

9.59 WASHINGTON TOWNSHIP

This section presents the jurisdictional annex for Washington Township.

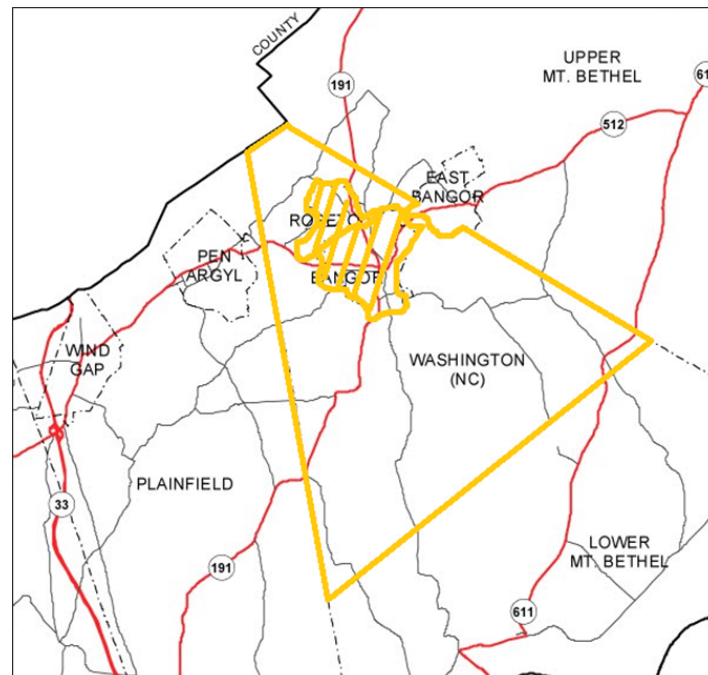
A. HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact		Alternate Point of Contact	
<u>Name</u>	Rick Weaver	<u>Name</u>	
<u>Title/Department</u>	Zoning Officer	<u>Title/Department</u>	
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B. MUNICIPAL PROFILE

Washington Township is located in the northeastern part of Northampton County, sharing its northern border with Monroe County. It encompasses an area of approximately 18.1 square miles, and has a population of 5,122 (2010 Census). As shown in Figure 1, the township is bordered by Plainfield Township (Northampton County) to the west; Lower Mount Bethel Township (Northampton County) to the southeast; Upper Mount Bethel Township and East Bangor (both in Northampton County) to the east and northeast; and Hamilton Township (Monroe County) to the north. Washington Township encompasses the boroughs of Bangor and Roseto.

Figure 1



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

Washington Township is in the Delaware River watershed, and is primarily drained by Martins Creek which runs north-south from Upper Mt. Bethel through the center of Washington Township and south to the Delaware River. A small area in the southeast of the Township is drained by the Delaware River tributary Oughoughton Creek. There are also a few small bodies of standing water in the western part of the borough, as well as some smaller streams which drain by Martins Creek tributary and into the Delaware.

Washington Township is intersected at its center by two major roadways: Route 191 runs north-south from Monroe County through Washington Township as 1st Street, and then Washington Boulevard, before veering southwest into Plainfield (Northampton County); and Route 512 runs east-west from Upper Mount Bethel as Erdman Street, then Market Street, and lastly Blue Valley Drive to Plainfield and Pen Argyl. South Main Street is another primary route, running north-south to the east of Route 191. Springfield Drive and Richmond Road provide the southern-most connection to points east from Washington Township, starting perpendicular to South Main Street in the center of the township.

B.1 Known or Anticipated Future Development

No know or anticipated development identified at this time.

C. NATURAL HAZARD EVENT HISTORY SPECIFIC TO WASHINGTON TOWNSHIP

Type of Event and Date	FEMA Disaster # (if applicable)	Local Damage and Losses

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 RISK	NATURAL HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
HIGH	Winter Storm	3	2	4	1	3	2.7
	Flood	3	2	2	3	3	2.5
MODERATE	Radon Exposure	4	1	2	1	4	2.4
	Extreme Temperatures	4	1	2	1	3	2.3
	Drought	2	1	4	1	4	2.2
	Wildfire	3	1	2	3	3	2.2
	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
	Subsidence / Sinkholes	2	1	1	2	1	1.4
	Landslide	1	1	1	4	1	1.3

HAZARD RISK	MAN-MADE HAZARDS	RISK ASSESSMENT CATEGORY					RISK FACTOR (RF)
		PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
HIGH	Fire (Urban/Structural)	4	2	1	4	2	2.6
	Environmental Hazard and	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
	Mass Gathering and Civil Disturbance	3	1	1	4	2	2
LOW	Terrorism	1	3	1	4	1	1.9
	Building Collapse	1	3	1	4	1	1.9
	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:

- Planning and Regulatory capability
- Administrative and Technical capability
- Fiscal capability
- Community classifications

E.1 Planning and Regulatory Capability

Tool / Program	Status			Dept./Agency Responsible	Effect on Loss Reduction: + Support O Neutral - Hinder	Change Since Last Plan: + Positive - Negative	Comments
	In Place	Date Adopted or Updated	Under Development				
Hazard Mitigation Plan	X	4/2006		Northampton County Emergency Management Agency (EMA)			Updating 2012
Emergency Operations Plan	X	2010		Northampton County EMA			
Disaster Recovery Plan							
Evacuation Plan							
Continuity of Operations Plan							
NFIP	X	2001		Zoning			
NFIP – Community Rating System	X	2001		Zoning			
Floodplain Regulations (spec. NFIP Flood Damage Prevention Ordinance)							
Floodplain Management Plan	X	10/2011		Zoning			In zoning ordinance
Zoning Regulations	X	10/2011		Zoning			
Subdivision Regulations	X	01/2006		Zoning			
Comprehensive Land Use Plan (or General, Master or Growth Mgt. Plan)	X	12/2005		Zoning			
Open Space Management Plan (or Parks/Rec or Greenways)	X	01/2008		Recreation board			Recreation Master

Tool / Program	Status			Dept./Agency Responsible	Effect on Loss Reduction: + Support O Neutral - Hinder	Change Since Last Plan: + Positive - Negative	Comments
	In Place	Date Adopted or Updated	Under Development				
Plan)							Plan
Stormwater Management Plan / Ordinance	X	09/2009		Township engineer			
Natural Resource Protection Plan							
Capital Improvement Plan							
Economic Development Plan							
Historic Preservation Plan							
Farmland Preservation							Through Northampton County
Building Code							Statewide Building Code 3 rd party
Fire Code							
Firewise							
Storm Ready							
Other							

E.2 Administrative and Technical Capability

Staff/Personnel Resources	Yes	No	Department/Agency	Comments
Planners (with land use / land development knowledge)	X		Zoning	
Planners or engineers (with natural and/or human caused hazards knowledge)	X		Zoning	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)		X	Township Engineer	Township Engineer – does not do building inspections
Emergency Manager	X		Board of Supervisors	
NFIP Floodplain Administrator	X		Zoning	
Land Surveyors	X		Board of Supervisors	Township Engineer
Scientists or staff familiar with the hazards of the community	X		Zoning	
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	X		Zoning	
Grant writers or fiscal staff to handle large/complex grants		X		
Staff with expertise or training in Benefit-Cost Analysis		X		
Other				

E.3 Fiscal Capability

Financial Resources	Yes	No	Department/Agency	Comments
Capital Improvement Programming		X		
Community Development Block Grants (CDBG)		X		Township does not qualify
Special Purpose Taxes		X		
Gas / Electric Utility Fees		X		
Water / Sewer Fees		X		
Stormwater Utility Fees		X		
Development Impact Fees		X		
General Obligation, Revenue, and/or Special Tax Bonds		X		
Partnering Arrangements or Intergovernmental Agreements		X		
Other				

E.4 Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
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. TBD = To Be Determined.

The classifications listed above relate to the community's effectiveness in providing services that may impact 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 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. StormReady communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness.

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 Initiative		Status	Review Comments
Description	Location		
Install/replace/repair culvert	600-700 Block Washington Boulevard	No Progress / Unknown	
Install/replace/repair culvert	300 Block Flicksville Rd.	No Progress / Unknown	
Install/replace/repair culvert	1600-1700 Block Lower	Completed	



	South Main St.		
Install/replace/repair culvert	Labar Rd. and Lower South Main St.	Completed	
Install/replace/repair culvert	1100 Block Mount Pleasant Rd.	Completed	
Stormwater Management (stream, channel and bank restoration)	channel and bank restoration) Township-wide	No Progress / Unknown	
Install/replace/repair culvert	Unit Block - Washington Boulevard	Discontinued	
Install/replace/repair culvert	500 Block Bangor Junction Rd.	No Progress / Unknown	
Install/replace/repair culvert	500 Block Molasses Rd.	Completed	
Install/replace/repair culvert	300 Block American Bangor Rd.	No Progress / Unknown	
Install/replace/repair culvert	300 Block Blue Valley Drive	Discontinued	
Install/replace/repair culvert	200 Block Blue Valley Drive	Discontinued	
Install/replace/repair culvert	Hahn Rd.	No Progress / Unknown	
Install/replace/repair culvert	800 Block Rutt Rd.	No Progress / Unknown	
Install/replace/repair culvert	Unit Block - Brodt Rd.	Completed	
Install/replace/repair culvert	Unit Block - Cedar Rd.	Completed	
Install/replace/repair culvert	1500 Block Second St.	No Progress / Unknown	

Further details on mitigation activities completed in the Township include:

- Drain improvement at 100 Block and 500 Block of Molasses Road.
- Drainage improvement at 1600-1700 Block of Lower South Main Street, and at Labar Road and Lower South Main Street.
- Install/replace/repair culvert at 1100 Block Mount Pleasant Rd.
- Drainage improvements and road reconstruction at Cedar Road.
- Install/replace/repair culvert at Brodt Road.

F.2 Hazard Vulnerabilities Identified

It is estimated that in Washington Township, 147 residents live within the 1% annual chance flood area (NFIP Special Flood Hazard Area). Of the municipality's total land area, 3.4% is located within the 1% annual chance flood area. \$28,625,717 (3.2%) of the municipality's general building stock replacement cost value (structure and contents) is located within the 1% annual chance flood area.

There are 25 NFIP policies in the community. While there are 58 structures located within the 1% annual chance flood area, there are only 13 policies issued to property owners in the 1% annual chance flood area. No Repetitive Loss (RL) properties have been identified in the municipality.

HAZUS-MH estimates that for a 1% annual chance flood, \$6,133,702 (0.7%) of the municipality's general building stock replacement cost value (structure and contents) will be damaged, 147 people may

be displaced, 43 people may seek short-term sheltering, and an estimated 412 tons of debris could be generated.

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):

- Flooding
 - o 500 block Bangor Junction Road
 - o 300 block American Bangor Road
 - o Elm Avenue
 - o 300 block Flickersville Road
 - o 600 block Washington Blvd (Route 191)
 - o 700 block Ruttroad
 - o 200 block Oak Road
- Shoulder washout
 - o 1st block of Brodt Road
 - o 1st block of Mack Road
- Erosion debris on road at 2500 block of Ackermanville Road

Please refer to the Hazard Profiles 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) Addressed	Priority (H/M/L)	Estimated Cost	Potential Funding Sources	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures*
1	500 Bangor Junction Road Stormwater Upgrades - Install additional storm sewer piping under the abandoned railroad bed to allow downstream flow. This will eliminate the damming causing the flooding condition which requires closing of the road. Will eliminate flooding the access to 500 Bangor Junction Road. (1 residential). Will reduce the need for Township Road crew to place road closure signs and reduce the need for the Township Police and Fire Department from doing traffic control at this site.								
	See above.	Property Protection; Structural Projects	Flood	High	Low	FEMA Mitigation Grant Funding; Township Budget	Washington Township	Short Term DOF	Existing
2	300 Block of American Bangor Road Stormwater Upgrades - Install additional or larger storm sewer piping to allow the storm water to flow to the south side of American Bangor Road without toping over the roadway. Clear vegetation and trees, excavate and clean the roadside swales on the north side of American Bangor Road to allow more volume of water to remain within the swale. This will eliminate the flooding condition which requires closing of the road. Will reduce the need for Township Road crew to place road closure signs and reduce the need for the Township Police and Fire Department from doing traffic control at this site.								
	See above.	Property Protection; Structural Projects	Flood	Low	Medium	FEMA Mitigation Grant Funding; Township Budget	Washington Township	Short Term DOF	Existing
3	Storm sewers at Elm Avenue; 700 block Rutt Road; 2500 block of Ackermanville Road; and 200 block Oak Road – Install catch basins and storm sewer piping. This will eliminate the need for street clean up and street repair after flooding or sever rain. This will also eliminate the flooding condition specific to 726 Rutt Road.								
	See above.	Property Protection; Structural Projects	Flood	Low	Medium	FEMA Mitigation Grant Funding; Township Budget	Washington Township	Short Term DOF	Existing
4	300 Block of Flicksville Road Stormwater Upgrades - Install catch basins and storm sewer piping to discharge the low lying area to the Martins Creek. This will eliminate the flooding condition which requires closing of the road. Will eliminate the flooding of 302, 304 and 311 Flicksville Road (3 residential). Will reduce the need for Township Road crew to place road closure signs and reduce the need for the Township Police and Fire								

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*
	Department from doing traffic control at this site.								
	See above.	Property Protection; Structural Projects	Flood	Medium	Medium	FEMA Mitigation Grant Funding; Township Budget	Washington Township	Short Term DOF	Existing
	Riprap installation at 1st block of Brodt Road, and 1st block of Mack Road – These are problem areas with road shoulder wash outs during flooding or sever rain events. This would disperse the energy of the water and eliminate road repairs.								
5	See above.	Property Protection; Structural Projects	Flood	Low	Medium	FEMA Mitigation Grant Funding; Township Budget	Washington Township	Short Term DOF	Existing
	600-700 block of Washington Blvd (Route 191) Mitigation - Fill the eroded area on the south side of Washington Blvd (Route 191) caused by the topping over of the Waltz Creek. This will eliminate the flooding condition which requires closing of the road. Will keep the Waltz Creek within its banks and potentially prevent the flooding of 625, 630 and 636 Washington Blvd. (2 residential and 1 business). Will reduce the need for PennDOT to place road closure signs and reduce/eliminate the need for the Township Police and Fire Department from doing traffic control at this site. Provide for safe travel to the general public.								
6	PennDOT would need to obtain permission from the property owner to place fill on the site. The Township may assist by providing some fill. PennDOT would need to provide equipment and manpower for the final grading and stabilization of the fill.								
	See above.	Property Protection; Structural Projects	Flood; Transportation Accident	High	Low	PennDOT	PennDOT, with support from Washington Township	Short Term DOF	Existing
	Hahn Road Reconstruction and Stormwater Upgrades - Road reconstruction, replace existing storm sewer piping with larger pipes and install additional catch basins and storm sewer piping to handle the volume of storm water. This will eliminate the erosion and washouts. Will reduce the continuous restoration required by the Township Road crew after rain events.								
7	See above.	Property Protection; Structural Projects	Flood; Transportation Accident	Low	Medium	FEMA Mitigation Grant Funding; Township Budget	Washington Township	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*
8	800 Block of Rutt Road Stormwater Upgrades - Installation of larger storm sewer pipes to carry the volume of water, preventing the toping over of the upstream inlet during heavy rain events and washouts within Washington Township and the Borough of Bangor. This would reduce the potential of flooding of 35+ residential units and 3 businesses and eliminate extensive restoration by the Bangor Borough and Washington Township road crews. This will eliminate the flooding condition which requires closing of the road. Will reduce the need for Bangor Borough and Washington Township Road crews to place road closure signs and reduce the need for the Bangor Borough and Washington Township Police and Fire Departments from doing traffic control at this site.								
	See above.	Property Protection; Structural Projects	Flood; Transportation Accident	Low	High	FEMA Mitigation Grant Funding; Township Budget	Washington Township	Short Term DOF	Existing
9	1100 block of Mt Pleasant Road Stream Channel Restoration - Will eliminate road flooding due to the stream flow diversion from previous storm events. Restoring all of the stream flow to the existing pipe under the roadway. This will eliminate the flooding condition which requires closing of the road. Will reduce the need for Township Road crew to place road closure signs and clean up and reduce the need for the Washington Township Police and Fire Departments from doing traffic control at this site.								
	See above.	Property Protection; Natural Resource Protection Structural Projects	Flood; Transportation Accident	Medium	High	FEMA Mitigation Grant Funding; Township Budget	Washington Township	Short Term DOF	Existing
10	<p>Retrofit structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority.</p> <p>Phase 1: Identify appropriate candidates for retrofitting based on cost-effectiveness versus relocation.</p> <p>Phase 2: Where retrofitting is determined to be a viable</p>	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*
	option, work with property owners toward implementation of that action based on available funding from FEMA and local match availability.								
11	<p>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.</p> <p>Phase 1: Identify appropriate candidates for relocation based on cost-effectiveness versus retrofitting.</p> <p>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.</p>	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
12	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	Property Protection	Flood	High	Low - Medium	Municipal Budget	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, ISO FEMA	On-going	New & 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*
	community. Further, continue to meet and/or exceed the minimum NFIP standards and criteria through the following NFIP-related continued compliance actions identified as below.								
13	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: <ul style="list-style-type: none"> • 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 of mitigation grant funding to mitigate their properties, and instructing them on how they can learn more and implement mitigation. • Use 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. • Work with neighborhood associations, civic and business groups to disseminate information on flood insurance and the availability of mitigation grant funding. 								
	See above.	Public Education and Awareness	All Hazards	High	Low-Medium	Municipal Budget	Municipality with support from Planning Partners, PEMA, FEMA	Short Term	N/A
14	Begin the process to adopt higher regulatory standards to manage flood risk (i.e. increased freeboard, cumulative substantial damage/improvements).	Prevention	Flood	High	Low	Municipal Budget	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from PEMA, FEMA	Short Term	New & Existing
15	Determine if a Community Assistance Visit (CAV) or Community Assistance Contact (CAC) is needed, and schedule if needed.	Prevention, Property Protection	Flood	Medium	Low	Municipal Budget	NFIP Floodplain Administrator with support from PADEP, PEMA, FEMA	Short Term	N/A
16	Have designated NFIP	Public	Flood	High	Low	Municipal	NFIP	Short Term	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*
	Floodplain Administrator (FPA) become a Certified Floodplain Manager through the ASFPM, and pursue relevant continuing education training such as FEMA Benefit-Cost Analysis.	Education and Awareness				Budget	Floodplain Administrator	DOF	
17	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 established.	Prevention, Property Protection, Public Education and Awareness	Flood	Medium	Low	Municipal Budget	NFIP Floodplain Administrator with support from PADEP, PEMA, FEMA	Short Term	N/A
18	Archive elevation certificates	Public Education and Awareness	Flood	High	Low	Municipal Budget	NFIP Floodplain Administrator	On-going	N/A
19	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)	Municipal 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	On-going	New & Existing
20	Complete the ongoing	Emergency	All Hazards	High	Low	Municipal	Municipality	On-going	New &

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*
	updates of the Comprehensive Emergency Management Plans	Services				Budget	with support from PEMA		Existing
21	Create/enhance/ maintain mutual aid agreements with neighboring communities for continuity of operations.	Emergency Services	All Hazards	High	Low	Municipal Budget	Municipality with support from Surrounding municipalities and County	On-going	New & Existing
22	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	Municipal Budget	Municipality with support from County, PEMA, FEMA	Short Term	N/A
23	Work with regional agencies (i.e. County and PEMA) 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).	Public Education and Awareness, Emergency Services	All Hazards	Medium	Medium	Municipal Budget, FEMA HMA and HLS grant programs	Municipality with support from County, PEMA	Short/Long Term DOF	N/A

Notes:

*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.

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.

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.

Mitigation Action		PA STEEL CRITERIA CONSIDERATIONS																				Results			
		(+) Favorable						(-) Less favorable						(N) Not Applicable											
		P Political			A Administrative			S Social		T Technical			E Economic			E Environmental					L Legal			SUMMARY (EQUAL WEIGHTING)	SUMMARY (BENEFITS & COSTS PRIORITIZED)
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			
1	500 Bangor Junction Road Stormwater Upgrades	+	-	+	-	-	+	+	+	+	+	+	-	N	+	+	N	N	+	+	N	+	N	14(+) 4(-) 5(N)	17(+) 6(-) 5(N)
2	300 block of American Bangor Road Stormwater Upgrades	+	-	+	-	-	+	+	+	+	N	+	-	N	+	N	N	N	+	+	N	+	N	12(+) 4(-) 7(N)	14(+) 6(-) 7(N)
3	Storm sewers at Elm Avenue; 700 block Rutt Road; 2500																							11(+)	13(+)

	block of Ackermanville Road; and 200 block Oak Road	+	-	+	-	-	+	+	-	+	+	N	+	-	N	+	N	N	N	+	+	N	+	N	5(-) 7(N)	7(-) 7(N)
4	300 block of Flicksville Road Stormwater Upgrades	+	-	+	-	-	+	+	+	+	+	N	+	-	N	+	+	N	N	+	+	N	+	N	13(+) 4(-) 6(N)	15(+) 6(-) 6(N)
5	Riprap installation at 1st block of Brodt Road, and 1st block of Mack Road	+	-	+	-	-	+	+	N	+	+	N	+	-	N	+	N	N	N	+	+	N	+	N	11(+) 4(-) 8(N)	14(+) 6(-) 8(N)
6	600-700 block of Washington Blvd (Route 191) Mitigation	+	-	+	-	-	+	+	+	+	+	+	+	-	+	+	+	N	N	+	+	N	+	N	15(+) 4(-) 4(N)	17(+) 6(-) 4(N)
7	Hahn Road Reconstruction and Stormwater Upgrades	+	-	+	-	-	+	+	N	+	+	N	+	-	N	+	N	N	N	+	+	N	+	N	11(+) 4(-) 8(N)	13(+) 6(-) 8(N)
8	800 Block of Rutt Road Stormwater Upgrades	+	N	+	-	-	+	+	+	+	+	N	+	-	N	+	N	N	N	+	+	N	+	N	12(+) 3(-) 8(N)	14(+) 5(-) 8(N)
9	1100 block of Mt Pleasant Road Stream Channel Restoration	+	N	+	-	-	+	+	-	+	+	N	+	-	N	+	+	+	N	+	+	+	+	N	14(+) 4(-) 5(N)	16(+) 6(-) 5(N)
10	Retrofit Vulnerable Properties	+	+	+	-	-	+	+	+	+	+	+	+	+	+	-	+	+	+	N	+	N	+	+	18 (+) 3 (-) 2 (N)	22 (+) 3 (-) 2 (N)
11	Acquire Vulnerable Properties	+	+	+	-	-	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	N	+	+	17 (+) 5 (-) 1 (N)	21 (+) 5 (-) 1 (N)

12	Maintain NFIP compliance	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	-	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)
13	Public Education and Outreach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	N	N	N	+	+	17 (+) 0 (-) 6 (N)	21 (+) 0 (-) 6 (N)
14	Higher Regulatory Standards	+	+	-	+	+	-	-	-	+	+	+	+	+	+	+	N	N	+	+	+	+	-	16 (+) 5 (-) 2 (N)	20 (+) 5 (-) 2 (N)	
15	Community Assistance Visit	+	+	+	+	+	-	+	+	+	N	N	+	+	+	N	N	N	N	+	N	+	-	14 (+) 2 (-) 7 (N)	18 (+) 2 (-) 7 (N)	
16	NFIP FPA become a Certified Floodplain Manager	+	+	+	+	-	+	+	+	+	N	+	+	+	+	N	N	N	N	N	N	+	+	15 (+) 1 (-) 7 (N)	19 (+) 1 (-) 7 (N)	
17	Join Community Rating System	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	+	19 (+) 2 (-) 2 (N)	23 (+) 2 (-) 2 (N)	
18	Archive Elevation Certificates	+	+	+	+	+	+	+	+	+	N	+	+	+	N	+	N	N	N	N	+	N	+	+	16 (+) 0 (-) 7 (N)	20 (+) 0 (-) 7 (N)
19	Support Plan Maintenance and Update	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	N	N	+	+	+	+	19 (+) 0 (-) 4 (N)	23 (+) 0 (-) 4 (N)	
20	Update CEMP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	N	+	+	+	+	20 (+) 0 (-) 3 (N)	24 (+) 0 (-) 3 (N)	
21	Enhance Mutual Aid Agreements	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	N	+	N	+	+	19 (+) 0 (-) 3 (N)	23 (+) 0 (-) 3 (N)	
22	Identify Post-Disaster Capabilities	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	N	N	N	+	N	+	+	18 (+) 1 (-) 4 (N)	22 (+) 4 (-)	

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 Washington Township to illustrate the probable areas impacted within Washington 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 Washington 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.

