



SOMERSET COUNTY

# HAZARD MITIGATION PLAN

## SOMERSET COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

FINAL PLAN UPDATE  
JULY 2019

[www.co.somerset.nj.us/hmp](http://www.co.somerset.nj.us/hmp)

### Section 9.10: Township of Green Brook Annex

*Prepared by the Somerset County  
Mitigation Planning Committee*



## 9.10 Township of Green Brook

This section presents the jurisdictional annex for the Township of Green Brook (hereinafter referred to as Green Brook).

### 9.10.1 HAZARD MITIGATION PLAN POINTS OF CONTACT

Hazard Mitigation Plan Points of Contact					
Primary Point of Contact			Alternate Point of Contact		
Name: Kelly G. Cupit, Township Administrator Address: 111 Green Brook Road Green Brook, New Jersey 08812 Phone Number: (732) 968-1023 x6601 Fax Number: (732) 968-4088 E-mail Address: kgcupit@greenbrooktp.org			Name: Frank Gaffney, OEM Coordinator Address: 111 Green Brook Road Green Brook, New Jersey 08812 Phone Number: (732) 713-7430 Fax Number: (732) 968-4088 E-mail Address: frankgaffney50@gmail.com		
Municipal HMP Committee Members					
Local Jurisdiction Role/Position	Name	Email	Phone	Date Notified About Mitigation Plan Development	Agreed to participate? (Yes/No)
Land Use/Community Planner	Richard Roseberry	<a href="mailto:rrosebeery@maserconsulting.com">rrosebeery@maserconsulting.com</a>	610-868-4201 x4701	11/6/2017	Y
Emergency Manager	Frank Gaffney	<a href="mailto:fgaffney@greenbrooktp.org">fgaffney@greenbrooktp.org</a>	732-713-7430	11/6/2017	Y
Floodplain Manager/ Floodplain Administrator	Richard Roseberry	<a href="mailto:rrosebeery@maserconsulting.com">rrosebeery@maserconsulting.com</a>	610-868-4201 x4701	11/6/2017	Y
Public Works Director / City Engineer	Richard Roseberry	<a href="mailto:rrosebeery@maserconsulting.com">rrosebeery@maserconsulting.com</a>	610-868-4201 x4701		Y
Building Code Official	George DeLucca	<a href="mailto:gdelucca@greenbrooktp.org">gdelucca@greenbrooktp.org</a>	732-968-1023 x6608	11/6/2017	Y
Fiscal/Budget Officer	Raymond Murray	<a href="mailto:rmurray@greenbrooktp.org">rmurray@greenbrooktp.org</a>	732-968-1023 x6604	11/6/2017	Y
Manager/Administrator	Kelly Cupit	<a href="mailto:kgcupit@greenbrooktp.org">kgcupit@greenbrooktp.org</a>	732-968-1023 x6601		Y
Elected Officials	Patrick Boccio	<a href="mailto:pboccio@greenbrooktp.org">pboccio@greenbrooktp.org</a>	267-476-0768	11/6/2017	Y

### 9.10.2 PROFILE

#### 9.10.2.1 Population

The population of Green Brook is estimated to be 7,203, based on information gathered during the 2010 U.S. Census. Census population estimates of July 2017 indicated a total population of 7,212.

#### 9.10.2.2 Location

Green Brook is located in central New Jersey and is bisected east to west by the Route 22 Corridor. The Township lies between North Plainfield, Plainfield, Middlesex and Bound Brook, south of Route 22. The northern section of the Township is bordered by Warren Township and Watchung Borough.

#### 9.10.2.3 Brief History

Incorporated in 1936, Green Brook was once a part of North Plainfield Township. It is the home of Washington Rock, a promontory from which George Washington was said to have observed British troop movements throughout the coastal plain during the Revolutionary War. The Township developed with a commercial corridor on both sides of Route 22 and residential neighborhoods to the north and south of the highway.

### 9.10.2.4 Governing Body Format

Green Brook is governed by a Township Committee composed of five members elected for staggered three-year terms. Elections are held on a partisan basis each November, with either one or two seats up for election each year. The Mayor is selected annually from among the five members by a majority vote of the Committee Members at the annual organization meeting held within the first seven days of the New Year.

### 9.10.2.5 Growth/Development Trends

Green Brook did not note any major residential or commercial development, or major infrastructure development planned for the next 5 years in the municipality (updated in 2018).

New Development/Potential Development in Municipality						
Property Name	Type (Residential or Commercial)	No. of Structures	Address	Block and Lot	Known Hazard Zone	Description /Status
N/A	N/A	N/A	N/A	N/A	N/A	N/A

The Township's Flood Damage Prevention Ordinance will work to protect new development from the effects of natural hazards.

### 9.10.3 NATURAL HAZARD EVENT HISTORY SINCE 2014

Somerset County has a history of natural hazard events as detailed in Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The table below presents a summary of events that have occurred from since the 2014 HMP to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources. For details of events prior to 2014, refer to Section 5.0 of this plan.

Natural Hazard Event History (2014 to present)				
Type of Event	FEMA Disaster # (if applicable)	County Designated?	Date	Approximate Damage Assessment
Cold/Wind Chill	N/A	N/A	January 4, 2014	No local damage reported
Strong Wind	N/A	N/A	January 6, 2014	No local damage reported
Flood	N/A	N/A	January 6, 2014	No local damage reported
Cold/Wind Chill	N/A	N/A	January 7, 2014	No local damage reported
Cold/Wind Chill	N/A	N/A	January 22, 2014	No local damage reported
Winter Storm	N/A	N/A	February 12, 2014	No local damage reported
Flood	N/A	N/A	February 22, 2014	No local damage reported
Strong Wind	N/A	N/A	March 12, 2014	No local damage reported
Flood	N/A	N/A	March 30, 2014	No local damage reported
Flood	N/A	N/A	April 1, 2014	No local damage reported
Thunderstorm Wind	N/A	N/A	April 15, 2014	No local damage reported

Natural Hazard Event History (2014 to present)				
Type of Event	FEMA Disaster # (if applicable)	County Designated?	Date	Approximate Damage Assessment
Flood	N/A	N/A	April 15, 2014	No local damage reported
Flood	N/A	N/A	April 30, 2014 to May 1, 2014	No local damage reported
Thunderstorm Wind	N/A	N/A	May 10, 2014	No local damage reported
Earthquake, Magnitude 1.9, 6 km N of Boonton (Montville Twp.)	N/A	N/A	May 31, 2014	No local damage reported
Earthquake, Magnitude 1.0, 13 km SW of Ramblewood, NJ (Laurel Springs Boro.)	N/A	N/A	June 19, 2014	No local damage reported
Thunderstorm Wind	N/A	N/A	July 2, 2014	No local damage reported
Heat	N/A	N/A	July 2, 2014	No local damage reported
Thunderstorm Wind	N/A	N/A	July 3, 2014	No local damage reported
Flash Flood	N/A	N/A	July 3, 2014	No local damage reported
Thunderstorm Wind	N/A	N/A	July 8, 2014	No local damage reported
Earthquake, Magnitude 1.6, 3 km W of Jersey City, NJ (Kearny Town)	N/A	N/A	July 8, 2014	No local damage reported
Flood	N/A	N/A	July 16, 2014	No local damage reported
Earthquake, Magnitude 1.2, 4 km SW of Ringwood, NJ (Ringwood Boro.)	N/A	N/A	July 28, 2014	No local damage reported
Flash Flood	N/A	N/A	August 21, 2014	No local damage reported
Earthquake, Magnitude 1.3, 2 km S of Park Ridge, NJ (Woodcliff Lake Boro.)	N/A	N/A	September 3, 2014	No local damage reported
Flood	N/A	N/A	December 9, 2014	No local damage reported
Earthquake, Magnitude 1.9, 13 km SE of Twin Rivers, NJ (Millstone Twp.)	N/A	N/A	December 13, 2014	No local damage reported
Earthquake, Magnitude 1.5, 2 km SW of Clifton, NJ (Bloomfield Twp.)	N/A	N/A	December 28, 2014	No local damage reported
Cold/Wind Chill	N/A	N/A	January 7, 2015	No local damage reported
Flood	N/A	N/A	January 18, 2015	No local damage reported
Strong Wind	N/A	N/A	February 2, 2015	No local damage reported
Cold/Wind Chill	N/A	N/A	February 13, 2015	No local damage reported
Strong Wind	N/A	N/A	February 15, 2015	No local damage reported
Cold/Wind Chill	N/A	N/A	February 15, 2015	No local damage reported
Cold/Wind Chill	N/A	N/A	February 16, 2015	No local damage reported

Natural Hazard Event History (2014 to present)				
Type of Event	FEMA Disaster # (if applicable)	County Designated?	Date	Approximate Damage Assessment
Cold/Wind Chill	N/A	N/A	February 20, 2015	No local damage reported
Cold/Wind Chill	N/A	N/A	February 24, 2015	No local damage reported
Flood	N/A	N/A	March 11, 2015	No local damage reported
Flood	N/A	N/A	March 14, 2015	No local damage reported
Earthquake, Magnitude 1.2, 2 km SW of Clifton, NJ (Bloomfield Twp.)	N/A	N/A	March 27, 2015	No local damage reported
Strong Wind	N/A	N/A	April 4, 2015	No local damage reported
Flash Flood	N/A	N/A	May 31, 2015	No local damage reported
Earthquake, Magnitude 1.2, 2 km N of Wanaque, NJ (Ringwood Boro.)	N/A	N/A	July 12, 2015	No local damage reported
Heat	N/A	N/A	July 19, 2015	No local damage reported
Earthquake, Magnitude 2.7, 3.5 km N of Bernardsville, NJ (Bernardsville Boro.)	N/A	N/A	August 14, 2015	No local damage reported
Flash Flood	N/A	N/A	August 19, 2015	No local damage reported
Flood	N/A	N/A	August 19, 2015	No local damage reported
Earthquake, Magnitude 1.4, 5 km WNW of Fairfield, NJ (Fairfield Twp.)	N/A	N/A	August 22, 2015	No local damage reported
Drought and Excessive Heat	N/A	N/A	April 2015 – September 2015	No local damage reported
Combined effects of freeze, excessive heat, and drought	N/A	N/A	April 2016 – September 2016	No local damage reported
Earthquake, Magnitude 2.1, 2.4 km NW of Ringwood, NJ (Ringwood Boro.)	N/A	N/A	January 2, 2016	No local damage reported
Severe Winter Storm and Snowstorm (Blizzard)	DR-4264	Yes	January 22-24, 2016	No local damage reported
Earthquake, Magnitude 1.1, 1.1 km NW of Butler, NJ (Bloomingdale Boro.)	N/A	N/A	February 19, 2016	No local damage reported
Flash Flood	N/A	N/A	February 24, 2016	No local damage reported
Thunderstorm Wind	N/A	N/A	April 2, 2016	No local damage reported
Earthquake, Magnitude 0.8, 4.4 km N of Butler, NJ (Bloomingdale Boro.)	N/A	N/A	May 27, 2016	No local damage reported
Lightning	N/A	N/A	June 8, 2016	No local damage reported
Thunderstorm Wind	N/A	N/A	June 8, 2016	No local damage reported
Lightning	N/A	N/A	June 28, 2016	No local damage reported

Natural Hazard Event History (2014 to present)				
Type of Event	FEMA Disaster # (if applicable)	County Designated?	Date	Approximate Damage Assessment
Thunderstorm Wind	N/A	N/A	June 28, 2016	No local damage reported
Earthquake, Magnitude 1.1, 1 km NW of Butler, NJ (Butler Boro.)	N/A	N/A	July 4, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 8, 2016	No local damage reported
Flood	N/A	N/A	July 8, 2016	No local damage reported
Thunderstorm Wind	N/A	N/A	July 18, 2016	No local damage reported
Thunderstorm Wind	N/A	N/A	July 25, 2016	No local damage reported
Thunderstorm Wind	N/A	N/A	July 25, 2016	No local damage reported
Thunderstorm Wind	N/A	N/A	July 25, 2016	No local damage reported
Flood	N/A	N/A	July 25, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 30, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 31, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 31, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 31, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 31, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 31, 2016	No local damage reported
Heavy Rain	N/A	N/A	July 31, 2016	No local damage reported
Flash Flood	N/A	N/A	July 31, 2016	No local damage reported
Earthquake, Magnitude 0.8, 2.2 km SW of Clifton, NJ (Bloomfield Twp.)	N/A	N/A	July 31, 2016	No local damage reported
Earthquake, Magnitude 1.0, 2 km N of Wanaque, NJ (Wanaque Boro.)	N/A	N/A	August 9, 2016	No local damage reported
Earthquake, Magnitude 0.5, 1 km N of Butler, NJ (Bloomingdale Boro.)	N/A	N/A	August 9, 2016	No local damage reported
Earthquake, Magnitude 0.6, 5 km NE of Wanaque, NJ (Ringwood Boro.)	N/A	N/A	September 20, 2016	No local damage reported
Earthquake, Magnitude 1.5, 2.6 km W of Belmar, NJ (Westville Boro.)	N/A	N/A	November 6, 2016	No local damage reported
Earthquake, Magnitude 2.0, 16.3 km E of Highlands, NJ (Middletown Twp.)	N/A	N/A	November 6, 2016	No local damage reported
Earthquake, Magnitude 1.31, 1.4 km S Morris Plains, NJ (Morris Plains Boro.)	N/A	N/A	March 25, 2017	No local damage reported
Flood	N/A	N/A	March 31, 2017	No local damage reported

Natural Hazard Event History (2014 to present)				
Type of Event	FEMA Disaster # (if applicable)	County Designated?	Date	Approximate Damage Assessment
Hail	N/A	N/A	May 14, 2017	No local damage reported
Hail	N/A	N/A	May 31, 2017	No local damage reported
Flood	N/A	N/A	June 24, 2017	Roadway flooding occurred in Green Brook on US Highway 22 near Somerset Avenue and Watchung Avenue as a result of the remnants of Tropical Storm Cindy.
Flood	N/A	N/A	July 22, 2017	No local damage reported
Flood	N/A	N/A	August 22, 2017	No local damage reported
Flood	N/A	N/A	August 22, 2017	Severe thunderstorms caused flooding on Rockview Avenue in Green Brook.
Heavy Rain	N/A	N/A	August 23, 2017	No local damage reported
Earthquake, Magnitude 1.71, 3.7 km SW of Morris Plains, NJ (Morris Twp.)	N/A	N/A	September 25, 2017	No local damage reported
Earthquake, Magnitude 0.98, 2.7 km SW of Morris Plains, NJ (Morris Twp.)	N/A	N/A	September 30, 2017	No local damage reported
Flood	N/A	N/A	October 29, 2017	No local damage reported
Earthquake, Magnitude 1.38, 3.5 km NW of Keansburg, NJ (Keansburg Boro.)	N/A	N/A	November 8, 2017	No local damage reported
Severe Winter Storm and Snowstorm (Blizzard)	DR-4368	Yes	March 6, 2018	Although all portions of the county experienced significant snowfall from this event, the higher amounts (around one and one half feet) occurred in the eastern sections of the county closer to the off shore low pressure system. Thundersnow also occurred in a few locations. Some reported snowfall totals include: 22.0 inches in Green Brook Township.

Note:

DR = Major Disaster Declaration

EM = Emergency Declaration

N/A = Not applicable

**9.10.4 NATURAL HAZARD RISK/VULNERABILITY RISK RANKING**

The table below summarizes the vulnerability risk rankings of potential hazards of Green Brook.

Natural Hazard Risk/Vulnerability Risk Ranking				
Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
Flood	1% Annual Chance: \$6,300,000 0.2% Annual Chance: \$11,000,000	Frequent	18	High <sup>g</sup>
Severe Storm	100-Year MRP: \$327,713 500-Year MRP: \$3,719,948 Annualized Loss: \$27,703	Frequent	39	High
Severe Winter Storm	1% of GBS: \$11,536,460 5% of GBS: \$57,682,300	Frequent	27	Medium
Earthquake	500-Year MRP: \$2,223,092 2,500-Year MRP: \$32,721,199 Annualized Loss: \$34,076	Occasional	12	Low
Drought	Not available	Occasional	20	Medium
Extreme Temperature	Not available	Frequent	27	Medium
Wildfire	Not available	Occasional	32	High

## Note

- Building damage ratio estimates based on FEMA 386-2 (August 2001)
- The valuation of general building stock and loss estimates was based on custom inventory for Somerset County.
- High = Total hazard priority risk ranking score of 31 and above  
Medium = Total hazard priority risk ranking of 15-30  
Low = Total hazard risk ranking below 15
- Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the value of contents.
- Loss estimates for the flood and earthquake hazards represent both structure and contents.
- The HAZUS-MH earthquake model results are reported by Census Tract.
- This rank was adjusted based on qualitative input from county/jurisdictional representatives due to hazard event history and other municipality-specific considerations.



### 9.10.5 CAPABILITY ASSESSMENT

This section describes the following capabilities of the local jurisdiction:

- Legal and regulatory capability;
- Administrative and technical capability;
- Fiscal capability;
- Community resiliency;
- Community political capability; and
- Community classification.

#### 9.10.5.1 Legal and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Green Brook. The Township reviewed its responses from the 2014 HMP and has updated any information that has changed since that time.

Legal and Regulatory Capability			
Regulatory Tools (Codes, Ordinances, Plans)	Do you have this? (Y or N)	Enforcement Authority	Code Citation (Section, Paragraph, Page Number, Date of Adoption)
1) Building Code	Y	-	International Building Code – New Jersey Edition, NJAC 5:24-3.14 Adopted 2/20/07
2) Zoning Ordinance	Y	Zoning Officers, Deputy – Joe Costa, Ray Murray, Kelly Cupit	1982 codification, and is from time to time amended
3) Subdivision Ordinance	Y	-	Land Development Ordinance of the Township of Green Brook
4) NFIP Flood Damage Prevention Ordinance	Y	Engineer, Rick Roseberry	Flood Damage Protection Ordinance 2007-725 Adopted August 20, 2007
4a) Cumulative Substantial Damages	-	-	-
4b) Freeboard	-	-	-
5) Growth Management	Y	-	COAH Affordable Housing Plan
6) Floodplain Management / Basin Plan	Y	-	-
7) Stormwater Management Plan/Ordinance	Y	-	December 2005

Legal and Regulatory Capability			
Regulatory Tools (Codes, Ordinances, Plans)	Do you have this? (Y or N)	Enforcement Authority	Code Citation (Section, Paragraph, Page Number, Date of Adoption)
8) Comprehensive Plan / Master Plan/ General Plan	Y	Land Use Board Chairman, Albert St. Louis	Master Plan, last revised In 2017
9) Capital Improvements Plan	Y	-	Revised annually by Ordinance
10) Site Plan Review Requirements	-	-	-
11) Open Space Plan	-	-	-
12) Stream Corridor Management Plan	Y	-	Environmental Resources Inventory 1978 (update in 2008)
13) Watershed Management or Protection Plan	-	-	-
14) Economic Development Plan	Y	-	Master Plan, last revised 2017
15) Comprehensive Emergency Management Plan	-	-	-
16) Emergency Response Plan	Y	-	Emergency Operations Plan Revised 4/16/07, 6/28/2007, 2017
17) Post-Disaster Recovery Plan	Y	-	Implemented 1999
18) Post-Disaster Recovery Ordinance	N	-	-
19) Real Estate Disclosure Requirement	N	-	-
20) Other (Special Purpose Ordinances such as critical or sensitive areas)	-	-	-

Notes:

- = Available

N = No

Y = Yes

### 9.10.5.2 Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Green Brook. The Township reviewed its responses from the 2014 HMP and has updated any information that has changed since that time.

Administrative and Technical Capability		
Staff / Personnel Resources	Available (Y or N)	Department / Agency / Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	C. Richard Roseberry, P.E. Twp. Engineer With the firm of Maser Consulting
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	C. Richard Roseberry, P.E. Twp. Engineer
3) Planners or engineers with an understanding of natural hazards	Y	C. Richard Roseberry, P.E. Twp. Engineer
4) NFIP Floodplain Administrator	Y	C. Richard Roseberry, P.E. Twp. Engineer
5) Surveyor(s)	Y	Maser Consulting
6) Personnel skilled or trained in GIS applications	Y	C. Richard Roseberry, P.E. Twp. Engineer
7) Scientist familiar with natural hazards	N	-
8) Emergency Manager	Y	Frank Gaffney, OEM Coordinator
9) Grant Writer(s)	Y	Kelly Cupit, Administrator
10) Staff with expertise or training in benefit/cost analysis	Y	Kelly Cupit, Administrator Raymond Murray, Chief Finance Officer

Notes:

- = Unavailable

N = No

Y = Yes

### 9.10.5.3 Fiscal Capability

The table below summarizes financial resources available to Green Brook. The Township reviewed its responses from the 2014 HMP and has updated any information that has changed since that time.

Fiscal Capability	
Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community Development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to levy taxes for specific purposes	No
4) User fees for water, sewer, gas or electric service	Yes
5) Impact fees for homebuyers or developers of new development/homes	Yes
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	Yes
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) State mitigation grant programs	Yes
11) Other	-

#### 9.10.5.4 Overall Capabilities

The Township of Green Brook's 2018 assessment of its overall capabilities to implement hazard mitigation strategies in each of the above categories, in addition to their local assessment of how these capabilities could be expanded and/or improved to reduce risk, is presented in the table below.

Overall legal and regulatory capability to implement hazard mitigation strategies	Overall technical capability to implement hazard mitigation strategies	Overall fiscal capability to implement hazard mitigation strategies	Overall administrative capability to implement hazard mitigation strategies	Community's willingness to enact policies and programs that reduce hazard vulnerabilities
High	High	High	High	High
<b>How these capabilities can be expand and/or improved to reduce risk</b>				
None identified; existing capabilities are determined to be sufficient to support municipal hazard mitigation goals and initiatives.				

#### 9.10.5.5 Community Classifications

The table below summarizes classifications for community program available to Green Brook. The Township reviewed its responses from the 2014 HMP and has updated any information that has changed since that time.

Community Classifications		
Program	Classification	Date Classified
Community Rating System (CRS)	NP	-
Building Code Effectiveness Grading Schedule (BCEGS)	-	-
Public Protection	NP	-
Storm Ready	NP	-
Firewise	NP	-

Notes:

- = Unavailable

N/A = Not applicable

NP = Not participating.

The classifications listed above relate to Green Brook's ability to provide effective services to lessen its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS Class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with Class 1 being the best possible classification, and Class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1,000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

### **9.10.6 MITIGATION STRATEGY**

This section discusses past mitigations actions and status, identifies hazard vulnerabilities, and describes proposed hazard mitigation initiatives.

#### **9.10.6.1 past Mitigation Actions/Status**

The status of all 2014 HMP initiatives was evaluated by the Township of Green Brook in 2018 and is presented in the following table. The community has indicated that local priorities have shifted only slightly since the last plan. Since the last plan, the Township has been successful in participating in a property acquisition in the floodway and has just been awarded funding to acquire an additional three houses for hazard mitigation.

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB-1 (GB-1)	Apply for participation in Community Rating System	High	Flooding	Twp. of				X	Lack of staffing to implement is main barrier	X		No Change
GB-2 (GB-2)	Prioritize flood prone land for acquisition and preservation as open space	Medium	Flooding	Green Brook Open Space	X		X		1 Home has been acquired and demolished, 3 more are in the process	X		Continue to focus on acquisitions, demolitions and continue to monitor eligible homes
GB-3 (GB-3)	Support completion of the Green Brook Flood Control Project under way by the Army Corps of Engineers	High	Flooding	Army Corps of Engineer			X		This project is a 50 year project with federal funds that get metered out.	X		No Change

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB4 (GB-5)	Prioritize purchase, relocate or elevate structures located in hazard prone areas to protect structures from future damage with priority on SRL, RL or Flood Insurance Policy properties located within the township. Phase 1: Identify appropriate candidates based on cost-effectiveness. Phase 2: Where determined to be a viable option, work with property owners toward implementation of the determined action based on available funding from FEMA and local match availability.	High	Flooding	Twp. Of Green Brook			X		1 home has been acquired and demolished, 3 more are in the process	X		No Change. Purchase, relocate, or elevate structures located in hazard-prone areas to protect structures from future damage, with priority on repetitive loss properties including 12 homes and 4 businesses on Greenbrook Road and Washington Avenue. (changed Mitigation Initiative description)



2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB5 (GB-6)	Retrofit critical facilities and infrastructure in hazard prone areas, including the Town Hall, Green Brook Middle School, Green Brook Manor Nursing Home, Green Brook Fire Company, and the 10 wells listed in the Vulnerable Critical Facilities section, above. Obtain and install backup power sources at critical facilities.	High	All	Twp. of Green Brook	X		X		Through HMGP, Township has acquired a generator that will be retrofit to Green Brook Middle School and the Firehouse. Town hall has a generator but needs to adjust the items it operates to include the elevator.	X		No Change- Combined with GB11
GB6 (GB-7)	Educate public on natural hazards and preparedness to include, but not be limited to, the following to promote and effect natural hazard risk reduction: Provide and maintain links to the HMP website; Use letters and email notification systems and newsletters to better educate the public on flood insurance, the availability of mitigation grant funding, and personal natural hazard risk reduction measures; Provide public education and outreach on proper installation and/or use of backup power.	Medium	All	Twp. of Green Brook			X		Township launched new website- will incorporate section for hazard mitigation	X		No Change Combined with GB22

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB7 (GB-10)	Strive to maintain compliance with and good-standing in the National Flood Insurance program, including adoption and enforcement of floodplain management requirements (e.g. regulating all new and substantially improved construction in Special Hazard Flood Areas), floodplain identification and mapping, and flood insurance outreach to the community.	High	Flood	Twp. of Green Brook			X		Ongoing	X		No Change
GB8	Incorporate ordinances and/or zoning restrictions to control and mitigate future development in hazard areas, as identified in Section 9.10.11. Specifically, develop policy to discourage the illegal filling of sensitive areas, particularly flood zones, and implement penalties for policy violations.	Medium	All Hazards	Municipality with support from County, NJOEM and FEMA				X	These policies are in place.		X	Completed
GB9	Improve communication systems. Specifically, develop communication specific SOPs utilizing redundant systems to ensure the public is notified of the most current information in the aftermath of a disaster.	Medium	All Hazards	Municipality with support from County, NJOEM and FEMA	X				Township utilizes Nixle		X	Completed with GB25

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB10	Develop programs/ procedures to capture and archive loss data from events. Examples include: Record location and length of roadway closures; Develop a database of residential and commercial property damage, including permit history for such repairs; High water marks, perhaps painting phone poles with high water marks and or regulatory Base Flood Elevations (BFEs).	Medium	All Hazards	Municipality with support from County, NJOEM and FEMA				X	Lack of staffing to implement	X		No Change
GB11	Obtain and install backup power sources at critical facilities.	Medium	All Hazards	Municipality with support from County, NJOEM and FEMA	X		X		Through HMGP, Township has acquired a generator that will be retrofit to Green Brook Middle School and the Firehouse. Town hall has a generator but needs to adjust the items it operates to include the elevator.		X	No Change- Combined with GB5

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB12	Participate in local, county and/or state level projects and programs to develop improved structure and facility inventories and hazard datasets to support enhanced risk assessment efforts. Such programs may include developing a detailed inventory of critical facilities based upon FEMA's Comprehensive Data Management System (CDMS) which could be used for various planning and emergency management purposes including: Support the performance of enhanced risk and vulnerability assessments for hazards of concern. Support state, county and local planning efforts including mitigation (including updates to the State HMP), comprehensive emergency management, debris management, and land use. Improved structural and facility inventories could incorporate flood, wind and seismic-specific parameters (e.g. first floor elevations, roof types, structure types based on FEMA-154 "Rapid Visual Screening of Buildings for Potential Seismic Hazards" methodologies). It is recognized that these programs will need to be initiated and supported at the County and/or State level, and will require training, tools and funding provided at the county, state and/or federal level.	Medium	All Hazards	Hazard Mitigation Plan Coordinator				X	Lack of staffing to implement	X		No Change

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB13	Create/Enhance/Maintain Mutual Aid agreements with neighboring communities for continuity of operations	High	All Hazards	Municipality with support from County, NJOEM, FEMA and surrounding communities	X					X		No Change
GB14	Identify and develop agreements with entities that can provide support with FEMA/NJOEM paperwork after disasters; qualified damage assessment personnel – Improve post-disaster capabilities – damage assessment; FEMA/NJOEM paperwork compilation, submissions, record-keeping	Medium	All Hazards	Municipality with support from County, NJOEM and FEMA			X		Utilizes consultant for HMGP process		X	No Change
GB15	Work with regional agencies (i.e. County and NJOEM) to help develop damage assessment capabilities at the local level through such things as training programs, certification of qualified individuals (e.g. code officials, floodplain managers, engineers).	Medium	All Hazards	Municipality with support from County, NJOEM and FEMA				X	Lack of staffing	X		No Change
GB16 (GB9)	Continue to support the implementation, monitoring, maintenance, and updating of this Plan (through participating in the 5 year Plan Update), as defined in Section 7.0	High	All Hazards	Municipality with support from Planning Partners,			X		Ongoing	X		No Change

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB17	Obtain and archive elevation certificates	High	Flood, Severe Storm	NFIP Floodplain Administrator				X	Lack of staffing	X		No Change
GB18	Promote the participation of Floodplain Administrators within the planning process and other activities.	Medium	Flood	Municipality with support from County, NJOEM and FEMA			X		Ongoing	X		No Change
GB19	Enhance the County/community resilience to severe storms (incl. severe winter storms) by joining the NOAA "Storm Ready" program and supporting communities in joining the program.	Medium	Severe Storm	Municipality with support from County, NJOEM and FEMA				X			X	Does not participate
GB20	Adopt regulations for undergrounding utilities in new developments.	H	Severe Storm	Municipal Council				X	These policies are in place.	X		No Change
GB21	Implement permit fee waivers for installation of backup power for private property.	H	Severe Storm	Municipal Council			X		Will consider permanent fee waivers	X		No Change

2014 HMP Initiative #	Mitigation Initiative Description	2014 HMP Priority	Hazard(s) Mitigated	Lead and Support Agencies	Status				Status Details	Relevance		Relevance Details
					Completed	Initiated but Not Completed	Ongoing Type of Activity	Not Initiated		Still Relevant - Carry Forward to Updated Mitigation Strategy	No Longer Relevant - Omit from Updated Mitigation Strategy	
GB22	Provide public education and outreach on proper installation and/or use of backup power	H	Severe Storm	Municipal Clerk		X					X	No Change Combined with GB6
GB23	Implement, review, and enforce municipal policies and programs to prevent trees from threatening lives and impacting power availability/interruption.	H	Severe Storm	Municipal Code Enforcement			X		Ongoing	X		No Change
GB24	Develop policy to discourage the illegal filling of sensitive areas, particularly flood zones, and implement hefty fines, penalties and property condemnation for violations.	High	All Hazards	Municipal Code Enforcement				X	The Township has these policies in place.		X	No Change
GB25	Develop communication specific SOPs utilizing redundant systems to ensure the public is notified of the most current information in the aftermath of a disaster.	High	All Hazards	Municipality with support from County, NJOEM and FEMA							X	No Change- Combined with GB9

### 9.10.6.2 Hazard Vulnerabilities Identified

It is estimated that in Green Brook, 378 residents live within the 1% annual chance flood area (NFIP Special Flood Hazard Area). \$120,349,000 (5.9%) of the municipality's general building stock replacement cost value (structure and contents) is located within the 1% annual chance flood area.

There are 105 NFIP policies in the community and there are 77 policies located within the 1% annual chance flood area. FEMA has identified 41 Repetitive Loss (RL) properties including 4 Severe Repetitive Loss (SRL) properties in the municipality.

HAZUS-MH estimates that for a 1% annual chance flood, \$6,300,000 (0.31%) of the municipality's general building stock replacement cost value (structure and contents) will be damaged, 607 households may be displaced, 445 people may seek short-term sheltering, and an estimated 75 tons of debris could be generated.

Further information regarding the summary of the community's participation in the NFIP is provided in the table below.

NFIP Summary								
Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 1% Boundary (3)	# Policies in 0.2% - Boundary (3)	# Policies Outside the 0.2% Flood Hazard (3)
Green Brook (T)	105	214	\$3,440,648	41	4	77	9	19

Source:

- (1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2 via NJDEP in August 2017 and are current as of March 31, 2017. Please note the total number of repetitive loss properties includes the severe repetitive loss properties.
- (2) Information regarding total building and content losses was gathered from the claims file provided by FEMA Region 2 (current as of Township of Green Brook).
- (3) The policy locations used are based on the latitude and longitude provided by FEMA Region 2.



HAZUS-MH critical facility damage estimates for the Township of Green Brook are provided below.

Critical Facility Damage Estimate										
Name	Municipality	Type	Exposure		Potential Loss from 1% Flood Event			Potential Loss from 0.2% Flood Event		
			1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	Days to 100-Percent <sup>(1)</sup>	Percent Structure Damage	Percent Content Damage	Days to 100-Percent <sup>(1)</sup>
Green Brook Middle School	Green Brook (T)	School	x	x	-	-	-	-	-	-
Green Brook Township Police Department	Green Brook (T)	Police	x	x	-	-	-	-	-	-
Green Brook Township Volunteer Fire Company 1	Green Brook (T)	Fire	x	x	-	-	-	-	-	-
Green Brook Well 5	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 6	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 7	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 8	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 9	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 11	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 1	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 2	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 3	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Well 4	Green Brook (T)	Potable Water	x	x	-	-	-	-	-	-
Green Brook Manor Nursing Home	Green Brook (T)	Senior		x	-	-	-	-	-	-
Green Brook Town Hall	Green Brook (T)	Town Hall	x	x	-	-	-	-	-	-

Source: HAZUS-MH 4.0

Notes:

- = No loss (calculated by HAZUS-MH 4.0)
- X = Facility located within the DFIRM boundary.
- DFIRM = Digital Flood Insurance Rate Map
- NA = Not available
- T = Township

- (1) HAZUS-MH 4.0 provides a general indication of the maximum restoration time for 100% operations. Clearly, a great deal of effort is needed to quickly restore essential facilities to full functionality; therefore, this will be an indication of the maximum downtime (HAZUS-MH 4.0 User Manual).
- (2) Please note in some cases, a facility may be located in the DFIRM flood hazard boundary; however HAZUS did not calculate potential loss. This may be because the depth of flooding does not amount to any damages to the structure according to the depth damage function used in HAZUS for that facility type.

Please refer to the Hazard Profiles in Section 5 of this plan for additional vulnerability information relevant to this jurisdiction.

## 9.10.7 PROPOSED HAZARD MITIGATION INITIATIVES

The list below represents a summary of community mitigation initiatives developed in 2018 as part of the most recent plan update. The Township of Green Brook has indicated that local priorities have shifted only slightly since the version of the plan in 2014. The Township has been successful in participating in an acquisition in the floodway and has just been awarded funding to acquire an additional three houses for hazard mitigation. Detailed Action Worksheets are included only for NEW Mitigation Actions/Projects. Some of the identified mitigation initiatives in the table below 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. Please note that the Township has opted to carry forward legacy initiative numbers from the 2014 plan, for internal municipal tracking purposes, formatted as: “2019# [2014# (2009#)]”.

Proposed Hazard Mitigation Initiatives														
2019 Initiative Number	Initiative Name	Initiative Description	New Initiative or Carried Forward	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	2018 Action Status
GB-1 [GB-1 (GB-1)]	Community Rating System	Apply for participation in Community Rating System.	Carried Forward	Existing	Flooding	12	Twp. of Green Brook	Medium	Not sure	Municipal operating budget	Long Term	High	Action/Project, PR	Not initiated. Lack of staffing to implement is main barrier.
GB-2 [GB-2 (GB-2)]	Land Acquisition	Prioritize flood prone land for acquisition and preservation as open space.	Carried Forward	New	Flooding	10	Green Brook Open Space	High	Land donated	Municipal & County Open Space Trust Funds	OG	Medium	Action/Project, PR PP	Ongoing. One home has been acquired and demolished; three more are in the process.
GB-3 [GB-3 (GB-3)]	Green Brook Flood Control Project	Support completion of the Green Brook Flood Control Project under way by the Army Corps of Engineers.	Carried Forward	Ongoing	Flooding	1,2,3,4	Army Corps of Engineer	High	No cost to Township	Federal Government	OG	High	Action/Project, PP	Ongoing. This project is a 50 year project with federal funds that get metered out.
GB4 [GB4 (GB-5)]	Hazard-prone Structures	Prioritize purchase, relocate or elevate structures located in hazard prone areas to protect structures from future damage with priority on SRL, RL or Flood Insurance Policy properties located within the township. Phase 1: Identify appropriate candidates based on cost-effectiveness. Phase 2: Where determined to be a viable option, work with property owners toward implementation of the determined action based on available funding from FEMA and local match availability.	Carried Forward	Existing	Flooding	4	Army Corps of Engineer - Part of GB Flood Control Project	High	No cost to Township	FEMA Grant	OG	High	Action/Project, PP	Ongoing. One home has been acquired and demolished; three more are in the process.

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Proposed Hazard Mitigation Initiatives														
2019 Initiative Number	Initiative Name	Initiative Description	New Initiative or Carried Forward	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	2018 Action Status
GB5 [GB5 (GB-6)] combined with GB11	Critical Infrastructure Hardening	Retrofit critical facilities and infrastructure in hazard prone areas, including the Town Hall, Green Brook Middle School, Green Brook Manor Nursing Home, Green Brook Fire Company, and the 10 wells listed in the Vulnerable Critical Facilities section, above. Obtain and install backup power sources at critical facilities.	Carried Forward	Existing	All	6,7	Twp. of Green Brook	High	\$2.25 million	HMGP PDM FMA	OG	High	Action/ Project, PP	Ongoing. Through HMGP, Township has acquired a generator that will be retrofit to Green Brook Middle School and the Firehouse. Town hall has a generator but needs to adjust the items it operates to include the elevator.
GB6 [GB6 (GB-7)] combined with GB22	Public Outreach & Education	Educate public on natural hazards and preparedness to include, but not be limited to, the following to promote and effect natural hazard risk reduction: Provide and maintain links to the HMP website. Use letters and email notification systems and newsletters to better educate the public on flood insurance, the availability of mitigation grant funding, and personal natural hazard risk reduction measures. Provide public education and outreach on proper installation and/or use of backup power.	Carried Forward	Both	All	5,13	Twp. of Green Brook	Medium	Part of newsletter	Operating Budget	Long Term	Medium	Action/ Project, PE	Ongoing. Township launched new website- will incorporate section for hazard mitigation.
GB7 [GB7 (GB-10)]	National Flood Insurance Program	Strive to maintain compliance with and good-standing in the National Flood Insurance program, including adoption and enforcement of floodplain management requirements (e.g. regulating all new and substantially improved construction in Special Hazard Flood Areas), floodplain identification and mapping, and flood insurance outreach to the community.	Carried Forward	Both	Flood	5,8,12,13	Twp. of Green Brook	Medium	\$1302.00	Operating Budget	OG	High	Capability, PR	Ongoing.

Proposed Hazard Mitigation Initiatives														
2019 Initiative Number	Initiative Name	Initiative Description	New Initiative or Carried Forward	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	2018 Action Status
GB8 [(GB10)]	Archive Loss Data from Disaster Events	Develop programs/ procedures to capture and archive loss data from events. Examples include: Record location and length of roadway closures; Develop a database of residential and commercial property damage, including permit history for such repairs; High water marks, perhaps painting phone poles with high water marks and or regulatory Base Flood Elevations (BFEs).	Carried Forward	N/A	All Hazards	8	Municipality with support from County, NJOEM and FEMA	Medium	Medium	Municipal Budget	Short	Medium	Action/Project, PR	Not initiated. Lack of staffing to implement.
GB9 [(GB12)]	Risk Assessment Mitigation	Participate in local, county and/or state level projects and programs to develop improved structure and facility inventories and hazard datasets to support enhanced risk assessment efforts. Such programs may include developing a detailed inventory of critical facilities based upon FEMA's Comprehensive Data Management System (CDMS) which could be used for various planning and emergency management purposes including: Support the performance of enhanced risk and vulnerability assessments for hazards of concern. Support state, county and local planning efforts including mitigation (including updates to the State HMP), comprehensive emergency management, debris management, and land use. Improved structural and facility inventories could incorporate flood, wind and seismic-specific parameters (e.g. first floor elevations, roof types, structure types based on FEMA-154 "Rapid Visual Screening of Buildings for Potential Seismic Hazards" methodologies). It is recognized that these programs will need to be initiated and supported at the County and/or State level, and will require training, tools and funding provided at the county, state and/or federal level.	Carried Forward	N/A	All Hazards	1,3,8	Hazard Mitigation Plan Coordinator	Medium-High	Medium-High	FEMA Mitigation Grant Programs with local match	Long Term DOF	Medium	Capability, PR	Not initiated. Lack of staffing to implement.

Proposed Hazard Mitigation Initiatives														
2019 Initiative Number	Initiative Name	Initiative Description	New Initiative or Carried Forward	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	2018 Action Status
GB10 [(GB13)]	Mutual Aid	Create/Enhance/Maintain Mutual Aid agreements with neighboring communities for continuity of operations.	Carried Forward	N/A	All Hazards	3,7	Municipality with support from County, NJOEM, FEMA and surrounding communities	Medium	Low	Municipal Budget	Short Term	High	Capability, PR, ES	Completed, but ongoing activities / maintenance will be required so carrying forward.
GB11 [(GB15)]	Damage Assessment Capabilities	Work with regional agencies (i.e. County and NJOEM) to help develop damage assessment capabilities at the local level through such things as training programs, certification of qualified individuals (e.g. code officials, floodplain managers, engineers).	Carried Forward	N/A	All Hazards	3,7	Municipality with support from County, NJOEM and FEMA	Medium	Medium	Municipal Budget, FEMA HMA and HLS grant programs	Short-Long Term DOF	Medium	Capability, PR	Not initiated. Lack of staffing.
GB12 [GB16 (GB9)]	Plan Support	Continue to support the implementation, monitoring, maintenance, and updating of this Plan (through participating in the 5 year Plan Update), as defined in Section 7.0.	Carried Forward	New and Existing	All Hazards	6,7,13	Municipality with support from Planning Partners, County Planning, NJOEM, FEMA	High	Low – High (for 5 year update)	Municipal Budget, FEMA planning grants	On-going	High	Capability, PR	Ongoing.
GB13 [(GB17)]	Elevation Certificates	Obtain and archive elevation certificates.	Carried Forward	N/A	Flood, Severe Storm	8	NFIP Floodplain Administrator	Medium	Low	Municipal Budget	On-going	High	Capability, PR	Not initiated. Lack of staffing.
GB14 [(GB18)]	Floodplain Administrators	Promote the participation of Floodplain Administrators within the planning process and other activities.	Carried Forward	N/A	Flood	All	Municipality with support from County, NJOEM and FEMA	Medium	Medium	Municipal Budget	Short	Medium	Capability, PR	Ongoing.
GB 15 [(GB20)]	Underground Utilities	Adopt regulations for undergrounding utilities in new developments.	Carried Forward	N/A	Severe Storm	1,2,4,8	Municipal Council	Medium	Low	Municipal Budget	Short	High	Capability, PR	Not initiated.
GB16 [(GB21)]	Permit Fee Waivers	Implement permit fee waivers for installation of backup power for private property.	Carried Forward	N/A	Severe Storm	2,3,5	Municipal Council	Medium	Low	Municipal Budget	Short	High	Action/Project, PR	Ongoing. Will consider permanent fee waivers.
GB17 [(GB23)]	Tree Maintenance and Power Lines	Implement, review, and enforce municipal policies and programs to prevent trees from threatening lives and impacting power availability/interruption.	Carried Forward	N/A	Severe Storm	2,3,5,8	Municipal Code Enforcement	Medium	Low	Municipal Budget	Short	High	Action/Project, PR	Ongoing.

**Notes:**

\* Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

**Acronyms and Abbreviations:**

ARC American Red Cross  
 DPW Department of Public Works  
 FEMA Federal Emergency Management Agency

**Potential FEMA HMA Funding Sources:**

FMA = Flood Mitigation Assistance Grant Program  
 HMGP = Hazard Mitigation Grant Program  
 PDM = Pre-Disaster Mitigation Grant Program  
 RFC = Repetitive Flood Claims Grant Program  
 SRL = Severe Repetitive Loss Grant Program



HMA	Hazard Mitigation Assistance
HMP	Hazard Mitigation Proposal
N/A	Not applicable
NFIP	National Flood Insurance Program
NJOEM	New Jersey Office of Emergency Management
NOAA	National Oceanic and Atmospheric Administration
SCPD	Somerset County Planning Department
USACE	U.S Army Corp of Engineers
USGS	U.S. Geological Survey

**Costs:**

Where actual project costs have been reasonably estimated:

Low = < \$10,000

Medium = \$10,000 to \$100,000

High = > \$100,000

Where actual project costs cannot reasonably be established at this time:

Low = Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.

Medium = Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.

High = Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

**Benefits:**

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low = < \$10,000

Medium = \$10,000 to \$100,000

High = > \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low = Long-term benefits of the project are difficult to quantify in the short term.

Medium = Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.

High = Project will have an immediate impact on the reduction of risk exposure to life and property.

**Timeline:**

Short Term= 1 to 5 years

Long Term = 5 years or greater

OG = On-going program

DOF = Depending on funding

**Notes (for Mitigation Type):**

1. PR = Prevention: Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
2. PP = Property Protection: These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
3. PE = Public Education and Awareness: Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
4. NR = Natural Resource Protection: Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. SP = Structural Projects: Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
6. ES = Emergency Services: Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
7. Initiative= Initiatives are comprised of EVERYTHING your community wants to do or is doing in order to meet its mitigation goals. Initiatives include Capabilities, Actions and Projects.
8. Capability= Regulatory, administrative, technical, and fiscal staffing, tools and/or resources. Capabilities can be existing, or in need of further development/expansion.
8. Action/Project= Specific activities or projects that your community plans to undertake or is currently completing in order to achieve its long term mitigation goals. Actions/Projects can include, but are not limited to: structural projects, infrastructure projects, natural systems protection projects, or education and awareness programs.

### 9.10.8 PRIORITIZATION OF MITIGATION INITIATIVES

The table below summarizes the priority levels for each mitigation initiative, listed by number. Please note that the Township has opted to carry forward legacy initiative numbers from the 2014 plan, for internal municipal tracking purposes, formatted as: “2019# [2014# (2009#)]”

Prioritization of Mitigation Initiatives							
Initiative #	# of Objectives Met	Benefits	Costs	Do benefits equal or exceed costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
GB-1 [GB-1 (GB-1)]	1	M	M	Y	N	Y	H
GB-2 [GB-2 (GB-2)]	1	H	L	Y	N	N	M
GB-3 [GB-3 (GB-3)]	4	H	L	Y	N	N	H
GB4 [GB4 (GB-5)]	1	H	L	Y	Y	N	H
GB5 [GB5(GB-6)] combined with GB11	2	H	H	Y	Y	N	H
GB6 [GB6 (GB-7)] combined with GB22	2	M	L	Y	N	Y	M
GB7 [GB7 (GB-10)]	4	M	M	Y	N	Y	H
GB8 [(GB10)]	1	M	M	Y	N	Y	M
GB9 [(GB12)]	3	M	M	Y	N	Y	M
GB10 [(GB13)]	2	M	L	Y	N	Y	H
GB11 [(GB15)]	2	M	M	Y	N	Y	M
GB12 [GB16 (GB9)]	3	M	M	Y	N	Y	H
GB13 [(GB17)]	1	H	L-M	Y	N	Y	H
GB14 [(GB18)]	13	M	M	Y	N	Y	M
GB 15 [(GB20)]	4	M	L	Y	N	Y	H
GB16 [(GB21)]	3	M	L	Y	N	Y	H
GB17 [(GB23)]	4	M	L	Y	N	Y	H

Notes:

H = High

L = Low

M = Medium

N/A = Not applicable

N = No

Y = Yes





### 9.10.8.1 Explanation of Priorities

Explanations of priority classifications used to assess the mitigation initiatives described in this annex are presented below:

High Priority = A project that meets multiple objectives (i.e., multiple hazards), where potential benefits exceed the costs. High-priority projects have funding secured or are on-going projects that meet eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation (PDM) Grant Program. High-priority projects can be completed in the short term (1 to 5 years).

Medium Priority = A project that meets goals and objectives, where the potential benefits outweigh the costs. Funding for medium-priority projects has not been secured but these projects are eligible for grants under HMGP, PDM, or other grant programs. These projects can be completed in the short term, once funding is completed. Medium-priority projects will become high-priority projects once funding is secured.

Low Priority = A project that will mitigate the risk of a hazard, where the potential benefits do not exceed the costs or have benefits that are difficult to quantify. Funding for low-priority projects has not been secured and these projects are not eligible for HMGP or PDM grant funding. The timeline for completion is considered long term (1 to 10 years). Low-priority projects may be eligible other sources of grant funding from other programs. A low-priority project could become a high-priority project once funding is secured as long as it could be completed in the short term.

Was prioritization of initiatives based on the above definitions? Yes

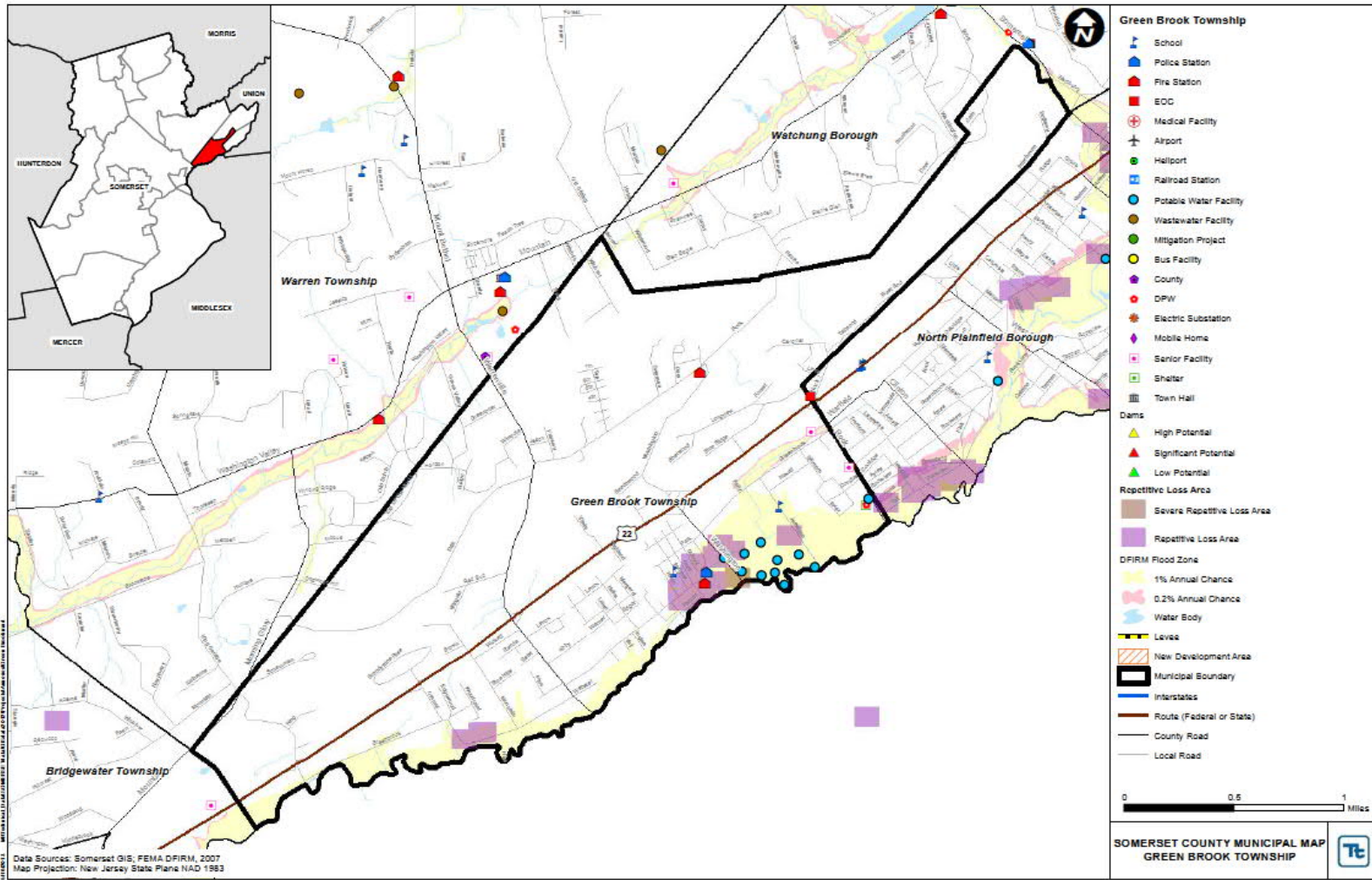
Was prioritization of initiatives based on parameters other than those stated above? Not applicable

### 9.10.9 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The Township of Green Brook has no additional risk vulnerabilities that need to be addressed at this time.

### 9.10.10 HAZARD AREA EXTENT AND LOCATION

A hazard area extent and location map illustrating the probable areas impacted within Green Brook is provided on the following page. This map is based on the best data available at the time of the preparation of this plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Township of Green Brook has significant exposure. The planning area maps are provided in the hazard profiles within Section 5.4 of this plan.



### 9.10.11 STATUS OF INCORPORATION OF MITIGATION PLANNING INTO EXISTING AND FUTURE PLANNING MECHANISMS

It is the intention of Green Brook to incorporate mitigation planning as an integral component of daily municipal operations. The following table contains a list of planning mechanisms that have been utilized during prior plan maintenance cycles, and those that will be incorporated into municipal procedures during the upcoming plan maintenance cycle (2019-2024).

Status of Incorporation of Mitigation Planning into Existing and Future Planning Mechanisms				
Planning Mechanisms	Reported Utilization (2009-2014)	Planned Utilization (2014-2019)	Reported Utilization (2014-2019)	Planned Utilization (2019-2024)
<b>Operating Budget</b> When constructing upcoming budgets, hazard mitigation actions will be funded as budget allows. Construction projects will be evaluated to see if they meet the hazard mitigation goals and objectives.	-	X	X	X
<b>Capital Improvement Budget</b> When constructing upcoming budgets, hazard mitigation actions will be funded as budget allows. Construction projects will be evaluated to see if they meet the hazard mitigation goals and objectives.	-	-	-	X
<b>Human Resource Manual</b> Employee job descriptions may contain hazard mitigation actions.	-	-	-	-
<b>Building and Zoning Ordinances</b> Prior to land use, zoning changes, or development permitting, the municipality will review the hazard mitigation plan and other hazard analyses to ensure consistent and compatible land use.	X	-	X	-
<b>Comprehensive Land Use Plan</b> When applicable, the municipality will incorporate hazard mitigation actions in the development and extent of the regulations.	X	-	X	-
<b>Grant Applications</b> Data and maps will be used as supporting documentation in grant applications.	X	-	X	-
<b>Municipal Ordinances</b> When updating municipal ordinances, hazard mitigation will be a priority.	X	-	X	-
<b>Fire Plan</b> The Hazard Mitigation Plan will be used as a resource for the development of future Fire Plans.	-	-	-	-
<b>Capital Improvement Planning</b> The municipality will establish a protocol to review current and future projects for hazard vulnerability. The municipality will incorporate hazard-resistant construction standards into the design and location of projects.	-	-	-	X
<b>Day-to-Day Operations</b> The municipality will incorporate hazard mitigation actions in daily operations and all projects.	X	-	X	-

Status of Incorporation of Mitigation Planning into Existing and Future Planning Mechanisms				
Planning Mechanisms	Reported Utilization (2009-2014)	Planned Utilization (2014-2019)	Reported Utilization (2014-2019)	Planned Utilization (2019-2024)
<b>Local School Service Projects</b> The municipality will work closely with the local school district and assist with community service projects for the service organizations. Several of the municipality's hazard mitigation actions can be implemented as a joint project with the school district.	-	-	-	-
<b>Municipal Budget</b> Adopted annually, the municipality will look at mitigation actions when allocating funding.	X	-	X	-
<b>Economic Development</b> The local economic development group will take into account information regarding identified hazard areas when assisting new businesses in finding a location.	-	-	-	X

### 9.10.12 ADDITIONAL COMMENTS

There are no additional comments at this time.

### 9.10.12 NFIP ADMINISTRATOR INPUT

The Township provided the following NFIP Administrator Input in 2018, for inclusion in the 2019 HMP.

SECTION 9.10: TOWNSHIP OF GREEN BROOK

Adoption Date of your Current Floodplain Management Ordinance	Date of Entry into NFIP <sup>1</sup>	Position or Title of Your Jurisdiction's Designated Floodplain Manager/Administrator (may also be called NFIP Coordinator)			Is this person is a Certified Floodplain Manager?	Is floodplain management an auxiliary function?	Is your community in good standing with the NFIP?
8/2007	3/15/77	Township Engineer			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Provide an explanation of NFIP administration services (i.e., permit review, GIS, education or outreach, inspections, engineering capability, etc.):							
Permit Review, Mapping, Inspections							
Describe barriers to running an effective NFIP program in the community (if applicable):							
None							
When was most recent FEMA Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?*	Is a CAV or CAC scheduled or needed?	Does the current floodplain management ordinance exceed FEMA or State minimum requirements? If so, describe how.	Is training of staff regarding NFIP issues planned?	Does your community intend to continue to enforce the floodplain management requirements including regulating new construction in Special Flood Hazard Areas (SFHAs)?	Does your community participate in the CRS? If so, state your Class.	Does your community intend to continue its participation in the CRS program?	If your community is not currently participating in the CRS program, are you intending to initiate the process during the next planning cycle?
None	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes* <input checked="" type="checkbox"/> No* Class__	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
*Describe any outstanding compliance issues (i.e., current violations):							
None							

Provide an explanation of your local floodplain permitting process:								
Permit applications are reviewed locally for compliance with local ordinance. DEP flood hazard permits are required prior to starting work for projects within regulated areas. As built plans are required prior to occupancy. Enforcement is performed by both Construction Code and Zoning Enforcement Officers.								
Does your community intend to continue floodplain identification and mapping services including any local requests for map updates?	Does your community intend to initiate/continue the buyouts of repetitive loss properties?	Does your community intend to commit staff or resources to improve local mapping or code administration in the future?	Does your community intend to provide local outreach to promote the sale of flood insurance?	Does your community intend to participate in RiskMAP meetings and planning initiatives?	Does your community intend to continue to implement structural improvements to mitigate against flooding - culverts, drainage basins, etc.?	Does your community intend to continue to implement home improvement programs designed to minimize basement flooding?	Does your community intend to continue to implement roadway improvements to reduce damage from future flooding events?	Does your community intend to implement plans and programs in coordination with a local or regional drainage/sewer authority?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Does your community intend to adopt the new FEMA Advisory Base Flood Elevations?	As Floodplain Manager, did you (or your predecessor at the time) actively participate in the development of the Initial Hazard Mitigation Plan?		As Floodplain Manager, are you actively participating in the development of this Hazard Mitigation Plan Update?		Have there been any changes to your community's local floodplain management program since the last version of the plan in 2014?			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes* <input checked="" type="checkbox"/> No			

\* If you answered "yes", that there have been changes to your local program since 2009, please describe:

Provide a description of your community assistance and monitoring activities:	
Community assistance is provided via public education of permitting and ordinance requirements, and FEMA options of elevation certificates, LOMA, LOMR.	
NFIP participating communities are required to update/revise their floodplain management ordinance to ensure that it complies with the latest FEMA regulations. Will your community continue to commit to this program requirement?	NFIP participating communities are also required to update/revise their floodplain management ordinance to be consistent with the latest FIRMs. Will your community continue to commit to this program requirement?
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No