

CHAPTER 3: RISK ASSESSMENT

RISK ASSESSMENT PROCESS

The process of risk assessment began with a collaborative discussion on January 19, 2021, via a zoom call. The Eastern Shore had a diverse group of attendees participate in the risk assessment representing local and state government, non-profits, and education interests. Together, they learned about historic hazards that have affected the Shore, the expected effect of sea-level rise on the frequency and intensity of tropical storms, and the role of hazard mitigation planning in protecting lives and property.

Participants also received information which identified risks in the last two hazard mitigation plans, and then participated in an Esri Survey123 to prioritize those hazards based on their own experiences, as well as new knowledge they had acquired from presentations. Participants also added to the hazard list if they judged there were any missing items.

A comprehensive list of hazards that were evaluated included:

Table 1: Types of Potential Hazards in the Eastern Shore of Virginia

Hazard Category	Hazard Type
Agriculture & Food Emergency	Invasive Environmental Species and Diseases
	Plant Disease or Infestation
	Food Contamination
	Farm Animal Disease
	Fish Kill
Environmental	Hurricane
	Coastal Flooding
	High Wind
	Storm Surge
	Coastal Erosion
	Non-Coastal Flooding
	Tornado
	Extreme Heat
	Thunderstorm
	Drought or Low Water
	Winter Weather
	Erosion- Not Coastal
	Land Subsidence
	Lightning
	Wildland Fire
	Extreme Cold
	Fog
	Earthquake
Extraterrestrial	Space Weather
	Space Object/Debris Crash
Hazardous Materials	Chemical
	Oil or Natural Gas
	Radiological

Risk Assessment

	Nuclear
Health	Pandemic
	Water Quality
	Infectious Disease
	Substance Use and Overdose
Public Safety	Active Threat
	Cyber Attack
	Civil Disorder
	Chemical, Biological, Radiological, Nuclear, and high yield Explosives
	Crowd Disaster
	Geopolitical Pressures
	Sabotage
	Electromagnetic Pulse
Structural	Fire/Explosion
	Building or Structural Failure
	Mine or Underground Structure Emergency
Supply & Distribution	Communications Failure
	Electrical Energy Failure
	Water or Wastewater Disruption
	Food Shortage
	Medical Drug, Blood Product or Supplies Shortage
	Petroleum Product Shortage
Transportation	Road and Highway
	Marine
	Public Transportation
	Aviation
	Rail

Participants were asked to rank and score each of the hazards based on the following:

- *Probability*
- *Affected Communities*
- *Primary / Secondary Impacts*

The scores were compiled and averaged by A-NPDC staff and shared with the Steering Committee members. Hazards were reviewed and then divided into three priorities: high, medium, and low.

The resulting prioritization was presented at the next meeting on February 16, 2021. At that meeting, the prioritization of hazards was slightly revised, and similar categories from previous HMP documents were combined. The high priority hazards – coastal flooding, wind, coastal erosion, and storm water flooding – did not change, and remained consistent with the previous hazard mitigation plans (Table 2). Although hazards such as ice/snow, drought, and wildfire were ranked as low or medium in previous plans, Steering Committee members elected to not rank these hazards for the current update in order to focus on hazards that impact the region more frequently. These hazards are still included and described in some locality chapters, however, as each locality has special circumstances surrounding their infrastructure, emergency response capabilities, and ability to recover following a hazard. Scoring results were clearly indicative of these five hazards being the most probable, most frequent, and affects the most communities in the region – by far. Each of these five identified priority hazards and their impacts are described in each respective locality chapter, as well as identified secondary, local hazards for each jurisdiction. Hazards identified in these chapters are to be reassessed annually and amended in the plan as needed.

Table 2: Eastern Shore of Virginia Hazard Prioritization

Hazard	2006	2011	2016	2021
<i>High Wind</i>	High	High	High	High
<i>Coastal Erosion</i>	High	High	High	High
<i>Coastal Flooding</i>	High	High	High	High
<i>Storm Water</i>	High	High	High	High
<i>Pandemic</i>	-	-	-	High*
<i>Well Contamination (Water Quality)</i>	Medium	Unranked	Medium	Medium
<i>Ice-Snow</i>	Medium	Medium	Medium	Unranked
<i>Biological Hazards (Infectious Disease)</i>	Medium	Unranked	Medium	Medium
<i>Drought</i>	Medium	Medium	Medium	Unranked
<i>Sewage Spills</i>	Medium	Medium	Medium	Unranked
<i>Storm Surge</i>	-	-	-	Medium*
<i>Non-Coastal Flooding</i>	-	-	-	Medium*
<i>Road and Highway</i>	-	-	-	Medium*
<i>Wildland</i>	Low	Medium	Low	Unranked
<i>Hazardous Materials Incidents</i>	Low	Low	Low	Unranked
<i>Heat Wave</i>	Low	Low	Low	Unranked
<i>Fish Kills</i>	Low	Unranked	Low	Unranked
<i>Invasive Environmental Disease</i>	Low	Unranked	Low	Unranked
<i>Earthquake</i>	Low	Unranked	Low	Unranked
<i>Substance Use and Overdose</i>	-	-	-	Low*
<i>Communications Failure</i>	-	-	-	Low*
<i>Active Threat</i>	-	-	-	Low*
<i>Electrical Energy Failure</i>	-	-	-	Low*
<i>Tornado</i>	-	-	-	Low*

*New Priority Identified in the 2021 Plan

With the hazards identified, the group began the risk analysis for the five priority hazards: coastal flooding, wind, coastal erosion, storm water flooding and pandemic. The first step was to thoroughly document their histories, to understand the causes, and to look at the human systems that have been put in place to attempt to mitigate their effects. This work can be found in Chapter 4: High Wind; Chapter 5: Coastal Erosion; Chapter 6: Coastal Flooding; Chapter 7: Storm Water; and Chapter 8 Pandemic

The extent and vulnerability of each of the four high priority environmental hazards, are documented in each of the locality chapters, beginning with Chapter 9: The Region. Structures insured by the National Flood Insurance Program (NFIP) that have been repetitively damaged by floods are addressed in the appropriate local chapters.