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SECTION 6. MITIGATION STRATEGY

This section presents mitigation actions for Warren County to reduce potential exposure and losses identified as concerns in the Risk Assessment section of this HMP update. The Steering and Planning Committee reviewed the risk assessment to identify and develop these mitigation actions, which are presented herein.

This section includes:

- 1) Background and Past Mitigation Accomplishments
- 2) General Mitigation Planning Approach
- 3) Review and Update of Mitigation Goals and Objectives
- 4) Capability Assessment
- 5) Mitigation Strategy Development and Update

Hazard mitigation reduces the potential impacts of, and costs associated with, emergency and disaster-related events. Mitigation actions address a range of impacts, including impacts on the population, property, the economy, and the environment.

Mitigation actions can include activities such as: revisions to land-use planning, training and education, and structural and non-structural safety measures.

2016 HMP Update Changes

- For the 2016 HMP update, the mitigation strategy remains in Section 6.
- The mission statement, goals, and objectives were updated to align with the county and state's current mitigation priorities.
- A SWOO exercise was conducted for Warren County and summarized in this section.
- The 2011 HMP capability assessment section was presented in Section 5. For the 2016 HMP update, the capability assessment was expanded and presented in Section 6 (Volume I) and Section 9 (Volume II).
- The mitigation strategy evaluation and prioritization methodology was updated and expanded.

6.1 Background and Past Mitigation Accomplishments

In accordance with DMA 2000 requirements, a discussion regarding past mitigation activities and an overview of past efforts is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this HMP update. The county, through previous and ongoing hazard mitigation activities, has demonstrated that it is pro-active in protecting its physical assets and citizens against losses from natural and human-caused hazards. Examples of previous and ongoing actions, projects, and capabilities include the following:

- The Warren County Department of Public Safety/Office of Emergency Management facilitated the development of the original Warren County HMP, completed and approved by FEMA in 2011, which included the 22 municipalities. The current planning process is also being led by the County which includes participation of all 22 municipalities.
- Warren County partnered with Hunterdon County to develop an enhanced mitigation strategy to acquire the severe repetitive loss (SRL) properties in both Counties. In 2015, the two Counties submitted a regional application to apply for FEMA Flood Mitigation Assistance funding to acquire the interested SRL properties. Further information regarding this enhanced strategy may be found in Appendix H.
- Warren County Office of Emergency Management is currently developing a regional rail plan for hazardous materials in transit.
- WC Department of Engineering and County Department of Public Works (Roads and Bridges Division) regularly inspect bridges and roads on the County scour watch list for scour and debris post-storm and flood events to ensure structural integrity is being maintained.



- WC Department of Engineering and County Department of Public Works coordinate projects based upon assessment of need to include in the annual Capital Improvement Budget. These projects include addressing roads that experience frequent flooding (i.e., roadway design and drainage improvements).
- The County HAZMAT maintains effective coordination and information sharing related to hazardous material sites with NJOEM and the Right to Know Network (RTKN).
- Warren County is developing a Shelter Task Force that will be used to determine sheltering gaps/needs within the County. The County is working with the New Jersey State Police on this project.
- The WCOEM conducts outreach 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 four times a year at the WCOEM's Emergency Managers Coordination Quarterly (EMCQ) meetings. Additionally, WCOEM attends the annual New Jersey Emergency Preparedness Conference in Atlantic City.
- Municipalities have actively participated in available mitigation grant funding opportunities to implement mitigation projects. Details on these projects are presented in Section 9 of this HMP update.
- Municipalities have incorporated hazard mitigation into their daily operations and planning mechanisms. A summary of current and future plan integration activities are presented in each municipality's annex in Section 9 of this HMP update.

These past and ongoing activities have contributed to the county's understanding of its hazard preparedness and future mitigation activity needs, costs, and benefits. These efforts provide a foundation for the Planning Committee to use in developing this HMP update.

6.2 General Mitigation Planning Approach

The overall approach used to update the county and local hazard mitigation strategies are based on FEMA and State of New Jersey regulations and guidance regarding local mitigation plan development, including:

- DMA 2000 regulations, specifically 44 CFR 201.6 (local mitigation planning)
- FEMA "Local Mitigation Planning Handbook", March 2013
- FEMA Local Mitigation Plan Review Guide, October 1, 2011
- FEMA "Integrating Hazard Mitigation into Local Planning", March 1, 2013
- FEMA "Plan Integration: Linking Local Planning Efforts", July 2015
- FEMA Mitigation Planning How-To Guide #3, Identifying Mitigation Actions and Implementing Strategies (FEMA 386-3)
- FEMA "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards", January 2013

The mitigation strategy update approach includes the following steps that are further detailed later in this section:

- Review and update mitigation goals and develop objectives
- Identify mitigation capabilities, and evaluate their capacity and effectiveness to mitigate and manage hazard risk
- Identify progress on previous county and local mitigation strategies
- Develop updated county and local mitigation strategies



- Prepare an implementation strategy, including the prioritization of projects and initiatives in the updated mitigation strategy

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6.3 Review and Update of Mitigation Goals and Objectives

This section documents the efforts to update the hazard mitigation goals and objectives to reduce or avoid long-term vulnerabilities to the identified hazards.

6.3.1 Goals and Objectives

According to 44 CFR 201.6(c)(3)(i): “The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.” Further, FEMA mitigation planning guidance recommends establishing objectives to better tie mitigation goals to specific mitigation strategies (e.g. projects, activities, and initiatives).

For the purposes of this HMP update, goals are defined as follows:

Goals are general guidelines that explain what is to be achieved. They are usually broad, long-term, policy-type statements and represent global visions. Goals help define the benefits the HMP is trying to achieve. The success of the HMP, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of hazard mitigation).

FEMA defines **Goals** as general guidelines that explain what should be achieved. Goals are usually broad, long-term, policy statements, and represent a global vision.

FEMA defines **Objectives** as strategies or implementation steps to attain mitigation goals. Unlike goals, objectives are specific and measurable, where feasible.

FEMA defines **Mitigation Actions** as specific actions that help to achieve the mitigation goals and objectives.

The 2011 goals and objectives were reviewed by the Steering Committee in February 2015 in consideration of the hazard events and losses since the 2011 plan, the updated hazard profiles and vulnerability assessment, the goals and objectives established in the updated State of New Jersey HMP, county and local risk management plans, as well as direct input on how the Steering Committee (representing the county and participating municipalities) recognized the need to move forward to best manage their hazard risk. Through facilitated discussion and brainstorming, it was decided to revise all of the HMP goals. In essence, the 2011 goals remain as a part of the 2016 goals and new objectives for the county; however the goals were broadened and new objectives were added to provide a more specific course of action to meet the goals.

The following are the updated goals for the 2016 Warren County HMP update:

1. Protect life
2. Protect property
3. Increase public preparedness and awareness
4. Develop and maintain an understanding of risks from hazards
5. Enhance county and local mitigation capabilities to reduce hazard vulnerabilities
6. Support continuity of operations pre-, during and post-hazard events

Warren County HMP goals are compatible with the needs and goals expressed in other available community planning documents as well as the State of New Jersey HMP. Each goal has a number of corresponding objectives that further define the specific actions or implementation steps. Achievement of these goals will define the effectiveness of a mitigation strategy. The goals also are used to help establish priorities.



Objectives are short-term aims which, when combined, form a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable. The objectives were developed by the Steering Committee through its knowledge of the local area, review of past efforts, findings of the risk assessment, qualitative evaluations, and identification of mitigation options. The objectives are used to (1) measure the success of the HMP once implemented, and (2) to help prioritize identified mitigation actions.

Table 6-1 presents Warren County’s goals and objectives for the 2016 HMP update. Although an objective is listed with each goal, the objectives were developed to meet multiple goals as demonstrated in Table 6-2.

Table 6-1. Warren County Hazard Mitigation Plan Goals and Objectives

Goal	Objective
Goal 1: Protect life	1.1: Increase communications and improve warning and emergency communications systems (New)
	1.2: Pursue cost-effective mitigation actions to reduce the impacts of hazards on people, property and vulnerable populations (modified 2011 Goal #4)
	1.3: Maintain and enhance local planning and regulatory standards related to future development and investments (2011 Objective 4.B)
Goal 2: Protect property	2.1: Protect/harden/retrofit critical facilities and infrastructure (2011 Objective 4.A)
	2.2: Reduce repetitive and severe repetitive losses (2011 Goal #4)
	2.3: Pursue mitigation actions that will preserve or restore the environment’s natural abilities to absorb the impacts of hazards (New)
Goal 3: Increase public preparedness and awareness	3.1: Improve education and outreach efforts regarding potential impacts of hazards, and the identification of specific measures that can be taken to reduce their impact (2011 Goal #1)
	3.2: Increase awareness of risks and understanding of the advantages of mitigation to the general public and local government officials (2011 Objective 1.A)
	3.3 Increase local government official awareness regarding funding opportunities for mitigation and participating/contributing to future Plan updates (2011 Objectives 1.B and 1.C)
Goal 4: Develop and maintain an understanding of risks from hazards	4.1: Maintain and enhance critical facilities data such that these sites can be prioritized and risk-assessed for possible mitigation actions (2011 Objective 2.C)
	4.2: Improve hazard data available to the county, participating communities and private citizens for use in future planning efforts (2011 Objective 2.A and Objective 3.E)
	4.3: Improve data collection, use, and sharing to reduce the impacts of hazards (2011 Goal #2)
Goal 5: Enhance county and local mitigation capabilities to reduce hazard vulnerabilities	5.1: Provide government officials and local practitioners with educational opportunities and information regarding best practices for hazard mitigation planning, project identification and implementation (2011 Objective 2.B)
	5.2: Support increased participation in the National Flood Insurance Program and Community Rating System (2011 Objective 3.B)
	5.3 Support increased integration of hazard mitigation planning and floodplain management with effective municipal zoning regulation, and effective municipal/county subdivision regulation, site plan regulation and comprehensive planning implementation (2011 Objective 3.C)
Goal 6: Support continuity of operations pre-, during and post- hazard events	6.1: Ensure continuity of operations of essential county and local government services (New)
	6.2: Increase resiliency by facilitating rapid disaster recovery (New)
	6.3: Support and encourage the implementation of back-up and alternative energy sources (New)



Table 6-2. Warren County Hazard Mitigation Plan Objectives

Obj. #	Objective Statement	Goal 1: Protect Life	Goal 2: Protect Property	Goal 3: Increase public preparedness and awareness	Goal 4: Develop and maintain an understanding of risks from hazards	Goal 5: Enhance county and local mitigation capabilities to reduce hazard vulnerabilities	Goal 6: Support continuity of operations pre-, during and post-hazard events
1.1	Improve warning and emergency communications systems.	X		X		X	X
1.2	Pursue cost-effective mitigation actions to reduce the impacts of hazards on people, property and vulnerable populations (modified 2011 Goal #4)	X	X	X	X	X	X
1.3	Maintain and enhance local planning and regulatory standards related to future development and investments (2011 Objective 4.B)	X	X		X	X	
2.1	Protect/harden/retrofit critical facilities and infrastructure (2011 Objective 4.A)	X	X				X
2.2	Reduce repetitive and severe repetitive losses (2011 Goal #4)	X	X				
2.3	Pursue mitigation actions that will preserve or restore the environment's natural abilities to absorb the impacts of hazards (New)	X	X			X	
3.1	Improve education and outreach efforts regarding potential impacts of hazards, and the identification of specific measures that can be taken to reduce their impact (2011 Goal #1)			X			X
3.2	Increase awareness of risks and understanding of the advantages of mitigation to the general public and local government officials (2011 Objective 1.A)				X	X	
3.3	Increase local government official awareness regarding funding opportunities for mitigation and participating/contributing to future Plan updates (2011 Objectives 1.B and 1.C)				X	X	
4.1	Maintain and enhance critical facilities data such that these sites can be prioritized and risk-assessed for possible mitigation actions (2011 Objective 2.C)		X		X	X	X
4.2	Improve hazard data available to the county, participating communities and private citizens for use in future planning efforts (2011 Objective 2.A and Objective 3.E)				X	X	
4.3	Improve data collection, use, and sharing to reduce the impacts of hazards (2011 Goal #2)					X	
5.1	Provide government officials and local practitioners with educational opportunities and information regarding best practices for hazard mitigation planning, project identification and implementation (2011				X	X	



Obj. #	Objective Statement	Goal 1: Protect Life	Goal 2: Protect Property	Goal 3: Increase public preparedness and awareness	Goal 4: Develop and maintain an understanding of risks from hazards	Goal 5: Enhance county and local mitigation capabilities to reduce hazard vulnerabilities	Goal 6: Support continuity of operations pre-, during and post-hazard events
	Objective 2.B)						
5.2	Support increased participation in the National Flood Insurance Program and Community Rating System (2011 Objective 3.B)	X	X	X			
5.3	Support increased integration of hazard mitigation planning and floodplain management with effective municipal zoning regulation, and effective municipal/county subdivision regulation, site plan regulation and comprehensive planning implementation (2011 Objective 3.C)				X	X	
6.1	Ensure continuity of operations of essential county government services (New).	X	X				X
6.2	Increase resiliency by facilitating rapid disaster recovery (New).	X	X				X
6.3	Support and encourage the implementation of alternative energy sources (New).	X	X				X

Note:

Obj. Objective

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6.4 Capability Assessment

According to FEMA 386-3, a capability assessment is an inventory of a community's missions, programs, and policies; and an analysis of its capacity to carry them out. This assessment is an integral part of the planning process. The assessment process enables identification, review, and analysis of local and state programs, policies, regulations, funding, and practices currently in place that may either facilitate or hinder mitigation.

For the 2016 HMP update, the county and all municipalities identified and assessed their capabilities in the areas of planning and regulatory, administrative and technical, and fiscal. By completing this assessment, the county and each municipality learned how or whether they would be able to implement certain mitigation actions by determining the following:

- Limitations that may exist on undertaking actions;
- The range of local and/or state administrative, programmatic, regulatory, financial, and technical resources available to assist in implementing their mitigation actions;
- Actions currently outside the scope of capabilities;
- Types of mitigation actions that may be technically, legally (regulatory) administratively, politically, or fiscally challenging or infeasible;
- Opportunities to enhance local capabilities to support long-term mitigation and risk reduction.

During the 2016 HMP update process, all participating jurisdictions were tasked with developing their capability assessment, paying particular attention to evaluating the effectiveness of these capabilities in supporting hazard mitigation, and identifying opportunities to enhance local capabilities. The purpose of this section is to provide a summary of these capabilities for the purposes of mitigation and does not describe all responsibilities of each entity. The following subsections and tables present a summary of these assessments.

More detailed county and municipal capabilities in the areas of planning and regulatory, administrative and technical, and fiscal may be found in the Capability Assessment section of the jurisdictional annexes in Section 9. Further, within each annex, participating jurisdictions have identified how they have integrated hazard risk management into their existing planning, regulatory, and operational/administrative framework ("integration capabilities"), and how they intend to promote this integration ("integration actions"). A further summary of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 7.

6.4.1 Planning and Regulatory Capability

According to the *FEMA Local Mitigation Handbook*, planning and regulatory capabilities are based on the implementation of ordinances, policies, local laws and state statutes, and plans and programs that relate to guiding and managing growth and development. Warren County and its municipalities have various federal, state, county, and local policies, programs, and plans available to promote and support mitigation and reduce future damages. Refer to Section 9 which summarizes the planning and regulatory capabilities per municipality.

State of New Jersey Hazard Mitigation Plan

The State of New Jersey HMP includes an evaluation of the state's overall pre- and post-hazard mitigation policies, programs, and capabilities; the policies related to development in hazard-prone areas; and the state's funding capabilities. The State of New Jersey HMP thoroughly describes the federal and state programs available to Warren County to promote mitigation. The State of New Jersey HMP was used as a resource in developing Warren County's HMP update.



National Flood Insurance Program (NFIP)

The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968 (FEMA's 2002 NFIP: Program Description). The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.

There are three components to the NFIP: flood insurance, floodplain management, and flood hazard mapping. Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary. Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage in the U.S. is reduced by nearly \$1 billion each year through communities implementing sound floodplain management requirements and property owners purchasing flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance (FEMA 2008).

All jurisdictions in Warren County participate in the NFIP. The effective Flood Insurance Rate Maps (FIRMs) for the County and all jurisdictions are dated September 29, 2011. Further details on the county's flood vulnerability may be found in the flood hazard profile in Section 5.4.4.

NFIP Community Rating System (CRS)

As an additional component of the NFIP, the CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance (FEMA 2012). Currently, there are no communities in Warren County participating in the CRS program.

Critical Area Protection Policy

Green Acres Program; Blue Acres Program; Historical Preservation Program; Farmland Preservation; Wetlands Act of 1970 (N.J.S.A. 13:9A); Soil and Erosion and Sediment Control Act (N.J.S.A. 4:24); Highlands Water Protection and Planning Act (N.J.S.A. 13:20-1).

These programs provide funding for the State, municipalities, and counties to purchase land for open-space preservation and recreation. The Wetlands Act of 1970 (N.J.S.A. 13:9A) provide rules and regulations governing development in wetland areas of New Jersey. New Jersey has 15 soil conservation districts, following county boundaries that implement the New Jersey Soil Erosion and Sediment Control Act (N.J.S.A. 4:24), which governs certain aspects of new development. The Highlands Act calls for a prohibition on development on steep slopes defined in the Act.

Land Use Planning Policy

The State of New Jersey Municipal Land Use Law (L.1975, c. 291, s. 1, effective August 1, 1976) is the legislative foundation for the land use process, including decisions by Planning Boards and Zoning Boards of Adjustment, in the State of New Jersey. It defines the powers and responsibilities of boards and is essential to their functions and decisions. It also provides the required components of a municipal master plan.

Every municipal agency shall adopt and may amend reasonable rules and regulations, not inconsistent with this act or with any applicable ordinance, for the administration of its functions, powers, and duties. These plans



help jurisdictions review their land use plans and policies with public participation. The Municipal Land Use Law requires that each municipality prepare a comprehensive plan and update that plan every 6 years.

The County currently has a Master Plan, Strategic Growth Plan, and Open Space Plan. These plans identify flood areas, steep slopes and other environmental constrained areas. Additionally, smart growth practices are recommended in the County's Strategic Growth Plan. The County's Open Space Plan discusses practices to protect natural resources throughout Warren County and recommends the acquisition/conservation of hazard areas and not building within these hazard areas. All municipalities have master plans. The master plans were reviewed and consulted when developing the goals and objectives of the HMP update, as well as updating each community's mitigation strategy.

Floodplain Management Policy

The New Jersey State Law Flood Hazard Area Control Act (NJSA 58:16A-52) and subsequent regulations attempt to minimize damage to life and property from flooding caused by development within fluvial and tidal flood hazard areas, to preserve the quality of surface waters, and to protect the wildlife and vegetation that exist within and depend upon such areas for sustenance and habitat. While it does not require local adoption, as it is enforced by the NJDEP, the floodplain ordinances of each municipality need to be reviewed to be in compliance with this new regulation.

All municipalities in Warren County participate in the NFIP and have a Floodplain Ordinance. Communities are encouraged to adopt standards which exceed NFIP requirements.

Building Codes Policy

Uniform Construction Code (Uniform Construction Code Act of 1975 [UCC]) requires all jurisdictions to have current land use master plans, zoning, and other land development ordinances. The UCC adopts up-to-date building codes as its Building Subcode and One- and Two-Family Subcode. These subcodes contain requirements that address construction in both A and V flood zones.

Building codes mandate best practices and technology, much of which is designed to reduce or prevent damage from occurring when structures are under stress. New Jersey State Law requires that all municipalities adopt ordinances that follow the UCC. In January 2013, the state established by emergency rule the best available data from FEMA's latest flood maps, plus one foot of freeboard, as the general rebuilding standard to adapt to changing flood hazard risks and corresponding federal flood insurance rates. All municipalities in Warren County have an active building code.

Emergency Management Plan

According to State Police Directive 101, each county and municipality shall prepare, adopt, and maintain an emergency operations plan that meets the requirements of the State Emergency Operations Plan guidelines and checklist. The plan describes the hazards faced by the jurisdiction as well as the jurisdictions capabilities, needs, demands, and emergency management structure. Warren County and each municipality have an emergency operations plan.

6.4.2 Administrative and Technical Capability

According to the FEMA Local Mitigation Handbook, administrative and technical capability refers to a community's staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. It also refers to the ability to access and coordinate these resources effectively. Local mitigation is further supported by county, regional, state, and federal administrative and technical capabilities.



The following summarizes the administrative and technical capabilities available in Warren County. Based upon the capability assessment conducted, municipal administrative and technical capabilities vary across the county. Refer to Section 9 which describes each municipality's administrative and technical capabilities.

6.4.2.1 Administrative and Technical Capabilities – Federal and State

New Jersey State Police – Office of Emergency Management (NJOEM)

The Governor of New Jersey has the overall responsibility for Emergency Management activities in the State. The Superintendent of the New Jersey State Police is the State Director of the New Jersey Office of Emergency Management (NJOEM). On behalf of the Governor, all activities and departments are coordinated, directed, and controlled from the NJOEM, Emergency Operations Center.

The State Director of Emergency Management supervises, directs, and appoints deputies and/or assistants to control the daily activities of NJOEM. The function and staffing of NJOEM is with the approval of the Attorney General. The State Hazard Mitigation Officer is the representative of State government acting as the primary point of contact with FEMA, other federal agencies, and county and local units of government in the planning and implementation of pre- and post-disaster mitigation programs and activities required under the Stafford Act. Currently, the New Jersey State Hazard Mitigation Officer is Acting Sergeant First Class Michael Gallagher of NJOEM.

Recovery Bureau

The Chief of the Recovery Bureau supervises the Mitigation, Public Assistance, and Finance Units. The Mitigation Unit undertakes hazard mitigation planning and the review of mitigation projects in advance of potential disasters, and is also activated during and immediately after disasters to evaluate existing and proposed mitigation measures in the affected areas.

The Public Assistance Unit accepts and reviews applications for funds for emergency work submitted by local individuals, households, and businesses, as well as from local governments during and immediately after a disaster. The 2013 reorganization of the Bureau added a dedicated Finance Unit to support the fiscal functions of both the Public Assistance and Mitigation Units. The Finance Unit ensures timely reimbursements and fiduciary responsibility.

Mitigation Unit

The Mitigation Unit, within the Emergency Management Section, has the mission of enhancing State, county, and municipal risk reduction through the development and implementation of mitigation strategies. Hazard mitigation, by definition, is any sustained action that prevents or reduces the loss of property or human life from recurring hazards. The Mitigation Unit accomplishes this task by implementing and administering several grant-based programs in conjunction with FEMA.

Preparedness Bureau

The Preparedness Unit in the Preparedness Bureau is responsible for disseminating preparedness information in advance of a disaster or potential disaster. The Preparedness Unit maintains an extensive library of natural disaster preparedness and recovery information on its Family and Community Emergency Preparedness website, accessible at www.nj.gov/njoem or www.njsp.org/njoem. The disaster preparedness and recovery information featured prominently on the New Jersey State Police and NJOEM website home pages is a critical part of New Jersey's efforts to protect public health and safety and to minimize loss of life and property in the event of a disaster.



Hazard Mitigation Administrative Plan

In the event that an active disaster declaration has necessitated a FEMA-approved HMGP Administrative Plan, the plan is reviewed to ensure compliance with the prevailing guidance and to set forth the administrative procedures, organization, and requirements for administering the HMGP in New Jersey. The HMGP Administrative Plan is developed by the State and details the process for prioritizing post-disaster mitigation funding of local mitigation projects.

New Jersey Department of Environmental Protection

Bureau of Dam Safety & Flood Control

The Bureau of Dam Safety & Flood Control leads the State's efforts as the State NFIP Coordinator and Community Rating System (CRS) support. In addition, the section's responsibilities include the funding of construction and operation of federal-state-local flood control mitigation projects throughout the state. The section has also taken a lead role on the development and adoption of NJ Flood Hazard Area mapping, as well as an active partnership with FEMA on their FEMA Map Modernization Program efforts. The Bureau provides assistance to communities participating in the NFIP and interested in joining CRS thru the NJDEP Community Assistance Program Unit.

NJDEP Dam Safety Section

The NJDEP Dam Safety Section under the Bureau of Dam Safety and Flood Control has responsibility for overseeing dam safety in the State. In 1912, the New Jersey legislature passed a series of safety regulations related to the construction, repair, and inspection of existing and proposed dams in the State. In 1981, the law was amended and became the Safe Dam Act, N.J.S.A. 58:4. Eventually in 1985, the Dam Safety Standards, N.J.A.C. 7:20 regulations were passed eventually leading to the Dam Safety Section.

The primary goal of the program is to ensure the safety and integrity of dams in New Jersey and, thereby, protect people and property from the consequences of dam failures. The Section also coordinates with the Division of State Police, local and county emergency management officials in the preparations and approval of Emergency Action Plans.

The Dam Safety Section reviews plans and specifications for the construction of new dams or for the alteration, repair, or removal of existing dams and must grant approval before the owner can proceed with construction. Engineers from the Section evaluate each project, investigate site conditions, and check recommended construction materials. During construction, engineers identify conditions that may require design changes, check for compliance with approved plans and specifications, and approve foundations before material is placed.

Existing dams are periodically inspected to assure that they are adequately maintained and owners are directed to correct any deficiencies found. The regulations require the owner to obtain a professional engineer to inspect their dams on a regular basis. These investigations include a comprehensive review of all pertinent material contained in the Department's files, a visual inspection, technical studies when necessary, and the preparation of a comprehensive report (NJDEP 2012a).

The owners or operators of all dams which raise the waters of any stream more than 70 feet above its usual mean low-water height or which impound more than 10,000 acre-feet of water shall have a regular inspection performed annually and formal inspections performed every three years by a New Jersey licensed professional engineer obtained by the owner. In addition, these inspections must be attended by a professional engineer assigned from the NJDEP.



Division of Water Supply and Geoscience

The Division of Water Supply and Geoscience (Water Supply) works to ensure adequate, reliable and safe water supply is available for the future. This goal is accomplished through the regulation of ground and surface water diversions, permitting of wells, permitting of drinking water infrastructure, monitoring of drinking water quality and technical support for water systems to achieve compliance with all Federal and State standards. In addition, Water Supply staff act in a support role during an emergency situation to provide technical assistance, as needed to re-establish safe and adequate public water supplies.

Water Supply staff provides technical assistance to assist water systems during water supply emergencies and to address routine non-compliance from significant deficiencies or poor water quality test results. The Drinking Water State Revolving Fund (DWSRF) program assists water systems in financing the cost of infrastructure through the use of federal and New Jersey Infrastructure Trust funds. Additionally, Water Supply provides operator licensing and training support as well as financial assistance through the DWSRF program.

Water Resource Management

The Water Pollution Management Element is responsible for protecting New Jersey's surface and ground waters from pollution caused by improperly treated wastewater and its residuals. This is accomplished primarily through the implementation of the New Jersey Pollutant Discharge Elimination System (NJPDES) permit program. This includes publicly owned treatment facilities (e.g. sanitary sewerage plants) and privately owned facilities (e.g. industrial facilities) as well as facilities that discharge stormwater (e.g. municipalities and highway agencies) and stormwater related to development. The NJPDES program also regulates discharges to ground water (e.g. septic systems) and the proper management of any residuals that are generated as part of the treatment process. The varied ownership of infrastructure components is often a complicating factor in the regulation of these entities (e.g. ownership of a treatment facility by a public entity and sewer mains by a different municipal entity). The total universe of NJPDES permits includes over 7500 permits. The Programs engineering and environmental specialist staff provide technical assistance in the development, interpretation and implementation of permit conditions.

New Jersey Department of the State - Office of Planning Advocacy (OPA) - Business Action Center

Supports and coordinates planning throughout NJ to protect the environment, mitigate development hazards and guide future growth into compact, mixed use development and redevelopment while fostering a robust long-term economy. The Office implements the goals of the State Development and Redevelopment Plan to achieve comprehensive, long term planning; and integrates that planning with programmatic and regulatory land use decisions at all levels of government and the private sector.

New Jersey Geological and Water Survey

Evaluates geologic, hydrogeologic and water quality data to manage and protect water resources, to identify natural hazards and contaminants, and to provide mineral resources including offshore sands for beach nourishment. Information provided by the survey includes GIS data and maps of geology, topography, groundwater and aquifer recharge. In addition the data tracks wellhead protection areas, aquifer thicknesses, properties and depths, groundwater quality, drought, geologic resources, and hazards such as earthquakes, abandoned mines, karst-influenced sinkholes and landslides. Equivalent of three work days is available to counties and/or municipalities upon written or electronic request to the State Geologist.



Rutgers University

Office of the New Jersey's State Climatologist

The ONJSC generates and archives climate data. Generated data are from the NJ Weather and Climate Network (NJWxNet), an assemblage of 55 automated weather stations situated throughout NJ. A decade or more of hourly observations are available from some of the stations, while others have shorter records. Since fall 2012 observations are available on a five-minute basis.

Along with these records, ONJSC archives or has ready access to National Weather Service (NWS) Cooperative Weather Station data. These are daily observations from several dozen stations at any given time over the past century plus. Individual stations have as many as 120 years of data; others have come and gone since the late 19th century. Another source of generated data is the Community Collaborative Rain, Hail and Snow Network (CoCoRaHS), which includes daily observations of rain and snow from as many as several hundred volunteers throughout NJ.

New Jersey Climate Adaptation Alliance

The New Jersey Climate Adaptation Alliance was formed in response to a diverse group of stakeholders who came together on November 29, 2011 at Rutgers University to participate in the conference “Preparing NJ for Climate Change: A Workshop for Decision-Makers”.

The Alliance focuses on climate change preparedness for New Jersey in key impact sectors (public health; watersheds, rivers and coastal communities; built infrastructure; agriculture; and natural resources) through:

- Conducting outreach and education of the general public and targeted sectoral leaders;
- Developing recommendations for state and local actions through collaboration with policymakers at the state, federal and local levels;
- Undertaking demonstration and pilot projects in partnership with the private sector, local governments, non-governmental organizations, and others;
- Identifying science, research and data needs; and
- Developing capacity for implementation of preparedness measures and documentation of best practices (Rutgers University 2014).

NJADAPT is a collaborative effort of scientists and data managers in academia, government, the private sector and NGO community who have developed a strategic plan for a New Jersey platform to host and apply climate science impacts and data. NJADAPT includes a flood exposure profile for community discussions about hazard impacts; NJ Flood Mapper which is a tool for flooding hazards and sea level rise; and Getting to Resilience, a tool used to help communities reduce vulnerability and increase preparedness. NJADAPT can be accessed at <http://www.njadapt.org/>

6.4.2.2 Administrative and Technical Capabilities – County and Local

Warren County Department of Public Safety/Office of Emergency Management

The Warren County Department of Public Safety/Office of Emergency Management (Warren County OEM) acts as a coordinating agency among local, state, and federal agencies. In addition, they work in conjunction with county and municipal health agencies and health care providers, and emergency service personnel including police, fire, EMS, and the Sheriff's Office to coordinate responses in the event of an emergency.



The Warren County OEM assists local agencies in the establishment of their emergency operations plan, which it then sends on to the New Jersey State Police Office of Emergency Management for final approval. The Warren County OEM also files all municipal applications for state and/or federal disaster relief funding.

The Warren County Department of Public Safety/OEM is leading the HMP update. As mitigation grant funding becomes available, the Warren County distributes information to the local offices of emergency management at County Working Group/Local Emergency Planning Committee (CWG/LEPC) quarterly meetings. The Warren County Department of Public Safety/OEM maintains the County Continuity of Operations/Continuity of Government (COOP/COG), leads the LEPC, and is leading the Hazard Mitigation Grant Program (HMGP)-Energy Allocation Initiative for the county.

The Warren County Department of Public Safety/OEM currently maintains relationships with the U.S. Army Corps of Engineers and the Delaware River Basin Commission. These relationships help provide the County with technical information and/or assistance in the identification of hazard areas and risk assessments.

The Warren County Department of Public Safety/OEM sponsors and participates in various exercises to evaluate various county agency and stakeholder abilities to respond to a situation, such as a natural hazard event. The following describes a sampling of exercises and meetings participated in the recent past, demonstrating the county's commitment to preparedness:

- Warren County OEM attends the State OEM Coordinators meetings.
- In July 2014, Warren County OEM hosted and participated in an OEM Basic Workshop for statewide OEM Coordinators.
- In August 2014, Warren County OEM participated in a hazardous materials exercise with a local business (Avantor).
- On March 30, 2015, Warren County OEM hosted a training led by NJOEM to train OEM coordinators and other County employees regarding their roles and responsibilities during a disaster.
- In August 2015, Warren County employees took a Crude by Rail Emergency Preparedness course which was provided by the National Emergency Management Association (NEMA).
- NJDEP Dam Safety gave two presentations to County municipalities regarding dam failure/dam safety and the Cannonsville dam situation.
- In July 2015, the County took part in a medical needs sheltering exercise.
- In the fall 2015, the County participated in a sheltering tabletop exercise with Morris County.
- Warren County OEM employees participated in the following: dam safety training, Bakken oil seminar, railroad planning training, and numerous meetings and exercises regarding emergency preparedness and mitigation.

Warren County Department of Public Works

The Warren County Department of Public Works (Roads and Bridges Division) regularly inspect bridges and roads on the County scour watch list for scour and debris post-storm and flood events to ensure structural integrity is being maintained.

The Warren County Department of Public Works (Engineering) coordinates projects based upon assessment of need to include in the annual Capital Improvement Budget. These projects include addressing roads that experience frequent flooding (i.e., roadway design and drainage improvements).



Warren County Planning Department

The Warren County Planning Board approves applications for development and the plans for development must meet County drainage requirements to minimize risk to County drainage facilities.

As part of the 2016 HMP update, a county-wide critical facility inventory was developed and used to assess risk. The GIS Department under the Planning Department will maintain this dataset for the county.

Warren County Department of Land Preservation

Working with the Warren County Agricultural Development Board, the Warren County Board of Recreation Commissioners, and the Warren County Municipal and Charitable Conservancy Trust Fund Committee, the Land Preservation Department is responsible for administering Warren County's Farmland, Historic, and Open Space Preservation Programs.

Warren County Health Department

The Warren County Health Department is charged with protecting and enhancing the general health and welfare of the County's residents and visitors. This is accomplished by conducting a comprehensive public health program, through activities in the broad categories of Health Promotion, Consumer, Environmental and Personal Health Services.

The 'Ready Together New Jersey', a public health guide to emergency planning, is available on the Health Department's website. In 2014, Warren County Health Department completed a Superstorm Sandy Health & Wellbeing Assessment Report available on their website. The assessment included impacts on finances and personal health.

The Health Department's Emergency Preparedness Division leads the following:

- Bioterrorism and response program – The Warren County Health Department received funding from the NJ Department of Health & Senior Services for the establishment of a bioterrorism preparedness and response program to increase critical capacity.
- HAZMAT Team – The Warren County Hazardous Materials (HAZMAT) Team supports the county in the response to any HAZMAT or chemical, biological, radiological, nuclear, and explosive (CBRNE) incidents.
- NJ LINCS – Warren County participates in the NJ LINCS program. NJ LINCS is a statewide partnership that brings the state health department, local health departments and community organizations together to protect the public's health.
- Medical Reserve Corps – The Warren County Health Department Medical Reserve Corps is a community-based volunteer unit of medical professionals who can assist local public health agencies with public health needs during emergencies.

6.4.3 Fiscal Capabilities

Mitigation projects and initiatives are largely or entirely dependent on available funding. Warren County and its municipalities are able to fund mitigation projects through existing local budgets, local appropriations (including referendums and bonding), and through a myriad of federal and state loan and grant programs. Additional information on funding sources may be found in the 2014 State of New Jersey HMP. The county currently accesses funding from the following sources for mitigation work:

- Federal and state funding programs
- Capital improvements project funding



- Authority to levy taxes for specific purposes
- Incur debt through general obligation funds and special tax bonds
- Open Space Trust Fund
- Capital improvement plans/municipal budgets

County and Local Funding Opportunities

Open Space Trust Fund

The Open Space Trust Fund, which currently collects 4.5 cents per \$100 of assessed property value, has enabled Warren County to preserve over 20,000 acres of farmland, 1,700 acres of county parkland, and participate in numerous historical and open space preservation efforts with local non-profits and municipalities throughout the county. To balance the needs of farmland, open space and historic preservation, the Board of Chosen Freeholders allocates the trust funds as follows:

- 55% to the County Agriculture Development Board for farmland preservation;
- 25% to the Municipal and Charitable Conservancy Trust Fund Committee for non-profit and municipal sponsored open space and historic preservation projects; and
- 20% to the Board of Recreation Commissioners for acquisition of county parkland.

Capital Improvement Plans

Capital improvement plans outline capital spending and investments necessary for public improvements. Many municipalities in Warren County have capital improvement plans. These plans and budgets have been and may continue to be used to fund mitigation projects and demonstrate integration into daily operations. Refer to Section 9 for further details.

Federal Hazard Mitigation Funding Opportunities

Federal mitigation grant funding is available to all communities with a current HMP (this plan); however most of these grants require a “local share”. In general, HMA funds may be used to pay up to 75 percent of the eligible activity costs. The remaining 25 percent of eligible activity costs are derived from non-Federal sources. Exceptions to the 75 percent Federal and 25 percent non-Federal share are described below under the specific FEMA HMA grant programs.

Hazard Mitigation Grant Program (HMGP)

The HMGP is a post-disaster mitigation program. It is made available to states by FEMA after each federal disaster declaration. The HMGP can provide up to 75% funding for hazard mitigation measures. The HMGP can be used to fund cost-effective projects that will protect public or private property in an area covered by a federal disaster declaration or that will reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard-prone areas, flood-proofing or elevation to reduce future damage, minor structural improvements, and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved HMP (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to NJOEM and placed in rank order for available funding and submitted to



FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and may be considered as additional HMGP funding becomes available.

Flood Mitigation Assistance (FMA) Program

The FMA combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP-insured homes and businesses are eligible for mitigation under this program. Funding for FMA is limited and, as with the HMGP, individuals cannot apply directly for the program. FEMA may contribute up to 100 percent Federal cost share for severe repetitive loss properties. FEMA may contribute up to 90 percent Federal cost share for repetitive loss properties. Applications must come from local governments or other eligible organizations. FMA funds are distributed from FEMA to the state. NJOEM serves as the grantee and program administrator for FMA.

Pre-Disaster Mitigation (PDM) Program

The PDM program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover up to 75% of a project's cost. Small impoverished communities may be eligible for up to a 90 percent Federal cost share. As with the HMGP and FMA, a FEMA-approved local HMP is required to be approved for funding under the PDM program.

Federal and State Disaster and Recovery Assistance Programs

Following a disaster, various types of assistance may be made available by local, state, and federal governments. The types and levels of disaster assistance depend on the severity of the damage and the declarations that result from the disaster event. Among the general types of assistance that may be provided should the President of the United States declare the event a major disaster are the following:

Individual Assistance (IA)

IA provides help for homeowners, renters, businesses, and some non-profit entities after disasters occur. This program is largely funded by the U.S. Small Business Administration. For homeowners and renters, those who suffered uninsured or underinsured losses may be eligible for a Home Disaster Loan to repair or replace damaged real estate or personal property. Renters are eligible for loans to cover personal property losses. Individuals may borrow up to \$200,000 to repair or replace real estate, \$40,000 to cover losses to personal property and an additional 20% for mitigation. For businesses, loans may be made to repair or replace disaster damages to property owned by the business, including real estate, machinery and equipment, inventory and supplies. Businesses of any size are eligible. Non-profit organizations such as charities, churches, private and universities are also eligible. An Economic Injury Disaster Loan provides necessary working capital until normal operations resume after a physical disaster. These loans are restricted, by law, to small businesses only.

Public Assistance (PA)

PA provides cost reimbursement aid to local governments (state, county, local, municipal authorities, and school districts) and certain non-profit agencies that were involved in disaster response and recovery programs or that suffered loss or damage to facilities or property used to deliver government-like services. This program is largely funded by FEMA with both local and state matching contributions required.



Small-Business Administration (SBA) Loans

Small Business Administration (SBA) loans provides low-interest disaster loans to homeowners, renters, business of all sizes, and most private nonprofit organizations. SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.

Homeowners may apply for up to \$200,000 to replace or repair their primary residence. Renters and homeowners may borrow up to \$40,000 to replace or repair personal property-such as clothing, furniture, cars, and appliances – damaged or destroyed in a disaster. Physical disaster loans of up to \$2 million are available to qualified businesses or most private nonprofit organizations.

Department of Homeland Security

The Homeland Security Grant Program (HSGP) plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation. The HSGP supports core capabilities across the five mission area of Prevention, Protection, Mitigation, Response, and Recovery based on allowable cost. HSGP is comprised of three interconnected grant programs including the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), and the Operation Stonegarden (OPSG). Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration.

Community Development Block Grants (CDBG)

CDBG are federal funds intended to provide low- and moderate-income households with viable communities, including decent housing, as suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, planning, and administration. Public improvements may include flood and drainage improvements. In limited instances, and during the times of “urgent need” (e.g., post disaster) as defined by the CDBG National Objectives, CDBG funding may be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event.

Community Development Block Grants-Disaster Recovery (CDBG-DR)

The National Disaster Resilience Competition will make \$1 billion available to communities that have been struck by natural disasters in recent years. The competition will promote risk assessment and planning and will fund the implementation of innovative resilience projects to better prepare communities for future storms and other extreme events. Funding for the competition is from the CDBG-DR appropriation provided by the 2013 Disaster Relief Appropriations Act (PL 113-2).

Federal Highway Administration - Emergency Relief

The Federal Highway Administration Emergency Relief is a grant program that may be used for repair or reconstruction of federal-aid highways and roads on federal lands which have suffered serious damage as a result of a disaster.

Federal Transit Administration - Emergency Relief

The Federal Transit Authority Emergency Relief is a grant program that funds capital projects to protect, repair, reconstruct, or replace equipment and facilities of public transportation systems. Administered by the



Federal Transit Authority at the U.S. Department of Transportation and directly allocated to MTA and Port Authority, this transportation-specific fund was created as an alternative to FEMA PA.

Homeownership Repair and Rebuilding Fund

The Homeownership Repair and Rebuilding Fund provides grants up to an additional \$10,000 to eligible homeowners who have already qualified for FEMA housing assistance's maximum grant (\$31,900) and will not receive other assistance from private insurance or government agencies that would duplicate the grant's funding.

U.S. Economic Development Administration

The USEDA is an agency of the U.S. Department of Commerce that supports regional economic development in communities around the country. It provides funding to support comprehensive planning and makes strategic investments that foster employment creation and attract private investment in economically distressed areas of the United States. Through its Public Works Program, USEDA invests in key public infrastructure, such as in traditional public works projects, including water and sewer systems improvements, expansion of port and harbor facilities, brownfields, multitenant manufacturing and other facilities, business and industrial parks, business incubator facilities, redevelopment technology-based facilities, telecommunications and development facilities. Through its Economic Adjustment Program, USEDA administers its Revolving Loan Fund (RLF) Program, which supplies small businesses and entrepreneurs with the gap financing needed to start or expand their business in areas that have experienced or are under threat of serious structural damage to the underlying economic base.

New Jersey Environmental Infrastructure Trust

The New Jersey Environmental Infrastructure Trust (NJEIT) is an independent state financing authority that provides low-interest rate loans to qualified borrowers in New Jersey for water quality and infrastructure projects. The NJEIT, partnering with NJDEP, offers short-term financing (bridge loans) and long-term disaster-recovery loan assistance.

New Jersey Economic Development Authority (NJEDA)

The New Jersey Economic Development Authority (NJEDA) is an independent state agency that provides tax incentives to foster development and employment growth and retention, financing for small and mid-sized businesses, revitalizes communities through redevelopment initiatives, and supports entrepreneurial development by providing access to training and mentoring programs. With its large portfolio of some 30 varied programs and services, NJEDA can assist businesses, non-profits and developers to access capital, including tax-exempt and taxable bond financing, loans, loan guarantees, and business and tax incentives.

New Jersey Redevelopment Authority (NJRA)

The New Jersey Redevelopment Authority (NJRA) is an independent state financing authority committed exclusively to the redevelopment of New Jersey's urban areas. NJRA offers several financing resources including site acquisition funding, predevelopment assistance, several development assistance resources, and technical assistance.

New Jersey Housing and Mortgage Finance Agency

The New Jersey Housing and Mortgage Finance Agency (NJHMFA) is an independent state financing authority that provides affordable home ownership and housing opportunities for New Jersey residents by funding affordable home mortgages for first-time home buyers, promoting construction and rehabilitation of rental housing, and encouraging mixed-income owner-occupied housing growth. NJHMFA provides low-



interest financing and administers low-income housing tax credits for the State of New Jersey's low and moderate income communities.

New Jersey Department of Community Affairs

The New Jersey Department of Community Affairs (NJCA) is a state agency created to provide administrative guidance, financial support, and technical assistance to local governments, community development organizations, businesses, and individuals to improve the quality of life in New Jersey. NJCA offers a wide range of programs, funding, and services that respond to issues of public concern including fire and building safety, housing production, community planning and development, and local government management and finance. Among other funding sources, NJCA administers CDBG funding and is typically the CDBG-DR funding recipient for the State of New Jersey.

6.5 Mitigation Strategy Development and Update

As required by FEMA, the county and participating municipalities completed a comprehensive evaluation of the mitigation strategies and actions from the 2011 HMP and reported on the status of each. Their update may be found in each jurisdictional annex (Section 9). In addition, the county and participating municipalities were provided the opportunity to include new strategies or actions to include in the 2016 HMP update. New actions were prioritized to ensure they are cost-effective, environmentally sound, and technically feasible using the methodology outlined below.

6.5.1 Strengths, Weaknesses, Opportunities, and Obstacles (SWOO)

In March 2015, two Strengths, Weaknesses, Opportunities, and Obstacles (SWOO) sessions were held with the Planning Committee. The purpose of this session was to identify strengths, weaknesses, opportunities and obstacles in hazard mitigation within Warren County through a facilitated brainstorming session on risks, vulnerabilities, and capabilities. All information shared during this session was recorded and used to prepare catalogs of mitigation alternatives to be used by the Planning Committee in preparing their individual jurisdictional annexes. Many of the strategies (such as community outreach) identified in the catalogs could be applied to multiple hazards. This HMP update identifies strategies for multiple hazards for the County and each jurisdictional annex for participating jurisdictions (Section 9).

The Planning Committee generated a mitigation catalog which includes a comprehensive list of mitigation actions (see Appendix D) to be considered that met the following objectives:

- Use information obtained from the public involvement strategy;
- Use information provided in the risk assessment;
- Seek mitigation actions consistent with the goals and objectives for the Warren County Multi-Jurisdictional Plan;
- Create catalogs of mitigation actions to be used as a tool by the Planning Committee in selection of mitigation actions.

Catalog of Mitigation Actions

Based on information gathered during the two SWOO sessions, a catalog of mitigation actions was created listing initiatives that could manipulate the hazard, reduce exposure to the hazard, reduce vulnerability to the hazard, and to increase the ability to respond to or be prepared for a hazard (Appendix B). In addition, the catalog indicates responsibility for implementation (i.e., who would most likely implement the initiative: personal property owners, private sector business, or government). Based on the risk assessment, the hazards included in the catalog are deemed to be those to which the planning area is most vulnerable.



The catalog is not meant to be exhaustive or site-specific but rather to inspire thought and provide members of the Planning Committee a baseline of initiatives backed by a planning process, consistent with the goals and objectives of the planning area, and within the capabilities of the Participants. The Planning Committee was not bound to these actions. They had the opportunity to add further actions subsequent to the SWOO workshops. Actions in the catalog that were not selected by the Partners to include in their jurisdictional annexes were not selected based on the following:

- Action is currently outside the scope of capabilities (funding)
- The jurisdiction is not vulnerable to the hazard
- Action is already being implemented

All proposed mitigation actions were identified in relation to the goals and objectives presented above. The mitigation actions include a range of options in line with the four types of mitigation actions described in FEMA guidance (FEMA's *Local Mitigation Planning Handbook*, March 2013); discussed further below.

6.5.2 Update of Municipal Mitigation Strategies

To evaluate progress on local mitigation actions, each municipality with actions in previous DMA 2000 or related plans, including those who participated in the 2011 HMP, was provided with a Mitigation Action Plan Review Worksheet. Each worksheet was pre-populated with those actions identified for their jurisdiction in the prior plan. For each action, municipalities were asked to indicate the status of each action ("No Progress/Unknown," "In Progress/Not Yet Complete," "Continuous," "Completed," or "Discontinued"), and provide review comments on each. Municipalities were requested to quantify the extent of progress, and provide reasons for the level of progress or why actions were discontinued. Each jurisdictional annex provides a table identifying their prior mitigation strategy, the status of those actions and initiatives, and their disposition within their updated strategy.

Local mitigation actions identified as "Complete," and those actions identified as "Discontinued," have been removed from the updated strategies. Those local actions that municipalities identified as "No Progress/Unknown," "In Progress/Not Yet Complete," as well as certain actions/initiatives identified as "Continuous," have been carried forward in their jurisdiction's updated mitigation strategies. Municipalities were asked to provide further details on these projects to help better define the projects, identify benefits and costs, and improve implementation.

Certain continuous or ongoing strategies represent programs that are, or since the 2011 plan have become, fully integrated into the normal operational and administrative framework of the community. Such programs and initiatives have been identified within the Capabilities section of each annex, and removed from the updated mitigation strategy.

From March through November 2015, the county and contract consultant held mitigation action workshops; whether in formal meetings as a Planning Committee, one-on-one with municipalities, or via conference call. The goals of these workshops were to: (1) evaluate progress on previously identified mitigation actions from the 2011 HMP; (2) review and evaluate a comprehensive range of mitigation strategies for consideration; (3) provide the tools and guide the municipalities on identifying and prioritizing selected mitigation actions; and (4) discuss integration of mitigation activities into daily operations. All municipalities attended these small-scale workshops which began the development of their jurisdictional annexes.

All participating municipalities were provided capture tools (Mitigation Action Worksheets) to further assist in assessing the risk, evaluating potential actions/projects (qualitative alternatives analysis), and identifying actions for implementation.



The county and municipalities identified projects that have been submitted to NJOEM for grant funding, including projects for which Letters of Intent (LOI) and grant applications have been submitted under the Hurricane Sandy HMGP. In general, LOI/application-based projects submitted directly by the communities are identified within their updated mitigation strategies. Communities may also have included other LOI/application-based projects submitted by special-purpose districts (e.g., fire or school districts), local utilities, and hospitals and health care entities.

From January 2015 to January 2016, members of the Planning Committee and the planning consultant worked directly with each community (phone, email, local support meetings) to assist with the development and update of their annex and include mitigation strategies, focusing on identifying well-defined, implementable projects with a careful consideration of benefits (risk reduction, losses avoided), costs, and possible funding sources (including mitigation grant programs).

As new additional potential mitigation actions, projects, or initiatives became evident during the plan update process, included as part of the risk assessment update and as identified through the public and stakeholder outreach process (see Section 3), communities were made aware of these either through direct communication (local meetings, email, phone) or via their draft municipal annexes.

To help support the selection of an appropriate, risk-based mitigation strategy, each annex provides a summary of hazard vulnerabilities identified during the plan update process, either directly by municipal representatives, through review of available county and local plans and reports, or through the hazard profiling and vulnerability assessment process.

Concerted efforts were made to assure that municipalities develop updated mitigation strategies that included activities and initiatives covering the range of mitigation action types described in recent FEMA planning guidance (FEMA's *Local Mitigation Planning Handbook*, March 2013), specifically:

- **Local Plans and Regulations** – These actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.
- **Structure and Infrastructure Projects** – These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct man-made structures to reduce the impact of hazards.
- **Natural Systems Protection** – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- **Education and Awareness Programs** – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as the NFIP and CRS, StormReady (NOAA) and Firewise (NFPA) Communities.

In consideration of federal and state mitigation guidance, the Planning Committee recognized that all municipalities would benefit from the inclusion of certain mitigation initiatives. These include initiatives to address vulnerable public and private properties, including RL and SRL properties; initiatives to support continued and enhanced participation in the NFIP; improved public education and awareness programs; and initiatives to support county-wide and regional efforts to build greater local mitigation capabilities.

In May 2015, a second mitigation strategy workshop was conducted by the planning consultant, FEMA Region 2, and NJOEM for all participating jurisdictions to support the identification, evaluation, and prioritization of local mitigation strategies, as well as how to present and document this process within the plan. The following



significant modifications to the mitigation strategy identification, update, and documentation process were made:

- An overarching effort has been made to better focus local mitigation strategies to clearly defined, readily actionable projects and initiatives that meet the definition or characteristics of mitigation.
- Per NJOEM’s advice, broadly defined mitigation objectives were maintained if the community felt it were appropriate to ensure eligibility in the future. For example, if a community has numerous RL properties however specific projects/property-owner interest is not solidified at this time, a general action was maintained to ensure future eligibility.
- Certain continuous or ongoing strategies that represent programs that are, or since the 2011 plan have become, fully integrated into the normal operational and administrative framework of the community have been identified within the Capabilities section of each annex, and removed from the updated mitigation strategy.
- Where applicable, mitigation projects have been documented with an Action Worksheet, based on FEMA’s Action Worksheet templates and within recent guidance documents. These Action Worksheets and Prioritization Tables appear at the end of each jurisdiction’s annex.

Overall a comprehensive-range of specific mitigation initiatives were considered by each plan participant to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected. Table 6-3 lists the common mitigation actions identified across a majority of the communities.

Table 6-3. Comprehensive Range of Mitigation Actions

Jurisdiction	Acquisitions and Elevations	Drainage/ Stormwater	Education and Awareness	Continuity of Operations/ Generators	Structure and Infrastructure	Local Plans and Regulations
Warren County	X	X	X	X	X	X
Allamuchy Township			X	X	X	X
Alpha Borough		X	X	X	X	
Town of Belvidere	X	X	X	X	X	X
Blairstown Township	X	X	X	X	X	X
Franklin Township	X		X	X	X	X
Frelinghuysen Township		X	X		X	X
Greenwich Township	X		X	X	X	X
Hackettstown			X	X		X
Hardwick Township						
Harmony Township	X	X	X		X	X
Hope Township	X	X	X	X	X	
Independence Township			X	X		X
Knowlton Township	X		X		X	





Jurisdiction	Acquisitions and Elevations	Drainage/ Stormwater	Education and Awareness	Continuity of Operations/ Generators	Structure and Infrastructure	Local Plans and Regulations
Liberty Township		X	X	X		
Lopatcong Township	X		X			X
Mansfield Township	X		X	X		X
Oxford Township		X	X	X	X	X
Town of Phillipsburg	X	X	X	X	X	X
Pohatcong Township	X		X		X	X
Washington Borough			X	X		X
Washington Township	X	X	X	X	X	X
White Township	X	X	X	X	X	X

6.5.3 Update of County Mitigation Strategies

The update of the county-level mitigation strategies was very similar to the municipal update. It included a review of progress on the actions/initiatives identified in the 2011 HMP, using a process similar to that used to review municipal mitigation strategy progress. The county, through their various department representatives, was provided with a Mitigation Action Plan Review Worksheet identifying all of the county-level actions/initiatives from the 2011 HMP. For each action, relevant county representatives were asked to indicate the status of each action (“No Progress/Unknown,” “In Progress/Not Yet Complete,” “Continuous,” “Completed,” or “Discontinued”), and provide review comments on each.

Projects/initiatives identified as “Complete,” as well as though actions identified as “Discontinued,” have been removed from this HMP update. Those actions the county has identified as “No Progress/Unknown,” “In Progress/Not Yet Complete,” or “Continuous” have been carried forward in the county’s updated mitigation strategy.

Throughout the course of the HMP update process, additional regional and county mitigation actions have been identified. These were identified through:

- Review of the results and findings of the updated risk assessment
- Review of the findings of the SWOO
- Review of available regional and county plans, reports, and studies
- Direct input from county departments, including:
 - Department of Public Safety/Office of Emergency Management
 - Department of Public Works - Engineering
 - Department of Planning

6.5.4 Mitigation Strategy Evaluation and Prioritization

Section 201.6(c)(3)(iii) of 44 CFR requires an action plan describing how the identified actions will be prioritized. Recent FEMA planning guidance (March 2013) identifies a modified STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) mitigation action evaluation methodology that uses a set of 10 evaluation criteria suited to the purposes of hazard mitigation strategy evaluation. This method provides a systematic approach that considers the opportunities and constraints of implementing a particular mitigation action.



Based on this guidance, the Steering and Planning Committees have developed and applied an action evaluation and prioritization methodology which includes an expanded set of 14 criteria to include the consideration of cost-effectiveness, availability of funding, anticipated timeline, and if the action addresses multiple hazards.

The 14 evaluation/prioritization criteria used in the 2016 update process are:

- 1) Life Safety – How effective will the action be at protecting lives and preventing injuries?
- 2) Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?
- 3) Cost-Effectiveness – Are the costs to implement the project or initiative commensurate with the benefits achieved?
- 4) Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.
- 5) Political – Is there overall public support for the mitigation action? Is there the political will to support it?
- 6) Legal – Does the municipality have the authority to implement the action?
- 7) Fiscal – Can the project be funded under existing program budgets (i.e., is this initiative currently budgeted for)? Or would it require a new budget authorization or funding from another source such as grants?
- 8) Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?
- 9) Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
- 10) Administrative – Does the jurisdiction have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
- 11) Multi-hazard – Does the action reduce the risk to multiple hazards?
- 12) Timeline – Can the action be completed in less than 5 years (within our planning horizon)?
- 13) Local Champion – Is there a strong advocate for the action or project among the jurisdiction’s staff, governing body, or committees that will support the action’s implementation?
- 14) Other Local Objectives – Does the action advance other local objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of other plans and programs?

Participating jurisdictions were asked to use these criteria to assist them in evaluating and prioritizing all mitigation actions identified in the 2016 HMP update (previously identified actions that were carried forward and new mitigation actions). Specifically, for each mitigation action, the jurisdictions were asked to assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria, defined as follows:

- 1 Highly effective or feasible
- 0 Neutral
- -1 Ineffective or not feasible

Further, jurisdictions were asked to provide a brief summary of the rationale behind the numeric rankings assigned, as applicable. The numerical results of this exercise were then used by each jurisdiction to help prioritize the action or strategy as “Low,” “Medium,” or “High.” While this provided a consistent, systematic



methodology to support the evaluation and prioritization of mitigation actions, jurisdictions may have additional considerations that could influence their overall prioritization of mitigation actions.

For the 2016 HMP update there has been an effort to develop more clearly defined and action-oriented mitigation strategies. These local strategies include projects and initiatives that have been well-vetted, and are seen by the community as the most effective approaches to advance their local mitigation goals and objectives within their capabilities. As such, many of the initiatives in the updated mitigation strategy were ranked as “High” or “Medium” priority, as reflective of the community’s clear intent to implement, available resources notwithstanding. In general, initiatives that would have had “Low” priority rankings were appropriately screened out during the local action evaluation process.

6.5.5 Benefit/Cost Review

Section 201.6(c)(3)(iii) of 44 CFR requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a benefit/cost review of the proposed projects and their associated costs. Stated otherwise, cost-effectiveness is one of the criteria that must be applied during the evaluation and prioritization of all actions comprising the overall mitigation strategy.

The benefit/cost review applied for the evaluation and prioritization of projects and initiatives in this HMP update process was qualitative; that is, it does not include the level of detail required by FEMA for project grant eligibility under the HMGP and PDM grant program. For all actions identified in the local strategies, jurisdictions have identified both the costs and benefits associated with a project, action, or initiative.

Costs are the total cost for the action or project, and may include administrative costs, construction costs (including engineering, design and permitting), and maintenance costs.

Benefits are the savings from losses avoided attributed to the implementation of the project, and may include life-safety, structure and infrastructure damages, loss of service or function, and economic and environmental damage and losses.

When available, jurisdictions were asked to identify the actual or estimated dollar value for project costs and associated benefits. Having defined costs and benefits allows a direct comparison of benefits versus costs, and a quantitative evaluation of project cost-effectiveness. Often, however, numerical costs and/or benefits have not been identified, or may be impossible to quantitatively assess.

For the purposes of this planning process, jurisdictions were tasked with evaluating project cost-effectiveness with both costs and benefits assigned to “High,” “Medium,” and “Low” ratings. Where quantitative estimates of costs and benefits were available, ratings/ranges were defined as:

- Low < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where quantitative estimates of costs and/or benefits were not available, qualitative ratings using the following definitions were used:



Table 6-4. Qualitative Cost and Benefit Ratings

Costs	
High	Existing funding levels are not adequate to cover the costs of the proposed project, and implementation would require an increase in revenue through an alternative source (e.g., bonds, grants, and fee increases).
Medium	The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
Low	The project could be funded under the existing budget. The project is part of or can be part of an existing, ongoing program.
Benefits	
High	Project will have an immediate impact on the reduction of risk exposure to life and property.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property or will provide an immediate reduction in the risk exposure to property.
Low	Long-term benefits of the project are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

For some of the Warren County initiatives identified, the Planning Committee may seek financial assistance under FEMA’s HMGP or HMA programs. These programs require detailed benefit/cost analysis as part of the application process. These analyses will be performed when funding applications are prepared, using the FEMA benefit/cost analysis model process. The Planning Committee is committed to implementing mitigation strategies with benefits that exceed costs. For projects not seeking financial assistance from grant programs that require this sort of analysis, the Planning Committee reserves the right to define “benefits” according to parameters that meet its needs and the goals and objectives of this HMP.