



Mitigation Plan for Four New Jersey Counties  
**Gloucester County Appendices**

**Appendix GC.20**  
**Wenonah Borough, New Jersey**

April 8, 2016

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## Table of Contents

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<b>Table of Contents</b>	<b>GC.20-i</b>
<b>Part 1 Overview</b>	<b>GC.20-1</b>
1.1: Mitigation Plan for Four New Jersey Counties	GC.20-1
1.2: Wenonah Borough (Gloucester County) Municipal Appendix	GC.20-1
<b>Part 2 Participation</b>	<b>GC.20-2</b>
2.1: Municipal Working Group Participation	GC.20-2
2.2: Public Participation	GC.20-4
<b>Part 3 Hazard Identification and Risk Assessment</b>	<b>GC.20-5</b>
3.1: Municipal Profile	GC.20-5
3.2: Hazard Priorities	GC.20-9
3.3: Hazard Mapping	GC.20-10
3.4: Critical Facilities Inventory and Hazard Exposure Assessment	GC.20-11
<b>Part 4 Mitigation Measures</b>	<b>GC.20-16</b>
4.1: Mitigation Goals and Strategy	GC.20-16
4.2: SDVR HMP Mitigation Measures	GC.20-17
4.3: Municipal Mitigation Measures – Identification	GC.20-18
4.4: Municipal Mitigation Measures – Implementation	GC.20-19
4.5: Multi-Jurisdictional Mitigation Measures	GC.20-21
4.6: Authorities, Policies, Programs, Resources, and Plan Integration	GC.20-23

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## Table of Contents

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### List of Figures

Figure GC.20-1: Wenonah Borough (Gloucester County) Location Map	GC.20-5
Figure GC.20-2: Wenonah Borough Base Map	GC.20-6
Figure GC.20-3: Wenonah Borough Housing Units by Year Built	GC.20-8
Figure GC.20-4: Wenonah Borough Mitigation Project Locations	GC.20-22

### List of Tables

Table GC.20-1: Wenonah Borough (Gloucester County) Working Group	GC.20-2
Table GC.20-2: Public Participation	GC.20-4
Table GC.20-3: Wenonah Borough Demographics	GC.20-7
Table GC.20-4: Wenonah Borough Demographic Rankings	GC.20-7
Table GC.20-5: Wenonah Borough Economics and Housing	GC.20-7
Table GC.20-6: Wenonah Borough Ranking (Economics and Housing)	GC.20-8
Table GC.20-7: Supporting Mapping and Exhibits	GC.20-10
Table GC.20-8: Wenonah Borough Critical Facilities Inventory	GC.20-12
Table GC.20-9: Wenonah Borough Critical Facilities Hazard Exposure	GC.20-14
Table GC.20-10: Status of Wenonah Borough SDVR HMP Mitigation Measures	GC.20-17
Table GC.20-11: Wenonah Borough Municipal Mitigation Measures Identification	GC.20-18
Table GC.20-12: Wenonah Borough Municipal Mitigation Measures Implementation	GC.20-20

### Attachments

Attachment GC.20.A: Public Review Comments	GC.20.A-1
Attachment GC.20.B: Adoption Resolution	GC.20.B-1
Attachment GC.20.C: Approval Letter	GC.20.C-1

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## Part 1: Overview

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### Part 1.1: Mitigation Plan for Four New Jersey Counties

The Mitigation Plan for Four New Jersey Counties (NJ4 HMP) incorporates input from approximately ninety (90) participating municipalities in Camden, Cumberland, Gloucester, and Salem Counties. The NJ4 HMP is an update and expansion of the South Delaware Valley Region Multi-jurisdictional Hazard Mitigation Plans that were adopted by all four counties and approved by the Federal Emergency Management Agency in 2010 and 2011.

The NJ4 HMP has two main parts:

- Regional Hazard Mitigation Plan
- County and Municipal Appendices

The Regional Hazard Mitigation Plan includes descriptions and information that is common to all participating NJ4 HMP jurisdictions organized according to the following three main focus areas:

- Planning Process
- Hazard Identification and Risk Assessment
- Mitigation Measures

The Regional Hazard Mitigation Plan also includes Annexes that contain detailed background information for these three focus areas and additional reference materials for the implementation of the NJ4 HMP.

The County and Municipal Appendices include specific information for these same three main focus areas for each of the participating municipalities. Detailed tabulations are included in these Appendices for critical facilities, status of past mitigation activities, and proposed mitigation measures for each municipality.

### Part 1.2: Wenonah Borough (Gloucester County) Municipal Appendix

This Municipal Appendix is focused on Wenonah Borough in Gloucester County, New Jersey.

The Wenonah Borough Municipal Working Group recommended the Wenonah Borough (Gloucester County) Municipal Appendix for adoption to the Wenonah Borough Council.

The Wenonah Borough Council adopted the Municipal Appendix by resolution (see Attachment B: Adoption Resolution).

Region II of the Federal Emergency Management Agency subsequently approved the Municipal Appendix (see Attachment C: Approval Letter).

## Part 2: Participation

### Part 2.1: Municipal Working Group Participation

Part 2.1 includes:

- *Municipal Working Group members including positions in the community, meetings and work sessions attended, and specific contributions to the Municipal Appendix*
- *Municipal positions and organizations that were invited but were not able to participate in the plan update process*
- *Municipal positions and organizations that have been recommended by the Federal Emergency Management Agency (FEMA) as candidates for participation on Municipal Working Groups but do not exist in the municipality*

Table GC.20-1 identifies the Municipal Working Group members. As explained in *Section 2: Planning Process* of the Mitigation Plan for Four New Jersey Counties (NJ4 HMP) Regional Hazard Mitigation Plan, the Municipal Working Groups are comprised of community representatives who worked to make sure mitigation measures included in the Municipal Appendix addressed the risks faced by residents, businesses, and property owners and reflected the priorities of the community. The Working Group will also continue to stay involved during the implementation and maintenance of the NJ4 HMP.

**Table GC.20-1: Wenonah Borough (Gloucester County) Working Group**

First Name	Last Name	Department	Position	Round 1 Work Session <sup>1</sup>	Round 2 Work Session <sup>2</sup>	Working Group Meeting <sup>3</sup>	Contribution <sup>4</sup>
David	Shaver	Wenonah Borough of Wenonah OEM	OEM Coordinator	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Organized Working Group and Work Sessions.
Joseph	Buono	Wenonah Borough Fire Marshal	Deputy Emergency Management Coordinator / Fire Marshal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Thomas	Lombardo	Wenonah Borough Council	Mayor		<input checked="" type="checkbox"/>		
John R.	Dominy	Wenonah Borough Council	Council President		<input checked="" type="checkbox"/>		
Jack	Sheppard	Wenonah Borough Council	Councilman		<input checked="" type="checkbox"/>		
David	Kreck	Wenonah Borough Engineering	Borough Engineer / Floodplain Administrator / Wenonah Borough Environmental Commission Representative		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Provided municipal documents for review.

<sup>1</sup> Round 1 Work Session was held on July 31, 2014.

<sup>2</sup> Round 2 Work Session was held on October 30, 2014.

<sup>3</sup> Municipal Working Group Meeting was held on December 18, 2014.

<sup>4</sup> Municipal Working Group members reviewed briefing materials in advance of Work Sessions, contributed during Work Sessions, and reviewed the preliminary Mitigation Plan for Four New Jersey Counties. Additional or unusual contributions are noted in the far right hand column of Table GC.20-1.

## Part 2: Participation

First Name	Last Name	Department	Position	Round 1 Work Session <sup>1</sup>	Round 2 Work Session <sup>2</sup>	Working Group Meeting <sup>3</sup>	Contribution <sup>4</sup>
Karen	Sweeney	Wenonah Borough Municipal Clerk / Admin	Municipal Offices		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Organized Working Group and Work Sessions.
Gary	Odenbrett	Wenonah Borough Shade Tree Commission	Chair			<input checked="" type="checkbox"/>	
Kenneth	Trovarelli	Wenonah Borough Public Works	Superintendent		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Seth	Basile	Wenonah Borough Police Department	Police Officer		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Drew	Sole	Wenonah Borough Fire Company	Fire Chief		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Richard	Black	Wenonah Borough Fire Department	Fire Captain		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Christopher	Black	Wenonah Borough Fire Department	Firefighter		<input checked="" type="checkbox"/>		
Trisha	Sheehan		Wenonah Borough Resident		<input checked="" type="checkbox"/>		

The following lists candidate positions and organizations within the community that were extended invitations but could not participate during the development of the Municipal Appendix. These positions and organizations will continue to be extended invitations to participate during subsequent plan implementation and maintenance activities.<sup>5</sup>

- Community / Faith-Based Organizations
- School Board

The following lists positions and organizations that are generally recommended for consideration as members of the Municipal Working Groups by FEMA but do not currently exist within the community. An invitation to participate will be extended if positions are created or filled and as organizations are formed.

- Land Use / Economic Development Plan
- GIS / IT Specialist
- Transportation Department Directors / Supervisors
- Emergency Medical Services
- Business Associations
- Non-Governmental Organizations
- Critical Infrastructure and Key Resources
- Major Employers and Businesses
- Healthcare Institutions

<sup>5</sup> See Section 4: Mitigation Measures of the NJ4 HMP Regional Hazard Mitigation Plan.

## Part 2: Participation

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### Part 2.2: Public Participation

*Part 2.2 includes opportunities provided to the public and interested parties in the municipality to participate during the plan update process.*

Table GC.20-2 identifies the date, type, and location (where applicable) for opportunities provided to the public and interested parties to participate in the development of the plan update.

**Table GC.20-2: Public Participation**

<b>Date</b>	<b>Type of Involvement</b>	<b>Location</b>
August 15, 2014	Link to Project Website ( <a href="http://nj4hmp.com">http://nj4hmp.com</a> ) established	Borough of Wenonah.com <sup>6</sup>
November 25, 2014	Preliminary Municipal Appendix posted to website for public comment	Borough of Wenonah.com <sup>6</sup>
December 18, 2014	Public hearing included on Wenonah Borough Committee agenda providing for open discussion, and public comment regarding the Preliminary Municipal Appendix	Wenonah Borough Hall

Public comments and input received for the Preliminary Municipal Appendix were considered by the Municipal Working Group and incorporated into the Draft Municipal Appendix where appropriate. Public comments received during the review of the Preliminary Municipal Appendix were included in Attachment A to the Municipal Appendix along with a brief explanation of how the comments were addressed in the Draft Municipal Appendix.

In addition, the Municipal Appendix was adopted as part of a regularly scheduled public meeting (see Attachment B: Adoption Resolution).

Public education and outreach is an on-going mitigation measure included in the Municipal Appendix.<sup>7</sup> In addition, public participation will continue to be encouraged during subsequent plan implementation and maintenance activities.<sup>8</sup>

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<sup>6</sup> <http://www.boroughofwenonah.com/index.php/2-uncategorised/175-mitigation-plan-for-four-nj-counties>

<sup>7</sup> See Mitigation Measure M-1 in Part 4 of the Municipal Appendix.

<sup>8</sup> See *Section 4: Mitigation Measures* of the NJ4 HMP Regional Hazard Mitigation Plan.

## Part 3: Hazard Identification and Risk Assessment

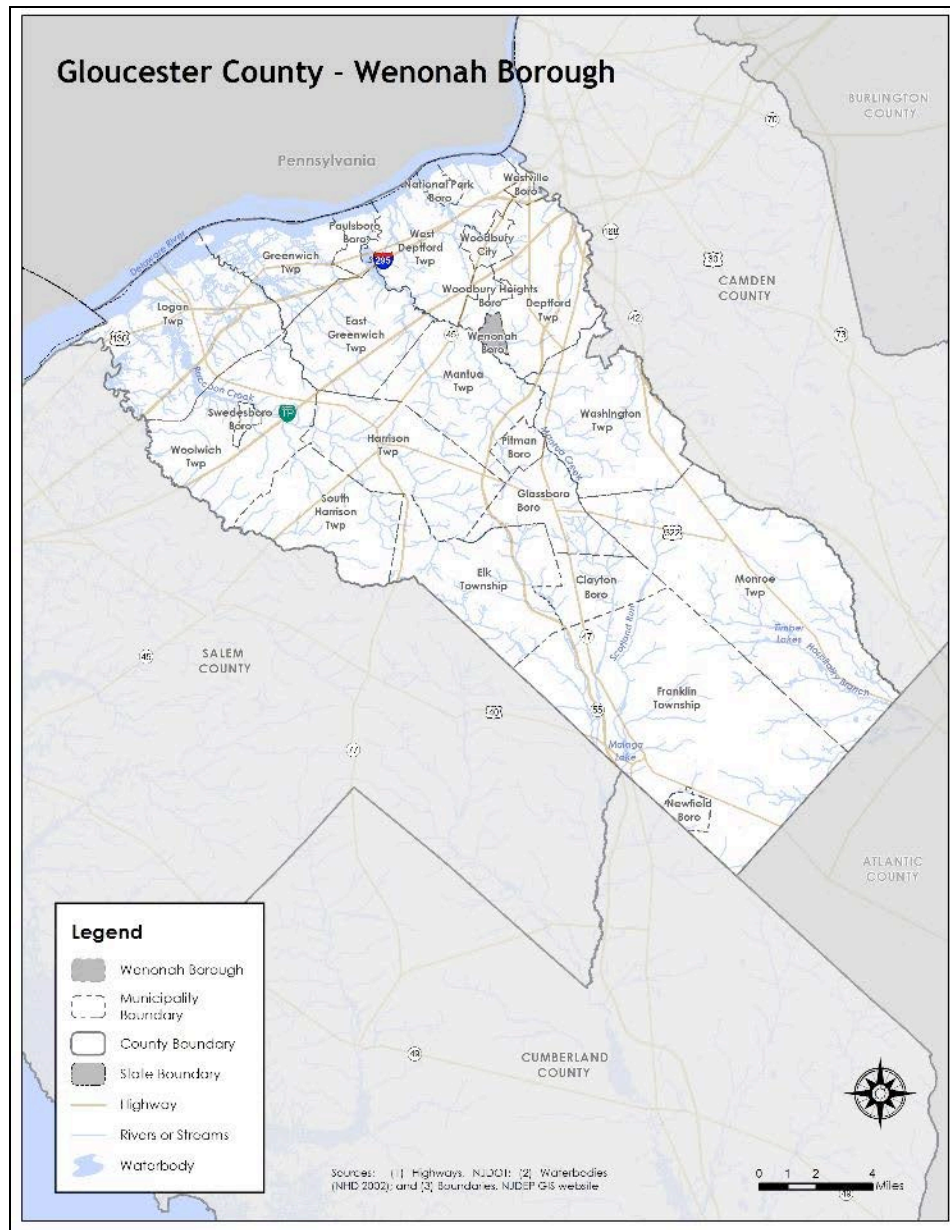
### Part 3.1: Municipal Profile

Part 3.1 includes:

- Selected data and information about the municipality that is generally relevant for emergency management planning and specifically for hazard mitigation
- A brief character sketch for the municipality that is only intended to portray a few of the most basic elements

Wenonah Borough is located in the northeastern part of Gloucester County (See Figure GC.20-1).

Figure GC.20-1: Wenonah Borough (Gloucester County) Location Map



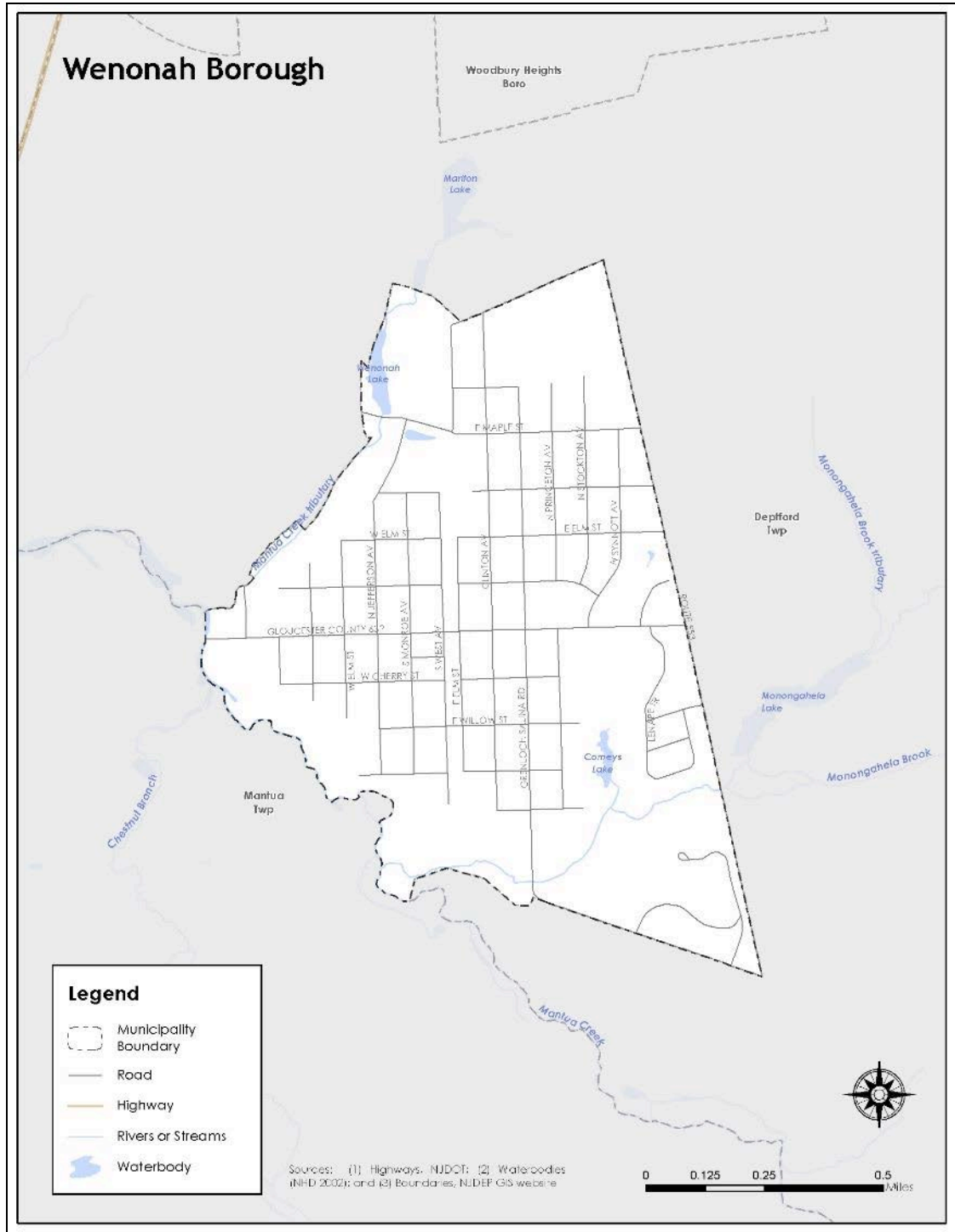


### Part 3: Hazard Identification and Risk Assessment

Wenonah Borough is a historic rural town in Gloucester County.

Per Figure GC.20-2 the major water bodies include Wenonah Lake, Comey's Lake, Dilks Pond, Mantua Creek, and Monongahela Brook. The major transportation routes in Wenonah Borough are Gloucester County Routes 553 (Glassboro Road), and 632 (West Mantua Avenue). Locally, South Marion Avenue serves as a main route for evacuation. The land is predominantly flat.

Figure GC.20-2: Wenonah Borough Base Map



### Part 3: Hazard Identification and Risk Assessment

In addition, Table GC.20-3 is a compilation of demographic information for the municipality and comparison with the county, the four county region, and State of New Jersey.

**Table GC.20-3: Wenonah Borough Demographics**  
(Source: Census DP-1, 2010 ACS 5 Year Estimates, DP 3, 4)

	Wenonah Borough	Gloucester County	Region	New Jersey
2000 Population	2,317	254,673	974,328	8,414,350
2010 Population	2,278	288,288	1,024,926	8,791,894
Percent Change	-1.68%	13.2%	5.19%	4.49%
Population Density	2,342.8 / sq. mile	895.3 / sq. mile	754.25 / sq. mile	1,195.5 / sq. mile
Land Area	0.97 sq. miles	322.00 sq. miles	1,358.86 sq. miles	7,354.22 sq. miles
% of Population 18 and younger	25.1	24.4	24.1	23.5
% of Population 18 - 64	62.2	63.2	62.7	63
% of Population 65 and over	12.7	12.4	13.2	13.5

Table GC.20-4 illustrates how Wenonah Borough ranks in the county, the four county region, and New Jersey.

**Table GC.20-4: Wenonah Borough Demographic Rankings**

	Gloucester County (total of 24)	Region (total of 90)	New Jersey (total of 565)
Population Rank	23	72	476
Land Area Rank	23	78	491
Population Density Rank	8	38	261
Population Change Rank	19	66	-

Table GC.20-5 includes information related to economic and housing statistics for Wenonah Borough, Gloucester County, the four county region, and New Jersey.

**Table GC.20-5: Wenonah Borough Economics and Housing**  
(Source: USDA ERS, Census DP-1, 2010 ACS 5 Year Estimates, DP 3, 4; NJ LWD 2010)

	Wenonah Borough	Gloucester County	Region	New Jersey
Date Incorporated	March 10, 1871	1686	-	-
Rural / Urban Status	Urban	Urban	Urban	Urban
Median Household Income	\$103,403	\$72,664	\$60,933	\$69,811
Total Number of Housing Units	860	109,796	397,990	3,529,033
Occupied Housing Units	829	104,271	372,472	3,176,069
Vacant Housing Units	31	5,525	25,518	352,964
Owner Occupied Housing Units	749	83,525	266,593	2,126,279
Renter occupied Housing Units	80	20,746	105,879	1,049,790

**Part 3: Hazard Identification and Risk Assessment**

	Wenonah Borough	Gloucester County	Region	New Jersey
Building Permits	2	716	1,554	13,535
Largest Industry	Educational Services, and health care and social assistance	Educational Services, and health care and social assistance	Educational services, and health care and social assistance	Educational services, and health care and social assistance

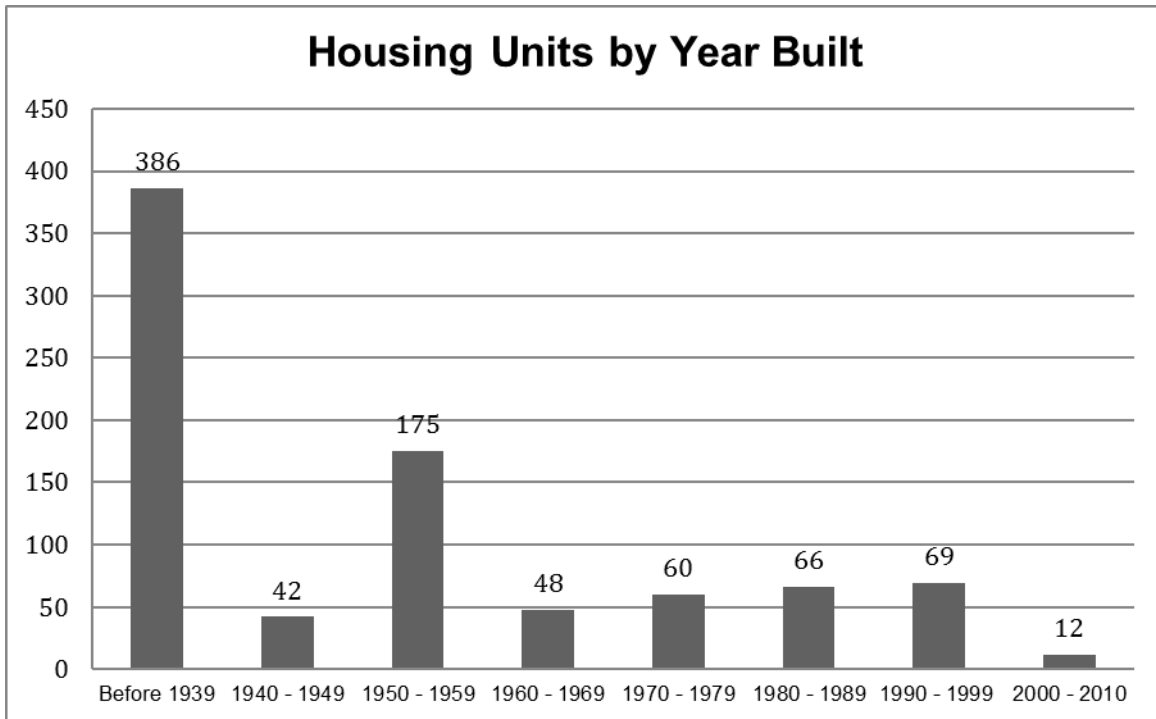
Table GC.20-6 illustrates how Wenonah Borough ranks in the county and the four county region.

**Table GC.20-6: Wenonah Borough Ranking (Economics and Housing)**

	Gloucester County (total of 24)	Region (total of 90)
Median Household Income Rank	3	5
Vacant Housing Rank	31	85
Renter Occupied Housing Rank	23	81
Building Permits Rank	17	61

Figure GC.20-3 illustrates development patterns in Wenonah Borough by examining housing units by year built. About 45% of homes in Wenonah Borough were built prior to 1939.

**Figure GC.20-3: Wenonah Borough Housing Units by Year Built**  
(Source: 2010 ACS 5 Year Estimates, DP 4)



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## Part 3: Hazard Identification and Risk Assessment

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### Part 3.2: Hazard Priorities

*Part 3.2 includes hazard priority determinations per the Municipal Working Group.*

As a key step in the Hazard Identification and Risk Assessment (HIRA) process, the twelve (12) natural hazards identified in the NJ4 HMP<sup>1</sup> were discussed during the Municipal Working Group Work Sessions and the relative priority of these hazards was identified. The Municipal Working Group rated the hazards as follows:

#### High Priority

- None

#### Moderate Priority

- Dam Failure
- Flood
- High Wind

#### Low Priority

- Drought
- Earthquake
- Extreme Temperature: Cold & Hot
- Severe Weather – Summer
- Severe Weather – Winter
- Wildfire

Three additional hazards were discussed but were not considered applicable to the municipality:

- Coastal Erosion & Sea Level Rise
- Geologic Hazards
- Levee Failure

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<sup>1</sup> See *Section 3: Hazard Identification and Risk Assessment*.

## Part 3: Hazard Identification and Risk Assessment

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### Part 3.3: Hazard Mapping

Part 3.3 includes cross references to hazard inventory and risk assessment mapping included in the NJ4 HMP Regional Hazard Mitigation Plan.

Table GC.20-7 provides information regarding hazard inventory mapping included in *Annex D: Hazard Profiles and Risk Assessments* of the NJ4 HMP that support the Hazard Identification and Risk Assessment (HIRA) for the Municipal Appendix. The indicated maps and exhibits correspond to the hazards identified by the Municipal Working Group in Part 3.2. The information represented by these maps will be used in the Critical Facilities Hazard Exposure Assessment described in Part 3.4.

**Table GC.20-7: Supporting Mapping and Exhibits**

Figure #	Hazard	Map	HIRA Contribution
Figure RP.D-3	Dam Failure	Dam Locations and Hazard Classification	Identify areas in proximity to rated dams
Figure RP.D-46	Flood	FEMA Flood Hazard Zones Preliminary FIRM (PFIRM)	Identify areas subject to periodic flooding (work-in-progress for revisions to effective FIRM)
Figure RP.D-54	Flood (Storm Surge)	Coastal Flood Loss Atlas – SLOSH Model Maximum of Maximum	Identify areas where inundation due to storm surge may occur
Figure RP.D-99	Wildfire	Wildland Fuel Hazard Risk	Identify areas subject to wildfire
Figure RP.D-106	Wildfire	Wildland Urban Interface (WUI)	Identify areas subject to wildfire

The following hazards are not referenced as these hazards occur uniformly across the municipality and have the same potential impact on all properties and assets:

- Drought
- Earthquake
- Extreme Temperatures – Cold and Hot
- High Wind
- Severe Weather – Summer
- Severe Weather – Winter

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## Part 3: Hazard Identification and Risk Assessment

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### Part 3.4: Critical Facilities Inventory and Hazard Exposure Assessment

Part 3.4 includes:

- *Inventory information for municipal critical facilities*
- *Hazard exposure analysis results for municipal critical facilities*

Consistent with the process described in Section 3 of the NJ4 HMP Regional Hazard Mitigation Plan, Table GC.20-8 contains updated inventory information for municipal critical facilities including cross-references to related mitigation measures identified in Part 4 of the Municipal Appendix.

*Note: Shaded cells (if any) will be completed as part of follow-up efforts to be conducted as part of Mitigation Measure M-2 (see Part 4 of the Municipal Appendix).*

Table GC.20-9 provides the means to record results of overlaying critical facility locations with hazard mapping identified in Part 3.3. The results will indicate critical facilities that are potentially exposed to specific hazards.

*Note: This information will be used in critical site and facility assessments to be conducted as part of Mitigation Measure M-2 (see Part 4 of the Municipal Appendix).*

Hazards that apply to all critical facilities in the NJ4 region and will automatically be included in the proposed critical site and facility assessment process include:

- Earthquake
- High Wind
- Severe Weather – Summer
- Severe Weather – Winter

Hazards that do not relate to the proposed critical site and facility assessment process include:

- Drought
- Extreme Temperatures – Cold and Hot

As a result, these six (6) hazards are not included in the critical facility exposure assessment in Section 3 of the NJ4 HMP Regional Hazard Mitigation Plan.

### Part 3: Hazard Identification and Risk Assessment

**Table GC.20-8: Wenonah Borough (Gloucester County) Critical Facilities Inventory**

CF #	Name	Type	Sub-Type	Address	Co-located CF #	Shelter (Y/N)	Generator (Y/N)	Comments	Mitigation Measure #
CF-1	Borough Hall	Municipal	Administrative Offices	1 South West Avenue, Wenonah	CF-3	Y	Y		
CF-2	Emergency Operations Center	EOC	Co-located Facilities	14 South West Avenue, Wenonah	CF-4	N	Y		
CF-3	Police Station	Law Enforcement Facilities	Stations	1 South West Avenue, Wenonah	CF-1	N	Y	Includes a holding cell	
CF-4	Wenonah Fire Department	FireStation	Stations	14 South West Avenue, Wenonah	CF-2	N	Y		
CF-5	Public Works	Public Works	Combined Administrative Office, Maintenance / Work Area, Equipment / Material Storage, and Fueling Station	1 West Maple Street, Wenonah		N	N	No fueling station exists at this location	
CF-6	Well #1	Utilities – Water	Wellheads	2 East Buttonwood Street, Wenonah	CF-8	N/A	Y <sup>2</sup>		
CF-7	Well #2	Utilities – Water	Wellheads	2 West Maple Street, Wenonah		N/A	Y <sup>2</sup>		
CF-8	Water Tower	Utilities – Water	Water Towers	2 East Buttonwood Street, Wenonah	CF-6	N/A	N		
CF-9	Elm Street Pump Station	Utilities – Wastewater	Pump Stations / Lift Stations	Elm Street, Wenonah		N/A	Y <sup>2</sup>		
CF-10	Mantua Avenue Pump Station	Utilities – Wastewater	Pump Stations / Lift Stations	Mantua Avenue, Wenonah		N/A	Y		
CF-11	South Marion Pump Station	Utilities – Wastewater	Pump Stations / Lift Stations	South Marion Avenue, Wenonah		N/A	Y <sup>2</sup>		
CF-12	Lenape Trail Pump Station	Utilities – Wastewater	Pump Stations / Lift Stations	Lenape Trail, Wenonah		N/A	Y <sup>2</sup>		
CF-13	North Jefferson Avenue Pump Station	Utilities – Wastewater	Pump Stations / Lift Stations	North Jefferson Avenue, Wenonah		N/A	Y <sup>2</sup>		
CF-14	Wenonah Elementary School	Schools	Public Schools	200 North Clinton Avenue, Wenonah		Y	N		M-5

<sup>2</sup> Portable back-up generator hook-up at pump station.

**Part 3: Hazard Identification and Risk Assessment**

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CF #	Name	Type	Sub-Type	Address	Co-located CF #	Shelter (Y/N)	Generator (Y/N)	Comments	Mitigation Measure #
CF-15	All God's Children Preschool – Wenonah United Methodist Church	Vulnerable Populations Facilities	Private Child Day Care	105 East Willow Street, Wenonah		N	N		
CF-16	Willowglen Academy Group Home	Vulnerable Populations Facilities	Private / Non-Profit Group Homes	508 North Clinton Avenue, Wenonah		N	N		
CF-17	Memorial Presbyterian Church	Emergency Staging Areas	Equipment Mobilization	202 East Mantua Avenue, Wenonah		N	N		
CF-18	Holy Nativity Lutheran Church	Emergency Staging Areas	Equipment Mobilization	3 Lenape Trail, Wenonah		N	N		
CF-19	Holy Trinity Episcopal Church	Emergency Staging Areas	Equipment Mobilization	11 North Monroe Avenue, Wenonah		N	N		
CF-20	Community Center	Other Municipal	Community Center	2 North East Avenue, Wenonah		N	N		



### Part 3: Hazard Identification and Risk Assessment

**Table GC.20-9: Wenonah Borough (Gloucester County) Critical Facilities Hazard Exposure**

CF #	Name	Increased Inundation +1 Foot	Increased Inundation +2 Foot	Increased Inundation +3 Foot	Dam Failure	Flood – FIRM Zone V	Flood – FIRM Zone A	Flood – FIRM Zone 0.2%	Storm Surge – Category 1	Storm Surge – Category 2	Storm Surge – Category 3	Storm Surge – Category 4	Levee Failure	Wildfire Wildland High Density Urban Interface	Wildfire Extreme / High Fuel Level Risk
CF-1	Borough Hall	N/A	N/A	N/A		N/A							N/A		
CF-2	Emergency Operations Center	N/A	N/A	N/A		N/A							N/A		
CF-3	Police Station	N/A	N/A	N/A		N/A							N/A		
CF-4	Wenonah Fire Department	N/A	N/A	N/A		N/A							N/A		
CF-5	Public Works	N/A	N/A	N/A		N/A							N/A		
CF-6	Well #1	N/A	N/A	N/A		N/A							N/A		
CF-7	Well #2	N/A	N/A	N/A		N/A							N/A		
CF-8	Water Tower	N/A	N/A	N/A		N/A							N/A		
CF-9	Elm Street Pump Station	N/A	N/A	N/A		N/A							N/A		
CF-10	Mantua Avenue Pump Station	N/A	N/A	N/A		N/A							N/A		
CF-11	South Marion Pump Station	N/A	N/A	N/A		N/A							N/A		
CF-12	Lenape Trail Pump Station	N/A	N/A	N/A		N/A							N/A		
CF-13	North Jefferson Avenue Pump Station	N/A	N/A	N/A		N/A							N/A		
CF-14	Wenonah Elementary School	N/A	N/A	N/A		N/A							N/A		
CF-15	All God's Children Preschool – Wenonah United Methodist Church	N/A	N/A	N/A		N/A							N/A		
CF-16	Willowglen Academy Group Home	N/A	N/A	N/A		N/A							N/A		
CF-17	Memorial Presbyterian Church	N/A	N/A	N/A		N/A							N/A		
CF-18	Holy Nativity Lutheran Church	N/A	N/A	N/A		N/A							N/A		

**Part 3: Hazard Identification and Risk Assessment**

CF #	Name	Increased Inundation +1 Foot	Increased Inundation +2 Foot	Increased Inundation +3 Foot	Dam Failure	Flood – FIRM Zone V	Flood – FIRM Zone A	Flood – FIRM Zone 0.2%	Storm Surge – Category 1	Storm Surge – Category 2	Storm Surge – Category 3	Storm Surge – Category 4	Levee Failure	Wildfire Wildland High Density Urban Interface	Wildfire Extreme / High Fuel Level Risk
CF-19	Holy Trinity Episcopal Church	N/A	N/A	N/A		N/A							N/A		
CF-20	Community Center	N/A	N/A	N/A		N/A							N/A		

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## Part 4: Mitigation Measures

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### Part 4.1: Mitigation Goals and Strategy

Part 4.1 includes:

- *Goal statements reviewed and approved by the Municipal Working Group based on goals included in the Southern Delaware Valley Region (New Jersey) Multi-Jurisdictional Hazard Mitigation Plans (SDVR HMPs) approved by FEMA in 2010 and 2011 for Camden, Cumberland, Gloucester, and Salem Counties*
- *Overarching strategy for the municipality's mitigation program*

Goals were originally established by the Southern Delaware Valley Region Hazard Mitigation Steering Committee and validated by the four County Hazard Mitigation Working Groups in response to risk and capability assessment results.

As part of the plan update process, these goals were reviewed and edited by the Municipal Working Group for use in the Municipal Appendix. All mitigation measures in the Municipal Appendix are related to at least one of these four goal statements.

- **Goal 1: Improve education and outreach efforts** regarding potential risk of natural hazards and appropriate mitigation measures that can be used to reduce risk (including programs, activities, and projects)
- **Goal 2: Improve data collection, use, and sharing** to reduce the risk of natural hazards
- **Goal 3: Improve capabilities and coordination** at municipal, county, and state levels to plan and implement hazard mitigation measures
- **Goal 4: Plan and implement projects** to mitigate identified natural hazards, known problems, and areas of concern

Based on these goals, the results of the NJ4 HMP Regional Hazard Mitigation Plan HIRA, and experience of participants in the plan update process, the Municipal Working Group identified an overarching strategy for mitigation:

- Focus on projects to address known problems or areas of concern for critical facilities and vulnerable populations as additional initial risk reduction efforts
- Provide opportunities for residents and property owners to access available information about risk reduction and mitigation measures
- Identify additional areas of concern for critical facilities and vulnerable populations for future plan updates
- Institutionalize hazard mitigation into municipal activities and programs through regular interactions of the Municipal Working Group and better integration of related regulatory programs and planning initiatives
- Stay informed regarding changing conditions and related improvements in hazard and risk data due to future natural hazard events and increasing understanding of the effects of climate change and use the information as part of periodic evaluations of and refinements or additions to the municipality's mitigation program

The mitigation measures described in Parts 4.3 through 4.5 of the Municipal Appendix reflect this strategy.

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## Part 4: Mitigation Measures

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### Part 4.2: SDVR HMP Mitigation Measures

Part 4.2 includes the status of mitigation measures identified for the municipality in the SDVR HMP.

Known problems and areas of concern were the basis for mitigation measures identified in the SDVR HMP. In cases where these problems and concerns still existed at the time of the plan update, the related SDVR HMP mitigation measures were candidates for inclusion in the Municipal Appendix.

Table GC.20-10 identifies the status of mitigation measures included in the SDVR HMP. These entries were based on information provided by the Municipal Working Group. In some cases, the SDVR HMP mitigation measures were carried over as part of the Municipal Appendix as indicated in the “Comments” column and the far right-hand column of Table GC.20-10.

**Table GC.20-10: Status of Wenonah Borough (Gloucester County) SDVR HMP Mitigation Measures**

Mitigation Action, Program, or Project	Status	Comments	Mitigation Measure # (Notes A & B)
<b>Wenonah 1:</b> Risk assessment study of electrical/utility infrastructure in borough.	Not completed, not funded	Issue is not considered valid. Therefore, mitigation measure is not included in updated Municipal Appendix.	N/A
<b>Wenonah 2:</b> Threat recognition of railroad tracks carrying chlorine, ethanol, etc. near municipal building, EOC, data storage facility, and firehouse.	Not completed, not funded	Revised mitigation measure is included in updated Municipal Appendix.	M-9

**Table GC.20-10 Notes:**

- A. See Tables GC.20-11 and GC.20-12 for municipal (M-#) mitigation measures
- B. See Table GC.20-13 for multi-jurisdictional (MJ-#) mitigation measures

## Part 4: Mitigation Measures

### Part 4.3: Municipal Mitigation Measures – Identification

Part 4.3 includes brief descriptions of mitigation measures that are considered the sole responsibility of the municipality.

Table GC.20-11 includes the list of mitigation measures that are considered the responsibility of the municipality. These mitigation measures:

- Reflect the goals and strategy identified in Part 4.1
- Include projects carried over from SDVR HMPs as detailed in Part 4.2
- Include new projects, programs or activities identified by the Municipal Working Groups including measures to address known problems or areas of concern for critical facilities and vulnerable populations
- Address Repetitive Flood Loss (RL) and Severe Repetitive Flood Loss Properties (SRL)<sup>1</sup> if applicable

*Note: Wenonah Borough does not currently have RL or SRL properties per information provided by the New Jersey Department of Environmental Protection.*

Table GC.20-11 includes:

- Brief description of the mitigation action, program or project
- Hazard(s) addressed by the measure
- Relevant goal(s) addressed by the measure
- Whether the measure pertains to existing or new structures or both

*Note: Mitigation measures with discrete locations are shown in Figure GC.20-4.*

**Table GC.20-11: Wenonah Borough (Gloucester County) Municipal Mitigation Measures Identification**

#	Mitigation Action, Program, or Project	Hazard(s)	Goal (s)	Existing or New Structures
M-1	Identify and pursue outreach and education opportunities to inform municipal residents, businesses, and property owners regarding: <ul style="list-style-type: none"> <li>• Current hazards and risks</li> <li>• Changing conditions and actions that may reduce / increase risk</li> <li>• Best practices for hazard mitigation at the individual or property level.<sup>2</sup></li> </ul>	All	Goal #1	Both
M-2	Prioritize critical facilities and complete site and facility surveys to identify vulnerabilities and potential mitigation measures.	All	Goal #2	Existing
M-3	Prioritize recurrent drainage problem areas and initiate data collection to track unreimbursed damages and related response and recovery expenses.	All	Goal #2	Existing

<sup>1</sup> See Section 3: Hazard Identification and Risk Assessment and related portions of Annex D of the NJ4 HMP Regional Hazard Mitigation Plan for a description of RL and SRL properties.

<sup>2</sup> For example, individual property owners can be informed about back-up power alternatives such as initial battery back-up for power disruptions.

## Part 4: Mitigation Measures

#	Mitigation Action, Program, or Project	Hazard(s)	Goal (s)	Existing or New Structures
M-4	Conduct regular Municipal Working Group meetings consistent with the plan maintenance program and the Municipal Adoption Resolution.	All	Goal #3	Both
M-5	Install permanent backup emergency power generator at Wenonah Elementary School (CF-14).	All	Goal #4	Both
M-6	Engineering study to (1) evaluate condition of existing storm sewer system and (2) identify areas subject to frequent erosion in order to update stormwater management plan accordingly.	Flood	Goal #4	Existing
M-7	Remedial measures to stabilize stream banks and stormwater drainage easements.	Flood	Goal #4	Both
M-8	Maintenance plan update and continuing implementation of tree debris clearing of conservation areas bordering public / private properties and from public rights of way.	High Wind	Goal #4	Both
M-9	Threat recognition of railroad tracks carrying hazardous materials near Wenonah Borough critical facilities. <sup>3</sup>	Risk / Threat Assessment	Goal #4	Both

### Part 4.4: Municipal Mitigation Measures – Implementation

*Part 4.4 includes a tabulation of relevant aspects related to the implementation of the municipal mitigation measures.*

Table GC.20-12 includes information identified by the Municipal Working Group:

- Part(ies) responsible for following up with implementation of the measure
- Priority for implementation considering a range of criteria<sup>4</sup>
- Project Type to help determine funding options and implementation mechanisms at the municipal level<sup>5</sup>
- Estimated Cost, including estimates provided by the Municipal Working Group or approximate ranges for projects that are in early stages of development
- Target Date, indicating desired completion dates assuming availability of funding
- Next step(s) anticipated to implement the identified mitigation measures at the municipal level

<sup>3</sup> Although natural hazards are the focus of the NJ4 HMP, these technological hazards are a continuing concern to the community and are documented in the Municipal Appendix to reflect the full range of hazards within Wenonah Borough.

<sup>4</sup> See *Section 4: Mitigation Measures* and related portions of Annex E of the NJ4 HMP Regional Hazard Mitigation Plan for a description of evaluation criteria considered by the Municipal Working Group.

<sup>5</sup> See *Section 4: Mitigation Measures* and related portions of Annex F of the NJ4 HMP Regional Hazard Mitigation Plan for a description of project types and related information regarding funding options and implementation mechanisms.

## Part 4: Mitigation Measures

**Table GC.20-12: Wenonah Borough (Gloucester County) Municipal Mitigation Measures Implementation**

#	Mitigation Action, Program, or Project	Responsible Part(ies)	Priority	Project Type	Estimated Cost (\$)	Target Date	Next Step(s)
M-1	Identify and pursue outreach and education opportunities.	Municipal OEM	Low	Public Outreach and Education	Staff time commitment	On-going	<ul style="list-style-type: none"> <li>▪ Work with County Working Group to identify resource needs and availability.</li> <li>▪ Identify target audience(s).</li> </ul>
M-2	Prioritize critical facilities and complete site and facility surveys to identify vulnerabilities and potential mitigation measures.	Municipal OEM and Facility Managers	Moderate	Data Acquisition and Management	Staff time commitment	On-going	Review critical facility list and establish priorities, procedures, and tentative time schedule for conducting site and facility surveys.
M-3	Prioritize recurrent drainage problem areas and initiate data collection to track unreimbursed damages and related response and recovery expenses.	Municipal OEM and Municipal Working Group	High	Capabilities and Coordination	Staff time commitment	On-going	Identify recurrent drainage problem areas, establish priorities, and identify data collection procedures.
M-4	Conduct regular Municipal Working Group meetings.	Municipal OEM and Municipal Working Group	Low	Capabilities and Coordination	Staff time commitment	On-going	Establish regular Municipal Working Group membership, reporting requirements, and meeting / work session schedule.
M-5	Install permanent backup emergency power generator at Wenonah Elementary School (CF-14).	Municipal OEM, Wenonah Elementary School, and Borough Council	High	Back-up Emergency Power Generator	< \$100K	One to three years	Conduct project scoping.
M-6	Engineering study to (1) evaluate condition of existing storm sewer system and (2) identify areas subject to frequent erosion in order to update stormwater management plan accordingly.	Municipal OEM, Borough Council, and Borough Engineer	High	Public Property Flood Mitigation	< \$100K	Three to five years	Develop scope of work for engineering study and procure professional consulting services.
M-7	Remedial measures to stabilize stream banks and stormwater drainage easements.	Municipal OEM, Borough Council, Borough Engineer, and Environmental Commission	High	Public Property Flood Mitigation	< \$100K	Three to five years	Conduct project scoping.

## Part 4: Mitigation Measures

#	Mitigation Action, Program, or Project	Responsible Part(ies)	Priority	Project Type	Estimated Cost (\$)	Target Date	Next Step(s)
M-8	Maintenance plan update and continuing implementation of tree debris clearing of conservation areas bordering public / private properties and from public rights of way.	Municipal OEM, Public Works Department, and Environmental Commission	Moderate	Private / Public Property Mitigation	< \$100K	One to three years	Conduct project scoping.
M-9	Threat recognition of railroad tracks carrying hazardous materials near Wenonah Borough critical facilities.	Municipal OEM	High	Risk / Threat Assessment	< \$50K	Three to five years	Develop scope of work for risk / threat assessment and procure professional consulting services.

### Part 4.5: Multi-Jurisdictional Mitigation Measures

*Part 4.5 includes brief descriptions of mitigation measures that require multiple jurisdictions to implement.*

During the Municipal Working Group Work Sessions, the Municipal Working Group identified some SDVR HMP mitigation measures as well as new areas of concern as mitigation measures where implementation requires participation or leadership from other levels of government, including county, state, and federal agencies.

*Section 4: Mitigation Measures* of the NJ4 HMP Regional Hazard Mitigation Plan describes multi-jurisdictional implementation strategies in detail. Section 4 identifies multi-jurisdictional mitigation measures that Municipal Working Groups believe are partly or wholly the responsibility of County agencies. These measures have been referred to the County Working Group for consideration. As part of the mitigation measures in the County Appendix to the NJ4 HMP Regional Hazard Mitigation Plan, the County Working Group will be working with the municipalities to identify:

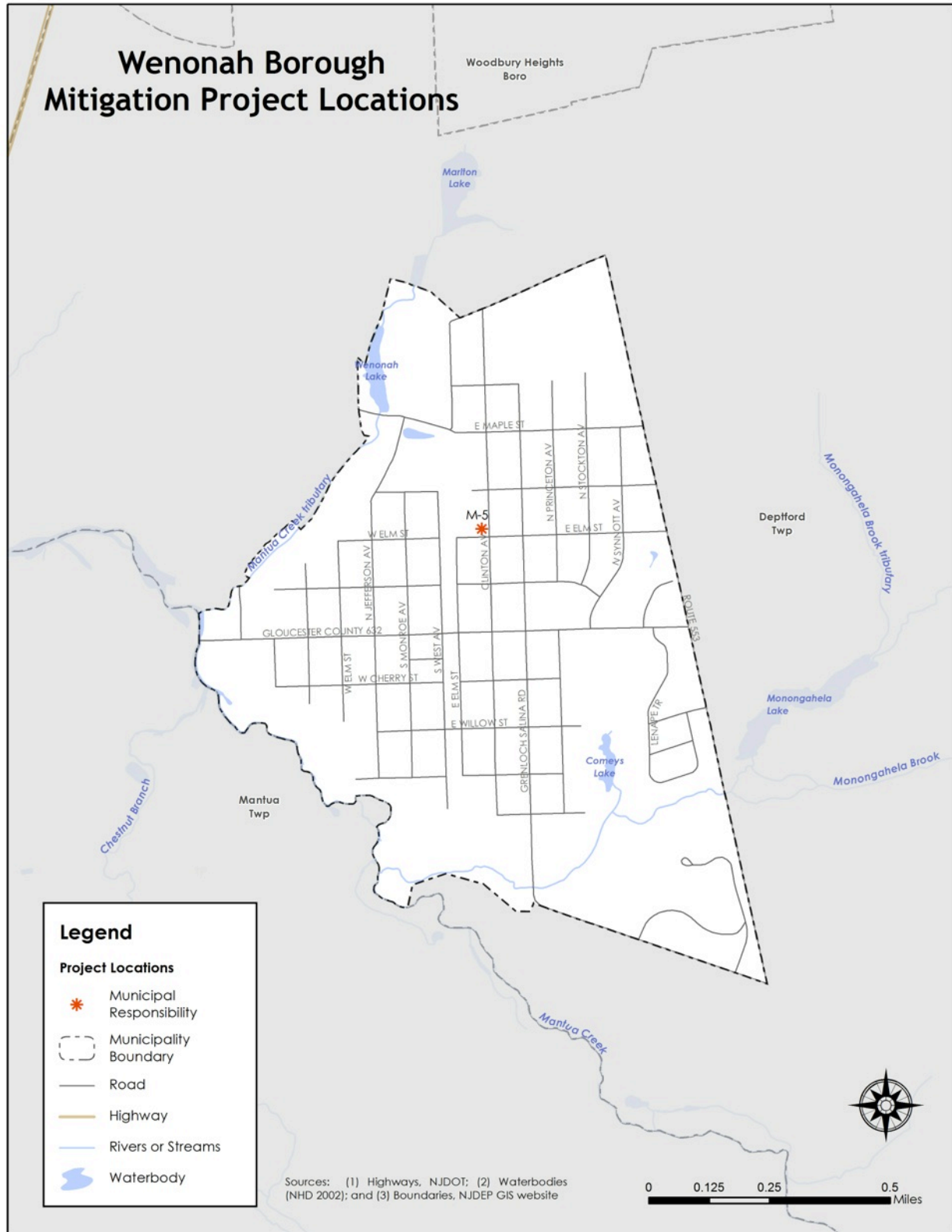
- Specific responsibilities amongst different level(s) of government to address these problem areas
- Mitigation measures or related projects which may address the described problem areas that are already acknowledged as County responsibilities including identifying the appropriate County agency or department taking the lead role and status of implementing these mitigation measures
- Which, if any, additional mitigation measures the member agencies of the County Working Group will assume responsibility to implement

*Note: Wenonah Borough did not identify any multi-jurisdictional mitigation measures.*



## Part 4: Mitigation Measures

Figure GC.20-4: Wenonah Borough Mitigation Project Locations



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## Part 4: Mitigation Measures

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### Part 4.6: Authorities, Policies, Programs, Resources, and Plan Integration

Part 4.6 includes three (3) subparts:

- **Authorities, Policies, and Programs** - Cross referencing relevant information and recommendations in the NJ4 HMP Regional Hazard Mitigation Plan regarding existing authorities, policies, and programs in the region and specific information about the jurisdiction's participation and continued compliance in the National Flood Insurance Program (NFIP)
- **Capabilities and Coordination** - Cross referencing relevant information and recommendations in the NJ4 HMP Regional Hazard Mitigation Plan regarding improving capabilities and coordination at the municipal level and specific information about the jurisdiction's available resources
- **Plan Review and Integration** – Identifying plans and programs included in the development of Plan Integration recommendations in the NJ4 HMP Regional Hazard Mitigation Plan

### Authorities, Policies, and Programs

Section 1.3: *Existing Authorities, Policies, Programs, and Resources* of the NJ4 HMP Regional Hazard Mitigation Plan summarizes relevant authorities, policies, and programs related to hazard mitigation in the region including the NFIP.

Continuing municipal participation in the NFIP as part of the implementation of the NJ4 HMP by the municipality, includes:

- Involvement of Floodplain Manager / Administrator during the NJ4 HMP implementation process
- Commitment to adopt updated FIRMs and evaluate / update the municipality's Flood Management Plan and/or Ordinance as appropriate per recommendations in Section 4.6 of the NJ4 HMP Regional Hazard Mitigation Plan

### Capabilities and Coordination

The update of the SDVR HMP included reexamining municipal hazard mitigation capabilities; potential for improving capabilities and coordination within and between jurisdictions; and, plan integration considerations. Section 1.3: *Existing Authorities, Policies, Programs, and Resources* of the NJ4 HMP Regional Hazard Mitigation Plan includes summary statements regarding regional resources and the impact of resource limitations on the overall approach to the NJ4 HMP mitigation strategies. Section 4: *Mitigation Measures* and related portions of Annex F of the NJ4 HMP Regional Hazard Mitigation Plan include summary observations and recommendations concerning:

- Hazard mitigation planning and mitigation measure implementation capabilities and coordination at the regional, county, and municipal levels
- Coordination within municipal governments, between municipal governments and their communities, and between municipal, county, and state agencies responsible for hazard mitigation

### Plan Review and Integration

Specific documents obtained during the plan update process from the Municipal Working Group include:

- Emergency Operations Plan (2008)
- Land Use Ordinance (2003)
- Master Plan (1999)
- Master Plan Reexamination Report (2006)
- Stormwater Control Ordinance (2014)
- Stormwater Management Plan (2006)

Table RP.4-4 in *Section 4.6: Plan Review and Integration* of the NJ4 HMP Regional Hazard Mitigation Plan identifies the primary plans and documents collected from each of the participating municipalities. In addition, Annex E.2 provides a complete list of all the plans and documents collected from the participating municipalities.

Section 4.6 also includes the results of reviewing the primary plans and documents to determine the extent to which these documents reflect up-to-date hazard risk and mitigation. In addition, Section 4.6 includes recommendations for integrating the results of the NJ4 HMP, including hazard mitigation data, goals, measures, and/or recommendations with existing plans and programs at the municipal level that are relevant to all participating municipalities and incorporated by reference in each of the jurisdiction-specific Appendices including:

- Hazard Assessments
- Emergency Operations Plans
- Floodplain Management Ordinances
- Master Plans and Reexamination Reports
- Other plans and documents

The plan maintenance process includes a commitment to review and follow these recommendations during future scheduled updates of these various documents as considered appropriate by the Working Group and the governing body of the municipality.

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## Attachment A: Public Review Comments

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The following comments were received during the public review of the Wenonah Borough Municipal Appendix:

**Table GC.20.A-1: Public Review Comments**

Comment Date and Time	Comment	Response

*Note: As of April 17, 2015, no public review comments were received for the Wenonah Borough Municipal Appendix.*

## **Attachment B: Adoption Resolution**

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Following this page is the Adoption Resolution for the Wenonah Borough Municipal Appendix as approved by the Wenonah Borough Council.

## **Attachment C: Approval Letter**

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Following this page is the Approval Letter for the Wenonah Borough Municipal Appendix.