



## 9.14 Township of Knowlton

This section presents the jurisdictional annex for the Township of Knowlton.

### 9.14.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Frank Makowski, OEM Director 628 Route 94, Columbia, NJ 07832 (908) 229-1188 <a href="mailto:francismakowski@yahoo.com">francismakowski@yahoo.com</a>	Frank Van Horn, Deputy OEM Coordinator 628 Route 94, Columbia, NJ 07832 (908) 319-2615 <a href="mailto:fmvanhorn@earthlink.net">fmvanhorn@earthlink.net</a>

### 9.14.2 Municipal Profile

Knowlton Township is located in western Warren County and covering 25.3 square miles. It is mostly covered by forests, ridgelines, wetlands, streams and farmland. Natural areas located in the Township include the Delaware River, Columbia Lake Wildlife Management Area, and the Delaware Water Gap National Recreational Area. Mount Pleasant, Brownings, Hainesburg, Warrington, Polkville, Ramseyburg, Columbia, Hainesville, and Delaware are villages/unincorporated communities located within Knowlton Township. The Paulins Kill and Delawanna Creek run across the Township and the Delaware River makes up the western border of Knowlton. Knowlton Brook, Honey Run, and Stony Brook are additional bodies of water found in the Township. The Township is bordered to the north by Hardwick Township, east by the Townships of Blairstown and Hope, to the west by Pennsylvania, and to the south by White Township. According to the U.S. Census, the 2010 population for Township of Knowlton was 3,055.

### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. Refer to the map in section 9.14.8 of this annex which illustrates the hazard areas along with the location of potential new development.

**Table 9.14-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Block & Lot)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Simpson Road Project	Comm	1	Simpson Road Block 14, lots 1,2 Block 12 lot 11		Gas Station, Restaurants
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None identified					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.14.3 Natural Hazard Event History Specific to the Municipality

Warren County has a history of natural and non-natural hazard events as detailed in Volume I, 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. For the purpose of this plan update, events that



have occurred in the County from 2008 to present were summarized to indicate the range and impact of hazard events in the community.

Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

**Table 9.14-2. Hazard Event History**

Date(s) of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
August 27 – September 5, 2011	Hurricane Irene	DR-4021	Yes	The Township experienced high winds, heavy rain and localized flooding. This caused the need to evacuate residents and created a public health and safety threat due to reduced access to medical facilities, schools, food, fuel, utilities. Floodwaters in the Township undermined Walnut Road when a 17 foot wide shoulder washed out and damaged two catch basins. The volunteer fire department responded to flooded basements and ran generators, providing emergency protective measures to the Township. The DPW had to remove debris from roadways. The Township had over \$80,000 in damages, overtime, and equipment use as a result of Irene.
September 28 – October 6, 2011	Remnants of Tropical Storm Lee	DR-4039	Yes	Power outages, flooding on Route 46 corridor, debris, road closures – Walnut Road, Route 46, Hainesburg River Road, Brugler Road. Private residences along Route 46 corridor experienced flooding. Public Assistance was requested; Township had overtime costs for DPW, debris removal, DPW equipment, and volunteer fire overtime and equipment.
October 29, 2011	Severe Storm	DR-4048	Yes	A severe snow storm caused localized damage in the Township and created a public health/safety risk due to reduced access to commerce, police, fire, and medical services. The Township utilized force account labor and equipment to remove vegetative debris from the roadways. The Township had over \$30,000 in costs as a result of this event.
October 26 – November 8, 2012	Hurricane Sandy	DR-4086	Yes	This event led to road closures, utility outages, and commercial closures. A shelter was opened at North Warren High School. The municipal building sustained damages that included gutters torn off the building. Route 46 corridor flooded. Public Assistance was requested; Township had overtime costs for DPW, debris removal, DPW equipment, and volunteer fire overtime and equipment.

**9.14.4 Hazard Vulnerabilities and Ranking**

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. The risk ranking methodology is presented in Section 5.3. However, each municipality had the opportunity to adjust the final ranking based on municipal feedback. The following





summarizes the hazard vulnerabilities and their ranking in the Township of Knowlton. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

### Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Township of Knowlton.

**Table 9.14-3. 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>
Dam Failure	Damage estimate not available	Occasional	24	Medium
Drought	Damage estimate not available	Frequent	30	Medium
Earthquake	100-Year GBS: \$0 500-Year GBS: \$275,333 2,500-Year GBS: \$4,284,294	Occasional	28	Medium
Flood	1% Annual Chance: \$14,840,050	Frequent	18	High
Geologic	RCV Exposed to Carbonate Rock Areas: \$86,881,720	Frequent	54	High
Hurricane	100-year MRP: \$105,377.00 500-year MRP: \$499,071 Annualized: \$7,480.00	Frequent	48	High
Nor'Easter	Damage estimate not available	Frequent	48	High
Severe Storm	100-Year MRP: \$105,377 500-year MRP: \$499,071 Annualized: \$7,480	Frequent	48	High
Severe Winter Storm	1% GBS: \$1,660,417 5% GBS: \$8,302,087	Frequent	51	High
Wildfire	Estimated Value in the Extreme, Very High, and High Hazard Areas: \$15,233,500	Frequent	24	Medium
Hazardous Materials	Damage estimate not available	Frequent	36	High

**Notes:**

GBS = General building stock; MRP = Mean return period.

- a. The general building stock valuation is based on the custom inventory generated for the municipality and based on improved value.
- b. High = Total hazard priority risk ranking score of 31 and above  
Medium = Total hazard priority risk ranking of 20-30+  
Low = Total hazard risk ranking below 20
- c. Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the estimated value of contents. Loss estimates for the flood and earthquake hazards represent both structure and contents. Potential flood loss estimates were generated using Hazus-MH 2.2 and the 2011 FEMA DFIRM for the 1-percent annual chance event. For the geologic and wildfire hazards, the improved value and estimated contents of buildings located within the identified hazard zones is provided



### National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Township of Knowlton.

**Table 9.14-4. NFIP Summary**

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 1% Flood Boundary (3)
Knowlton, Township of	54	3	\$28,185	13	8	39

Source: FEMA Region 2, 2014

- (1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, and are current as of 11/30/2014. Please note the total number of repetitive loss properties includes the severe repetitive loss properties. The number of claims represents claims closed by 11/30/14.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.

Notes: FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
A zero percentage denotes less than 1/100th percentage and not zero damages or vulnerability as may be the case.  
Number of policies and claims and claims total exclude properties located outside County boundary, based on provided latitude and longitude.

### Critical Facilities

The table below presents the number of critical facilities, by type, in the community located in the effective FEMA flood zones (1% and 0.2% annual chance boundaries).

**Table 9.14-5. Number of Critical Facilities in the DFIRM 1% and 0.2% Annual Chance Flood Boundaries**

Municipality	1% Annual Chance	0.2% Annual Chance
	Gas Station	Gas Station
Knowlton, Township of	1	2

Source: Warren County, FEMA 2011

### Other Vulnerabilities Identified by Municipality

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. Further, mitigation projects have been identified that may more specifically detail vulnerabilities in the community. There are no additional vulnerabilities identified at this time.



### 9.14.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Education/Outreach and Community classification
- Self-Assessment of Capability
- National Flood Insurance Program
- Integration of Mitigation Planning into Existing and Future Planning Mechanisms

#### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Township of Knowlton.

**Table 9.14-6. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	Yes	Local	Planning board	Reviewed in 2009
Capital Improvements Plan	Yes	Local	Twp. Comm.	Reviewed annually at budget approval
Floodplain Management / Basin Plan	No			
Stormwater Management Plan	Yes	Local	Twp. Comm.	Land Use Ord. Chapter 11-330 et seq.
Open Space Plan	Yes	Local	Twp. Comm.	Land Use Ord. Chapter 11-291 et seq.
Stream Corridor Management Plan	No			
Watershed Management or Protection Plan	No			
Economic Development Plan	No			
Comprehensive Emergency Management Plan	Yes	Local	OEM	Approved 2013
Emergency Response Plan	Yes	Local	OEM	Contained in Emergency Mgmt. Plan
Post-Disaster Recovery Plan	No			
Transportation Plan	No			
Strategic Recovery Planning Report	No			
Other Plans:	No			
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local		State Uniform Construction Code Act (N.J.S. 52:27D-119 et seq.)
Zoning Ordinance	Yes	Local	Twp. Comm.	Contained in Land Use Ordinance
Subdivision Ordinance	Yes	Local	Twp. Comm.	Contained in Land Use Ordinance



**Table 9.14-6. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
				Can be accessed at <a href="http://www.knowlton-nj.com">www.knowlton-nj.com</a>
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Floodplain Administrator	Chapter 105
NFIP: Cumulative Substantial Damages	Don't know			
NFIP: Freeboard	Yes	State, Local	Floodplain Administrator	Chapter 105-13
Growth Management Ordinances	No			Majority of Township is 10 acre zoning
Site Plan Review Requirements	Yes	Local	Planning board	Contained in Land Use Ordinance
Stormwater Management Ordinance	Yes	Local	Twp. Comm.	Contained in Land Use Ordinance
Municipal Separate Storm Sewer System (MS4)	Yes	County	Warren County	Located in Columbia.
Natural Hazard Ordinance	No			
Post-Disaster Recovery Ordinance	No			
Real Estate Disclosure Requirement	No			
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]				

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Township of Knowlton.

**Table 9.14-7. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning Board
Mitigation Planning Committee	Yes	OEM
Environmental Board/Commission	Yes	Environmental Commission
Open Space Board/Committee	Yes	Open Space and Farmland Preservation
Economic Development Commission/Committee	Yes	
Maintenance Programs to Reduce Risk	Yes	Statewide Insurance
Mutual Aid Agreements	Yes	
<b>Technical/Staffing Capability</b>		





**Table 9.14-7. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Rodman Assoc. Maser Engineering - Planning
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Rodman Assoc.
Planners or engineers with an understanding of natural hazards	Yes	Rodman Assoc.
NFIP Floodplain Administrator	Yes	Rodman Assoc.
Surveyor(s)	No	
Personnel skilled or trained in GIS and/or Hazus-MH applications	No	
Scientist familiar with natural hazards	No	
Emergency Manager	Yes	Frank Makowski
Grant Writer(s)	Yes	Municipal Clerk, Volunteers
Staff with expertise or training in benefit/cost analysis	No	
Professionals trained in conducting damage assessments	Yes	Engineer, DCA Construction Official

**Fiscal Capability**

The table below summarizes financial resources available to the Township of Knowlton.

**Table 9.14-8. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact Fees for homebuyers or developers of new development/ homes	Yes
Stormwater Utility Fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Don't Know
Other Federal or State Funding Programs	Yes
Open Space Acquisition Funding Programs	Yes
Other	

**Education/Outreach and Community Classifications**

The table below summarizes education/outreach programs the community participates in and the classifications for community program available to the Township of Knowlton.



**Table 9.14-9. Education/Outreach and Community Classifications**

Program	Do you have/participate in this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	No		
Public Protection (ISO Fire Protection Classes 1 to 10)	No		
Storm Ready	No	NP	N/A
Firewise	No	NP	N/A
Disaster/Safety Programs in/for Schools	Yes		
Organizations with Mitigation Focus (advocacy group, non-government)	No		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	No		

N/A = Not applicable. NP = Not participating

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the 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 1000 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/>

**Self-Assessment of Capability**

The table below provides an approximate measure of the Township of Knowlton’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.14-10. Self-Assessment of Capability**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and Regulatory Capability		X	





Table 9.14-10. Self-Assessment of Capability

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Administrative and Technical Capability			X
Fiscal Capability			X
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities.		X	

**National Flood Insurance Program**

**NFIP Floodplain Administrator (FPA)**

Ted Rodman, Township Engineer

**Flood Vulnerability Summary**

The Township maintains a list of properties that have been damaged by floods. Property owners have applied for RFC, but did not meet BCA requirements. During Hurricane Sandy and other events, 12 structures were damaged. The Township made Substantial Damage estimates on PDA forms. After Hurricane Sandy, the Township had 12 properties interested in mitigation. Two have been elevated by the property owners with flood insurance money and ICC. The other 10 properties did not qualify for mitigation.

**Resources**

The FPA has assistance from additional consultants to help with the responsibilities of floodplain administration. NFIP administration services and functions provided by the FPA and staff include permit review, inspections, damage assessments, record keeping, and outreach through the Township's website. The Township provides announcements regarding hazards and mitigation on the Township website. The FPA did not identify any barriers to running an effective floodplain management program; however, he does not feel adequately supported and trained to fulfill his responsibilities as the municipal FPA. He would consider attending continuing education and/or certification training on floodplain management if it were offered by the County.

**Compliance History**

It is unknown if the Township is in good standing with the NFIP or when the most recent compliance audit was conducted.

**Regulatory**

The Township's floodplain management regulations and/or ordinances do not exceed the FEMA and state minimum requirements. The Planning Board and Zoning Board consider efforts to reducing flood risk when reviewing variances. The Township has considered joining CRS and would attend a CRS seminar if offered locally.

**Community Rating System**

The Township of Knowlton does not participate in the Community Rating System (CRS) program.





## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

### Planning

The 2008 Comprehensive Farmland Preservation details the current state of farmland preservation in the Borough, as well as proposes preservation goals and other mitigation actions. At the time of the Plan's development, the Borough had already preserved approximately 1,596 acres of farmland; future goals are: 2008 target of 100 additional acres, 2013 target of additional 500 acres and 2017 target of 1,000 additional acres of farmland preservation.

### Regulatory and Enforcement (Ordinances)

**INSERT INFO IF APPLICABLE**

### Operational and Administration

The Township has established an Environmental Commission and Open Space Committee that aid in planning decisions to support the conservation and preservation of the Township's critical environmental features.

Founded in 1993, the Knowlton Environmental Commission advises the Township Committee and informs residents of environmental issues, laws, and programs that may affect them. Their mission includes reviewing development proposals and promoting long-range planning based on the capacity of the township's land. They have served in this role frequently, advising the local government on issues that impact natural resources and the Township's rural character such as the opening of a sewer facility, the decommissioning of the Portland, Pennsylvania, coal plant, and the operations of a neighboring chemical manufacturing facility. The Commission seek to advise the local government to use smart growth in planning and aid them in finding ways to capitalize on and promote their natural resources.

The Planning Board is an appointed board charged with making recommendations to the Township Committee regarding the boundaries of Knowlton's residential, business, and planned commercial zones and recommending appropriate regulations to be enforced therein. The Planning Board is responsible for reviewing all subdivision applications and larger development proposals requiring site plan review. Members participate in overall planning for the town and are involved in proposed changes to the Land Use and Subdivision Ordinances. They are advised by an attorney, the township engineer, and when needed, a city planner.

### Funding

In 1997, Knowlton Township voters approved a referendum to establish an open space tax assessed at 2 cents per \$100 of valuation. This tax brings in about \$50,000 per year. These funds are used in partnership with the state and county programs for the preservation of farmland and purchase of land for recreation and open space.

### Education and Outreach

Residents of Knowlton can find out about emergency alerts, important advisories, and community updates through the Nixle notification system. Additionally, the Township provides information on their website.



### 9.14.6 Mitigation Strategy and Prioritization

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

#### Past Mitigation Initiative Status

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The following table indicates progress on the community's mitigation strategy identified in the 2011 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.

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Table 9.14-11. Past Mitigation Initiative Status

2011 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	<u>Describe Status</u> 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	<u>Next Step</u> (Include in 2016 HMP? or Discontinue)	<u>Describe Next Step</u> 1. If including action in the 2016 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why
Knowlton Township 1: Acquisition/elevation of five Severe Repetitive Loss (SRL) properties on US Highway Route 46.	OEM Coordinator	Complete	1. Block 57, Lot 15 elevated. 100% complete. Funded by FEMA, insurance, and homeowner 2. Block 48, Lot 10 elevated. 100% complete. Funded by insurance and property owner 3. 2 structures – home and office elevated	Discontinue	This action has been completed and will not be included in the 2016 HMP Update.
Knowlton Township 2: Acquisition/elevation of two SRL properties on Riverview Avenue.	OEM Coordinator	No Progress	Did not meet benefit cost analysis requirement	Include in 2016 HMP	Refer to Table 9.14-12 which includes a new mitigation action to support the mitigation of vulnerable structures.
Knowlton Township 3: Acquisition/elevation of 20 Repetitive Loss (RL) properties on US Highway Route 46.	OEM Coordinator	No Progress	1. Did not meet benefit cost analysis requirement 2. One property on Route 46 with 2 structures (home and office) were elevated. Funded by insurance and property owner	Include in 2016 HMP	Refer to Table 9.14-12 which includes a new mitigation action to support the mitigation of vulnerable structures.
Knowlton Township 4: Acquisition/elevation of 10 RL properties on Riverview Avenue.	OEM Coordinator	No Progress	Did not meet benefit cost analysis requirement	Include in 2016 HMP	Refer to Table 9.14-12 which includes a new mitigation action to support the mitigation of vulnerable structures.
Knowlton Township 5: Acquisition/elevation of four RL properties on Willow Lane.	OEM Coordinator	Complete	Elevated. 100% complete. Funded by FEMA, insurance and property owner.	Discontinue	This action has been completed and will not be included in the 2016 HMP Update.
Knowlton Township 6: Acquisition/elevation of two RL properties on Riverview Drive.	OEM Coordinator	No Progress	Did not meet benefit cost analysis requirement	Include in 2016 HMP	Refer to Table 9.14-12 which includes a new mitigation action to support the mitigation of vulnerable structures.
Knowlton Township 7: Acquisition/elevation of one RL property on Pine Tree Lane.	OEM Coordinator	No Progress	Did not meet benefit cost analysis requirement	Include in 2016 HMP	Refer to Table 9.14-12 which includes a new mitigation action to support the mitigation of vulnerable structures.



2011 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2016 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2016 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why
Knowlton Township 8: Back-up generator for the Knowlton Municipal Complex located on Route 94. Facility is the Emergency Operations Center.	OEM Coordinator	Complete	FEMA funded. 100% complete	Discontinue	This action has been completed and will not be included in the 2016 HMP Update.
Knowlton Township 9: Conduct all hazards public education and outreach program for hazard mitigation and preparedness.	WCOEM, OEM Coordinator	No Progress	No progress at this time. Township wishes to pursue in the future.	Include in 2016 HMP	Refer to Table 9.14-12 which includes a new mitigation action to support the mitigation of vulnerable structures.

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### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

There are no additional mitigation projects/activities identified that have also been completed but were not identified in the previous mitigation strategy in the 2011 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

The Township attended a mitigation action workshop in March 2015 where the following FEMA publications were provided to all plan participants to use as a resource as part of the municipal comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 ‘Selecting Appropriate Mitigation Measures for Floodprone Structures’ (March 2007) and FEMA ‘Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards’ (January 2013). In May 2015, the Township participated in a second workshop led by FEMA Region 2 and NJOEM and was provided the results to the risk assessment to further assist with the identification of mitigation actions.

Table 9.14-11 summarizes the comprehensive-range of specific mitigation initiatives the Borough would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.14-12 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.



Table 9.14-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
Knowlton - 1	Improve Fire Service: 1. Improve access to river at Ferry Land and Clover Rest Home. 2. Add fire hydrants in Columbia 3. Install standpipes at lake on Countryside Road 4. Purchase pumper/rescue truck	New and Existing	Wildfire	1, 2, 6	Township Committee and Fire Department	High	High	Budget, bonding or obtain grant	DOF	High	SIP	PP
Knowlton - 2	Support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or acquisition/relocation to protect structures from future damage, with repetitive loss and severe repetitive loss properties as a priority when applicable. Phase 1: Identify appropriate candidates and determine most cost-effective mitigation option (in progress). Properties currently identified for an HMA application along Route 46. Phase 2: Work with the property owners to implement selected action based on available funding and local match availability.											
	See above.	Existing	Flood	All	Township Committee and County Public Safety	High	High	FEMA FMA	Short Term / DOF	High	SIP	PP
Knowlton - 3	Develop and implement an enhanced all-hazards, public outreach / education / mitigation information program on natural hazard risks and what they can do in the way of mitigation and preparedness, including flood insurance.	N/A	Existing	All	Township	Medium	Low	Municipal Budget	Ongoing	High	EAP	PI

Notes:

Not all acronyms and abbreviations defined below are included in the table.

\*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:

CRS Community Rating System  
 DPW Department of Public Works  
 FEMA Federal Emergency Management Agency  
 FPA Floodplain Administrator  
 HMA Hazard Mitigation Assistance

N/A Not applicable  
 NFIP National Flood Insurance Program  
 NJDEP New Jersey Department of Environmental Protection  
 NJOEM New Jersey Office of Emergency Management  
 OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA Flood Mitigation Assistance Grant Program  
 HMGP Hazard Mitigation Grant Program

PDM Pre-Disaster Mitigation Grant Program  
 HMA Hazard Mitigation Assistance Program

Timeline:





Short 1 to 5 years  
Long Term 5 years or greater

OG On-going program  
DOF Depending on funding

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.

Mitigation Category:

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

CRS Category:

- Preventative Measures (PR) - 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.
- Property Protection (PP) - 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.
- Public Information (PI) - 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.
- Natural Resource Protection (NR) - 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.
- Structural Flood Control Projects (SP) - 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.
- Emergency Services (ES) - 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





Table 9.14-13. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
Knowlton - 1	Improve Fire Service	1	1	1	0	0	0	1	0	0	0	1	0	0	0	5	High
Knowlton - 2	Support the mitigation of flood-vulnerable properties	1	1	1	0	0	0	1	0	0	0	1	0	0	0	6	High
Knowlton - 3	Develop and implement an enhanced all-hazards, public outreach / education / mitigation information program on natural hazard risks and what they can do in the way of mitigation and preparedness, including flood insurance.	1	1	1	1	1	0	0	0	0	1	1	0	0	0	7	High

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions.





### **9.14.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.14.8 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Township of Knowlton that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan, and are 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 Knowlton has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

### **9.14.9 Additional Comments**

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None at this time.

DRAFT



Figure 9.14-1. Township of Knowlton Hazard Area Extent and Location Map 1

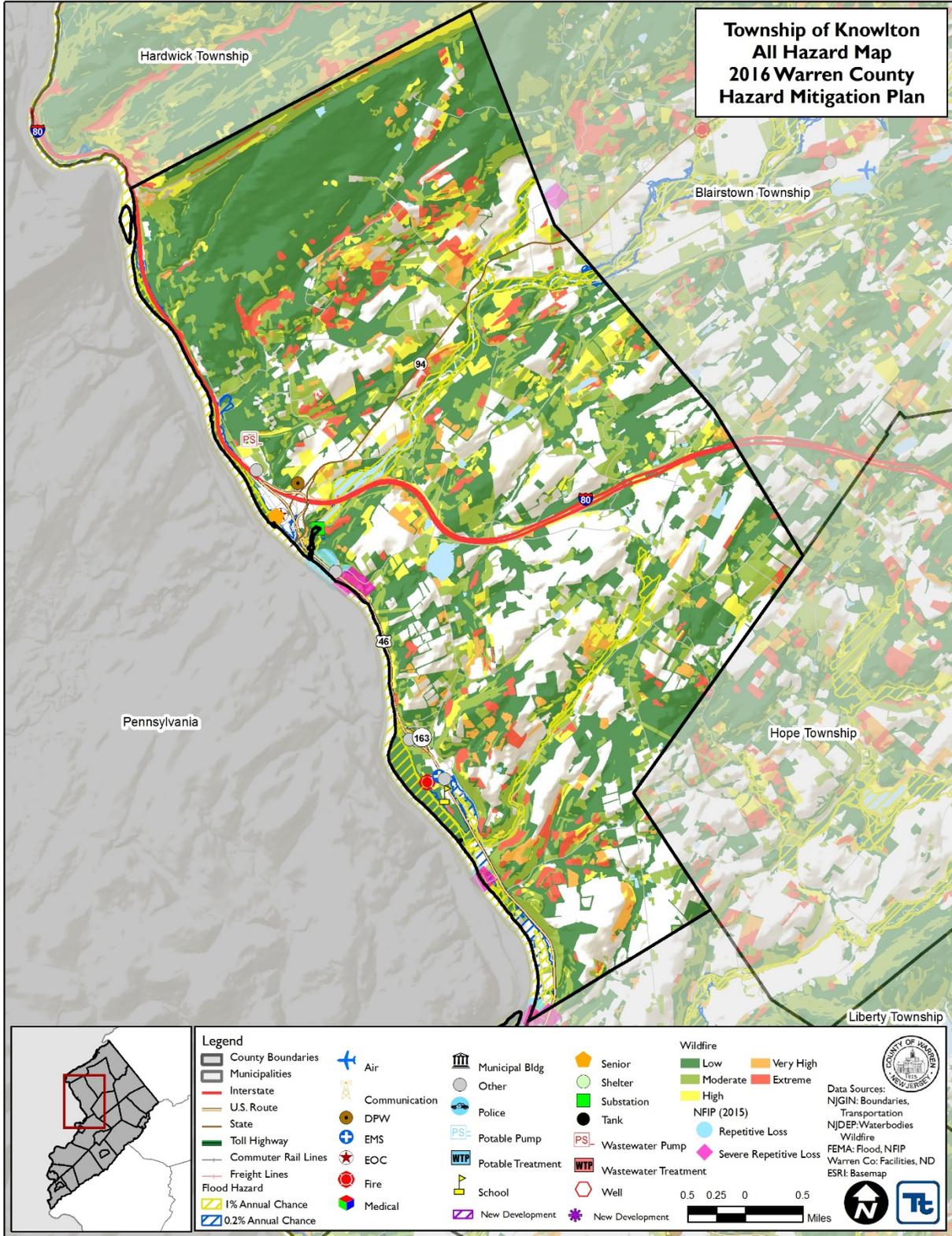
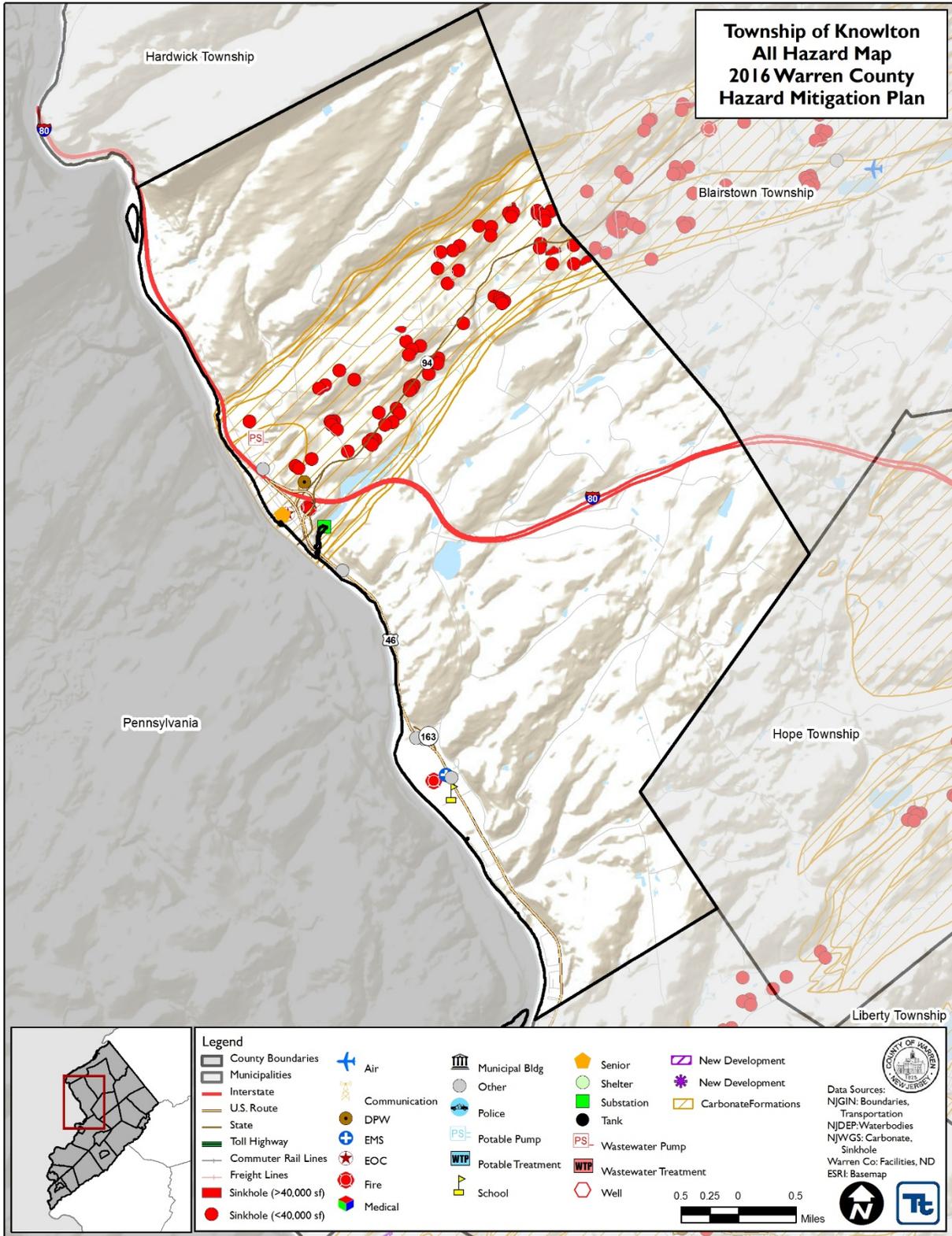




Figure 9.14-2. Township of Knowlton Hazard Area Extent and Location Map 2





**Action Number:** Knowlton - 1  
**Mitigation Action/Initiative:** Improve Fire Service

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Fire
<b>Specific problem being mitigated:</b>	Improved fire service
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	5. Improve access to river at Ferry Land and Clover Rest Home. 6. Add fire hydrants in Columbia 7. Install standpipes at lake on Countryside Road 8. Purchase pumper/rescue truck
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	See above
<b>Action/Project Category</b>	SIP
<b>Goals Met</b>	Protect life, protect property enhance local mitigation capabilities to reduce hazard vulnerabilities, support continuity of operations in hazard events.
<b>Applies to existing and or new development, or not applicable</b>	Applies to existing and new development
<b>Benefits (losses avoided)</b>	High Life safety, property protection
<b>Estimated Cost</b>	\$400,000
<b>Priority*</b>	high
Plan for Implementation	
<b>Responsible Organization</b>	Township Committee / Fire Company
<b>Local Planning Mechanism</b>	Township Committee
<b>Potential Funding Sources</b>	Budget, bonding or obtain grant
<b>Timeline for Completion</b>	Dependent on budget
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:



**Action Number:** Knowlton - 1  
**Mitigation Action/Initiative:** Improve Fire Service

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	0	
Political	0	
Legal	0	
Fiscal	1	Need to budget for improvements or obtain grant funds to complete project
Environmental	0	
Social	0	
Administrative	0	
Multi-Hazard	1	
Timeline	0	
Agency Champion	0	
Other Community Objectives	0	
<b>Total</b>	5	
<b>Priority (High/Med/Low)</b>	High	



<b>Action Number:</b>	Knowlton - 2
<b>Mitigation Action/Initiative:</b>	Support the mitigation of flood vulnerable properties - Acquisition/mitigation of severely repetitively flooded properties

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flood
<b>Specific problem being mitigated:</b>	Improved fire service
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	1. Acquire flood vulnerable properties - Route 46 properties which have severely repetitively flooded 2. Elevate flood vulnerable properties 3. Do nothing
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Support the mitigation of flood vulnerable properties - Currently severe repetitive loss properties are located along Route 46 and interested in being acquired.
<b>Action/Project Category</b>	SIP
<b>Goals Met</b>	Protect life, protect property enhance local mitigation capabilities to reduce hazard vulnerabilities,
<b>Applies to existing and or new development, or not applicable</b>	Applies to existing development
<b>Benefits (losses avoided)</b>	High - Life safety, property protection
<b>Estimated Cost</b>	High
<b>Priority*</b>	High
Plan for Implementation	
<b>Responsible Organization</b>	Township Committee / Warren County Public Safety
<b>Local Planning Mechanism</b>	Township Committee
<b>Potential Funding Sources</b>	FEMA FMA
<b>Timeline for Completion</b>	Short - DOF
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:



Action Number: Knowlton - 2

Mitigation Action/Initiative: Acquisition/mitigation of severely repetitively flooded properties

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	Reduces flood losses
Technical	0	
Political	0	
Legal	0	
Fiscal	1	Need to obtain grant funds to complete project
Environmental	0	
Social	0	
Administrative	0	
Multi-Hazard	1	
Timeline	0	
Agency Champion	1	
Other Community Objectives	0	
<b>Total</b>	6	
<b>Priority (High/Med/Low)</b>	High	