

Northampton County Emergency Operations Plan

2.2 Hazard Vulnerability and Mitigation

At the initial Eastern Shore Hazard Mitigation Planning Committee meeting, sheets from the Federal Emergency Management Agency (FEMA) publication entitled State and Local Mitigation Planning, How-to Guides were distributed. Members reviewed these sheets and listed all the hazards on the sheets that affect the Eastern Shore and some unique hazards that were not listed, including the following:

- Coastal Flooding
- Stormwater Flooding
- High Wind
- Coastal Erosion
- Ice/Snow
- Sewage Spills
- Drought
- Wildfire
- Hazmat Incidences
- Heat Wave
- Biohazards
- Well Contamination

The Eastern Shore Hazard Mitigation Planning Committee utilized five criteria to rank the hazards from highest to lowest priority. Those five categories included probability based on past events, number of structures damaged, primary impacts, secondary impacts, and potential mitigation options. The Committee agreed to use the following definitions as a standard for evaluation of all the hazards:

Probability: Frequency of occurrence based on historical data of all potential hazards

Level

- 1 - Unlikely (less than 1% occurrence: no events in the last 100 years)
- 2 - Likely (between 1% and 10% occurrence: 1 to 10 events in the last 100 years)
- 3 - Highly likely (over 10% occurrence: 11 events or more in the last 100 years)

Affected Structures: Number of structures affected

Level

- 1 - Small (limited to 1 building)
- 2 - Medium (limited to 2 to 10 buildings)
- 3 - Large (over 10 buildings)

Primary Impacts: Based on percentage of damage to typical structure or industry in the community

Level

- 1 - Negligible (less than 3% damage)
- 2 - Limited (between 3% and 49% damage)
- 3 - Critical (more than 49% damage)

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Secondary Impacts: Based on impacts to the community at large

Level

- 1 - Negligible (no loss of function, no displacement time, no evacuations)
- 2 - Limited (some loss of function, displacement time, or evacuations)
- 3 - Critical (major loss of function, displacement time, or evacuations)

Mitigation Options: Number of cost-effective mitigation options

Level

- 1 - Few (0 to 1 cost-effective mitigation option)
- 2 - Several (2 to 3 cost-effective mitigation options)
- 3 - Many (over 3 cost-effective mitigation options)

The Eastern Shore Hazard Mitigation Planning Committee then prioritized and ranked these hazards based on the preceding criteria.

In the general discussion of the hazards, the Committee determined that well contamination is usually the result of secondary effects of coastal or stormwater flooding. For this reason, a discussion of this hazard will be included with the coastal flooding profile. The four hazards that have the highest priority are coastal flooding, high wind, stormwater flooding, and coastal erosion. The following table represents the Committee’s prioritization criteria and how each individual hazard was ranked.

		High 12-15			Medium 9-11		Low 5-8	
Hazard Type	Probability	Impacts			Mitigation Options	Total Score	Hazard Priority	
		Affected Structures	Primary Impact	Secondary Impact				
Coastal Flooding	3	3	3	3	3	15	High	
High Wind	3	3	3	3	3	15	High	
Storm Water Flooding	3	3	3	2	3	14	High	
Coastal Erosion	3	3	3	1	2	12	High	
Ice-Snow	3	1	2	3	2	11	Medium	
Sewage Spills	3	1	2	2	3	11	Medium	
Drought	3	1	3	2	2	11	Medium	
Wildfire	3	1	1	1	3	9	Medium	
Hazmat Incidents	3	1	1	2	1	8	Low	
Heat Wave	3	1	1	1	1	7	Low	
Biohazards	2	1	1	2	1	7	Low	
Well Contamination	3	1	-	-	-	-	-	

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High-Priority Hazards

Coastal Flooding – These events are highly likely, affecting large numbers of buildings, infrastructure, and people. Damages can be critical, with buildings suffering over 49% damage from these events. These events are also typically very disruptive to the region, causing major displacement and evacuations.

Stormwater Flooding – These events are highly likely, affecting large numbers of buildings, infrastructure, and people. Damages can be critical, with buildings suffering over 49% damage from these events. These events are also typically disruptive to the region, causing some displacement and evacuations.

High Wind – These events are highly likely, affecting large numbers of buildings. This hazard received the maximum available score during the current update, surpassing stormwater flooding and tying with coastal flooding. Damages were considered to be limited during development of the original plan in 2006, but the current update considered damages to be critical, with buildings suffering over 49% damage from these events. These events are also typically disruptive to the region, causing some displacement and evacuations.

Coastal Erosion – Erosion is considered to be highly likely, affecting large numbers of buildings. Damages can be critical, with buildings suffering over 49% damage from these events. These events are not typically disruptive to the region.

Medium-Priority Hazards

Ice/Snow –The probability of winter weather events rose to medium priority during the current update, but these hazards affect small numbers of structures. Ice and snow are considered to cause limited damage to the structures on the Eastern Shore. Winter weather is very disruptive to the region, causing major loss of function to the area's commercial businesses, schools, shellfish harvesting industry, and aquaculture industry.

Sewage Spills – This hazard was considered during the original 2006 plan, but did not receive a score. The current update considers sewage spills to be medium priority, with a small number of structures affected by an event. These events cause limited damage to structures and cause limited disruption to the region. The Committee believes there are over three cost-effective options for mitigating these events.

Drought – This hazard was considered likely during the original 2006 plan, but has been elevated to medium priority for the current update, with little effect on the built environment. Droughts cause critical damage to the water supply for farmers and residents. Crop loss is especially damaging to the regional, agriculturally based economy and is a secondary impact of drought. These events are also typically disruptive to the region, causing some loss of individual water supply wells.

Wildfires – These events were considered to be low priority originally, but have been elevated to medium priority for the current update. These events are considered highly likely but affect small numbers of structures. Wildfires generally cause negligible damage to the larger wood product industry. These events are not typically disruptive to the region.

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Low-Priority Hazards

Hazmat Incidents – These events are elevated to low priority for the current update, but affect almost no structures. They cause negligible damage to the structures on the Eastern Shore and are moderately disruptive to the region.

Heat Waves – These events are low priority but generally do not affect the built environment. Heat waves cause negligible damage to structures and industries in the community. These incidents are not typically disruptive to the region.

Biohazards – These events include algal blooms and fish kills and are considered to be likely. They have little impact on structures and cause short-term disruption to the fishing industry. Biohazards have limited impact on the community at large.

Risk Descriptions

The Eastern Shore Hazard Mitigation Planning Committee members prioritized the hazards based on primary and secondary impacts, probabilities that the event would occur again, and cost-effective mitigation options. Four hazards are considered high-priority hazards under the criteria. Hazards ranked as medium or low priority are not considered in substantial detail, since mitigation options either do not exist or the mitigation options are not as cost effective as the high-priority mitigation options. On the Eastern Shore, mitigating damages from ice-snow events, sewage spills, drought, wildfire, Hazmat incidents, heat waves, or biohazards are not as cost effective as mitigating damages from coastal flooding, stormwater flooding, coastal erosion, and high-wind events, which cause extensive disruption and damage.