9.39 HANOVER TOWNSHIP

This section presents the jurisdictional annex for Hanover Township.

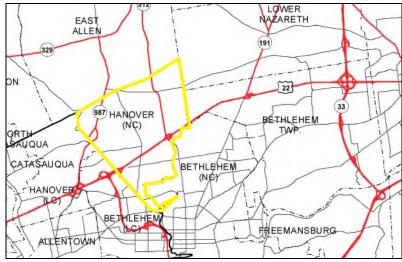
A. HAZARD MITIGATION PLAN POINT OF CONTACT

Pri	imary Point of Contact	Alternate Point of Contact			
Name Title/ Department Address Telephone Fax Email	Yvonne D. Kutz Zoning Officer Zoning 3630 Jacksonville Rd., Bethlehem PA, 18017 610-866-1140 610-758-9116 Zoning@hanovertwp-nc.org	Name Title/ Department Address Telephone Fax Email	Vincent G. Milite Public Works Director Public Works 3630 Jacksonville Rd., Bethlehem PA, 18017 610-866-1140 610-758-9116 vmilite@hanovertwp-nc.org		
		Alte	rnate Point of Contact		
		Name Title/ Department Address Telephone Fax Email	John J. Finnigan, Jr. Township Manager Administration 3630 Jacksonville Rd., Bethlehem PA, 18017 610-866-1140 610-758-9116 jfinnigan@hanovertwp-nc.org		

B. MUNICIPAL PROFILE

Hanover Township is an urban township located in the west-central part of Northampton County, on the border with Lehigh County. It encompasses an area of approximately 6.7 square miles, and has a population of 10,866 (2010 Census). As shown in Figure 1, the township is bordered by East Allen Township to the north; Lower Nazareth Township to the northeast; Bethlehem Township to the east; Bethlehem City (Northampton County) to the southeast, Bethlehem City (Lehigh County) to the southwest, and Hanover Township (Lehigh County) to the west.

Figure 1



(Source: http://www.lvpc.org/pdf/maps/baseMap-LehighNorthamptonCounties.pdf)

With the exception of a cut-out for the Bethlehem Golf Course, the Monocacy Creek forms the township's southern border with Bethlehem Township and Bethlehem City, and serves as the major drainage waterway of the township. The Catasauqua Creek also drains a small portion of the township.

US Route 22 is the most-significant east-west roadway in the township, passing through the middle of the township. PA Route 512 is the major north-south highway, extending from its interchange with US Route 22 in the western part of the township north into East Allen Township. Jacksonville Road is another major north-south roadway, passing from the northern border with East Allen Township south, then southwest, into Bethlehem City (Lehigh County).

B.1 Known or Anticipated Future Development

The following table summarizes major residential/commercial development and major infrastructure development that are identified for the next five (5) to ten (10) years in the municipality. Refer to the map at the end of this annex which illustrates the hazard areas within the municipality.

Property Name	Type (Residential or Commercial)	Number of Structures	Location	Known Hazard Zone*	Description / Status
Hanover Corporate Center II, Jaindl Boulevard	Commercial	10-15	S.R. 0512 @ Hanoverville Road	None	Approved / Some construction
Traditions @ Bridle Path, Bridle Path Road	Residential	204	Bridle Path Road	None	Approved / Some construction
Gulick Property, S.R. 0512 (100 acres +/-)	Commercial / Residential	20-300+	20-300+ S.R. 0512 @ S.R. 022		n/a
Lehigh Northampton Airport Authority Property, Airport Road Corridor (1,540 acres +/-)	Commercial	20-40	Airport Road corridor	None	n/a

^{*} Only location-specific hazard zones or vulnerabilities identified. With the exception of flood, wildfire, landslides, and land subsidence/sinkholes, all locations within the Lehigh Valley are exposed to the natural hazards addressed in this plan.

C. NATURAL HAZARD EVENT HISTORY SPECIFIC TO HANOVER TOWNSHIP

FFMA Disaster #	
(if applicable)	Local Damage and Losses
4025-DR-PA 095- 32432-00	Building damage and lost wages
	4025-DR-PA 095-

D. NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

The following relative ranking of natural and non-natural hazard risks in this municipality was developed using PEMA's Risk Factor methodology described in Section 4, "Risk Assessment"

HAZARD	NATURAL	RISK ASSESSMENT CATEGORY						
RISK	HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	FACTOR (RF)	
	Winter Storm	3	2	4	1	3	2.7	
HIGH	Flood	3	2	2	3	3	2.5	
	Radon Exposure	4	1	2	1	4	2.4	
	Subsidence / Sinkholes	2	2	4	2	1	2.3	
ш	Extreme Temperatures	4	1	2	1	3	2.3	
RATI	Drought	2	1	4	1	4	2.2	
MODERATE	Wildfire	3	1	2	3	3	2.2	
Σ	Hailstorm	3	1	3	2	1	2.1	
	Wind, incl. Tornado	1	3	2	4	1	2.1	
	Lightning	4	1	1	2	1	2	
LOW	Earthquake	1	1	4	4	1	1.9	
2	Landslide	1	1	1	4	1	1.3	

HAZARD	MAN-MADE	RISK ASSESSMENT CATEGORY						
RISK	HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	FACTOR (RF)	
_	Fire (Urban / Structural)	4	2	1	4	2	2.6	
H E E	Env. Hazard and Explosion	3	2	2	4	3	2.6	
	Utility Interruption	3	1	3	4	3	2.5	
MOD - ERATE	Transportation Accident	4	1	1	4	1	2.2	
MOD	Mass Gathering and Civil Disturbance	3	1	1	4	2	2	
	Terrorism	1	3	1	4	1	1.9	
	Building Collapse	1	3	1	4	1	1.9	
LOW	Dam Failure	1	2	2	4	2	1.9	
_	Nuclear Incident	1	1	1	4	2	1.4	
	Levee Failure	0	0	0	0	0	0	

E. CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification.

E.1 Planning and Regulatory Capability

		Status					
Tool / Program	In Place	Date Adopted or Updated	Under Develop- ment	Dept./Agency Responsible	Effect on Loss Reduction: + Support O Neutral - Hinder	Change Since Last Plan: + Positive - Negative	Comments
Hazard Mitigation Plan	X	2006			+		Updating 2012
Emergency Operations Plan	Х	2006			+		
Disaster Recovery Plan							
Evacuation Plan							
Continuity of Operations Plan							
NFIP							
NFIP – Community Rating System							
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)	x	2002			+		
Floodplain Management Plan	Х	2012			0		
Zoning Regulations	Х	2010			0		Always updating
Subdivision Regulations	X	2010			0		Always updating
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	2004			0		
Open Space Management Plan (or Parks/Rec or Greenways Plan)	Х	2006			0		
Stormwater Management Plan /	Χ	2007			+		

	Status						
Tool / Program	In Place	Date Adopted or Updated	Under Develop- ment	Dept./Agency Responsible	Effect on Loss Reduction: + Support O Neutral - Hinder	Change Since Last Plan: + Positive - Negative	Comments
Ordinance							
Natural Resource Protection Plan							
Capital Improvement Plan							
Economic Development Plan							
Historic Preservation Plan							
Farmland Preservation							
Building Code	Х	2112			0		
Fire Code	Х	2112			0		
Other							

E.2 Administrative and Technical Capability

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	Х		Hanover Engineering Associates	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Hanover Engineering Associates	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	Х		Hanover Engineering Associates	
Emergency Manager	Х		Internal – Emergency Management Coordinator & 2 Deputies	
NFIP Floodplain Administrator	Χ		Internal – Zoning Officer	
Land Surveyors			Hanover Engineering Associates	
Scientists or staff familiar with the hazards of the community		Х		
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program		Х		
Grant writers or fiscal staff to handle large/complex grants			Internal – Township Treasurer	
Staff with expertise or training in Benefit-Cost Analysis	Х		Internal – Township Manager	
Other				

E.3 Fiscal Capability

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming	X		Township Treasurer	
Community Development Block Grants (CDBG)	Х		Township Treasurer	
Special Purpose Taxes	Х		Township Treasurer	
Gas / Electric Utility Fees	Х		Township Treasurer	
Water / Sewer Fees	Х		Township Treasurer	
Stormwater Utility Fees		Х		
Development Impact Fees	Х		Township Treasurer	
General Obligation, Revenue, and/or Special Tax Bonds	Х		Township Treasurer	
Partnering Arrangements or Intergovernmental Agreements	Х		Township Treasurer	
Other				

E.4 Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	9	TBD
Building Code Effectiveness Grading Schedule (BCEGS)	TBD	TBD
Public Protection	TBD	TBD
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact it's 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 one (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/

F. MITIGATION STRATEGY

F.1 Past Mitigation Activities/Efforts

The following table summarizes progress on the mitigation strategy identified by the Township in the 2006 plan.

2006 Ini	tiative	Status	Review Comments		
Description	Location	Otatus	Neview Comments		
Monocacy Creek - rebank to prevent flooding of PA512	SR512 in area of US22	Discontinued	Creek is properly banked on the Hanover Township side. Problems and impacts concern the City of Bethlehem.		

F.2 Hazard Vulnerabilities Identified

It is estimated that in Hanover Township (NC), 18 residents live within the 1% annual chance flood area (NFIP Special Flood Hazard Area). Of the municipality's total land area, 2.4% is located within the 1% annual chance flood area. \$8,898,211 (0.3%) of the municipality's general building stock replacement cost value (structure and contents) is located within the 1% annual chance flood area.

There are 8 NFIP policies in the community. While there are 31 parcels located within the 1% annual chance flood area, there are 0 policies issued to property owners in the 1% annual chance flood area. FEMA has identified 3 Repetitive Loss (RL) including 1 Severe Repetitive Loss (SRL) properties in the municipality.

HAZUS-MH estimates that for a 1% annual chance flood, \$7,677,000 (0.2%) of the municipality's general building stock replacement cost value (structure and contents) will be damaged, 237 people may be displaced, 191 people may seek short-term sheltering, and an estimated 115 tons of debris could be generated. HAZUS-MH estimates the following damage and loss of use to critical facilities in the community as a result of a 1% annual chance flood event:

Critical Facilities Located in the DFIRM 1% and 0.2% Flood Boundaries and Estimated Potential Damage from the 1% Flood Event

		Ехро	sure	Potential Loss from 1% Flood Event		
Name	Туре	1% Event	0.2% Event	Structure Damage	Content Damages	Days to 100- Percent Functional
WESTGATE WATER SYS	Potable Water	Х	Х	-	-	-
WESTGATE WATER SYS	Potable Water	Х	Х	-	-	-

Source: FEMA, 2004; FEMA, 2011; HAZUS-MH 2.1

Notes:

X = indicates the facility location as provided by Lehigh Valley is located in the DFIRM flood zone.

NA = HAZUS-MH 2.1 does not estimate the days to 100-percent functional for user-defined facilities.

- = There is no damage estimate either because the 0.2% annual chance flood event potential loss estimates were not run in HAZUS or HAZUS did not calculate potential loss estimates for some facilities located in the DFIRM flood hazard zone. This is because even though these facilities are located within the boundary of the flood depth grid generated by HAZUS the depth of flooding does not amount to any damages to the structure or contents according to the depth damage function used in HAZUS.

The following vulnerabilities have been identified by the community, within the risk assessment, or in other plan, reports and documents (e.g. FEMA Flood Insurance Studies, Act 167 Stormwater Management Plans):

- Sinkholes
- Industrial accidents
- Bomb threats
- Snow storms
- Ice storms
- Accidents
- Fires

Please refer to the Hazard Profiles in the Risk Assessment section for additional vulnerability information relevant to this jurisdiction.

F.3 Hazard Mitigation Strategy

Note some of the identified mitigation initiatives in Table F 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.

Action No.	Action	Mitigation Technique Category	Hazard(s) Priority Addressed (H/M/L)		Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
1	Retrofit structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation. Phase 2: Where retrofitting is determined to be a viable option, work with property owners toward implementation of that action based on available funding from FEMA and local match availability.	Property Protection	Flood, Severe Storm, Earthquake	Medium- High*	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA	Long-term DOF	Existing
2	Purchase, or relocate structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Phase 1: Identify appropriate candidates for relocation based on cost-effectiveness versus retrofitting.	Property Protection	Flood	Medium- High*	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA	Long-term DOF	Existing

Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*		
	Phase 2: Where relocation is determined to be a viable option, work with property owners toward implementation of that action based on available funding from FEMA and local match availability.										
3	Maintain compliance with and good-standing in the NFIP 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. Further, continue to meet and/or exceed the minimum NFIP standards and criteria through the following NFIP-related continued compliance actions identified below.	Property Protection	Flood, Severe Storms	High	Low - Medium	Local Budget	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, ISO FEMA	Ongoing	New & Existing		
4	Conduct and facilitate community and public education and outreach for residents and businesses 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, and regularly post notices on the County/municipal homepage(s) referencing the HMP webpages. • Prepare and distribute informational letters to flood vulnerable property owners and neighborhood associations, explaining the availability mitigation grant funding to mitigate their properties, and instructing them on how they can learn more and implement mitigation.										
	See above.	Public Education	All Hazards	High	Low- Medium	Municipal Budget	Municipality with support	Short	N/A		

Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
		and Awareness					from Planning Partners, PEMA, FEMA		
5	Begin the process to adopt higher regulatory standards to manage flood risk (i.e. increased freeboard, cumulative substantial damage/improvements) and sinkhole risk (e.g. carbonate bedrock standards).	Prevention	Flood; Subsidence / Sinkholes	High	Low	Municipal Budget	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA	Short	New & Existing
6	Determine if a Community Assistance Visit (CAV) or Community Assistance Contact (CAC) is needed, and schedule if needed.	Prevention, Property Protection	Flood, Severe Storms	Medium	Low	Municipal Budget	NFIP Floodplain Administrator with support from PADEP, PEMA, FEMA	Short (year 1)	N/A
7	Have designated NFIP Floodplain Administrator (FPA) become a Certified Floodplain Manager through the ASFPM, and pursue relevant continuing education training such as FEMA Benefit-Cost Analysis.	Public Education and Awareness	Flood, Severe Storms	High	Low	Municipal Budget	NFIP Floodplain Administrator	Short (DOF)	N/A
8	Participate in the Community Rating System (CRS) to further manage flood risk and reduce flood insurance premiums for NFIP policyholders. This shall start with the submission to FEMA-DHS of a Letter of Intent to join CRS, followed by the completion and submission of an application to the program once the community's current compliance with the NFIP is	Prevention, Property Protection, Public Education and Awareness	Flood, Severe Storms	Medium	Low	Municipal Budget	NFIP Floodplain Administrator with support from PADEP, PEMA, FEMA	Short (year 1)	NA

Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	established.								
9	Archive elevation certificates	Public Education and Awareness	Flood, Severe Storm	High	Low	Local Budget	NFIP Floodplain Administrator	On-going	NA
10	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	All Categories	All Hazards	High	Low – High (for 5-year update)	Local Budget, possibly FEMA Mitigation Grant Funding for 5-year update	Municipality (via mitigation planning point of contacts) with support from Planning Partners (through their Points of Contact), PEMA	Ongoing	New & Existing
11	Complete the ongoing updates of the Comprehensive Emergency Management Plans	Emergency Services	All Hazards	High	Low	Local Budget	Municipality with support from PEMA	Ongoing	New & Existing
12	Create/enhance/ maintain mutual aid agreements with neighboring communities for continuity of operations.	Emergency Services	All Hazards	High	Low	Local Budget	Municipality with support from Surrounding municipalities and County	Ongoing	New & Existing
13	Identify and develop agreements with entities that can provide support with FEMA/PEMA paperwork after disasters; qualified damage assessment personnel – Improve post-disaster capabilities – damage assessment; FEMA/PEMA paperwork compilation, submissions, record-keeping	Public Education and Awareness, Emergency Services	All Hazards	Medium	Medium	Local budget	Municipality with support from County, PEMA, FEMA	Short	NA
14	Work with regional agencies (i.e. County and PEMA) to	Public Education	All Hazards	Medium	Medium	Local budget,	Municipality with support	Short – Long- term DOF	NA

Action No.	Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
	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).	and Awareness, Emergency Services				FEMA HMA and HLS grant programs	from County, PEMA		

Notes:

Costs:

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

Low = < \$10,000

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

High = > \$100,000

Potential FEMA HMA Funding Sources:

PDM = Pre-Disaster Mitigation Grant Program

FMA = Flood Mitigation Assistance Grant Program

RFC = Repetitive Flood Claims Grant Program

SRL = Severe Repetitive Loss Grant Program

HMGP = Hazard Mitigation Grant Program

Timeline:

Short = 1 to 5 years. Long Term= 5 years or greater. OG = On-going program.

DOF = Depending on funding.

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

G. ANALYSIS OF MITIGATION ACTIONS

Municipal mitigation actions were evaluated and prioritized primarily using the PA STEEL methodology discussed in Section 6 of this plan. Per the cost-benefit weighted PA STEEL methodology, those actions receiving 20 or more favorable ratings were generally considered high-priority actions. However, other factors beyond the PA STEEL numeric ranking may have been considered by the municipality during project prioritization. For example, a project might be assigned a medium priority because of the uncertainty of a funding source, and could be changed to high once a funding source has been identified such as a grant.

Batte							(+) F		A STI rable		CRIT					ATIC Not		icab	le						Res	ults
Miltig	ation Action	P	P olitic	al	Adm	A ninistr	ative		S ocial	Те	T chnic	cal			E iomic	;		Envi	E ronr	nental			L Lega	ı		<i>(</i>)
NO.	Name	Political Support Local Champion Public Support		Staffing	Funding Allocation	Maintenance / Operations	Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Benefit of Action (x3)	Cost of Action (x3)	Contributes to Economic Goals	Outside Funding Required	Effect on Land / Water	Effect on Endangered Species	Effect on HAZMAT / Waste Site	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	State Authority	Existing Local Authority	Potential Legal Challenge	SUMMARY (EQUAL WEIGHTING)	SUMMARY (BENEFITS & COSTS PRIORITIZED)	
1	Retrofit Vulnerable Structures	+	+	+	1	-	+	+	+	+	+	+	+	+	+	-	+	+	+	N	+	N	+	+	18 (+) 3 (-) 2 (N)	22 (+) 3 (-) 2 (N)
2	Acquire Vulnerable Structures	+	+	+	ı	1	-	+	-	+	+	+	+	+	+	ı	+	+	+	+	+	Ν	+	+	17 (+) 5 (-) 1 (N)	21 (+) 5 (-) 1 (N)
3	Maintain NFIP compliance	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	-	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)
4	Public Education and Outreach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	N	N	+	+	17 (+) 0 (-) 6 (N)	21 (+) 0 (-)

																										6 (N)
5	Higher Regulatory Standards	+	+	-	+	+	-	-	-	+	+	+	+	+	+	+	+	N	N	+	+	+	+	-	16 (+) 5 (-) 2 (N)	20 (+) 5 (-) 2 (N)
6	Community Assistance Visit	+	+	+	+	+	-	+	+	+	N	N	+	+	+	+	Z	N	Ν	N	+	N	+	-	14 (+) 2 (-) 7 (N)	18 (+) 2 (-) 7 (N)
7	NFIP FPA become a Certified Floodplain Manager	+	+	+	+	-	+	+	+	+	N	+	+	+	+	+	N	N	Ν	N	N	N	+	+	15 (+) 1 (-) 7 (N)	19 (+) 1 (-) 7 (N)
8	Join Community Rating System	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	Ν	+	+	N	+	+	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)
9	Archive Elevation Certificates	+	+	+	+	+	+	+	+	+	N	+	+	+	N	+	Ν	Ν	Z	Ν	+	N	+	+	16 (+) 0 (-) 7 (N)	20 (+) 0 (-) 7 (N)
10	Support Plan Maintenance and Update	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	Ν	N	+	+	+	+	19 (+) 0 (-) 4 (N)	23 (+) 0 (-) 4 (N)
11	Update CEMP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Ν	N	+	N	+	+	+	+	20 (+) 0 (-) 3 (N)	24 (+) 0 (-) 3 (N)
12	Enhance Mutual Aid Agreements	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	N	+	N	+	+	19 (+) 0 (-) 3 (N)	23 (+) 0 (-) 3 (N)
13	Identify Post- Disaster Capabilities	+	+	+	+	ı	+	+	+	+	+	+	+	+	+	+	+	Ν	Ζ	N	+	N	+	+	18 (+) 1 (-) 4 (N)	22 (+) 4 (-) 4 (N)
14	Develop Post- Disaster Capabilities	+	+	+	-	-	+	+	+	+	+	+	+	-	+	-	+	N	N	N	+	N	+	+	15 (+) 4 (-) 4 (N)	17 (+) 6 (-) 4 (N)

H. FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

A more detailed flood loss analysis could be conducted on a structural level (versus the Census block analysis conducted for the HMP). The location of each building, details regarding the building (see additional data needed below) and the assessed or fair market value could be included in HAZUS-MH. The FEMA DFIRM boundaries, FEMA Flood Insurance Study detailed studies, base flood elevations and available Light Detection and Ranging (LiDAR) data or digital elevation models (DEM) could be used to generate a more accurate flood depth grid and then integrated into the HAZUS model. The flood depth-damage functions could be updated using the U.S. Army Corps of Engineer damage functions for residential building stock to better correlate HAZUS-MH results with FEMA benefit-cost analysis models. HAZUS-MH would then estimate more accurate potential losses per structure.

Additional data needed to perform the analysis described above:

- Specific building information first-floor elevation (elevation certificates), number of stories, foundation type, basement, square footage, occupancy type, year built, type of construction etc.
- Assessed or fair market value of structure
- LiDAR or high resolution DEM

I. HAZARD AREA EXTENT AND LOCATION

A hazard area extent and location map has been generated and is provided below for Hanover Township to illustrate the probable areas impacted within Hanover Township. This map is based on the best available data 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 Hanover Township has significant exposure. Regional risk maps are provided in the hazard profiles within Section 4, Volume I of this Plan.

J. ADDITIONAL COMMENTS

No additional comments at this time.

