

"A Historic Past"



"A Bright Future"

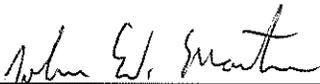
CITY OF DELAWARE CITY
407 Clinton Street – P.O. Box 4159
Delaware City, Delaware 19706
302-834-4573

RESOLUTION 11-0228-01

WHEREAS, the Federal Disaster Mitigation Act of 2000, as amended, requires that local governments develop and adopt natural hazard mitigation plans in order to receive certain federal disaster assistance; and

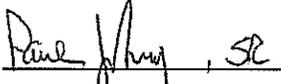
WHEREAS, it is permissible that the City of Delaware City adopts the County mitigation plan as their jurisdiction's mitigation plan and by doing so, meets the requirements for maintaining a local hazard mitigation plan under 44 CFR Part 201, published by the Federal Emergency Management Agency (FEMA) on February 28, 2002, and amended on October 31, 2007;

BE IT HEREBY RESOLVED by the Mayor and Council of the City of Delaware City, this 28th day of February 2011 that the New Castle County Multi-Jurisdictional All Hazard Mitigation Plan dated January 6, 2010, is approved and adopted by and for the City of Delaware City. A copy of the plan is attached to this Resolution.

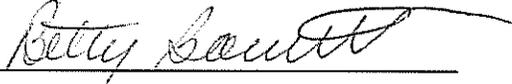


John W. Martin, Mayor

Stanley E. Green, Councilmember



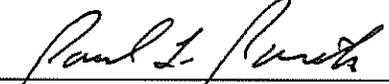
Paul H. Johnson, Sr., Councilmember



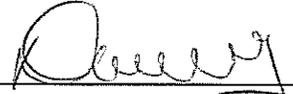
Betty Barrett, Councilmember



Ronald R. Graham, II, Councilmember

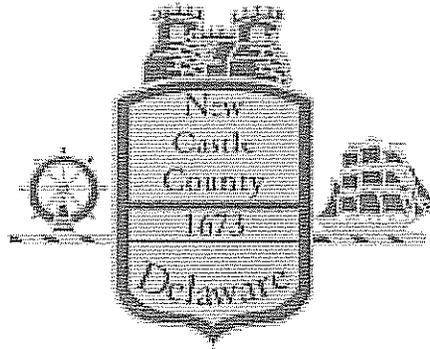


Paul L. Parets, Councilmember



Dawn K. Gwynn, Secretary

New Castle County All Hazard Mitigation Plan



Plan Executive Summary

January 6, 2010

New Castle County Department of Public Safety
Office of Emergency Management

NEW CASTLE COUNTY
ALL HAZARD MITIGATION PLAN SUMMARY
November 2009

New Castle County Department of Public Safety
Office of Emergency Management
Cpl. Paul J. Sweeney Public Safety Headquarters
3601 North DuPont Highway
New Castle, Delaware 19720

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Plan Summary

Hazard Mitigation Plan. The Coordinator of Emergency Management directed the planning effort, supported by Vision Planning and Consultants, and plan review work conducted by OEM Planner and Emergency Services Corps interns.

The New Castle County Hazard Mitigation Advisory Committee, assembled by the New Castle Office of Emergency Management, provided guidance and assisted with development of the All Hazard Mitigation Plan update, including review of previous hazard mitigation planning initiatives, development of mitigation strategies, an action plan, and an update to the local capability assessment. The members of the advisory committee provided expertise and perspective to all aspects of the planning process, including, land-use planning, building codes, transportation, and infrastructure, to name a few. Representation included members from the local government, law enforcement, fire service, Licensing & Inspections, emergency management community, state agencies, Public Works, emergency medical professionals, building officials, municipal governments, and private industry.

Once the Plan is promulgated by County Council, and approved by (FEMA), the Committee will function as an advisor to the Coordinator of Emergency Management, the State Hazard Mitigation Officer, and the State Flood Mitigation Officer on hazard mitigation efforts, including future reviews and revisions.

Participation of local agencies was critical in the development of the Plan. Twenty-five stakeholders (listed below) participated by identifying potential vulnerable facilities along with agency-specific goals to address their vulnerabilities through mitigation actions and initiatives.

Village of Arden	NC County Code Official
Village of Ardencroft	NC County Special Services
Village of Ardentown	NC County Police Division
Town of Bellefonte	NC County Land Use
Delaware City	Delaware Emergency Management Agency
Town of Elsmere	NC County Office of Emergency Management
Town of Middletown	DNREC
City of Newark	NC County Council
City of New Castle	Members of local print media
Town of Newport	Citizens of NCC
Town of Odessa	NCC Planning Board Members
Town of Townsend	NCC Office of Law
NC County Community Services	

These 25 agencies and stakeholders own or lease facilities of the hundreds tracked by New Castle County.

Introduction

The purpose of the New Castle County Multi-jurisdictional All Hazard Mitigation Plan (hereinafter referred to as the "Plan") is to provide guidance for hazard mitigation in New Castle County unincorporated and incorporated areas. It identifies hazard mitigation goals, objectives and recommended actions and initiatives for county and municipal government to reduce injury and damage from natural and human-caused hazards. A Mitigation Action Plan (MAP) provides strategies for participating agencies that will improve their resistance to any hazard-caused disaster. The MAP is not included as part of this document, but is being developed separately.

This Plan meets the requirements for maintaining a local hazard mitigation plan under 44 CFR Part 201, published by the Federal Emergency Management Agency (FEMA) on February 28, 2002, and amended on Oct. 31, 2007.

This Plan keeps New Castle County and its municipalities qualified to obtain all disaster assistance to include all categories of Public Assistance, Individual Assistance and Hazard Mitigation grants available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended. The Enhanced State All Hazard Mitigation Plan qualifies the State for hazard mitigation planning and project funding of 20 percent of the federal Stafford Act disaster expenditures. It also keeps the state eligible for the annually funded Pre-Disaster Mitigation Program, and the Flood Mitigation Assistance Program.

Without this plan, all eligible local jurisdictions – would be ineligible to receive a variety of disaster recovery programs, including the Public Assistance Program to repair or replace damaged public facilities, and the Fire Management Assistance Program to help the state and communities recover the costs of major disasters. However, the State and local communities would remain eligible for certain emergency assistance and Human Services programs available through the Stafford Act.

The Planning Process

This Plan is the product of thousands of hours of work and the effort of people from many organizations. The plan builds on a number of mitigation planning initiatives since 2000, provides updates to those initiatives and incorporates new initiatives since 2004 into this updated plan.

Staff from the New Castle County Office of Emergency Management led the development effort of the revised New Castle County Multi-Jurisdictional All

Coordination of Local Planning

The State and local government agreed to simultaneously update mitigation plans at the county level. This approach facilitated the integration of the planning processes. A cooperative Request for Proposal process was conducted, led by New Castle County Office of Administrative Services in coordination with NCC Office of Emergency Management to obtain one consultant to update the three County plans and the City of Wilmington plan. County-level goals and actions were linked to the goals established in the state Plan. This allowed more effective coordination of municipal, county and state goals. County goals will provide valuable feedback to state officials as they developed broader state-level mitigation goals during their next update. County-level risk assessments were conducted in a manner that provided updates to the existing vulnerabilities and presented an opportunity for the State to provide input during the planning process.

Prioritizing Recipients for Hazard Mitigation Grants

The process used to review, evaluate and select projects for hazard mitigation grants is built on years of public participation. The state's Hazard Mitigation Grant Program uses a competitive system where both federal and state criteria are used to evaluate and recommend projects for funding. Projects recommended for funding are those that best document their ability to reduce future impacts of natural disasters as well as demonstrate cost-effectiveness through a benefit-cost analysis. Only projects with a minimum benefit-cost ratio of 1-to-1 receive further consideration by a review committee. Typically, hazard mitigation funds following a disaster are available on a competitive basis to all eligible agencies and organizations statewide.

Maintaining the Plan

The New Castle County Multi-Jurisdictional All Hazard Mitigation Plan is a living document and will be reviewed, updated and adopted by county officials and submitted to FEMA for approval every Five years. The plan will be revised more frequently if conditions under which the plan were developed materially change as a result of new or revised policy, a major disaster, or availability of funding.

Participants in the maintenance of this plan include the NCC Hazard Mitigation Council and representatives of local jurisdictions whose hazard mitigation plans influenced the development of the Plan.

Review of the Plan can take place in three ways:

- *a* Annually, for progress made on mitigation actions and projects identified in the Mitigation Strategy.

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- . ∅ After each presidentially declared disaster, to look for areas where the Plan should to be refocused due to the impact of the disaster.
- . ∅ Every five years before the county plan is resubmitted for approval to FEMA.

The process used to monitor mitigation measures is similar to the one used to monitor, evaluate and update the content of the plan. Actions and projects identified in the mitigation strategies will be reviewed annually at the Hazard Mitigation Workshop held in conjunction with DEMA, DNREC, New Castle County, Wilmington, County municipalities and stakeholders in mitigation projects. Local agencies will submit brief progress reports annually. NCC OEM will track the overall progress of actions and projects identified in the plan.

Risk Assessment

The *NCC Hazard Identification, Analysis, and Vulnerability Assessment, completed in August 2009* identified nine natural and three human-caused hazards that have the greatest potential to adversely affect the people, environment, economy and property of New Castle County, Delaware and incorporated areas. Hazards that were considered include: Flood, Hurricanes and Coastal Storms, Severe Thunderstorms and Tornadoes, Drought/Extreme Heat, Hail, Winter Storms and Freezes, Hail, Earthquake, Dam/Levee Failure, Terrorism, Hazardous Materials, and Energy Pipeline Failures. The state has received 15 Presidential Disaster Declarations for natural hazard events since 1962. Below are synopses of these hazards and the risks they pose.

Flood (Riverine and Coastal) – According to the National Climatic Data Center, 121 flood events were reported in New Castle County between March 4, 1993 and July 31, 2009. These 121 events resulted in two (2) deaths, four (4) injuries and a total of approximately \$24.155 million in property damage (NCDC, 2009). Twenty one of these events have occurred since Feb. 2003 when data was completed for the AHM Plan adopted in 2005. The total overall exposure within the county is estimated around \$ 68,004,000 in annualized expected losses. In summary, during a 100-year flood event, as many as 3,033 facilities could sustain slight damage (1 to 5 percent damage) and 298 facilities could sustain moderate damage (5 to 30 percent damage). In a 500-year event, as many as 2,621 facilities could sustain slight damage and 721 could sustain moderate damage. Only a few facilities (11) would escape with merely negligible damage (0 to 1 percent damage) in a 100-year event and 0 in a 500-year event.

Tropical Storm Winds – Severe wind events resulting from hurricanes, tropical storms and nor'easters can cause widespread damage and loss life, as evidenced by the numerous coastal events that have impacted the State of Delaware. Although Delaware has not experienced a direct strike from a major hurricane in more than two decades (a fact often attributed to the geographic position of North Carolina), Delaware has experienced the effects of as many as

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14 hurricanes and at least one significant tropical storm since the 1920s. Historical evidence shows that the State of Delaware is vulnerable to hurricane and tropical storm-force winds. The total potential annualized losses equal \$4,948,518.

Thunderstorms – According to the National Climatic Data Center, New Castle County experienced 251 thunderstorm high wind events for the period January 1950 through July 2009. These events resulted in three (3) deaths, four (4) injuries and a total of approximately \$11.367 million in property damage (NCDC, 2009). Therefore, the approach to determining the County's vulnerability to severe thunderstorm wind is to examine not just severe thunderstorm events in the County boundary, but to look at all of the events of the neighboring counties within 25 miles of the boundary of the County as well. A severe thunderstorm that impacts Cecil County, MD (to the west of New Castle County) could have just as easily impacted New Castle County instead. The total estimated annualized losses for the county equal \$1,122,247.

Tornados – From 1950 – 2009 22 tornadoes that were reported to the National Climatic Data Center as having touched down in New Castle County. These events are responsible for eight injuries and \$7,413,000 in property damages in the county. The total estimated annualized losses for the county equal \$221,563.

Wildfire - Most of the wildfires within the state are small, ground fires that are fairly easily extinguished and seldom do much damage. (Austin Short, Delaware Forest Service, austin.short@state.de.us). Only one wildfire event has been recorded in New Castle County for the period 1993-2009, a fire at a salvage yard in Wilmington that was fueled by strong winds (NCDC, 2009).

Drought – According to the National Climatic Data Center, the State of Delaware has experienced 48 reported droughts and/or periods of unseasonably dry weather from 1950 through July 2009, most of which affected the entire forecast zone of New Castle, Kent and Sussex counties. All crop damage reported for this period (\$29.1 million) is tied to a single event—the drought that gripped the Middle Atlantic States throughout much of the growing season of 1999, which eased in mid-August of that year. The total estimated annualized losses for the county equal \$1,286,977.

Extreme Temperatures - According to the National Climatic Data Center, New Castle County has experienced 79 reported cases of either extreme heat or extreme cold from 1950 through July 2009. These heat waves and cold snaps, which the NCDC began collecting data on in 1995, have caused 10 deaths, 50 injuries, and no reported damage.

Hail - According to the National Climatic Data Center, New Castle County experienced 28 hail events from 1950 through July 2009, with some hail stones exceeding 1.75 inches in diameter. These events total approximately \$5,000 in property damage (NCDC, 2009). After examining the historical occurrence of hail

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in New Castle County and the hazard's lack of any historical damage, it was determined that the risk of significant hailstorms for the area, as well as potential losses due to hailstone impact, is considered negligible and is not further considered.

Winter Storms - According to the National Climatic Data Center, New Castle County experienced 95 distinct winter storm (snow and ice) events from 1993 through July 2009. In recent history, the two most powerful and costly storms to affect Delaware were the Blizzard of 1996 and a storm over President's Day Weekend 2003. The 95 New Castle County events resulted in nearly \$4.5 million in property damage, three (3) deaths, and 65 reported injuries. The total estimated annualized losses for the county equal \$1,833,346¹

Earthquake – According to the Delaware Geological Survey, 59 earthquakes have been impacted the State of Delaware during a period from 1638 through 2009. The greatest of these, in terms of the Modified Mercalli Intensity (MMI) scale for earthquakes, was the October 9, 1871 earthquake reported to have had an intensity of VII on the MMI scale in New Castle County. An event registering 7 would correspond to a ranking between 5.4 and 6.1 on the Richter Scale, and would be considered a “very strong” earthquake. No damage estimates are currently available for these events. While New Castle County has felt earthquakes every so often, none have been significant enough to cause any damage for well over 100 years. The coastal plain of the Mid-Atlantic is notorious for being a seismically quiet zone. However, if a serious earthquake were to occur, the losses would likely be significant. This explains the amount of potential annualized losses for the county of \$1,717,731.

Tsunami and Volcano - Though tsunamis are more likely to affect Pacific Rim states, historical evidence does show that tsunamis have affected the Eastern United States and Gulf of Mexico, including Delaware. Due to the relatively low probability of a tsunami significantly impacting the State of Delaware, no further analysis or vulnerability assessment will be conducted for this hazard at this time. There are no active volcanoes in the State of Delaware, thus no historical evidence of volcanic eruption exists within the planning area. There is also no indication that this hazard is a significant enough threat to the state to warrant further analysis or a vulnerability assessment at this time.

Dam/Levee Failure The approach for determining vulnerability to dam and/or levee failure consists of a number of factors. Data from the USACE National Inventory of Dams (NID)² in addition to the HAZUS-MH demographic inventory

¹ It is important to note that for winter storm, some factors that contribute to a community's actual and perceived losses are not reflected in this analysis, such as removal of snow from roadways, debris clean-up, some indirect losses from power outages, etc.

² With the National Dam Inspection Act of 1972, the U.S. Congress authorized the U.S. Army Corps of Engineers (USACE) to inventory dams located in the United States. The Water Resources Development

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was used, with an assumption that dam breaks most likely will occur at the time of maximum capacity.³ The affected population was then calculated. There are 9 dams in NCC that were determined to have a vulnerability to place at risk a total of 4,991 people.

Terrorism – Because of the relevantly recent, or heightened, focus being placed on managing terrorism and consequences of terrorism in the United States, no historical database is currently available for cataloging acts of terrorism. However, at the time of this Plan's development, no significant historical occurrences of terrorism were known to have taken place within the New Castle County planning area. Evaluation of terrorism potential is maintained through the Delaware Homeland Security Working Group and the Critical Infrastructure Protection Plans developed under DHS guidance.

Hazardous Materials - National Response Center (NRC) data for New Castle County for the last 5 years from 2004 to 2008 shows that there were 476 incidents, 10 injuries, 9 deaths, and \$50,000 in damage.

Energy Pipeline Failure - 622 miles of Energy pipelines cross most of the County's boundaries. If any of these energy pipelines, oil or gas, were to rupture, such an event could endanger property and lives in the immediate area (within less than half a mile radius).

Overall Risk Ranking for New Castle County (updated with 2010 revision)

Hazard	Rank
Coastal Flood	1
Riverine Flood	2
Hurricane Wind	3
Earthquake	4
Winter Storm	5
Severe Thunderstorm	6
Extreme Temperatures	7
Tornado	8
Lightning	9
Hail	10
Drought	11

Act of 1986 authorized USACE to maintain and periodically publish an updated National Inventory of Dams (NID).

³Downstream quarter-circle buffer proportional to the maximum capacity of dams are assumed to represent the maximum impact area.

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Probability of Future Events -The final step of any hazard analysis is calculating the likelihood of future events. Given the number of events that have occurred in the past and the time period over which those events have occurred, one can calculate the number of events that occur per year. This gives a sense of the probability of future occurrences. The results of this calculation for New Castle County are presented in **Table 4.2-9**.

Mitigation Goals and Objectives

The Hazard Mitigation Advisory Committee supported the review of the goals, objectives, mitigation actions, and initiatives (mitigation strategy).

The mitigation actions address or solve statewide mitigation issues or problems. The State Hazard Mitigation Advisory Committee revisited the following mission statement for the New Castle County All Hazard Mitigation Plan and the following goals and for hazard mitigation. The majority of the goals were retained from the 2004 Plan. One new goal (#10) was added.

Mission - Develop and maintain a comprehensive pre- and post-disaster hazard mitigation program guided by the effective use of technology and data, improved communications and warnings, the purchase of necessary equipment, sound planning, the adoption of codes, enhanced transportation networks, expanded education and outreach efforts, strengthened public facilities and infrastructure and the implementation of projects designed to reduce the vulnerability of individuals, families, households, businesses, infrastructure, and critical facilities to the negative effects of natural and human-caused.

- Goal #1 New Castle County will maximize the use of technology and data to develop sound mitigation policies and projects.

- Goal #2 New Castle County will emphasize the use of sound planning practices to reduce the impacts of natural and human-caused hazards.

- Goal #3 New Castle County will acquire or upgrade existing equipment to improve disaster readiness and implement hazard mitigation measures.

- Goal #4 New Castle County will improve communication and warning systems to better protect lives and property from the potential impacts of natural and human-caused hazards.

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- Goal #5 New Castle County will consider the adoption and implementation of local codes to reduce the impact of natural and human caused hazards.
- Goal #6 New Castle County will adopt transportation-related measures to improve evacuation, sheltering and security concerns.
- Goal #7 New Castle County will enhance education and outreach strategies to improve the dissemination of information to the public regarding hazard, including the steps that can be taken to reduce their impact.
- Goal #8 New Castle County adopts mitigation measures that better protect public facilities and critical infrastructure from the impact of natural and human-caused hazards.
- Goal #9 New Castle County will identify and implement sound hazard mitigation projects.
- Goal #10 New Castle County will ensure that sound stormwater management principles are implemented throughout the County.

Mitigation actions from the 2004 Plan were reviewed in detail to determine the status of each action (completed, cancelled, in progress, not started, ongoing, etc.) Specific mitigation actions are contained in Section 6.2 of the Plan. Of the actions developed in the 2004 plan, a total of 30 actions have been completed in the municipalities and unincorporated areas of the county, and five actions have been cancelled. The majority of the remaining actions that have been carried over into the 2009 update have not yet been implemented.

Disaster Resilient State Initiative

In February 2003, Governor Ruth Ann Minner signed Executive Order #38 designating Delaware as a disaster resilient state. Currently, the Administration of Governor Jack Markell, who took office in Jan. 2009 has developed and is reviewing an update to this initiative to establish a new Executive Order sanctioning hazard mitigation efforts in the State of Delaware. This Executive Order will be included into the Appendices of the Plan upon adoption.

