



## SECTION 4. RISK ASSESSMENT

### 4.1 IDENTIFICATION OF HAZARDS OF CONCERN

To provide a strong foundation for mitigation strategies, Burlington County considered a full range of natural hazards that could impact the area, and then identified and ranked the hazards that present the greatest concern. The hazard identification process included the following:

Hazards of Concern are defined as those hazards that are considered most likely to impact a community. These are identified using available data and local knowledge.

- Input from the County and participating jurisdictions
- Review of the 2019 State of New Jersey Hazard Mitigation Plan and previous hazard identification efforts
- Research and local, state, and federal information on the frequency, magnitude, and costs associated with hazards that have impacted or could impact the region
- Qualitative or anecdotal information regarding natural hazards and the perceived vulnerability of the study area's assets to them.

#### 4.1.1 Changes from the 2019 Hazard Mitigation Plan

Many of the hazards of concern for the Burlington County 2024 HMP update are the same as Burlington County's 2019 plan. A few hazards were renamed to be more encompassing, and a few hazards were removed. Since the development of the last plan, hazards and disasters not assessed in the prior plan have occurred in the Planning Area. These hazards were identified by stakeholders as areas to address in the plan. Key changes from 2019 are as follows:

- The prior plan did not address disease outbreak. Beginning in March 2020, the Planning Area was hit with the COVID-19 pandemic along with the rest of the world. The new disease outbreak hazard profile includes influenza, West Nile Virus, Lyme disease, and the coronavirus that causes COVID-19.
- The prior plan addressed extreme temperature in the severe weather hazard profile. The update addresses extreme temperatures as its own section.
- The prior plan addressed dam failure in the flood hazard profile. The update addresses dam failure as its own section.
- The plan update removed the coastal erosion hazard profile and incorporated it into the flood hazard profile. After reviewing the 2019 HMP and current conditions, the Steering Committee noted that coastal erosion in the County is primarily associated with flooding events. The updates flood hazard profile also includes riverine flooding, coastal flooding, flash flooding, stormwater flooding, ice jams, and sea level rise.
- The landslide hazard profile was removed from this 2024 update in recognition of the infrequency and low risk of the hazard in Burlington County.



- The 2024 Burlington County Hazard Mitigation Plan Update includes best available data throughout the plan to present an updated understanding the Planning Area’s risk.

### 4.1.2 Hazard Groupings

Like the 2019 Burlington County HMP, updated HMP groups hazards based on the similarity of hazard events, typical concurrence or impacts, consideration of how hazards have been grouped in FEMA guidance documents (*FEMA 386-2 Understanding Your Risks, Identifying Hazards and Estimating Losses; Multi-Hazard Identification and Risk Assessment – The Cornerstone of the National Mitigation Strategy; Local Mitigation Planning Handbook*), and consideration of hazard grouping in the State of New Jersey HMP. The final identification and grouping of hazards of concern for the Planning Area is as follows:



The *dam failure* hazard profile addresses dam failures.



The *disease outbreak* hazard profile addresses diseases, including influenza, West Nile Virus, Lyme disease, and COVID-19.



The *drought* hazard profile addresses drought events.



The *earthquake* hazard profile addresses earthquake events.



The *extreme temperature* hazard profile addresses periods of extreme heat and cold.



The *flood* hazard addressed riverine flooding, coastal flooding, flash flooding, stormwater flooding, ice jams, erosion, and sea level rise. This grouping is consistent with FEMA’s *Multi-Hazard Identification and Risk Assessment* guidance.



The *severe weather* hazard profile addresses high wind events, tornadoes, thunderstorms and lightning, hailstorms, and hurricanes and other tropical storms. This grouping is consistent with the State of New Jersey HMP.



The *severe winter weather* profile includes blizzards, heavy snow, ice storms, nor’easters, and sleet. This grouping is consistent with the State of New Jersey HMP.



The *wildfire* profile addresses wildfires.



### 4.1.3 Hazards of Concern for the 2024 Hazard Mitigation Plan

According to input from the County, and review of all available resources, nine hazards concern were identified as significant hazards affecting the entire planning area, to be addressed at the county level in this plan:

- Dam failure
- Disease outbreak
- Drought
- Earthquake
- Extreme temperature
- Flood
- Severe weather
- Severe winter weather
- Wildfire

Other natural and human-caused hazards of concern have not occurred within Burlington County, have a low potential to occur or to result in significant impacts within the County, or are covered in other plans. Therefore, these hazards will not be further addressed within this version of the plan. However, if deemed necessary by the County, these hazards may be considered in future versions of the HMP.

These hazards of concern were identified based on the following:

- Input from all Planning Partners
- Review of the New Jersey State Hazard Mitigation Plan
- Review of the 2019 Burlington County HMP
- Research on the frequency, magnitude, and costs associated with hazards that have previously or could feasibly impact the region
- Qualitative information regarding natural (not human-caused) hazards and the perceived vulnerability of the study area's assets to them.

Table 4.1-1 documents the process of identifying the natural hazards of concern for further profiling and evaluation.

*Table 4.1-1. Identification of Hazards of Concern for Burlington County*

Hazard	Is this a hazard that may occur in Burlington County?	Why was this determination made?	Sources
Coastal Erosion	Yes – this is profiled with flooding	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies coastal erosion as a hazard of concern for New Jersey in the coastal erosion and sea level rise hazard profile.</li> <li>Burlington County stretches from the Delaware River to the Mullica River, in which coastal erosion has the potential to occur along tidal waterways. Fluvial erosion can occur along rivers, streams, and creeks in the County.</li> <li>The Planning Partnership identified erosion as a hazard that may impact the County. However, the coastal erosion hazard was identified as a condition associated with flooding, so it is included in the flood hazard profile.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NOAA NCEI</li> <li>USACE</li> <li>Stockton Coastal Research Center</li> <li>Planning Partnership Input</li> </ul>
Dam Failure	Yes	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies dam failure as a hazard of concern for New Jersey.</li> <li>Burlington County has 10 high hazard classified dams and 40 dams with a significant hazard potential classification.</li> <li>The Planning Partnership identified dam failure as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>Planning Partnership Input</li> <li>USACE National Inventory of Dams</li> </ul>
Disease Outbreak	Yes – influenza, West Nile Virus, Lyme disease, and COVID-19	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies pandemic as a hazard of concern for New Jersey.</li> <li>Burlington County has been identified in two FEMA declarations for COVID-19.</li> <li>Burlington County has been impacted by mosquito and tick-borne diseases.</li> <li>The Planning Partnership identified disease outbreak as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>Burlington County Department of Health</li> <li>Planning Partnership Input</li> </ul>
Drought	Yes	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies drought as a hazard of concern for New Jersey.</li> <li>New Jersey has entered periods of drought and Burlington County has experienced droughts classified in the abnormally dry and moderate categories.</li> <li>The Planning Partnership identified drought as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NOAA NCEI</li> <li>USDA</li> <li>U.S. Drought Monitor</li> <li>NDMC</li> <li>Planning Partnership Input</li> </ul>

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Earthquake	Yes	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies earthquake as a hazard of concern for New Jersey.</li> <li>Although the County has not experienced a major earthquake, there have been 10 instances where the epicenter of an earthquake was located in Burlington County, the most recent occurring in 2018.</li> <li>The Planning Partnership identified earthquake as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NJGWS</li> <li>USGS</li> <li>Planning Partnership Input</li> </ul>
Extreme Temperature	Yes – heat and cold	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP discusses extreme temperatures in its hazard profile for severe weather.</li> <li>Burlington County has been included in four documented NOAA events related to extreme temperature since 2021. One was cold/wind chill, and the remaining three were extreme heat.</li> <li>The Planning Partnership identified extreme temperature as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>FEMA</li> <li>NOAA NCEI</li> <li>Planning Partnership Input</li> </ul>
Flood	Yes – riverine, coastal, flash flooding, stormwater flooding, ice jams, erosion, and sea level rise	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies flood as a hazard of concern for New Jersey.</li> <li>Burlington County was included in 32 emergency declarations where flooding may have occurred.</li> <li>Burlington County has been included in numerous flood and flash flood events from the NOAA database since 2018.</li> <li>Burlington County stretches from the stretches from the Delaware River to the Mullica River. These rivers and their tributaries are tidally influenced and are impacted by coastal flooding.</li> <li>The Planning Partnership identified Flood as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NOAA NCEI</li> <li>Planning Partnership Input</li> </ul>
Geological Hazards	No	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP discusses landslides and land subsidence within the geological hazard profile.</li> <li>Previous analysis of Burlington County has shown that the risks associated with geologic hazards are extremely minimal.</li> <li>The Planning Partnership elected to not include this hazard.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>2019 Burlington County HMP</li> <li>USGS</li> <li>NJGWS</li> <li>Planning Partnership Input</li> </ul>

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Hazard	Is this a hazard that may occur in Burlington County?	Why was this determination made?	Sources
Land Subsidence (includes abandoned mines)	No	Please see Geological Hazards	
Landslide (includes mudslides)	No	Please see Geological Hazards	
Sea Level Rise	Yes – this is profiled with flooding	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies sea level rise as a hazard of concern for New Jersey in the coastal erosion and sea level rise hazard profile.</li> <li>Burlington County stretches from the Delaware River to the Mullica River. These rivers and their tributaries are tidally influenced and are likely to be impacted by sea level rise.</li> <li>The Planning Partnership identified sea level rise as a hazard that may impact the County and has included sea level rise in the flood hazard profile.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>NOAA</li> <li>Rutgers University</li> <li>Planning Partnership Input</li> </ul>
Severe Weather	Yes – high wind events, tornadoes, thunderstorms and lightning, hailstorms, and hurricanes and other tropical storms	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies severe weather as a hazard of concern for New Jersey.</li> <li>Burlington County was included in 28 FEMA declarations between 1985-2022 in relation to severe storms.</li> <li>The Planning Partnership identified severe weather as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NOAA NCEI</li> <li>Planning Partnership Input</li> </ul>
Severe Winter Weather	Yes – blizzards, heavy snow, ice storms, nor'easters, and sleet	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies severe winter weather as a hazard of concern for New Jersey.</li> <li>Burlington County was included in 4 FEMA disaster declarations for winter weather between 2000-2022.</li> <li>The Planning Partnership identified severe winter weather as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NOAA NCEI</li> <li>Planning Partnership Input</li> </ul>
Storm Surge	Yes – this is profiled with flooding	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP discusses storm surge within the hurricane and tropical storm hazard profile.</li> <li>Burlington County stretches from the Delaware River to the Mullica River. These rivers and their tributaries are tidally influenced and are impacted by storm surges.</li> <li>The Planning Partnership identified storm surge as a hazard that may impact the County and has included storm surge/ coastal flooding in the flood hazard profile.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NOAA NCEI</li> <li>Planning Partnership Input</li> </ul>

Is this a hazard that may occur in Burlington County?			
Hazard		Why was this determination made?	Sources
Tornado	Yes – this is profiled with severe weather	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP discusses tornadoes within the severe weather hazard profile.</li> <li>Burlington County has had five tornadoes since 2018, according to NOAA NCEI.</li> <li>The Planning Partnership identified tornado as a hazard that may impact the County and has included tornado in the severe weather hazard profile</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>NOAA NCEI</li> <li>Planning Partnership Input</li> </ul>
Wildfire	Yes	<ul style="list-style-type: none"> <li>The 2019 New Jersey State HMP identifies wildfire as a hazard of concern for New Jersey.</li> <li>There have been many occurrences of wildfires of varying severity in Burlington County.</li> <li>The Planning Partnership identified wildfire as a hazard of concern for Burlington County.</li> </ul>	<ul style="list-style-type: none"> <li>New Jersey State HMP</li> <li>FEMA</li> <li>New Jersey Forest Fire Service</li> <li>Planning Partnership Input</li> </ul>

Notes: FEMA = Federal Emergency Management Agency; NDMC = National Drought Mitigation Center; NJGWS = New Jersey Geological and Water Survey; NOAA = National Oceanic and Atmospheric Administration; NCEI = National Centers for Environmental Information; USACE = U.S. Army Corps of Engineers; USDA = U.S. Department of Agriculture; USGS = U.S. Geological Survey