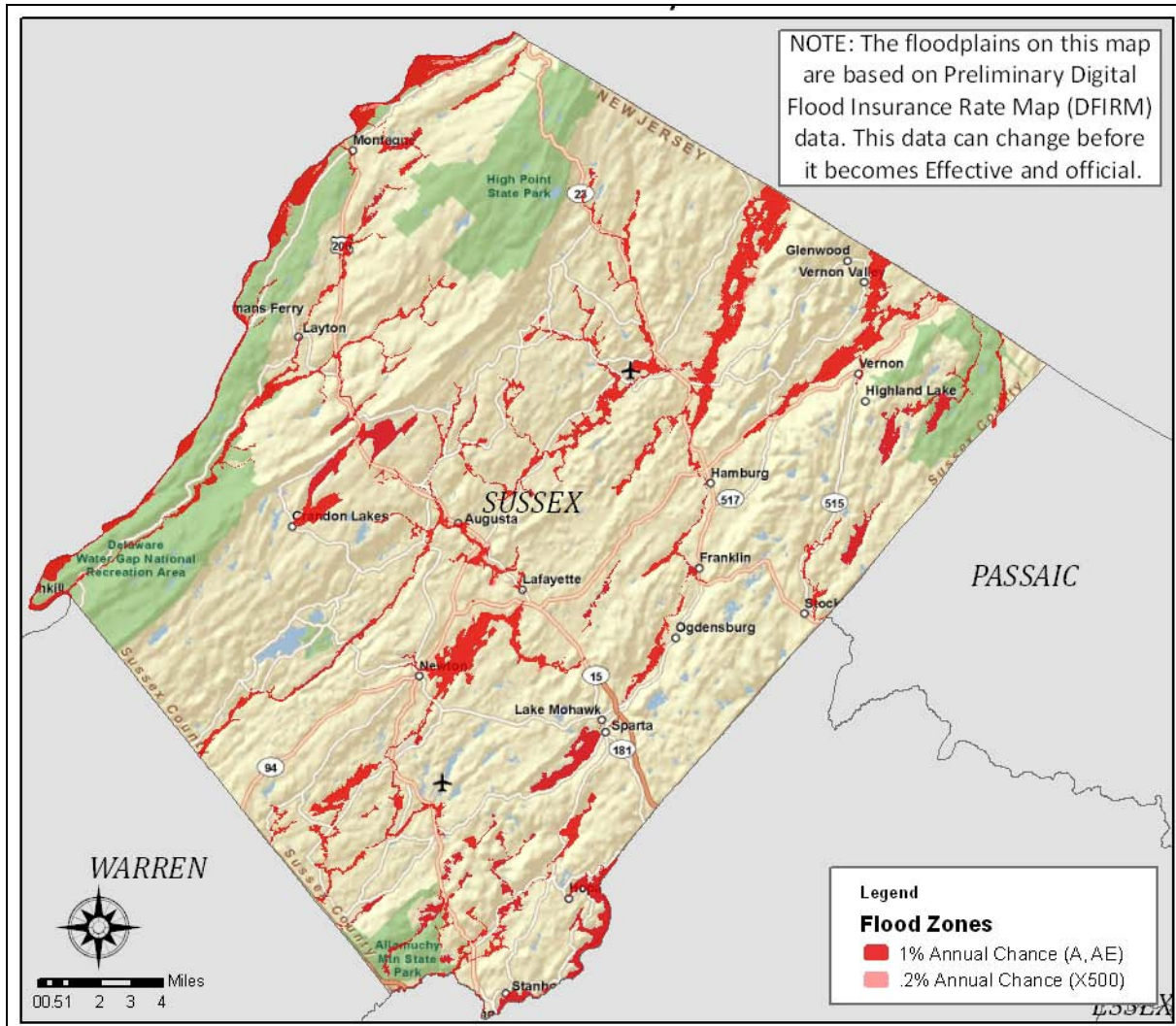
Location and Extent of the Flood Hazard

The area's characteristics can also impact the severity of a flood, such as topography, current soil moisture, vegetation, reservoir levels, and manmade alterations to the landscape. Densely populated areas are also at a high risk for flash floods because the construction of buildings, highways, driveways, and parking lots increases runoff by reducing the amount of rain absorbed by the ground.¹⁷

Certain areas of the County are at higher risk for flooding than others. As previously mentioned, the Delaware River has been the source of many damaging previous events. Flooding in this area is commonly due to snow melt combined with a rain event, heavy rains, or cyclonic events (including hurricanes, tropical storms, or nor'easters). Areas depicted on FIRMs as being in both the 1% and .2% annual chance of flood have a higher risk of flooding than areas outside of the floodplain, as shown in Figure 3.3.4-1. According to Sussex County's Preliminary DFIRM data (which is subject to change at any time before going Effective), of Sussex County's 342,698.02 acres, 28,000.22 acres are in the SFHA and at higher risk for flooding, or 8.17% of the County's land.

¹⁷ NOAA. Retrieved from http://www.nssl.noaa.gov/primer/flood/fld_basics.html

Figure 3.3.4-2: Sussex County Floodplains from Preliminary DFIRM Data



Source: FEMA DFIRM Preliminary data, which is subject to change at any time before becoming Effective.

Another way to look at where flooding has caused damages in the past is to review information and general locations of Repetitive Loss and Severe Repetitive Loss Properties. A Repetitive Loss (RL) property is a structure covered under an NFIP flood insurance policy that has submitted at least two insurance claims of more than \$1,000 in a ten-year period. According to the National Flood Insurance Act, a Severe Repetitive Loss (SRL) property is residential property covered under an NFIP flood insurance policy and 1) 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 2) 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. In either case, two of the referenced claims must have occurred within a ten-year period and are greater than 10 days apart.

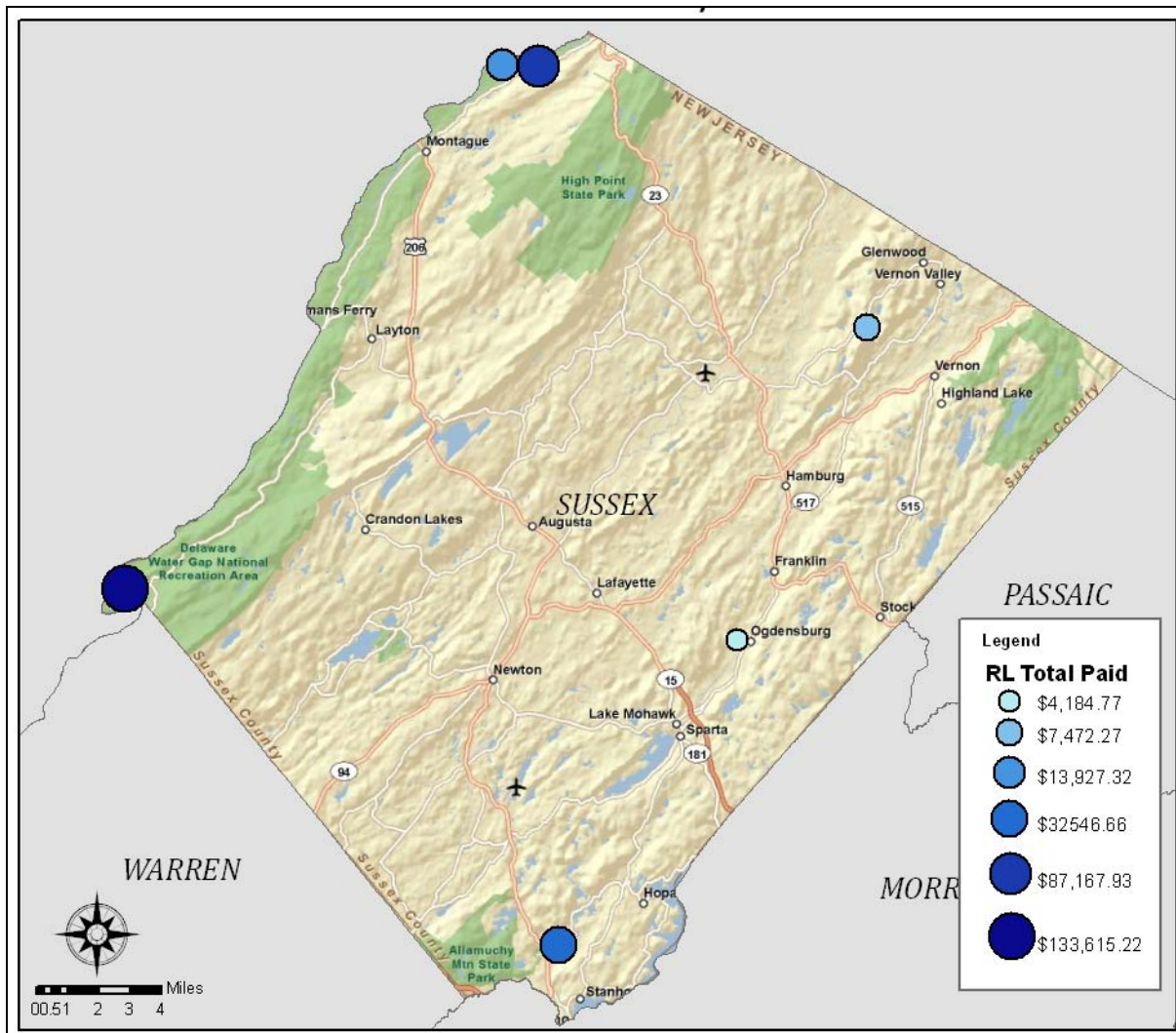
Table 3.3.4-2 and Figure 3.3.4-3 show the County’s RL properties. The five municipalities with paid RL claims are: Walpack Township, Montague Township, Byram Township, an unknown municipality, and Ogdensburg. Walpack and Montague Townships share a boundary with the Delaware River, whose overflow was the cause of many of the RL flood events in the County. In Byram Township, Lubbers Run and the Musconetcong River have been known to cause flooding. In Ogdensburg, the Walkill River is a source of flooding. Many lakes in Sussex County also cause flooding. Sussex County has no reported SRL claims.

Table 3.3.4-2: Sussex County Municipality Repetitive Loss Properties by Total Paid

Municipality	# Residential Properties	# Non-Residential Properties	Building Claims Paid	Contents Claims Paid	# Claims	Total Paid
Walpack Twp	1	0	\$133,492	\$124	2	\$133,615
Montague Twp	2	0	\$100,539	\$557	5	\$101,095
Byram Twp	1	0	\$23,739	\$8,807	2	\$32,547
Misc. Sussex County	1	0	\$7,472	\$0	2	\$7,472
Ogdensburg	1	0	\$1,809	\$2,376	2	\$4,185
Sussex County RL Totals	6	0	\$267,051	\$11,864	13	\$233,914

Source: FEMA Repetitive Losses Queried May 10, 2010.

Figure 3.3.4-3: Sussex County Repetitive Loss Properties



Source: FEMA Repetitive Losses Queried May 10, 2010.

Notes:

- (1) Six RL properties could not be geocoded based on data provided, these include: three in Stockton, one in Clinton, one in Frenchtown, and one unknown municipality.

Impact on Life and Property of the Flood Hazard

According to the USGS, “Floods are the most chronic and costly natural hazard in the United States, causing an average of 140 fatalities and \$5 billion damage each year (Schildgen, 1999).”¹⁸ More than half of all fatalities during floods are auto related, and usually the result of drivers misjudging the depth of water on a road and the force of moving water – a car can float in just a few inches of water. In the U.S. in the past 50 years, loss of life to floods has declined,

¹⁸ USGS *Large Floods in the United States: Where They Happen and Why Circular 1245*, 2003, p1. Retrieved from <http://pubs.usgs.gov/circ/2003/circ1245/pdf/circ1245.pdf>

mostly due to improved warning systems, however economic losses have continued to rise due to increased urbanization and coastal development.¹⁹

Flood events have severely impacted the County in the past, including deaths, injuries, significant property damage, sewage and storm water drainage issues, road damage, dam damage, and utility damage. According to a comparison of the SHELDC and NCDC databases, since 1960 there have been twelve flood events within Sussex County that resulted in losses, summarized in Table 3.3.4-1. These twelve flood events are estimated to have caused 1 possible death, 1 possible injury, and \$231,511,294 in property damages in 2010 currency. The NFIP has paid out a total of \$233,914 in 6 Repetitive Loss claims.

According to the 2008 *Multi-Jurisdictional Flood Mitigation Plan for Municipalities in the Non-tidal, New Jersey Section of the Delaware River Basin*, all of the Sussex County jurisdictions that participated in the Flood Mitigation Plan are classified as having a low to medium flood vulnerability.

The USACE Philadelphia District, in partnership with NJDEP, is currently working on an Interim Feasibility Study for New Jersey which is expected to be submitted around 2013. The purpose is to evaluate possible flood mitigation options, including flood-proofing and removing or relocating structures within the floodplain of the Delaware River Basin which aim to reduce flood losses.

The Green Acres, Farmland, Blue Acres, and Historic Preservation Bond Act of 2007 authorized \$12 million for acquisition of lands in the floodways of the Delaware River, Passaic River or Raritan River, and their tributaries, for recreation and conservation purposes.²⁰ Properties that have been damaged by flooding, or are prone to incurring flood damage, are eligible for acquisition. There have also been recent approved funding and efforts for improving flood warning and education in the Delaware River Basin area.

Prioritization and Rationale of the Flood Hazard

The probability of future significant flood events in the County is 24%, or 'likely' for an index value of 3. Based on previous impacts from flood events, the magnitude of a future event could be "critical" for an index value of 3. Floods can occur unexpectedly, but are usually followed by some type of predicted weather event, so the warning time for a flood event will be "6-12 hours" for an index value of 3. Flood duration can vary, but generally "lasts less than 1 week" for an index value of 3.

Table 3.3.3-3: CPRI for Degree of Risk for Flood in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
3 x .45	+	3 x .30	+	3 x .15	+	3 x .10	=	3

¹⁹ USGS *Flood Hazards – A National Threat Circular*. Retrieved from <http://pubs.usgs.gov/fs/2006/3026/2006-3026.pdf>

²⁰ NJDEP. Retrieved from <http://www.nj.gov/dep/greenacres/>

Based on previous flood history and that more than 8% of County's land is in the SFHA, floods will continue to impact the County. For these reasons, floods will be studied in further detail in this Plan.

3.3.5 Hazardous Materials Release

Description of the Hazardous Materials Release Hazard

In general terms, 'hazardous materials' refers to hazardous substances, petroleum, natural gas, synthetic gas, and acutely toxic chemicals. They can come in many forms. The term Extremely Hazardous Substance is used in Title III of the Superfund Amendments and Reauthorization Act of 1986 to refer to those chemicals that could cause serious health effects following short-term exposure from accidental releases. Hazardous material releases can occur as a result of transportation accidents or a release from a fixed site due to flooding, earth movement, an accident, or an attack. Nuclear power generating facilities have the greatest concentration of radioactive materials of any private source. Usually the most immediate threat to public safety is caused when a hazardous material release causes an explosion.

Starting in 1986, the Emergency Planning and Community Right-to-know Act (EPCRA) required certain industries to report the locations and quantities of chemicals stored on-site to government officials. EPCRA Section 313 requires the EPA and the States to collect this data annually and make it publicly available. The Toxic Release Inventory (TRI) database is the vehicle to make public the information about releases and transfers of toxic chemicals from facilities in certain industrial sectors, including manufacturing, waste handling, mining, and electricity generation. Reporting is mandatory for facilities that use specific Standard Industrial Classification Codes, have at least 10 full-time workers, manufacture/process/use more than minimum amounts of the chemical, and the chemical is on the TRI list. Therefore, not all toxic on-site occurrences are recorded in TRI.

Occurrences and Probability of the Hazardous Materials Release Hazard

According to the Right-To-Know Network's Toxics Release Inventory (TRI), Sussex County facilities had a total of 2,235,480 pounds of releases and 7,264,831 pounds of waste from 1987 to 2008. The types of chemicals that are reported through the TRI were originally established by Congress (based on lists that Maryland and New Jersey were using at the time), with the intent that the list would be improved through a process for listing and de-listing hazardous chemicals and categories.²¹ Table 3.3.5-1 lists the County's top 5 types of chemicals for onsite releases from 1987 to 2008. 1,1,1-Trichloroethane was the top chemical released in the County for this time period, which is a type of solvent. It is a colorless, sweet-smelling liquid that was previously used in correction fluid, and can cause poisoning and illness from inhalation and skin irritation from skin contact with the liquid. It has been found to be an ozone depleting substance and is being regulated by the Montreal Protocol, and phased out in most cases.

²¹ RTK TRI. Retrieved from <http://www.rtknet.org/node/630>

Table 3.3.5-1: Sussex County's Top 5 Chemicals for On-Site Releases from 1987 - 2008

Chemical Name	Quantity Releases (in Pounds)
1,1,1-Trichloroethane	968,322
Trichloroethylene	489,790
Methyl Ethyl Ketone	339,494
Methyl Isobutyl Ketone	337,662
Toluene	76,786

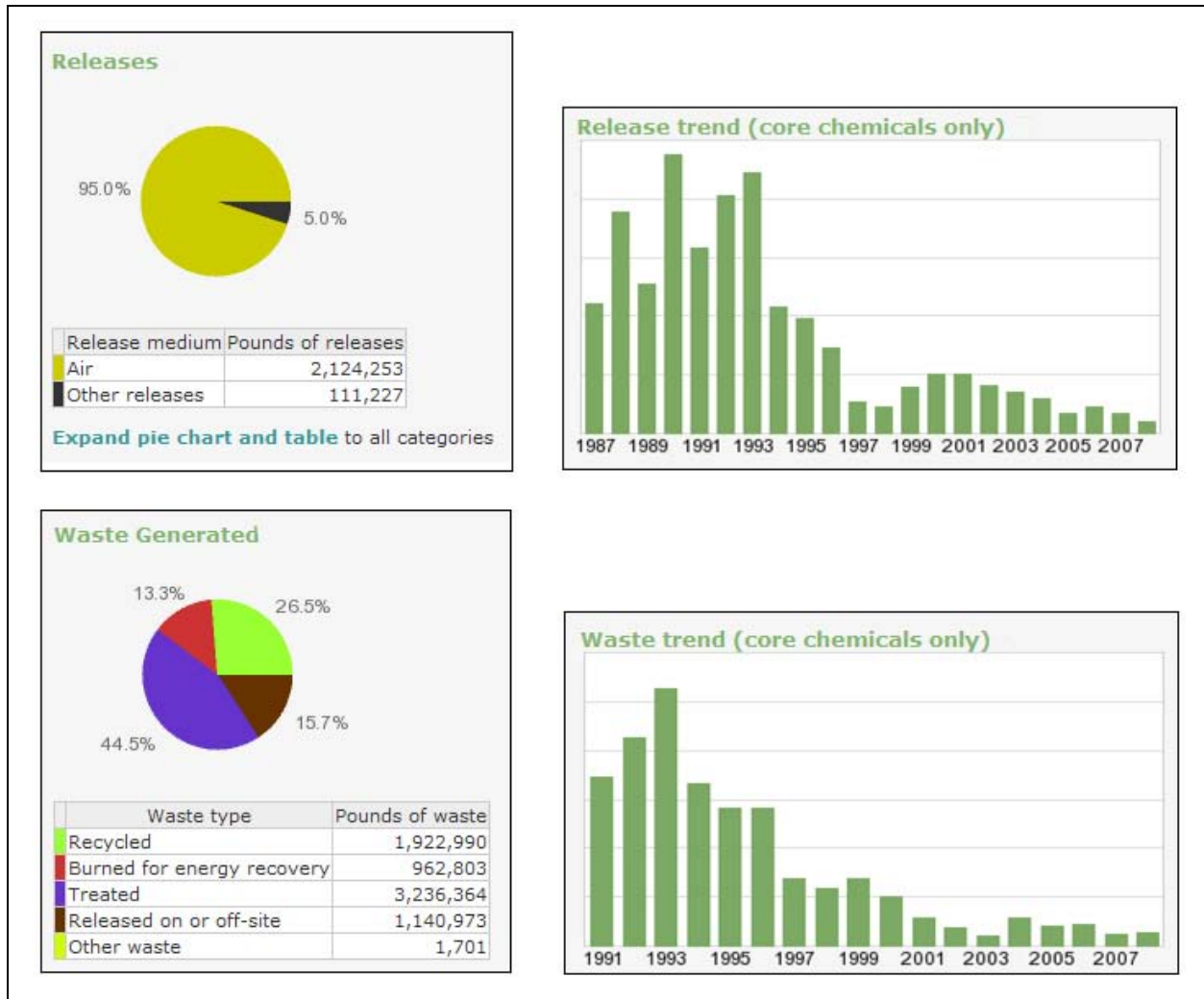
Source: RTK TRI. Retrieved from www.rtknet.org

Table 3.3.5-2: Sussex County's Top 5 Industries for On-Site Releases from 1987 - 2008

Top Industries for On-Site Releases	Quantity Releases (in Pounds)
Plastics and Rubber	1,209,886
Fabricated Metals	495,746
Printing and Publishing	364,807
Miscellaneous or No Industry Code	158,818
Chemicals	3,000

Source: RTK TRI. Retrieved from www.rtknet.org

Figure 3.3.5-1: Sussex County's Waste Released and Generated - Totals and Trends from 1987 - 2008



Source: RTK TRI. Retrieved from www.rtknet.org

Another component to hazardous material events is the possibility of a release of chemicals during transport. The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) maintains the Hazmat Incident Database which records events that occurred during transport. The database contains data from the past ten years, and indicates if an incident was a “serious incident” or not. A “serious incident” is defined as a hazardous material release incident that caused a fatality or major injury, the evacuation of 25 or more persons, closure of a major transportation artery, alteration of aircraft flight plan or operation, the release of radioactive materials from Type B packaging, the release of more than 11.9 gallons or 88.2 pounds of a severe marine pollutant, or the release of a bulk quantity of a hazardous material.²² Sussex County had at least two “serious incidents” listed as shown in Figure 3.3.5-3. Note that the database provides the location as the name of a city; since there are multiple locations named ‘Franklin’ in New Jersey, it is unclear if these two incidents occurred in Sussex County or elsewhere in the State.

²² PHSA. Retrieved from <https://hazmatonline.phmsa.dot.gov/IncidentReportsSearch/>

Table 3.3.5-3: Sussex County Hazardous Material Serious Incidents During Transport

Location	Date	Carrier/Reporter Name	Shipper Name	Packaging Type	Commodity	Quantity Released	Deaths	Injuries	Total Amount of Damages
Fredon	2/9/2004	Ferrell Gas Inc	Ferrell Gas Inc	Portable Tank	Liquefied Petroleum Gases	1	0	0	\$2
Franklin*	8/7/1998	Star Enterprise	Star Enterprise	Cargo Tank Motor Vehicle	Fuel Oil	2401	0	0	\$81,900
Franklin*	8/7/1998	Star Enterprise	Star Enterprise	Cargo Tank Motor Vehicle	Gasoline	6101	0	0	\$81,900
Hamburg	12/11/2003	Ferrell Gas Inc	Ferrell Gas Inc	Portable Tank	Liquefied Petroleum Gases	50	0	0	\$1,232

Source: PHSA. Retrieved from <https://hazmatonline.phmsa.dot.gov/IncidentReportsSearch/>

Notes:

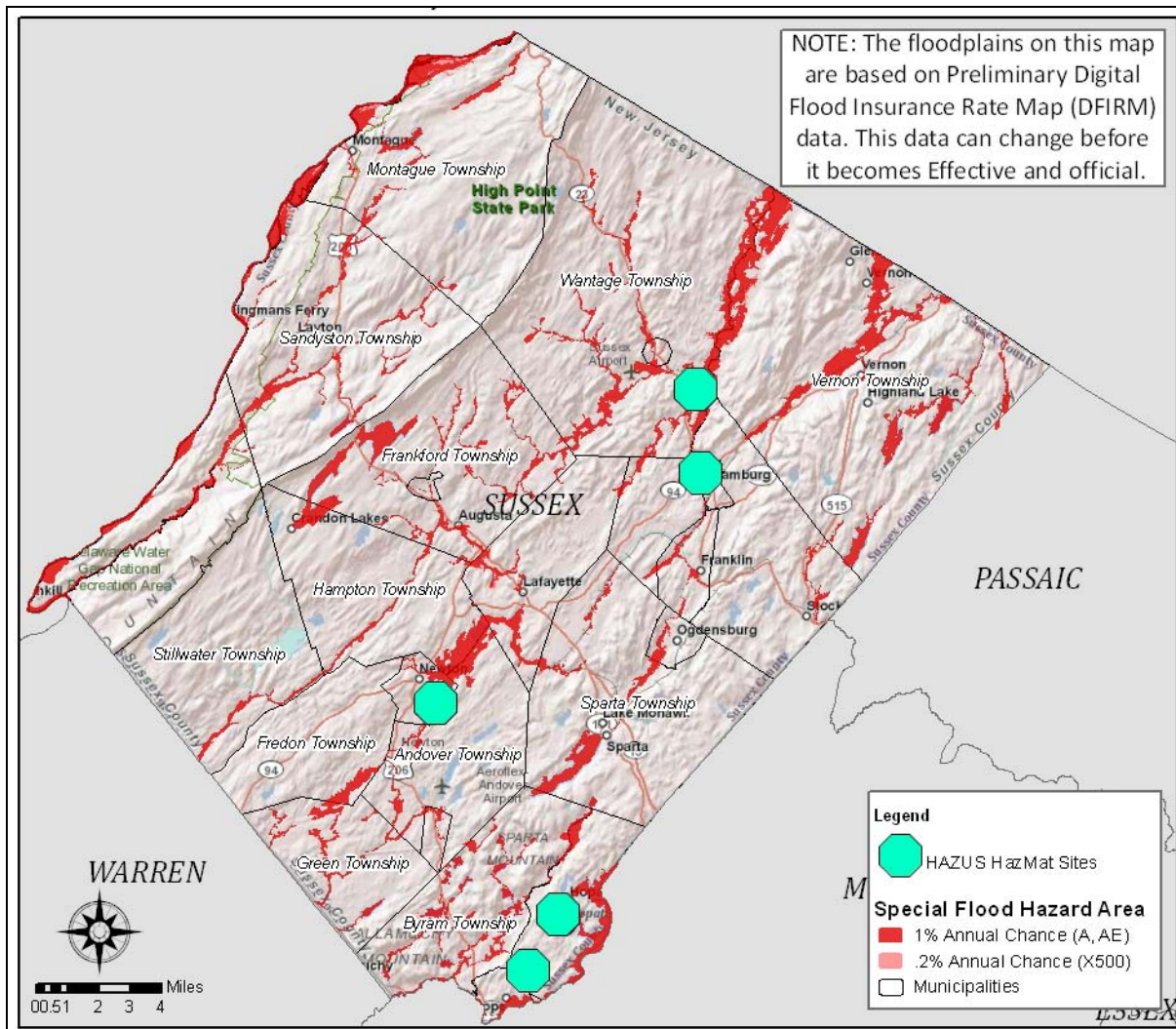
- (7) It is unclear if Franklin* is the city in Sussex or elsewhere in the State. The database not provide any other identifying location information.

It is highly likely that smaller hazardous material releases and transportation incidents will continue to occur. However, Sussex County has not experienced a severe large-scale hazardous material incident at a fixed site or during transport resulting in deaths or serious injuries. The probability of a severe event occurring in Sussex County is unlikely.

Location and Extent of the Hazardous Materials Release Hazard

Hazardous material releases are more likely to occur in areas surrounding fixed site facilities and along major transport routes in Sussex County. Figure 3.3.5-2 shows hazardous material sites according to the HAZUS-MR4 inventory data. There are only five facilities listed in Sussex County, and none are in the floodplain. Nuclear sites are not included in the HAZUS data, but the only New Jersey nuclear sites are located in Salem and Ocean Counties.

Figure 3.3.5-2: Sussex County Hazardous Materials Facilities



Source: GIS Hazardous Material site data from HAZUS MR4. Floodplain GIS data from FEMA's Preliminary Digital Flood Insurance Rate Map database which is subject to change at any time before becoming Effective in the future.

Table 3.3.5-4: Sussex County's Top 5 Municipalities for On-Site Releases from 1987 - 2008

Municipality	Quantity Releases (in Pounds)
Hamburg	796,787
Sussex	668,602
Newton	343,636
Franklin	179,141
Vernon	134,702

Source: RTK TRI. Retrieved from www.rtknet.org

Impact on Life and Property of the Hazardous Materials Release Hazard

Public health impacts of a hazardous material release can be varied, ranging from temporary minor skin irritation to death. Mechanisms are in place to prevent catastrophic hazardous materials releases from occurring, but they are still possible. In Sussex County, it is more likely that smaller scale controlled and accidental chemical releases will occur. New Jersey State Police includes a Hazardous Materials Response Unit, and offers training for first responders on how to deal with hazardous materials and related emergency response.

Prioritization and Rationale of the Hazardous Materials Release Hazard

Since the probability of future catastrophic hazardous materials release events are unlikely, this is considered an index value of 1. Based on previous occurrences, the magnitude or severity for anticipated hazardous materials release event impacts is considered 'negligible' because "less than 25% of property that is severely damaged" for an index value of 1. The warning time for a hazardous materials release event is "less than 6 hours warning time before an event occurs" for an index value of 4. Hazardous material release events, can end very quickly or last an entire day, therefore they would be classified as "the event lasts less than one day" for an index value of 2.

Table 3.3.5-5: CPRI for Degree of Risk for Hazardous Materials Release Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
1 x .45	+	1 x .30	+	4 x .15	+	2 x .10	=	1.55

Although hazardous material releases can occur in Sussex County, as documented by historical reports, there have been no previously reported deaths or injuries, and the financial impacts have been extremely low in the past. Based on past events, the likelihood of a severe hazardous material release event occurring is very unlikely, though possible. For these reasons, hazardous materials release events will not be studied in further detail in this Plan.

3.3.6 High Wind – Straight Line Winds

Description of the High Wind – Straight Line Winds Hazard

Straight line high wind hazards include tropical cyclone winds (hurricanes, tropical storms, and tropical depressions), Nor'easter storm winds, and winds created by any other type of severe storm such as thunderstorms. Many of these storms have the potential to create both wind and water damages. In this section we will address only the wind hazard impacts, although in some cases it is difficult to separate the consequences of the two hazards. Tornado wind events are addressed separately in Section 3.3.7.

Tropical cyclones are formed as a developing center moves over warm water, the pressure drops in the center of the storm and as the pressure drops, the system becomes better organized and the winds begin to rotate around the low pressure, pulling the warm and moist

ocean air. Tropical cyclones can evolve from a tropical depression to a tropical storm to a hurricane as they intensify as shown in Table 3.3.6-1. In the Northern Hemisphere, hurricane winds rotate in a counter-clockwise direction with different wind speeds and characteristics in each quadrant, with the most severe effects in the right-front quadrant.

Table 3.3.6-1: Types of Tropical Cyclones

Name	Maximum Sustained Surface Wind Speed (Using the U.S. 1-minute average)		
	Tropical Depression	33 kt or less	38 mph or less
Tropical Storm	34kt to 63 kt	39 mph to 73 mph	63 km/hr to 118 km/hr
Hurricane	64 kt or more	74 mph or more	119 km/hr or more

Source: NOAA, National Hurricane Center (NHC). Retrieved from <http://www.nhc.noaa.gov/aboutgloss.shtml#h>

The Saffir-Simpson Hurricane Scale defines hurricane strength by categories, with a Category 1 storm being the weakest and Category 5 being the strongest as shown in Table 3.3.6-2. Depending on where and how hurricanes strike, it is possible for a lower category storm to inflict greater damage than a higher category storm.

Table 3.3.6-2: Saffir-Simpson Hurricane Scale

Category	Wind Speeds	Likely Effects
1	74 to 95 mph	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also some coastal road flooding and minor pier damage.
2	96 to 110 mph	Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Small craft in unprotected anchorages break moorings.
3	111 to 130 mph	Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures, mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain may be flooded well inland.
4	131 to 155 mph	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore. Terrain may be flooded well inland.
5	155 mph or more	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located near the shoreline. Massive evacuation of residential areas may be required.

Source: NOAA, NHC. Retrieved from <http://www.nhc.noaa.gov/>

Notes:

- (2) The scale corresponds to the 1-minute average sustained wind speed as opposed to gusts which could be 20 percent higher or more.
- (3) Effects depend on a number of factors and may differ from the examples here.

A nor'easter is a cyclonic storm that moves along the east coast of North America with winds that blow from a northeasterly direction. They may occur at any time of the year, but are most common and strongest in the winter months. These storms are usually most intense near New England and

Canada. Nor'easters can produce heavy snow and rain, and may bring gale force winds greater than 58 miles per hour and can cause rough seas, coastal flooding, and beach erosion.²³

Thunderstorms often bring strong winds in addition to hail and lightening. A thunderstorm is considered severe when the hail is .75" or larger, frequent and dangerous lightening is present, or has wind speeds 58 miles per hour or greater.

Occurrences and Probability of the High Wind – Straight Line Winds Hazard

According to a comparison of the SHELDUS and NCDC databases, since 1960 there have been four hurricane/tropical storm events within Sussex County that have resulted in losses. It is difficult to determine the losses due to wind damage versus the losses due to flooding damage. Table 3.3.6-3 shows the events with total losses from both types of damage.

Table 3.3.6-3: Significant Hurricane/Tropical Storm Events with Wind and Flooding Losses, Sussex County, 1960 - 2010

Location	Date	Name	Deaths	Injuries	Property Damage	Crop Damage
Sussex	7/30/1960	Tropical Storm Brenda	0	0	\$17,909	\$0
Sussex	9/12/1960	Hurricane Donna	0.14	0.43	\$179,088	\$179,088
Sussex	8/28/1971	Tropical Storm Doria	0	0.14	\$12,536,410	\$12,536
Sussex	6/22/1972	Tropical Storm Agnes	0	0	\$125,364	\$1,253,641

Source: SHELDUS 7.0, NCDC, and NOAA's NWS Storm Prediction Center GIS data

Notes:

- (1) All efforts were made to research the actual location of deaths and injuries associated with a specific event, however when a specific county could not be determined then the number of deaths or injuries were divided by the number of counties associated with that event according to NCDC. This is the methodology utilized by SHELDUS 7.0. This can cause fractions of deaths or injuries associated with a specific county for an event.
- (2) Property Damage and Crop Damage amounts have been adjusted to 2010 inflation amounts using the average Consumer Price Index from the U.S. Department of Labor's Bureau of Labor Statistics.

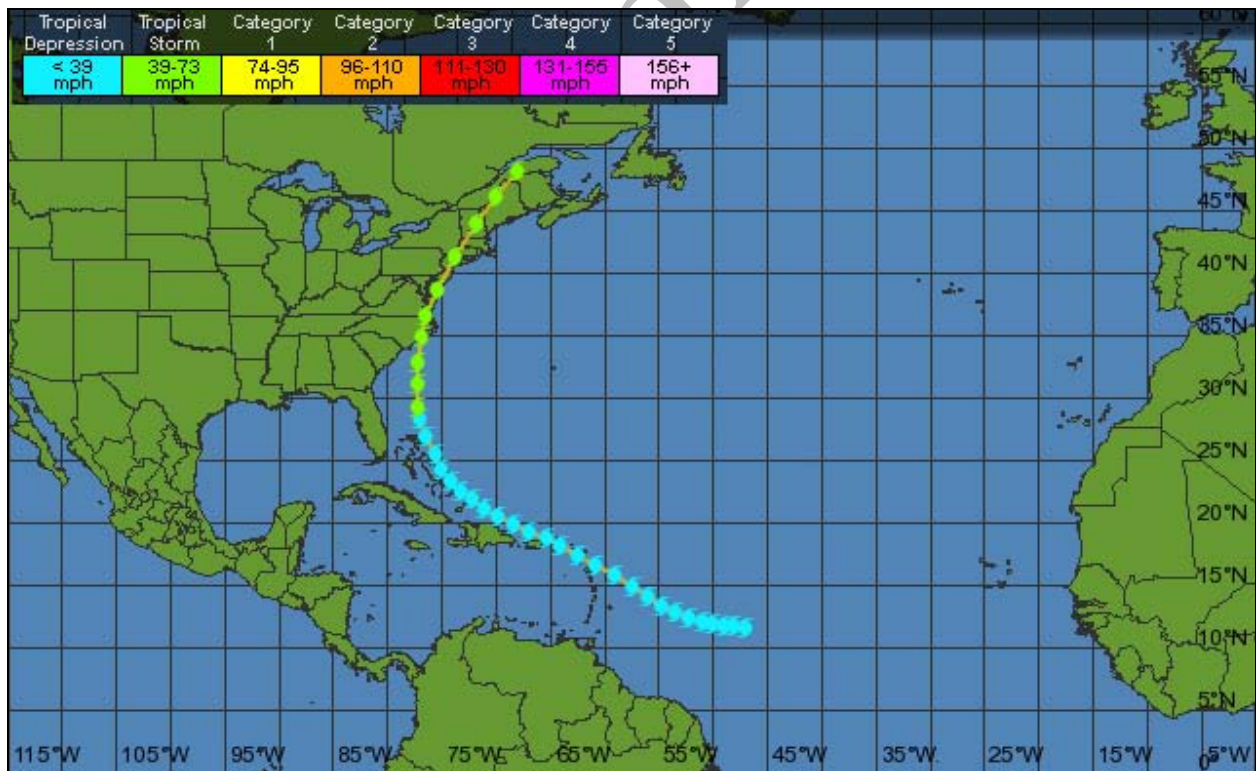
²³ NOAA, from http://www.noaa.gov/features/03_protecting/noreasters.html

Figure 3.3.6-1: Hurricane Donna Track and Radar Image, September 1960



Source: NOAA.

Figure 3.3.6-2: Tropical Storm Doria Track, August 1971



Source: NOAA.

Nor'easters are not a separate category in the NCDC or SHEL DUS databases, but upon cross-referencing a list of known significant nor'easter against the significant winter weather events

and wind events in the database, it was determined that the blizzard of 1996 was a nor'easter with significant impacts. See Section 3.3 and Figure 3.3.10-2 for further information regarding this event. On February 14-19, 2003, another nor'easter known as the "Presidents' Day Storm II", hit Sussex County and had significant impacts. It is unclear if any of the damages reported for Sussex County were due to wind damage.

According to the SHELDCUS and NCDC databases, an additional 67 straight line wind events that caused damages in Sussex County occurred between 1960 and 2010. These were caused by straight line high wind damage associated with thunderstorms and other severe storms.

Based on the occurrence of four significant hurricane/tropical storm wind events, two nor'easter wind events, and sixty-seven other wind-related events in fifty years, the probability of future loss-causing straight line high wind events in Sussex County is above 100% likelihood per year.

Location and Extent of the High Wind – Straight Line Winds Hazard

The entire county has approximately the same risk for occurrence of straight line high wind events. They can occur at any location within Sussex County, although weather patterns will affect where the severity is the greatest. As cyclonic storms come inland, they begin to lose some of their intensity; however this does not lessen the effects for one part of the County as opposed to another.

Impact on Life and Property of the High Wind – Straight Line Winds Hazard

Wind events can create windblown debris that become damage-causing missiles, failure of structures, and destruction of infrastructure including utility lines and bridges. Trees are often uprooted in severe winds and after acting as missiles, then become debris that must be dealt with before access to some areas and repair work can commence.

According to a comparison of the SHELDCUS and NCDC databases, since 1960 there have been four hurricane/tropical storm events as summarized in Table 3.3.6-3. These four events may have caused 1 death and 1 injury, and totaled \$12,858,770 in property damages and \$1,445,265 in crop damages in 2010 currency. Again, it is important to note that these damages may be due more to flooding than to winds. In Sussex County, the two previously mentioned nor'easters caused 1 death and 1 potential injury, and approximately \$3.187 million in property damages in adjusted for 2010 values. However, these losses are mostly attributed to the high snowfall during these two nor'easters, and the true amount of wind damage is unknown.

The additional sixty-seven other wind-related storms that caused losses in Sussex County caused an estimated 2 deaths, 12 injuries, \$1,044,858 in property damages, and \$167 in crop damage, based on 2010 inflation values. These losses may be most reflective of true wind losses in Sussex County as opposed to the cyclone event losses that are a combination of wind and precipitation losses.

Prioritization and Rationale of the High Wind – Straight Line Winds Hazard

Since the probability of future significant straight line high wind events in the County is greater than 100%, this is considered ‘highly likely’ for an index value of 4. Based on previous occurrences, the magnitude or severity for anticipated tornado hazard impacts is considered ‘critical’ due to the potential one or two previous deaths, multiple injuries, and property damages for an index value of 3. The warning time for a straight line high wind event can vary depending on the type of event, with cyclonic events prompting a warning from NOAA’s National Hurricane Center in advance, but thunderstorms may have less lead time. The issued warnings often change as a storm approaches, therefore the category of “12 to 24 hours warning time before an event occurs” for an index value of 2 will be used. The duration of the event can also vary, but generally the “event lasts less than 1 day” for an index value of 2.

Table 3.3.6-4: CPRI for Degree of Risk for High Wind – Straight Line Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
4 x .45	+	3 x .30	+	2 x .15	+	2 x .10	=	3.2

As documented by previous reports, many straight line high winds have occurred in Sussex County over the past fifty years. Based on past events, straight line high wind events will continue to occur in Sussex County and cause significant losses. For these reasons, straight line high winds will be analyzed in further detail in Section 3.4 of this Plan.

3.3.7 High Wind – Tornado

Description of the High Wind – Tornado Hazard

Tornadoes are defined as violently rotating columns of air extending from thunderstorms down to the ground. Tornadoes are unpredictable and can occur at any time of day or night, and at any season throughout the year. The Fujita Tornado Scale (F-Scale) was introduced in 1971, and is a damage scale (not a wind speed scale) that categorizes each tornado by intensity and area.²⁴ The F-Scale categories range from low intensity F0 with estimated wind speeds of 40 to 72 miles per hour up to F5 with estimated wind speeds of over 260 miles per hour. In 2007, the Enhanced Fujita Scale (EF-Scale) was introduced, and although it relates to the original Fujita Scale, it is more complex and has different wind speed ranges associated with the classifications. To determine an EF rating, begin with the 28 Damage Indicators, then determine the Degree of Damage (DOD), and based on the DOD, each category is given an expected estimate of wind speed.²⁵

²⁴ “Proposed Characterization of Tornadoes and Hurricanes by Area and Intensity” (Feb, 1971). Dr. T. Fujita

²⁵ NOAA from <http://www.spc.noaa.gov/efscale/>

Table 3.3.7-1: F-Scale and EF-Scale Wind Speed Range Comparison

F-Scale			EF-Scale	
F-Scale	Fastest ¼-mile Wind Speeds (mph)	3-Second Gust Speed (mph)	EF-Scale	3-Second Gust Speed (mph)
F0	40 - 72	45 - 78	EF0	65 - 85
F1	73 - 112	79 - 117	EF1	86 - 109
F2	113 - 157	118 - 161	EF2	110 - 137
F3	158 - 207	162 - 209	EF3	138 - 167
F4	208 - 260	210 - 261	EF4	168 - 199
F5	261 - 318	262 - 317	EF5	200 - 234

Source: Wind Science and Engineering Center at Texas Tech University and NOAA/National Weather Service.

Occurrences and Probability of the High Wind - Tornado Hazard

According to a comparison of the SHELDUS and NCDC databases, since 1960 there has been one F2 tornado that resulted in losses, and another possible tornado in Sussex County. Sources are conflicting as to whether this was a tornado, and it is not included in NOAA's tornado GIS datasets, so in our analysis, it will not carry as much weight as the other event.

Table 3.3.7-2: Significant Tornado Events, Sussex County, 1960 - 2010

Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Sussex	8/3/1974	Possible Tornado*		1	0	\$219,389	\$0
Libertyville	7/29/2009	Tornado	F2	0	0	\$812,947	\$203,237

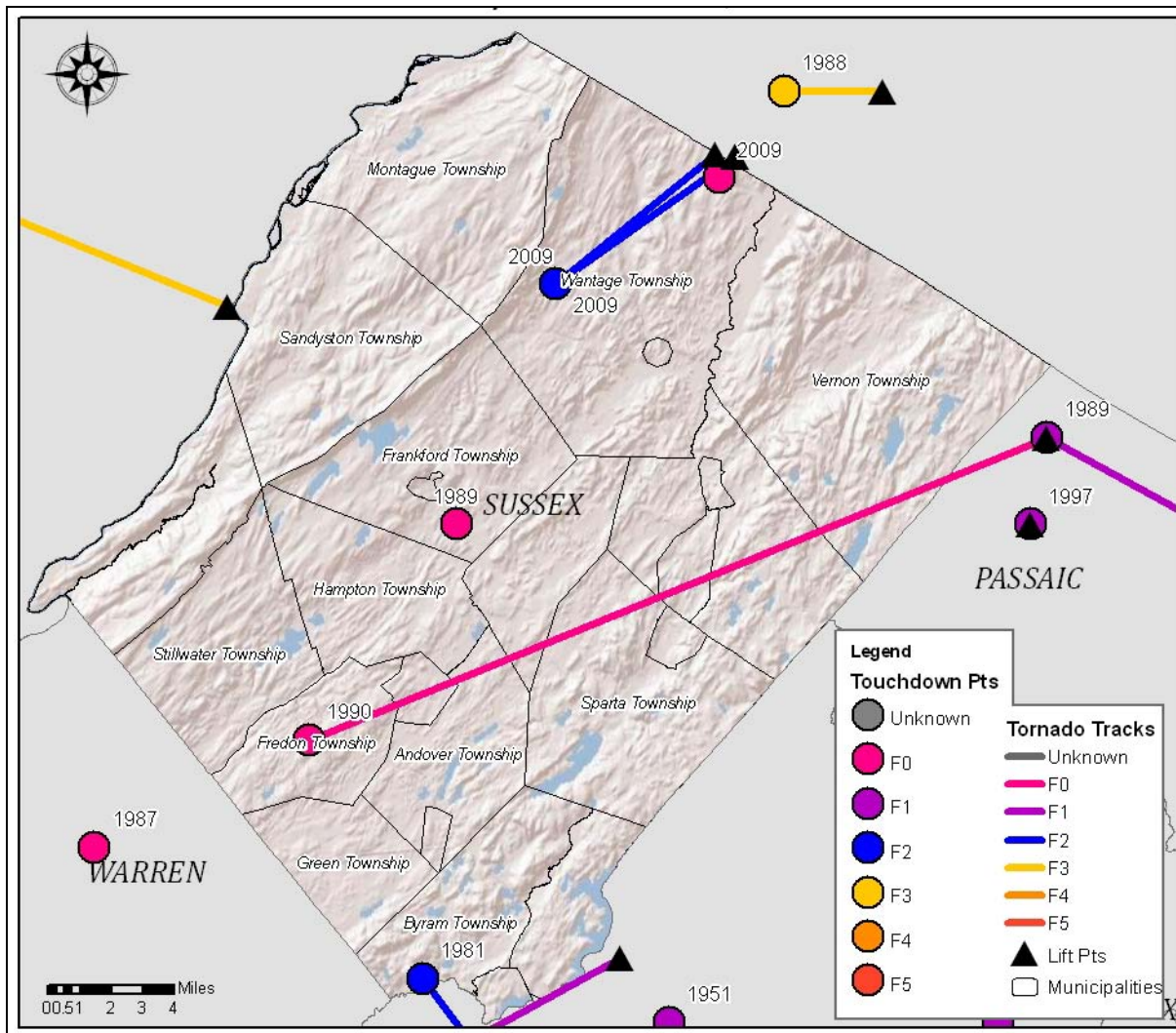
Source: SHELDUS 7.0, NCDC, and NOAA's NWS Storm Prediction Center GIS data

Notes:

- (1) Property Damage and Crop Damage amounts have been adjusted to 2010 inflation amounts using the average Consumer Price Index from the U.S. Department of Labor's Bureau of Labor Statistics.
- (2) 1974 event is listed as a "possible tornado" in SHELDUS, and is not included in the NOAA GIS data which goes back to 1950, so it is very questionable if it should be considered in these analyses.

Figure 3.3.7-1 is based on USGS data, and shows where previous tornadoes have occurred in Sussex County from 1950 to 2009. Not all events have known tracks, so touchdown points are used for an approximation of where the tornado occurred.

Figure 3.3.7-1: Tornado Events, Sussex County, 1950 - 2010



Source: NOAA. GIS data retrieved from <http://www.spc.ncep.noaa.gov/gis/svrgis/>

According to NOAA's National Severe Storms Laboratory (NSSL), Sussex County had between 0.6 and 0.8 tornado days per year for any tornado, regardless of strength, and approximately five days per century for significant tornadoes (F2 or greater).²⁶ Based on the occurrence of one or two significant events in fifty years, the probability of future loss-causing tornado events in Sussex County is 2% to 4% likelihood per year.

Location and Extent of the High Wind - Tornado Hazard

The entire county has approximately the same risk for occurrence of tornadoes. They can occur at any location within Sussex County, although tornado events tend to occur more frequently in flatter terrain. See Figure 3.3.7-1 for an overview of the County's terrain. Tornado paths can range from 100 yards to a mile wide and are usually less than 15 miles long. The most severe

²⁶ NOAA NSSL. Retrieved from http://www.nssl.noaa.gov/primer/tornado/tor_hazardgraph.html

recorded tornado event to occur in the County was an F2 in 1973, which is associated with ‘considerable damage’ and estimated wind speeds of 113 to 157 miles per hour.

Impact on Life and Property of the High Wind – Tornado Hazard

According to a comparison of the SHEL DUS and NCDC databases, since 1960 there have been one or two tornado events within Sussex County that have resulted in losses. There has been one documented death associated with the event that may or may not have been a tornado. There have been no documented injuries due to tornadoes during this time in the County, and the estimated amount of total property damages is nearly \$812,947 to \$1,032,336 and \$203,237 of crop damages in 2010 currency. A wind velocity of 200 miles per hour will result in a wind pressure of 102.4 pounds per square foot of surface area; a load that exceeds the tolerance limits of most buildings and cause high amounts of property damage. According to reports, Sussex County has not experienced a F3 or higher tornado.

The National Weather Service tries to provide accurate and timely warnings for tornadoes to reduce the loss of life and property. However, it is difficult to ensure the public knows how to react and find shelter to a tornado, particularly when tornadoes are such rare events in the County that can occur at any time of year. According to a recent study by National Severe Storms Laboratory Research Meteorologist Dr. Harold Brooks, violent tornadoes rated F4 or higher are responsible for 67% of the total deaths from 1921 to 1995.²⁷ The most severe recorded tornado in Sussex County was only an F2. The most vulnerable population in the path of tornadoes are residents of manufactured or mobile homes. According to the 2000 Census, Sussex County has 780 manufactured housing units, with an average household size of 2.8 for an estimated 2,184 people at higher risk.²⁸

Prioritization and Rationale of the High Wind – Tornado Hazard

Since the probability of future significant tornadoes in the County is 2% to 4%, this is considered ‘unlikely’ for an index value of 1. Based on previous occurrences, the magnitude or severity for anticipated tornado hazard impacts is considered ‘critical’ because potentially one death occurred due to a tornado, and the losses are over \$1 million 2010 dollars for an index value of 3. The warning time for a tornado is “less than 6 hours warning time before an event occurs” for an index value of 4. Tornadoes begin and end relatively quickly, therefore they would fall into “the event lasts less than 6 hours” classification for an index value of 1.

Table 3.3.7-3: CPRI for Degree of Risk for Tornado Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
1 x .45	+	3 x .30	+	4 x .15	+	1 x .10	=	2.05

Although tornadoes can occur in Sussex County, as documented by historical reports, there may or may not have been one previously recorded death due to a tornado with no reported injuries over

²⁷ NOAA. Retrieved from http://www.oar.noaa.gov/spotlite/archive/spot_climatology.html

²⁸ Bureau of the Census. Retrieved from <http://factfinder.census.gov>

the past fifty years. Based on past events, the likelihood of a severe tornado event occurring is relatively unlikely. For these reasons, tornadoes will not be studied in further detail in this Plan.

3.3.8 Landslide (Non-Seismic)

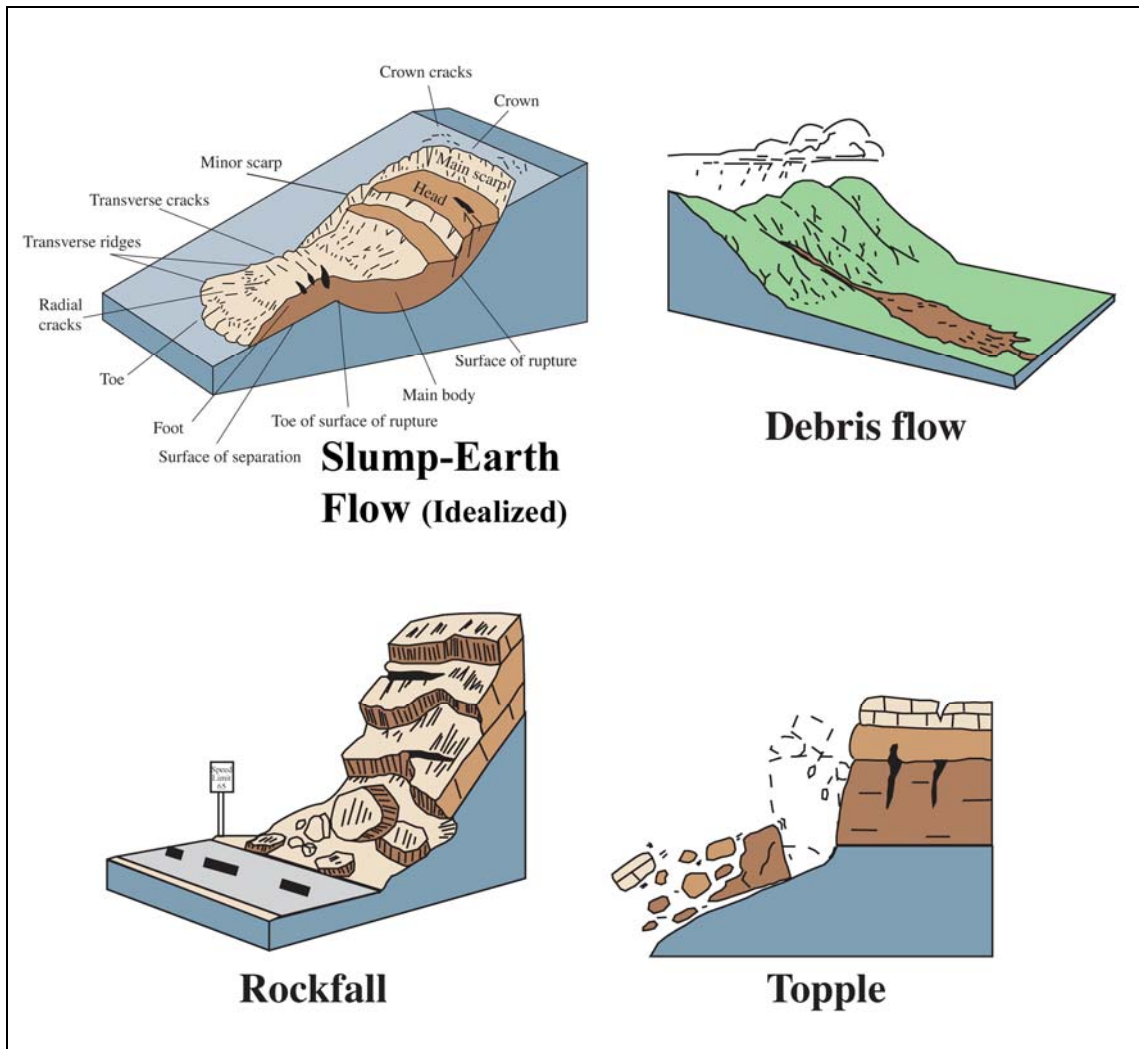
Description of the Landslide Hazard

A landslide is defined as “the movement of a mass of rock, debris, or earth down a slope”²⁹. The term ‘landslide’ includes events such as rock falls, slides, topples, spreads, and flows. A debris flow is a form of rapid mass movement in which a combination of loose soil, rock, organic matter, air, and water mobilize as slurry that flows downslope.³⁰ Landslides are more likely on certain combinations of soil, moisture, angle of slope, and following wildfires. They may occur suddenly or in slow gradual slides. They can be triggered by rains, floods, earthquakes, and other natural causes as well as man-made causes such as grading, terrain cutting and filling, reservoir draw-downs and excessive development. In this section, we will not include earthquake caused landslides; see Sections 3.3 and 4.x for a further discussion on earthquake-related landslides. The U.S. Geological Survey National Landslide Hazards Program (NLHP) conducts research and provides public products to try to reduce long-term losses from landslides.

²⁹ Cruden, D.M., 1991. A Simple Definition of a Landslide. Bulletin of the International Association of Engineering Geology, No. 43, pp. 27-29

³⁰ USGS Fact Sheet 2004-3072 Landslide Types and Processes retrieved from <http://pubs.usgs.gov/fs/2004/3072/>

Figure 3.3.8-1: Examples of Common Types of Landslides



Source: USGS Fact Sheet 2004-3072 *Landslide Types and Processes* Retrieved from <http://pubs.usgs.gov/fs/2004/3072/>

Occurrence and Future Probability of Landslide Hazard

NJDEP’s NJ Geological Survey maintains a dataset for landslides in the State, with 171 locations to date. Table 3.3.8-1 and Figure 3.3.8-2 provide a summary of events in Sussex County that caused damages or had unknown impacts.

Table 3.3.8-1: Landslide Events with Damages or Unknown Severity, Sussex County, 1782 - 2009

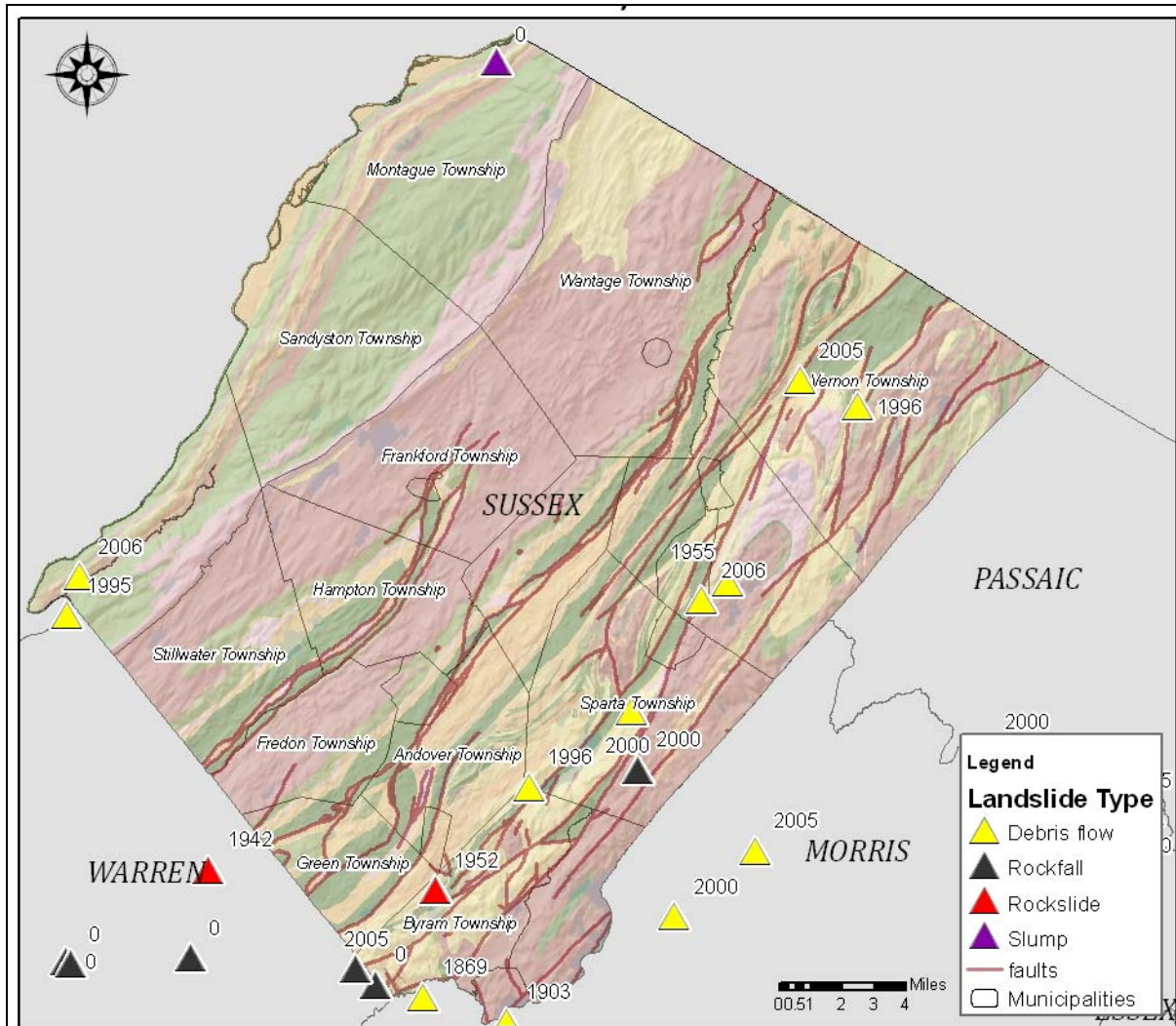
Location	Date	Type	Trigger	Description	Deaths	Injuries	Property Damage
Byram Township	12/1952	Rockslide	Weathering	A rockslide killed a 10 year old boy, another 10 year old boy suffered a broken ankle while playing on Panther Mountain.	1	1	No
Hardyston Township	08/1955	Debris Flow	Heavy Rain	Rte 23 closed at Beaver Lake as a result of landslide due to heavy rain from Hurricane Diane.	0	0	Yes
Sparta Township	01/1996	Debris Flow	Heavy Rain/ Snowmelt	Two landslides after heavy rain and melting snow, house destroyed in Lake Mohawk section.	0	0	Yes
Sparta Township	08/2000	Debris Flow	Heavy Rain	Massive landslide after heavy rain, property damage, railroad and Glen Road temporarily closed.	0	0	Yes
Franklin Boro	05/2006	Debris Flow	Heavy Rain	Heavy rains caused a retaining wall to collapse triggering a debris flow, damaging a deck.	0	0	Yes

Source: NJDEP Landslide GIS Data retrieved from <http://www.nj.gov/dep/njgs/geodata/dgs06-3.htm>

Notes:

- (1) There were five other Sussex County events in the database, but these reportedly caused no damage.

Figure 3.3.8-2: Reported Sussex County Landslides



Source: NJDEP Landslide GIS Data retrieved from <http://www.nj.gov/dep/njgs/geodata/dgs06-3.htm>

Based on the occurrence of five landslide events that potentially caused damage in one-hundred twenty-three years, the probability of future landslide events Sussex County is 4% likelihood per year.

Location and Extent of Landslide Hazard

According to USGS and NJGS, Sussex County overall has a low susceptibility of landslide incidence, with the northern part of the County in a swath of high susceptibility/moderate incidence, as shown in Figure 3.3.8-3. However, some areas may be more or less prone to landslides based on geology, man-made alterations of the area, and soil moisture. Detailed landslide susceptibility maps were created for northern New Jersey Counties as part of a NJDEP NJGS study, but Sussex was not part of the study.

Figure 3.3.8-3: New Jersey Landslide Susceptibility/Incidence



Source: NJDEP NJGS

Impact on Life and Property of the Landslide Hazard

Landslides can pose a danger to public health, can damage infrastructure including roads and utilities, and can cause property damage. According to the NJGS data, there has been one documented death, and one injury caused by previous landslide events in Sussex County. There have been instances of financial impacts and road damages due to landslides in the County. Some New Jersey communities have made attempts to mitigate landslide hazards through building codes.

Prioritization and Rationale of the Landslide Hazard

Since the probability of future significant landslides in the County is 4%, this is considered 'unlikely'; however, given the USGS's determination that a swath in the northern part of the County has a high susceptibility/moderate incidence, an index value of 2 will be used. Based on previous occurrences, the magnitude or severity for anticipated landslide hazard impacts is considered 'critical' because there has been one previous death, one previous injury, and some previous road and property damages, for an index value of 3. The warning time for a landslide is usually "less than 6 hours" for an index value of 1; although USGS does have a list of landslide warning signs on their website, such as soil moving away from foundations, sunken or down-dropped road beds, sudden decrease in creek water levels, a faint rumbling sound that increases, and more at <http://landslides.usgs.gov/learning/prepare/index.php> Landslides generally last for "less than 6 hours", so the index value would be 1.

Table 3.3.8-2: CPRI for Degree of Risk for Drought Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
2 x .45	+	3 x .30	+	4 x .15	+	1 x .10	=	2.5

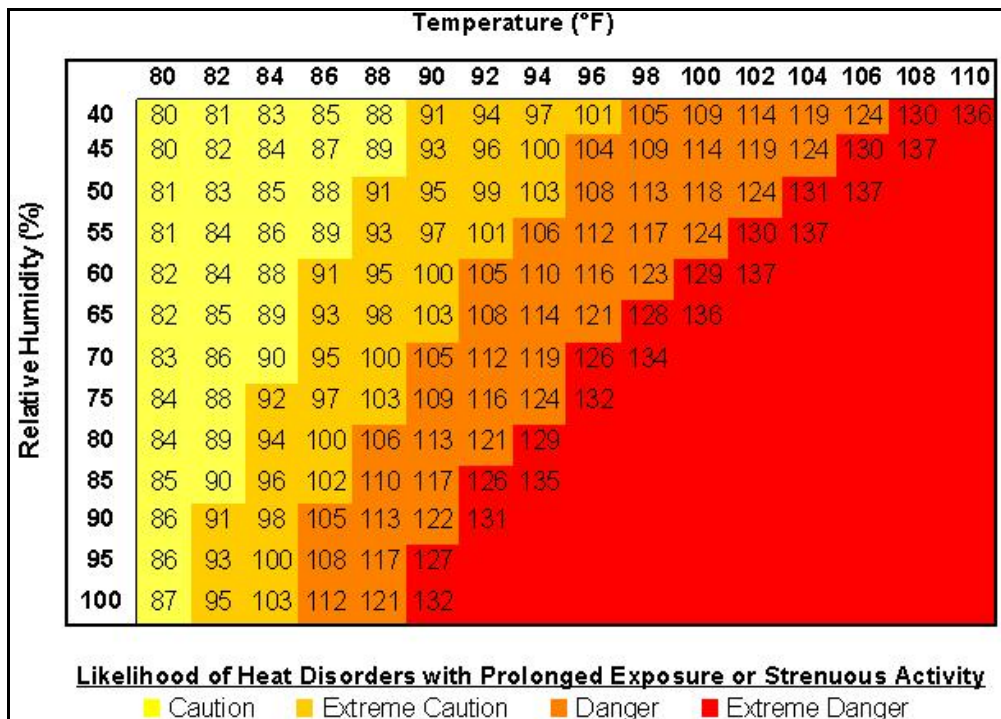
Landslides can occur in Sussex County and cause losses. There was one death and one injury that occurred in 1952 when two 10 year old boys were playing on Panther Mountain. There have been no other deaths reported in 123 years, and the probability of a future event is low. The majority of the County, where most of the population centers are, is considered to be in a Low susceptibility area. For these reasons, non-seismic landslides will not be studied in further detail in this Plan.

3.3.9 Severe Weather – Summer

Description of the Severe Weather – Summer Hazard

In the northeastern United States, periods of hotter than normal temperatures, often with high levels of humidity, can occur in the summer. These extreme temperature events can last a day to a week or longer. It is usually considered a heat wave in this area when the temperature rises above 100 degrees Fahrenheit, accompanied by high humidity. NOAA's National Weather Service (NWS) has created the Heat Index (HI) that combines relative humidity and actual air temperature to try to accurately measure how hot the air feels to the human body, and then demonstrate the potential health effects.

Figure 3.3.9-1: NOAA's National Weather Heat Index



Source: NOAA. Retrieved from <http://www.weather.gov/om/heat/heatindex.shtml>

Occurrence and Future Probability of Severe Weather – Summer Hazard

According to a comparison of the SHELDUS and NCDC databases, since 1960 there have been six extreme heat events within Sussex County that resulted in losses.

Table 3.3.9-1: Significant Severe Summer Weather Events, Sussex County, 1960 - 2010

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
Sussex	7/31/1993	Heat Wave	0	0.08	\$0	\$0
Sussex	7/01/1995	Unseasonably Warm	0	0.63	\$0	\$0
Sussex	7/14/1995	Excessive Heat	0	1	\$0	\$0
Sussex	8/1/1995	Unseasonably Warm	0	0.71	\$0	\$0
Sussex	7/12/1997	Excessive Heat	1.56*	0	\$0	\$0
Sussex	6/7/2008	Excessive Heat	0	0.625	\$0	\$0

Source: SHELDUS 7.0 and NCDC

Notes:

- (1) All efforts were made to research the actual location of deaths and injuries associated with a specific event, however when a specific county could not be determined then the number of deaths or injuries were divided by the number of counties associated with that event according to NCDC. This

is the methodology utilized by SHELDUS 7.0. This can cause fractions of deaths or injuries associated with a specific county for an event.

- (2) The 1997 excessive heat wave was listed as 1.56 deaths for Sussex County in SHELDUS, however this same event had zero deaths in NCDC (with 25 injuries), so the source of this number is unclear.

Based on the occurrence of six significant events in fifty years, the probability of future loss-causing tornado events in Sussex County is 12% likelihood per year.

Location and Extent of Severe Weather – Summer Hazard

The entire county has approximately the same risk for severe summer weather. Generally, heat waves are regional phenomena, but pockets of extreme heat can exist based on elevation and pressure system patterns. Climate change may or may not influence the severity of heat waves in the area in the future.

Impact on Life and Property of the Severe Weather – Summer Hazard

Heat waves can cause deaths, injuries, wide-spread power outages, and damage such as road buckling. According to a comparison of the SHELDUS and NCDC databases, since 1960 there have been six extreme heat temperature events in Sussex County that have resulted in losses. There have been possibly 0 to 2 deaths and 3 injuries in the County. From July 4, 1999 to July 6, 1999 there was a serious heat wave in New Jersey that caused 17 deaths and 160 injuries in neighboring counties. According to NOAA’s NWS, on average, heat kills more Americans than any other natural hazard except extreme cold temperatures.³¹ NWS has increased its efforts to alert the public and authorities to the hazards of heat waves, and communities have implemented cooling centers during some events to reduce the loss of life.

Prioritization and Rationale of the Severe Weather – Summer Hazard

Since the probability of future significant heat waves in the County is 12%, this is considered ‘possibly’ for an index value of 2. The magnitude or severity for anticipated heat wave hazard impacts could be ‘critical’ since one or two deaths may have occurred in the past for an index value of 3. The warning time for severe summer weather is usually “at least 24 hours before an event occurs” for an index value of 1. Heat waves can usually last more than a day but less than a week, so the index value would be 3.

Table 3.3.9-2: CPRI for Degree of Risk for Severe Weather – Summer Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
2 x .45	+	3 x .30	+	1 x .15	+	3 x .10	=	2.35

³¹ NOAA NWS. Retrieved from http://www.weather.gov/os/brochures/heat_wave.shtml

Summer severe weather events can cause serious harm to people. However, it is unclear if the previous deaths and injuries occurred in Sussex County or elsewhere in the State. Based on past events, the likelihood of a significant heat wave event occurring is possible but not likely in Sussex County. For these reasons, the severe summer weather hazard will not be examined in further detail in this Plan.

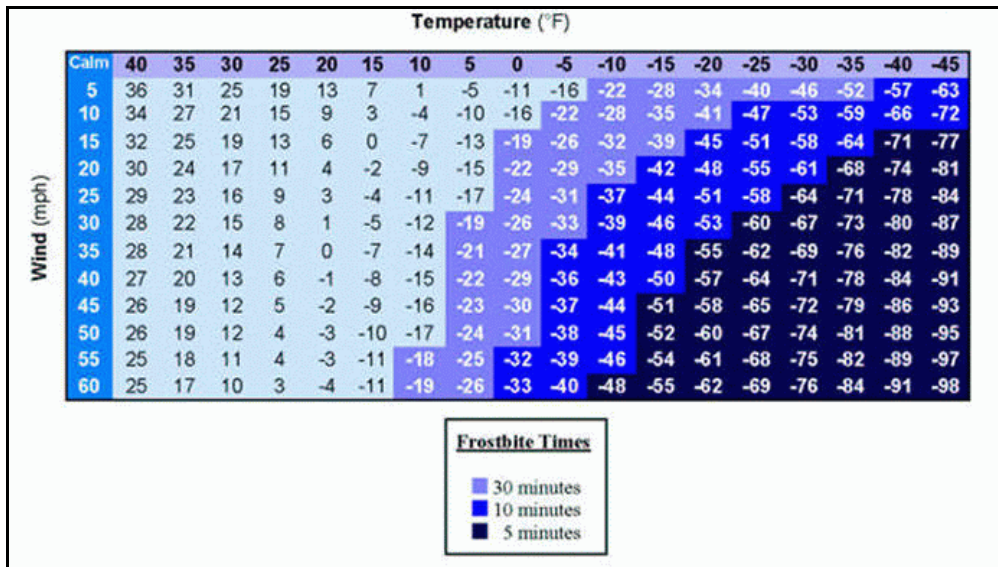
3.3.10 Severe Weather – Winter

Description of the Severe Weather – Winter Hazard

Severe winter weather may include one or more of the following: snowstorms, blizzards, sleet, freezing rain, ice storms, and extreme cold temperatures. Extreme cold temperatures are characterized by the ambient air temperature dropping to approximately 0 degrees Fahrenheit or below. Significant snowstorms are characterized by a rapid accumulation of snow, while a blizzard is categorized as a snowstorm with winds of 35 miles per hour or greater and/or visibility of less than ¼ mile for three or more hours. Many of these types of storms can immobilize a region, cause treacherous roadways, power usage spikes, and property damage or collapse. Although there is no widely used scale to classify snowstorms, the National Weather Service (NWS) developed the Northeast Snowfall Impact Scale (NESIS). NESIS classifies high impact Northeast snowstorms that have large areas of 10 inch snowfall accumulations or more. The index utilizes population information in addition to meteorological measurements for an indication of the storm's impacts on society. The five categories are: Extreme (5), Crippling (4), Major (3), Significant (2), and Notable (1). NOAA's National Weather Service (NWS) in cooperation with a team of universities and other agencies developed the current wind chill temperature index (WCT) formula in 2001.³² WCT uses wind speed at 5 feet (the average height of a human's face), incorporates heat loss from the body, is based on a human face model, utilizes 3 miles per hour as the calm wind threshold, uses a consistent standard for skin tissue resistance and assumes a clear night sky for solar radiation.

³² NOAA. Retrieved from <http://www.crh.noaa.gov/lx/?n=winterday>

Figure 3.3.9-1: Wind Chill Temperature Index



Source: NOAA. Retrieved from <http://www.crh.noaa.gov/lx/?n=winterday>

Occurrence and Future Probability of Severe Weather - Winter Hazard

According to a comparison of the SHELDUS and NCDC databases, since 1960 there have been thirty-eight severe winter weather events within Sussex County that resulted in losses. Table 3.3.10-1 lists the twenty winter weather events with reported bodily harm in Sussex County.

Table 3.3.10-1: Severe Winter Weather Events with Reported Deaths and/or Injuries, Sussex County, 1960 - 2010

Location	Date	Type	NESIS Category	Deaths	Injuries	Property Damage	Crop Damage
Sussex	2/13/1960	Glaze, Sleet, Snow	-	2.38	0.33	\$1,791	\$0
Sussex	2/19/1960	Snow, High Winds	-	0	0.1	\$17,909	\$0
Sussex	3/3/1960	Snow, High Winds	5	2.86	0.43	\$17,909	\$0
Sussex	12/11/1960	Snow, Strong Winds	-	0	2.48	\$17,909	\$0
Sussex	1/19/1961	Heavy Snow, Strong Winds	3	0	0.05	\$17,909	\$0
Sussex	1/12/1964	Heavy Snowstorms	4	0	0.1	\$16,715	\$0
Sussex	12/16/1973	Snow, Sleet, Freezing Rain	-	0.38	0.14	\$119,398	\$0
Sussex	1/3/1974	Snow and Ice	-	0.1	0	\$10	\$0
Sussex	1/9/1974	Snow and Ice	-	1.48	0	\$10	\$0
Sussex	3/29/1974	Snow, Wind	-	1.5	0	\$0	\$0
Sussex	4/10/1974	Snow and Ice	-	0.13	0.13	\$0	\$0
Sussex	12/28/1976	Snow	-	0	0.05	\$0	\$0

Location	Date	Type	NESIS Category	Deaths	Injuries	Property Damage	Crop Damage
Sussex	1/19/1978	Snow	4	0	0.1	\$0	\$0
Sussex	1/7/1996	Blizzard (DR-1088)*	5	0	0.23	\$2,003,817	\$0
Sussex	1/13/1999	Winter Storm	-	3.13	0	\$0	\$0
Sussex	4/9/2000	Heavy Snow	-	4	0	\$0	\$0
Sussex	1/14/2003	Winter Weather	-	0.44	0	\$0	\$0
Sussex	2/16/2003	Winter Weather (DR-3181)*	4	1	0.13	\$1,183,225	\$0
Sussex	1/28/2005	Extreme Cold/Wind Chill	-	0	2	\$0	\$0
Sussex	12/24/2008	Winter Weather	-	0.08	0	\$0	\$0

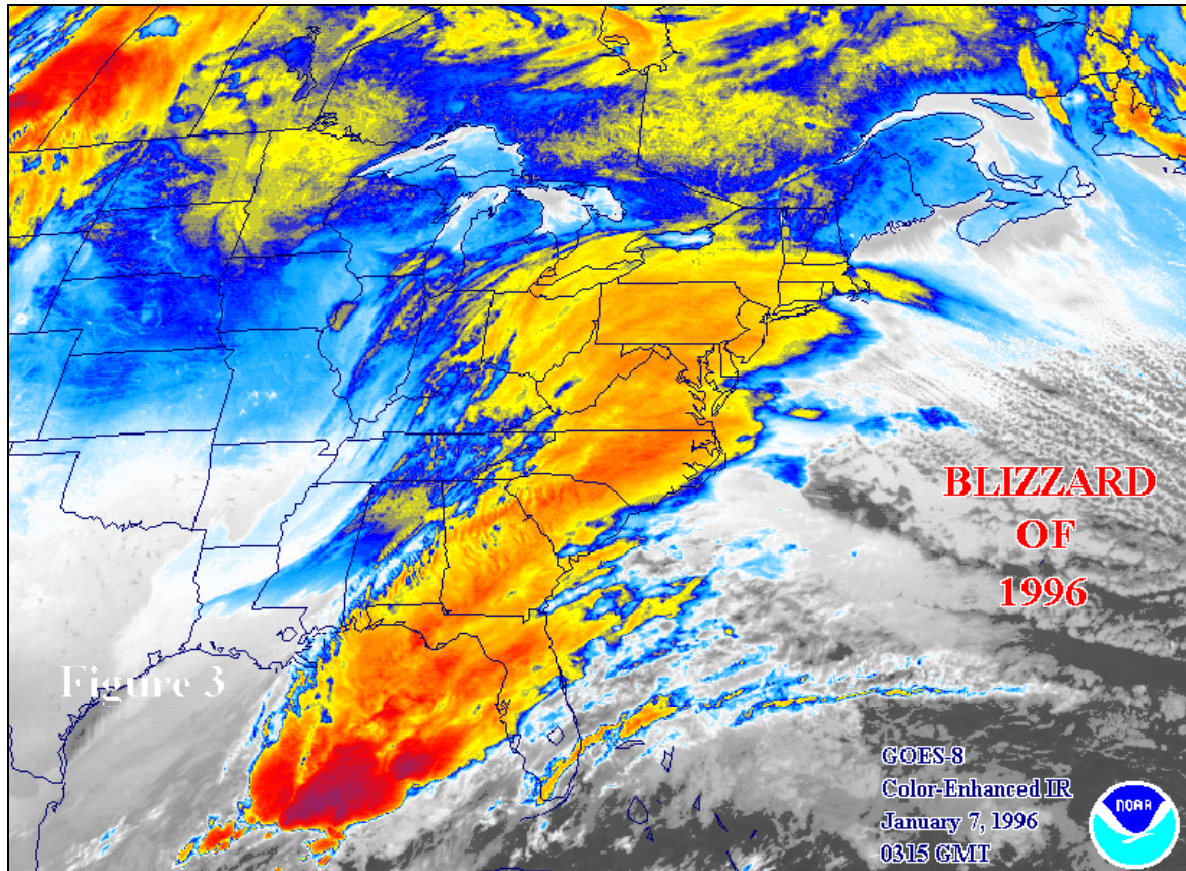
Source: SHELDUS 7.0, NCDC, and NWS's NESIS from http://www.ncdc.noaa.gov/snow-and-ice/nesis.php?sort=nesis_asc#rankings

Notes:

- (1) All efforts were made to research the actual location of deaths and injuries associated with a specific event, however when a specific county could not be determined then the number of deaths or injuries were divided by the number of counties associated with that event according to NCDC. This is the methodology utilized by SHELDUS 7.0. This can cause fractions of deaths or injuries associated with a specific county for an event.
- (2) Events with an asterisk (DR)* denote Declared Emergencies. See Table 3.2.1-1.

The "Blizzard of 1996" was a severe nor'easter that paralyzed the eastern coast with up to 4 feet of snow. In many locations, the storm did not meet the technical definition of a blizzard, however on January 7, the Trenton-Mercer Airport recorded conditions to meet the true classification of a blizzard. A State of Emergency was declared for New Jersey and then a Presidential Disaster Declaration was issued.

Figure 3.3.10-2: Color Enhanced Infrared Satellite Image of the Blizzard on January 7, 1996



Source: NOAA. Retrieved from www.crh.noaa.gov

The winter storm that occurred from February 14-19, 2003 caused significant impacts in Sussex County and received a Disaster Declaration because of the effects of heavy snow. Total snowfall in Sussex County ranged from 17' to 25'.

Based on the occurrence of thirty-eight significant events in fifty years, the probability of future loss-causing severe winter weather events in Sussex County is 76% likelihood per year.

Location and Extent of Severe Weather – Winter Hazard

The entire county has approximately the same risk for severe winter weather. However, different areas of the County may be more or less severely affected during a particular event due to elevation, terrain, precipitation levels, and weather and pressure system patterns. According to the Office of the New Jersey State Climatologist, Sussex County is part of the North Climate Zone which averages 40 to 50 inches of annual snowfall.³³ These amounts can vary widely from year to year, with some winters consisting of multiple severe winter weather events, while others are very mild with little or no severe weather. The extent of winter storms varies in terms of storm location, temperature, and ice or snowfall. Extreme temperatures can also occur during the winter in Sussex County, and it is difficult to predict long term patterns.

³³ Office of New Jersey State Climatologist. Retrieved from <http://climate.rutgers.edu/>

Climate change may or may not influence the severity of severe winter weather in the area in the future.

Impact on Life and Property of the Severe Weather – Winter Hazard

As seen in Table 3.3.10-1, severe winter weather events have potentially caused 17 or 18 deaths and 6 to 7 injuries in Sussex County. The cause of death and injuries due to winter storms can be attributed to car accidents, hypothermia, exhaustion and heart attacks, frostbite, wind chill, fires, carbon monoxide poisoning, structure collapse, and electrocution. According to NOAA’s NWS, on average, extreme cold temperatures kills more Americans than any other natural hazard.

During a winter storm infrastructure can be severely impacted, including damaged roadways, utility lines and pipes, railroads, and bridges. The twenty severe weather events that caused bodily harm also account for property damages totaling \$3,396,602 in 2010 currency. According to SHELDUS and NCDC databases, in addition to these twenty events, there have been eighteen additional severe winter weather events that caused property damages since 1960. The most severe of the events in which no deaths or injuries occurred, was a heavy snow event on January 22, 2005 that caused the 2010 monetary equivalent of \$1,760,446 in property damages. The remaining seventeen storms with reported property damages total \$1,198,879 in adjusted dollar figures for the year 2010. This puts property damage estimates at approximately \$6.356 million for all severe winter weather events since 1960 in Sussex County.

Prioritization and Rationale of the Severe Weather – Winter Hazard

The probability of future significant winter weather in the County is 76%, or ‘Highly Likely’ for an index value of 4. The magnitude or severity for anticipated severe winter weather hazard impacts could be ‘catastrophic’ since multiple deaths, injuries, and hefty financial impacts have occurred in the past, for an index value of 4. The warning time for severe winter weather is usually “at least 24 hours before an event occurs” for an index value of 1. Severe winter weather usually lasts more than a day but less than a week, so the index value would be 3.

Table 3.3.10-2: CPRI for Degree of Risk for Severe Weather – Winter Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
4 x .45	+	4 x .30	+	1 x .15	+	3 x .10	=	3.45

Severe winter weather events can cause serious harm to people and property, as demonstrated by past events and impacts in Sussex County. Based on past events, the likelihood of a significant winter weather event occurring is very likely. For these reasons, this hazard will be examined in further detail in Section 4 in this Plan.

3.3.11 Wildfire

Description of the Wildfire Hazard

A wildfire is any fire that burns out of control and typically occurs in grasslands, forest, brush land, etc. Wildfire is a natural process that is important to ecosystems, and fire suppression can lead to more severe fires due to the buildup of vegetation, which creates more fuel. However, wildfires can also endanger the lives of people and destroy property when out of control. Wildfires can also cause secondary effects including erosion, landslides, introduction of invasive species, and changes in water quality. Wildfires can be caused by lightning strikes, but are most often the intentional or unintentional result of humans.

Occurrences and Probability of the Wildfire Hazard

According to the 2007 State Hazard Mitigation Plan for the State of New Jersey, Sussex County had a total of 1,135 fire incidents that burned a total of 802 acres from 1996 to 2006, for an average of 103.2 fire incidents per year and an annual average of 73 acres.³⁴

According to a comparison of the SHEL DUS and NCD C databases, since 1960 there have been no wildfire events within Sussex County that have resulted in losses.

Based on the occurrence of zero significant events in fifty years, the probability of future loss-causing wildfire events in Sussex County is below 1% likelihood per year.

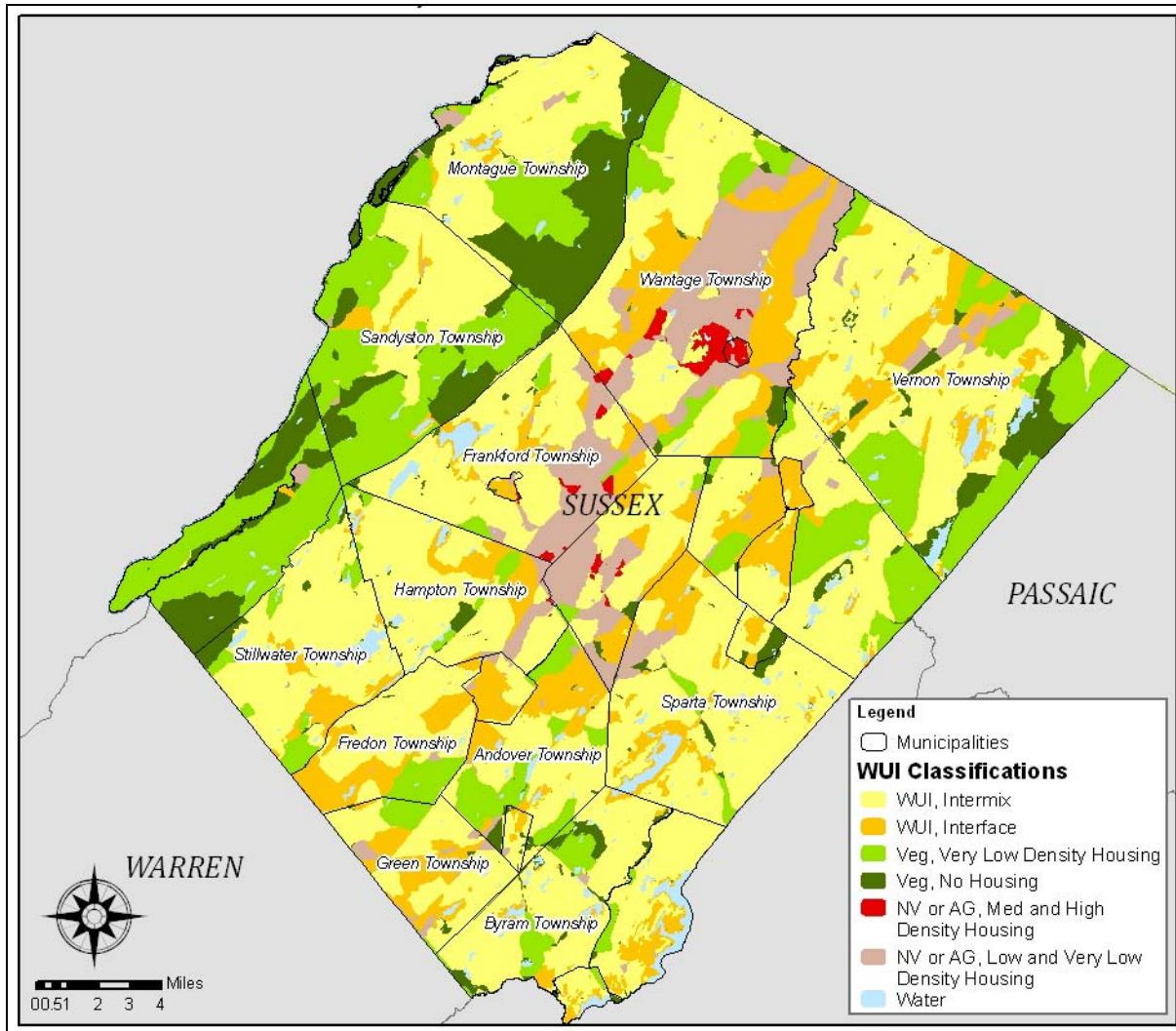
Location and Extent of the Wildfire Hazard

When hot and dry conditions develop, forests and vegetation may become vulnerable to wildfires. Commercial and residential development near forested areas are at the highest risk of wildfire. The Wildland-Urban Interface (WUI) is where houses meet or intermingle with wildland vegetation. The WUI is where wildfires pose the greatest risk to human lives and structures. Figure 3.3.11-1 shows the extent of the WUI by census block, where the risk is the greatest in the yellow intermix and gold interface areas. Both areas must have a density of at least one structure per 40 acres. Intermix communities are places where housing and vegetation intermingle and wildland vegetation is continuous, with more than 50% vegetation. Interface communities are areas with housing in the vicinity of contiguous vegetation, within 1.5 miles of an area over 1,325 acres that is more than 75% vegetated.³⁵

³⁴ 2007 NJ State Hazard Mitigation Plan pg 66-67.

³⁵ Radeloff, V. C., R. B. Hammer, S. I Stewart, J. S. Fried, S. S. Holcomb, and J. F. McKeefry. 2005. The Wildland Urban Interface in the United States. *Ecological Applications* 15:799-805. Retrieved from http://silvis.forest.wisc.edu/projects/WUI_Main.asp

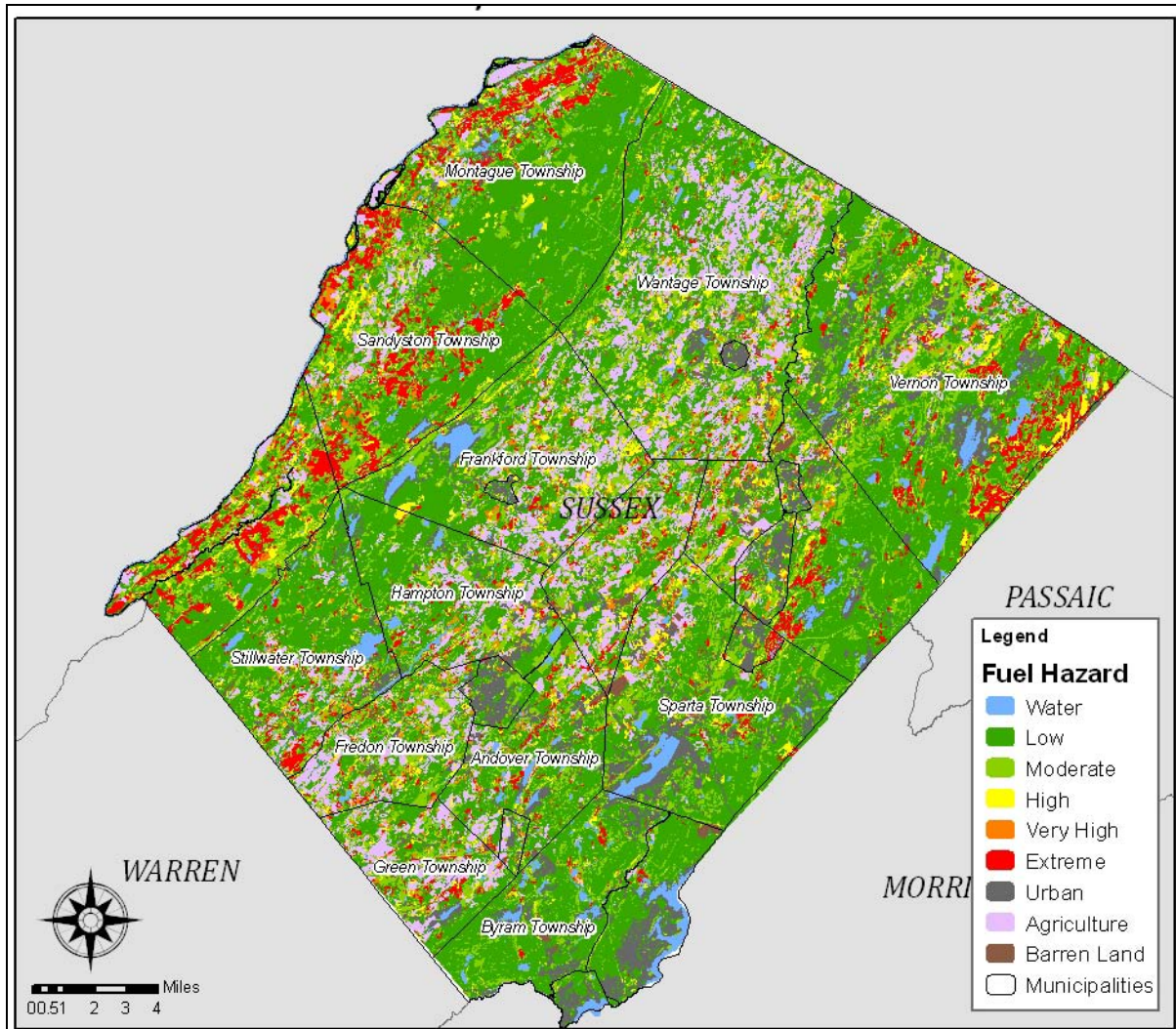
Figure 3.3.11-1: Sussex County Wildland-Urban Interface 2000 Extent



Source: Radeloff, V. C., R. B. Hammer, S. I. Stewart, J. S. Fried, S. S. Holcomb, and J. F. McKeefry. 2005. The Wildland Urban Interface in the United States. *Ecological Applications* 15:799-805. WUI 2000 GIS data retrieved from <http://silvis.forest.wisc.edu/Library/WUIDefinitions.asp>

Temperature, humidity, and wind affect the severity and duration of wildfires. The type and amount of fuel, in addition to its burning qualities and level of moisture, affect wildfire potential and behavior. Topography is also important because it affects the movement of air and fire over the ground. The slope and shape of terrain can change the rate of speed at which the fire travels. In May 2009, NJDEP's New Jersey Forest Fire Service released wildfire fuel hazard GIS data, shown in Figure 3.3.11-2. They incorporated land type and slope into the hazard ranking. The areas of highest wildfire fuel risk are shown in red (extreme risk), orange (very high risk), and yellow (high risk).

Figure 3.3.11-2: Sussex County Wildfire Fuel Hazard Risk



Source: NJDEP's New Jersey Forest Fire Service. GIS Data retrieved from <http://www.state.nj.us/dep/gis/njfh.html#HUN>

Impact on Life and Property of the Wildfire Hazard

According to a comparison of the SHELDUS and NCDC databases, since 1960 there have been no wildfire events within Sussex County that have resulted in losses. According to New Jersey's 2007 State Hazard Mitigation Plan, there have been wildfire incidents in Sussex County that caused 2 injuries, but no property damages.

Prioritization and Rationale of the Wildfire Hazard

Since the probability of future significant wildfires in the County is less than 1%, this is considered 'unlikely' for an index value of 1. Based on previous occurrences, the magnitude or severity for anticipated wildfire hazard impacts is considered 'negligible' because two injuries

that are treatable are considered an index value of 1. The warning time for a wildfire is “less than 6 hours warning time before an event occurs” for an index value of 4. Wildfires can last multiple days, but usually the “event lasts less than 1 week” for an index value of 3.

Table 3.3.11-1: CPRI for Degree of Risk for Wildfire Hazard in Sussex County

Probability	+	Magnitude /Severity	+	Warning Time	+	Duration	=	CPRI
1 x .45	+	1 x .30	+	4 x .15	+	3 x .10	=	1.65

Although wildfires can occur in Sussex County, as documented by historical reports, there have been no previously recorded deaths and no financial impacts have from previous wildfires in the past fifty years. Based on past events, the likelihood of a severe wildfire event occurring is unlikely, though possible. For these reasons, wildfires will not be studied in further detail in this Plan.

3.4 Hazard Priorities

Section 3.3 provided an overview and profiles for all of the hazards that have potential to impact Sussex County in the future. However, in Section 4 the hazards of highest concern to the County will be further reviewed through detailed risk assessments.

A summary of all of the profiled hazards for Sussex County is shown in Table 3.4-1. It includes the CPRI value that was compiled in the profiles, the probability of future loss-causing/significant events occurring in the County annually, overview of relevant background information, reasoning for why to include or exclude the hazard from further risk assessment in Section 4, and if it will or will not be reviewed further in this Plan. This is meant to be a brief overview of information from Section 3.3, and any further details regarding the hazards and associated information can be found there.

Table 3.4-1: Prioritization and Rationale for Further Risk Assessment for Sussex County Hazards

Hazard	CPRI	Future Probability of Loss-Causing Events in County	Background	Rationale	Further Risk Assessment?
Severe Weather - Winter	3.45	64%	<ul style="list-style-type: none"> • 38 severe events with 17-18 deaths and 6-7 injuries • @\$3,397 million in property damages 	<ul style="list-style-type: none"> • Previous multiple deaths and injuries and severe financial impacts • Highly likely loss-causing events will continue to occur 	Yes
High Wind - Straight Line	3.2	100%	<ul style="list-style-type: none"> • 2-3 previous deaths and 12-13 injuries • At least \$1.045 million in property damages 	<ul style="list-style-type: none"> • Highly likely for loss-causing events to occur often in County • Past history of severe losses 	Yes
Flood	3	24%	<ul style="list-style-type: none"> • Possibly 1 previous death and 1 injury • @\$231.511 million in previous property damages • Multiple severe events, three recent in 2004,2005, & 2006 	<ul style="list-style-type: none"> • Significant event that is highly likely • Previous events have been very severe • Will continue to severely impact County in the future 	Yes
Earthquake /Geological	2.9	Possible	<ul style="list-style-type: none"> • 19 previous events, none significant • Studies that risk in area is higher than previously thought due to active network of faults 	<ul style="list-style-type: none"> • Concerns raised based on Sykes 2007 study that lower frequency but high severity events possible in area • USGS and NJDEP possible risk with high magnitude • Event could be catastrophic with many older structures not seismically sound 	Yes

Hazard	CPRI	Future Probability of Loss-Causing Events in County	Background	Rationale	Further Risk Assessment?
Dam Failure	2.65	Possible	<ul style="list-style-type: none"> • 36 high, 45 significant, 153 low hazard dams • 31 dam incidents, 4 dam failures • Previous property damage of unknown amounts • County average dam age = 73 years old (many unknown age) 	<ul style="list-style-type: none"> • No previously recorded deaths or injuries, but financial impacts from complete failures • All high hazard dams have EAPs, but very large number of high and significant hazard dams • 4 past failures and 31 'dam incidents' in the County 	Yes
Landslide (non-seismic)	2.5	4%	<ul style="list-style-type: none"> • 5 previous events • 1 death, 1 injury in 1952 • Property damage amount unknown but house destroyed, railroad repairs, and road repairs 	<ul style="list-style-type: none"> • Previous death and injury of children on a mountainside in 1952 are only reported in 123 years • Most of County in Low Susceptibility/Incidence area • Probability based on previous occurrences low 	No
Severe Weather - Summer	2.35	12%	<ul style="list-style-type: none"> • 6 events with possibly 0-2 deaths and 3 injuries • No property damages 	<ul style="list-style-type: none"> • Unclear if 2 deaths occurred in County or elsewhere in State • Probability of future events is possible but not likely 	No
High Wind - Tornado	2.05	2%-4%	<ul style="list-style-type: none"> • 1-2 previous events • Death occurred from unconfirmed tornado event - sources are conflicting • @\$812,947-\$1.032 million in property damages 	<ul style="list-style-type: none"> • One reported death occurred from questionable event • Most severe previous tornado was F2 • Probability low of future events 	No
Wildfire	1.65	<1%	<ul style="list-style-type: none"> • No previous events with deaths, injuries, property, or crop damages 	<ul style="list-style-type: none"> • No previous deaths, injuries, or damages • Very unlikely loss-causing event will occur 	No
Hazardous Material Release	1.55	Unlikely	<ul style="list-style-type: none"> • Both transportation and on-site have occurred in past • All have been minor 	<ul style="list-style-type: none"> • No previously reported deaths or injuries • Low previous financial impacts • Unlikely to occur 	No

Hazard	CPRI	Future Probability of Loss-Causing Events in County	Background	Rationale	Further Risk Assessment?
Drought	1.3	2%	<ul style="list-style-type: none"> 1 previous significant event with @\$6.58 million in crop damages 	<ul style="list-style-type: none"> No previously recorded deaths, injuries, or property damages Unlikely for event with impacts to occur, and impacts have previously been only crop damages 	No

Notes:

- (2) Property Damage and Crop Damage amounts have been adjusted to 2010 inflation amounts using the average Consumer Price Index from the U.S. Department of Labor’s Bureau of Labor Statistics.
- (3) Sources for losses and basis for probabilities explained in Section 3.3.

As shown in Table 3.4-1, winter severe weather, high wind – straight line, floods, earthquake/geological hazards, and dam failure have been selected for further in-depth risk assessment in Section 4.

Preliminary Draft

This page is intentionally blank.

NOTE:

•To determine Probabilities, only significant events were used for calculation – events that caused deaths, injuries, or property damages!!! *(We're concerned with 'damaging' events that we can mitigate, not common events with little impact or consequences. However, some of these deaths/injuries/properties may not have occurred in that county, but as they're associated with that event, will be counted towards probability.)*

•To determine Magnitude, all attempts were made to evaluate SHELDUS (& NCDC data) and determine if deaths/injuries actually occurred in that county, and then count towards Magnitude. *(If death/injury associated with that event, but it is not described in which county(ies) the death, injury, or damages occurred, then the number of counties are divided into the number of losses to evenly distribute them.)*

Methodology for Prioritizing Hazards

- For each hazard:
 - Identify
 - Describe/Locate
 - Historical Overview
 - Use Calculated Priority Risk Index (CPRI) categories and risk levels

Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duration x 10%	=	CPRI
-------------------	---	------------------------------	---	-----------------------	---	-------------------	---	------

- Brief description of how determined CPRI category values
- Brief justification for inclusion/exclusion of that hazard for further Risk Assessment

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Highly Likely	<ul style="list-style-type: none"> Frequent significant events with a well documented history of occurrence. Event has up to 1 in 1 year chance of occurring. (1/1 = 100%) History of events is 33%-100% likely per year. 	4	45%
	Likely	<ul style="list-style-type: none"> Occasional occurrences with at least two or more documented historic significant events. Event has up to 1 in 3 years chance of occurring. (1/3 = 33%) History of events is 20%-33% likely per year. 	3	
	Possibly	<ul style="list-style-type: none"> Rare occurrences with at least one documented or anecdotal historic significant event Event has up to 1 in 5 years chance of occurring. (1/5=20%) History of events is 10%-20% likely per year. 	2	
	Unlikely	<ul style="list-style-type: none"> Extremely rare with no documented history of significant events occurring. Event has up to 1 in 10 years chance of occurring. (1/10=10%) History of events is 0%-10% likely per year. 	1	
Magnitude /Severity	Catastrophic	<ul style="list-style-type: none"> Multiple deaths More than 50% of property is severely damaged Complete shutdown of facilities for more than 1 month 	4	30%
	Critical	<ul style="list-style-type: none"> Injuries and/or illnesses result in permanent disability More than 25% of property is severely damaged Complete shutdown of critical facilities for at least 14 days 	3	
	Limited	<ul style="list-style-type: none"> Injuries and/or illnesses do no result in permanent disability More than 10% of property is severely damaged Complete shutdown of critical facilities for at least 1 day 	2	
	Negligible	<ul style="list-style-type: none"> Injuries and/or illnesses are treatable with first aid Less than 25% of property is severely damaged Shutdown of critical facilities for 24 hours or less 	1	
Warning Time	Less than 6 Hours	Less than 6 Hours warning time before event occurs	4	15%
	6-12 Hours	6-12 Hours warning time before event occurs	3	
	12-24 Hours	12-24 Hours warning time before event occurs	2	
	24+ Hours	At least 24 Hours warning time before event occurs	1	
Duration	More than 1 week	Event lasts more than 1 week	4	10%
	Less than 1 week	Event lasts less than 1 week	3	
	Less than 1 Day	Event lasts less than 1 day	2	
	Less than 6 Hours	Event lasts less than 6 hours	1	

Note that 'significant event' simply means an event that had associated death, injury, or financial impacts.

Hazards: Hunterdon County	Probability (of event with deaths, injuries or property damage) X 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duratio n x 10%	=	CPRI
Dam Failure	(2 x .45)	+	(2 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.2
Drought	(1 x .45)	+	(1 x .30)	+	(1 x .15)	+	(4 x .10)	=	1.3
EQ/Geological	(2 x .45)	+	(4 x .30)	+	(4 x .15)	+	(2 x .10)	=	2.9
Flood	(4 x .45)	+	(4 x .30)	+	(3 x .15)	+	(3 x .10)	=	3.75
HazMat	(1 x .45)	+	(1x .30)	+	(4 x .15)	+	(2 x .10)	=	1.55
High Wind Straight Line	(4 x .45)	+	(4 x .30)	+	(2 x .15)	+	(2 x .10)	=	3.5
High Wind Tornado	(1 x .45)	+	(1 x .30)	+	(4 x .15)	+	(1 x .10)	=	1.45
SW - Summer	(1 x .45)	+	(4 x .30)	+	(1 x .15)	+	(3 x .10)	=	2.1
SW - Winter	(4 x .45)	+	(4 x .30)	+	(1 x .15)	+	(3 x .10)	=	3.45
Landslides	(1 x .45)	+	(1 x .30)	+	(4 x .15)	+	(1 x .10)	=	1.45
Wildfire	(1 x .45)	+	(1 x .30)	+	(4 x .15)	+	(3 x .10)	=	1.65

#events / # years *100 = %

Drought- crop damages adjusted per 2008 dollars (adj2008)=\$6,500,006.5; 1 in 50 years = 2%, magnitude is 1 or 2

Flood - 6.14 deaths, 1.5 injuries, prop damages adjusted per 2008 dollars (adj2008) = \$76,410,490.36 ; 17 in 50 years = 34%, magnitude is 4

High Wind Straight line - 6.13 deaths, 13.18 injuries, prop damages adj2008 = \$1,426,282.58; crop damages adj2008 = \$165.08; 75 events in 50 years = over 100%, magnitude is 4

Tornado - 0, prop damages adj2008 = \$61,694.39; 5 events in 50 years = 10%, magnitude is 1

Summer - 5.83 deaths from earlier events that it's unknown what county they occurred in, .63 injuries; 4 events in 50 years = 8%, magnitude 4

Winter - 11.85 deaths, 4.14 injuries, prop damages adj2008 = \$5,104,135.28; 38 events in 50 years = 76%

Landslides - 0 deaths or injuries, unknown \$ amounts; 15-4 listed as no damage, so 11 in 123 years =8.9%

Wildfire - 0, prop damages adj2008 = \$53,608.38; 1 incident in 50 years = 2.2%, magnitude 1

Dam failure - Based on operation and maintenance requirements and local knowledge of the dams in Hunterdon County, the probability of dam failure is "possible" for an index value of 2. The severity or magnitude of the damage from a dam failure could range from critical to negligible. However, based on previous occurrences, the magnitude has had little to no impact in the Hunterdon County area. In order to balance these two possibilities, we will utilize an index value of 2 for the magnitude/severity of dam failure in the County. Although there are some predictive conditions that can be observed from an inspection, most dam failures seem to have "less than 6 hours warning time before an event occurs" for an index value of 4. A dam failure event would have a short duration, for a classification of "the event lasts less than 6 hours" for an index value of 1.

Hazards: Mercer County	Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duratio n x 10%	=	CPRI
Dam Failure	(2 x .45)	+	(2 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.2
Drought	(1 x .45)	+	(1 x .30)	+	(1 x .15)	+	(4 x .10)	=	1.3
EQ/Geological	(2 x .45)	+	(4 x .30)	+	(4 x .15)	+	(2 x .10)	=	2.9
Flood	(4 x .45)	+	(3 x .30)	+	(3 x .15)	+	(3 x .10)	=	3.45
HazMat	(1 x .45)	+	(1x .30)	+	(4 x .15)	+	(2 x .10)	=	1.55
High Wind Straight Line	(4 x .45)	+	(4 x .30)	+	(2 x .15)	+	(2 x .10)	=	3.5
High Wind Tornado	(2 x .45)	+	(3 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.5
SW - Summer	(2 x .45)	+	(4 x .30)	+	(1 x .15)	+	(3 x .10)	=	2.55
SW - Winter	(4 x .45)	+	(4 x .30)	+	(1 x .15)	+	(3 x .10)	=	3.45
Landslides	(1 x .45)	+	(3 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.05
Wildfire	(1 x .45)	+	(2 x .30)	+	(4 x .15)	+	(3 x .10)	=	1.95

#events / # years *100 = %

Drought - 0, crop adj2008=\$6,500,006.5; 1 in 50 years = 2%, magnitude is 1

Flood - 1.14 deaths, 6.5 injuries, damage adj2008 = \$110,655,345.5 ; crop adj2008=\$17,333.43 ; 17 in 50 years = 34%, magnitude is 3 (could go 4)

High Wind Straight Line - 12.53 deaths, 3.18 injuries, damage adj2008 = \$5,022,429.33 ;crop adj2008=\$ 125,465.8 ; 92 in 50 years = 100+%, magnitude is 4

HW Tornado - 1 deaths (1962), 0 injuries, damage adj2008 = \$4,581,193; 8 in 52 years = 15%, magnitude is 3

Summer - 12.955 deaths, 6.34 injuries, damage adj2008 = \$ 0 ; 9 in 50 years = 18%, magnitude is 4

Winter - 12.85 deaths, 4.14 injuries, damage adj2008 = \$ 5269665.91 ; 32 in 50 years = 64%, magnitude is 4

Landslide only 1 in 123 years (swath of moderate susceptibility in USGS data), 2 quarry worker fatalities, but listed as no damages

Wildfire - 0 deaths, .54 injuries, damage adj2008 = \$3,151,530.69 ; 3 in 50 years (all in April 1963) = 6%, magnitude is 1

Hazards: Sussex County	Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duratio n x 10%	=	CPRI
Dam Failure	(3 x .45)	+	(2 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.65
Drought	(1 x .45)	+	(1 x .30)	+	(1 x .15)	+	(4 x .10)	=	1.3
EQ/Geological	(2 x .45)	+	(4 x .30)	+	(4 x .15)	+	(2 x .10)	=	2.9
Flood	(3 x .45)	+	(3 x .30)	+	(3 x .15)	+	(3 x .10)	=	3
HazMat	(1 x .45)	+	(1x .30)	+	(4 x .15)	+	(2 x .10)	=	1.55
High Wind Straight Line	(4 x .45)	+	(3 x .30)	+	(2 x .15)	+	(2 x .10)	=	3.2
High Wind Tornado	(1 x .45)	+	(3 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.05
SW - Summer	(2 x .45)	+	(3 x .30)	+	(1 x .15)	+	(3 x .10)	=	2.35
SW - Winter	(4 x .45)	+	(4 x .30)	+	(1 x .15)	+	(3 x .10)	=	3.45
Landslides	(2 x .45)	+	(3 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.5
Wildfire	(1 x .45)	+	(1 x .30)	+	(4 x .15)	+	(3 x .10)	=	1.65

#events / # years *100 = %

Drought - 0, crop adj2008=\$6,500,006.5; 1 in 50 years = 2%, magnitude is 1

Flood - .14 deaths, .5 injuries, damage adj2008 = \$228,637,700 ; crop adj2008=\$0; 12 in 50 years = 24%, magnitude is 3

HighWind Straight Line - 1.49 deaths, 11.43 injuries, damage adj2008 = \$1031888.89; crop adj2008=\$ 165 ; 67 in 50 years = 100+%, magnitude is 3 (could go 4)

HW Tornado - unsure if due to a tornado! 1 deaths (1974), 0 injuries, damage adj2008 = \$1019522.9; 2 in 50 years = 4%, magnitude is 3

Summer - 1.56 deaths, 3.045 injuries, damage adj2008 = \$ 0 ; 6 in 50 years = 12%, magnitude is 3

Winter - 17.48 deaths, 6.27 injuries, damage adj2008 = \$ 6277034.93 ; 38 in 50 years = 76%, magnitude is 4

Landslide 10 in 123 years, only 5 with losses (4%), including 1 fatality (10 year old boy), and 1 injury. Also northern tip of county has a swath of high susceptibility/moderate incidence, so up probability to 2. Most losses are a house or road was damaged.

Wildfire - 0, damage adj2008 = \$ 0 ; 0 in 50 years =0%, magnitude is 1

Str winds = 2 deaths, 22 injuries, etc just in Sussex, 70 sig events in 60 years = over 100% chance!

Tornado = 1 sign event in 60 years = 1.7%

Summer = 1 death in Sussex, 7 events in 60 years = 11.7%

Landslides = 10 in 123 years = 8.1%, 1 death, 1 injury.

Winter = 2 deaths plus 1 shoveling heart attack, 6 events, at least \$1M during one ice storm just in Sussex

Hazards: Warren County	Probability x 45%	+	Magnitude/ Severity x 30%	+	Warning Time x 15%	+	Duratio n x 10%	=	CPRI
Dam Failure	(2 x .45)	+	(2 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.2
Drought	(1 x .45)	+	(1 x .30)	+	(1 x .15)	+	(4 x .10)	=	1.3
EQ/Geological	(2 x .45)	+	(4 x .30)	+	(4 x .15)	+	(2 x .10)	=	2.9
Flood	(3 x .45)	+	(3 x .30)	+	(3 x .15)	+	(3 x .10)	=	3
HazMat	(1 x .45)	+	(1x .30)	+	(4 x .15)	+	(2 x .10)	=	1.55
High Wind Straight Line	(4 x .45)	+	(4 x .30)	+	(2 x .15)	+	(2 x .10)	=	3.5
High Wind Tornado	(1 x .45)	+	(1 x .30)	+	(4 x .15)	+	(1 x .10)	=	1.45
SW - Summer	(1 x .45)	+	(4 x .30)	+	(1 x .15)	+	(3 x .10)	=	2.1
SW - Winter	(4 x .45)	+	(4 x .30)	+	(1 x .15)	+	(3 x .10)	=	3.45
Landslides	(1 x .45)	+	(4 x .30)	+	(4 x .15)	+	(1 x .10)	=	2.35
Wildfire	(1 x .45)	+	(1 x .30)	+	(4 x .15)	+	(3 x .10)	=	1.65

#events / # years *100 = %

Drought - 0, crop adj 2008=\$6,500,006.5; 1 in 50 years = 2%, magnitude is 1

Flood - 1.14 deaths, .5 injuries, damage adj 2008 = \$75,015,763.52 ; crop adj 2008=\$0; 13 in 50 years = 26%, magnitude is

HighWind Straight Line - 9.13 deaths, .43 injuries, damage adj 2008 = \$1,717,241.29; crop adj2008=\$ 165 ; 70 in 50 years = 100+%, magnitude is 4

HW Tornado - 0, damage adj2008 = \$1,915,507.12; 1 (an F1) in 50 years = 2%, magnitude is 3

Summer - 4.29 deaths, 1.42 injuries, damage adj 2008 = \$ 0 ; 5 in 50 years = 10%, magnitude is 4

Winter - 13.48 deaths, 4.27 injuries, damage adj 2008 = \$ 6,751,768.46 ; 41 in 50 years = 82%, magnitude is 4

Landslides 21, 12 significant in 123 years = 10% prob, multiple deaths

Wildfire - 0, damage adj2008 = \$ 0 ; 0 in 50 years =0%, magnitude is 1

Fire = 0s

Str Winds = 1 death, 3 injuries, 64 sign events in 60 years = over 100%!!

Tornado = 1 significant event in 60 years = 1.7%

Winter = 6 events in 60 years = 10% no deaths or injuries, but one disaster declaration...

Summer = 10 significant events in 60 years = 16.7% 1 indirect death, drowned while trying to escape heat

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Hunterdon County Participating Municipalities Status - June 9, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
Alexandria Township				(**)	
Bethlehem Township					
Bloomsbury Borough					
Califon Borough				(**)	
Clinton Town				(**)	
Clinton Township				(**)	
Delaware Township				(**)	
East Amwell Township	Not Participating				
Flemington Borough					
Franklin Township				(**)	
Frenchtown Borough				(**)	
Glen Gardner Borough				(**)	
Hampton Borough				(**)	
High Bridge Borough				(**)	
Holland Township				(**)	
Kingwood Township				(**)	
Lambertville City	Not Participating				
Lebanon Borough				(**)	
Lebanon Township				(**)	
Milford Borough				(**)	
Raritan Township				(**)	
Readington Township				(**)	
Stockton Borough				(**)	
Tewksbury Township				(**)	
Union Township				(**)	
West Amwell Township				(**)	

Legend

Completed

Started Capability Assessment but has not completed essential questions

(**) Interview scheduled for June 7 & 8

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Mercer County Participating Municipalities Status - June 9, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
East Windsor Township					
Ewing Township					
Hamilton Township					
Hightstown Borough					
Hopewell Borough					
Hopewell Township					
Lawrence Township					
Pennington Borough					
Princeton Borough					
Princeton Township					
Robbinsville Township					
Trenton City					
West Windsor Township					

Legend

Completed

Started Capability Assessment but has not completed essential questions

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Sussex County Participating Municipalities Status - June 9, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
Andover Borough					
Andover Township					
Branchville Borough					
Byram Township					
Frankford Township					
Franklin Borough					
Fredon Township					
Green Township					
Hamburg Borough					
Hampton Township					
Hardyston Township					
Hopatcong Borough					
Lafayette Township					
Montague Township					
Newton Town					
Ogdensburg Borough					
Sandyston Township					
Sparta Township					
Stanhope Borough			(*)		
Stillwater Township					
Sussex Borough					
Vernon Township					
Walpack Township					
Wantage Township					

Legend

Completed

Started Capability Assessment but has not completed essential questions

(*) Capability Assessment has not been completed but answers to essential questions provided at interview.

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Warren County Participating Municipalities Status - June 9, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
Allamuchy Township					
Alpha Borough			(*)		
Belvidere Township					
Blairstown Township			(*)		
Franklin Township					
Frelinghuysen Township					
Greenwich Township					
Hackettstown Town					
Hardwick Township					
Harmony Township			(*)		
Hope Township			(*)		
Independence Township			(*)		
Knowlton Township					
Liberty Township			(*)		
Lopatcong Township					
Mansfield Township					
Oxford Township					
Phillipsburg Town					
Pohatcong Township					
Washington Borough					
Washington Township					
White Township					

Legend

Completed

Started Capability Assessment but has not completed essential questions

(*) Capability Assessment has not been completed but answers to essential questions provided at interview.

Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan

Work-in-Progress Review Materials

Submitted to:
NDRR Steering Committee

Submitted by:



July 14, 2010

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Steering Committee Meeting – Agenda
July 14, 2010**

- 1. Project Status and General Schedule**
 - a. Project Status Report – June 2010
 - b. General Schedule Update

- 2. Municipal Participation Status**

- 3. Steering Committee Review Draft Plan**
 - a. Plan
 - b. Appendices
 - c. Review Process

- 4. Public Review**
 - a. Notification to Public re: Plan Availability / Website Posting
 - b. Notification to NDRR Municipalities
 - c. Notification to Adjacent Communities / Counties

- 5. Working Group / Public Meetings**
 - a. Presentation

- 6. Next Steps**
 - a. Conduct Working Group Public Meetings
 - b. Prepare and submit NJOEM / FEMA Draft Plan (August Steering Committee Meeting)

- 7. Next Meetings / Action Items**
 - a. NDRR Steering Committee Meeting: August 11, 2010 @ 10:00 am ET, Location TBD

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Hunterdon County Participating Municipalities Status - July 14, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
Alexandria Township	5/23/2010				
Bethlehem Township			Not participating		
Bloomsbury Borough			Not participating		
Califon Borough					
Clinton Town	5/23/2010				
Clinton Township	5/23/2010				
Delaware Township	5/23/2010				
East Amwell Township			Not participating		
Flemington Borough					
Franklin Township	5/23/2010				
Frenchtown Borough					
Glen Gardner Borough	5/23/2010				
Hampton Borough	5/23/2010				
High Bridge Borough	5/23/2010				
Holland Township	5/23/2010				
Kingwood Township	5/23/2010				
Lambertville City			Not participating		
Lebanon Borough					
Lebanon Township	5/23/2010				
Milford Borough	5/23/2010				
Raritan Township	5/23/2010				
Readington Township	5/23/2010				
Stockton Borough	5/23/2010				
Tewksbury Township	5/23/2010				
Union Township					
West Amwell Township	5/23/2010				

Legend
Completed

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Mercer County Participating Municipalities Status - July 14, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
East Windsor Township	2/22/2010				
Ewing Township	2/22/2010				
Hamilton Township	2/22/2010				
Hightstown Borough	2/22/2010				
Hopewell Borough	2/22/2010				
Hopewell Township					
Lawrence Township	2/22/2010				
Pennington Borough					
Princeton Borough	2/22/2010				
Princeton Township					
Robbinsville Township	2/22/2010				
Trenton City	Not participating				
West Windsor Township					

Legend
Completed

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Sussex County Participating Municipalities Status - July 14, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
Andover Borough	2/17/2010	6/2/2010			
Andover Township	2/17/2010				
Branchville Borough	2/17/2010	6/2/2010			
Byram Township	6/2/2010				
Frankford Township	2/17/2010	6/2/2010			
Franklin Borough	2/17/2010	6/2/2010			
Fredon Township	2/17/2010	6/2/2010			
Green Township	2/17/2010				
Hamburg Borough	2/17/2010	6/2/2010			
Hampton Township	2/17/2010				
Hardyston Township	2/17/2010	6/2/2010			
Hopatcong Borough	2/1/2010	2/17/2010			
Lafayette Township	2/17/2010	6/2/2010			
Montague Township					
Newton Town	2/17/2010	6/2/2010			
Ogdensburg Borough	2/17/2010	5/18/2010			
Sandyston Township	2/17/2010	6/2/2010			
Sparta Township	2/17/2010	6/2/2010			
Stanhope Borough	2/17/2010	6/2/2010			
Stillwater Township	2/1/2010				
Sussex Borough	2/17/2010	5/18/2010			
Vernon Township	2/17/2010	6/2/2010			
Walpack Township	6/2/2010				
Wantage Township	2/17/2010				

Legend
Completed

**NDRR, NJ All-Hazards Pre-Disaster Mitigation Plan
Warren County Participating Municipalities Status – July 14, 2010**

Municipality	Meeting #1	Meeting #2	Capability Assessment	Draft Mitigation Action List	Final Mitigation Action List
Allamuchy Township	2/24/2010				
Alpha Borough	5/19/2010				
Belvidere Township	5/19/2010				
Blairstown Township	2/24/2010	5/19/2010			
Franklin Township	2/24/2010				
Frelinghuysen Township	5/19/2010				
Greenwich Township	2/24/2010	5/19/2010			
Hackettstown Town	2/24/2010	5/19/2010			
Hardwick Township	2/24/2010				
Harmony Township	2/24/2010	5/19/2010			
Hope Township	5/19/2010				
Independence Township					
Knowlton Township	5/19/2010				
Liberty Township					
Lopatcong Township	2/24/2010	5/19/2010			
Mansfield Township	2/24/2010	5/19/2010			
Oxford Township	2/24/2010				
Phillipsburg Town	2/24/2010	5/19/2010			
Pohatcong Township	5/19/2010				
Washington Borough	2/24/2010				
Washington Township	2/24/2010	5/19/2010			
White Township	2/24/2010	5/19/2010			

Legend
Completed

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
HMWG/Public Meeting – Agenda
July 15, 2010**

1. Introductions

- a. County representatives
- b. JLWA representatives

2. PowerPoint Presentation

3. Next Steps

- a. Plan Web posting
- b. Public review and comment
- c. Plan Adoption

4. Next Meetings

- a. August 25, 2010 – Steering Committee Meeting

5. Question and Answer forum

Sussex

HMWG - Public Meeting July 15 2010

Name	Organization
CHIEF William J. KARADOURAS JR	OGDENSBURG PD.
Steve Matz	Newton PD/OEM
Ed Hayes	Hampton OEM
Jim Williams	FRANKLIN O.E.M.
Roy Wherry	Vernon Twp
Jeff Lewis	Branchville OEM
James McDonald	Sussex Health/Health
Kathy Potter	GREEN Township
Robert Haffner	Hopatcong Borough
John Swanson	Hopatcong, Borough
Eric Swydar	Sussex Co
TAKA LITTLE	SUSSEX BORO
Floyd Southard Jr	Sussex Boro
Jesse TRACE-Revak	Montague OEM
Raymond Rafferty	Byram Twp.
Alice Greer	Sussex City Planning
Joe Sabatini	Byram Twp.
Bob Schultz	Hardyston Twp / Sussex Borough
John Eskilson	County Administrator
Eskil S. Danielson	S.C.O.E.M.
MARK VOGA	SC OEM
JUAN MONOZ	JLWA
Pete Demer	JLWA

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Project Briefing

prepared for:
**Hazard Mitigation Planning Working Group
& Citizens of Sussex County**

prepared by:
**Sussex County
Office of Emergency Management**

July 15, 2010

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Sussex County and it's municipalities are working on a Plan to reduce risks from natural hazards.

This briefing contains:



- What is a hazard mitigation plan?
- What are the benefits and costs?
- Where are we in the planning process?
- Draft Hazard Mitigation Plan
- Next steps
- Questions, discussion, public comment



Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

**What is a
Hazard Mitigation Plan?**


What is "Hazard Mitigation"?

Any measures taken to reduce risks posed by hazards on a place and its population






What is "Hazard Mitigation"?



Hazard mitigation includes projects that limit the area hazards can impact like floodwalls, window shutters, or safe rooms ...

What is "Hazard Mitigation"?



...projects that move assets out of harm's way like elevating structures, or burying utilities...



What is "Hazard Mitigation"?

...**regulatory practices** like enacting or enforcing building codes, permits, or land use policies...



What is "Hazard Mitigation"?

... and **training / educational programs** for communities and local agencies.



What is a "Hazard Mitigation Plan"?

A plan that identifies projects to reduce a community's risk before disasters occur...

... which is different from an "Emergency Operations Plan" or "EOP"; a plan that identifies procedures to guide a community's response to an emergency or disaster after it happens

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

What are the Benefits and Costs of the Plan?

Benefits of Participating

- Every \$1 spent on mitigation projects saves \$4 in recovery costs*
- From 1955-2005, mitigation measures prevented 220 deaths and 4,700 injuries*
- For every eligible \$1 spent by local communities on FEMA-funded grant projects, the Federal government contributes \$3 to \$9
- Opportunities to improve local insurance ratings = lower flood insurance premiums

* Source: The Multi-hazard Mitigation Council, "Hazard Mitigation Saves," 2005 an independent review of FEMA mitigation activities

Costs of Not Participating

- Pre-disaster hazard mitigation grant programs (PDM, FMA, SRL, RFC) - *Not Eligible*
- Post-disaster mitigation grant programs (PA, HMGP) - *Not Eligible*

Continuing a cycle of destruction and increasingly costly recovery

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Where are we in the planning process?

Planning Process

- The Northern Delaware River Region formed with Hunterdon, Mercer, Sussex and Warren Counties
- A Hazard Mitigation Planning Steering Committee was assembled with representatives of all four counties
- Sussex County OEM secured a grant from FEMA to help fund the planning process for all four counties and selected Witt Associates as the project technical consultant

Planning Process

Sussex County OEM wanted broad participation so they solicited participation of all the municipalities in the County and organized a Hazard Mitigation Plan Working Group comprised of Local OEM Coordinators and representatives of Sussex County Departments

Planning Process

- Organize Resources
 - Build the Planning Team
 - Data/Document Requests and Review
- Assess Risks
 - Hazard Identification
 - Risk Assessment & Loss Estimation
- Develop a Mitigation Plan
 - Capability Assessment
 - Mitigation Strategies
- Implement the Plan and Monitor Progress

Planning Process

- Organize Resources
 - Build the Planning Team
 - Data/Document Requests and Review
- Assess Risks
 - Hazard Identification
 - Risk Assessment & Loss Estimation
- Develop a Mitigation Plan
 - Capability Assessment
 - Mitigation Strategies
- Implement the Plan and Monitor Progress

Planning Process

The Plan answers these two questions:

- What hazards pose the greatest risk to the County and its citizens?
- What are the most effective measures to reduce those risks?

Hazard Identification, Profiling and Prioritization

Eleven (11) natural and man-made hazards identified/profiled:

- Dam Failure
- Drought
- Earthquake/Geological
- Flood
- Hazardous Materials Release
- High Wind–Straight-Line Winds
- High Wind–Tornado
- Landslide (non-seismic)
- Severe Weather-Summer
- Severe Weather-Winter
- Wildfire

Hazard Identification, Profiling and Prioritization

Six (6) hazards were assigned priority for further study:

- **Dam Failure**
- Drought
- **Earthquake/Geological**
- **Flood**
- Hazardous Materials Release
- **High Wind–Straight-Line Winds**
- High Wind–Tornado
- Landslide (non-seismic)
- Severe Weather-Summer
- **Severe Weather-Winter**
- Wildfire

Hazard Risk Assessment

Risk was assessed in several ways:

- Exposure in predictable areas - such as **flood** (per FEMA FIRM maps)...

Hazard Risk Assessment

...or **dam failure** (per NJ DEP maps and data)...

Hazard Risk Assessment

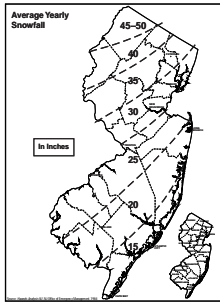
...or **wildfire**.

Hazard Risk Assessment

Patterns of past damages – such as repetitive **flood** damage claims under the National Flood Insurance Program (NFIP).

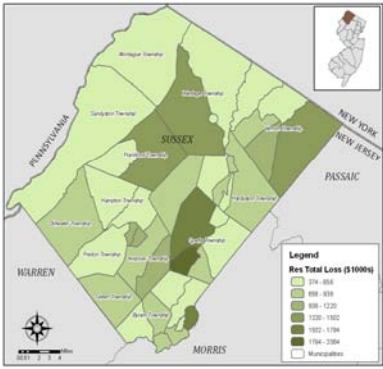
Hazard Risk Assessment

➤ Exposure to predictable events that can cause building failures – such as snow loads from **winter storms**...



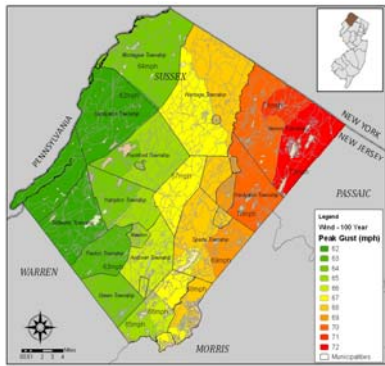
Hazard Risk Assessment

...OR **earthquakes**
...



Hazard Risk Assessment

...and **high winds**



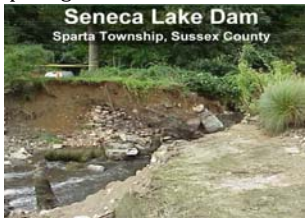
Hazard Mitigation Plan Goals & Objectives

- Goal 1: Improve Education and Outreach
- Goal 2: Improve Data Collection, Use, Sharing
- Goal 3: Improve Capabilities, Coordination, and Opportunities
- Goal 4: Pursue Mitigation Opportunities

Mitigation Actions

Projects were identified per:

- Problem Areas from the Risk Assessment and as indicated by participating communities
- Repetitive Flood Loss Properties
- Critical Facilities



County Mitigation Actions

- Hazard mitigation measures identified for Sussex County OEM to implement include:
 - Conduct yearly workshops about FEMA hazard mitigation grant programs
 - Improve information available to participating municipalities regarding hazards and risk, especially for critical and sensitive facilities

Municipal Mitigation Actions

- Hazard mitigation measures identified for Participating Municipalities to implement include:
 - Property Acquisitions
 - Elevation or Relocation of Critical Facilities
 - Drainage Improvements
 - Bridge and Culvert Replacements
 - Debris Removal
 - Upgrading Utilities

Municipal Mitigation Actions

- Hazard mitigation measures identified for Participating Municipalities to implement also include:
 - Engineering studies to determine appropriate actions for specific problems (flood, dam failure, high wind, mine capping)
 - Provision of back-up power generation
 - Provision of early warning systems
 - Building code updates
 - Public awareness programs

Next Steps: Plan Review and Adoption

- Steering Committee Draft Plan available for review & comment
- Revisions, if necessary
- Submission to NJOEM/ FEMA RII in September
- Revisions, if necessary
- Participating jurisdictions adopt plan
- Participating jurisdictions implement the plan and monitor progress
- Five-year plan update cycle

Next Steps: Public Review & Comment

- Website posting:
<http://www.sussex.nj.us/Cit-e-Access/webpage.cfm?TID=7&TPID=11091>
- Comments are needed by August 6th to be included in the Plan submittal to NJOEM / FEMA

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

**For more information, contact:
Sussex County OEM**

C.2 Public Process

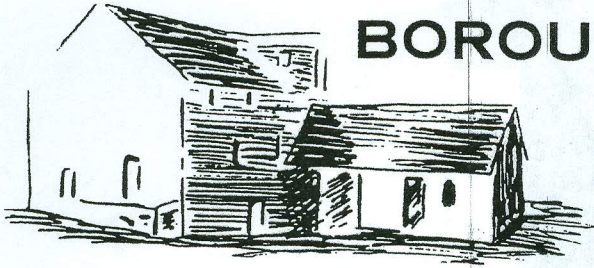
On the following pages are copies of documentation for public involvement during the development of the Plan including notice, agendas, sign-in sheets, and presentation materials for the following:

- December, 2007 Municipal Letters of Intent
- April 26, 2010 County Web Site Posting of Plan Development
- May 13, 2010 Notice of Public Meeting
- May 13, 2018 Web posting of Public Meeting
- May 18, 2010 Public Meeting
- June 07, 2010 News Article about the Plan development
- July 07, 2010 Public Meeting posted in paper
- July 15, 2010 Public Meeting
- July 23, 2010 Plan posted on County Web Site
- August 06, 2010 OEM booth open at County Fair for Plan comments

DRAFT

DRAFT

This page is intentionally blank.



BOROUGH OF ANDOVER

137 MAIN STREET
ANDOVER, NJ 07821-4525

973-786-6688
FAX: 973-786-7231

December 28, 2007

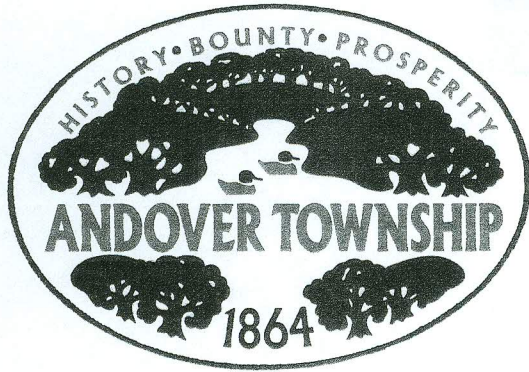
Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson

The Borough of Andover supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,

Doris L. Lewis
Borough Clerk



Township of Andover

Municipal Offices

December 21, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, NJ 07860

Dear Director Danielson:

The Township of Andover supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Crane". The signature is fluid and cursive, with a long horizontal stroke at the end.

Michael Crane
Interim Township Administrator

Borough of Branchville, N.J.

5 MAIN STREET, P.O. BOX 840
BRANCHVILLE, NEW JERSEY 07826-0840
973-948-4626


December 21, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, NJ 07860

Dear Director Danielson,

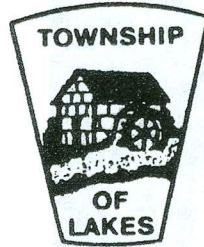
The Borough of Branchville supports and endorses the regional Pre-disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,


Gerald Van Gorden
Mayor

TOWNSHIP OF BYRAM NEW JERSEY

MAILING ADDRESS:
10 MANSFIELD DRIVE
STANHOPE, NJ 07874
Phone: 973-347-2500
Fax: 973-347-0502



WEBSITE ADDRESS:
www.byramtwp.org

December 27, 2007

Eskil S. Danielson, MA OEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, New Jersey 07860

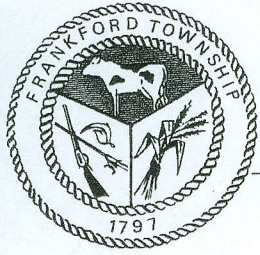
Dear Director Danielson:

The Township of Byram supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer Counties.

Sincerely,

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Joseph W. Sabatini
Township Manager



FRANKFORD township

151 US Hwy 206, Augusta New Jersey 07822 • Phone: 973 / 948-5566 • Fax: 973 / 948-2612

Web Site: www.frankfordtownship.com • E-mail: clerk@frankfordtwp-nj.com

CAROL ANN KRISTENSEN
Mayor

WILLIAM HAHN
Deputy Mayor

ROBERT McDOWELL
Committeeman

LOUANNE CULAR,
R.M.C./C.M.C
Township Administrator/Municipal Clerk

December 31, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, NJ 07860

Dear Director Danielson:

The Township of Frankford supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,

Louanne Cular, RMC
Clerk/Administrator



BOROUGH OF FRANKLIN
46 MAIN STREET
FRANKLIN, NJ 07416

Douglas C. Kistle, Mayor
Richard R. Wolak, Administrator
Patricia A. Leasure, Clerk
Phone: 973/827-9280X100
Fax: 973/827-9279

December 20, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson

The Borough of Franklin, Sussex County, supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely

Richard R Wolak
Administrator

Cc: Councilman Hill – Public Safety
Phillip Crabb – Emergency Management
File



TOWNSHIP OF FREDON NEW JERSEY / 443 ROUTE 94, NEWTON, NEW JERSEY 07860
PH: (973) 383-7025 FX: (973) 383-8711

December 20, 2007

Eskil S. Danielson, MA, CEM, Director
Sussex County Sherrif's Office
Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson:

The Township of Fredon supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon, and Mercer Counties.

If anything further is required, please do not hesitate to contact me at (973) 383-7025 Ext. 22.

Very truly yours,

John A.W. Richardson
Mayor



Township of Green

OFFICE OF MUNICIPAL CLERK/ADMINISTRATOR
P.O. BOX 65, 150 KENNEDY RD.
TRANQUILITY, N.J. 07879
TELEPHONE: (908) 852-9333
FAX: (908) 852-1972

A. Denise Stagnari, RMC

December 26, 2007

Eskil S. Danielson, MA, CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, NJ 07860

Dear Director Danielson:

The Township of Green supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

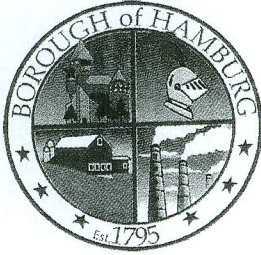
Sincerely,


A. Denise Stagnari, RMC
Clerk/Administrator

ADS/lac

Borough of Hamburg

16 Wallkill Avenue
Hamburg, New Jersey 07419



Doreen Schott Borough Clerk / Registrar
Telephone: 973-827-9230 X 13
Fax: 973-827-0466
Boro_clerk@hamburgnj.org
www.hamburgnj.org

December 27, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

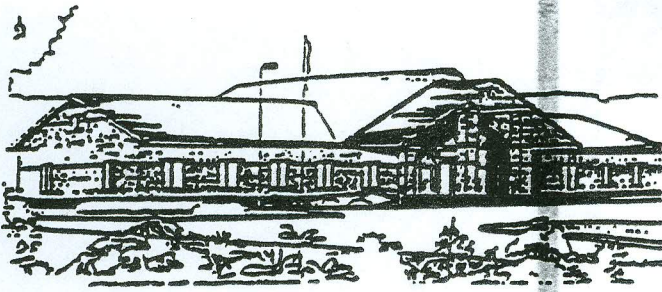
Dear Director Danielson

The Borough of Hamburg supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely

A handwritten signature in cursive script that reads 'Mayor Paul Marino'.

Mayor Paul Marino



TOWNSHIP OF HAMPTON

1 Municipal Complex Road

Newton, NJ 07860

P: 973-383-5570 • F: 973-383-8969

Eileen Klose
Township Administrator

Kathleen Armstrong, RMC
Township Clerk

December 20, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson:

The Township of Hampton supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,

Eileen Klose
Township Administrator



TOWNSHIP OF HARDYSTON

HARDYSTON, NEW JERSEY 07419

Office of Township Manager
Marianne Smith
149 Wheatsworth Road, Suite A
Hardyston, NJ 07419
(973) 823-7020 or (973) 697-4895
Extension: 9410
Fax: (973) 823-7021
E-mail: msmith@hardyston.com

January 3, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, NJ 07860

Dear Director Danielson:

The Township of Hardyston supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Very truly yours,

Marianne Smith
Township Manager



Borough of Hopatcong

MUNICIPAL BUILDING
111 RIVER STYX ROAD
HOPATCONG, NEW JERSEY 07843-1535
(973) 770-1200
FAX: (973) 770-0301
FAX: (973) 398-3650 – Health Dept.
Web site: <http://www.hopatcong.org>

January 4, 2008

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency
39 High Street
Newton, New Jersey 07860

Dear Director Danielson:

Please be advised that the Borough of Hopatcong supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,

Sylvia Petillo,
Mayor

C: J. Swanson, Police Chief

LAFAYETTE TOWNSHIP

33 Morris Farm Road
Lafayette, NJ 07848
(973) 383-1817
Fax (973) 383-0566

Richard Hughes
Mayor

AnnaRose Fedish
Municipal Clerk/Registrar

January 2, 2008

Mr. Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, NJ 07860

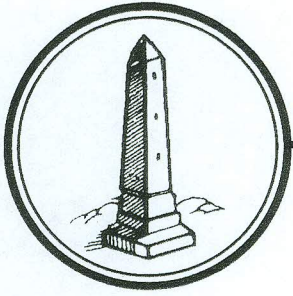
Dear Mr. Danielson:

The Township of Lafayette supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,



Richard Hughes
Mayor



Township of Montague

"The Top of New Jersey"

277 Clove Road, Montague, New Jersey 07827

Phone: (973) 293-7300

Fax: (973) 293-7467

December 27, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson:

The Township of Montague supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,

Mark Utter
Mayor

MU/jc



Town of Newton

Council-Manager Plan Since 1956

Eileen Kithcart
Office of the Town Manager

ekithcart@tellurian.net
www.newtontownhall.com

December 26, 2007

Eskil Danielson, MA CEM, Director
Sussex County Div. of Emergency Management
39 High Street
Newton, New Jersey 07860

Re: Pre-Disaster Mitigation (PDM) Planning Grant

Dear Director Danielson,

The Town of Newton supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer Counties.

On behalf of the Town I want to thank you for your efforts in this regard.

Sincerely,


Eileen Kithcart
Town Manager

cc: Town Council
K. Teets, OEM Coord.



C O U N T Y O F S U S S E X

Borough of Ogdensburg

Fourteen Highland Avenue, Ogdensburg, NJ 07439

MAYOR

James R. Sekelsky

ADMINISTRATIVE OFFICES

(973) 827-3444

FAX # (973) 827-9602

December 20, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson:

The Borough of Ogdensburg supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

A.J. RUTKOWSKI
OGDENSBURG BOROUGH
MUNICIPAL EMERGENCY COORDINATOR
FOR
THE HONORABLE JAMES SEKELSKY
MAYOR



Sandyston Township
183 Route 645
Sandyston, NJ 07826

Phone: 978-948-3520 Fax: 978-948-0783


December 26, 2007

Eskil S. Danielson, MA CEM Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, NJ 07860

Dear Mr. Danielson:

The Township of Sandyston supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon, and Mercer counties.

Sincerely,


George B. Harper, Jr.
Mayor

TOWNSHIP OF SPARTA



65 Main Street
Sparta, NJ 07871-1986
Phone: (973) 729-8485
Henry.Underhill@spartanj.org

December 20, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, New Jersey 07860

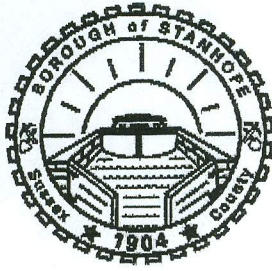
Dear Director Danielson:

The Township of Sparta supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Very truly yours,

A handwritten signature in black ink, appearing to read "Henry M. Underhill", with a long horizontal flourish extending to the right.

Henry M. Underhill
Township Manager



Borough of Stanhope, Sussex County, New Jersey

77 MAIN STREET, STANHOPE, NJ 07874 TEL: 973-347-0159 x 14
RWSTEWARTADMIN@NAC.NET

ADMINISTRATOR'S OFFICE
RICHARD W. STEWART

January 4, 2008

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson:

The Borough of Stanhope supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,

Richard W. Stewart
Borough Administrator

Post-it® Fax Note	7671	Date	1/4/08	# of pages	1
To	SKIP DANIELSON	From	Richard W. Stewart		
Co./Dept.	O.E.M.	Co.	Stanhope BORO		
Phone #	973-579-0380	Phone #	973-347-0159		
Fax #	973-579-0387	Fax #	973-347-6058		

Stillwater Township

964 Stillwater Road
Newton, NJ 07860
973-383-9484

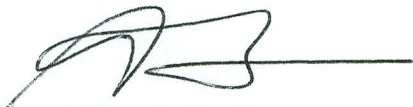
December 21, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management
39 High Street
Newton, NJ 07860

Dear Director Danielson:

The Township of Stillwater supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,



Alfred P. Fuoco
Mayor



BOROUGH OF SUSSEX

**Catherine Gleason
Acting Borough Clerk**

**2 Main Street
Sussex, NJ 07461
(973)875-4831 x105**

January 3, 2008

**Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, NJ 07860**

Dear Director Danielson:

The Borough of Sussex supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer Counties.

Sincerely,

**Catherine Gleason
Acting Borough Clerk**

Cc: Mayor and Council



Township of Vernon

Telephone 973-764-4055

21 Church Street
P.O. Box 340
Vernon, New Jersey 07462-0340

www.vernontwp.com

January 4, 2008

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Re: Pre-Disaster Planning Application

Dear Director Danielson,

The Township of Vernon supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely,



Melinda Carlton
Township Manager

/ks

Cc: Township Council
Patricia Lycosky, Twp. Clerk
Chief Roy Wherry

Township of Walpack
Box 94
Walpack, N.J. 07881

Date *Dec. 21, 2007*

Eskil S. Danielson, MA CE, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson

The Township (Town, Township, Borough) of Walpack supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Sincerely



Mayor/Manager/Administrator

TOWNSHIP OF WANTAGE

888 State Route 23
Wantage, New Jersey 07461-3318

Phone (973) 875-7192
Fax (973) 875-0801
E-mail: administrator@wantagetwp-nj.org

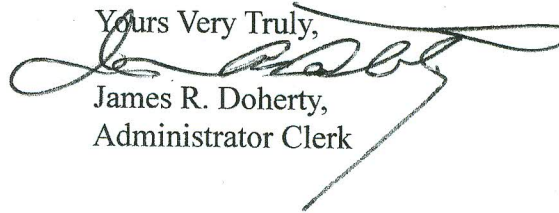
December 20, 2007

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office, Division of Emergency Management
39 High Street
Newton, New Jersey 07860

Dear Director Danielson:

Wantage Township supports and endorses the regional Pre-Disaster Planning application being submitted to FEMA by Sussex, Warren, Hunterdon and Mercer counties.

Yours Very Truly,



James R. Doherty,
Administrator Clerk

Sussex County

http://www.sussex.nj.us/Cit-e-Access/webpage.cfm?TID=7&TPID=11091

[Print](#) | [Close](#)

General Information

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Planning Project

1. [What is Hazard Mitigation?](#)
2. [What is a Hazard Mitigation Plan?](#)
3. [Purpose & Need for The Plan](#)
4. [Outcomes: Identifying Mitigation Projects & Other Benefits](#)
5. [Participation](#)
6. [Process Overview](#)

1. [What is Hazard Mitigation?](#)

Natural hazards have the potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. While an important aspect of emergency management deals with disaster recovery – those actions that a community must take to repair damages and make itself whole in the wake of a natural disaster – an equally important aspect of emergency management involves hazard mitigation.

Hazard mitigation actions are efforts taken before a disaster happens to lessen the impact that future disasters of that type will have on people and property in the community. They are things you do today to be more protected in the future. Hazard mitigation actions taken in advance of a hazard event are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. With careful selection, hazard mitigation actions can be long-term, cost-effective means of reducing the risk of loss and help create a more disaster-resistant and sustainable community.

[↑Top](#)

2. [What is a Hazard Mitigation Plan?](#)

A Hazard Mitigation Plan is a well-organized and well-documented evaluation of the hazards that a jurisdiction is susceptible to, and the extent to which these events will occur. Hazard Mitigation Plans identify an area's vulnerability to the effects of the natural and manmade hazards, as well as the goals, objectives, and actions required for minimizing future loss of life, injury, property damage, and economic disruption as a result of hazard events.

[↑Top](#)

3. [Purpose & Need for The Plan](#)

Hazard mitigation plans are developed BEFORE a disaster strikes. The plans identify community policies, actions, and tools for long-term implementation to reduce risk and potential for future losses. Adopted, implemented and maintained on an ongoing basis, these plans will gradually, but steadily, lessen the impacts associated with hazard events in Sussex County.

Under the federal Disaster Mitigation Act of 2000 (DMA 2000), as of November 1, 2004 communities that do not have a FEMA-approved hazard mitigation plan in place are no longer eligible for FEMA project grant monies under long standing programs such as the Flood Mitigation Assistance Program (FMA), Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Grant Program (PDM) and newer grant programs such as the Severe Repetitive Loss Grant Program (SRL).

[↑Top](#)

[Pre-Disaster Mitigation General Information](#)

[Planning Group Information](#)

[Participating Jurisdictions](#)

[Meeting Schedule](#)

[The Draft Plan](#)

[Useful Links](#)

[Contact Information](#)

4. Outcomes: Identifying Mitigation Projects & Other Benefits

A major focus of this Hazard Mitigation Plan will be to identify effective mitigation projects and realistic implementation strategies, including identifying potential funding streams. This includes projects that may be eligible for federal funding through FEMA grants or other federal sources, as well as to projects that may not qualify for federal funding but are still important to a community. This planning process will help lay the groundwork for implementation of both federally fundable and non-federally fundable mitigation projects.

In addition to identifying effective mitigation projects, a Hazard Mitigation Plan will also assist municipalities of Sussex County in the following ways:

- Increased understanding of natural and manmade hazards and risk the county faces;
- Eligibility for federal funds for pre-disaster mitigation planning under DMA 2000;
- Developing partnerships that support planning and mitigation efforts and may offer potential financial savings, including: reduced flood insurance premiums, broader resources for funding of mitigation projects, and enhanced benefit-cost ratios for U.S. Army Corps of Engineers projects;
- Enhanced coordination of hazard mitigation with comprehensive planning and zoning;
- Development of more sustainable and disaster-resistant communities; and
- Reduced long-term impacts and damages to human health and structures, and reduced repair costs.

Proactive mitigation leads to the development of sustainable, cost-effective projects. In contrast, reactive mitigation tends to yield "quick-fix" alternatives that may cost much and accomplish little. Proactive mitigation is also far more cost-effective than paying to clean up and rebuild after disasters happen. Danger to population and damage to property can be reduced if the region evaluates where and how disasters may occur, and takes steps to reduce those risks.

[↑Top](#)

5. Participation

Jurisdictions located within Sussex County who wish to be recognized by FEMA as being compliant with the federal Disaster Mitigation Act of 2000 (DMA 2000) must either: (a) participate with Sussex County in the multi-jurisdictional plan development process and formally adopt the final plan, or (b) prepare their own hazard mitigation plan.

Elected and appointed government officials, business leaders, volunteers of non-profit organizations, citizens, and other stakeholders have been invited to participate in the coordinated multi-jurisdictional plan development process. **Participating Jurisdictions** Citizens of Sussex County will have the opportunity to participate by attendance at the various public meetings. The dates of these meeting will be posted on this website. **Meeting Schedules**

Active participation in the process is the only way a jurisdiction can be seen in FEMA's eyes as a 'participating jurisdiction' that has met the requirements of DMA 2000 and is therefore eligible to apply for Federal funds for hazard mitigation projects. Participation includes attending meetings, providing feedback and reaching out to the public and other key stakeholders in the community, and adopting the final plan.

[↑Top](#)

6. Process Overview

The hazard mitigation planning processes will be conducted over the course of approximately one year, beginning in January, 2010. Key steps of the process include:

- Research a full range of natural and manmade hazards.
- Identify the most significant hazards (the ones that present the most risk to the county); these will be the focus of the plan.
- Identify the location and extent of hazard areas.
- Identify assets located within hazard areas.
- Characterize existing and potential future assets at risk by analyzing land uses and development trends.

- Assess vulnerabilities to the identified hazards.
- Identify local, state, and Federal capabilities that support hazard mitigation.
- Develop a mitigation strategy by evaluating and prioritizing goals, objectives, and hazard mitigation actions.
- Adopt the plan.
- Implement the Plan and monitor its progress.

While natural disasters cannot be prevented from occurring, the continued implementation of our hazard mitigation plan over the long-term will gradually, but steadily, lessen the impacts associated with hazard events in our region.

[↑Top](#)

Copyright © 2010 Sussex County. All Rights Reserved.

County OKs health benefits change

By **BRUCE A. SCRUTON**
bscruton@njherald.com
NEWTON — About 100 non-represented Sussex

John Eskilson also had posed. In fact, during the meeting Eskilson received a text message from a state

the first deduction won't occur until the first paycheck in June. Koch argued the fairness.

were convinced by the state official's determination. Freeholder Rich Zeoli and Freeholder Director Jeff

Several people appeared before the board seeking the county's help to keep the pool

STATE NEWS BRIEFS

N.J. seeks reduced emissions from Pa. power plant

TRENTON (AP) — New Jersey wants federal regu-

members of the Associated Press. Member Audit Bureau of Circulations. Postmaster: Send address changes to The New Jersey Herald, 2 Spring Street, Newton, NJ 07860.



Visit our website at www.njherald.com to find out more about I-SERVICES.

GOOD SERVICE IS OUR GUARANTEE

If you did not receive your New Jersey Herald by:

6:30 AM Monday-Friday or 8:00 AM Sunday then we will make a

SPECIAL DELIVERY of your missing Herald.

CALL 383-1500

By 10:30 AM Mon.-Fri & Sun.

New Jersey Herald

2 Spring Street, P.O. Box 10, Newton, New Jersey 07860 973-383-1500

The Sussex County Sheriff's Office, Division of Emergency Management, Hazards Mitigation Working Group will hold a public meeting on

Tuesday, May 18, 2010, in the Freeholder's Meeting Room, One Spring St., Newton, N.J. at 10:00 a.m.

At that time, representatives from Sussex County and James Lee Witt Assoc. will make a presentation on the Pre-Disaster Mitigation Planning Project underway in Sussex County. A Q & A will follow.

\$649 **\$949** **I'm FREE** **\$699** **I'm FREE**

Many Styles and Fabrics to Choose From! Largest Selection of Recliners! Buy One Recliner and Get One for FREE!

Lane HOME FURNISHINGS

DOWNING'S FURNITURE

405 STATE HWY 94 • SPARTA, NJ • 973-383-3833

Tuesday thru Friday	Saturday	Sunday	Monday
9:30-5:30	till 5:00	12:00-4:00	(Closed)

forces in Afghanistan prepare to push hard into the Kandahar Province in June. The campaign for Kandahar, already under way in districts outside the city, is expected to be among the bloodiest of the nearly nine-year-old war.

California, at a House hearing on the rig fire and oil leak, citing documents his committee had received from BP. Asked about the tests, Steven Newman, president of the Transocean, which owned the drilling rig, and Lamar McKay, president of BP America, told the committee

Louisiana coast killed 11 people. Oil continuing to flow into the Gulf waters threatens sensitive ecological marshes and wetlands and the region's fishing industry. Congressional investigators revealed Wednesday that a key safety system, known as the blowout preventer, used in BP's oil-drilling rig in the

Lamar McKay, cannoner, and wildlife near the coast and on shore. The public also got its first look on Wednesday of oil documents established the firmest evidence to date of the sequence of catastrophic events that led to the explosion and worsening spill, a series of failures more reminiscent of the loss of the space shuttle Challenger

operator, released a video taken by a remotely controlled camera. Oil flowing from a break in the yellowish pipe becomes lighter in color



SheriCurrently: August 17, 2010 3:15 PM

Print this page Email this page

Search

Page Navigation

- [Pre-Disaster Mitigation](#)
- [General Information](#)
- [Planning Group Information](#)
- [Participating Jurisdictions](#)
- [Meeting Schedule](#)
- [The Draft Plan](#)
- [Useful Links](#)
- [Contact Information](#)

[Home](#)

[Email Alerts](#)

[County Directory](#)

[Board of Freeholders](#)

[County Administrator](#)

[Departments](#)

[County Clerk](#)

[Surrogate](#)

[Sheriff](#)

[County Tourism](#)

[Economic Development](#)

[Events Calendar](#)

[News & Information](#)

[Meeting Schedules](#)

[Service Requests](#)

[Contact Information](#)

[Municipalities](#)

[Form Center](#)

[Links](#)

[F.A.Q.s](#)

[Employment Oppty.s.](#)

[Public Transportation](#)

[Outgoing RSS Feeds](#)

[Recycling/Solid Waste](#)

Meeting Schedule

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Planning Project

The following includes records for meetings that have already occurred and the current schedule for meetings related to this planning effort that are open to the public:

Tuesday, May 18, 2010 at the Sussex County Board of Chosen Freeholders conference room, One Spring Street, Newton, NJ 07860 at 10 a.m. The public is encouraged to attend.

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
Sussex County Working Group Meeting – Agenda
May 18, 2010**

1. Introductions

- a. Northern Delaware River Region Steering Committee
- b. County Hazard Mitigation Working Group

2. Hazard Mitigation Planning Overview

- a. Power Point

3. Work-in-Progress/Next Steps

- a. Public Participation
- b. Data Requests (“wish lists”)
- c. Mitigation Action Interviews

4. Action Items

- a. JLWA to supply Force Account Forms
- b. “Wish list” intent / content / distribution to counties and communities (via initial briefings)
- c. Mitigation Action Interview package review prior to scheduled interviews

5. Next Meeting

- a. June 1st and 2nd: Municipal Mitigation Action Interviews

NDRR NJ All-Hazards Pre-Disaster Mitigation Plan
 Working Group Meeting /Public Meeting - Sign-up Sheet

May 18, 2010

Name	Title	Organization	Address	Phone	Fax	E-mail
William J. VARDAPANE JR	CHIEF OF POLICE	OLDENSBURG POLICE	PO Box 45 OLDENSBURG, NJ 07439	973 827 3160 CELL 973 362 5775	973 827 0271	Oldenburg Police DEPT @EMBARQMAIL.COM (Lower case letters)
Eric Slate	EMC	Oldenburg	14 Highland AVE Oldenburg NJ 07439	973-919- 8139	973-827 7101	Slateno3@Embarqmail.com
TAMAH Conover	GIS Analyst	SCOGIS	one Spring ST Newton, NJ 07860	(973) 579 0430 x1340		Tconover@sussex.nj.us
Alice Brees	Principal Planner	Sussex County Planning	7 Spring St Newton	579- 0580		abrees@sussex.nj.us
Robert Haffner	Deputy OEM Coord.	Hopatcong Borough	111 Riverstye Rd Hopatcong NJ 07843	973- 398-5000 ext. 247	973- 398-4048	rhaffner@hopatcongpolice.org
Floyd Southard J	Deputy OEM Coord.	Sussex Borough	2 Main St Sussex NJ 07461	973- 534- 7258		Fsouthard@embarqmail.com
JAKE LITTLE	OEM COORD.	SUSSEX BOROUGH	2 MAIN ST. SUSSEX NJ 07461	862- 266- 0278		jakelittle1@YAHOO.COM JAKELITTLE@YAHOO.COM
James McDonald	Chief RRHS	Sussex County Health/Hermet	1 Spring Street Newton NJ 07860	973 579 0370	973 579 9719	jmedonald@sussex.nj.us

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Project Briefing

prepared for:
**Hazard Mitigation Planning Working Group
& Citizens of Sussex County**

prepared by:
**Sussex County
Office of Emergency Management**

May 18th, 2010

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Sussex County and its municipalities are working on a Plan to reduce risks from natural hazards.

This briefing contains:

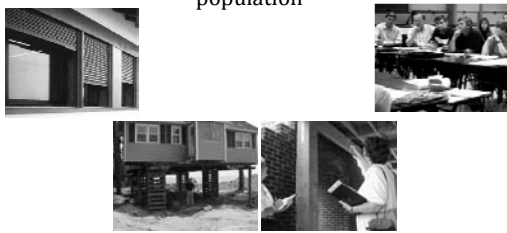
- What is a hazard mitigation plan?
- What are the benefits and costs?
- How is the Plan being developed?
- Municipality and County Department interviews
- Next steps

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan


**What is a
Hazard Mitigation Plan?**

What is "Hazard Mitigation"?



Any measures undertaken to reduce risks posed by natural hazards on a place and its population




What is "Hazard Mitigation"?




Hazard mitigation includes projects that limit the area hazards can impact like floodwalls, window shutters, or safe rooms ...

What is "Hazard Mitigation"?



...projects that move assets out of harm's way like elevating structures, or burying utilities...



What is "Hazard Mitigation"?

...**regulatory practices** like enacting or enforcing building codes, permits, or land use policies...



What is "Hazard Mitigation"?

... and **training / educational programs** for communities and local agencies



What is a "Hazard Mitigation Plan"?

A plan that identifies projects to reduce a community's risk before disasters occur...

... which is different from an "Emergency Operations Plan" or "EOP"; a plan that identifies procedures to guide a community's response to an emergency or disaster after it happens

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

What are the benefits and costs of the Plan?

Benefits of Participating

- Every \$1 spent on mitigation projects saves \$4 in recovery costs*
- From 1955-2005, mitigation measures prevented 220 deaths and 4,700 injuries*
- For every eligible \$1 spent by local communities on FEMA-funded grant projects, the Federal government contributes \$3 to \$9
- Opportunities to improve local insurance ratings = lower flood insurance premiums

* Source: The Multi-hazard Mitigation Council, "Hazard Mitigation Saves," 2005 an independent review of FEMA mitigation activities

Costs of Not Participating

- Pre-disaster hazard mitigation grant programs (PDM, FMA, SRL, RFC) - *Not Eligible*
- Post-disaster mitigation grant programs (PA, HMGP) - *Not Eligible*

Continuing a cycle of destruction and increasingly costly recovery

**Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan**

How is the Plan being developed?

How is the Plan Being Developed?

- The Northern Delaware River Region formed with Hunterdon, Mercer, Sussex and Warren Counties
- A Hazard Mitigation Planning Steering Committee was assembled with representatives of all four counties
- Sussex County OEM secured a grant from FEMA to help fund the planning process for all four counties and selected James Lee Witt Associates as the project technical consultant

How is the Plan Being Developed?

Sussex County OEM has been soliciting participation of all the municipalities in the County and organized a Hazard Mitigation Planning Working Group comprised of Local OEM Coordinators and representatives of Sussex County Departments

How is the Plan Being Developed?

The Plan will answer two questions:

- What hazards pose the greatest risk to the County and its citizens?
- What are the most effective measures to reduce those risks?

Hazard Identification

Hazard List, Sussex County							
Hazard	Type (1)	Score from Application	County EOP	Mitigation 2020	NJ State/FU (2)	NCEM RFP (3)	Profiled in HMP?
Dam Failure	T						
Drought	N	✓					
Earthquake/Geological (4)	N			✓	✓	✓	✓
Flood (5)	N	✓		✓	✓	✓	✓
Hazardous Materials Release	T			✓	✓	✓	✓
High Wind - Straight-Line Winds (6)	N	✓		✓	✓	✓	✓
High Wind - Tornado	N	✓		✓	✓	✓	✓
Severe Weather - Summer	N	✓		✓	✓	✓	✓
Severe Weather - Winter	N	✓		✓	✓	✓	✓
Landslide (non-seismic)	N			✓	✓	✓	✓
Wildfire	N	✓		✓	✓	✓	✓

Notes:
 (1) Type Legend: N = Natural, T = Technological/Manned
 (2) NJ State/FU = State of New Jersey Hazard Mitigation Plan
 (3) Hazards indicated as likely candidates to include in planning for Sussex County per Northern Delaware River Region Request for Proposals (RFP)
 (4) Earthquake/Geological includes effects of surface faulting, ground shaking, earthquake induced landslides, and liquefaction
 (5) Includes tidal, flash, and riverine flooding
 (6) High Wind - Straight-Line Winds includes winds due to hurricanes, tropical storms, nor'easters, coastal storms, and other severe storms, excluding tornadoes.

Hazard Prioritization

CPEI Category	Degree of Risk		CPEI Rank	Assigned Mitigating Partner
	Level (3)	Description		
Probability	Highly Likely	High probability with a well documented history of occurrence. Hazard has an 1 in 10 year chance of occurring (10% - 20%)	1	40%
	Likely	High probability with a documented history of occurrence. Hazard has 1 in 20 year chance of occurring (5% - 10%)	2	
	Possible	High probability with at least one documented or anecdotal historic event. Hazard has 1 in 50 year chance of occurring (2% - 5%)	3	
	Unlikely	High probability with no documented history of occurrence or events. Hazard has 1 in 100 year chance of occurring (1% - 2%)	4	
Magnitude/Severity	Catastrophic	Multiple deaths. Complete destruction of facilities for more than 1 month	4	50%
	Critical	Multiple deaths. Significant damage to facilities. Complete destruction of critical facilities for at least 1 day	3	
	Severe	Multiple deaths. Significant damage to facilities. Complete destruction of critical facilities for at least 1 day	2	
	Highly Severe	Multiple deaths. Significant damage to facilities. Complete destruction of critical facilities for at least 1 day	1	
Warning/Response Time	Less than 1 Hour	Less than 1 hour warning time before event occurs	4	10%
	1-24 Hours	1-24 hour warning time before event occurs	3	
	24-48 Hours	24-48 hour warning time before event occurs	2	
	More than 1 week	Event lasts more than 1 week	1	
Duration	Less than 1 Day	Event lasts less than 1 day	2	50%
	Less than 1 Month	Event lasts less than 1 month	1	

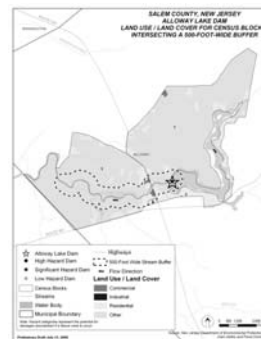
Hazard Risk Assessment

- Risk will be assessed in several ways:
- Exposure of assets to hazards that occur in predictable areas - such as **flood** (per FEMA FIRM maps)...



Hazard Risk Assessment

- ...or **dam failure** (per NJ DEP maps and data)



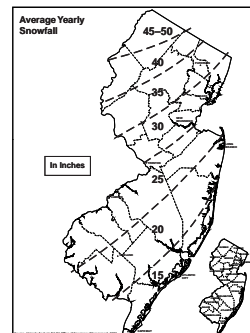
Hazard Risk Assessment

- Patterns of past damages - such as repetitive **flood** damage claims under the National Flood Insurance Program (NFIP).



Hazard Risk Assessment

- Exposure of assets to predictable events - that can cause building failures - such as snow loads from **winter storms**...



Hazard Risk Assessment

- or **high winds**



Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

Municipality and County Department Interviews

Municipality and County Department Interviews

Why conduct municipal interviews?

- Identify hazard-related community issues affecting residents, property owners and business operations
- Explore and identify potential solutions, i.e., projects for inclusion in the Plan

Municipality and County Department Interviews

What do municipalities have to do?

- Schedule one-hour interview – via County OEM Coordinator
- Complete Capability Assessment – via on-line survey
- Review provided interview related materials – to be sent via e-mail
- Identify problem areas and potential projects

Interview Schedule

Sussex June 1st				
Scheduled Time	Section & Municipality	Section & POC	Section & Municipality	Section & POC
9:00am				
10:00am				
11:00am				
12:00pm				
1:00pm				
2:00pm				
3:00pm				
4:00pm				
5:00pm				
6:00pm				
7:00pm				
8:00pm				
9:00pm				

Sussex June 2 nd				
Scheduled Time	Section & Municipality	Section & POC	Section & Municipality	Section & POC
9:00am				
10:00am				
11:00am				
12:00pm				
1:00pm				
2:00pm				
3:00pm				
4:00pm				
5:00pm				
6:00pm				
7:00pm				
8:00pm				
9:00pm				

Capability Assessment

10. Hazard Mitigation Programs

13a. What department or agency administers floodplain management in your municipality (Environmental Protection, Public Works, Planning, Engineering, Permits, etc.)?

13b. Who is the community's designated Floodplain Administrator (by name and title)?
Note: If your community participates in the NFIP, there is a designated Floodplain Administrator.

13c. How is the Floodplain Administrator involved in the development of the Northern Delaware River Region All-Hazards Pre-Disaster Mitigation Plan?

Point of Contact
 Working Group
 Not

Interview Materials

- Each municipality will receive the following:
 - Overview
 - Critical Facilities List
 - Example Mitigation Projects
 - Proposed Mitigation Actions

Critical Facilities Lists

	A	B	C	D	E	F	G	H
1	Name	Address	City	State	Zip Code	Description	Lat	Long
	Municipal HIGH School	1 Main Street	Municipal	NJ	07823	Grade Schools (Primary and High Schools)	40.83	-75.07
2	Oak Street Elementary School	15 Oak Street	Municipal	NJ	07823	Grade Schools (Primary and High Schools)	40.83	-75.07
3	Washington elementary School	16 Gilmore Street	Municipal	NJ	07823	Grade Schools (Primary and High Schools)	40.84	-75.03
4	County Sheriff	13 4th St	Municipal	NJ	7823	Sheriff	40.83	-75.08
5	Fire Company #1	9 Wilson Ave	Municipal	NJ	07823	Fire Station	40.85	-74.98
7	Fire Company #2	82 Front Street	Municipal	NJ	07823	Fire Station	40.83	-75.07
8								
9								


Proposed Mitigation Actions

Mitigation Action, Program, or Project	Benefit(s) Addressed	Applicable Existing or New Structures	Existing Level Planning/ Implementation	Responsible Party	Target Date / Project Duration	Estimated Cost (\$)	Funding Source	Priority
Project # 1 (Insert mitigation action, e.g., Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing) of 1 Severe Repetitive Loss property on local Street.		Flood	Existing	Floodplain Management	Floodplain Administrator / DEN Coordinator		FHA, FEMA C & DRIFP if available	
Project # 2 (Insert mitigation action, e.g., Acquisition, Elevation, Mitigation Reconstruction, Flood Proofing) of 1 Severe Repetitive Loss properties on local Street.		Flood	Existing	Floodplain Management	Floodplain Administrator / DEN Coordinator		FHA, FEMA C & DRIFP if available	
Project # 3 (Insert mitigation action, e.g., roof and/or structural hardening, window and door replacements, back-up generators, and 1 of 2 schools located on Oxford Street)		Severe Water Intruder & Straight Line Winds	Existing	Emergency Management	School Board Administrator		FEMA C & DRIFP if available	
Project # 4 (Insert mitigation action, e.g., roof and/or structural reinforcement, window and door replacements, back-up generators, and 1 of school located on CR119)		Severe Water Intruder & Straight Line Winds	Existing	Emergency Management	School Board Administrator		FEMA C & DRIFP if available	

Project Identification

➤ Projects are identified per:

- Problem Areas from the Risk Assessment and as indicated by participating communities
- Repetitive Flood Loss Properties
- Critical Facilities



Typical Projects

➤ Potential hazard mitigation measures are identified by each of the municipalities. Typical action items include:

- Property Acquisitions
- Elevation or Relocation of Critical Facilities
- Drainage Improvements
- Bridge and Culvert Replacements
- Flood Proofing of Commercial Properties
- Upgrading Utilities

Typical Projects

➤ Hazard mitigation measures identified for municipalities to implement can also include:

- Engineering studies to determine appropriate actions for specific problems (flood, dam failure, high wind, mine capping)
- Provision of back-up power generation
- Provision of early warning systems
- Building code updates
- Public awareness programs

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

Next Steps

What's Left To Do?

- Conduct the workshops
- Incorporate identified mitigation actions
- Complete Draft Plan and submit to Working Group for review and comment

From: [Eskil S. Danielson](#)
To: [Pete Dennen](#)
Cc: "[Robert E. Untig](#)"; mvogel@sussexcountysheriff.com; "[Amy Conry](#)"
Subject: FW: Sussex County News - 06/07/2010
Date: Monday, June 07, 2010 11:20:04 AM

Pete – Here is another part of our effort to get the word on PDM out to the public. Check both the PDM article and the Hurricane article. Both have PDM in them. Skip

From: sussex_news-owner@cit-e.net [mailto:sussex_news-owner@cit-e.net] **On Behalf Of** Sussex County News
Sent: Monday, June 07, 2010 7:58 AM
To: Sussex County Email Alert
Subject: Sussex County News - 06/07/2010



Vol. 4 Issue 6

Newton, NJ

Monday, June 7, 2010

Feature Story

*If you enjoy this newsletter,
please forward it to a friend.*

[Northern Delaware River Region Communities Planning for Future Disasters](#)

The Offices of Emergency Management of Sussex, Warren, Hunterdon and Mercer counties, working jointly, have begun developing Hazard Mitigation Plans for the four-county Northern Delaware River Region and its 85 municipalities. [Read More...](#)

also in this issue

- [Summer Reading Club at the Sussex County Library](#)
- [Prime Time Seniors Donate to the Social Services Food Pantry](#)
- [Vestibular Rehabilitation Q & A](#)
- [Learn About the Office of Mosquito Control](#)
- [Human Services in Sussex County](#)
- [Sussex County Tackles Mental Illness in Community and Jail](#)
- [May Champions for Charity](#)

- [Public Health Nursing Takes It to the Streets](#)



**Click to Subscribe to
Sussex County Email Alerts...**

News

[↑Top](#)

[Summer Reading Club at the Sussex County Library](#)

(5/3/2010)  [Print this story](#)

The Sussex County Library will be providing a free, fun-filled Summer Reading Club again this year! The annual club is a great time for every member of the family and it is the highlight of our summer programming.



[↑Top](#)

[Prime Time Seniors Donate to the Social Services Food Pantry](#)

(5/6/2010)  [Print this story](#)

Fifty-five members of Prime Time Seniors brought food to their monthly meeting at Liberty Towers, in Newton, on May 5, 2010, to donate to the Social Services food pantry.



[↑Top](#)

[Vestibular Rehabilitation Q & A](#)

(5/18/2010)  [Print this story](#)

Vestibular Rehabilitation Therapy (VRT) has been demonstrated to be a highly effective treatment for most individuals with vestibular or central balance system disorders.

[↑Top](#)

[Learn About the Office of Mosquito Control](#)

(6/7/2010)  [Print this story](#)

The office uses an Integrated Pest Management approach to controlling mosquitoes. It starts with the philosophy that a multi-faceted prevention and control plan is the most cost-effective and efficient means of controlling mosquito populations.



[↑Top](#)

[Human Services in Sussex County](#)

(6/1/2010)  [Print this story](#)

The Sussex County Department of Human Services is dedicated to serving the County's most vulnerable residents in an efficient, cost-effective and dignified manner.



[↑Top](#)

[Stepping Up for Change: Sussex County Tackles Mental](#)

[Illness in Community and Jail](#)

(6/1/2010)  [Print this story](#)

In the 2008 Sussex County Human Services Needs Assessment, there was a consistent theme that emerged, and that theme was a need for coordination between mental health and substance abuse treatment.

[↑Top](#)

[May Champions for Charity](#)

(5/24/2010)  [Print this story](#)

The month of May was a banner month for Champions for Charity as Hopatcong High School, Kittatinny Regional High School and Lenape Valley Regional High School have all joined in the effort to ease hunger in Sussex County.



[↑Top](#)

[Public Health Nursing Takes It to the Streets](#)

(6/2/2010)  [Print this story](#)

The Sussex County Office of Public Health Nursing will be providing health awareness at various locations in the County through their Take It to the Streets program.



[↑Top](#)

and don't miss...

- [Public Hearing on Transportation](#)
- [Summer Safety Tips](#)
- [Spring 2010 Health Matters, the Newsletter of the Sussex County Cancer Coalition](#)



**Public Services
and Events Calendar**

A Program of the County of Sussex

Board of Chosen Freeholders

[Jeffrey M. Parrott](#)
Freeholder Director
[Phillip R. Crabb](#)
Deputy Director
[Susan M. Zellman](#)
[Richard A. Zeoli](#)

County Administrator
[John Eskilson](#)

The Board of Chosen Freeholders hopes you find the official County of Sussex Email Newsletter informative and helpful whether you live, work or play in our County. Please email your comments to feedback@sussex.nj.us.

To subscribe to this periodic email newsletter, please click [here](#).

To unsubscribe, click [here](#).

Privacy Statement

Your information will not be sold or distributed and is used only to maintain this list and to assist us in tailoring our content for reader interest.

We would appreciate hearing from you. Please contact us with your thoughts and/or comments on the County's Electronic Newsletter or Website by emailing us at feedback@sussex.nj.us.

If you enjoyed this newsletter, please forward it to a friend.

© 2010 County of Sussex
One Spring Street, Newton, NJ 07860

FIVE-DAY FORECAST FOR NEWTON

TODAY	TONIGHT	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Sunny	Partly Cloudy	Isolated T-storms	Isolated T-storms	Scat'd T-storms	Isolated T-storms
96°	69°	89° 67°	89° 69°	86° 65°	83° 62°

ALMANAC

Data reported from Sussex
Temperature
 Yesterday's High98
 Yesterday's Low67
 Normal High82
 Normal Low58
 Record High99 in 1999
 Record Low42 in 1967
Precipitation
 Yesterday's0.00"

RIVER STAGES

River levels are measured in feet.

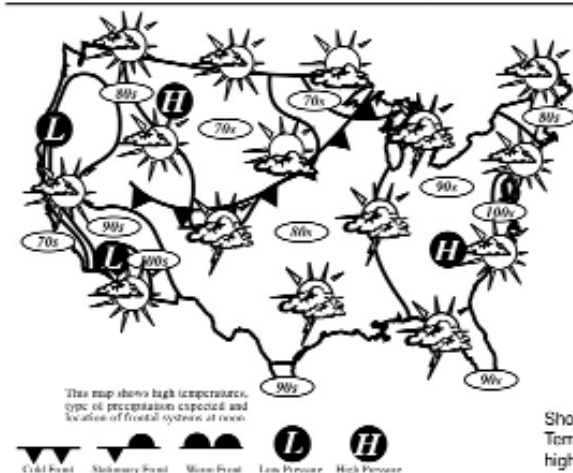
Delaware River	Flood Stage	Current Stage	24 hr. Level Change
Belvidere	22	3.81	-0.08
Port Jervis	18	2.85	0.00
Montague	25	5.22	-0.09
Trenton	20	8.31	+0.09

SUN AND MOON

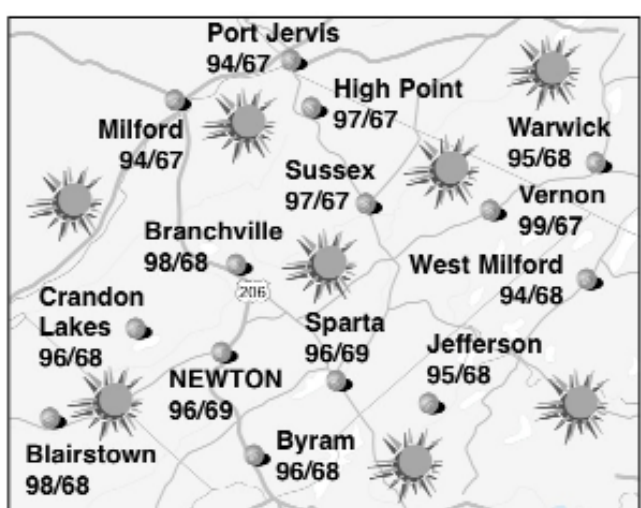
Sunrise today5:34 a.m.
 Sunset tonight8:34 p.m.
 Moonrise today1:29 a.m.
 Moonset today4:42 p.m.

New 7/11 First 7/18 Full 7/25 Last 8/2

NATIONAL WEATHER MAP



SUSSEX COUNTY WEATHER



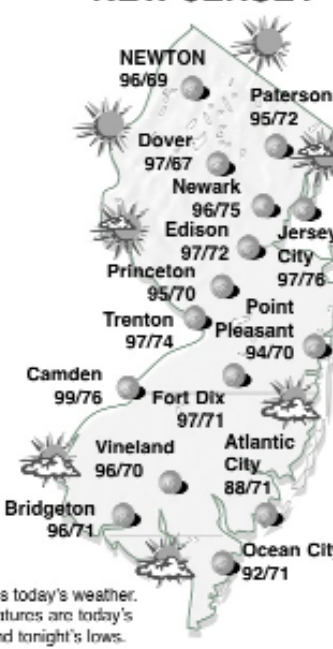
SUSSEX COUNTY

	Today	Thu.
Andover	96/69 s	89/67 t
Branchville	98/68 s	90/67 t
Franklin	96/67 s	89/66 mc
Hamburg	97/67 s	89/66 mc
High Point	97/67 s	89/66 t
Hopatcong	95/68 s	87/66 t
Newton	96/69 s	89/67 t
Sparta	96/69 s	89/67 t
Sussex	97/67 s	90/66 t
Vernon	99/67 s	90/67 pc

REGIONAL CITIES

	Today	Thu.
Atlantic City	88/71 pc	79/72 pc
Allentown, PA	98/69 s	90/67 t
Blairstown	98/68 s	91/66 t
Cape May	89/71 pc	80/72 pc
Dover	97/67 s	89/66 mc
Flemington	97/69 s	90/67 mc
Hackensack	97/74 s	91/71 mc
Hoboken	97/75 s	90/72 mc
Jersey City	97/76 s	89/72 mc
Long Beach Is.	90/71 pc	80/73 pc
Middletown, NY	95/66 pc	89/66 t
Milford, PA	94/67 s	90/66 t
Morristown	97/68 s	90/67 mc
Newark	96/75 pc	90/72 mc
New York	97/75 s	90/72 mc
Parsippany	98/69 s	89/67 pc
Paterson	92/71 pc	81/71 pc
Philadelphia	99/76 s	94/74 mc
Point Pleasant	94/70 pc	83/72 mc
Port Jervis, NY	94/67 pc	89/66 t
Princeton	95/70 s	89/69 mc
Rockaway	97/67 s	89/66 mc
Scranton, PA	95/67 s	91/66 t
Somerville	99/69 s	91/67 mc
Springfield	96/74 pc	90/70 t
Stroudsburg, PA	98/66 s	91/65 t
Trenton	97/74 s	91/71 mc
Warwick, NY	95/68 pc	90/66 t
Wayne	96/71 pc	89/69 t
West Milford	94/68 pc	89/68 t
Wildwood	93/71 pc	82/72 pc

NEW JERSEY



Parkinson's

Continued from Page A1

A former volunteer firefighter, Coscia also is a full-time manager at Home Depot and coaches his 11-year-old son Ian's baseball games.

It was difficult to keep from becoming depressed, but Coscia said through the encouragement of his family, which includes daughters Alyssa, 18, and Erin, 16, he was able to move forward.

In March, the family attended a

Parkinson's awareness walk in Central Park, sponsored by the Michael J. Fox Foundation.

Coscia also began reading books by Fox, the "Back to the Future" star who was diagnosed with the disease in 1991. "It became, not if we find a cure, but when we find a cure," Coscia said.

His kids suggested he start an organization and hold a fundraiser.

Because he and his son Ian enjoy baseball so much, Coscia decided to hold the fund-raiser during a Skyhawks game. He was able to purchase tickets at a discount price and will sell them for

\$10.50 each before the game.

Money raised will go to the Michael J. Fox Foundation. Coscia also will have an information booth at the game.

Although there is no cure, Coscia says he is now on a medication that slows the progression of the disease and has helped control his tremors.

"I'm not going to lay down. I have to stay as busy as possible," he said. "I couldn't do this without my wife and kids. Looking at them every day and the positive outlook they have has helped with everything."

Having a mullet pays off at Pittsburgh Zoo

PITTSBURGH (AP) — Mullet conservation efforts are under way in Pittsburgh — the hairstyle, not the fish.

The Pittsburgh Zoo and PPG Aquarium gave reduced admission Monday to those sporting the business-in-front, party-in-back look.

The tongue-in-cheek promotion kicked off a week of discount gimmicks at the zoo.

Stuck in the '60s? A tie-dye shirt will get you in the gates for \$5 Thursday. On Friday, the zoo's Facebook friends can

ODD NEWS

get the lower price.

On Monday, the person with the best mullet won a behind-the-scenes zoo tour.

And the prize for the runners-up? A chance for a free haircut.

Italian motorists steal \$12,500 in coins

ROME (AP) — Money makes the world go round — or in this case brings an Italian highway to a halt.

A truck carrying about \$2.5 million in

coins overturned in southern Italy, unloading its contents onto the highway and leading motorists to hit the brakes and dig in.

Police in Foggia, where the accident occurred Monday, said Tuesday it was impossible to establish how much money had been stolen, as many of the euro1 and euro2 coins remained in piles on the highway. But motorists acting quickly before police arrived made off with at least \$12,500.

Police said the truck's driver and one passenger had suffered minor injuries. The truck was carrying the money from the Italian mint to local banks.

TAXATION • BUSINESS TRANSACTIONS

CHARLES J. BRAND, Esq., CPA, LLM (Tax)
 cbrand@dolanlaw.com

DOLAN & DOLAN, P.A.
 ATTORNEYS AT LAW

P.O. Box D • 53 SPRING STREET
 NEWTON, NJ 07860 • PH. (973) 383-1600

Experienced Personal Service
 Free Consultation

The Sussex County Sheriff's Office,
Division of Emergency Management,
Hazards Mitigation Working Group
 will hold a public meeting on

Thursday, July 15, 2010,
in the Freeholder's Meeting Room,
One Spring St., Newton, N.J.
at 10:00 a.m.

At that time, representatives from Sussex County and James Lee Witt Assoc. will make a presentation on the Pre-Disaster Mitigation Planning Project underway in Sussex County.

A Q & A will follow.

GRANO WELLNESS CENTER'S
First Annual
LOSE WEIGHT
FOR CHARITY

Join our Physician-supervised
 Ideal Weight Loss Program &
Lose 3-7 lbs. per week!

WEIGHT LOSS WORKSHOP
Tuesday, July 20 at 7pm
 Call or visit
www.granowellness.com to sign up!

Lose weight & get healthy while supporting the American Heart Association and American Diabetes Association.

American Heart Association
 American Diabetes Association
 Cure • Care • Commitment

GRANO PAIN RELIEF & WELLNESS CENTER
 973-827-0003 • 108 Rte. 23 South • Hamburg
 973-383-5533 • 65 Newton-Sparta Rd. • Newton

SIDEWALK SALE DAYS!
JULY 8, 9 & 10
20% off the purchase of an in-stock clock

Great Savings on clearance items too!

CORNWELL CLOCKS
 69 Spring Street
 Newton, NJ

973-300-1776
 Mon.-Fri.: 9:30-5:30 • Sat.: 9:30-4:00
 Open Thursday till 8pm
 www.cornwellclocks.com



AP Photo/Tim Donnelly

Sunbathers gather along Atlantic City Beach Tuesday. The East Coast broiled under an unrelenting sun as record-topping temperatures soared to 100 or higher in several cities, utility companies cranked out power to cool the sweating masses and the unlucky sought any oasis they could find.

Easterners seek respite from heat

By **JIM FITZGERALD** and **DAVID B. CARUSO**
 Associated Press Writers

NEW YORK — The East Coast cooked under an unrelenting sun Tuesday as record-topping temperatures soared to 100 or higher from Virginia to Massachusetts, utility companies cranked out power to cool the sweating masses and the unlucky sought any oasis they could find.

The temperature hit 103 degrees in New York City and 102 in Philadelphia, breaking records for the day, both set in 1999. The temperature also soared past the century mark in Boston, Washington and Newark, N.J., and broke records in Providence, R.I., and Hartford, Conn.

In downtown Philadelphia, pedestrians and drivers appeared to move a little more slowly amid the high humidity, blazing sun and baking sidewalks. Robert McCarron, 44, wore a navy suit and tie as he walked four blocks from a downtown subway station to an office building where he was due for a job interview.

"If I was going to a job, you'd better believe I wouldn't be wearing a suit," he said. "This is rough, and it's only going to get hotter."

After an extended Fourth of July weekend when temperatures inched into at least the 90s from Maine to Texas, The National Weather Service issued heat advisories until Wednesday night for much of the Northeast and mid-Atlantic, including an excessive heat warning for the Philadelphia area.

With people cranking up their air conditioning, energy officials predicted near-record demand for power. Utilities and regional electrical system operators cited ample generation capacity and expected no major blackouts, though, and just a smattering of power failures were reported.

Even so, those without air conditioning were left to cope as they could. On the baking streets of the Bronx, 14-year-old Miguel Pena and 13-year-old Vincent Quiles walked their bicycles up a steep hill, white handkerchiefs around their heads to keep the sweat out of their eyes.

"We thought it would be cooler on the bike, but now we're going home. It's just too hot," Miguel said.

Added Vincent: "You can't breathe out here."

The hot air is "sitting over the top of us, and it's not really going to budge much for the next day or two," said Brian Korty, a meteorologist with the National Weather Service in Camp Springs, Md. After that, he said, a system coming in off the Atlantic Ocean would bring in cooler weather.

Authorities in some places Tuesday began calling the hot stretch a heat wave, a phenomenon defined by at least three consecutive days of temperatures of 90 or above. Newark handily beat that threshold Tuesday, hitting at least 100 for the third day in a row.

It was so hot that even machines had to slow down. Transportation officials cut the speed of commuter trains in suburban Washington when the tracks got too hot because extreme heat can cause welded rails to bend under pressure.

Workers at the Marine Mammal Stranding Center in Brigantine used tubs of ice cubes to help four sick or weak seals keep cool.

Deaths blamed on the heat included a 92-year-old Philadelphia woman whose body was found Monday and a homeless woman found lying next to a car Sunday in suburban Detroit.

In Washington, where the thermometer climbed to 100 degrees by mid-afternoon, President Barack Obama warned reporters about to leave the Oval Office: "Stay cool out there. Hydrate."

LOTTERY

New Jersey
 Midday Pick 3: 1-5-0
 Midday Pick 4: 4-8-0-1
 Pick 3: 4-7-3
 Pick 4: 8-1-9-1
 Cash 5: 6-8-20-21-38
 Mega Millions: 8-18-45-47-50
 Mega Ball: 36

New York
 Midday Daily: 7-4-0
 Lucky Sum: 11
 Midday WinFour: 9-8-9-8
 Lucky Sum: 34
 Daily: 1-1-5
 Lucky Sum: 7
 WinFour: 2-8-6-1
 Lucky Sum: 17
 Pick 10: 6-8-16-23-24-26-28-29-30-34-37-39-45-49-50-58-60-62-69-79
 Take 5: 16-17-25-34-36

Pennsylvania
 Midday Daily: 4-6-3
 Midday Big 4: 0-3-6-8
 Treasure Hunt: 6-18-20-26-30
 Midday Quinto: 0-4-0-8-9
 Daily: 0-4-1

Big 4: 6-2-0-4
Evening Quinto: 4-8-1-9-7
Cash 5: 3-17-20-21-33

Great Plants
Great Gardens

- Hanging Baskets
- Annuals
- Perennials
- Ground Covers
- Trees & Shrubs
- Herbs
- Vines
- Mulches

We carry a broad palette of plants grown and displayed on 10 acres.

Quality That Produces Results
KUPERUS FARMSIDE GARDENS & FLORIST

19 Loomis Avenue, Sussex, NJ 07461
 1-800-231-7768
 www.farmsidegardens.com
CLOSED SUNDAYS

**Northern Delaware River Region, New Jersey All-Hazards Pre-Disaster Mitigation Plan
HMWG/Public Meeting – Agenda
July 15, 2010**

1. Introductions

- a. County representatives
- b. JLWA representatives

2. PowerPoint Presentation

3. Next Steps

- a. Plan Web posting
- b. Public review and comment
- c. Plan Adoption

4. Next Meetings

- a. August 25, 2010 – Steering Committee Meeting

5. Question and Answer forum

Sussex

HMWG - Public Meeting July 15 2010

Name	Organization
CHIEF William J. KARADOURAS JR	OGDENSBURG PD.
Steve Matz	Newton PD/OEM
Ed Hayes	Hampton OEM
JIM WILLIAMS	FRANKLIN O.E.M.
Roy Wherry	Vernon Twp
JEFF Lewis	Branchville OEM
James McDonald	Sussex Health/Health
Kathy Potter	GREEN Township
Robert Haffner	Hopatcong Borough
JOHN SWANSON	HOPATCONG BOROUGHS
ERIC SWYDOR	Sussex Co
TAKE LITTLE	SUSSEX BORO
Floyd Southard Jr	Sussex Boro
Jesse BRACE-Revak	Montague OEM
Raymond Rafferty	Byram Twp.
Alice Greep	Sussex City Planning
Joe Sabatini	Byram Twp.
Bob Schultz	Hardyston Twp / Sussex Borough
John Eskilson	County Administrator
Eskil S. Danielson	S.C.O.E.M.
MARK VOGA	SC OEM
JUAN MONOZ	JLWA
Pete Demer	JLWA

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Project Briefing

prepared for:
**Hazard Mitigation Planning Working Group
& Citizens of Sussex County**

prepared by:
**Sussex County
Office of Emergency Management**

July 15, 2010

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Sussex County and it's municipalities are working on a Plan to reduce risks from natural hazards.

This briefing contains:



- What is a hazard mitigation plan?
- What are the benefits and costs?
- Where are we in the planning process?
- Draft Hazard Mitigation Plan
- Next steps
- Questions, discussion, public comment



Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

**What is a
Hazard Mitigation Plan?**


What is "Hazard Mitigation"?

Any measures taken to reduce risks posed by hazards on a place and its population






What is "Hazard Mitigation"?



Hazard mitigation includes projects that limit the area hazards can impact like floodwalls, window shutters, or safe rooms ...

What is "Hazard Mitigation"?



...projects that move assets out of harm's way like elevating structures, or burying utilities...




What is "Hazard Mitigation"?

...**regulatory practices** like enacting or enforcing building codes, permits, or land use policies...



What is "Hazard Mitigation"?

... and **training / educational programs** for communities and local agencies.



What is a "Hazard Mitigation Plan"?

A plan that identifies projects to reduce a community's risk before disasters occur...

... which is different from an "Emergency Operations Plan" or "EOP"; a plan that identifies procedures to guide a community's response to an emergency or disaster after it happens

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

What are the Benefits and Costs of the Plan?

Benefits of Participating

- Every \$1 spent on mitigation projects saves \$4 in recovery costs*
- From 1955-2005, mitigation measures prevented 220 deaths and 4,700 injuries*
- For every eligible \$1 spent by local communities on FEMA-funded grant projects, the Federal government contributes \$3 to \$9
- Opportunities to improve local insurance ratings = lower flood insurance premiums

* Source: The Multi-hazard Mitigation Council, "Hazard Mitigation Saves," 2005 an independent review of FEMA mitigation activities

Costs of Not Participating

- Pre-disaster hazard mitigation grant programs (PDM, FMA, SRL, RFC) - *Not Eligible*
- Post-disaster mitigation grant programs (PA, HMGP) - *Not Eligible*

Continuing a cycle of destruction and increasingly costly recovery

Sussex County, New Jersey
All-Hazards Pre-Disaster Mitigation Plan

Where are we in the planning process?

Planning Process

- The Northern Delaware River Region formed with Hunterdon, Mercer, Sussex and Warren Counties
- A Hazard Mitigation Planning Steering Committee was assembled with representatives of all four counties
- Sussex County OEM secured a grant from FEMA to help fund the planning process for all four counties and selected Witt Associates as the project technical consultant

Planning Process

Sussex County OEM wanted broad participation so they solicited participation of all the municipalities in the County and organized a Hazard Mitigation Plan Working Group comprised of Local OEM Coordinators and representatives of Sussex County Departments

Planning Process

- Organize Resources
 - Build the Planning Team
 - Data/Document Requests and Review
- Assess Risks
 - Hazard Identification
 - Risk Assessment & Loss Estimation
- Develop a Mitigation Plan
 - Capability Assessment
 - Mitigation Strategies
- Implement the Plan and Monitor Progress

Planning Process

- Organize Resources
 - Build the Planning Team
 - Data/Document Requests and Review
- Assess Risks
 - Hazard Identification
 - Risk Assessment & Loss Estimation
- Develop a Mitigation Plan
 - Capability Assessment
 - Mitigation Strategies
- Implement the Plan and Monitor Progress

Planning Process

The Plan answers these two questions:

- What hazards pose the greatest risk to the County and its citizens?
- What are the most effective measures to reduce those risks?

Hazard Identification, Profiling and Prioritization

Eleven (11) natural and man-made hazards identified/profiled:

- Dam Failure
- Drought
- Earthquake/Geological
- Flood
- Hazardous Materials Release
- High Wind–Straight-Line Winds
- High Wind–Tornado
- Landslide (non-seismic)
- Severe Weather-Summer
- Severe Weather-Winter
- Wildfire

Hazard Identification, Profiling and Prioritization

Six (6) hazards were assigned priority for further study:

- **Dam Failure**
- Drought
- **Earthquake/Geological**
- **Flood**
- Hazardous Materials Release
- **High Wind–Straight-Line Winds**
- High Wind–Tornado
- Landslide (non-seismic)
- Severe Weather-Summer
- **Severe Weather-Winter**
- Wildfire

Hazard Risk Assessment

Risk was assessed in several ways:

- Exposure in predictable areas - such as **flood** (per FEMA FIRM maps)...

Hazard Risk Assessment

...or **dam failure** (per NJ DEP maps and data)...

Hazard Risk Assessment

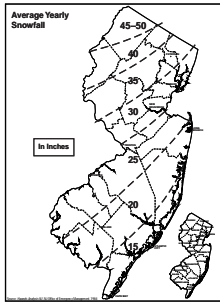
...or **wildfire**.

Hazard Risk Assessment

Patterns of past damages – such as repetitive **flood** damage claims under the National Flood Insurance Program (NFIP).

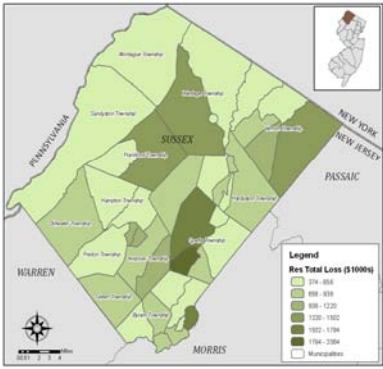
Hazard Risk Assessment

➤ Exposure to predictable events that can cause building failures – such as snow loads from **winter storms**...



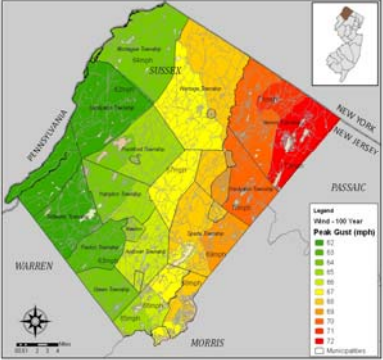
Hazard Risk Assessment

...OR **earthquakes**
...



Hazard Risk Assessment

...and **high winds**




Hazard Mitigation Plan Goals & Objectives

- Goal 1: Improve Education and Outreach
- Goal 2: Improve Data Collection, Use, Sharing
- Goal 3: Improve Capabilities, Coordination, and Opportunities
- Goal 4: Pursue Mitigation Opportunities

Mitigation Actions

Projects were identified per:

- Problem Areas from the Risk Assessment and as indicated by participating communities
- Repetitive Flood Loss Properties
- Critical Facilities



County Mitigation Actions

- Hazard mitigation measures identified for Sussex County OEM to implement include:
 - Conduct yearly workshops about FEMA hazard mitigation grant programs
 - Improve information available to participating municipalities regarding hazards and risk, especially for critical and sensitive facilities

Municipal Mitigation Actions

- Hazard mitigation measures identified for Participating Municipalities to implement include:
 - Property Acquisitions
 - Elevation or Relocation of Critical Facilities
 - Drainage Improvements
 - Bridge and Culvert Replacements
 - Debris Removal
 - Upgrading Utilities

Municipal Mitigation Actions

- Hazard mitigation measures identified for Participating Municipalities to implement also include:
 - Engineering studies to determine appropriate actions for specific problems (flood, dam failure, high wind, mine capping)
 - Provision of back-up power generation
 - Provision of early warning systems
 - Building code updates
 - Public awareness programs

Next Steps: Plan Review and Adoption

- Steering Committee Draft Plan available for review & comment
- Revisions, if necessary
- Submission to NJOEM/ FEMA RII in September
- Revisions, if necessary
- Participating jurisdictions adopt plan
- Participating jurisdictions implement the plan and monitor progress
- Five-year plan update cycle

Next Steps: Public Review & Comment

- Website posting:
 - <http://www.sussex.nj.us/Cit-e-Access/webpage.cfm?TID=7&TPID=11091>
- Comments are needed by August 6th to be included in the Plan submittal to NJOEM / FEMA

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Plan

For more information, contact:
Sussex County OEM



SheriCurrently: August 17, 2010 3:24 PM

Print this page Email this page

Search [input] Go

Page Navigation [dropdown]

Home

Email Alerts

County Directory

Board of Freeholders

County Administrator

Departments

County Clerk

Surrogate

Sheriff

County Tourism

Economic Development

Events Calendar

News & Information

Meeting Schedules

Service Requests

Contact Information

Municipalities

Form Center

Links

F.A.Q.s

Employment Opttys.

Public Transportation

Outgoing RSS Feeds

Recycling/Solid Waste

The Draft Plan

Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Planning Project

The Sussex County, New Jersey All-Hazards Pre-Disaster Mitigation Planning process is currently underway for the 24 participating municipalities. Public comment is solicited for the draft plan, which is linked below. Please direct comments to Sussex County Emergency Management Director Eskil "Skip" Danielson at edanielson@sussexcountysheriff.com by August 15. We thank you for your interest.

- [Pre-Disaster Mitigation General Information](#)
- [Planning Group Information](#)
- [Participating Jurisdictions](#)
- [Meeting Schedule](#)
- [The Draft Plan](#)
- [Useful Links](#)
- [Contact Information](#)



The Draft Plan

Choose a section below, or download the entire [draft plan](#) (23MB PDF).

[Cover Sheet and Table of Contents](#)

- [1. Introduction](#)
- [2. Planning Process](#)
- [3. Hazard Identification, Profiling and Prioritization](#)
- [4. Risk Assessment](#)
- [5. Capability Assessment](#)
- [6. Mitigation Action Plan](#)
- [7. Plan Monitoring and Maintenance](#)

Please direct comments to Sussex County Emergency Management Director Eskil "Skip" Danielson at edanielson@sussexcountysheriff.com by August 15.

Home | [Sussex County Email Newsletters](#) | [County Directory](#) | [Board of Freeholders](#) | [County Administrator](#) | [Departments](#) | [County Clerk](#) | [Surrogate Court](#) | [Sheriff's Office](#) | [County Tourism](#) | [Economic Development](#) | [Public Services & Events Calendar](#) | [News and Information](#) | [Meeting Schedules](#) | [Service Request Form](#) | [Contact Information](#) | [Municipalities](#) | [Form Center](#) | [Links](#) | [Frequently Asked Questions \(FAQ\)](#) | [Employment Opportunities](#) | [Sussex County Skylands Ride/Public Transportation](#) | [Outgoing RSS Feeds](#) | [Municipal Utilities Authority](#)

Copyright © 2009 Sussex County. All Rights Reserved.

Powered by **CIT-e-NET** LLC



[Print this page](#) [Email this page](#)

Search

- [Home](#)
- [Email Alerts](#)
- [County Directory](#)
- [Board of Freeholders](#)
- [County Administrator](#)
- [Departments](#)
- [County Clerk](#)
- [Surrogate](#)
- [Sheriff](#)
- [County Tourism](#)
- [Economic Development](#)
- [Events Calendar](#)
- [News & Information](#)
- [Meeting Schedules](#)
- [Service Requests](#)
- [Contact Information](#)
- [Municipalities](#)
- [Form Center](#)
- [Links](#)
- [F.A.Q.s](#)
- [Employment Oppty.s.](#)
- [Public Transportation](#)
- [Outgoing RSS Feeds](#)
- [Recycling/Solid Waste](#)

County Farm and Horse Show/New Jersey State Fair on any weekday. Click

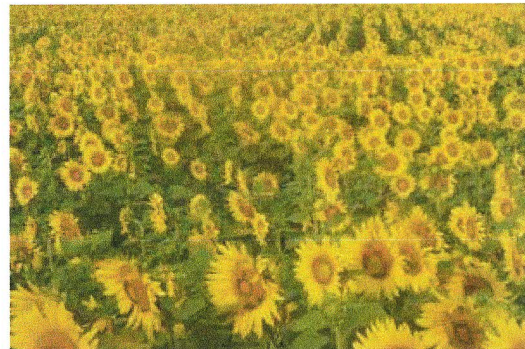
- [2010 Seasonal Fall Flu Clinics](#)
- [Bids Wanted: Ice Control Materials, Sewer Extension, Equipment and Software, Road Resurfacing,](#)
- [The Balance Center at the Sussex County Homestead To Offer Free Balance Screenings](#)
- [August is National Immunization Awareness Month](#)
- [Public Comment Solicited on Pre-Disaster Mitigation Draft Plan](#)
- ["Hometown Heroes" Homestead Family BBQ](#)
- [FREE TRAINING FOR VOLUNTEER MEDICARE COUNSELORS](#)
- [NJ State Fair Farmers Market](#)
- [Sparta High School Receives Champions for Charity Award](#)

[More News...](#)

NJ State Fair Farmers Market

Once again, it's Fair time and the Sussex County Farmers Market will be open for business in front of the greenhouse.

[Read More...](#)



- 08/13 [2010 NJ State Fair/Sussex County Farm & Horse Show](#)
- 08/13 [Artistic Ice Carver @ Main Library](#)
- 08/13 [Family Summer Reading Luau Party @ Main Library](#)
- 08/14 [2010 NJ State Fair/Sussex County Farm & Horse Show](#)
- 08/14 [Barbara and J.B. in Concert @ Sussex-Wantage Libra](#)
- 08/15 [2010 NJ State Fair/Sussex County Farm & Horse Show](#)
- 08/16 [The Sussex BARDS @ Main Library](#)

[More Events...](#)

Stay Informed: | [Subscribe to Our Email Newsletter](#) | [Get RSS Updates](#) | [Follow us on Twitter](#)

- [County Profile](#)

Board of Chosen Freeholders

- [Jeffrey M. Parrott](#)
Freeholder Director
- [Phillip R. Crabb](#)
Deputy Director
- [Parker Space](#)
- [Susan M. Zellman](#)
- [Richard A. Zeoli](#)

County Administrator

[John Eskilson](#)

Whether you are a County resident, a business person or a visitor to our great County, we urge you to take advantage of the many resources Sussex County has to offer. With our rolling hills and beautiful vistas, our farms, lakes, golf courses and charming villages and shopping areas, we're sure you'll find Sussex County is a wonderful place to live - or visit, work and raise a family.

C.3 Correspondence

On the following pages are copies of Sussex County OEM correspondence related to the development of the Plan.

- January 26, 2010 E-mail outlining the NDRR Steering Committee Kick-off Meeting
- April 13, 2010 E-mail to OEM Coordinators detailing plan data requirements
- April 13, 2010 Invitation to OEM Coordinators to join HMWG
- May 03, 2010 E-mail request with text for Public Notice publication
- May 03, 2010 E-mail to County Departments scheduling public meeting
- May 11, 2010 Press Release
- May 11, 2010 E-mail to Municipal OEM Coordinators announcing Capability Survey
- May 11, 2010 E-mail to Municipal OEM Coordinators announcing Mitigation Workshop
- May 19, 2010 E-mail requesting county meeting on critical facilities
- May 20, 2010 E-mail to County Departments results of public meeting
- May 28, 2010 E-mail to municipality concerning Mitigation Workshop
- June 04, 2010 E-mail to Municipal OEM Coordinators concerning Workshop participation
- June 04, 2010 E-mail to County Departments concerning workshop participation and draft documents
- June 04, 2010 E-mail to Municipal OEM Coordinators concerning Workshop participation
- July 04, 2010 E-mail to County Departments announcing public meeting
- June 04, 2010 E-mails concerning county mitigation actions review
-
- June 08, 2010 E-mail with County Mitigation Actions amendments
- June 18, 2010 E-mail to OEM Coordinators announcing a public meeting
- June 18, 2010 E-mail to County Departments announcing a public meeting
- June 28, 2010 E-mail delivering public meeting add proof
- July 08, 2010 E-mail coordinating Draft Plan distribution
- July 30, 2010 E-mail requesting review of plan documents
- July 30, 2010 E-mail to county officials reviewing public participation
- July 30, 2010 E-mail notifying adjacent jurisdictions of plan review opportunity
- August 04, 2010 E-mail soliciting review responses from county officials

DRAFT

This page is intentionally blank.

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: ["Frank Wheatley"](mailto:Frank.Wheatley); WillBDuffy@aol.com; ["Hunt, William"](mailto:Hunt.William); ["Laurene Fleming"](mailto:Laurene.Fleming); [Stuart Wallace](mailto:Stuart.Wallace); [Pete Dennen](mailto:Pete.Dennen); [Robert Ricker](mailto:Robert.Ricker); akrouse@co.warren.nj.us; [Ken Malette](mailto:Ken.Malette); dgallant@co.warren.nj.us
Cc: ["Robert Untig"](mailto:Robert.Untig); ["Mark Vogel"](mailto:Mark.Vogel); aconry@sussexcountysheriff.com; ["Kathy Lear"](mailto:Kathy.Lear); ["Robert Little"](mailto:Robert.Little); JEskilson@sussex.nj.us
Subject: Northern Delaware River Region (NDRR) PDM Steering Committee Meeting - January 26, 2010
Date: Tuesday, January 26, 2010 2:18:26 PM

All - The above cited regional steering committee meeting was held this morning in Warren Co. The attendees were as in "To..." above plus the undersigned.

Stuart Wallace of James Lee Witt Assoc. (JLW) went through an energetic agenda and proposed work schedule to complete the NDRR All Hazards Pre-Disaster Mitigation Plan within the eleven month time frame.

The following points were decided:

1. The result of the process will be four county plans, each encompassing their respective municipalities. This as opposed to a single regional plan. This may result in a longer FEMA review process but we are willing to tolerate that.

2. Each county will schedule a PDM Working Group and/or LEPC meeting soon for a JLW presentation. Attendees should include reps from planning, engineering, GIS, hospitals, co. school supt., utilities rep., etc.

3. Each county will then schedule a municipal stakeholder's meeting with presentation by JLW. These meetings should be with the EMCs and other municipal principles such as an administrator, manager or elected official. Eventually (May/June), each municipality will have a one-on-one with JLW with their respective planners, engineers, public works supervisors, etc. to look at specific PDM projects.

4. Each county will begin to locate and make available to JLW their Mitigation 2020, Critical Infrastructure, DFIRMS (flood) data, etc.

The next two NDRR Steering Committee meetings will be 2/10 @ 1000 at Hunterdon OEM and 3/10 @ 1000 back at Warren.

Stuart Wallace advised that we can get a PDF of the two handouts from today's meeting and you should see same soon.

Thank you all for coming.

Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Edanielson@sussexcountysheriff.com)
To: [Pete Dennen](mailto:PeterDennen@sussexcountysheriff.com)
Subject: FW: Recent Flood Events/Pre-Disaster Mitigation Planning Interface
Date: Tuesday, April 13, 2010 10:50:22 AM

-----Original Message-----

From: Eskil S. Danielson [<mailto:Edanielson@sussexcountysheriff.com>]
Sent: Wednesday, April 07, 2010 11:32 AM
To: 911tech@myway.com; 'Anthony Kozlowski'; 'Brace-Ravek'; Charlie Risdon; Dan Murphy; 'Ed Hayes'; 'Eric Danielson'; 'Eric Slater'; 'Geo Laoudis'; 'Hickerson'; Jake Little (jakelittle1@yahoo.com); 'jeff lewis'; 'John Richardson'; John Swanson; Joseph Konopinski (jkonopin@embarqmail.com); 'K Teets'; lafayetteoem@embarqmail.com; 'mike Fernald'; 'Nafis'; Ray Rafferty (rrafferty@byrampd.org); 'Rich Pumphery'; Rick Hughes; 'Roy Wherry'; 'Sid Crum'; Stan Dutkus; 'Wayne Anthony'; William P. O'Keefe (n2keo@ptd.net)
Subject: FW: Recent Flood Events/Pre-Disaster Mitigation Planning Interface

Subject: FW: Recent Flood Events/Pre-Disaster Mitigation Planning Interface

I apologize if some of you are receiving this for a second time. Our new Internet provider apparently has a maximum number of recipients on contact lists. We are trying to correct that. Skip

-----Original Message-----

From: Eskil S. Danielson [<mailto:Edanielson@sussexcountysheriff.com>]
Sent: Tuesday, April 06, 2010 11:49 AM
Subject: Recent Flood Events/Pre-Disaster Mitigation Planning Interface

All Municipalities/Sussex County - As you all know, Sussex County is leading a Pre-Disaster Mitigation Planning effort which is required by FEMA for future disaster funding in categories other than A and B. Our consultants are James Lee Witt Assoc. Our project manager from JLW is Peter Dennen. These efforts are being covered by a FEMA PDM planning grant and we are working closely with Warren, Hunterdon and Mercer Counties under that same grant.

Before the recent floods, I advised everyone to pay close attention to the flooding issues that may occur during the then predicted heavy rains. Although Sussex County did not reach the monetary threshold for Public Assistance Categories A & B in these recent events, parts of the state have been declared disaster areas (Morris and Passaic Co.s inter alia) and under the Stafford Act, New Jersey will receive not only recovery funding but also mitigation funding which goes into a statewide mitigation fund. This happens after every declared disaster and therefore even after the South Jersey Blizzards of earlier this year. By having our PDM Plans in place, it is possible that those funds will be open to us next year for projects identified during the PDM planning process.

Please adequately document the flooding issues from the recent storms for the JLW Assoc. representative (Peter Dennen) when he meets with each of your municipalities/county sometime in May or June. It will be of great assistance to him and to your municipality and Sussex County.

Please also look for the public information segment on the Sussex County Website soon.

Any questions, please contact me.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: wcramp@sussex.nj.us; DKunz@sussex.nj.us; "jhatzelis"; "Jim McDonald"; "Joseph Inga"; slosey@sussex.nj.us; ABrees@sussex.nj.us; ESnyder@sussex.nj.us; "Jeff Hamler (E-mail)"; JBiuso@sussex.nj.us
Cc: ieskilson@sussex.nj.us; "Aconry@Sussexcountysheriff.Com"; "mvogel"; "Robert E. Untig"; "virgil Rome"; Pete Dennen; "Hal Wirths"; deakman@sussex.nj.us
Subject: Sussex County Hazard Mitigation Working Group (HMWG) - Meeting May 18, 2010 1000 @
Date: Tuesday, April 13, 2010 1:49:15 PM

Welcome To The Sussex County Hazards Mitigation Working Group - As you will recall, on February 1, 2010 most of you were invited to attend a preliminary Pre-Disaster Mitigation Planning meeting at the Sheriff's Office. Let me review PDM Planning for you.

FEMA requires that all jurisdictions have an approved Pre-Disaster Mitigation Plan before a jurisdiction can be eligible for certain levels of post-disaster funding, specifically:

- Category C: Road systems and bridges
- Category D: Water control facilities
- Category E: Public buildings and contents
- Category F: Public utilities
- Category G: Parks, recreational, and other.

Having a PDM plan in place also makes jurisdictions eligible to apply for mitigation grants from funds allocated by the Stafford Act after every Presidentially Declared Disaster. The jurisdiction does not have to have been a jurisdiction affected by a specific disaster.

In order for Sussex County to develop a PDM plan, we have partnered with Warren, Hunterdon and Mercer Counties to procure an approximately \$580,000 FEMA grant to hire a consultant. Internationally known James Lee Witt Assoc. was hired and has begun work. You may have met our Senior Planner from Witt, Peter Dennen at the February meeting.

Pete has been working with each of the counties at an upper level to obtain previously compiled hazard mitigation data, not the least of which were the recently issued Delaware River Basin Commission Flood Mitigation Project and the Mitigation 20/20 Project from earlier this decade. Critical infrastructures are also being identified.

We have held a preliminary meeting with our municipal officials in this regard and they remain active partners.

Our task, as the SC HMWG, is to consider our hazards and to prioritize a County Level Hazards List based on our emergency and disaster experience over the past several years.

The hazards to be considered are:

- Dam Failure
- Drought
- Earthquake/Geological
- Flood
- Hazardous Materials Release
- High Wind-Straight-Line Winds
- High Wind - Tornado
- Severe Weather - Summer
- Severe Weather - Winter
- Landslide - non-seismic
- Wildfire

On Tuesday, May 18, 2010 at the Sussex County Freeholder's Meeting Room, One Spring Street, Newton, we will explore these hazards from a county level perspective. Each municipality will be doing so soon thereafter from their level. We have to identify the six or seven of these that we can identify as having experienced or are likely to experience as impacting Sussex County infrastructure, facilities, services, etc. Site specific information including GIS will have to be developed where mitigation efforts can be applied for should funding become available.

This meeting will have to be a publicly announced meeting and the public will hopefully participate to some degree.

Please acknowledge receipt of this invitation and advise as to your attendance and/or substitute representative both to me and to aconry@sussexcountysheriff.com.

Any questions, please contact me.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson@sussexcountysheriff.com)
To: 911tech@myway.com; "Brace-Ravek"; Charlie Risdon; "David J. "Jim" Williams"; "Ed Hayes"; "Eric Danielson"; "Eric Slater"; "Geo Laoudis"; "Hickerson"; Jake Little; "jeff lewis"; "John Richardson"; John Swanson; Joseph Konopinski; "K Teets"; lafayetteoem@embarqmail.com; "mike Fernald"; "Nafis"; Ray Rafferty; "Rich Pumphery"; Rick Hughes; "Roy Wherry"; "Sid Crum"; Stan Dutkus; "Wayne Anthony"; William P. O'Keefe
Cc: [Pete Dennen](mailto:Pete.Dennen@sussexcountysheriff.com); "mvogel"; aconry@sussexcountysheriff.com
Subject: FW: Notice of a Public Meeting
Date: Monday, May 03, 2010 1:14:59 PM

All Sussex County Municipal Coordinators - Please note the public meeting notice below. This is not required for you but may be helpful. This is to solicit community input.

Keep in mind, we will be setting up one-on-one sessions (15 to 30 min.) during daytime hours later this month. It is at these sessions that you will be able to bring municipality specific possible hazards mitigation sites to the James Lee Witt consultant.

Please check the Sheriff's Website for a complete rundown on the PDM Project. Please keep in mind that this is FEMA required and that each municipality will be able to be covered by the county plan provided there is participation. You do not want to have to do this on your own in order to retain post-disaster funding status. Skip

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Monday, May 03, 2010 12:17 PM
To: 'Robert E. Untig'; 'JEsilson@sussex.nj.us'; 'wcramp@sussex.nj.us'; 'ESnyder@sussex.nj.us'; 'jhatzelis'; 'slosey@sussex.nj.us'; 'ABrees@sussex.nj.us'; 'DKunz@sussex.nj.us'; 'Jeff Hamler (E-mail)'; 'Joseph Inga'; 'JBiuso@sussex.nj.us'; 'Jim McDonald'
Cc: 'mvogel'; 'aconry@sussexcountysheriff.com'; 'Pete Dennen'
Subject: FW: Notice of a Public Meeting

Hazards Mitigation Working Group - FYI. The required public notification of the within cited meeting. Skip

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Monday, May 03, 2010 12:09 PM
To: 'legals@njherald.com'
Cc: 'Pete Dennen'; 'mvogel'; 'aconry@sussexcountysheriff.com'; 'Robert E. Untig'; 'JEsilson@sussex.nj.us'
Subject: Notice of a Public Meeting

Please print the following as a public meeting notice. Feel free to send to the news area for their edification.

The Sussex County Sheriff's Office, Division of Emergency Management, Hazards Mitigation Working Group will meet on Tuesday, May 18, 2010, in the Freeholder's Meeting Room, One Spring St., Newton, N.J. at 10:00 a.m. At that time, representatives from Sussex County and James Lee Witt Assoc. will make a presentation on the Pre-Disaster Mitigation Planning Project underway in Sussex County. A Q & A will follow.

Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson@njherald.com)
To: legals@njherald.com
Cc: [Pete Dennen](mailto:Pete.Dennen@njherald.com); "mvogel"; aconry@sussexcountysheriff.com; "Robert E. Untig"; JEskilson@sussex.nj.us
Subject: Notice of a Public Meeting
Date: Monday, May 03, 2010 12:09:07 PM

Please print the following as a public meeting notice. Feel free to send to the news area for their edification.

The Sussex County Sheriff's Office, Division of Emergency Management, Hazards Mitigation Working Group will meet on Tuesday, May 18, 2010, in the Freeholder's Meeting Room, One Spring St., Newton, N.J. at 10:00 a.m. At that time, representatives from Sussex County and James Lee Witt Assoc. will make a presentation on the Pre-Disaster Mitigation Planning Project underway in Sussex County. A Q & A will follow.

Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: "[Robert E. Untig](mailto:Robert.E.Untig)"; JEskilson@sussex.nj.us; wcramp@sussex.nj.us; ESnyder@sussex.nj.us; "jhatzelis"; slosey@sussex.nj.us; ABrees@sussex.nj.us; DKunz@sussex.nj.us; "[Jeff Hamler \(E-mail\)](mailto:Jeff.Hamler)"; "[Joseph Inga](mailto:Joseph.Inga)"; JBiuso@sussex.nj.us; "[Jim McDonald](mailto:Jim.McDonald)"
Cc: "mvogel"; aconry@sussexcountysheriff.com; [Pete Dennen](mailto:Pete.Dennen)
Subject: FW: Notice of a Public Meeting
Date: Monday, May 03, 2010 12:17:07 PM

Hazards Mitigation Working Group - FYI. The required public notification of the within cited meeting. Skip

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Monday, May 03, 2010 12:09 PM
To: 'legals@njherald.com'
Cc: 'Pete Dennen'; 'mvogel'; 'aconry@sussexcountysheriff.com'; 'Robert E. Untig'; 'JEskilson@sussex.nj.us'
Subject: Notice of a Public Meeting

Please print the following as a public meeting notice. Feel free to send to the news area for their edification.

The Sussex County Sheriff's Office, Division of Emergency Management, Hazards Mitigation Working Group will meet on Tuesday, May 18, 2010, in the Freeholder's Meeting Room, One Spring St., Newton, N.J. at 10:00 a.m. At that time, representatives from Sussex County and James Lee Witt Assoc. will make a presentation on the Pre-Disaster Mitigation Planning Project underway in Sussex County. A Q & A will follow.

Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

May 11, 2010

FOR IMMEDIATE RELEASE

Northern Delaware River Region communities planning for future disasters

Federal emergency management grant jumpstarts initiative

Newton – The Offices of Emergency Management of Sussex, Warren, Hunterdon and Mercer counties, working jointly, have begun developing Hazard Mitigation Plans for the four-county Northern Delaware River Region and its 85 municipalities.

“We are partnering with our sister counties to develop comprehensive Pre-Disaster Mitigation Plans to bring all of our municipalities in compliance with Federal Emergency Management Agency requirements. PDM plans are a requirement for future FEMA funding in certain categories,” said Eskil S. “Skip” Danielson, Sussex County Emergency Management Director and the project lead for the Northern Delaware River Region.

The main natural hazard in the region is flooding, but other potential hazards will also be analyzed, such as windstorms, hazardous material releases, dam failure, wildfires and severe winter weather. The Hazard Mitigation Plans will determine what public and private property is at risk to these hazards, and propose ways to eliminate or reduce – in other words, to “mitigate” – that risk. An important part of these plans will be identifying projects that are eligible for federal funding. The creation of these plans is also required for the counties and their participating municipalities to be eligible for future mitigation funding from FEMA.

“Having pre-disaster mitigation plans will lead to reduced exposure, a wiser use of public funds, identification of effective projects, strategic pathways to getting them done and better integration of hazard mitigation into land use planning,” according to Peter Dennen, the project manager for James Lee Witt Associates, the nationally recognized consultant organization that has been hired to conduct the planning effort.

The Federal Emergency Management Agency (FEMA) awarded the four counties a grant to support development of the plan. The region is using the money to hire James Lee Witt Associates to help develop the counties’ plans in accordance with state and federal standards. However, the counties and their municipalities will contribute their time and expertise in making sure the plans address the issues that are most important to the counties’ residents and property owners.

A series of public meetings will be part of the plan development process, both to solicit public comment and to present the draft plan to residents and local officials. The first of these meetings will be held at the Sussex County Freeholder’s Meeting Room, One Spring Street, Newton on Tuesday, May 18, 2010 at 10:00 a.m. For more information about the Northern Delaware River Region’s Hazard Mitigation Plans, go to www.sussexcountysheriff.com.

From: [Eskil S. Danielson](mailto:eskil.s.danielson@sussexcountynj.gov)
To: Pete Dennen; ["Bill Hickerson"](mailto:Bill Hickerson); ["Bob Klein"](mailto:Bob Klein); ["Chief John Swanson"](mailto:Chief John Swanson); ["Chief Ray Rafferty"](mailto:Chief Ray Rafferty); ["Chief Roy Wherry"](mailto:Chief Roy Wherry); ["Dave Coss"](mailto:Dave Coss); ["Ed Hayes"](mailto:Ed Hayes); ["Eric Danielson"](mailto:Eric Danielson); ["Eric Slater"](mailto:Eric Slater); ["Jake Little"](mailto:Jake Little); ["Jeff Lewis"](mailto:Jeff Lewis); ["Jim Williams"](mailto:Jim Williams); ["John Richardson Sr"](mailto:John Richardson Sr); ["Joseph Konopinski"](mailto:Joseph Konopinski); ["Ken Teets"](mailto:Ken Teets); ["Lt Jeff Nafis"](mailto:Lt Jeff Nafis); ["Mike Fernald"](mailto:Mike Fernald); ["Rich Pumphrey"](mailto:Rich Pumphrey); ["Richard Hughes"](mailto:Richard Hughes); ["Scott Danielson"](mailto:Scott Danielson); ["Sid Crum"](mailto:Sid Crum); ["Stanley Dutkus"](mailto:Stanley Dutkus); ["Wayne Anothony"](mailto:Wayne Anothony); ["William O'Keefe"](mailto:William O'Keefe)
Cc: JEskilson@sussex.nj.us; ["Robert E. Untig"](mailto:Robert E. Untig); ["mvogel"](mailto:mvogel); aconry@sussexcountysheriff.com
Subject: RE: County Hazard Mitigation Plan Capability Survey
Date: Tuesday, May 11, 2010 10:53:46 AM

All – Please note that in addition to the below on-line survey, we will be scheduling one-hour one-on-one sessions with all Sussex County municipalities on June 1 and 2, 2010. Your municipal administrators, planners, engineers, etc. should participate in these sessions. I will be contacting them in order for them to make an appointment. They should be prepared to bring along information on potential sites for hazard mitigation projects. Skip

From: Pete Dennen [<mailto:pdennen@wittassociates.com>]
Sent: Monday, May 10, 2010 11:00 AM
Subject: County Hazard Mitigation Plan Capability Survey

As discussed at the 02.09.2010 OEM Roll-out Meeting, James Lee Witt Associates is assisting your County OEM in the development of an All-Hazards Pre-Disaster Mitigation Plan. One of the components of an effective Plan is to assess the capabilities of the county organization as well as the local municipalities regarding the ability to plan and implement hazard mitigation projects. To facilitate this evaluation, Witt Associates has developed an on-line Capability Assessment Survey that we need each community to complete.

The survey is located on a site called "Survey Monkey". You will find below the website URL. Please take the time to access and complete the survey. This survey should only take about 20 minutes to complete. As the timeline for completing the Plan is compressed, we are asking that all surveys be completed no later than Thursday, May 27th, 2010.

If you have any questions or problems accessing this survey, do not hesitate to contact me at 609-922-5593 or pdennen@wittassociates.com.

Thank you for your time and diligence.

Survey Monkey site for **Sussex:** <http://www.surveymonkey.com/s/HDZZMRN>

*Peter J Dennen
Senior Planner
James Lee Witt Associates
310 West Center Street
Woodbury, NJ, 08096
609-922-5593
pdennen@wittassociates.com*

From: [Eskil S. Danielson](mailto:Edanielson@SussexCountySheriff.com)
To: ["Andover Township"](mailto:pdrouin@embarqmail.com); pdrouin@embarqmail.com; sussexadmin@embarqmail.com; [Richard Stewart](mailto:Richard.Stewart@SussexCountySheriff.com)
Cc: [Pete Dennen](mailto:Pete.Dennen@SussexCountySheriff.com); ["mvogel"](mailto:mvogel@SussexCountySheriff.com)
Subject: FW: Pre-Disaster Mitigation Municipality Specific Sessions.
Date: Tuesday, May 11, 2010 12:07:28 PM
Attachments: [PDMpressrelease.510.doc](#)

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Tuesday, May 11, 2010 11:47 AM
Cc: 'JEsilson@sussex.nj.us'; 'Pete Dennen';
'aconry@sussexcountysheriff.com'; 'mvogel'
Subject: Pre-Disaster Mitigation Municipality Specific Sessions.

All - In 2007, all Sussex County municipalities signed on to participate in the FEMA- required Pre-Disaster Mitigation Planning Project. The federally-funded consultant firm, James Lee Witt Assoc., has been gathering information from each municipality since February when we had our first meeting with representatives of each of the municipalities. It is now time to get down to the nitty-gritty.

Peter Dennen, project manager for the Northern Delaware River Region PDM Project, has set Tuesday June 1 and Wednesday June 2, 2010 to meet one-on-one with all Sussex County municipalities to determine what projects each community would like to place on the table for planning purposes.

Many of the projects will be flood prone areas-related such as dams, bridges, culverts, erosion areas, etc. However, you may have a hazardous materials site nearby or be concerned with protection of improved properties from wildland fires.

Please see the attached press release on the public meeting set for Tuesday, May 18, 2010. This would be good for those who missed the earlier meetings but is not necessary for most municipalities. You can go on the www.sussexcountysheriff.com website for further information and/or refer your citizenry to the website.

Who should attend the June municipality-specific meeting? We would suggest some combination of your planner, engineer, EMC, Planning Bd rep., DPW supervisor, fire chief, police chief, etc.
What should they bring? They should bring experiential data on past events that have occurred and could be mitigated against reoccurrence if and when funds could be obtained. (Note: The March 2010 flooding information should be readily available.

How do we schedule a meeting with James Lee Witt? There will be two JLW reps here each day. Call 973-579-0380 ext. 2201 and make an appointment with Amy Conry. The appointments will be for one hour/two municipalities at a time and will run from 9:00 a.m. through 10:00 p.m. If you share services (planner, engineer, etc.) with another municipality, you should try to schedule the appointments simultaneously.

Where? The one-on-one sessions will take place in the Sussex County Sheriff's Office at 39 High Street.

Please remember, this is a FEMA requirement and we are among the last

communities in the state to undergo this process.

Any questions, please call me. Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Edanielson@sussex.nj.us)
To: ABrees@sussex.nj.us; [Pete Dennen](mailto:PeteDennen@sussex.nj.us)
Cc: JBiuoso@sussex.nj.us; wcramp@sussex.nj.us
Subject: RE: County Facilities for Hazard Mitigation
Date: Wednesday, May 19, 2010 7:05:00 PM

Gentlemen – We had the PDM meeting yesterday with the rep from James Lee Witt. This is from Alice about flood mitigation issues she has found on the FPMs. We really need to get together and address ALL HAZARDS with regard to county facilities. One main issue is of course flooding and what can be done to mitigate against damage to county buildings, bridges, culverts, etc. Can you meet with me on the 20th or 21st? We have to meet with the James Lee Witt people on June 1st or 2nd. Skip

From: ABrees@sussex.nj.us [mailto:ABrees@sussex.nj.us]
Sent: Wednesday, May 19, 2010 9:28 AM
To: pdennen@wittassociates.com; edanielson@sussexcountysheriff.com
Subject: County Facilities for Hazard Mitigation

Thanks for the informative session yesterday, and I just had some thoughts about County facilities. From FEMA flood maps, it appears that the Frankford Main Library, Homestead nursing home and other County building there are partially in Zone A flood area. Also, the Vernon library is in a flood area according to FEMA map. Please check with County Engineer and Facilities Manager, it seems there are issues to be addressed there, I have no idea what is currently in place relating to flood mitigation, or what procedures are in place for nursing home residents in event of a flood. Thanks,

*Alice Brees, PP, AICP
Principal Planner
Sussex County Planning Div.*

From: [Eskil S. Danielson](mailto:Edanielson@sussexcountysheriff.com)
To: edanielson@sussexcountysheriff.com; wcramp@sussex.nj.us; DKunz@sussex.nj.us; "jhatzelis"; "Jim McDonald"; "Joseph Inga"; slosey@sussex.nj.us; ABrees@sussex.nj.us; ESnyder@sussex.nj.us; "Jeff Hamler (E-mail)"; JBiuso@sussex.nj.us
Cc: jeskilson@sussex.nj.us; "Aconry@Sussexcountysheriff.Com"; "mvogel"; "Robert E. Untig"; "virgil Rome"; Pete Dennen; "Hal Wirths"; deakman@sussex.nj.us
Subject: RE: Sussex County Hazard Mitigation Working Group (HMWG) - Meeting May 18, 2010 1000 @ One Spring St.
Date: Thursday, May 20, 2010 11:38:41 AM

All - We held the below mentioned publicly advertised meeting on Tuesday with Peter Dennen and Richard Look of James Lee Witt Assoc. I want to thank those of you who were able to attend or were represented.

We have a need to prioritize our ALL HAZARDS Pre-Disaster Mitigation Planning efforts over the next couple of weeks.

The reps from JLW are scheduling one hour sessions on June 1st and 2nd with the municipalities. We will have to schedule a Sussex County government agencies meeting with them very soon thereafter.

With regard to county facilities (including bridges, buildings, culverts) and PDM, we should be looking at the following risks: high winds, flooding, winter storms/snow load on buildings/alternative power/clearing on-site power lines, threat of wildfire to county facilities, hazardous materials storage and drought.

Please remember that having a PDM plan is not an option - it is a FEMA requirement.

It might help if persons on the HMWG take a look at the municipal survey on surveymonkey.com/s/XK3BY33. We do not have to do it as a county but it will give you an idea about what the municipalities are being asked for in addition to their risk assessments and projected mitigation efforts should funding become available.

Any questions or a need for a one-on-one with you and me, please call me.

Skip

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Tuesday, April 13, 2010 1:49 PM
To: 'wcramp@sussex.nj.us'; 'DKunz@sussex.nj.us'; 'jhatzelis'; 'Jim McDonald'; 'Joseph Inga'; 'slosey@sussex.nj.us'; 'ABrees@sussex.nj.us'; 'ESnyder@sussex.nj.us'; 'Jeff Hamler (E-mail)'; 'JBiuso@sussex.nj.us'
Cc: 'jeskilson@sussex.nj.us'; 'Aconry@Sussexcountysheriff.Com'; 'mvogel'; 'Robert E. Untig'; 'virgil Rome'; 'Pete Dennen'; 'Hal Wirths'; 'deakman@sussex.nj.us'
Subject: Sussex County Hazard Mitigation Working Group (HMWG) - Meeting May 18, 2010 1000 @

Welcome To The Sussex County Hazards Mitigation Working Group - As you will recall, on February 1, 2010 most of you were invited to attend a preliminary Pre-Disaster Mitigation Planning meeting at the Sheriff's Office. Let me review PDM Planning for you.

FEMA requires that all jurisdictions have an approved Pre-Disaster Mitigation Plan before a jurisdiction can be eligible for certain levels of post-disaster funding, specifically:

- Category C: Road systems and bridges
- Category D: Water control facilities
- Category E: Public buildings and contents
- Category F: Public utilities
- Category G: Parks, recreational, and other.

Having a PDM plan in place also makes jurisdictions eligible to apply for mitigation grants from funds allocated by the Stafford Act after every Presidentially Declared Disaster. The jurisdiction does not have to have been a jurisdiction affected by a specific disaster.

In order for Sussex County to develop a PDM plan, we have partnered with Warren, Hunterdon and Mercer Counties to procure an approximately \$580,000 FEMA grant to hire a consultant. Internationally known James Lee Witt Assoc. was hired and has begun work. You may have met our Senior Planner from Witt, Peter Dennen at the February meeting.

Pete has been working with each of the counties at an upper level to obtain previously compiled hazard mitigation data, not the least of which were the recently issued Delaware River Basin Commission Flood Mitigation Project and the Mitigation 20/20 Project from earlier this decade. Critical infrastructures are also being identified.

We have held a preliminary meeting with our municipal officials in this regard and they remain active partners.

Our task, as the SC HMWG, is to consider our hazards and to prioritize a County Level Hazards List based on our emergency and disaster experience over the past several years.

The hazards to be considered are:

- Dam Failure
- Drought
- Earthquake/Geological
- Flood
- Hazardous Materials Release
- High Wind-Straight-Line Winds
- High Wind - Tornado
- Severe Weather - Summer
- Severe Weather - Winter
- Landslide - non-seismic
- Wildfire

On Tuesday, May 18, 2010 at the Sussex County Freeholder's Meeting Room, One Spring Street, Newton, we will explore these hazards from a county level perspective. Each municipality will be doing so soon thereafter from their level. We have to identify the six or seven of these that we can identify as having experienced or are likely to experience as impacting Sussex County infrastructure, facilities, services, etc. Site specific information including GIS will have to be developed where mitigation efforts can be applied for should funding become available.

This meeting will have to be a publicly announced meeting and the public will hopefully participate to some degree.

Please acknowledge receipt of this invitation and advise as to your attendance and/or substitute representative both to me and to aconry@sussexcountysheriff.com.

Any questions, please contact me.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860

Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: [Pete Dennen](mailto:Pete.Dennen)
Cc: "[Amy Conry](mailto:Amy.Conry)"; [Rick Hughes](mailto:Rick.Hughes); "mvogel"
Subject: RE: Lafayette Twp. PDM
Date: Friday, May 28, 2010 12:59:43 PM

11 am on 6/1 is not available. 11 am on 6/2 is available for Lafayette. Skip

-----Original Message-----

From: Pete Dennen [<mailto:pdennen@wittassociates.com>]
Sent: Friday, May 28, 2010 12:49 PM
To: edanielson@sussexcountysheriff.com
Cc: Amy Conry
Subject: RE: Lafayette Twp. PDM

Skip,
This looks fine.

Could your office please send out a reminder to review all of the materials sent out and BRING A PRINTED COPY with them to the interview.

Thanks much.
Pete

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Friday, May 28, 2010 12:46 PM
To: Pete Dennen
Cc: Rick Hughes; aconry@sussexcountysheriff.com; 'mvogel'
Subject: Lafayette Twp. PDM

Pete - I am copying Lafayette Twp. OEM Coordinator/Committeeman Rick Hughes on this memo. Rick and I spoke yesterday and I am dropping some information off to the municipal building in about an hour. He can reach me later today or over the weekend on my cell - below.

We have the following time slots open for Lafayette's One-on-One session with you.

6/1 - 11 am, 1, 2, 3 and 4 pm.
6/2 - 9 am, 4 pm

Please remember that we are having our OEM quarterly meeting on June 2nd at 1900 at the Andover Twp. Fire Dept., Limecrest Road, Andover Twp. All appointments should be completed by then.

I will be leaving the area after I meet at Lafayette. I will be able to be reached by cell phone. Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](#)
To: "[Bill Hickerson](#)"; "[Bob Klein](#)"; "[Chief John Swanson](#)"; "[Chief Ray Rafferty](#)"; "[Chief Roy Wherry](#)"; "[Dave Coss](#)"; "[Ed Hayes](#)"; "[Eric Danielson](#)"; "[Eric Slater](#)"; "[Jake Little](#)"; "[Jeff Lewis](#)"; "[Jim Williams](#)"; "[Joe K](#)"; "[John Richardson Sr](#)"; "[Kenneth Teets](#)"; "[Lt. Jeff Nafis](#)"; "[MICHAEL FERNALD](#)"; "[Rich Pumphrey](#)"; "[Richard Hughes](#)"; "[Scott Danielson](#)"; scrumjr@embarqmail.com; "[Stanley Dutkus](#)"; "[Wayne Anthony](#)"; "[William O'Keefe](#)"
Cc: JEskilson@sussex.nj.us; "[Robert E. Untig](#)"; mvogel@sussexcountysheriff.com; "[Amy Conry](#)"; [Pete Dennen](#)
Subject: PDM Participation: Thank you!
Date: Friday, June 04, 2010 11:16:51 AM

All - Thank you for taking time out of your busy schedules to be a part of the PDM project and the one-on-one sessions held earlier this week. I am happy to report that all 24 municipalities participated and I believe walked away with a clear understanding of the potential projects they can strive to accomplish once the PDM plan is approved by NJ and FEMA. Please remember that your municipalities are not committed to any financial outlays unless and until you apply for funding. All decisions to go forward with any projects are local.
THANK YOU!!!! Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](#)
To: "[Catherine Steinel](#)"; "[David Troast](#)"; "[Joe Sabatini](#)"; "[Marianne Smith](#)"
Cc: JEskilson@sussex.nj.us; "[Robert E. Untig](#)"; [Pete Dennen](#)
Subject: PDM Project Participation
Date: Friday, June 04, 2010 11:02:35 AM

All - I just want to thank the township managers and administrators for participating in the PDM one-on-one sessions this week. I know that it took time out of your busy schedules, but I hope that it will be worthwhile in the long run.

This office will be receiving and distributing draft documents from now until about September when the first draft will be submitted by JLW to the state for their endorsement and subsequent approval. The target date for final approval is still January 2011.

Again, thank you. Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](#)
To: "[Catherine Steinel](#)"; "[David Troast](#)"; "[Joe Sabatini](#)"; "[Marianne Smith](#)"
Cc: JEskilson@sussex.nj.us; "[Robert E. Untig](#)"; [Pete Dennen](#)
Subject: PDM Project Participation
Date: Friday, June 04, 2010 11:02:35 AM

All - I just want to thank the township managers and administrators for participating in the PDM one-on-one sessions this week. I know that it took time out of your busy schedules, but I hope that it will be worthwhile in the long run.

This office will be receiving and distributing draft documents from now until about September when the first draft will be submitted by JLW to the state for their endorsement and subsequent approval. The target date for final approval is still January 2011.

Again, thank you. Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: [Pete Dennen](mailto:Pete.Dennen)
Subject: FW: Pre-Disaster Mitigation Action - REVISIONS
Date: Friday, June 04, 2010 12:32:12 PM

Pete - I have communicated with County Administrator John Eskilson and he agrees with my memo. Please delete Sussex County Project #4 as it has been completed. Please add a stream corridor and hydrology study for Neldon's Brook at CR-622/Bridge S-25 in Stillwater Twp. Thanks. Skip

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Friday, June 04, 2010 10:54 AM
To: 'WCcramp@sussex.nj.us'; 'pdennen@wittassociates.com'
Cc: 'FMartone@sussex.nj.us'; 'JRisko@sussex.nj.us';
'BKoppenaal@sussex.nj.us'; 'SDelmar@sussex.nj.us'; 'JEskilson@sussex.nj.us'
Subject: RE: Pre-Disaster Mitigation Action - REVISIONS

All - Bullet points (b/p) one thru four are not a matter of concern for the PDM Planning process unless or until bridge repair or extensive scouring would be necessary.

With regard to b/p five, if any project rose to a \$100K level, wouldn't it be great to be able to apply for a grant for 75% of the cost?

With regard to b/p six, this is exactly the type of project that PDM monies can be applied for at a 75%/25% funding level once we have a PDM plan in place.

With regard to written point seven on scouring, we will delete that potential study project.

With regard to written point eight, the Vernon Crossing issue was strongly raised by Vernon Township officials as critical to public safety (police, fire and EMS) agency responses. Dove-tailed with similar concerns for Maple Grange Road, it would appear that we have to do due diligence and do a study that would indeed determine that "there is no viable cost effective solution" to this public safety issue. I would strongly oppose removing the Vernon Crossing study from the project list.

Stillwater Township officials pointed out issues with regard to Neldon's Brook in the vicinity of CR-622/Bridge S-25. By copy of this e-mail, I will ask Peter Dennen of James Lee Witt Assoc. to include a stream corridor and hydrology study for the location.

As has been clearly stated in all of the PDM meetings to date, the project lists are "wish lists" and are not etched in stone.

THERE IS NO COMMITMENT IN ANY WAY OF COUNTY FUNDS TO PROJECTS AT THIS TIME AND THERE CAN NEVER BE ANY COMMITMENT UNLESS AND UNTIL THE COUNTY APPLIES FOR FUNDING. HOWEVER, SUSSEX COUNTY WILL NOT BE ELIGIBLE FOR A COUPLE OF LAYERS OF FUNDING UNLESS AND UNTIL WE HAVE AN APPROVED PDM PLAN CERTIFIED BY FEMA.

I want to thank everyone for their continued support of this effort.

I await your responses to this memo. Skip Danielson

-----Original Message-----

From: WCcramp@sussex.nj.us [<mailto:WCcramp@sussex.nj.us>]
Sent: Thursday, June 03, 2010 5:12 PM
To: pdennen@wittassociates.com; edanielson@sussexcountysheriff.com
Cc: FMartone@sussex.nj.us; JRisko@sussex.nj.us; BKoppenaal@sussex.nj.us;
SDelmar@sussex.nj.us; JEskilson@sussex.nj.us
Subject: Pre-Disaster Mitigation Action - REVISIONS

Gentlemen,

Based on a review of available information I would note the following:

- * County Bridges with spans over 20-ft are inspected under the federally mandated National Bridge Inspection Standards (NBIS)
- * County Bridges with spans 20-ft and under are inspected under the NJ State run Minor Bridge Inspection Standards (MBIS)
- * Since the NY State Thruway Schoharie Creek Bridge over the Schoharie Creek collapsed on April 5, 1987 bridges have been subjected to Scour Evaluation Program
- * County Bridges identified as "scour critical" have been studied and are now included a required Sussex County monitoring program by our staff.
- * Annually, the County has an existing program to retrofit or upgrade existing riprap scour counter measures to those bridges (at a cost of roughly \$2-3k per bridge)
- * Due to previous reports of advanced scour with partially undermined foundations at the Roy Road Bridge X-01, the County hired an outside Contractor who completed \$100k+ of scour remediations at this bridge last year.

There is neither a need nor would it make sense to spend \$100k for Scour Remediation Study when \$3k of riprap per County Bridge gets the job done.

With regard to flooding at the Vernon Crossing, there is no viable cost-effective solution to rectify this situation given the current environmental constraints.

Therefore, as County Engineer it is requested you do not include any bridge scour remediation studies or Hydrology study projects for the Vernon Crossing in the proposed Mitigation Actions Plan.

In retrospect, Chief Engineer Bill Koppenaal did point out one project site suitable for possible Mitigation Action as follows:

Stream Corridor Study for Neldons Brook in the vicinity of CR-622 Bridge S-25 adjacent to Swartswood Lake in Stillwater, NJ. There have been repeated reports of flooding affecting the traveling public, buildings including dwellings as well as local police, fire & EMS operations at this location.

It should be noted that the listing of this possible project should in no way be construed as a commitment by the Freeholders to provide funds for this project which would require separate action by the Board.

Please call me if you have any questions or require further information.

Walter

Walter H. Cramp, P.E.

Administrator, Department of Engineering & Planning/Sussex County Engineer
Sussex County Administrative Center One Spring Street Newton, NJ 07860

Office: 973-579-0430

Fax: 973-579-0444

e-mail: WCramp@sussex.nj.us

From: Martone, Frank

Sent: Thursday, June 03, 2010 10:40 AM

To: Cramp, Walter; Risko, John; Koppenaal, Bill; Delmar, Susan

Subject: Pre-Disaster Mitigation Action

The Mitigation Disaster meeting was held on 6/2/10 at the Sheriff's office conference room.

From: [Eskil S. Danielson](#)
To: [Pete Dennen](#)
Cc: WCramp@sussex.nj.us
Subject: Sussex County PDM Projects - Amendments Thereto
Date: Tuesday, June 08, 2010 11:26:35 AM

Pete - As per County Engineering, please do the following:

Delete Projects 1 - 5. Engineering feels that scouring is within their budget capacity.

Retain Vernon Crossing Project #6. - new #1.

Add the Neldon's Brook Stream Corridor Study project as County Engineering Project #2.

Change County "Engineering" Projects 7 thru 9 to County "Facilities" Projects. They become Project #s 3 thru 5.

Thank you. Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](#)
To: ["Andover Borough"](#); ["Andover Township"](#); ["Branchville Borough"](#); ["Byram Township"](#); ["Frankford Township"](#); ["Franklin Borough"](#); ["Fredon Township"](#); ["Green Township"](#); ["Hamburg Borough"](#); ["Hampton Township"](#); ["Hardyston Township"](#); ["Hopatcong Borough"](#); ["Lafayette Township"](#); ["Montague Township"](#); ["Ogdensburg Borough"](#); ["Richard Stewart"](#); ["Sandyston & Walpack Township"](#); ["Sparta Township"](#); ["Stillwater Township"](#); ["Sussex Borough"](#); ["Town of Newton"](#); ["Vernon Twp."](#); ["Wantage Township"](#)
Cc: [Pete Dennen](#); ["Amy Conry"](#); ["mvogel"](#)
Subject: FW: PDM Draft Plan Presentation - July 15, 2010 - 10:00 a.m. - Freeholder's Meeting Room
Date: Friday, June 18, 2010 11:38:58 AM

All - Earlier this month, all 24 Sussex County municipalities participated in the PDM project identification meetings along with county officials. This was a milestone for the PDM project. This office is reviewing draft sections of the plan on a regular basis.

As municipal clerks/administrators, you are especially invited to attend a publicly advertised meeting on the Draft PDM Plan for Sussex County on Thursday, July 15, 2010 at 10:00 a.m. in the Freeholder's Meeting Room. Stuart Wallace and Peter Dennen of James Lee Witt Assoc. will present the draft plan and it will be made available at that time. There will be a comment period to follow. The target for having the plan at the state is on or about September 1, 2010.

Please make every effort to attend or be appropriately represented. Please RSVP to Amy Conry at aconry@sussexcountysheriff.com. Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: JEskilson@sussex.nj.us; JBiuso@sussex.nj.us; WCramp@sussex.nj.us; JMcDonald@sussex.nj.us; ESnyder@sussex.nj.us; ABrees@sussex.nj.us; "Jeff Hamler (E-mail)"; "Joseph Inga"; FMartone@sussex.nj.us
Cc: "Robert E. Untig"; "mvogel"; "Amy Conry"; EMorgan@sussex.nj.us; Pete Dennen; jparrott@embarqmail.com
Subject: PDM Draft Plan Presentation - July 15, 2010 - 10:00 a.m. - Freeholder's Meeting Room
Date: Friday, June 18, 2010 11:32:31 AM

All - Earlier this month, all 24 Sussex County municipalities participated in the PDM project identification meetings along with county officials. This was a milestone for the PDM project. This office is reviewing draft sections of the plan on a regular basis.

As members of the Sussex County Pre-Disaster Mitigation Working Group, you are especially invited to attend a publicly advertised meeting on the Draft PDM Plan for Sussex County on Thursday, July 15, 2010 at 10:00 a.m. in the Freeholder's Meeting Room. Stuart Wallace and Peter Dennen of James Lee Witt Assoc. will present the draft plan and it will be made available at that time. There will be a comment period to follow. The target for having the plan at the state is on or about September 1, 2010.

Please make every effort to attend or be appropriately represented. Please RSVP to Amy Conry at aconry@sussexcountysheriff.com. Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: ["Annamarie Heverly"](mailto:Annamarie.Heverly)
Cc: ["Amy Conry"](mailto:Amy.Conry); mvogel@sussexcountysheriff.com; [Pete Dennen](mailto:Pete.Dennen)
Subject: RE: Ad proof for DIVISION OF EMERGENCY MANAGEME is ready
Date: Monday, June 28, 2010 10:50:22 AM

-----Original Message-----

From: Annamarie Heverly [<mailto:aheverly@njherald.com>]
Sent: Tuesday, June 22, 2010 3:59 PM
To: edanielson@sussexcountysheriff.com
Subject: FW: Ad proof for DIVISION OF EMERGENCY MANAGEME is ready

Hello, please find the ad for 7/7. Thank you

--

AnnaMarie Heverly
Account Executive
The New Jersey Herald
2 Spring St.
Newton, NJ 07860
973-383-1500 ext. 215
aheverly@njherald.com

----- Forwarded Message

From: "adcomp@njherald.com" <adcomp@njherald.com>
Reply-To: "adcomp@njherald.com" <adcomp@njherald.com>
Date: 22 Jun 2010 13:27:43 -0500
To: <aheverly@njherald.com>
Subject: Ad proof for DIVISION OF EMERGENCY MANAGEME is ready

Dear AnnaMarie Heverly,

Your ad proof 00297245 for customer DIVISION OF EMERGENCY MANAGEME is ready.
Please review copy and contact Creative staff for revisions.

----- End of Forwarded Message

I've attached the Mitigation Action Plan for Engineering that resulted from this meeting. We focused on the Bridge Sour Evaluation Program and selected 5, of the 32 critical, bridges as a plan of action (items 1 - 5). Item 6 was added for a Hydrology Study for Flow Impact at Vernon Crossing.

Please review and let me know if the 5 bridges I've selected should be changed. Peter Dennen asked that any changes be submitted to him ASAP.

Best Regards:

Frank Martone
Engineering Aide
Sussex County Division of Engineering
(973) 579-0430

<<100612 DOC SC Div Eng Mitigation Actions.pdf>>

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: edanielson@sussexcountysheriff.com; JEskilson@sussex.nj.us; JBiuso@sussex.nj.us; WCramp@sussex.nj.us; JMcDonald@sussex.nj.us; ESnyder@sussex.nj.us; ABrees@sussex.nj.us; "Jeff Hamler (E-mail)"; "Joseph Inga"; FMartone@sussex.nj.us
Cc: "Robert E. Untig"; "mvogel"; "Amy Conry"; EMorgan@sussex.nj.us; [Pete Dennen](mailto:Pete.Dennen); jparrott@embarqmail.com
Subject: RE: PDM Draft Plan Presentation - July 15, 2010 - 10:00 a.m. - Freeholder's Meeting Room
Date: Thursday, July 08, 2010 10:59:48 AM

REMINDER!!!! Public PDM meeting Thursday, July 15, 2010, at Freeholder's Meeting Room at 10:00 a.m. Please RSVP if you have not done so already. D/C Mark Vogel will be coordinating the meeting with the consultants as I will be away. I understand that copies of the draft plan will be distributed in electronic format at that meeting or immediately thereafter. We will then have a narrow window of opportunity to review and comment. Skip

-----Original Message-----

From: Eskil S. Danielson [mailto:edanielson@sussexcountysheriff.com]
Sent: Friday, June 18, 2010 11:32 AM
Subject: PDM Draft Plan Presentation - July 15, 2010 - 10:00 a.m. - Freeholder's Meeting Room

All - Earlier this month, all 24 Sussex County municipalities participated in the PDM project identification meetings along with county officials. This was a milestone for the PDM project. This office is reviewing draft sections of the plan on a regular basis.

As members of the Sussex County Pre-Disaster Mitigation Working Group, you are especially invited to attend a publicly advertised meeting on the Draft PDM Plan for Sussex County on Thursday, July 15, 2010 at 10:00 a.m. in the Freeholder's Meeting Room. Stuart Wallace and Peter Dennen of James Lee Witt Assoc. will present the draft plan and it will be made available at that time. There will be a comment period to follow. The target for having the plan at the state is on or about September 1, 2010.

Please make every effort to attend or be appropriately represented. Please RSVP to Amy Conry at aconry@sussexcountysheriff.com. Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: JEskilson@sussex.nj.us; "Jeff Hamler (E-mail)"; FMartone@sussex.nj.us; WCramp@sussex.nj.us; ESnyder@sussex.nj.us; ABrees@sussex.nj.us; DKunz@sussex.nj.us; "Joseph Inga"; "Jhatzelis"; JMcDonald@sussex.nj.us; JBiuso@sussex.nj.us
Cc: "Robert E. Untig"; "mvogel"; "Amy Conry"; Pete Dennen; tcarlson@sussex.nj.us; "Lt. Dave Rome"
Subject: Draft PDM Plan
Date: Wednesday, July 28, 2010 10:18:25 AM

Sussex County All Hazards Pre-Disaster Mitigation Planning Committee - I will have copies of the Draft PDM plan delivered to your offices today or by interoffice mail. I tried to e-mail them but the attachment is too large. Please take some time to review the draft and return any comments to me on or before August 6, 2010. Sorry for the limited time frame but technological difficulties added to the original delays in this process. Our deadline is to have the consultants deliver the plan to the state and then FEMA by late August.

I would like the plan to be accessible by the public as soon as possible on the websites for public review and comment. Thus, copies will be delivered to Thor Carlson and Lt. Dave Rome.

Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Amy Conry](#)
To: [Pete Dennen](#)
Subject: FW: Draft All Hazard Mitigation Plan
Date: Friday, July 30, 2010 11:59:03 AM
Attachments: [NDRR SC 2010 0714.pdf](#)

Amy L. Conry
Sussex County Sheriff's Office
Homeland Security Branch/Emergency Management Section
39 High Street
Newton, NJ 07860
(973)579-0380 x 2201
Fax (973)579-0389

From: Amy Conry [mailto:aconry@sussexcountysheriff.com]
Sent: Thursday, July 15, 2010 2:45 PM
To: Bill Hickerson; Bob Klein; Chief John Swanson; Chief Ray Rafferty; Chief Roy Wherry (chief@vernonpolice.com); Dave Coss; Ed Hayes (biged5679@yahoo.com); 'Eric Danielson'; Eric Slater; Jake Little; Jeff Lewis (jlewis310@embarqmail.com); Jim Williams; Joe K; John Richardson Sr; Kenneth Teets; Lt Jeff Nafis (E-mail); MICHAEL FERNALLD; Rich Pumphrey; Richard Hughes (Email); Scott Danielson; scrumjr@embarqmail.com; Stanley Dutkus; Wayne Anthony; William O'Keefe
Subject: Draft All Hazard Mitigation Plan

Please review attached document, and submit any concerns to Skip by August 2, 2010.

Thank you.

Amy L. Conry
Sussex County Sheriff's Office
Homeland Security Branch/Emergency Management Section
39 High Street
Newton, NJ 07860
(973)579-0380 x 2201
Fax (973)579-0389

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: ["Jeff Hamler \(E-mail\)"; "Joseph Inga"; "jhatzelis"; DKunz@sussex.nj.us; WCramp@sussex.nj.us; FMartone@sussex.nj.us; JBiuso@sussex.nj.us; ABrees@sussex.nj.us; ESnyder@sussex.nj.us; JEskilson@sussex.nj.us](mailto:Jeff.Hamler)
Cc: runtig@sussexcountysheriff.org; "mvoegel"; Pete Dennen; "Amy Conry"; "Rich Zeoli"
Subject: PDM Requests For Public Input
Date: Friday, July 30, 2010 11:40:04 AM

All - Just to keep everyone in the loop, the following steps have been taken to solicit public input on the Draft PDM plan. The solicitation of public input is a high level requirement of FEMA for PDM planning.

1. a "College Hill" program was taped for WSUS with Tony Selimo as the host and myself speaking about the PDM program. It will air on the 8th.
2. press releases were sent to the NJ Herald and Strauss News.
3. access information to the Draft PDM plan has been put on the county website and the Sheriff's Office website.
4. the Division of Emergency Management display at the SCF&HS/State Fair will have PDM information and requests for public input.
5. all 24 Sussex County municipal emergency management coordinators have the draft plan for comment and are asking for input from their officials.

Again, we have a very limited window of opportunity but we will maximize that opening.

Thank you all. Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil.S.Danielson)
To: sleary@co.orange.ny.us; richard.martinkovic@co.sullivan.ny.us; "Robert A. Lyons "; "Scott DiGiralomo";
fwheatley@co.warren.nj.us; ema@pikepa.org
Cc: [Pete Dennen](mailto:Pete.Dennen); "mvogel"; "Amy Conry"
Subject: Sussex County Draft Pre-Disaster Mitigation Plan
Date: Friday, July 30, 2010 12:05:27 PM

All Contiguous-County OEM Coordinators - As per the FEMA requirements for solicitation of input on Draft Pre-Disaster Mitigation Plans, please be advised that you can locate the Sussex County Draft All Hazards Pre-Disaster Mitigation Plan on the following website: www.sussex.nj.us and click on "Sheriff".

Any input can be sent to me by e-mail. Thank you for your anticipated attention to this outreach. Skip

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

From: [Eskil S. Danielson](mailto:Eskil_S_Danielson)
To: edanielson@sussexcountysheriff.com; JEskilson@sussex.nj.us; "Jeff Hamler (E-mail)"; FMartone@sussex.nj.us; WCrap@sussex.nj.us; ESnyder@sussex.nj.us; ABrees@sussex.nj.us; DKunz@sussex.nj.us; "Joseph Inga"; "jhatzelis"; JMcDonald@sussex.nj.us; JBiuso@sussex.nj.us
Cc: "Robert E. Untig"; "mvogel"; "Amy Conry"; Pete Dennen; tcarlson@sussex.nj.us; "Lt. Dave Rome"
Subject: RE: Draft PDM Plan
Date: Wednesday, August 04, 2010 10:44:52 AM

All - I hope everyone either has a disc with the draft PDM plan or has accessed it on www.sussex.nj.us and clicked on "Sheriff". I am still looking for the 1,000 foot input from the SC Hazards Mitigation Working Group members. We can now extend the comment period to Friday the 13th. Comments can be forwarded to me by e-mail. Thank you. Skip

-----Original Message-----

From: Eskil S. Danielson [<mailto:edanielson@sussexcountysheriff.com>]
Sent: Wednesday, July 28, 2010 10:17 AM
To: 'JEskilson@sussex.nj.us'; 'Jeff Hamler (E-mail)'; 'FMartone@sussex.nj.us'; 'WCrap@sussex.nj.us'; 'ESnyder@sussex.nj.us'; 'ABrees@sussex.nj.us'; 'DKunz@sussex.nj.us'; 'Joseph Inga'; 'jhatzelis'; 'JMcDonald@sussex.nj.us'; 'JBiuso@sussex.nj.us'
Cc: 'Robert E. Untig'; 'mvogel'; 'Amy Conry'; 'Pete Dennen'; 'tcarlson@sussex.nj.us'; 'Lt. Dave Rome'
Subject: Draft PDM Plan

Sussex County All Hazards Pre-Disaster Mitigation Planning Committee - I will have copies of the Draft PDM plan delivered to your offices today or by interoffice mail. I tried to e-mail them but the attachment is too large. Please take some time to review the draft and return any comments to me on or before August 6, 2010. Sorry for the limited time frame but technological difficulties added to the original delays in this process. Our deadline is to have the consultants deliver the plan to the state and then FEMA by late August.

I would like the plan to be accessible by the public as soon as possible on the websites for public review and comment. Thus, copies will be delivered to Thor Carlson and Lt. Dave Rome.

Thank you.

Eskil S. Danielson, MA CEM, Director
Sussex County Sheriff's Office
Division of Emergency Management and 9-1-1 Coordination
39 High Street
Newton, NJ 07860
Office - 973-579-0380 ext. 2200
Fax - 973-579-0389
Cell - 973-296-3571

Appendix D

STAPLEE Analysis of Mitigation Actions

Section 6 identified specific actions to achieve identified goals, an appropriate responsible party for each action, a schedule for accomplishment, suggested funding sources and priority rankings. The tables contained within this appendix provide the detailed basis for this initial prioritization of the actions.

In drafting this initial prioritization, the Sussex County Office of Emergency Management (SC OEM), consultant, and participating municipalities worked cooperatively to determine which STAPLEE criteria each action did or was likely to meet. The criteria that were considered “met” are identified with a “+”, and the criteria that were not considered met are identified with a “0”. The methodology also allows for a “-” designation when impacts are expected to be negative, but none of the projects below required it at this time. The participants in this process have defined High, Medium, and Low priorities to be assigned as follows:

- **High:** Meets five of the seven STAPLEE criteria
- **Medium:** Meets four of the seven STAPLEE criteria
- **Low:** Meets three of the seven STAPLEE criteria

This prioritization is considered preliminary and will be revisited in the future by the SC OEM and the participating municipalities as funding becomes available. The process by which these priorities will be revisited is described in Section 6.6.

Table D.1
Prioritization of Sussex County Hazard Mitigation Goals, Objectives, and General Actions

Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
1.A.1: Develop <i>All Hazards</i> public education and outreach program for hazard mitigation and preparedness.	+	+	+	0	+	+	+	6	High
1.A.2: Initiate a public awareness program on local cable TV for hazard safety.	+	0	+	+	0	0	+	4	Medium
1.A.3: Conduct yearly workshops related to the Federal Emergency Management Agency (FEMA) hazard mitigation grant programs, including Flood Mitigation Assistance (FMA) program, Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program, Severe Repetitive Loss (SRL) program, and Repetitive Flood Claim (RFC) program, with a focus on those aspects available to private firms and property owners (coordinated with Action 1.B.1, below).	+	+	+	+	+	0	+	6	High
1.A.4: Educate the public through New Jersey Office of Emergency Management (NJOEM) and New Jersey Forest Fire Service outreach programs and hazard mitigation workshops.	+	+	+	+	+	+	+	7	High

Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
1.B.1: Conduct yearly workshops related to FEMA hazard mitigation grant programs, including FMA, HMGP, PDM, SRL, and RFC (coordinated with Action 1.A.4, above).	+	+	+	0	+	0	+	5	High
1.C.1: Reach out to municipal Floodplain Administrators, departments of planning, public works, engineering, etc. regarding the importance of hazard mitigation planning and provision of municipal plans and data for planning purposes.	+	+	0	+	+	0	+	5	High
2.A.1: Develop and maintain relationships with organizations that can provide technical information and/or assistance in the areas of hazard identification and risk assessment.	+	+	+	+	0	0	+	5	High
2.A.2: Undertake site-specific studies to better characterize flood risks to areas with extensive flood loss histories (see also municipal actions in Table 6.3.3-1 for additional detail).	+	+	0	+	0	0	+	4	Medium
2.A.3: Use best possible flood data, including Digital Flood Insurance Rate Map and Map Mod data, if available, in next plan update. Track implementation of Risk MAP initiative to ensure Sussex County and municipalities gain full advantage of opportunities under this program.	+	+	+	0	+	0	+	5	High
2.A.4: Bi-annually update and verify status of repetitive loss and severe repetitive loss lists from the National Flood Insurance Program (NFIP).	+	+	0	0	+	0	+	4	Medium
2.A.5: Inventory critical facilities to identify those in geographic areas that may be prone to high ground motion during earthquakes (due to proximity to faults or to soil characteristics), and those with structures that may be at risk during an earthquake.	+	+	0	+	+	0	+	5	High
2.A.6: Coordinate with state efforts to prioritize critical facilities and conduct more detailed earthquake risk assessments, taking into account the relative importance of the facility and the level of seismic hazard.	+	+	0	+	+	0	+	5	High
2.A.7: Work with New Jersey Geological Survey (NJGS) to determine soil and shake characteristics at specific sites that the county has identified as priority critical facilities with potential vulnerabilities to earthquake forces, and then work with engineers to develop appropriate projects.	+	+	+	0	+	0	+	5	High
2.A.8: Coordinate with NJGS and other county, state and federal agencies to better identify specific sites in Sussex County that may be exposed to the effects of geo-hazards such as landslides, sinkholes, and subsidence.	+	0	0	+	+	+	+	5	High
2.A.9: Using a prioritized list of state, county, and local facilities, coordinate with state effort to survey wind vulnerabilities, based on criteria such as age of the facility, value of operations, proximity to the coast, etc.	+	0	0	+	+	0	+	4	Medium

Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
2.A.10: Conduct wind risk assessments on a limited number of high-priority facilities that appear to be vulnerable to high winds. Assessments will use standard FEMA guidelines, procedures, and software, including the wind hazard database.	+	+	+	0	+	+	+	6	High
2.A.11: Coordinate with state efforts to inventory or survey of prioritized areas to determine if there is a need for additional study or data collection related to wildfire and/or urban-interface fires. Focus of inventory/study will be on identifying areas where there exist vulnerable populations or built environment and/or areas where fuel loads and other conditions suggest potential for wildfire risk.	+	0	0	+	+	+	+	5	High
2.A.12: Coordinate with state efforts to maintain current information about fuel loads and conditions that may affect potential for fires.	+	0	0	+	+	+	+	5	High
2.A.13: For areas with significant risk from wildfires or urban interface fires, perform detailed studies to objectively determine (a) potential for wildfires, including likely magnitude, & (b) vulnerabilities of surrounding populations, built environment, and functions.	+	0	0	+	+	0	+	4	Medium
2.A.14: Coordinate with state efforts to conduct wildfire risk assessments for areas and assets that are determined to have the most hazard (fuel load, etc.) potential, and the most vulnerable structures, populations, or operations.	+	0	0	+	+	+	+	5	High
2.A.15: Maintain effective coordination and information sharing related to hazardous material sites with NJOEM and the Right to Know Network.	+	0	0	+	+	0	+	4	Medium
2.A.16: Complete data collection for Geographic Information System (GIS) analysis and mapping of potential areas of impact related to hazardous material sites.	+	+	+	+	+	+	+	7	High
2.A.17: Integrate data about hazardous materials with most current available information about other risk factors, e.g. population, climate, other site-specific characteristics.	+	0	+	0	+	+	+	5	High
2.A.18: Complete a detailed analysis of past losses related to winter storms to determine if additional study is indicated.	+	+	0	+	+	+	+	6	High
2.A.19: Undertake a survey of critical facilities to identify and prioritize those that may have structural characteristics that make them vulnerable to excessive snow and ice loads.	+	+	0	+	+	+	+	6	High
2.A.20: Work with appropriate agencies to identify specific areas that are vulnerable to storm effects, then inventory assets and populations in these areas as the basis for a risk calculation.	+	+	0	+	+	0	+	5	High
2.A.21: Work with New Jersey Department of Environmental Protection to more fully understand the dam hazard rankings and methodology behind them, particularly regarding high-hazard sites.	+	+	+	0	+	+	+	6	High

Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
2.A.22: Undertake more detailed engineering studies of dams that may pose risks to the county, based on additional data collected from state or federal agencies.	+	+	0	+	+	0	+	5	High
2.A.23: Conduct detailed risk assessments for dams that appear to have vulnerabilities, and where there is potential for significant damage or loss of life.	+	+	0	+	+	0	+	5	High
2.A.24: Consolidate and incorporate relevant local data related to hazards, extent, probability, exposure, risk, history, etc.	+	+	0	+	+	0	+	5	High
2.A.25: Work with ongoing county, state, and federal efforts to develop and maintain hazard-specific geospatial data necessary to perform full risk assessments for all relevant hazards in Sussex County.	+	0	+	+	+	+	+	6	High
2.A.26: Conduct detailed risk assessments for levees which appear to have vulnerabilities, and where there is potential for significant damage or loss of life.	+	+	0	+	+	0	+	5	High
2.A.27: Work with NJDEP and other agencies to compile better information about levees in the State, including inventories, engineering data, and any other studies (in particular those that may discuss or catalog past levee failures).	+	+	0	+	+	0	+	5	High
2.A.28: Conduct a detailed study to identify and map erosion hazard zones.	+	+	0	+	+	0	+	5	High
2.A.29: Undertake more detailed engineering studies of levees that may pose risks to the county, based on additional data collected from local, state or federal agencies.	+	+	0	+	+	0	+	5	High
2.A.30: Coordinate with state efforts to undertake detailed vulnerability assessments and develop mitigation options for critical facilities in A and AE zones.	+	0	+	+	+	+	+	6	High
2.B.1: Participate in the Emergency Preparedness Conference and workshops.	+	+	+	+	+	+	+	7	High
2.C.1: Develop a database inventory of critical facilities countywide (county-, local-, and privately-owned), including fire and police stations, medical facilities, and major public buildings important for emergency response and recovery, and critical lifeline transportation and utility nodes such as bridges, water treatment plants, wastewater treatment plants, high voltage electric substations, and hazardous materials facilities.	+	+	0	0	+	+	+	5	High
2.C.2: Prioritize critical facilities and complete Phase 1 site surveys to identify vulnerabilities.	+	+	+	+	+	0	+	6	High
3.A.1: Continue working with the state, as well as local jurisdictions, to encourage local cooperation in making Repetitive Loss (RL) (and SRL) property mitigation a high priority, and offering municipalities technical support in carrying out the requirements of FEMA mitigation programs as well as current information related to RL and SRL properties.	+	+	+	+	+	+	+	7	High

Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
3.A.2: Provide grants information, planning tools, training, and technical assistance to increase the number of public and private sector hazard mitigation projects.	+	+	+	+	+	+	+	7	High
3.A.3: Conduct direct outreach and education to municipal OEMs and other potential participants in Plan maintenance and future Plan updates.	+	+	+	+	+	+	+	7	High
3.A.4: Work with NJOEM and FEMA to incorporate "recommended revisions" per NJOEM and FEMA Region II review of this Plan into future Plan updates.	+	+	+	+	+	+	+	7	High
3.B.1: Conduct community outreach, workshops, and training to increase NFIP participation (coordinate with outreach actions listed under Objectives 1.A and 1.B).	+	+	+	+	+	0	+	6	High
3.B.2: Encourage municipalities to participate in the Community Rating Survey (CRS) program, including potentially setting up CRS site visits and/or workshops for interested municipalities.	+	+	+	+	+	+	+	7	High
3.B.3: Encourage municipalities to include identification and prioritization of actions related to future participation in and compliance with the NFIP.	+	+	+	0	+	+	+	6	High
3.C.1: Encourage enforcement of floodplain management as it relates to new and existing construction by integrating hazard mitigation practices with zoning, subdivision ordinances, comprehensive planning, and other land use tools at the municipal level.	+	+	0	+	+	0	+	5	High
3.C.2: Coordinate with state efforts to encourage the New Jersey League of Municipalities to become more involved in mitigation activities, and in particular to support the activities described in Action 3.C.1 and 3.D.1.	+	+	+	0	+	+	+	6	High
3.D.1: Encourage enforcement of floodplain management as it relates to new and existing construction by integrating hazard mitigation practices with zoning, subdivision ordinances, comprehensive planning, other land use tools, and environmental and other regulatory mechanisms via state requirements, reviews, and regulations. Coordinate with the State Planning Commission to integrate the State Development and Redevelopment Plan and the State Hazard Mitigation Plan Update.	+	+	0	0	+	+	+	5	High
3.E.1: Develop a simple GIS platform, or build upon an existing platform, to maintain and analyze critical facilities inventories and information about hazards.	+	+	0	+	+	0	+	5	High
3.F.1: Explore potential for possible regionalization or consolidation of hazard mitigation planning, administration, and/or implementation at the county level.	+	+	+	0	+	+	+	6	High
3.F.2: Increase understanding of the capabilities of municipal mitigation programs by continuing to encourage local coordinators to participate in the Municipal Capabilities Assessment Survey.	+	0	0	+	+	0	+	4	Medium

Action	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
3.G.1: Provide regular summaries to neighboring communities re: plan monitoring and update procedures (as outlined in Section 7) and post updates on Sussex County's website for public access to the plan update process.	+	+	+	0	+	+	+	6	High
4.A.1: Coordinate with state efforts to develop and implement a detailed severe repetitive loss mitigation strategy that will qualify the county and municipalities for 90:10 cost share under the FEMA SRL program.	+	+	+	+	+	+	+	7	High
4.A.2: Continue working with local and regional jurisdictions to encourage and support their efforts to mitigate RL (and SRL) properties, either individually through the use of cluster solutions and/or basin projects, as appropriate, and offer technical support in carrying out the requirements of FEMA mitigation programs. (see Table 6.3.3-1 for further detail).	+	+	+	+	+	0	+	6	High
4.A.3: Implement mitigation projects and programs intended to reduce risk to critical facilities (see Table 6.3.3-1 for further detail).	+	+	0	+	+	0	+	5	High
4.A.4: Implement other mitigation projects and programs as appropriate at the municipal level (see Table 6.3.3-1 for further detail).	+	+	+	+	+	0	+	6	High
4.A.5: Promote acquisition and elevation of repetitive loss and severe repetitive loss structures (see Table 6.3.3-1 for further detail).	+	+	+	+	+	0	+	6	High
4.A.6: Work with NJGS and other County, State and federal agencies to better identify specific sites in the County that may be exposed to the effects of geo-hazards such as landslides, sinkholes and subsidence.	+	+	0	+	+	0	+	5	High
4.B.1: Ensure full and effective enforcement of building codes, floodplain management, zoning, and other risk-reducing regulations.	+	+	+	0	+	0	+	5	High
4.B.2: Integrate hazard mitigation priorities into Capital Improvement Plans, transportation planning, and other capital planning.	+	+	+	0	+	0	+	5	High
4.B.3: Integrate hazard mitigation Plan and priorities into floodplain management, zoning, subdivision regulation, and other local regulations as appropriate.	+	+	+	0	+	+	+	6	High

¹ See the municipality actions below for a ranking.

Note: Projects were ranked with a -,0,+ rating per STAPLEE category. "-" indicates a negative impact, "0" indicates negligible impact, and "+" indicates a positive impact.

**Table G.2
Municipality Specific Mitigation Actions**

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
SUSSEX COUNTY DEPARTMENT OF ENGINEERING									
County Engineering 1: Hydrology study for flow impact at Vernon Crossing Bridge in support of potential new bridge.	+	+	+	+	+	0	+	6	High
County Engineering 2: Hydrology study of Neldon's Brook located at County Road 622 and Bridge S-25.	+	+	+	+	+	0	+	6	High
SUSSEX COUNTY FACILITIES									
County Facilities 1: Retrofit roof to meet current standards for snow load on County Department of Public Works building located on Route 206.	+	+	+	+	+	0	+	6	High
County Facilities 2: Retrofit roof to meet current standards for snow load of original section of County Public Safety Training Academy located on Morris Turnpike.	+	+	+	+	+	0	+	6	High
County Facilities 3: Retrofit roof to meet current standards for snow load of the original Homestead Healthcare Facility building located on Morris Turnpike.	+	+	+	+	+	0	+	6	High
ANDOVER BOROUGH									
Andover Borough 1: Retrofit roof to meet current standards for snow load on Andover Borough Fire Department building located on Route 206.	+	+	+	+	+	0	+	6	High
Andover Borough 2: Install 300 yards of berm on Kymer Brooke to protect Andover Borough Fire Department located on Route 206.	+	0	+	0	+	0	+	4	Medium
Andover Borough 3: Install retention basin on Washer Farm.	+	0	+	+	+	+	0	5	High
Andover Borough 4: Storm-water runoff management to re-direct runoff from Route 206 near Whitehall Road to a retention basin.	+	0	+	+	+	+	0	5	High
Andover Borough 5: Emergency generator for municipal water system facility located on Lenape Road.	+	0	+	0	+	0	+	4	Medium
Andover Borough 6: Retrofit roof to meet current standards for snow load on municipal building located on Main Street.	+	+	+	+	+	0	+	6	High
Andover Borough 7: Implement Fire Wise Program throughout the Borough.	+	+	+	+	+	0	+	6	High
Andover Borough 8: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
ANDOVER TOWNSHIP									
Andover Township 1: Elevation of flood prone property located on Stickles Pond Road.	+	+	0	+	+	0	+	5	High
Andover Township 2: Elevation of flood prone property located on Limecrest Road.	+	+	0	+	+	0	+	5	High
Andover Township 3: Implementation of Fire Wise community program.	+	+	+	+	+	0	+	6	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Andover Township 4: Upgrade of roof to current snow load and high wind standards of Long Pond School located on Limecrest Road.	+	+	0	+	+	0	+	5	High
Andover Township 5: Upgrade of roof to current snow load and high wind standards of Florence Burd School located on Newton-Sparta Road.	+	+	0	+	+	0	+	5	High
Andover Township 6: Inundation study for Hidden Valley Lake Dam located on Bonnie Glen Court.	+	+	+	+	+	0	+	6	High
Andover Township 7: Inundation study for Lake Lenape Dam located on Old Creamery Road.	+	+	+	+	+	0	+	6	High
Andover Township 8: Storm-water water retention basin addition to Hemlock Avenue and Old Creamery Road.	+	0	+	+	+	+	0	5	High
Andover Township 9: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
BRANCHVILLE BOROUGH									
Branchville Borough 1: Implementation of Fire Wise Program throughout the Borough.	+	+	+	+	+	0	+	6	High
Branchville Borough 2: Raise embankments along 40 feet of the Culver Brook near Milk Street.	+	0	+	0	+	0	+	4	Medium
Branchville Borough 3: Raise embankments along 70 feet of the Dry Brook near Township Baseball Field.	+	0	+	0	+	0	+	4	Medium
Branchville Borough 4: Armoring and bank stabilization for Small Pond Dam located on Wantage Avenue.	+	0	+	0	+	0	+	4	Medium
Branchville Borough 5: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
BYRAM TOWNSHIP									
Byram Township 1: Acquisition/ Elevation, of one Repetitive Loss property on Lackawanna Drive.	+	+	0	+	+	0	+	5	High
Byram Township 2: Retrofit roof to meet current high wind standards on Byram Township Lackawanna Fire Department building located on Lackawanna Drive.	+	+	+	+	+	0	+	6	High
Byram Township 3: Retrofit roof to meet current snow load standards on Byram Township Fire Department Cranberry Lake building located on Route 206.	+	+	+	+	+	0	+	6	High
Byram Township 4: Backup generator for shelter at Byram Township Fire Department Cranberry Lake located on Route 206.	+	0	+	0	+	0	+	4	Medium
Byram Township 5: Retro fit roof to meet current snow load and high wind standards on Byram Civic Center located on Mansfield Drive.	+	+	+	+	+	0	+	6	High
Byram Township 6: Retro fit roof to meet current snow load standards on Byram Municipal Building located on Mansfield Drive.	+	+	+	+	+	0	+	6	High
Byram Township 7: Flood proofing two pump stations located on Mansfield Drive.	+	+	0	+	+	0	+	5	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Byram Township 8: Harden Lee Hill Road Emergency Medical Services Station located on Lee Hill Road to FEMA 361 Standards.	+	+	+	+	+	0	+	6	High
Byram Township 9: Retro fit roof to meet current snow load standards on Intermediate School located on Mansfield Drive.	+	+	0	+	+	0	+	5	High
Byram Township 10: Upgrade and improve culverts on Little Paint Way.	+	0	+	+	+	+	0	5	High
Byram Township 11: Lackawanna Dam inundation study.	+	+	+	+	+	0	+	6	High
Byram Township 12: Forrest Lakes Dam analysis and inundation study.	+	+	+	+	+	0	+	6	High
Byram Township 13: Implementation of Fire Wise program in township.	+	+	+	+	+	0	+	6	High
Byram Township 14: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
FRANKFORD TOWNSHIP									
Frankford Township 1: Backup generator for Frankford Township Volunteer Fire Department 1 located on US Highway 206. Facility is used as a shelter and backup Emergency Operations Center.	+	0	+	0	+	0	+	4	Medium
Frankford Township 2: Upgrade and improvement of culverts on access road to Culver Lake Fire Tower located on the top of Sunrise Mountain.	+	0	+	+	+	+	0	5	High
Frankford Township 3: Backup generator for Culver Lake Fire Tower located on the top of Sunrise Mountain.	+	0	+	0	+	0	+	4	Medium
Frankford Township 4: Backup generator for Municipal Offices and Court located on US Highway 206. Facility is primary Emergency Operations Center.	+	0	+	0	+	0	+	4	Medium
Frankford Township 5: Provide backup generator for the Administration Building at the Sussex County Fair Site located on Plains Road. This facility also serves as an EMS site and a Primary Point of Distribution for both medical and commodities supplies.	+	0	+	0	+	0	+	4	Medium
Frankford Township 6: Provide an all hazard public education outreach program on mitigation related issues.	+	+	+	+	+	0	+	6	High
Frankford Township 7: Mountain Snowmelt and Rain Runoff Analysis for the area of Upper North Shore to Lower North Shore at the water edge of Culver Lake, from Sunkin Road to New Street.	+	+	+	+	+	0	+	6	High
Frankford Township 8: Installation of a storm warning system for severe weather affecting the Sussex County Fairgrounds on Plains Road.	+	+	+	+	+	0	+	6	High
Frankford Township 9: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
FRANKLIN BOROUGH									

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Franklin Borough 1: Retrofit roof to meet current snow load standards on Franklin Fire Department building located on Buckwheat Road.	+	+	+	+	+	0	+	6	High
Franklin Borough 2: Back-up generator for the Municipal Building located on Main Street.	+	0	+	0	+	0	+	4	Medium
Franklin Borough 3: Construction of retention pond and culverts to eliminate storm water run-off flooding on Route 23 between Franklin Avenue and Rutherford Avenue.	+	0	+	+	+	+	0	5	High
Franklin Borough 4: Storm-water management system upgrade and improvement along Newton Street off County Route 631.	+	0	+	+	+	+	0	5	High
Franklin Borough 5: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
FREDON TOWNSHIP									
Fredon Township 1: Harden Fredon Town Hall/Department of Public Works located on 94S to FEMA 361 Standards.	+	+	+	+	+	0	+	6	High
Fredon Township 2: Retrofit roof to meet current high wind standards on school located on Route 94S.	+	+	0	+	+	0	+	5	High
Fredon Township 3: Retrofit impact resistant windows and shutters to school located on Route 94S.	+	+	0	+	+	0	+	5	High
Fredon Township 4: Emergency generator for school shelter located on Route 94S.	+	0	+	0	+	0	+	4	Medium
Fredon Township 5: Implement Fire Wise prevention program throughout municipality.	+	+	+	+	+	0	+	6	High
Fredon Township 6: Inundation Study for twin dams located on Warner Road and Paulinskill Lake Road.	+	+	+	+	+	0	+	6	High
Fredon Township 7: Emergency generator for shelter at Civic Center.	+	0	+	0	+	0	+	4	Medium
Fredon Township 8: Inundation study for Whittemore Pond Dam.	+	+	+	+	+	0	+	6	High
Fredon Township 9: Upgrade and improve storm-water culverts at intersection of Pond Place and Slate Ridge.	+	+	0	+	+	0	+	5	High
Fredon Township 10: Install storm water runoff retention basin located at Newton Memorial Hospital.	+	0	+	+	+	+	0	5	High
Fredon Township 11: Retrofit roof to meet current snow-load standards on Civic Center/Emergency Services Center on 94S.	+	+	+	+	+	0	+	6	High
Fredon Township 12: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
GREEN TOWNSHIP									
Green Township 1: Retrofit roof to meet current high wind standards on Green Hills School located on Mackerly Road.	+	+	0	+	+	0	+	5	High
Green Township 2: Implement Fire Wise Program throughout the township.	+	+	+	+	+	0	+	6	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Green Township 3: Stream bank stabilization and augmentation of the Pequest River.	+	0	+	0	+	0	+	4	Medium
Green Township 4: Retrofit impact resistant windows and shutters on municipal building located on Kennedy Road.	+	+	+	+	+	0	+	6	High
Green Township 5: Retrofit an external -frame to mitigate straight line winds to post office building located on Municipal Road.	+	+	+	+	+	0	+	6	High
Green Township 6: Retrofit roof to meet current high wind standards for two buildings located on the Trinca Airport located on Airport Road.	+	+	+	+	+	0	+	6	High
Green Township 7: Storm-water runoff management system implemented for 350 homes in the Lake Tranquility development.	+	0	+	+	+	+	0	5	High
Green Township 8: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
HAMBURG BOROUGH									
Hamburg Borough 1: Backup generator for shelter at Hamburg Elementary School located on Linwood Avenue.	+	0	+	0	+	0	+	4	Medium
Hamburg Borough 2: Retrofit roof to meet current snow load standards on Hamburg Elementary School located on Linwood Avenue.	+	+	0	+	+	0	+	5	High
Hamburg Borough 3: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
HAMPTON TOWNSHIP									
Hampton Township 1: Retrofit roof to meet current snow load standards on Department of Public Works facility located on Rumsey Way.	+	+	+	+	+	0	+	6	High
Hampton Township 2: Implement Fire Wise program throughout Township.	+	+	+	+	+	0	+	6	High
Hampton Township 3: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
HARDYSTON TOWNSHIP									
Hardyston Township 1: Implement Fire Wise Program throughout Township.	+	+	+	+	+	0	+	6	High
Hardyston Township 2: Flood proofing of the Fire Company #1 and First Aid squad buildings located on Colson Terrace.	+	+	0	+	+	0	+	5	High
Hardyston Township 3: Storm-water management study to correct storm drainage system located on Colson Terrace.	+	0	+	+	+	+	0	5	High
Hardyston Township 4: Retrofit roof to meet current snow load standards at the Elementary School.	+	+	0	+	+	0	+	5	High
Hardyston Township 5: Retrofit Elementary School gymnasium windows with impact resistant glass and shutters.	+	+	0	+	+	0	+	5	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Hardyston Township 6: Retrofit South West side of municipal building with impact resistant windows and shutters.	+	+	+	+	+	0	+	6	High
Hardyston Township 7: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
HOPATCONG BOROUGH									
Hopatcong Township 1: Retrofit roof, windows and doors to meet current high wind standards on Hudson Maxim School located on River Styx Road.	+	+	0	+	+	0	+	5	High
Hopatcong Township 2: Retrofit roof to meet current snow load standards on Hopatcong Municipal Facility located on River Styx Road.	+	+	+	+	+	0	+	6	High
Hopatcong Township 3: Harden shelter Hopatcong High School to FEMA 361 Standards.	+	+	0	+	+	0	+	5	High
Hopatcong Township 4: Backup generator for Hopatcong Fire Company #4 located on Jefferson Trail. Serves as a shelter/reception center.	+	0	+	0	+	0	+	4	Medium
Hopatcong Township 5: Backup generator for Hopatcong Fire Department #3 located on Hopatching Road. Serves as a shelter/reception center.	+	0	+	0	+	0	+	4	Medium
Hopatcong Township 6: Storm-water management system upgrade and improvement to alleviate flooding between Durban Ave and Wills Ave.	+	0	+	+	+	+	0	5	High
Hopatcong Township 7: Harden shelter at Civic Center located on Lakeside Blvd to FEMA 361 Standards.	+	+	+	+	+	0	+	6	High
Hopatcong Township 8: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
LAFAYETTE TOWNSHIP									
Lafayette Township 1: Retrofit roof to meet current snow load standards on the Lafayette Fire Company building located on Route 15 North.	+	+	+	+	+	0	+	6	High
Lafayette Township 2: Retrofit roof to meet current snow load standards on Lafayette Department of Public Works Garage and Emergency Medical Services located on Morris Farm Road.	+	+	+	+	+	0	+	6	High
Lafayette Township 3: Retrofit roof to meet current snow load standards of Lafayette Township Elementary School located on Beaver Run Road.	+	+	0	+	+	0	+	5	High
Lafayette Township 4: Retrofit Lafayette Township Elementary School with impact resistant windows and shutters. Located on Beaver Run Road.	+	+	0	+	+	0	+	5	High
Lafayette Township 5: Retrofit Lafayette Federated Church (shelter) with impact resistant windows and shutters. Located on Route 15.	+	+	+	+	+	0	+	6	High
Lafayette Township 6: Implement Fire Wise Program throughout the Township.	+	+	+	+	+	0	+	6	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Lafayette Township 7: Construct a storm-water runoff management system for Dennis Road and Pellettown Road.	+	+	0	+	+	0	+	5	High
Lafayette Township 8: Culvert upgrade and improvement along Decker Road and Snover Road.	+	+	0	+	+	0	+	5	High
Lafayette Township 9: Storm-water management system upgrade and improvement along Beaver Run Road.	+	0	+	+	+	+	0	5	High
Lafayette Township 10: Storm-water management system upgrade and improvement along Meadows Road.	+	0	+	+	+	+	0	5	High
Lafayette Township 11: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
MONTAGUE TOWNSHIP									
Montague Township 1: Acquisition/ Elevation of two Repetitive Loss properties on River Road.	+	+	0	+	+	0	+	5	High
Montague Township 2: Retrofit roof to current standards for snow load on Montague Fire Department building located on Clove Road.	+	+	+	+	+	0	+	6	High
Montague Township 3: Retrofit roof to current standards for high winds on Montague Fire Department building located on Clove Road.	+	+	+	+	+	0	+	6	High
Montague Township 4: Retrofit roof to current standards for high winds on Montague Elementary School (shelter) located on Route 206.	+	+	0	+	+	0	+	5	High
Montague Township 5: Retrofit roof to current standards for snow load on Montague Elementary School (shelter) located on Route 206.	+	+	0	+	+	0	+	5	High
Montague Township 6: Backup generator for Montague Elementary School (shelter) located on Route 206.	+	0	+	0	+	0	+	4	Medium
Montague Township 7: Retrofit roof to current standards for snow load on Montague Department of Public Works building located on Weider Road.	+	+	+	+	+	0	+	6	High
Montague Township 8: Retrofit roof to current standards for high winds on Montague Department of Public Works building located on Weider Road.	+	+	+	+	+	0	+	6	High
Montague Township 9: Retrofit municipal building with impact resistant windows and shutters located on Clove Road.	+	+	+	+	+	0	+	6	High
Montague Township 10: Implementation of the Fire Wise Program throughout the township.	+	+	+	+	+	0	+	6	High
Montague Township 11: Warning system installation along flood areas on River Road.	+	+	+	+	+	0	+	6	High
Montague Township 12: Elevate river banks for a half mile along the Delaware and Benekill Rivers.	+	0	+	0	+	0	+	4	Medium
Montague Township 13: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
NEWTON TOWN									

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Newton Town 1: Retrofit roof to meet current standards for high winds on Halstead School located on Halstead Street.	+	+	0	+	+	0	+	5	High
Newton Town 2: Retrofit oldest portion of building with impact resistant windows of Newton Memorial Hospital located on High Street.	+	+	+	+	+	0	+	6	High
Newton Town 3: Retrofit roof to meet current standards for snow load on two sections of Newton Memorial Hospital located on High Street.	+	+	+	+	+	0	+	6	High
Newton Town 4: Retrofit roof to meet current standards for high winds on Newton High School located on Ryerson Avenue.	+	+	0	+	+	0	+	5	High
Newton Town 5: Retrofit roof to meet current standards for snow load on school located on Miriam Avenue.	+	+	+	+	+	0	+	6	High
Newton Town 6: Retrofit roof section over vehicle bays to meet current standards for snow load of Newton First Aid Squad 65 located on Sussex Street.	+	+	+	+	+	0	+	6	High
Newton Town 7: Implementation of Fire Wise Program throughout township.	+	+	+	+	+	0	+	6	High
Newton Town 8: Install armoring on Dam #4 located on Sussex County College property.	+	0	+	0	+	0	+	4	Medium
Newton Town 9: Install armoring of Dam #2 located on Swartswood Road.	+	0	+	0	+	0	+	4	Medium
Newton Town 10: Conduct inundation study for Morris Lake Dam located on Morris Lake Road.	+	+	+	+	+	0	+	6	High
Newton Town 11: Upgrade capacity of Merriam Avenue School Storm-water Pump Facility.	+	+	0	+	+	0	+	5	High
Newton Town 12: Retrofit roof to meet current standards for high winds on Newton Municipal Building located on Trinity Street.	+	+	+	+	+	0	+	6	High
Newton Town 13: Retrofit roof to meet current standards for snow load on Fire House #1 located on Mill Street.	+	+	+	+	+	0	+	6	High
Newton Town 14: Retrofit roof to meet current standards for snow load of Fire House #2 located on Woodside Avenue.	+	+	+	+	+	0	+	6	High
Newton Town 15: Storm-water management system upgrade and improvement access way to DPW Garage located on Moran Street.	+	0	+	+	+	+	0	5	High
Newton Town 16: Retrofit roof to meet current standards for snow load of one waste water treatment plant located on Townsend Street.	+	+	+	+	+	0	+	6	High
Newton Town 17: Retrofit two buildings with impact resistant windows and shutters at the Sussex County Community College	+	+	0	+	+	0	+	5	High
Newton Town 18: Retrofit two buildings to meet current snow load standards at the Sussex County Community College.	+	+	0	+	+	0	+	5	High
Newton Town 19: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
OGDENSBURG BOROUGH									
Ogdensburg Borough 1: Acquisition / elevation of one Repetitive Loss property located on Richardsville Road.	+	+	0	+	+	0	+	5	High
Ogdensburg Borough 2: Retrofit roof to meet current snow load standards for Ogdensburg Elementary School located 100 Main Street.	+	+	0	+	+	0	+	5	High
Ogdensburg Borough 3: Backup generator for Ogdensburg Elementary School located 100 Main Street. Facility utilized as a shelter.	+	0	+	0	+	0	+	4	Medium
Ogdensburg Borough 4: Dredge Heaters Pond to increase holding capacity.	+	0	+	+	0	0	0	3	Low
Ogdensburg Borough 5: Backup generator for Ogdensburg Fire Department located on Main Street. Facility utilized as a shelter.	+	0	+	0	+	0	+	4	Medium
Ogdensburg Borough 6: Implement Fire Wise Program throughout the Borough.	+	+	+	+	+	0	+	6	High
Ogdensburg Borough 7: Stream bank stabilization (vegetation addition) on Middle Sawmill Brook from RR tracks to Route 517.	+	0	+	0	+	0	+	4	Medium
Ogdensburg Borough 8: Armoring and bank stabilization on Heaters Pond Dam located at Edison Road.	+	0	+	0	+	0	+	4	Medium
Ogdensburg Borough 9: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
SANDYSTON TOWNSHIP									
Sandyston Township 1: Implement Fire Wise Program throughout the Township.	+	+	+	+	+	0	+	6	High
Sandyston Township 2: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
SPARTA TOWNSHIP									
Sparta Township 1: Emergency generator for shelter located within Sparta Ambulance Service building located on Sparta Avenue.	+	0	+	0	+	0	+	4	Medium
Sparta Township 2: Harden Sparta Department of Public Works building located on Prices Lane to FEMA 361 Standards.	+	+	+	+	+	0	+	6	High
Sparta Township 3: Retrofit impact resistant windows and shutters on Germany Flats Pump Facility located on Park Lake Drive.	+	+	+	+	+	0	+	6	High
Sparta Township 4: Stream bank stabilization along Sparta Glen Brook (3500 feet).	+	0	+	0	+	0	+	4	Medium
Sparta Township 5: Stream bank stabilization along Wallkill River at Station Park (1500 feet).	+	0	+	0	+	0	+	4	Medium
Sparta Township 6: Storm-water management system upgrade and improvement along Hopkins Corner Road and Valley Manner Drive.	+	0	+	+	+	+	0	5	High
Sparta Township 7: Implement Fire Wise Program throughout the Township.	+	+	+	+	+	0	+	6	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Sparta Township 8: Retrofit impact resistant windows and shutters on two buildings of the Sussex County Technical School.	+	+	0	+	+	0	+	5	High
Sparta Township 9: Retrofit two buildings to meet current snow load standards at the Sussex County Technical School.	+	+	0	+	+	0	+	5	High
Sparta Township 10: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
STANHOPE BOROUGH									
Stanhope Borough 1: Backup generator for Lenape Valley Regional High School. Facility is utilized as the primary ARC approved Shelter.	+	0	+	0	+	0	+	4	Medium
Stanhope Borough 2: Flood proofing and elevation of utilities for the Compact Building on Furnace Street.	+	+	0	+	+	0	+	5	High
Stanhope Borough 3: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
STILLWATER TOWNSHIP									
Stillwater Township 1: Retrofit doors and windows to meet FEMA hurricane resistant standards on Stillwater Township School located on Stillwater Road. Older section of building will need more extensive reconstruction.	+	+	0	+	+	0	+	5	High
Stillwater Township 2: Retrofit roof to meet current snow load standards on Swartswood Fire Department Fire Company located on County Route 612.	+	+	+	+	+	0	+	6	High
Stillwater Township 3: Retrofit roof to meet current snow load standards the Stillwater Fire Department located on Stillwater Road.	+	+	+	+	+	0	+	6	High
Stillwater Township 4: Stream-bank stabilization along the Paulinskill River at Kohlbocker Road.	+	0	+	0	+	0	+	4	Medium
Stillwater Township 5: Stream-bank stabilization of Neldon's Brook effecting Swartswood Fire Department Fire Company located on County Route 612.	+	0	+	0	+	0	+	4	Medium
Stillwater Township 6: Flood proofing of 2 homes located West End Drive.	+	+	0	+	+	0	+	5	High
Stillwater Township 7: Implement Fire Wise Program throughout the Township.	+	+	+	+	+	0	+	6	High
Stillwater Township 8: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
SUSSEX BOROUGH									
Sussex Borough 1: Stream bank stabilization, rip-wrap instillation surrounding confluence of Clove Brook and Papakating Creek.	+	0	+	0	+	0	+	4	Medium
Sussex Borough 2: Stream bank stabilization of town reservoir and feeder waterway to water treatment plant.	+	0	+	0	+	0	+	4	Medium

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Sussex Borough 3: Armoring of Lake Rutherford Dam located in High Point State Park.	+	0	+	0	+	0	+	4	Medium
Sussex Borough 4: Armoring of Colesville Reservoir Dam located Brink Road.	+	0	+	0	+	0	+	4	Medium
Sussex Borough 5: Retrofit impact resistant windows and shutters on Sussex Fire Department building located on Loomis Avenue.	+	+	+	+	+	0	+	6	High
Sussex Borough 6: Retrofit impact resistant windows and shutters on Sussex Middle School located on Loomis Avenue	+	+	0	+	+	0	+	5	High
Sussex Borough 7: Retrofit roof to meet current standards for snow load on original section of Sussex middle School located on Loomis Avenue.	+	+	0	+	+	0	+	5	High
Sussex Borough 8: Backup generator for shelter at Sussex Christian School located on Unionville Avenue.	+	0	+	0	+	0	+	4	Medium
Sussex Borough 9: Backup generator for shelter at Emergency Operations Center located on Main Street.	+	0	+	0	+	0	+	4	Medium
Sussex Borough 10: Backup generator for shelter at Department of Public Works garage located on Brookside Avenue.	+	0	+	0	+	0	+	4	Medium
Sussex Borough 11: Implement Fire Wise Program throughout the Borough.	+	+	+	+	+	0	+	6	High
Sussex Borough 12: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
VERNON TOWNSHIP									
Vernon Township 1: Retrofit roof to meet current snow load standards on Highland Lakes Volunteer Fire Department building located on Canistear Road.	+	+	+	+	+	0	+	6	High
Vernon Township 2: Retrofit roof to meet current snow load standards on Vernon Valley Police Department building located on Church Street.	+	+	+	+	+	0	+	6	High
Vernon Township 3: Retrofit roof to meet current snow load standards on Lounsberry Hollow School located on Sammis Road.	+	+	0	+	+	0	+	5	High
Vernon Township 4: Retrofit roof to meet current snow load standards on High School located on Route 565.	+	+	0	+	+	0	+	5	High
Vernon Township 5: Implement the Fire Wise Program throughout the township.	+	+	+	+	+	0	+	6	High
Vernon Township 6: Retrofit roof to meet current snow load standards on Glen Meadows School located on Sammis Road.	+	+	0	+	+	0	+	5	High
Vernon Township 7: Retrofit roof to meet current high wind standards on Cedar Mountain School located on Sammis Road.	+	+	0	+	+	0	+	5	High
Vernon Township 8: Retrofit roof to meet current snow load standards on Rolling Hill School located on Sammis Road.	+	+	0	+	+	0	+	5	High
Vernon Township 9: Retrofit roof to meet current snow load standards on Walnut Ridge School located on route 517.	+	+	0	+	+	0	+	5	High

Mitigation Action, Program, or Project	Social	Technical	Administrative	Political	Legal	Economic	Environmental	Total	Priority
Vernon Township 10: Storm-water management system upgrade and improvement along Maple Grange Road and Vernon Crossing Road.	+	0	+	+	+	+	0	5	High
Vernon Township 11: Embankment stabilization for Mountain Creek Water Park located on route 94.	+	0	+	0	+	0	+	4	Medium
Vernon Township 12: Storm-water management system along Tenneco Pipeline.	+	0	+	+	+	+	0	5	High
Vernon Township 13: Harden SES Americom building located on route 517 and Edsel Drive to FEMA 361 Standards.	+	+	+	+	+	0	+	6	High
Vernon Township 14: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
WALPACK TOWNSHIP									
Walpack Township 1: Acquisition/ Elevation of one Repetitive Loss property on Old Mine Road.	+	+	0	+	+	0	+	5	High
Walpack Township 2: Implement Fire Wise Program throughout the Township.	+	+	+	+	+	0	+	6	High
Walpack Township 3: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High
WANTAGE TOWNSHIP									
Wantage Township 1: Storm-water drainage improvement and road elevation on Mudtown Road between Route 23 and Skytop Road.	+	0	+	+	+	+	0	5	High
Wantage Township 2: Implement Fire Wise Program throughout the Township.	+	+	+	+	+	0	+	6	High
Wantage Township 3: Conduct "All Hazards" public education and outreach program for hazard mitigation and preparedness.	+	+	+	+	+	+	+	7	High

Note: Projects were ranked with a -,0,+ rating per STAPLEE category. "-" indicates a negative impact, "0" indicates negligible impact, and "+" indicates a positive impact.

Appendix E

Adoption Resolutions

Contents of this Appendix

- E.1 Sussex County
- E.2 Municipalities

In accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and the Interim Final Rule (IFR), Sussex County, New Jersey, has developed this Multi-Jurisdictional Hazard Mitigation Plan to identify hazards that threaten the county and ways to reduce future damages associated with these hazards.

Following this page are the signed adoption resolutions of the county and all participating jurisdictions that have adopted this Plan, authorizing municipal government staff to carry out the actions detailed herein.

E.1 Sussex County

[Insert copy of Sussex County resolution]

E.2 Municipalities

[Insert list and copies of Municipal resolutions]

DRAFT

This page is intentionally blank.

Appendix F

Approval Letters

Contents of this Appendix

- F.1 Sussex County
- F.2 Municipalities

In accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and the Interim Final Rule (IFR), Sussex County, New Jersey, has developed this Multi-Jurisdictional Hazard Mitigation Plan to identify hazards that threaten the county and ways to reduce future damages associated with these hazards.

Following this page are the signed approval letters to all participating jurisdictions that have been approved within this Plan

F.1 Sussex County

[Insert copy of Sussex County approval letter]

F.2 Municipalities

[Insert list and copies of Municipal approval letters]

DRAFT

This page is intentionally blank.