

SECTION 6

VULNERABILITY ASSESSMENT

This section identifies and quantifies the vulnerability of the jurisdictions within the Southeastern NC Region to the significant hazards identified in the previous sections (*Hazard Identification and Profiles*). It consists of the following subsections:

- ◆ 6.1 Overview
- ◆ 6.2 Methodology
- ◆ 6.3 Explanation of Data Sources
- ◆ 6.4 Asset Inventory
- ◆ 6.5 Vulnerability Assessment Results
- ◆ 6.6 Conclusions on Hazard Vulnerability

44 CFR Requirement

44 CFR Part 201.6(c)(2)(ii): The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. The description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of: (A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; (B) An estimate of the potential losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; (C) Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

6.1 OVERVIEW

This section builds upon the information provided in Section 4: *Hazard Identification* and Section 5: *Hazard Profiles* by identifying and characterizing an inventory of assets in the Southeastern NC Region. Additionally, an assessment is conducted for each identified hazard, where feasible, including the potential impact and expected amount of damages it may cause. The primary objective of the vulnerability assessment is to quantify exposure and the potential loss estimates for each hazard. In doing so, each county and their participating jurisdictions may better understand their unique risks to identified hazards and be better prepared to evaluate and prioritize specific hazard mitigation actions.

This section begins with an explanation of the methodology applied to complete the vulnerability assessment, followed by a summary description of the asset inventory as compiled for jurisdictions in the Southeastern NC Region. The remainder of this section focuses on the results of the assessment conducted.

For the dam failure¹, drought, excessive heat, infectious disease, radiological emergency, terrorism, cyber, and EMP, there was insufficient data available to conduct meaningful estimates of property damages. Therefore, a detailed vulnerability assessment could not be completed for these hazards at this time. Future updates of this plan should attempt to better quantify vulnerability for these hazards as better data is developed.

6.2 METHODOLOGY

This vulnerability assessment was conducted using two distinct methodologies: (1) a geographic information system (GIS)-based analysis; and (2) a risk modeling software analysis with results pulled from NCEM's Risk Management Tool (RMT). Each approach provides estimates for the potential impact of hazards. A brief description of the two different approaches is provided on the following pages.

6.2.1 GIS-Based Analysis

Hazards that have specified geographic boundaries permit vulnerability analysis to be conducted using Geographic Information Systems (GIS). These hazards include:

- ◆ Flooding
- ◆ Geological (Sinkholes and Coastal Erosion)
- ◆ Wildfires
- ◆ Hazardous Substances

The objective of the GIS-based analysis is to determine the estimated vulnerability of buildings, critical facilities and populations for the identified hazards in the Southeastern NC Region using best available geospatial data. Digital data was collected from local, regional, state, and national sources for hazards and buildings. This included local tax assessor records for individual parcels and buildings and georeferenced point locations for identified assets (critical facilities and infrastructure, special populations, etc.) when available. ESRI® ArcGIS™ 10.6.1 was used to assess hazard vulnerability utilizing digital hazard data, as well as local building data. Using these data layers, hazard vulnerability can be quantified by estimating the assessed building value for parcels and/or buildings determined to be located in identified hazards areas. To estimate vulnerable populations in hazard areas digital Census 2010 data by census tract was obtained and was supplemented with current population estimates from the US Census Bureau. This was intersected with hazard areas to determine exposed population counts. The results of the analysis provided an estimate of the number of people and critical facilities, as well as the assessed value of parcels and improvements, determined to be potentially at risk to those hazards with delineable geographic hazard boundaries.

6.2.3 Risk Management Tool

The Risk Management Tool (RMT) was developed by NCEM-Risk Management (RM) as a tool to simplify hazard mitigation plan development into a single, automated, tool-based format to include geospatially based risk assessment data, also developed by NCEM-RM. The RMT is a twofold system used to create and/or update a local and state hazard mitigation plan. The two parts of the RMT are step-by-step system that will prompt a user to input information and narrative as well as upload pictures, documents,

¹ As noted in Section 5: *Hazard Profiles*, dam failure could be catastrophic to structures and populations in the inundation area. However, due to lack of data, no additional analysis was performed. Further, USACE and NCDEQ also complete separate dam failure plans to identify risk and response measures.

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and other information as needed. The second part of the system is the Risk Tool. The Risk Tool will run a risk assessment at the building level for certain hazards selected based on predetermined calculations for each hazard. Some hazards will have a single return period and others have multi-return periods. The availability of multi-returns periods is based on the availability of datasets for each hazard and the degree of detail in each dataset.

The Risk Assessment produced by the Risk Tool will also identify high-risk structures in the planning area and estimate cost by types of mitigation projects (wind retrofits, elevation, acquisition, mitigation reconstruction) and benefit-cost estimates by type of mitigation. The mitigation tool is only meant to begin the process of thinking about problem areas where mitigation may be of interest to the jurisdiction and property owners. It is also designed to drive mitigation actions that are specific, measurable, attainable, realistic, and timely.

Finally, the Risk Management Tool also identifies vulnerable populations, such as children and elderly persons. Data used to assess these populations is the US 2010 Census. According to the US Census Bureau, those defined as “elderly,” are 65 years old or older, while those defined as “children” are 5 years old or younger. It is important to note that the numbers assessed are from the most recent Census in 2010.

Once all of the information is input into the system, a hazard mitigation plan can then be exported into multiple document formats. The system will also store the plan so that when it is time to update the plan, the information is already in the system.

The RMT was originally developed as part of the Integrated Hazard Risk Management (IHRM) pilot project which included Durham, Edgecombe, Macon, and New Hanover counties. The pilot was successful and it was determined that there is a need and interest in a system designed to be used statewide and potentially nationwide in the future. The RMT used in this update was the second version created by NCEM.

A list of the hazards assessed by the RMT follows:

- ◆ Hurricane and Coastal Hazards
- ◆ Tornadoes/Thunderstorms
- ◆ Earthquakes
- ◆ Flooding
- ◆ Wildfires

All conclusions are presented in “**Conclusions on Hazard Vulnerability**” at the end of this section.

6.3 EXPLANATION OF DATA SOURCES

Hurricanes

NCEM’s Risk Management Tool assessed vulnerable areas to the Hurricanes. For this assessment, vulnerable buildings and populations were analyzed against damages caused by hurricane winds.

Tornadoes/Thunderstorms

NCEM’s Risk Management Tool analyzed the vulnerable buildings and populations to the Tornadoes/Thunderstorms hazard. Sub hazards assessed under the thunderstorm’s hazards include hail

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and lightning; however, for the purposes of this assessment, thunderstorm winds were the only risk analyzed.

Earthquakes

NCEM's Risk management Tool assessed vulnerable areas to the earthquake hazard. This assessment included susceptible buildings by the type of structure, and the potential dollar losses associated with the buildings. It also analyzed susceptible populations, such as children and elderly.

Geological (Sinkholes and Coastal Erosion)

Vulnerability assessment results for sinkholes and coastal erosion were pulled from the NC State Enhanced Hazard Mitigation Plan.

Flooding

FEMA Digital Flood Insurance Rate Maps (DFIRMs) were used to determine flood vulnerability. DFRIM data can be used in ArcGIS for mapping purposes and, they identify several features including floodplain boundaries and base flood elevations. Identified areas on the DFRIM represent some features of a Flood Insurance Rate Maps including the 100-year flood areas (1.0 percent annual chance flood), and the 500-year flood areas (0.2 percent annual chance flood). To determine vulnerability, local parcel data and critical facilities were overlaid on the 100-year floodplain areas and 500-year floodplain areas. This data was also supplemented with the NCEM RMT data, which assessed structure type and vulnerable populations within the floodplain areas. It should be noted that such an analysis does account for building elevation.

Wildfires

The data used to determine vulnerability to wildfires in the Southeastern NC Region is based on a GIS analysis called the Southern Wildfire Risk Assessment (SWRA). It was provided for use in this plan by the North Carolina Division of Forest Resources. A specific layer known as the "Wildland Urban Interface" (WUI) was used to determine vulnerability of people and property. This layer uses the key input of housing density to define potential wildfire impacts to people and homes. The WUI Risk Index is then derived from a scale of -1 to -9, with the least negative impact being a -1. The primary purpose of this data is to highlight areas of concern that may be conducive of mitigation actions. Many assumptions are made, making it not a true probability; however, it does provide a comparison of risk throughout the region. Data was also supplemented with the data NCEM's RMT, which assessed vulnerable buildings, potential dollar losses of those buildings, and susceptible populations.

Hazardous Substances

Hazardous materials incidents can occur in both fixed facilities and through mobile transportation. For each fixed incident analysis, Toxic Release Inventory (TRI) data was used. The Toxic Release Inventory is a publicly available database from the federal Environmental Protection Agency (EPA) that contains information on toxic chemicals, releases, and other waste management activities reported annually by certain covered industry groups, as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA) and was further expanded by the Pollution Prevention Act of 1990. Facilities that meet certain activity thresholds must annually report their releases and other waste management activities for listed toxic chemicals to the EPA and to their state or tribal entity. A facility must report if it meets the following criteria:

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- ◆ The facility falls within one of the following industrial categories: manufacturing; metal mining; coal mining; electric generating facilities that combust coal and/or oil; chemical wholesale distributors; petroleum terminals and bulk storage facilities; RCRA Subtitle C treatment, storage, and disposal (TSD) facilities; and solvent recovery services;
- ◆ Has 10 or more full-time employee equivalents; and
- ◆ Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year. Persistent, bioaccumulative, and toxic (PBT) chemicals are subject to different thresholds of 10 pounds, 100 pounds, or 0.1 grams depending on the chemical.

For the mobile hazardous materials incident analysis, transportation data including major highways and railroads were obtained from the North Carolina Department of Transportation. This data is ArcGIS compatible, lending itself to buffer analysis to determine risk.

6.4 ASSET INVENTORY

An inventory of geo-referenced assets within Brunswick, New Hanover, Pender, and Onslow counties and jurisdictions was compiled in order to identify and characterize those properties potentially at risk to the identified hazards². By understanding they type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. Under this assessment, two categories of physical assets were created and then further assessed through GIS analysis. Additionally, social assets are addressed to determine population at risk to the identified hazards. These are presented below in Section 6.4.2.

6.4.1 Physical and Improved Assets

The two categories of physical assets consist of:

- ◆ **Improved Property:** Includes all improved properties in the Southeastern NC Region according to local parcel data provided by the counties. The information has been expressed in terms of the number of parcels and total assessed value of improvements (buildings) that may be exposed to the identified hazards.
- ◆ **Critical Facilities:** Critical facilities vary by jurisdiction. Each county provided data from their respective critical facilities that were used in this section. Identified critical facilities are fire stations, police stations, medical care facilities, schools, government facilities, emergency operation centers, or other important buildings. It should be noted that this listing is not all-inclusive for assets located in the region, but it is anticipated that it will be expanded during future plan updates as more geo-referenced data becomes available for use in GIS analysis.

The following table provide a detailed listing of the geo-referenced assets that have been identified for inclusion in the vulnerability assessment for the Southeastern NC Region.

² While potentially not all-inclusive for the jurisdictions in the Southeastern NC Region, “georeferenced” assets include those assets for which specific location data is readily available for connecting the asset to a specific geographic location for purposes of GIS analysis.

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Table 6.1 lists the number of parcels, total value of parcels, total number of parcels with improvements, and the total assessed value of improvements for participating areas of the Southeastern NC Region (study area of vulnerability assessment)³.

TABLE 6.1: IMPROVED PROPERTY IN THE SOUTHEASTERN NC REGION

Location	Number of Parcels	Total Assessed Value of Parcels	Estimated Number of Buildings	Total Assessed Value of Improvements
Brunswick County	141,581	\$9,914,013,665	83,090	\$14,979,238,057
Bald Head Island	2,368	\$472,828,580	1,165	\$621,138,490
Belville	889	\$61,104,130	782	\$132,514,260
Boiling Spring Lakes	8,966	\$129,566,760	2,772	\$399,791,700
Bolivia	118	\$3,830,650	76	\$15,699,590
Calabash	2,214	\$103,618,500	1,300	\$147,009,570
Carolina Shores	3,122	\$78,754,950	2,545	\$401,250,750
Holden Beach	2,732	\$475,890,200	2,060	\$466,548,168
Leland	12,329	\$675,396,610	8,799	\$1,809,693,775
Navassa	983	\$36,904,640	593	\$60,438,560
Northwest	618	\$12,967,700	300	\$20,919,140
Oak Island	11,405	\$1,267,805,080	8,930	\$1,494,298,009
Ocean Isle Beach	3,409	\$868,510,560	2,490	\$707,017,096
Sandy Creek	135	\$2,976,870	98	\$7,744,860
Shallotte	2,850	\$167,201,510	1,598	\$412,827,820
Southport	2,953	\$347,431,460	2,072	\$512,287,830
St. James	4,744	\$400,303,100	3,122	\$1,134,425,840
Sunset Beach	4,779	\$524,451,660	3,821	\$785,631,384
Varnamtown	473	\$15,157,480	305	\$34,870,350
Unincorporated Area	76,494	\$4,269,313,225	40,262	\$5,815,130,865
New Hanover County	96,803	\$11,393,561,127	82,043	\$19,275,321,477
Carolina Beach	3,874	\$472,809,228	2,983	\$581,952,993
Kure Beach	2,065	\$352,118,500	1,667	\$360,437,300
Wilmington	41,499	\$4,300,204,763	36,216	\$9,801,637,609
Wrightsville	1,883	\$1,366,421,200	1,544	\$488,540,800
Unincorporated Area	47,482	\$4,902,007,436	39,633	\$8,042,752,775
Onslow County	79,999	\$4,796,243,010	60,982	\$8,000,111,546
Holly Ridge	2,988	\$95,530,860	1,611	\$224,483,194
Jacksonville	15,573	\$1,222,451,621	14,180	\$2,332,842,890
North Topsail Beach	3,666	\$354,768,730	2,653	\$464,623,395
Richlands	1,003	\$43,865,020	833	\$104,342,078
Swansboro	1,636	\$143,742,830	1,465	\$205,831,048
Unincorporated Area	55,133	\$2,935,883,949	40,240	\$4,667,988,941
Pender County	49,277	\$4,243,758,251	30,234	\$3,946,369,985
Atkinson	325	\$5,247,643	184	\$11,518,718
Burgaw	1,916	\$90,332,977	1,302	\$237,162,974

³ Total assessed value for improvements is based on tax assessor records as joined to digital parcel data. This data does not include dollar figures for tax-exempt improvements such as publicly owned buildings and facilities. It should also be noted that, due to record keeping, some duplication is possible thus potentially resulting in an inflated value exposure for an area.

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St. Helena	352	\$19,229,188	196	\$19,903,173
Surf City	5,225	\$807,441,855	4,204	\$640,094,568
Topsail Beach	1,852	\$461,842,066	1,505	\$255,021,882
Watha	161	\$3,352,558	93	\$5,684,181
Unincorporated Area	39,446	\$2,856,311,964	22,750	\$2,776,984,489
Southeastern NC Regional Total	367,660	\$30,347,576,053	256,349	\$46,201,041,065

Source: Local Governments

The following table lists the fire stations, police stations, emergency operations centers (EOCs), medical care facilities, schools, and other critical facilities in the Southeastern NC Region. Local governments at the county level provided a majority of the data for this analysis. In addition, **Figure 6.1** shows the locations of essential facilities in the Southeastern NC Region. **Table 6.26**, at the end of this section, shows a complete list of the critical facilities by name, as well as the hazards that affect each facility. As noted previously, this list is not all inclusive and only includes information provided by the counties.

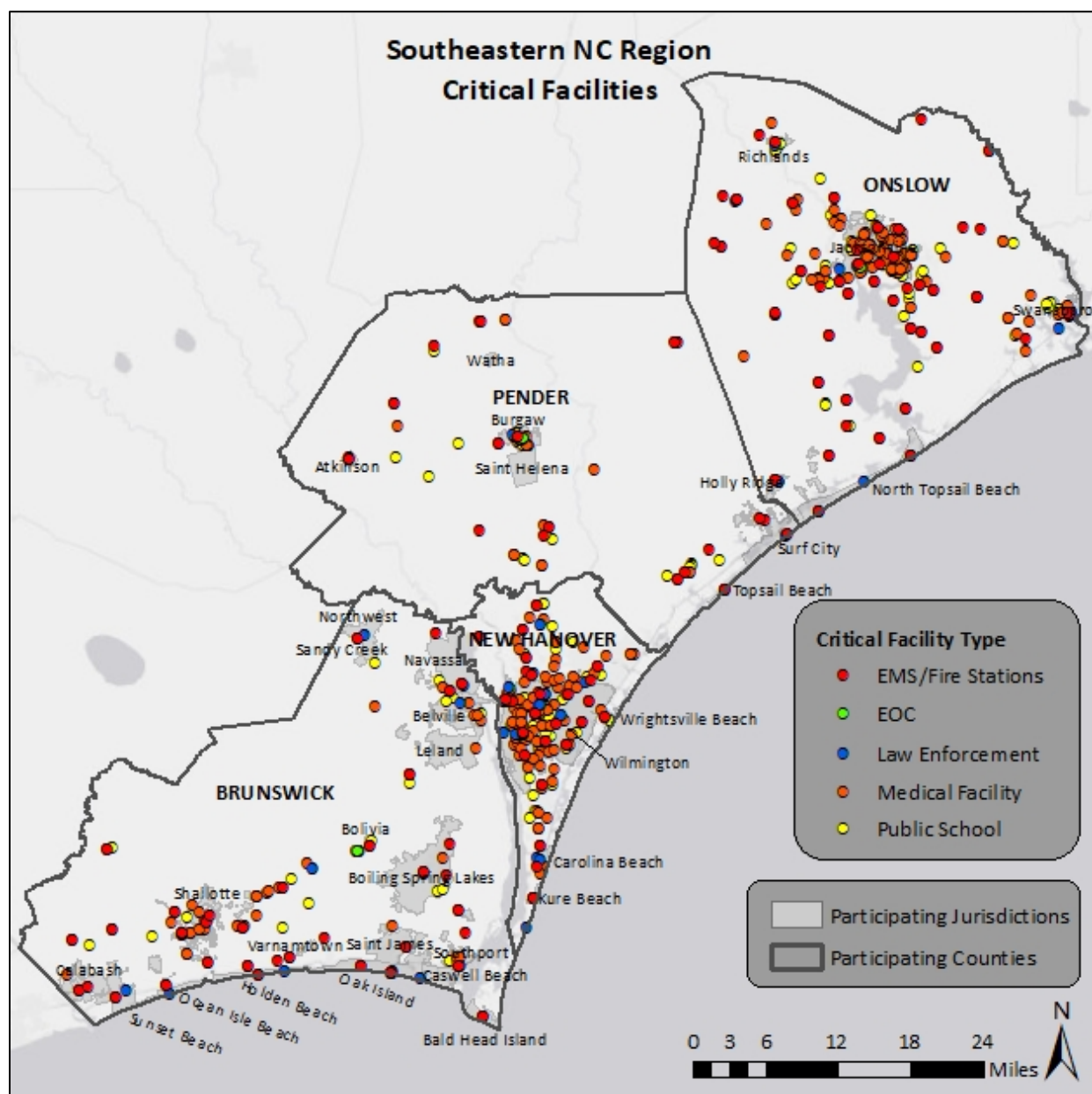
TABLE 6.2: CRITICAL FACILITY INVENTORY IN THE SOUTHEASTERN NC REGION

Location	Fire/EMS Stations	Police Stations	Medical Care Facilities	Schools	Other
Brunswick County	63	14	37	20	1
Bald Head Island	2	1	0	0	0
Belville	0	0	2	0	0
Boiling Spring Lakes	4	1	1	2	0
Bolivia	2	0	0	1	0
Calabash	3	0	0	0	0
Carolina Shores	0	0	0	0	0
Holden Beach	2	1	0	0	0
Leland	2	1	2	2	0
Navassa	2	1	0	0	0
Northwest	2	1	0	0	0
Oak Island	5	1	0	0	0
Ocean Isle Beach	2	1	0	0	0
Sandy Creek	0	0	0	0	0
Shallotte	8	1	4	2	0
Southport	2	1	2	2	0
St. James	2	0	0	0	0
Sunset Beach	2	1	0	0	0
Varnamtown	0	0	0	0	0
Unincorporated Area	23	3	26	11	1
New Hanover County	46	19	136	44	1
Carolina Beach	1	1	2	1	0
Kure Beach	2	1	0	0	0
Wilmington	23	12	103	26	1
Wrightsville	2	1	0	1	0
Unincorporated Area	18	4	31	16	0
Onslow County	49	9	72	43	1
Holly Ridge	2	1	1	0	0
Jacksonville	7	3	43	10	1
North Topsail Beach	2	1	0	0	0
Richlands	2	1	1	4	0
Swansboro	2	1	5	1	0
Unincorporated Area	34	2	23	28	0

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Location	Fire/EMS Stations	Police Stations	Medical Care Facilities	Schools	Other
Pender County	27	5	29	16	2
Atkinson	2	0	2	0	0
Burgaw	2	3	16	3	2
St. Helena	0	0	0	0	0
Surf City	2	1	0	0	0
Topsail Beach	3	1	0	0	0
Watha	0	0	0	0	0
Unincorporated Area	18	0	11	13	0
Southeastern NC Regional Total	185	47	274	123	5

Source: Local Governments

FIGURE 6.1: CRITICAL FACILITIES IN THE SOUTHEASTERN NC REGION

6.4.2 Social Vulnerability

In addition to identifying those assets potentially at risk to identified hazards, it is important to identify and assess those particular segments of the resident population in the Southeastern NC Region that are potentially at risk to these hazards.

Table 6.3 lists the population by county according to U.S. Census 2010 population estimates. The population estimates are updated using the most recent vintage tables dated July 1, 2018. The total population in the Southeastern NC Region according to Census data is 628,863.

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TABLE 6.3: TOTAL POPULATION IN THE SOUTHEASTERN NC REGION

Location	2018 Population Estimates
Brunswick County	136,744
New Hanover County	232,274
Onslow County	197,683
Pender County	62,162
Southeastern NC Regional Total	628,863

Source: US Census Bureau

Additional population estimates are presented in Section 3: *Community Profile*.

In addition, **Figure 6.2-6.5** illustrate the population density by census tract for each county, as it was reported by the U.S. Census Bureau in 2010 and updated with 2017 population estimates.

FIGURE 6.2: POPULATION DENSITY IN BRUNSWICK COUNTY

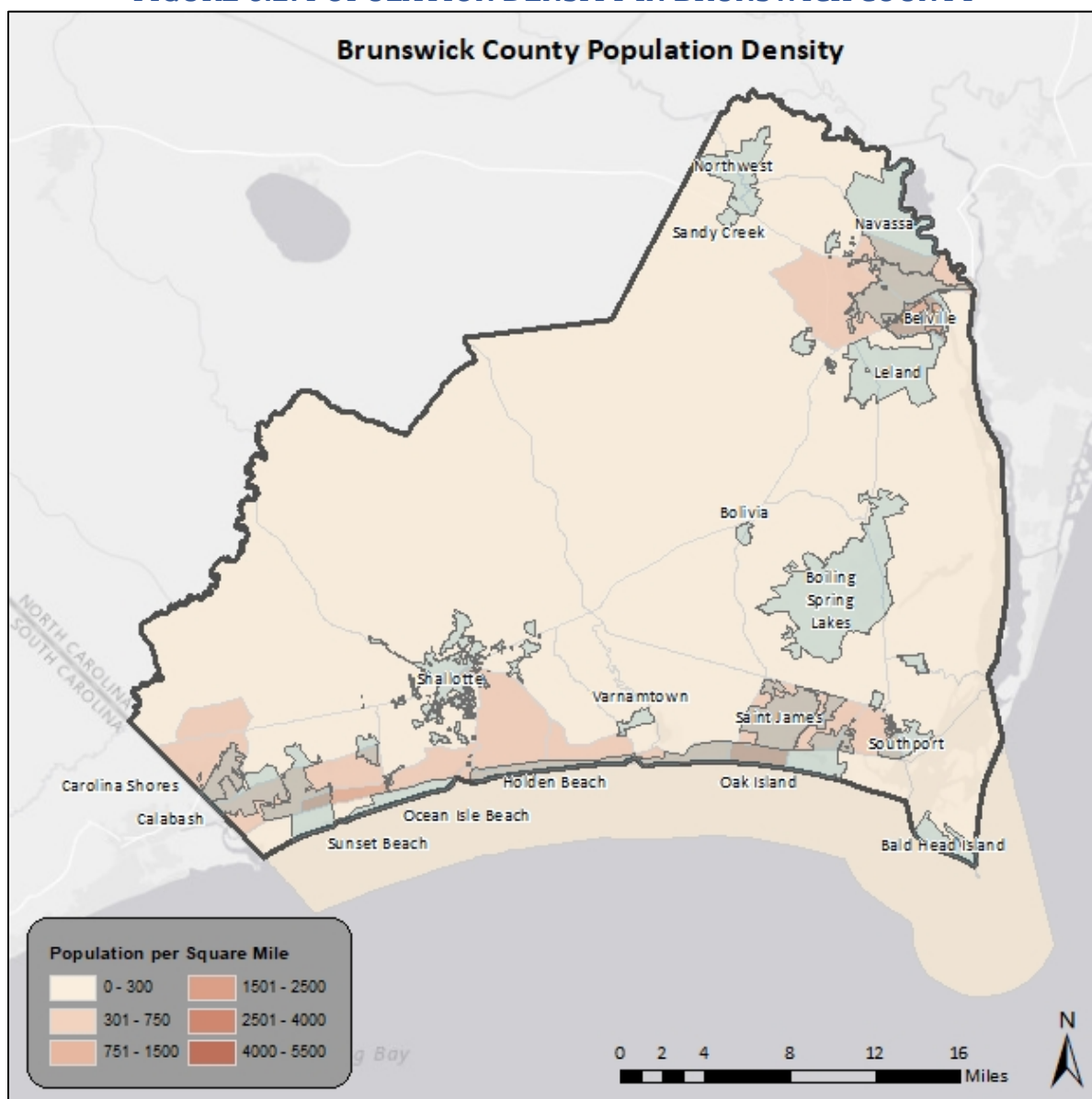


FIGURE 6.3: POPULATION DENSITY IN NEW HANOVER COUNTY

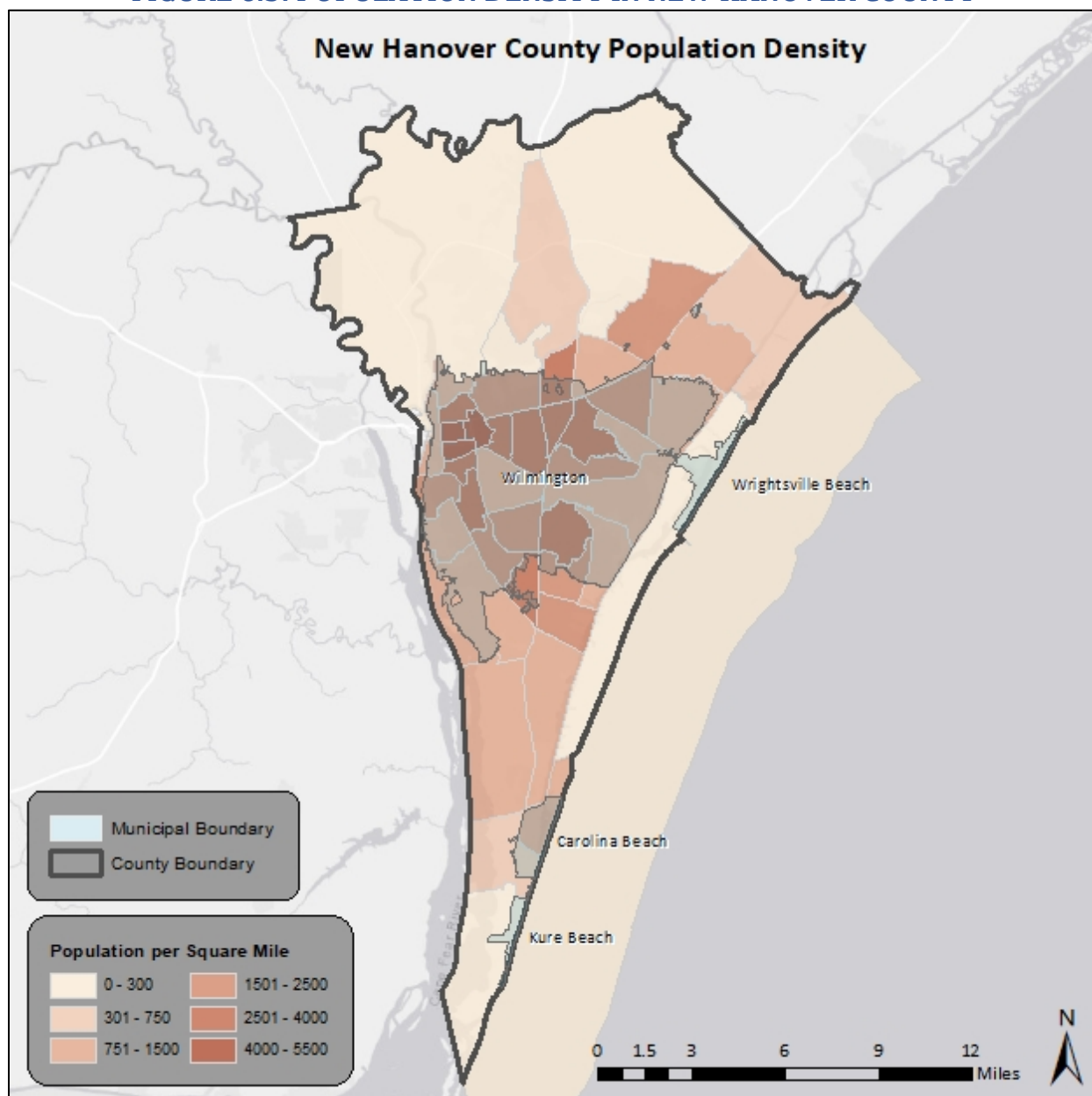


FIGURE 6.4: POPULATION DENSITY IN ONSLOW COUNTY

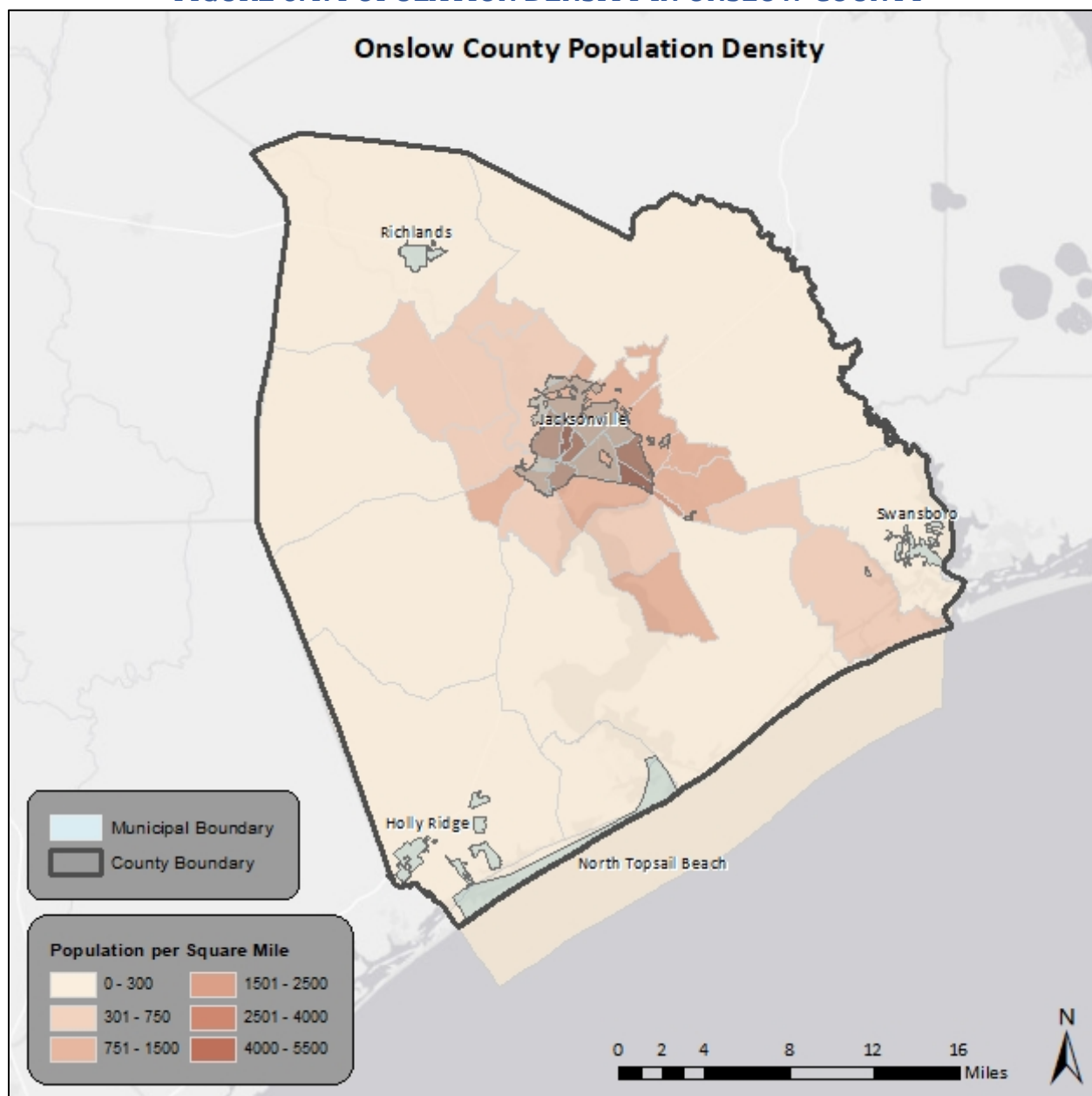
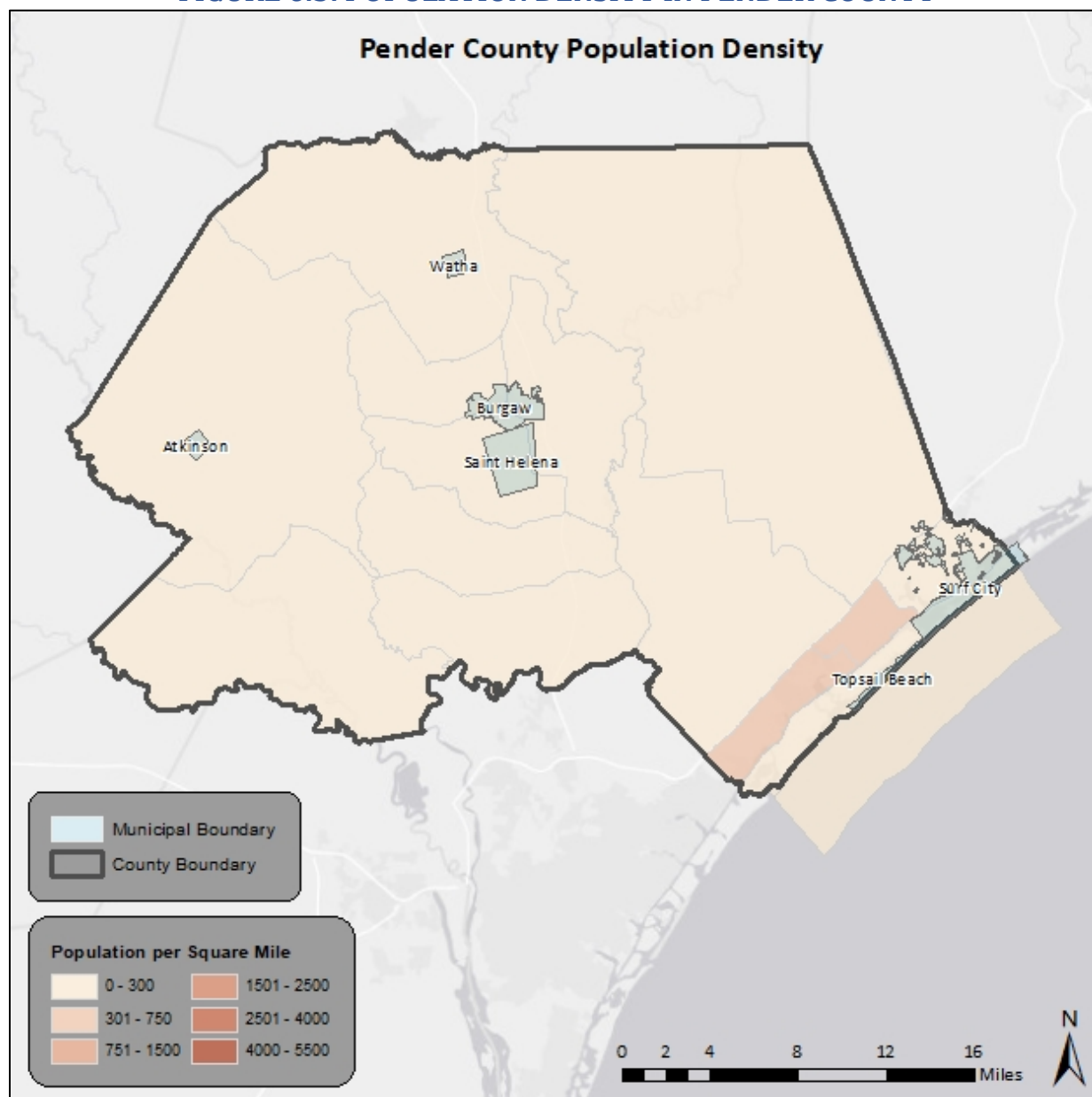


FIGURE 6.5: POPULATION DENSITY IN PENDER COUNTY



6.4.3. Development Trends and Changes in Vulnerability

Since the previous regional hazard mitigation plan was approved (in 2016), the Southeastern NC Region has experienced strong growth and development. **Table 6.4** shows the number of building units constructed since 2010 according to the US Census American Community Survey.

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TABLE 6.4: BUILDING COUNTS FOR THE SOUTHEASTERN NC REGION

Location	Total Housing Units (2017)	Units Built 2010 or later	% Building Stock built Post-2010
Brunswick County	92,284	12,429	13.5%
Bald Head Island	1,200	38	3.2%
Belville	909	15	1.7%
Boiling Spring Lakes	1,434	89	6.2%
Bolivia	83	-	0.0%
Calabash	1,535	52	3.4%
Carolina Shores	2,532	111	4.4%
Holden Beach	2,525	36	1.4%
Leland	8,041	1,322	16.4%
Navassa	747	24	3.2%
Northwest	394	9	2.3%
Oak Island	9,001	228	2.5%
Ocean Isle Beach	3,409	52	1.5%
Sandy Creek	109	8	7.3%
Shallotte	2,076	79	3.8%
Southport	1,907	162	8.5%
St. James	2,978	656	22.0%
Sunset Beach	5,157	242	4.7%
Varnamtown	296	-	0.0%
Unincorporated Area	47,951	9,306	19.4%
New Hanover County	107,369	4,319	4.0%
Carolina Beach	5,744	143	2.5%
Kure Beach	2,185	80	3.7%
Wilmington	57,147	2,013	3.5%
Wrightsville	2,826	-	0.0%
Unincorporated Area	39,467	2,083	5.3%
Onslow County	77,453	11,151	14.4%
Holly Ridge	1,196	438	36.6%
Jacksonville	23,717	3,409	14.4%
North Topsail Beach	2,571	60	2.3%
Richlands	853	258	30.2%
Swansboro	1,562	200	12.8%
Unincorporated Area	47,554	6,786	14.3%
Pender County	28,115	1,547	5.5%
Atkinson	143	-	0.0%
Burgaw	1,348	-	0.0%
St. Helena	194	2	1.0%
Surf City	3,780	302	8.0%
Topsail Beach	1,295	34	2.6%
Watha	104	2	1.9%
Unincorporated Area	21,251	1,207	5.7%
Southeastern NC Regional Total	305,221	29,446	9.6%

Table 6.5 shows population growth estimates for the region from 2010 to 2018 based on the US Census Annual Estimates of Resident Population and 2018 population estimates.

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TABLE 6.5: POPULATION GROWTH FOR THE SOUTHEASTERN NC REGION

Location	2010	2014	2018	% Change
Brunswick County	108,065	118,308	136,744	26.5%
Bald Head Island	158	165	179	13.3%
Belville	1,940	2,019	2,073	6.9%
Boiling Spring Lakes	5,439	5,655	6,137	12.8%
Bolivia	143	149	152	6.3%
Calabash	1,789	2,071	2,205	23.3%
Carolina Shores	3,386	3,571	4,378	29.3%
Holden Beach	576	605	647	12.3%
Leland	14,030	17,016	22,070	57.3%
Navassa	1,484	1,631	2,119	42.8%
Northwest	729	756	776	6.4%
Oak Island	6,818	7,221	8,072	18.4%
Ocean Isle Beach	536	564	631	17.7%
Sandy Creek	259	434	421	62.5%
Shallotte	3,511	3,703	4,287	22.1%
Southport	2,914	3,280	3,828	31.4%
St. James	3,194	4,321	5,837	82.7%
Sunset Beach	3,571	3,697	3,952	10.7%
Varnamtown	549	568	585	6.6%
Unincorporated Area	57,039	60,882	68,395	19.9%
New Hanover County	203,286	215,996	232,274	14.3%
Carolina Beach	5,724	6,024	6,354	11.0%
Kure Beach	2,015	2,073	2,102	4.3%
Wilmington	106,454	113,309	122,607	15.2%
Wrightsville	2,476	2,532	2,542	2.7%
Unincorporated Area	86,617	92,058	98,669	13.9%
Onslow County	186,889	191,820	197,683	5.8%
Holly Ridge	1,317	1,940	2,598	97.3%
Jacksonville	77,929	74,034	72,896	-6.5%
North Topsail Beach	745	724	739	-0.8%
Richlands	1,508	1,627	1,676	11.1%
Swansboro	2,692	3,037	3,273	21.6%
Unincorporated Area	102,698	110,458	116,501	13.4%
Pender County	52,416	55,908	62,162	18.6%
Atkinson	300	318	351	17.0%
Burgaw	3,862	3,987	4,140	7.2%
St. Helena	399	412	425	6.5%
Surf City	1,921	2,123	2,417	25.8%
Topsail Beach	369	389	427	15.7%
Watha	194	224	241	24.2%
Unincorporated Area	45,371	48,455	54,161	19.4%
Southeastern NC Regional Total	550,656	582,032	628,863	14.2%

6.5 VULNERABILITY ASSESSMENT RESULTS

As noted earlier, only hazards with a specific geographic boundary, modeling tool, or sufficient historical data allow for further analysis. Those results are presented here. All other hazards are assumed to impact the entire planning region (drought, excessive heat, hailstorm, lightning, and severe winter weather) or, due to lack of data, analysis would not lead to credible results (dam failure, infectious disease, terrorism, cyber, EMP). The total region exposure for critical facilities is presented in **Table 6.26**.

The annualized loss estimate for all hazards is presented at the end of this section in **Table 6.26**.

The hazards presented in this subsection include:

- ◆ Hurricane and Coastal Hazards,
- ◆ Tornadoes/Thunderstorms,
- ◆ Earthquakes,
- ◆ Geological Hazards (Sinkholes and Coastal Erosion)
- ◆ Flooding,
- ◆ Wildfires, and
- ◆ Hazardous Substances.

6.5.1. Hurricane and Coastal Hazards

Historical evidence indicates that the Southeastern NC Region has a significant risk to the hurricane and tropical storm hazard, mostly due to its proximity of the region to the Atlantic Ocean. In recent years, there have been 16 Disaster Declarations from hurricanes in the region (Hurricane Diana, Hurricane Hugo, Hurricane Bertha, Hurricane Fran, Hurricane Bonnie, Hurricane Dennis, Hurricane Floyd, Hurricane Isabel, Hurricane Ophelia, Tropical Storm Hanna, Tropical Storm Nicole, Hurricane Irene, Hurricane Matthew, Hurricane Florence, Tropical Storm Michael, and Hurricane Dorian). Many more storm tracks have come near or traversed through the region, as shown and discussed in Section 5: *Hazard Profiles*.

Numerous secondary hazards, such as erosion, flooding, tornadoes, and high winds, tend to be a result of hurricanes or tropical storms. These cumulative effects often make potential loss estimates difficult to calculate and track.

NCEM's Risk Management Tool analyzes hurricane winds and no other hazards often associated with hurricanes; therefore, only hurricane winds are analyzed in this section. Building and population vulnerabilities to hurricane winds in a 100-year frequency (return period) are reported in the following **Table 6.6** and **Table 6.7**.

It is assumed that all existing and future buildings and populations are at risk to the hurricane and tropical storm hazard.

TABLE 6.6: BUILDING VULNERABILITIES TO HURRICANE WINDS IN THE SOUTHEASTERN NC REGION

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Brunswick County	21,056	60,032	694,510,276	3,198	107,000,428	693	30,185,830	63,923	831,696,535

SECTION 6: VULNERABILITY ASSESSMENT

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Bald Head Island	124	988	52,831,729	40	2,262,545	11	110,931	1,039	55,205,206
Belville	205	759	5,805,715	36	754,860	5	44,598	800	6,605,173
Boiling Spring Lakes	673	1,874	13,330,489	36	343,597	31	726,518	1,941	14,400,604
Bolivia	260	227	1,225,745	22	237,179	15	390,451	264	1,853,375
Calabash	645	1,246	8,703,469	107	2,188,771	8	244,879	1,361	11,137,119
Carolina Shores	509	1,515	11,515,552	46	1,232,792	2	34,833	1,563	12,783,178
Holden Beach	281	1,954	101,897,415	8	160,536	2	169,320	1,964	102,227,271
Leland	1,104	2,719	16,084,836	146	3,088,006	45	2,257,068	2,910	21,429,910
Navassa	398	617	1,779,108	52	2,678,608	19	202,624	688	4,660,341
Northwest	264	424	1,961,123	19	194,545	11	238,554	454	2,394,222
Oak Island	1,458	6,646	75,061,287	220	4,791,682	38	1,021,205	6,904	80,874,174
Ocean Isle Beach	318	2,856	84,733,571	92	8,936,222	9	575,010	2,957	94,244,803
Sandy Creek	145	137	326,114	10	86,150	2	5,727	149	417,990
Shallotte	786	1,510	14,510,445	321	8,876,304	86	3,228,249	1,917	26,614,998
Southport	916	1,554	25,825,938	228	10,915,119	49	912,720	1,831	37,653,778
St. James	-	1,362	40,201,633	17	408,442	2	39,620	1,381	40,649,694
Sunset Beach	145	3,347	58,505,993	91	4,113,054	8	175,036	3,446	62,794,082
Varnamtown	219	338	2,515,599	16	253,758	6	127,162	360	2,896,519
Unincorporated Area	12,606	29,959	177,694,515	1,691	55,478,258	344	19,681,325	31,994	252,854,098
New Hanover County	37,801	80,659	3,131,725,196	5,600	445,960,974	883	66,037,785	87,142	3,643,723,953
Carolina Beach	1,571	3,418	382,821,884	202	26,576,773	28	3,485,140	3,648	412,883,797
Kure Beach	631	1,654	230,687,121	28	5,327,738	11	1,456,979	1,693	237,471,838
Wilmington	23,334	37,215	837,193,505	2,978	277,750,149	565	42,666,711	40,758	1,157,610,364
Wrightsville	668	1,624	534,142,910	68	10,304,961	17	1,117,397	1,709	545,565,267
Unincorporated Area	11,597	36,748	1,146,879,776	2,324	126,001,353	262	17,311,558	39,334	1,290,192,687
Onslow County	40,369	62,388	533,748,018	3,375	261,412,040	4,589	389,668,198	70,352	1,184,828,259
Holly Ridge	788	741	3,509,878	81	3,929,271	20	2,129,529	842	9,568,678
Jacksonville	15,729	19,801	173,748,090	1,293	156,867,610	3,719	268,403,504	24,813	599,019,204
North Topsail Beach	604	1,490	57,721,695	7	208,727	5	96,049	1,502	58,026,471
Richlands	731	975	10,956,029	87	7,830,485	51	10,583,899	1,113	29,370,414
Swansboro	809	1,733	21,349,252	163	13,018,153	50	18,140,415	1,946	52,507,821
Unincorporated Area	21,708	37,648	266,463,074	1,744	79,557,794	744	90,314,802	40,136	436,335,671
Pender County	9,780	29,429	281,900,514	3,574	44,266,151	422	17,322,703	33,425	343,489,369
Atkinson	206	164	1,145,000	36	282,571	14	262,789	214	1,690,360
Burgaw	1,340	1,412	11,363,209	340	9,908,246	87	3,273,363	1,839	24,544,818
St. Helena	124	209	2,088,045	54	380,428	7	118,777	270	2,587,250
Surf City	505	2,977	63,555,593	150	3,495,281	14	300,983	3,141	67,351,858
Topsail Beach	294	1,110	29,464,966	21	534,796	5	140,305	1,136	30,140,067
Watha	123	232	2,115,270	32	231,169	10	299,864	274	2,646,303
Unincorporated Area	7,073	22,984	157,435,640	2,927	28,386,793	282	12,691,545	26,193	198,513,978
Southeastern NC Regional Total	108,891	232,167	4,627,151,213	15,733	857,592,726	6,584	502,979,439	254,484	5,987,723,381

Source: NCEM Risk Management Tool

TABLE 6.7: POPULATION VULNERABILITIES TO HURRICANE WINDS IN THE SOUTHEASTERN NC REGION

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	22,708	5,748	105,925
Bald Head Island	32	8	149
Belville	407	103	1,897
Boiling Spring Lakes	1,143	289	5,333
Bolivia	73	18	339
Calabash	462	117	2,154
Carolina Shores	886	224	4,136
Holden Beach	109	28	508
Leland	2,823	715	13,171
Navassa	325	82	1,514
Northwest	170	43	793
Oak Island	1,310	331	6,107
Ocean Isle Beach	329	83	1,534
Sandy Creek	57	14	266
Shallotte	1,049	266	4,895
Southport	778	197	3,629
St. James	686	174	3,198
Sunset Beach	729	185	3,400
Varnamtown	111	28	519
Unincorporated Area	11,229	2,843	52,383
New Hanover County	28,034	11,698	202,267
Carolina Beach	770	321	5,555
Kure Beach	269	112	1,940
Wilmington	14,696	6,133	106,030
Wrightsville	332	138	2,397
Unincorporated Area	11,967	4,994	86,345
Onslow County	13,196	16,908	176,893
Holly Ridge	118	151	1,583
Jacksonville	6,525	8,360	87,457
North Topsail Beach	48	61	642
Richlands	158	203	2,123
Swansboro	268	344	3,603
Unincorporated Area	6,079	7,789	81,485
Pender County	7,876	3,078	52,206
Atkinson	45	17	296
Burgaw	663	258	4,384
St. Helena	57	22	378
Surf City	250	116	1,790
Topsail Beach	46	18	308
Watha	66	25	434
Unincorporated Area	6,749	2,622	44,616
Southeastern NC Regional Total	71,814	37,432	537,291

Source: NCEM Risk Management Tool

SECTION 6: VULNERABILITY ASSESSMENT

SOCIAL VULNERABILITY

Given the equal susceptibility across the Southeastern NC Region, it can be assumed that the entire population is at risk to the hurricane and tropical storm hazard.

CRITICAL FACILITIES

Given equal vulnerability across the Southeastern NC Region, all critical facilities are considered to be at risk. Although some buildings may perform better than others in the face of such an event due to construction, age, and other factors, determining individual building response is beyond the scope of this plan. However, this plan will consider mitigation actions for vulnerable structures, including critical facilities, to reduce the impacts of the hurricane wind hazard. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

In conclusion, a hurricane event has the potential to impact many existing and future buildings, critical facilities, and populations in the Southeastern NC Region. Hurricane events can cause substantial damage in their wake including fatalities, extensive debris clean-up, and extended power outages.

6.5.2 Tornadoes/Thunderstorms

Tornadoes

A probabilistic scenario was created to estimate building and population vulnerabilities in the Southeastern NC Region for the tornado hazard. For this scenario, a tornado ranked F2 on the Fujita scale was analyzed. The Risk Management Tool analyzed this information which has been reported in **Table 6.8** and **Table 6.9**.

TABLE 6.8: BUILDING VULNERABILITY TO THE TORNADES HAZARD

Location	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
	Number	Damages	Number	Damages	Number	Damages	Number	Damages
Brunswick County	61,825	\$6,532,380,272	3,163	\$1,190,948,508	696	\$370,405,929	65,684	\$8,093,734,706
Bald Head Island	1,044	\$450,311,833	40	\$22,341,143	10	\$1,830,919	1,094	\$474,483,896
Belville	753	\$100,619,696	26	\$11,647,370	5	\$1,117,576	784	\$113,384,642
Boiling Spring Lakes	1,874	\$197,554,685	36	\$8,106,407	31	\$26,059,657	1,941	\$231,720,748
Bolivia	227	\$20,674,146	21	\$4,900,661	16	\$49,405,401	264	\$34,980,207
Calabash	1,246	\$114,617,225	108	\$35,608,106	8	\$4,631,804	1,362	\$154,857,135
Carolina Shores	1,559	\$169,181,078	44	\$16,711,996	3	\$2,476,443	1,606	\$188,369,517
Caswell Beach	417	\$81,652,429	14	\$9,642,213	3	\$3,905,304	434	\$95,199,945
Holden Beach	2,171	\$334,747,314	23	\$5,621,408	4	\$1,513,262	2,198	\$341,881,983
Leland	2,718	\$261,870,247	146	\$51,416,147	45	\$24,215,571	2,909	\$337,501,965
Navassa	619	\$35,019,441	50	\$25,284,112	19	\$3,136,242	688	\$63,439,794
Northwest	424	\$27,647,321	19	\$3,474,157	11	\$2,051,824	454	\$33,173,301
Oak Island	7,462	\$748,922,690	217	\$51,322,355	40	\$14,024,192	7,719	\$814,269,237
Ocean Isle Beach	3,088	\$502,857,302	91	\$23,984,274	9	\$4,330,726	3,188	\$531,172,301
Sandy Creek	137	\$7,260,367	10	\$1,119,284	2	\$124,793	149	\$8,504,433
Shallotte	1,488	\$172,802,237	337	\$147,686,979	78	\$40,022,187	1,903	\$360,511,404
Southport	1,563	\$226,639,234	205	\$94,889,679	50	\$30,746,854	1,818	\$352,275,767
St. James	1,363	\$381,923,436	13	\$7,217,382	5	\$1,401,081	1,381	\$390,541,899
Sunset Beach	3,348	\$457,346,243	91	\$77,123,415	7	\$3,323,685	3,446	\$537,793,343
Varnamtown	338	\$28,645,605	16	\$3,373,073	6	\$1,758,625	360	\$33,777,303

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Location	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
	Number	Damages	Number	Damages	Number	Damages	Number	Damages
Unincorporated Area	29,986	\$2,268,849,354	1,656	\$601,299,099	344	\$208,651,205	31,989	\$3,078,799,658
New Hanover County	81,160	\$22,522,460,475	5,132	\$7,384,819,728	1,023	\$1,848,956,858	87,315	\$31,756,237,059
Carolina Beach	3,496	\$1,213,514,296	207	\$145,569,008	28	\$34,085,021	3,731	\$1,393,168,326
Kure Beach	1,706	\$818,399,298	27	\$29,311,830	12	\$16,401,250	1,745	\$864,112,377
Wilmington	37,397	\$9,316,253,298	2,664	\$4,541,140,157	673	\$1,207,306,049	40,734	\$15,064,699,504
Wrightsville Beach	1,674	\$2,011,994,124	62	\$114,716,113	17	\$4,001,076	1,753	\$2,130,711,312
Unincorporated Area	36,887	\$9,162,299,459	2,172	\$2,554,082,620	293	\$587,163,462	39,352	\$12,303,545,540
Onslow County	62,771	\$5,338,480,359	3,389	\$1,896,279,430	4,616	\$3,022,643,238	70,776	\$10,257,403,028
Holly Ridge	741	\$44,556,963	81	\$39,172,275	20	\$11,036,379	842	\$94,765,617
Jacksonville	19,801	\$1,934,365,940	1,293	\$1,159,310,250	3,740	\$2,355,557,361	24,834	\$5,449,233,551
North Topsail Beach	1,638	\$223,492,725	8	\$1,065,512	5	\$1,030,439	1,651	\$225,588,676
Richlands	975	\$92,752,895	87	\$42,553,960	51	\$41,896,579	1,113	\$177,203,434
Swansboro	1,827	\$176,283,766	164	\$86,810,280	50	\$75,402,559	2,041	\$338,496,605
Unincorporated Area	37,789	\$2,867,028,070	1,756	\$567,367,153	750	\$537,719,921	40,295	\$3,972,115,145
Pender County	29,362	\$2,609,305,060	3,566	\$776,664,106	419	\$203,677,092	33,347	\$3,589,646,257
Atkinson	164	\$13,829,966	36	\$4,427,644	14	\$3,233,274	214	\$21,490,884
Burgaw	1,412	\$132,628,146	340	\$139,152,796	87	\$34,832,288	1,839	\$306,613,230
St. Helena	209	\$19,202,936	54	\$4,536,430	7	\$1,428,949	270	\$25,168,314
Surf City	3,087	\$301,964,018	150	\$42,665,174	14	\$3,409,750	3,251	\$348,038,941
Topsail Beach	1,274	\$125,579,700	27	\$3,825,173	5	\$886,820	1,306	\$130,291,694
Watha	232	\$17,410,473	32	\$3,292,338	10	\$2,201,752	274	\$22,904,563
Unincorporated Area	22,984	\$1,998,689,821	2,927	\$578,764,551	282	\$157,684,259	26,193	\$2,735,138,631
Southeastern NC Regional Total	235,118	\$37,002,626,166	15,250	\$11,248,711,772	6,754	\$5,445,683,117	257,122	\$53,697,021,050

TABLE 6.9: POPULATION VULNERABILITY TO THE TORNADOES HAZARD

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	22,940	5,807	107,011
Bald Head Island	34	8	157
Belville	407	103	1,897
Boiling Spring Lakes	1,143	289	5,333
Bolivia	73	18	339
Calabash	462	117	2,154
Carolina Shores	912	231	4,256
Holden Beach	121	31	565
Leland	2,823	715	13,171
Navassa	325	82	1,514
Northwest	170	43	793
Oak Island	1,470	372	6,855
Ocean Isle Beach	355	90	1,657
Sandy Creek	57	14	266
Shallotte	1,049	266	4,895
Southport	782	198	3,650
St. James	686	174	3,198
Sunset Beach	729	185	3,400

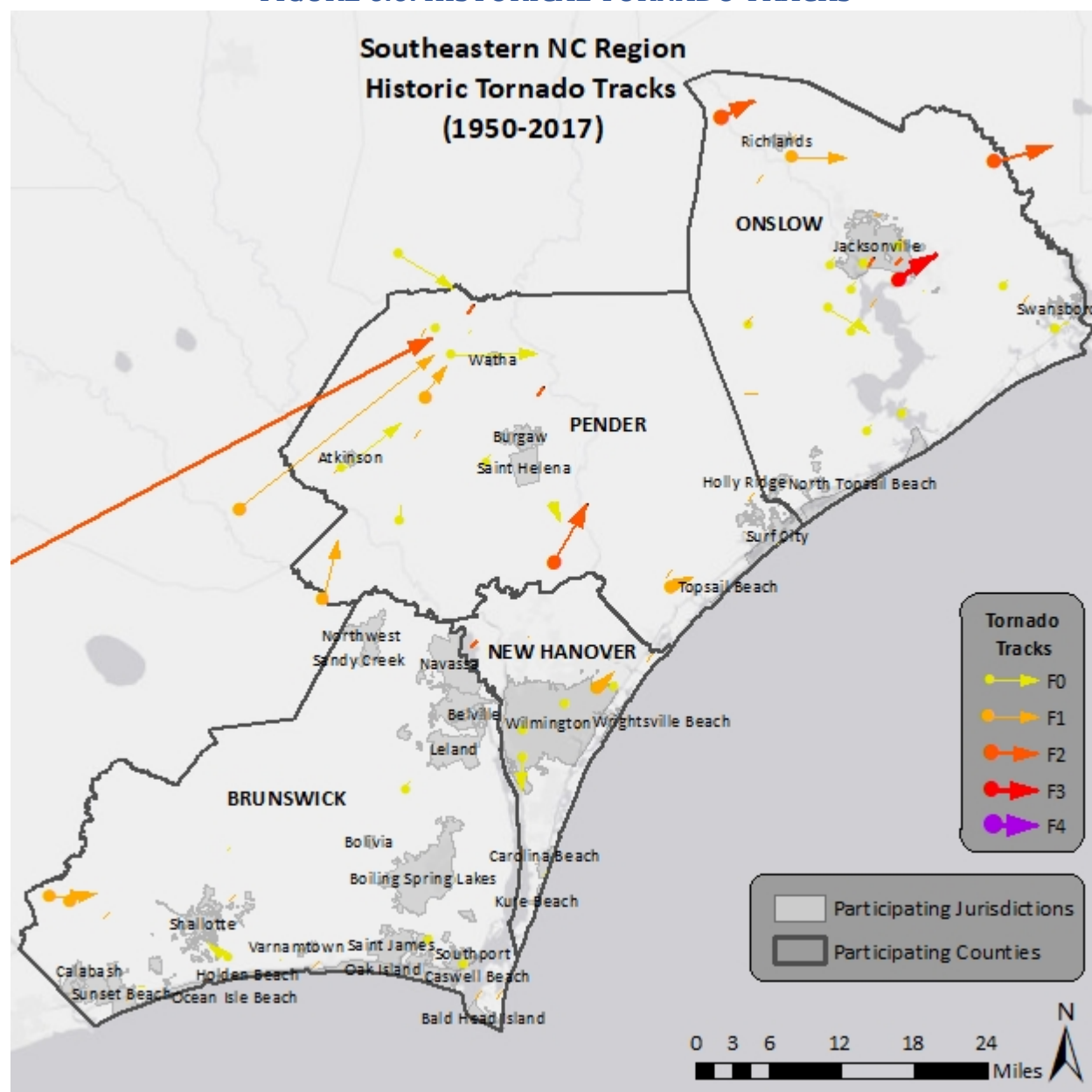
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Location	Elderly at Risk	Children at Risk	Total at Risk
Varnamtown	111	28	519
Unincorporated Area	11,231	2,843	52,392
New Hanover County	28,092	11,724	202,688
Carolina Beach	788	329	5,687
Kure Beach	277	116	2,001
Wilmington	14,696	6,133	106,030
Wrightsville	341	142	2,461
Unincorporated Area	11,990	5,004	86,509
Onslow County	13,238	16,962	177,459
Holly Ridge	118	151	1,583
Jacksonville	6,525	8,360	87,457
North Topsail Beach	52	67	706
Richlands	158	203	2,123
Swansboro	283	363	3,798
Unincorporated Area	6,102	7,818	81,792
Pender County	7,892	3,085	52,317
Atkinson	45	17	296
Burgaw	663	258	4,384
St. Helena	57	22	378
Surf City	259	120	1,856
Topsail Beach	53	21	353
Watha	66	25	434
Unincorporated Area	6,749	2,622	44,616
Southeastern NC Regional Total	72,162	37,578	539,475

Source: NCEM Risk Management Tool

A map of historical tornado points of origin and paths can be seen below in **Figures 6.6**.

FIGURE 6.6: HISTORICAL TORNADO TRACKS



Thunderstorms

A probabilistic scenario was created to estimate building and population vulnerabilities in the Southeastern NC Region for the thunderstorm hazard. For this scenario, damages due to thunderstorm winds on a 50-year frequency event (return period) were analyzed. It is important to note that this data does not include damages caused by other sub-hazards associated with thunderstorms, such as lightning or hail. This Risk Management Tool analyzed this information which has been reported below in **Table 6.10** and **Table 6.11**.

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TABLE 6.10: BUILDING VULNERABILITY TO THUNDERSTORM WINDS

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Brunswick County	21,056	60,032	\$28,292,423	3,198	\$5,075,527	693	\$860,385	63,923	\$34,228,336
Bald Head Island	124	988	\$1,249,396	40	\$201,694	11	\$3,395	1,039	\$1,454,486
Belville	205	759	\$342,730	36	\$8,967	5	\$601	800	\$352,298
Boiling Spring Lakes	673	1,874	\$805,539	36	\$3,435	31	\$9,478	1,941	\$818,452
Bolivia	260	227	\$85,604	22	\$18,826	15	\$3,457	264	\$107,887
Calabash	645	1,246	\$567,052	107	\$84,415	8	\$1,940	1,361	\$653,407
Carolina Shores	509	1,515	\$943,079	46	\$72,127	2	\$348	1,563	\$1,015,554
Holden Beach	281	1,954	\$2,329,149	8	\$3,929	2	\$588	1,964	\$2,333,665
Leland	1,104	2,719	\$1,157,438	146	\$59,355	45	\$97,005	2,910	\$1,313,799
Navassa	398	617	\$155,646	52	\$106,407	19	\$3,623	688	\$265,676
Northwest	264	424	\$97,974	19	\$3,120	11	\$2,361	454	\$103,455
Oak Island	1,458	6,646	\$2,554,310	220	\$170,457	38	\$25,569	6,904	\$2,750,336
Ocean Isle Beach	318	2,856	\$2,004,931	92	\$187,470	9	\$9,226	2,957	\$2,201,627
Sandy Creek	145	137	\$24,273	10	\$2,572	2	\$65	149	\$26,909
Shallotte	786	1,510	\$824,897	321	\$145,183	86	\$42,079	1,917	\$1,012,159
Southport	916	1,554	\$990,015	228	\$1,133,281	49	\$48,130	1,831	\$2,171,426
St. James	-	1,362	\$1,714,439	17	\$28,734	2	\$717	1,381	\$1,743,891
Sunset Beach	145	3,347	\$2,081,797	91	\$260,490	8	\$2,211	3,446	\$2,344,498
Varnamtown	219	338	\$130,261	16	\$8,510	6	\$1,052	360	\$139,823
Unincorporated Area	12,606	29,959	\$10,233,893	1,691	\$2,576,555	344	\$608,540	31,994	\$13,418,988
New Hanover County	37,801	80,659	\$88,306,248	5,600	\$19,525,319	883	\$2,551,966	87,142	\$110,383,532
Carolina Beach	1,571	3,418	\$5,401,209	202	\$499,708	28	\$25,502	3,648	\$5,926,419
Kure Beach	631	1,654	\$3,114,064	28	\$126,766	11	\$15,788	1,693	\$3,256,618
Wilmington	23,334	37,215	\$33,766,726	2,978	\$13,645,219	565	\$1,771,492	40,758	\$49,183,437
Wrightsville	668	1,624	\$10,652,469	68	\$241,794	17	\$12,294	1,709	\$10,906,556
Unincorporated Area	11,597	36,748	\$35,371,780	2,324	\$5,011,832	262	\$726,890	39,334	\$41,110,502
Onslow County	40,369	62,388	\$25,553,414	3,375	\$18,253,011	4,589	\$29,544,015	70,352	\$73,350,440
Holly Ridge	788	741	\$206,971	81	\$440,692	20	\$297,438	842	\$945,101
Jacksonville	15,729	19,801	\$8,253,960	1,293	\$9,129,020	3,719	\$21,888,734	24,813	\$39,271,714
North Topsail Beach	604	1,490	\$1,365,142	7	\$3,942	5	\$2,081	1,502	\$1,371,165
Richlands	731	975	\$544,853	87	\$290,200	51	\$313,590	1,113	\$1,148,643
Swansboro	809	1,733	\$905,378	163	\$1,139,889	50	\$941,303	1,946	\$2,986,570
Unincorporated Area	21,708	37,648	\$14,277,110	1,744	\$7,249,268	744	\$6,100,869	40,136	\$27,627,247
Pender County	9,665	29,088	\$11,964,777	3,560	\$1,636,279	419	\$389,438	33,067	\$13,990,493
Atkinson	206	164	\$57,442	36	\$6,503	14	\$3,281	214	\$67,226
Burgaw	1,340	1,412	\$595,533	340	\$155,143	87	\$67,993	1,839	\$818,669
St. Helena	124	209	\$111,505	54	\$10,299	7	\$1,207	270	\$123,011
Surf City	505	2,977	\$1,656,934	150	\$124,532	14	\$4,987	3,141	\$1,786,453
Topsail Beach	294	1,110	\$685,826	21	\$25,517	5	\$1,768	1,136	\$713,111
Watha	123	232	\$97,600	32	\$2,949	10	\$2,513	274	\$103,061
Unincorporated Area	7,073	22,984	\$8,759,937	2,927	\$1,311,336	282	\$307,689	26,193	\$10,378,962
Southeastern NC Regional Total	108,891	232,167	\$154,116,862	15,733	\$44,490,136	6,584	\$33,345,804	254,484	\$231,952,801

Source: NCEM Risk Management Tool

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TABLE 6.11: POPULATION VULNERABILITY TO THUNDERSTORM WINDS

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	22,708	5,748	105,925
Bald Head Island	32	8	149
Belville	407	103	1,897
Boiling Spring Lakes	1,143	289	5,333
Bolivia	73	18	339
Calabash	462	117	2,154
Carolina Shores	886	224	4,136
Holden Beach	109	28	508
Leland	2,823	715	13,171
Navassa	325	82	1,514
Northwest	170	43	793
Oak Island	1,310	331	6,107
Ocean Isle Beach	329	83	1,534
Sandy Creek	57	14	266
Shallotte	1,049	266	4,895
Southport	778	197	3,629
St. James	686	174	3,198
Sunset Beach	729	185	3,400
Varnamtown	111	28	519
Unincorporated Area	11,229	2,843	52,383
New Hanover County	28,034	11,698	202,267
Carolina Beach	770	321	5,555
Kure Beach	269	112	1,940
Wilmington	14,696	6,133	106,030
Wrightsville	332	138	2,397
Unincorporated Area	11,967	4,994	86,345
Onslow County	13,196	16,908	176,893
Holly Ridge	118	151	1,583
Jacksonville	6,525	8,360	87,457
North Topsail Beach	48	61	642
Richlands	158	203	2,123
Swansboro	268	344	3,603
Unincorporated Area	6,079	7,789	81,485
Pender County	7,876	3,078	52,206
Atkinson	45	17	296
Burgaw	663	258	4,384
St. Helena	57	22	378
Surf City	250	116	1,790
Topsail Beach	46	18	308
Watha	66	25	434
Unincorporated Area	6,749	2,622	44,616
Southeastern NC Regional Total	71,814	37,432	537,291

Source: NCEM Risk Management Tool

SECTION 6: VULNERABILITY ASSESSMENT

SOCIAL VULNERABILITY

It is assumed that all existing populations and future populations area at risk to the tornadoes/thunderstorms hazard.

CRITICAL FACILITIES

All critical facilities should still be considered at-risk to damage should an event occur. A list of all individual critical facilities in the region can be found in **Table 6.26**.

6.5.3. Earthquakes

A probabilistic scenario was created to estimate building and population vulnerabilities in the Southeastern NC Region for the earthquake hazard with a 500-year frequency (return period). The Risk Management Tool analyzed this information which has been reported below in **Table 6.12** and **Table 6.13**.

TABLE 6.12: BUILDING VULNERABILITY TO THE EARTHQUAKE HAZARD

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Brunswick County	21,537	61,407	\$6,751,661	3,224	\$2,883,283	705	\$850,075	65,336	\$10,485,018
Bald Head Island	137	1,043	\$220,103	40	\$35,091	11	\$3,735	1,094	\$258,929
Belville	205	759	\$50,118	36	\$28,588	5	\$1,687	800	\$80,394
Boiling Spring Lakes	673	1,874	\$133,869	36	\$15,827	31	\$35,183	1,941	\$184,879
Bolivia	260	227	\$19,570	22	\$9,281	15	\$14,507	264	\$43,359
Calabash	645	1,246	\$170,101	108	\$94,856	8	\$13,143	1,362	\$278,101
Carolina Shores	537	1,559	\$311,895	48	\$63,259	2	\$3,465	1,609	\$378,619
Holden Beach	346	2,172	\$249,401	23	\$12,697	3	\$4,720	2,198	\$266,818
Leland	1,104	2,719	\$215,023	146	\$82,723	45	\$34,053	2,910	\$331,799
Navassa	398	617	\$32,752	52	\$61,370	19	\$6,085	688	\$100,207
Northwest	264	424	\$32,749	19	\$7,059	11	\$4,712	454	\$44,519
Oak Island	1,756	7,460	\$538,439	223	\$113,413	38	\$29,077	7,721	\$680,928
Ocean Isle Beach	370	3,086	\$490,650	93	\$85,673	9	\$11,010	3,188	\$587,333
Sandy Creek	145	137	\$8,534	10	\$2,007	2	\$273	149	\$10,814
Shallotte	786	1,510	\$238,172	321	\$383,671	86	\$129,306	1,917	\$751,148
Southport	923	1,563	\$159,714	229	\$286,166	49	\$42,420	1,841	\$488,300
St. James	-	1,362	\$323,342	17	\$17,561	2	\$3,110	1,381	\$344,013
Sunset Beach	145	3,347	\$574,618	91	\$168,847	8	\$14,555	3,446	\$758,019
Varnamtown	219	338	\$31,328	16	\$5,120	6	\$5,723	360	\$42,171
Unincorporated Area	12,624	29,964	\$2,951,283	1,694	\$1,410,074	355	\$493,311	32,013	\$4,854,668
New Hanover County	37,881	80,909	\$8,007,349	5,601	\$10,036,076	884	\$1,418,931	87,394	\$19,462,358
Carolina Beach	1,623	3,501	\$576,495	202	\$156,944	28	\$44,202	3,731	\$777,641
Kure Beach	640	1,706	\$346,452	28	\$31,356	11	\$17,084	1,745	\$394,892
Wilmington	23,335	37,215	\$3,563,997	2,978	\$6,373,795	566	\$984,125	40,759	\$10,921,918
Wrightsville	676	1,668	\$524,631	68	\$132,489	17	\$14,437	1,753	\$671,557
Unincorporated Area	11,607	36,819	\$2,995,774	2,325	\$3,341,492	262	\$359,083	39,406	\$6,696,350
Onslow County	40,572	62,771	\$1,227,979	3,389	\$1,098,573	4,616	\$2,237,418	70,776	\$4,563,970
Holly Ridge	788	741	\$15,901	81	\$27,267	20	\$7,567	842	\$50,735
Jacksonville	15,746	19,801	\$432,026	1,293	\$707,012	3,740	\$1,858,653	24,834	\$2,997,690
North Topsail Beach	657	1,638	\$40,553	8	\$582	5	\$1,030	1,651	\$42,165

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Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Richlands	731	975	\$23,009	87	\$29,375	51	\$21,566	1,113	\$73,950
Swansboro	839	1,827	\$26,098	164	\$38,789	50	\$31,234	2,041	\$96,121
Unincorporated Area	21,811	37,789	\$690,392	1,756	\$295,548	750	\$317,368	40,295	\$1,303,309
Pender County	9,761	29,362	\$975,672	3,566	\$897,365	419	\$332,047	33,347	\$2,205,082
Atkinson	206	164	\$8,605	36	\$7,621	14	\$7,892	214	\$24,118
Burgaw	1,340	1,412	\$63,409	340	\$213,228	87	\$63,012	1,839	\$339,648
St. Helena	124	209	\$8,720	54	\$5,675	7	\$2,693	270	\$17,088
Surf City	542	3,087	\$64,651	150	\$35,849	14	\$3,620	3,251	\$104,119
Topsail Beach	353	1,274	\$27,429	27	\$3,626	5	\$1,176	1,306	\$32,231
Watha	123	232	\$7,479	32	\$3,141	10	\$4,150	274	\$14,770
Unincorporated Area	7,073	22,984	\$795,379	2,927	\$628,225	282	\$249,504	26,193	\$1,673,108
Southeastern NC Regional Total	109,751	234,449	\$16,962,661	15,780	\$14,915,297	6,624	\$4,838,471	256,853	\$36,716,428

TABLE 6.13: POPULATION VULNERABILITY TO THE EARTHQUAKE HAZARD

Location	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	22,940	5,807	103,611
Bald Head Island	34	8	157
Belville	407	103	1,897
Boiling Spring Lakes	1,143	289	5,333
Bolivia	73	18	339
Calabash	462	117	2,154
Carolina Shores	912	231	4,256
Holden Beach	121	31	565
Leland	2,823	715	13,171
Navassa	325	82	1,514
Northwest	170	43	793
Oak Island	1,470	372	6,855
Ocean Isle Beach	355	90	1,657
Sandy Creek	57	14	266
Shallotte	1,049	266	4,895
Southport	782	198	3,650
St. James	686	174	3,198
Sunset Beach	729	185	3,40
Varnamtown	111	28	519
Unincorporated Area	11,231	2,843	52,392
New Hanover County	28,092	11,724	202,688
Carolina Beach	788	329	5,687
Kure Beach	277	116	2,001
Wilmington	14,696	6,133	106,030
Wrightsville	341	142	2,461
Unincorporated Area	11,990	5,004	86,509
Onslow County	13,238	16,962	177,459
Holly Ridge	118	151	1,583
Jacksonville	6,525	8,360	87,457

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Location	Elderly at Risk	Children at Risk	Total at Risk
North Topsail Beach	52	67	706
Richlands	158	203	2,123
Swansboro	283	363	3,798
Unincorporated Area	6,102	7,818	81,792
Pender County	7,892	3,085	52,317
Atkinson	45	17	296
Burgaw	663	258	4,384
St. Helena	57	22	378
Surf City	259	120	1,856
Topsail Beach	53	21	353
Watha	66	25	434
Unincorporated Area	6,749	2,622	44,616
Southeastern NC Regional Total	72,162	37,578	536,075

SOCIAL VULNERABILITY

It is assumed that all existing populations and future populations are at risk to the earthquake hazard.

CRITICAL FACILITIES

All critical facilities should still be considered at-risk to minor damage should an event occur. A list of all individual critical facilities in the region can be found in **Table 6.26**.

In conclusion, an earthquake could potentially impact all existing and future buildings, facilities, and populations in the Southeastern NC Region. Though minor earthquakes are often recorded but not felt, they may rattle breakables and cause minimal damage. Furthermore, major earthquakes have potential to damage structures. Severe impacts of earthquakes may result in debris clean-up, service disruption, building collapse, and fatalities. Specific vulnerabilities for assets will be greatly dependent on their individual design and the mitigation measures in place, where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available. Furthermore, mitigation actions to address earthquake vulnerability will be considered.

6.5.4. Geological (Sinkholes and Coastal Erosion)

Sinkholes

The vulnerability information for sinkholes in **Table 6.14** was taken from the NC State Enhanced Hazard Mitigation Plan to determine vulnerability of structures in the Southeastern NC Region to sinkholes. For that plan, a GIS analysis was conducted to identify the number and value of buildings located within 50 yards of an existing sinkhole based on data received from the NC Geological Survey.

TABLE 6.14: SINKHOLE VULNERABILITY SUMMARY RESULTS

Location	Number of Buildings Within 50 Yards of Existing Sinkholes	Value of Buildings Within 50 Yards of Existing Sinkholes
Brunswick County	1,693	\$274,060,857
New Hanover County	1,223	\$617,106,193
Onslow County	1,311	\$50,397,642
Pender County	97	\$4,325,222
Southeastern NC Regional Total	4,324	\$945,889,914.00

Coastal Erosion

The vulnerability information for coastal erosion in **Table 6.15** was taken from the NC State Enhanced Hazard Mitigation Plan to determine vulnerability of structures in the Southeastern NC Region to coastal erosion. For that plan, a GIS analysis was conducted to identify the number and value of buildings located within 50 yards of eroding shorelines as identified by the NC Division of Coastal Management.

TABLE 6.15: COASTAL EROSION VULNERABILITY SUMMARY RESULTS

Location	Number of Buildings within 50 Yards of Eroding Shoreline	Value of Buildings within 50 Yards of Eroding Shoreline
Brunswick County	101	\$16,954,506
New Hanover County	39	\$30,862,658
Onslow County	130	\$21,965,739
Pender County	52	\$4,569,816
Southeastern NC Regional Total	322	\$74,352,719.00

SOCIAL VULNERABILITY

Given the small physical area impacted by coastal erosion (primarily located directly along beaches) it is assumed that a low amount of the population is at risk. There may be some populations/property owners that could be particularly vulnerable (potentially elderly populations) but further analysis would be needed to properly document that assumption.

CRITICAL FACILITIES

All of the critical facilities in the Southeastern NC Region are located in low incidence areas.

In conclusion, sinkholes and coastal erosion have the potential to impact existing and future buildings, facilities, and populations in the Southeastern NC Region, though some areas are at a higher risk than others due to a variety of factors. For example, proximity to existing sinkholes may increase vulnerability and proximity to eroding shorelines could increase vulnerability to coastal erosion. Specific vulnerabilities for Southeastern NC assets will be greatly dependent on their individual design and the mitigation measures in place, where appropriate. Such site-specific vulnerability determinations are outside the scope of this assessment but will be considered during future plan updates if data becomes available.

SECTION 6: VULNERABILITY ASSESSMENT

6.5.5 Flooding

Historical evidence indicates that the Southeastern NC Region is susceptible to flood events. A total of 350 flood events have been reported by the National Centers for Environmental Information since 1997, resulting in over \$26 million dollars in damages.

In order to assess flood risk, a GIS-based analysis was used to estimate exposure to flood events using Digital Flood Insurance Rate Map (DFIRM) data in combination with local tax assessor records for each of the Southeastern NC counties. The determination of assessed value at-risk (exposure) was calculated using GIS analysis by summing the total assessed building values for only those improved properties that were confirmed to be located within an identified floodplain. **Table 6.16** presents the potential at-risk property. Both the number of parcels and the approximate value are presented.

TABLE 6.16: ESTIMATED EXPOSURE OF PARCELS TO THE FLOODING HAZARD

	100 Year (1% Annual Chance) Flood Zone			500 Year (0.2% Annual Chance) Flood Zone		
Location	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings
Brunswick County	32,962	20,082	\$5,352,591,329	43,932	26,633	\$6,109,392,830
Bald Head Island	1,897	931	\$510,653,540	2,109	1,031	\$557,013,450
Belville	80	54	\$17,437,060	116	84	\$23,495,440
Boiling Spring Lakes	451	251	\$45,989,970	1,101	568	\$93,374,430
Bolivia	24	14	\$9,257,650	24	14	\$9,257,650
Calabash	396	209	\$56,724,795	263	132	\$11,665,650
Carolina Shores	32	1	\$77,040	462	370	\$64,479,910
Holden Beach	2,708	2,057	\$464,674,348	2,732	2,060	\$466,548,168
Leland	739	443	\$93,984,240	1,374	872	\$184,702,400
Navassa	134	61	\$4,026,060	187	91	\$6,312,930
Northwest	12	7	\$750,960	14	7	\$750,960
Oak Island	4,829	3,629	\$773,657,000	7,316	5,590	\$1,030,415,440
Ocean Isle Beach	3,286	2,473	\$701,633,666	3,330	2,480	\$704,355,886
Sandy Creek	-	-	\$0	-	-	\$0
Shallotte	337	147	\$49,367,090	656	315	\$116,770,690
Southport	471	285	\$109,124,260	768	466	\$152,495,430
St. James	1,091	763	\$275,342,080	1,352	958	\$338,083,820
Sunset Beach	1,949	1,477	\$370,489,300	2,113	1,595	\$397,575,330
Varnamtown	127	78	\$9,581,790	187	114	\$13,075,150
Unincorporated Area	14,399	7,202	\$1,859,820,480	19,828	9,886	\$1,939,020,096
New Hanover County	16,342	12,494	\$4,455,975,566	23,756	18,776	\$5,923,235,015
Carolina Beach	2,672	2,023	\$384,081,443	2,960	2,258	\$428,077,243
Kure Beach	466	367	\$109,515,600	899	699	\$170,202,900
Wilmington	3,246	2,631	\$1,475,833,477	5,863	4,903	\$2,051,472,478
Wrightsville	1,883	1,544	\$488,540,800	1,883	1,544	\$488,540,800
Unincorporated Area	8,075	5,929	\$1,998,004,246	12,151	9,372	\$2,784,941,594
Onslow County	14,374	9,645	\$1,520,075,756	19,032	12,951	\$2,034,086,338
Holly Ridge	163	13	\$3,468,300	417	67	\$10,307,270

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	100 Year (1% Annual Chance) Flood Zone			500 Year (0.2% Annual Chance) Flood Zone		
Location	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings	Approx. Number of Parcels	Approx. Number of Improved Buildings	Approx. Improved Value of Buildings
Jacksonville	1,429	1,158	\$220,778,458	3,039	2,460	\$451,658,727
North Topsail Beach	3,666	2,653	\$464,623,395	3,666	2,653	\$464,623,395
Richlands	58	40	\$10,776,427	85	60	\$13,373,237
Swansboro	250	186	\$26,549,306	288	219	\$31,080,346
Unincorporated Area	8,808	5,595	\$793,879,870	11,537	7,492	\$1,063,043,363
Pender County	14,632	8,905	\$1,126,215,607	19,084	11,549	\$1,565,757,030
Atkinson	19	10	\$930,100	25	15	\$1,256,737
Burgaw	396	209	\$56,724,795	572	323	\$93,582,823
St. Helena	34	18	\$1,462,485	54	26	\$2,236,542
Surf City	4,141	3,378	\$479,330,751	4,437	3,570	\$516,792,223
Topsail Beach	1,850	1,504	\$254,855,021	1,852	1,505	\$255,021,882
Watha	10	5	\$228,636	18	11	\$521,613
Unincorporated Area	8,182	3,781	\$332,683,819	12,126	6,099	\$696,345,210
Southeastern NC Regional Total	78,310	51,126	\$12,454,858,258	105,804	69,909	\$15,632,471,213

Source: FEMA DFIRM

To assess flood risk, the NCEM Risk Management Tool (RMT) analyzed buildings located in the 1 percent chance of annual floodplains. The buildings are assessed by the type of building (commercial, residential, or public) and also assesses Pre-Firm buildings, or structures built before flood ordinance regulations were adopted. This data is broken down by jurisdiction in **Table 6.17**.

TABLE 6.17: BUILDING VULNERABILITY FOR THE 100-YEAR FLOODPLAINS

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Brunswick County	1,199	4,088	\$54,717,442	142	\$4,447,425	40	\$1,677,946	4,270	\$60,842,814
Bald Head Island	20	371	\$15,335,614	16	\$435,687	2	\$40,137	389	\$15,811,438
Belville	3	12	\$107,399	2	\$28,945	-	\$0	14	\$136,344
Boiling Spring Lakes	3	5	\$6,387	1	\$395	-	\$0	6	\$6,782
Bolivia	10	10	\$18,309	-	\$0	-	\$0	10	\$18,309
Calabash	17	23	\$142,368	2	\$325,663	-	\$0	25	\$468,031
Carolina Shores	-	-	\$0	-	\$0	-	\$0	-	\$0
Holden Beach	21	124	\$1,747,026	12	\$285,258	1	\$114,583	137	\$2,146,867
Leland	20	86	\$394,015	1	\$1,572	1	\$32,139	88	\$427,726
Navassa	-	3	\$2,273	-	\$0	-	\$0	3	\$2,273
Northwest	-	-	\$0	-	\$0	-	\$0	-	\$0
Oak Island	196	901	\$7,685,320	22	\$608,983	1	\$52,844	924	\$8,347,147
Ocean Isle Beach	13	101	\$2,436,040	-	\$0	-	\$0	101	\$2,436,040
Sandy Creek	-	-	\$0	-	\$0	-	\$0	-	\$0

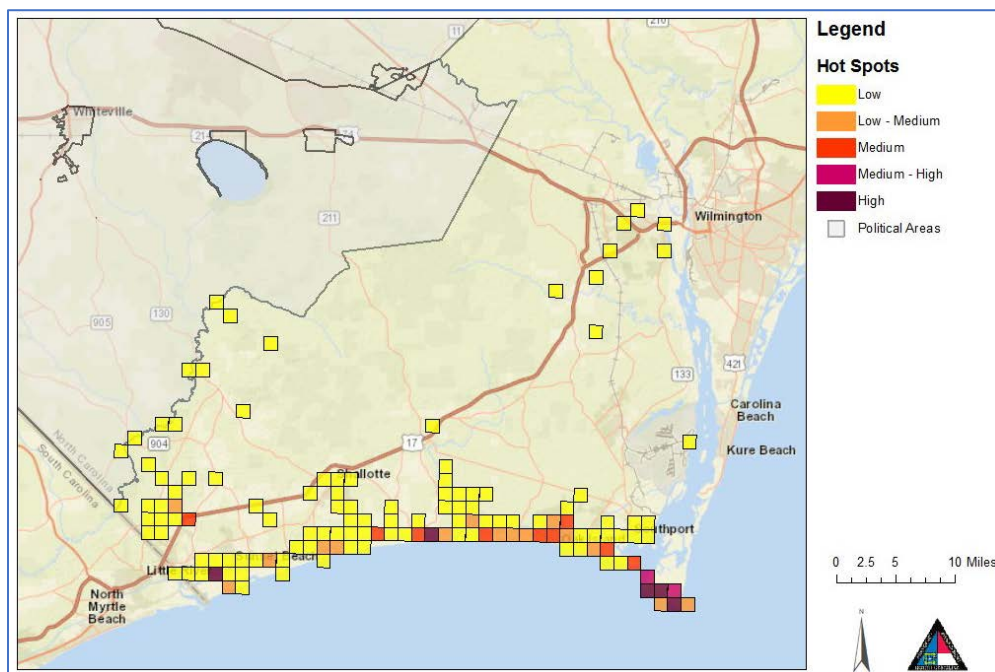
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Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Shallotte	58	68	\$430,673	25	\$639,088	1	\$2,410	94	\$1,072,171
Southport	25	76	\$1,062,181	4	\$163,553	-	\$0	80	\$1,225,734
St. James	-	162	\$2,125,924	3	\$18,781	-	\$0	165	\$2,144,705
Sunset Beach	56	317	\$4,844,976	9	\$448,022	1	\$100,115	327	\$5,393,113
Varnamtown	12	15	\$67,132	3	\$71,002	-	\$0	18	\$138,134
Unincorporated Area	745	1,814	\$18,311,805	42	\$1,420,476	33	\$1,335,718	1,889	\$21,068,000
New Hanover County	2,420	5,276	\$245,819,484	258	\$22,955,640	36	\$3,353,694	5,570	\$272,128,819
Carolina Beach	667	1,102	\$42,738,765	74	\$7,897,306	9	\$901,404	1,185	\$51,537,476
Kure Beach	82	167	\$3,371,723	-	\$0	-	\$0	167	\$3,371,723
Wilmington	465	963	\$12,213,874	85	\$6,772,518	11	\$477,653	1,059	\$19,464,046
Wrightsville	399	724	\$136,160,902	23	\$6,682,530	9	\$955,306	756	\$143,798,738
Unincorporated Area	807	2,320	\$51,334,220	76	\$1,603,286	7	\$1,019,331	2,403	\$53,956,836
Onslow County	885	1,426	\$21,399,062	49	\$320,606	7	\$205,984	1,482	\$21,925,653
Holly Ridge	2	2	\$3,306	-	\$0	-	\$0	2	\$3,306
Jacksonville	136	147	\$716,924	24	\$171,230	-	\$0	171	\$888,154
North Topsail Beach	172	305	\$9,964,075	3	\$25,212	3	\$47,429	311	\$10,036,716
Richlands	7	29	\$124,687	-	\$0	-	\$0	29	\$124,687
Swansboro	45	52	\$270,455	7	\$55,146	-	\$0	59	\$325,601
Unincorporated Area	523	891	\$10,319,615	15	\$69,018	4	\$158,555	910	\$10,547,189
Pender County	1,004	2,765	\$37,789,196	171	\$3,832,271	10	\$439,794	2,946	\$42,061,261
Atkinson	4	5	\$14,815	-	\$0	-	\$0	5	\$14,815
Burgaw	107	145	\$152,782	-	\$0	-	\$0	145	\$152,782
St. Helena	4	6	\$11,612	8	\$8,481	-	\$0	14	\$20,093
Surf City	172	565	\$11,592,352	75	\$2,163,831	4	\$209,951	644	\$13,966,134
Topsail Beach	242	631	\$11,625,921	21	\$1,002,927	4	\$183,376	656	\$12,812,224
Watha	-	-	\$0	-	\$0	-	\$0	-	\$0
Unincorporated Area	475	1,413	\$14,391,714	67	\$657,032	2	\$46,467	1,482	\$15,095,213
Southeastern NC Regional Total	5,508	13,555	\$359,725,184	620	\$31,555,942	93	\$5,677,418	14,268	\$396,958,547

Source: NCEM Risk Management Tool

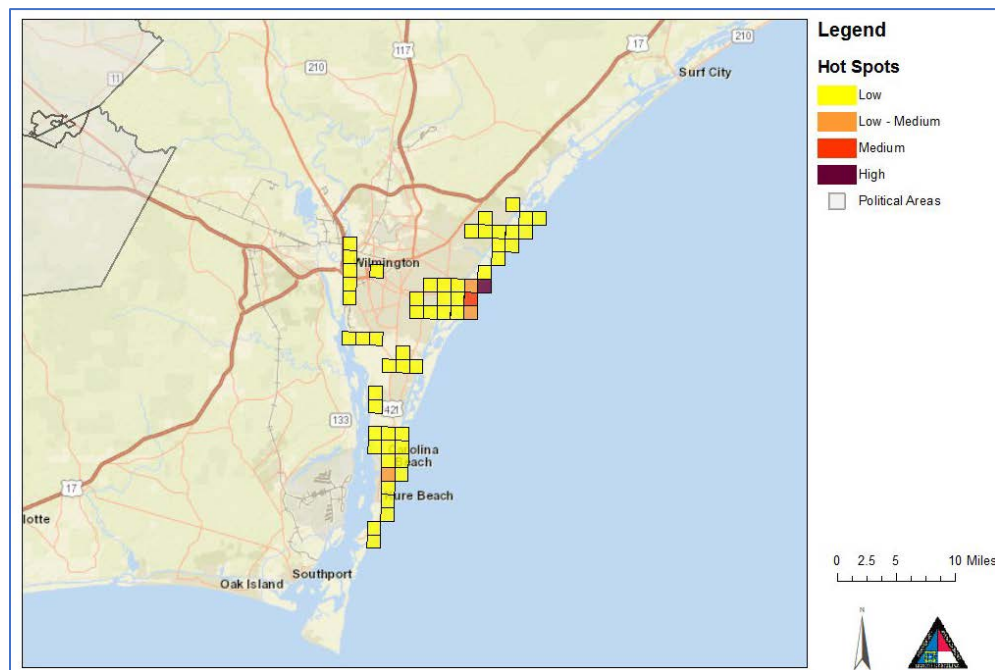
Figures 6.10 through 6.13 below display visual hotspots of potential dollar losses for the flood hazard in Brunswick, New Hanover, Onslow and Pender Counties.

FIGURE 6.10: POTENTIAL LOSSES FROM FLOODING IN BRUNSWICK COUNTY



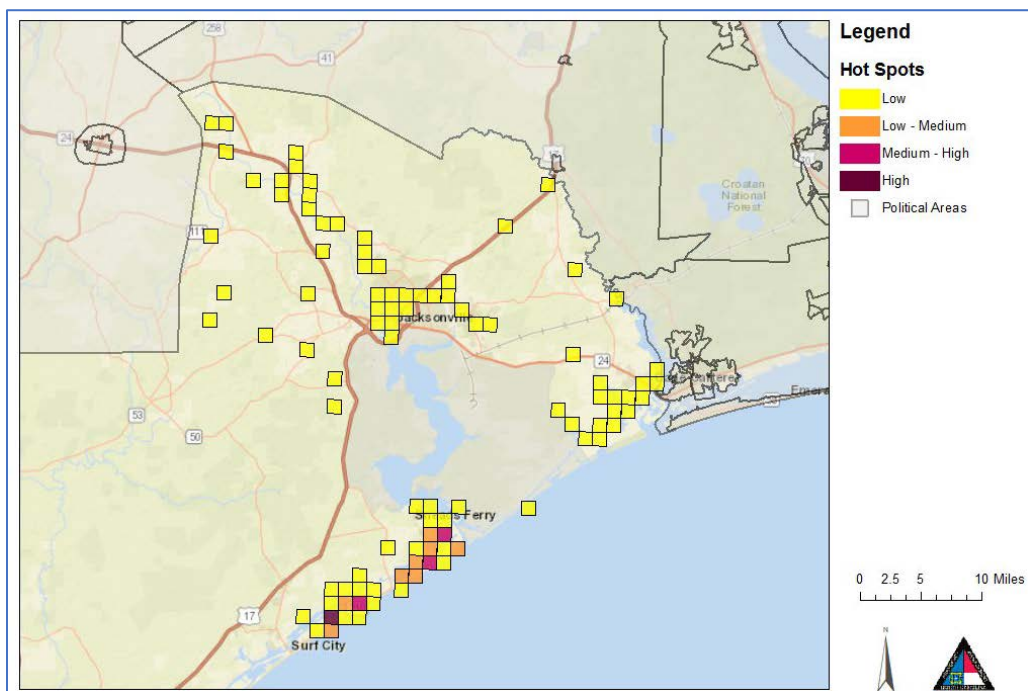
Source: NCEM Risk Management Tool

FIGURE 6.11: POTENTIAL LOSSES FROM FLOODING IN NEW HANOVER COUNTY



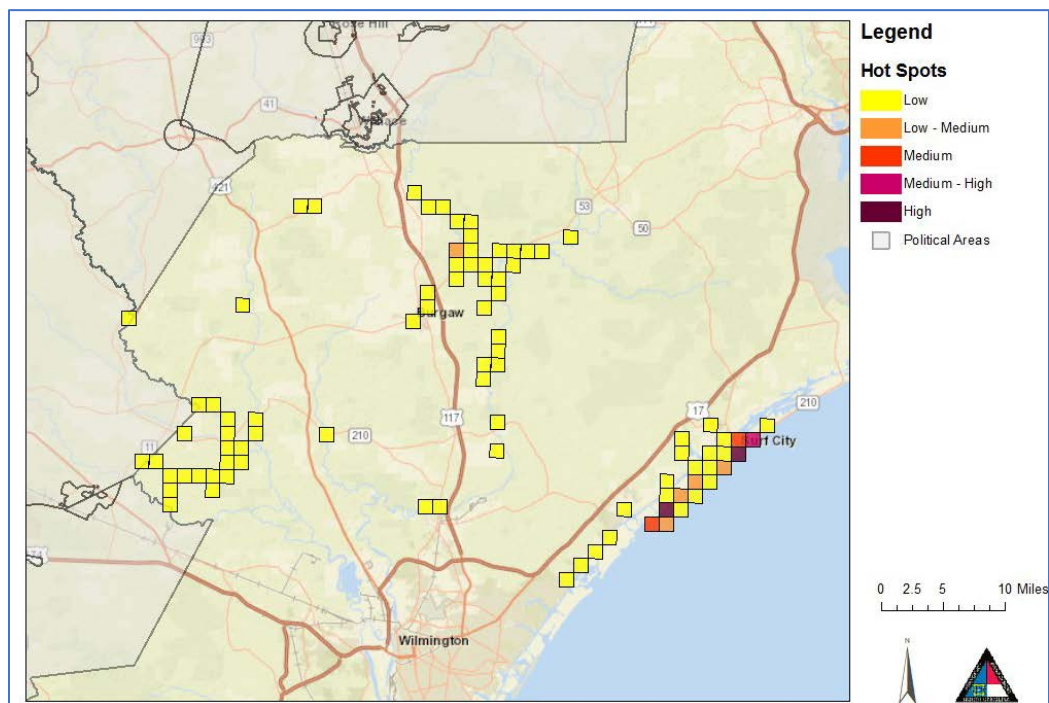
Source: NCEM Risk Management Tool

FIGURE 6.12: POTENTIAL LOSSES FOR FLOODING IN ONSLOW COUNTY



Source: NCEM Risk Management Tool

FIGURE 6.13: POTENTIAL LOSSES FOR FLOODING IN PENDER COUNTY



Source: NCEM Risk Management Tool

SECTION 6: VULNERABILITY ASSESSMENT

Table 6.18 assesses the vulnerability of the region's population. This data is also from the RMT and analyzes the populations of elderly and children living at risk to the 1 percent annual flooding.

TABLE 6.18: POPULATION VULNERABILITY FOR 100-YEAR FLOODPLAINS

Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	1,242	316	5,786
Bald Head Island	12	3	56
Belville	6	2	30
Boiling Spring Lakes	3	1	14
Bolivia	3	1	15
Calabash	9	2	40
Carolina Shores	-	-	-
Holden Beach	7	2	32
Leland	89	23	417
Navassa	2	-	7
Northwest	-	-	-
Oak Island	178	45	829
Ocean Isle Beach	12	3	54
Sandy Creek	-	-	-
Shallotte	47	12	220
Southport	38	10	177
St. James	82	21	380
Sunset Beach	69	18	322
Varnamtown	5	1	23
Unincorporated Area	680	172	3,170
New Hanover County	1,546	646	11,160
Carolina Beach	246	103	1,778
Kure Beach	27	11	195
Wilmington	380	159	2,741
Wrightsville	148	62	1,069
Unincorporated Area	745	311	5,377
Onslow County	215	275	2,885
Holly Ridge	-	-	4
Jacksonville	48	62	648
North Topsail Beach	10	12	131
Richlands	5	6	63
Swansboro	8	10	108
Unincorporated Area	144	185	1,931
Pender County	560	221	3,718
Atkinson	1	1	9
Burgaw	68	26	449
St. Helena	2	1	1
Surf City	48	22	342
Topsail Beach	26	10	175

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Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
Watha	-	-	-
Unincorporated Area	415	161	2,742
Southeastern NC Regional Total	3,563	1,458	23,549

Source: NCEM Risk Management Tool

SOCIAL VULNERABILITY

A national Census has not been conducted since 2010; therefore, 2010 Census tract level population counts are outdated for this update. However, population estimates from the US Census Bureau as of July 1, 2017 were available at a jurisdictional level. This data was analyzed to present at-risk populations to the flooding hazard in the Southeastern NC region and can be seen below in **Figures 6.14-6.17**.

FIGURE 6.14: BRUNSWICK COUNTY FLOODPLAINS

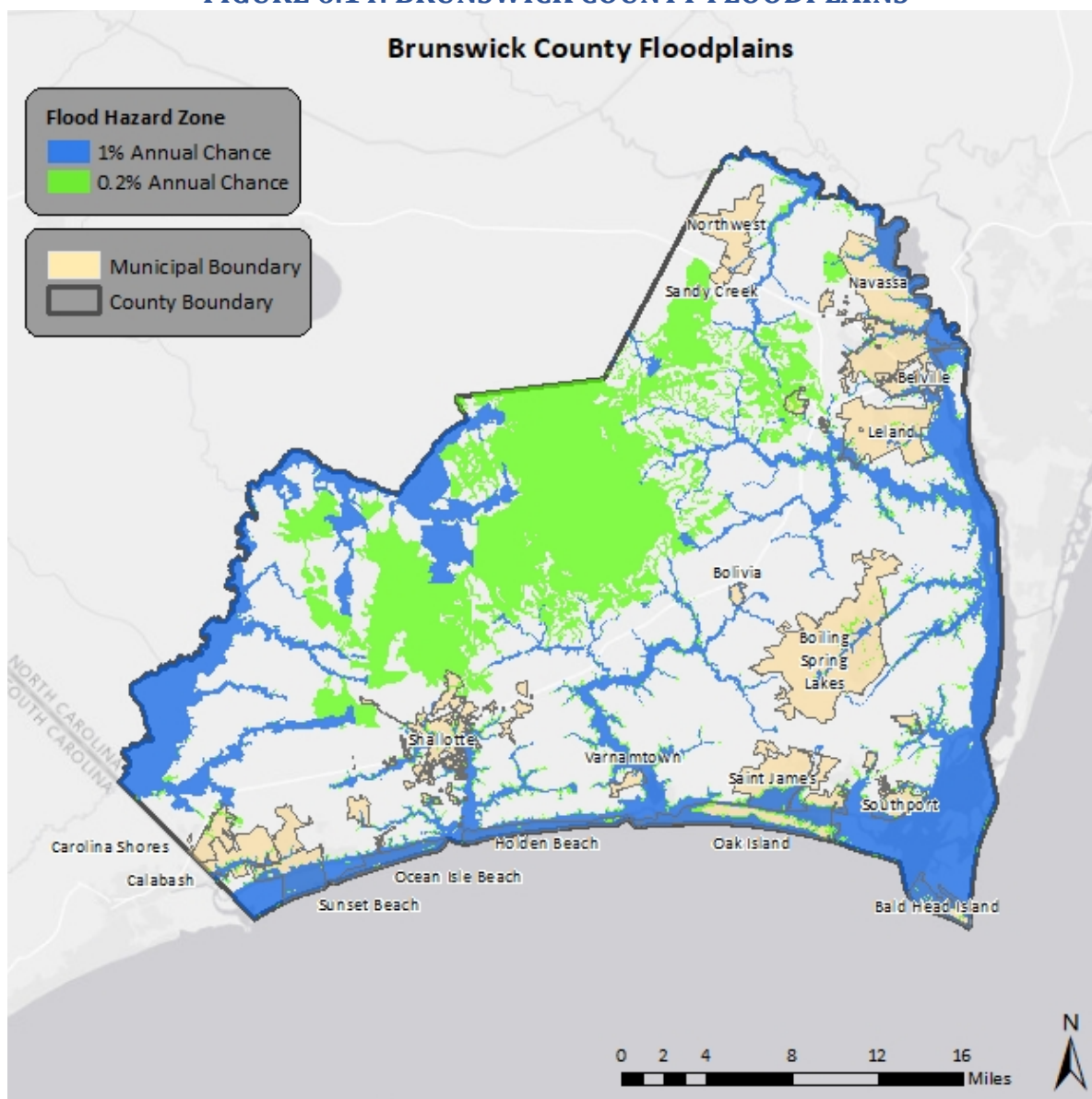


FIGURE 6.15: NEW HANOVER COUNTY FLOODPLAINS

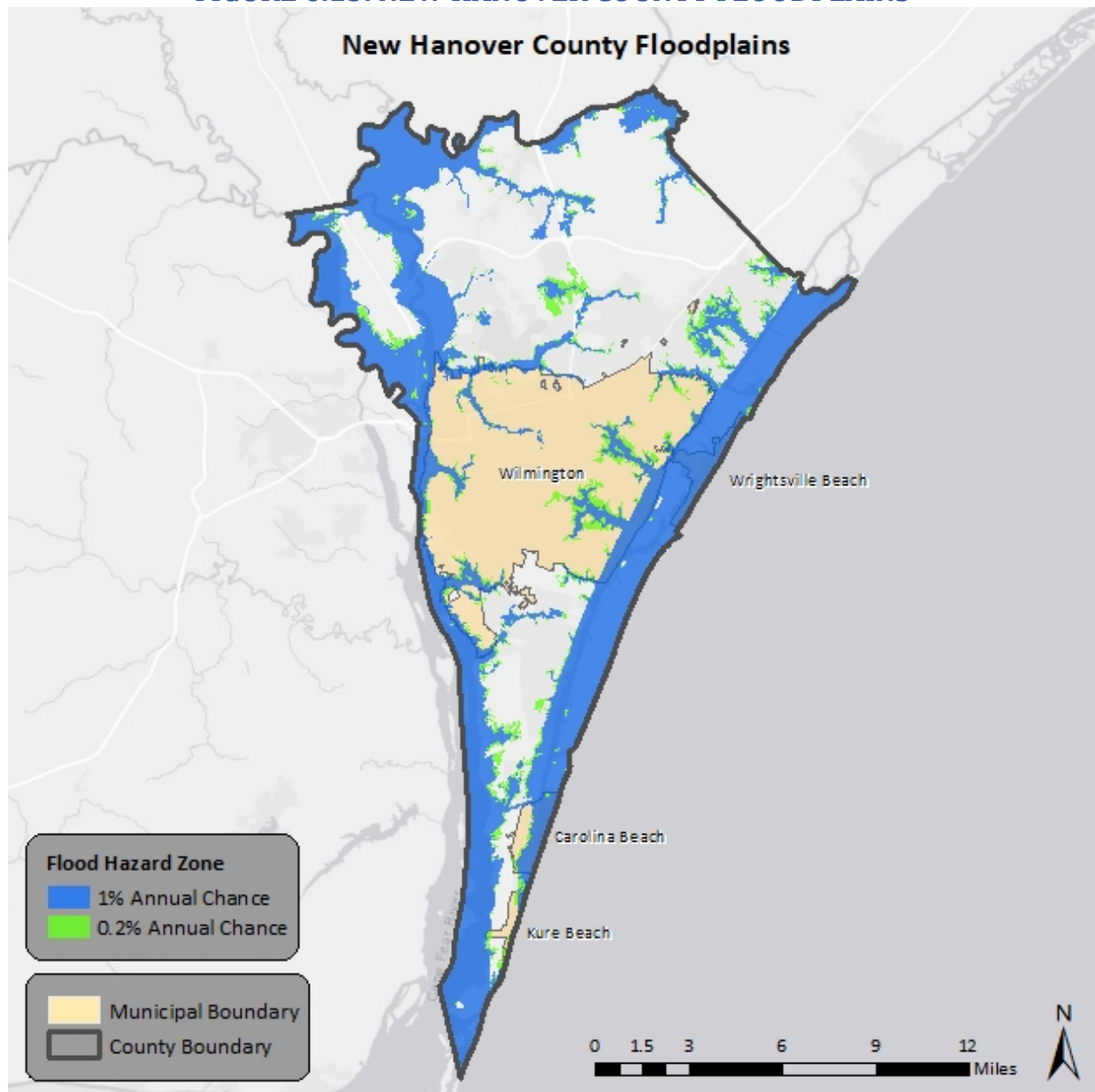


FIGURE 6.16: ONSLOW COUNTY FLOODPLAINS

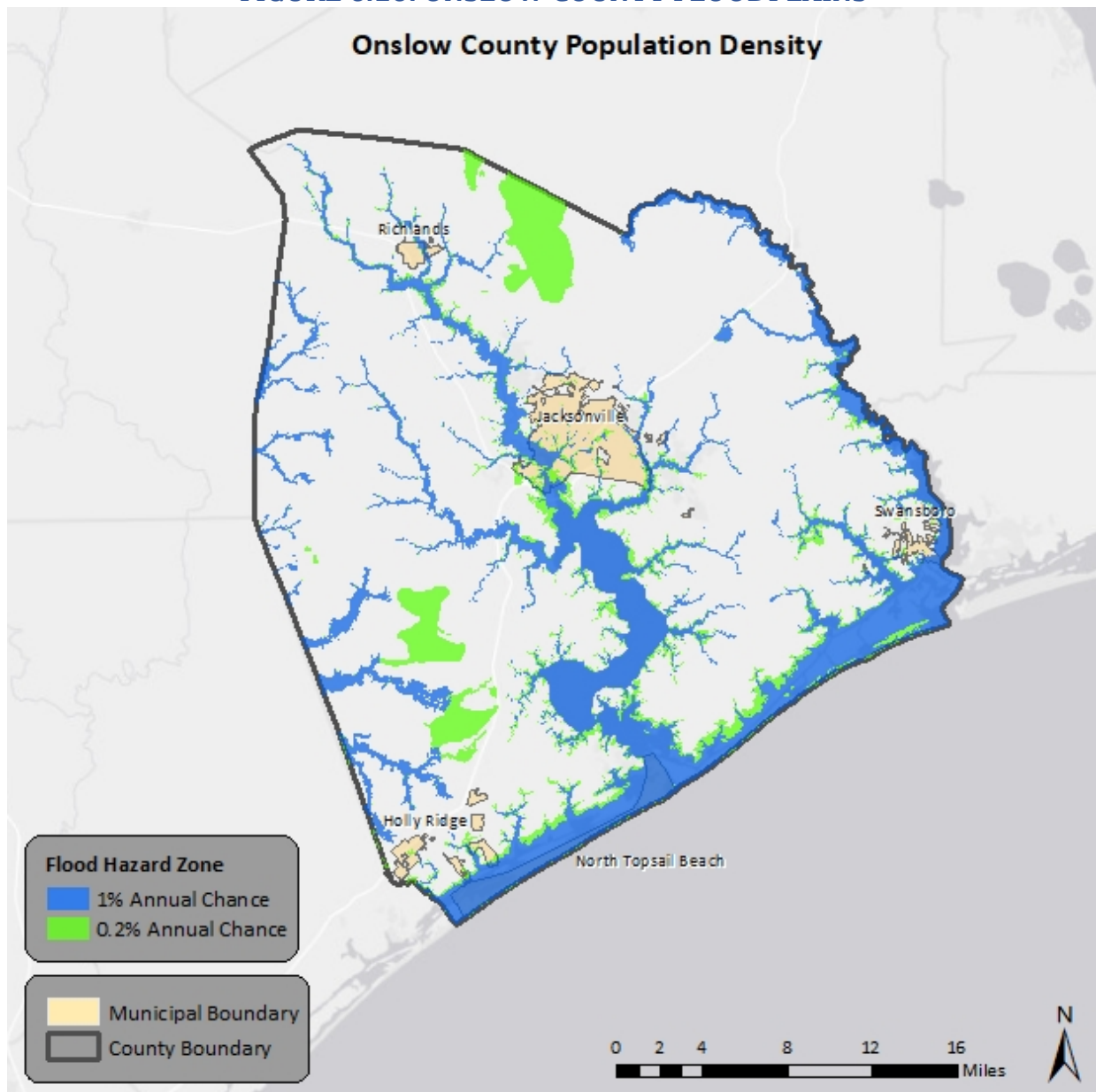
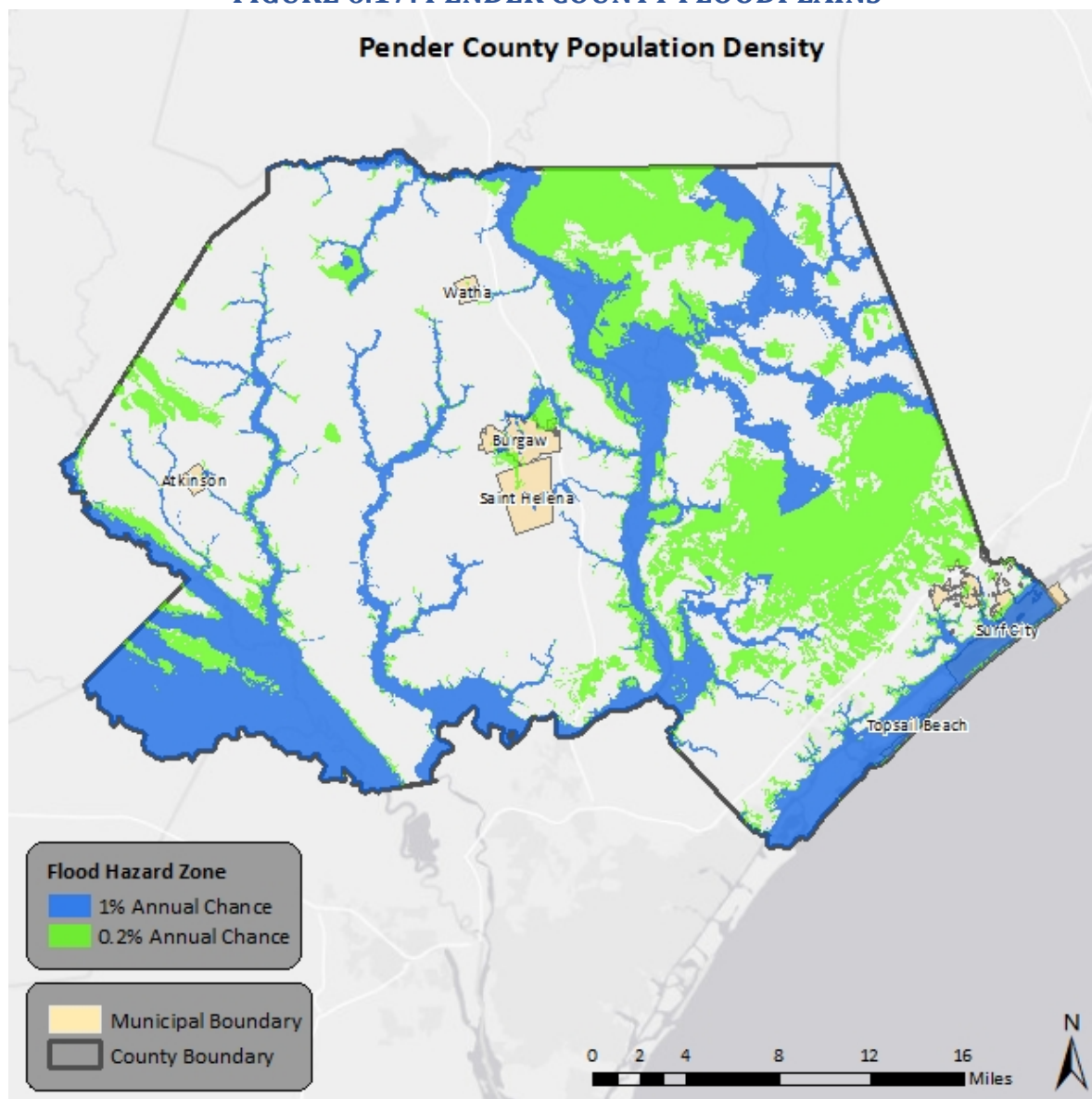


FIGURE 6.17: PENDER COUNTY FLOODPLAINS



CRITICAL FACILITIES

The critical facility analysis revealed that there are 78 critical facilities located in the Southeastern NC Region's 1.0-percent and 2.0-percent annual chance floodplain based on FEMA DFIRM boundaries and GIS analysis. (As previously noted, this analysis does not consider building elevation, which may negate risk.) A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

In conclusion, a flood has the potential to impact many existing and future buildings, facilities, and populations in the Southeastern NC Region, though some areas are at a higher risk than others. All types of structures in a floodplain are at-risk, though elevated structures will have a reduced risk. As noted, the floodplains used in this analysis include the 100-year and 500-year FEMA regulated floodplain boundaries. It is certainly possible that more severe events could occur beyond these boundaries or urban (flash) flooding could impact additional structures. Such site-specific vulnerability determinations

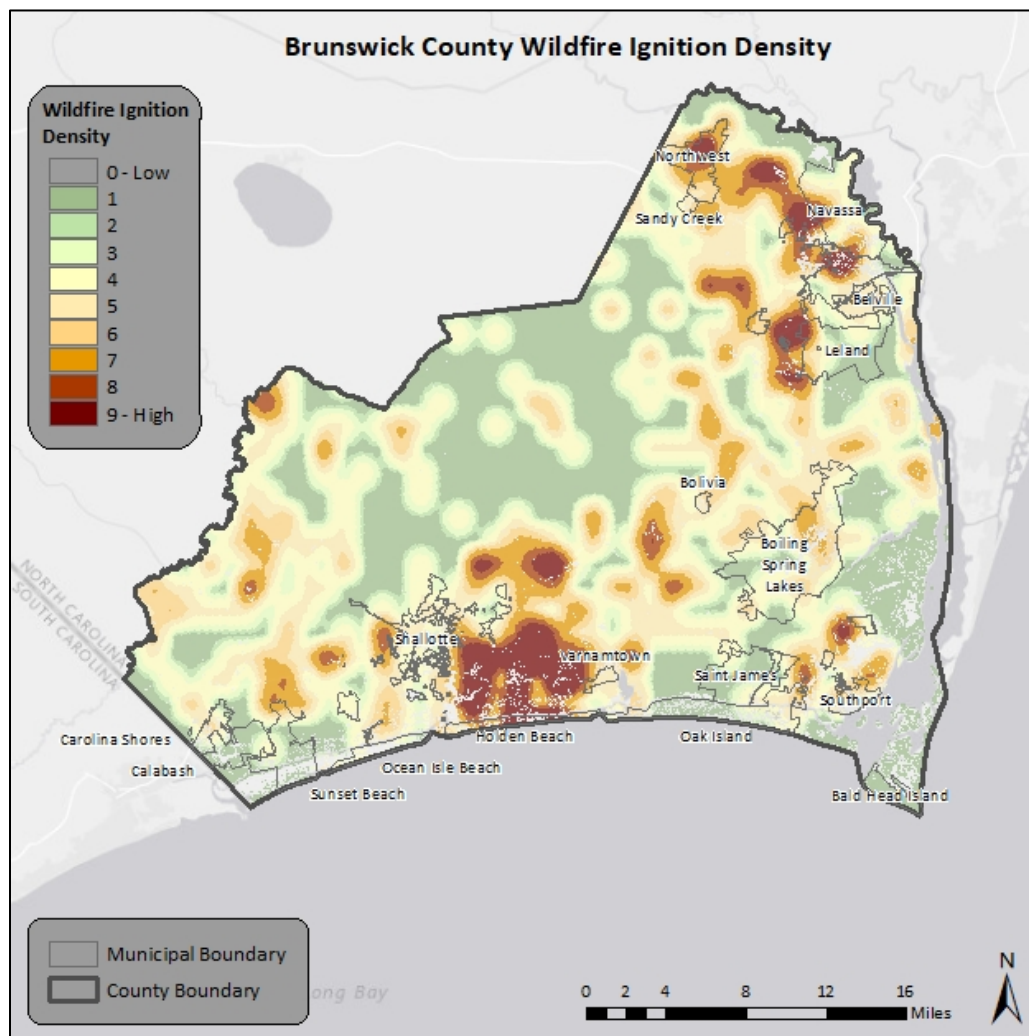
SECTION 6: VULNERABILITY ASSESSMENT

should be considered during future plan updates. Furthermore, areas subject to repetitive flooding should be analyzed for potential mitigation actions.

6.5.6 Wildfires

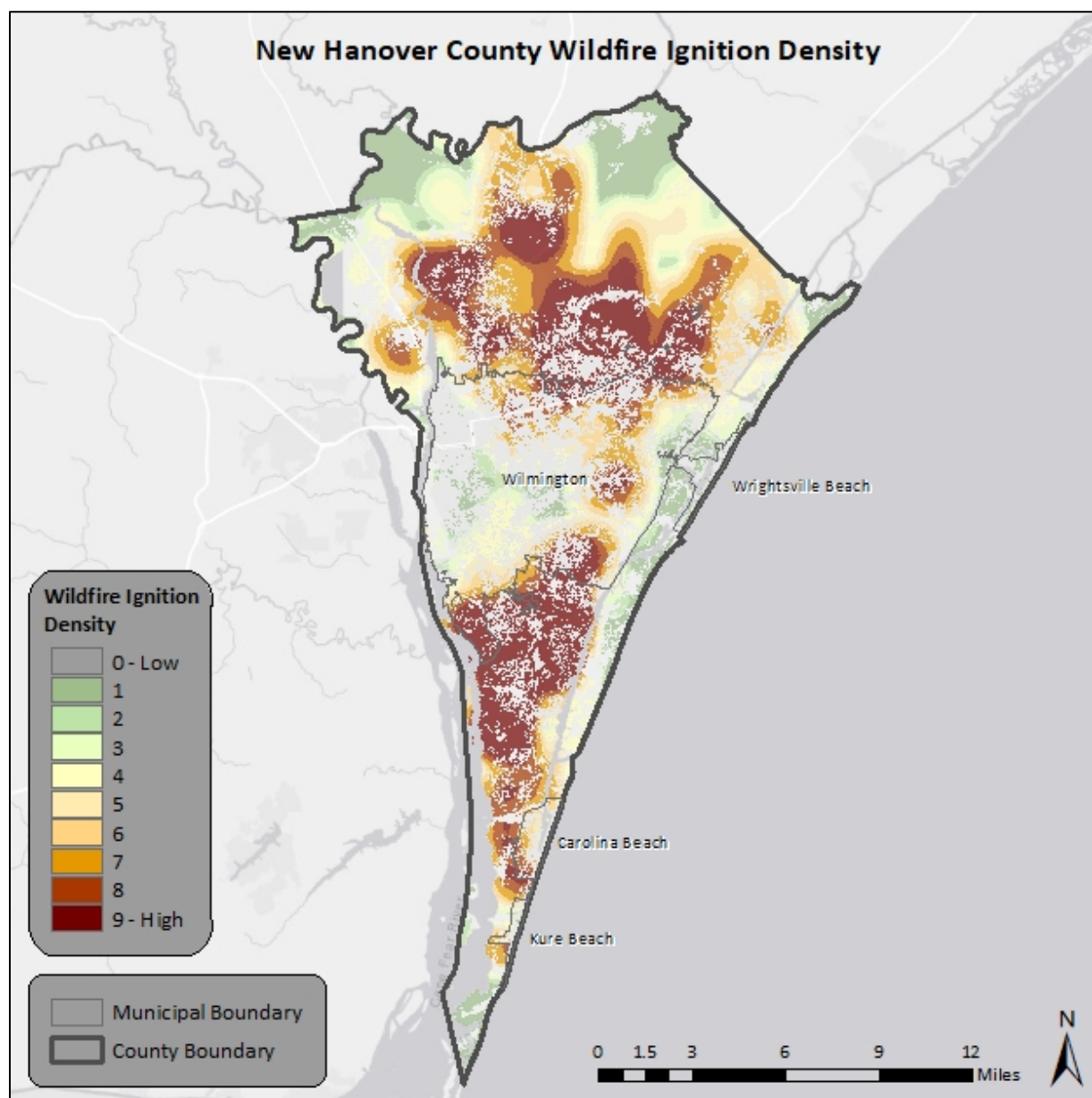
To estimate exposure to wildfire, the Wildland Urban Interface (WUI) Risk Index for the region was obtained through the Southern Wildfire Risk Assessment. The WUI uses a Response Function modeling approach and rates the potential impact of a wildfire on people and their homes. The index ranges from -1 to -9, with -9 being the most negative impact. For example, an area with high housing density and high flame lengths are rated -9, while an area with low housing density and low flame lengths are rated -1. At-risk areas fall within the range of -7 to -9. This index was layered with parcel data using GIS analysis. **Figures 6.18-6.21** show the Wildfire Ignition Density for each county in the region below.

FIGURE 6.18: WILDFIRE IGNITION DENSITY IN BRUNSWICK COUNTY



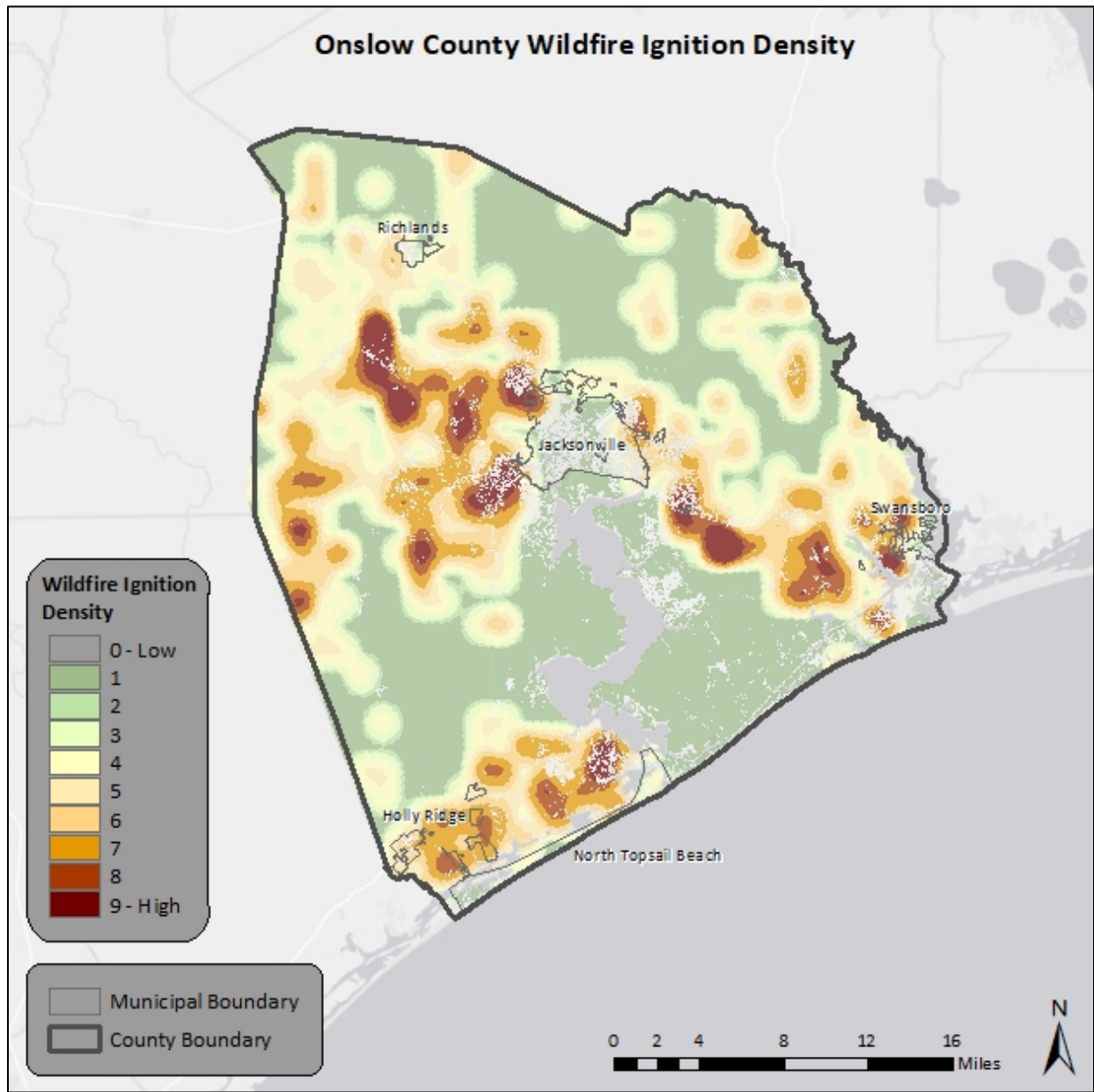
Source: Southern Wildfire Risk Assessment

FIGURE 6.19: WILDFIRE IGNITION DENSITY IN NEW HANOVER COUNTY



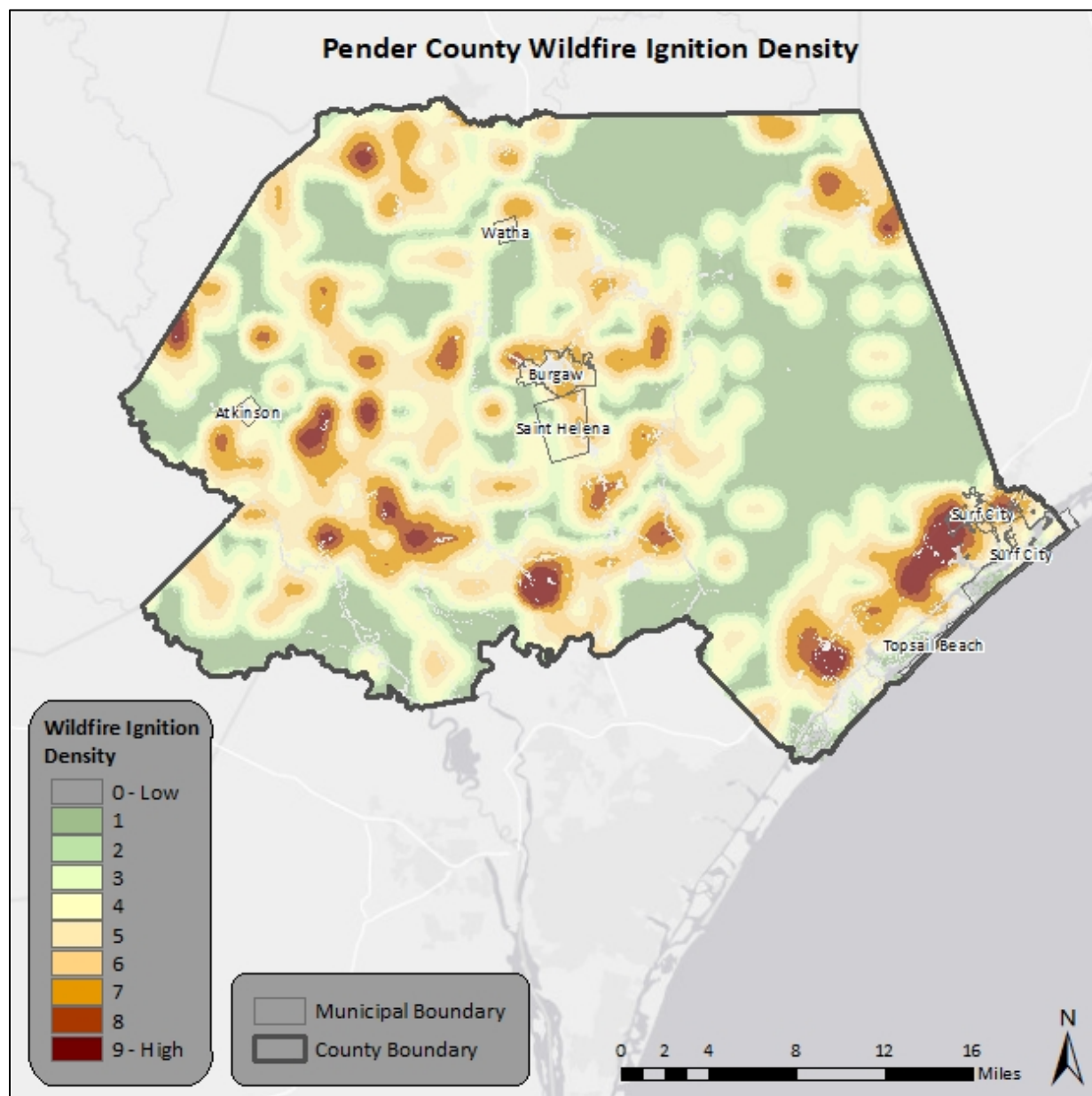
Source: Southern Wildfire Risk Assessment

FIGURE 6.20: WILDFIRE IGNITION DENSITY IN ONSLOW COUNTY



Source: Southern Wildfire Risk Assessment

FIGURE 6.21: WILDFIRE IGNITION DENSITY IN PENDER COUNTY



Source: Southern Wildfire Risk Assessment

The region contains some lands where the value falls into the at-risk category, though the region has somewhat less land labeled as at-risk compared to other regions of North Carolina. Overall, there is likely considerably less risk in this region than in other areas of the country.

SOCIAL VULNERABILITY

Even though not all areas have equal vulnerability, there is some susceptibility across the entire Southeastern NC Region. It is assumed that the total population is at risk to the wildfire hazard. Determining the exact number of people in certain wildfire zones is difficult with existing data and could be misleading.

SECTION 6: VULNERABILITY ASSESSMENT

CRITICAL FACILITIES

All of the counties in the Southeastern NC Region have critical facilities in the at-risk area (-7 or higher) for wildfires. New Hanover had the most with 104, and Pender had the least with 36. This data reflects a slightly elevated risk in New Hanover County for critical facilities to wildfires.

Table 6.19 shows the results of the GIS analysis.

TABLE 6.19: CRITICAL FACILITIES IN THE AT-RISK WUI RISK INDEX AREA

Location	Number of At-Risk Critical Facilities
Brunswick County	55
New Hanover County	104
Onslow County	99
Pender County	36
Southeastern NC Regional Total	294

Source: Southern Wildfire Risk Assessment, Local governments

Additional information was provided through the NCEM Risk Management Tool (RMT). This data describes vulnerability in both built and living environments and can be seen in below in **Table 6.20** and **Table 6.21**.

TABLE 6.20: BUILDING VULNERABILITY TO WILDFIRE HAZARDS IN THE SOUTHEASTERN NC REGION

Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
Brunswick County	16,798	44,075	\$4,746,767,141	2,297	\$1,158,179,367	541	\$488,324,254	46,913	\$6,393,270,764
Bald Head Island	-	15	\$8,626,244	2	\$151,151	-	\$0	17	\$8,777,395
Belville	187	750	\$100,230,667	26	\$13,890,788	2	\$816,357	778	\$114,937,813
Boiling Spring Lakes	639	1,824	\$194,148,625	33	\$8,172,694	31	\$29,784,134	1,888	\$232,105,454
Bolivia	227	203	\$18,487,612	15	\$3,390,865	13	\$9,880,048	231	\$31,758,525
Calabash	65	217	\$23,374,621	9	\$4,421,898	2	\$2,247,858	228	\$30,044,377
Carolina Shores	415	1,274	\$155,441,030	40	\$18,820,389	2	\$1,088,930	1,316	\$175,350,349
Holden Beach	144	1,057	\$194,284,718	7	\$3,930,592	3	\$2,261,760	1,067	\$200,477,069
Leland	930	2,370	\$268,102,240	114	\$47,642,188	44	\$41,406,079	2,528	\$357,150,507
Navassa	370	589	\$37,171,810	43	\$12,878,696	18	\$4,755,933	650	\$54,806,439
Northwest	263	423	\$32,411,538	19	\$4,026,982	11	\$3,380,772	453	\$39,819,292
Oak Island	843	2,695	\$304,286,210	121	\$36,840,718	26	\$11,122,487	2,842	\$352,249,415
Ocean Isle Beach	92	769	\$127,966,753	37	\$14,071,396	3	\$1,479,535	809	\$143,517,685
Sandy Creek	138	130	\$7,620,531	10	\$1,589,721	2	\$205,620	142	\$9,415,872
Shallotte	728	1,466	\$209,821,998	284	\$183,581,206	82	\$69,730,404	1,832	\$463,133,608
Southport	488	1,163	\$193,326,468	127	\$137,662,208	10	\$9,644,812	1,300	\$340,633,489

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Location	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
St. James	-	940	\$331,949,030	16	\$9,350,557	-	\$0	956	\$341,299,587
Sunset Beach	11	1,063	\$209,682,848	44	\$61,884,877	3	\$388,974	1,110	\$271,956,699
Varnamtown	198	314	\$31,019,143	12	\$4,249,907	6	\$2,897,670	332	\$38,166,719
Unincorporated Area	11,060	26,813	\$2,298,815,055	1,338	\$591,622,534	283	\$297,232,881	28,434	\$3,187,670,470
New Hanover County	16,425	50,226	\$13,102,945,064	2,448	\$4,121,898,254	361	\$785,692,231	53,035	\$18,010,535,548
Carolina Beach	798	2,333	\$790,550,725	67	\$66,388,178	18	\$26,458,555	2,418	\$883,397,458
Kure Beach	114	726	\$356,079,831	10	\$11,180,615	2	\$2,756,361	738	\$370,016,807
Wilmington	7,268	17,264	\$5,061,926,000	853	\$1,961,445,283	201	\$494,565,397	18,318	\$7,517,936,680
Wrightsville	-	-	\$0	-	\$0	-	\$0	-	\$0
Unincorporated Area	8,245	29,903	\$6,894,388,508	1,518	\$2,082,884,178	140	\$261,911,918	31,561	\$9,239,184,603
Onslow County	28,234	49,392	\$4,920,045,660	2,155	\$1,664,710,592	1,542	\$1,896,072,911	53,089	\$8,480,829,164
Holly Ridge	757	714	\$53,468,296	77	\$47,647,688	18	\$16,797,629	809	\$117,913,613
Jacksonville	7,312	11,754	\$1,492,374,793	513	\$904,465,424	1,097	\$1,143,741,407	13,364	\$3,540,581,624
North Topsail Beach	255	756	\$151,687,226	3	\$948,608	2	\$1,265,420	761	\$153,901,255
Richlands	529	709	\$85,885,368	59	\$47,204,752	26	\$45,543,103	794	\$178,633,223
Swansboro	355	1,096	\$122,124,318	111	\$93,607,710	35	\$119,793,055	1,242	\$335,525,083
Unincorporated Area	19,026	34,363	\$3,014,505,659	1,392	\$570,836,410	364	\$568,932,297	36,119	\$4,154,274,366
Pender County	7,022	22,296	\$2,269,492,302	2,676	\$699,150,244	297	\$274,277,880	25,269	\$3,242,920,427
Atkinson	94	80	\$7,262,907	14	\$2,084,462	6	\$2,648,726	100	\$11,996,094
Burgaw	579	757	\$98,553,462	110	\$101,862,803	19	\$17,111,547	886	\$217,527,812
St. Helena	97	172	\$19,186,324	43	\$4,039,880	7	\$2,354,466	222	\$25,580,671
Surf City	84	621	\$61,303,232	57	\$36,763,610	8	\$2,365,403	686	\$100,432,245
Topsail Beach	-	-	\$0	-	\$0	-	\$0	-	\$0
Watha	96	164	\$14,273,499	17	\$2,816,343	10	\$3,627,807	191	\$20,717,649
Unincorporated Area	6,072	20,502	\$2,068,912,878	2,435	\$551,583,146	247	\$246,169,931	23,184	\$2,866,665,956
Southeastern NC Regional Total	68,479	165,989	\$25,039,250,167	9,576	\$7,643,938,457	2,741	\$3,444,367,276	178,306	\$36,127,555,903

Source: NCEM Risk Management Tool

TABLE 6.21: POPULATION VULNERABILITY TO WILDFIRE HAZARD FOR THE SOUTHEASTERN NC REGION

Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
Brunswick County	18,534	4,690	86,465
Bald Head Island	-	-	2
Belville	402	102	1,875
Boiling Spring Lakes	1,113	281	5,191
Bolivia	65	16	303
Calabash	80	20	375
Carolina Shores	745	189	3,478
Holden Beach	59	15	275
Leland	2,461	623	11,480
Navassa	310	78	1,445
Northwest	170	43	791
Oak Island	531	134	2,476
Ocean Isle Beach	88	22	411
Sandy Creek	54	13	252
Shallotte	1,019	258	4,753
Southport	581	147	2,711
St. James	473	120	2,207
Sunset Beach	231	59	1,080
Varnamtown	103	26	482
Unincorporated Area	10,049	2,544	46,878
New Hanover County	17,153	7,159	123,756
Carolina Beach	518	216	3,737
Kure Beach	118	49	850
Wilmington	6,819	2,846	49,195
Wrightsville	-	-	-
Unincorporated Area	9,698	4,048	69,974
Onslow County	9,839	12,608	131,894
Holly Ridge	114	146	1,525
Jacksonville	3,870	4,959	51,876
North Topsail Beach	24	31	326
Richlands	115	148	1,544
Swansboro	170	218	2,278
Unincorporated Area	5,546	7,106	74,345
Pender County	6,543	2,545	43,280
Atkinson	22	8	144
Burgaw	355	138	2,345
St. Helena	47	18	311
Surf City	52	24	373
Topsail Beach	-	-	-
Watha	47	18	307
Unincorporated Area	6,020	2,339	39,800

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Incidence Level	Elderly at Risk	Children at Risk	Total at Risk
Southeastern NC Regional Total	52,069	27,002	385,395

Source: NCEM Risk Management Tool

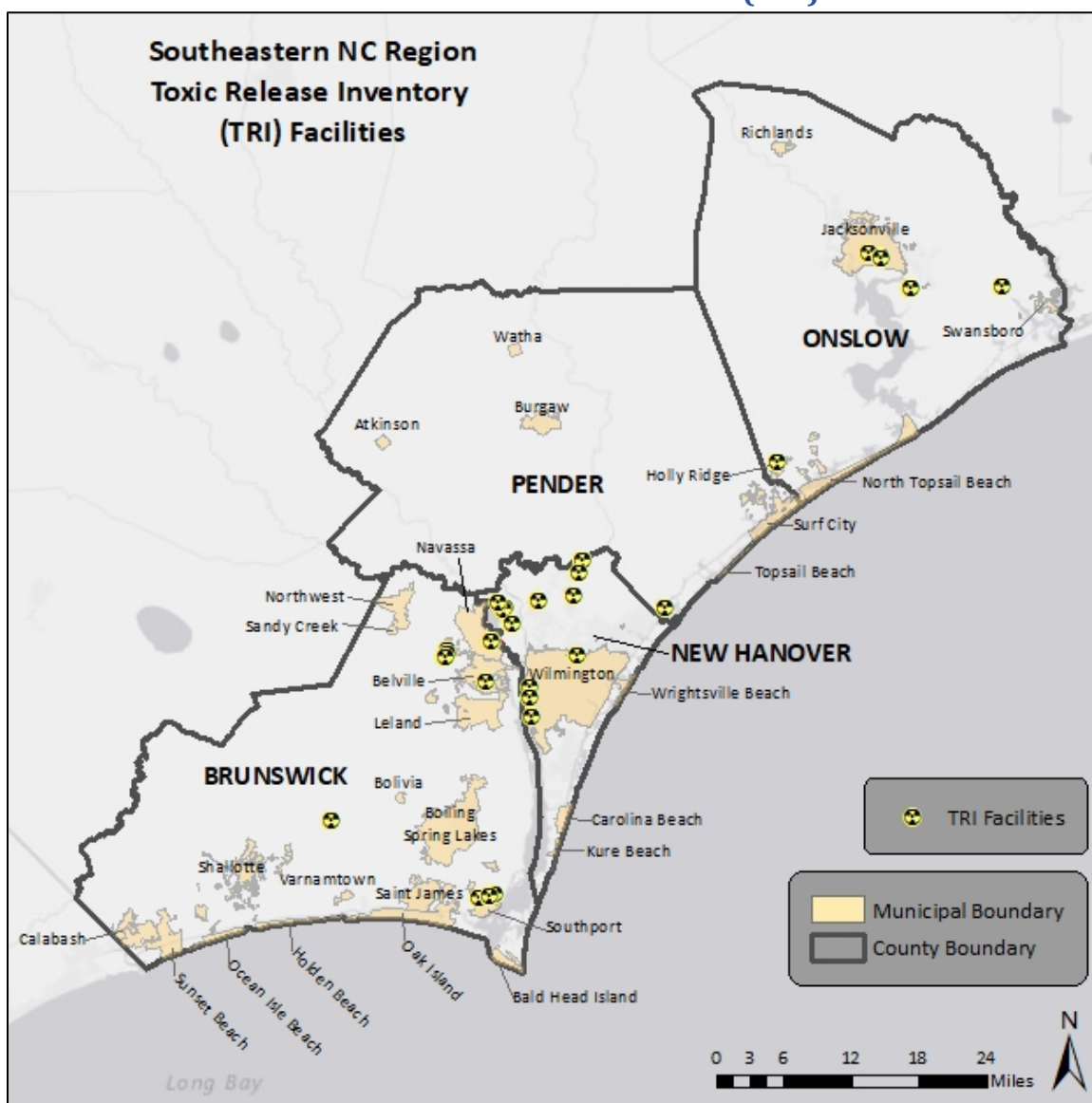
6.5.7 Hazardous Substances

Most hazardous substance incidents that occur are contained and suppressed before destroying any property or threatening lives. However, they can have a significant negative impact. Such events can cause multiple deaths, completely shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. In a hazardous substance incident, solid, liquid, and/or gaseous contaminants may be released from fixed or mobile containers. Weather conditions will directly affect how the hazard develops. Certain chemicals may travel through the air or water, affecting a much larger area than the point of the incidence itself. Non-compliance with fire and building codes, as well as failure to maintain existing fire and containment features, can substantially increase the damage from a hazardous materials release. The duration of a hazardous materials incident can range from hours to days. Warning time is minimal to none.

In order to conduct the vulnerability assessment for this hazard, GIS intersection analysis was used for fixed and mobile areas and parcels⁴. In both scenarios, two sizes of buffers—0.5 mile and 1 mile—were used. These areas are assumed to respect the different levels of effect: immediate (primary) and secondary. Primary and secondary impact sites were selected based on guidance from FEMA 426, Reference Manual to Mitigate Potential Terrorist Attacks against Buildings and engineering judgment. For the fixed site analysis, geo-referenced TRI listed toxic sites in the Southeastern NC Region, along with buffers, were used for analysis as shown in **Figure 6.10**. For the mobile analysis, the major roads (Interstate highway, U.S. highway, and State highway) and railroads, where hazardous materials are primarily transported that could adversely impact people and buildings, were used for the GIS buffer analysis. **Figure 6.11** shows the areas used for mobile toxic release buffer analysis. The results indicate the approximate number of parcels, improved value, as shown in **Table 6.22** (fixed sites), **Table 6.23** (mobile road sites) and **Table 6.24** (mobile railroad sites)⁵.

⁴ This type of analysis will likely yield inflated results (generally higher than what is actually reported after an actual event).

⁵ Note that parcels included in the 1-mile analysis are also included in the 0.5-mile analysis.

FIGURE 6.10: TOXIC RELEASE INVENTORY (TRI) FACILITIES

Source: EPA

TABLE 6.22: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES (FIXED SITES) IN THE SOUTHEASTERN NC REGION

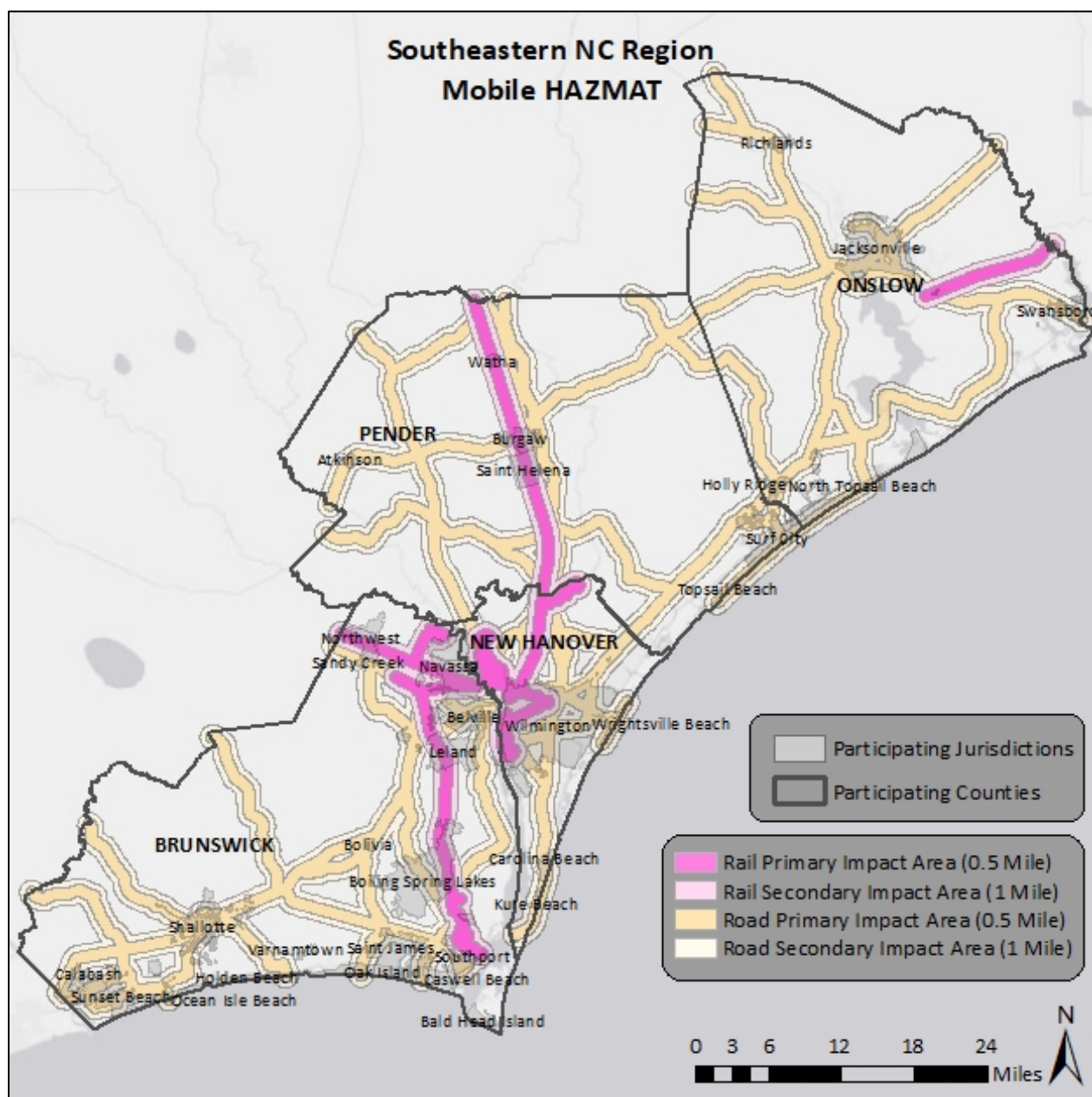
Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Brunswick County	1,528	1,077	\$286,270,230	5,616	3,961	\$1,023,012,995
Bald Head Island	-	-	-	-	-	-
Belville	2	2	\$991,170	397	367	\$61,502,920
Boiling Spring Lakes	-	-	-	-	-	-
Bolivia	-	-	-	-	-	-
Calabash	-	-	-	-	-	-

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Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Carolina Shores	-	-	-	-	-	-
Holden Beach	-	-	-	-	-	-
Leland	633	544	\$79,856,670	2,382	1,840	\$368,007,895
Navassa	29	14	\$11,208,760	153	75	\$16,777,900
Northwest	-	-	-	-	-	-
Oak Island	-	-	-	-	-	-
Ocean Isle Beach	-	-	-	-	-	-
Sandy Creek	-	-	-	-	-	-
Shallotte	-	-	-	-	-	-
Southport	333	208	\$68,509,000	1,215	783	\$212,326,640
St. James	-	-	-	-	-	-
Sunset Beach	-	-	-	-	-	-
Varnamtown	-	-	-	-	-	-
Unincorporated Area	531	311	\$125,704,630	1,469	896	\$364,397,640
New Hanover County	2,539	2,154	\$592,683,919	8,202	6,779	\$1,707,880,901
Carolina Beach	-	-	-	-	-	-
Kure Beach	-	-	-	-	-	-
Wilmington	1,921	1,699	\$327,460,561	4,982	4,315	\$1,082,159,434
Wrightsville	-	-	-	-	-	-
Unincorporated Area	618	455	\$265,223,358	3,220	2,464	\$625,721,467
Onslow County	1,654	1,207	\$190,390,033	5,456	4,393	\$616,993,861
Holly Ridge	339	174	\$22,846,964	878	545	\$49,037,674
Jacksonville	1,233	990	\$152,353,698	3,960	3,430	\$516,334,295
North Topsail Beach	-	-	-	-	-	-
Richlands	-	-	-	-	-	-
Swansboro	-	-	-	-	-	-
Unincorporated Area	82	43	\$15,189,371	618	418	\$51,621,892
Pender County	369	298	\$42,843,385	693	572	\$98,607,183
Atkinson	-	-	-	-	-	-
Burgaw	-	-	-	-	-	-
St. Helena	-	-	-	-	-	-
Surf City	-	-	-	-	-	-
Topsail Beach	-	-	-	-	-	-
Watha	-	-	-	-	-	-
Unincorporated Area	369	298	\$42,843,385	693	572	\$98,607,183
Southeastern NC Regional Total	6,090	4,736	\$1,112,187,567	19,967	15,705	\$3,446,494,940

Source: EPA, Local governments

FIGURE 6.9: MOBILE HAZMAT BUFFERS IN THE SOUTHEASTERN NC REGION



Source: NC Department of Transportation

TABLE 6.23: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES
(MOBILE ANALYSIS – ROAD)

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Brunswick County	53,609	32,796	\$5,779,007,619	86,671	52,685	\$9,318,373,486
Bald Head Island	-	-	\$-	-	-	\$-
Belville	495	401	\$82,058,310	889	782	\$132,514,260

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Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Boiling Spring Lakes	1,965	458	\$93,619,390	4,710	1,235	\$188,439,340
Bolivia	118	76	\$15,699,590	118	76	\$15,699,590
Calabash	1,857	1,048	\$120,808,690	2,214	1,300	\$147,009,570
Carolina Shores	1,819	1,451	\$230,782,590	3,086	2,512	\$395,848,340
Holden Beach	499	380	\$101,544,560	1,208	884	\$205,354,923
Leland	4,872	3,781	\$735,481,195	8,760	6,743	\$1,326,415,645
Navassa	127	46	\$12,759,850	380	201	\$27,413,160
Northwest	45	29	\$2,077,670	89	59	\$4,657,150
Oak Island	2,866	2,274	\$382,313,189	5,292	4,184	\$671,747,029
Ocean Isle Beach	977	716	\$176,188,450	1,955	1,602	\$428,216,576
Sandy Creek	109	80	\$6,488,930	135	98	\$7,744,860
Shallotte	1,686	1,019	\$289,461,820	2,494	1,447	\$378,257,800
Southport	2,796	1,989	\$483,605,700	2,910	2,038	\$499,982,720
St. James	550	229	\$85,641,320	1,752	975	\$392,097,760
Sunset Beach	2,747	2,175	\$384,922,856	1,752	975	\$392,097,760
Varnamtown	-	-	\$-	-	-	\$-
Unincorporated Area	30,081	16,644	\$2,575,553,509	48,927	27,574	\$4,104,877,003
New Hanover County	57,427	47,986	\$11,871,779,279	80,892	68,868	\$16,021,996,577
Carolina Beach	3,086	2,389	\$460,211,893	3,855	2,977	\$580,361,293
Kure Beach	2,065	1,667	\$360,437,300	2,065	1,667	\$360,437,300
Wilmington	27,907	24,358	\$6,763,654,862	36,634	32,357	\$8,737,707,009
Wrightsville	1,883	1,544	\$488,540,800	1,883	1,544	\$488,540,800
Unincorporated Area	22,486	18,028	\$3,798,934,424	36,455	30,323	\$5,854,950,175
Onslow County	28,239	21,297	\$3,378,893,315	43,728	33,898	\$4,804,450,606
Holly Ridge	1,714	1,286	\$156,565,174	1,833	1,367	\$171,388,964
Jacksonville	8,207	7,132	\$1,464,090,985	13,501	12,164	\$2,066,767,138
North Topsail Beach	1,731	1,197	\$250,926,670	1,782	1,221	\$259,043,610
Richlands	670	529	\$63,775,651	826	656	\$81,415,958
Swansboro	1,194	1,074	\$141,659,708	1,453	1,311	\$182,373,488
Unincorporated Area	14,723	10,079	\$1,301,875,127	24,333	17,179	\$2,043,461,448
Pender County	25,115	15,974	\$2,169,845,917	33,763	21,190	\$2,795,149,758
Atkinson	325	184	\$11,518,718	325	184	\$11,518,718
Burgaw	1,822	1,247	\$230,619,363	1,916	1,302	\$237,162,974
St. Helena	213	133	\$14,817,395	277	154	\$16,816,935
Surf City	4,942	3,991	\$609,105,738	5,196	4,192	\$637,444,836
Topsail Beach	1,836	1,489	\$252,206,350	1,852	1,505	\$255,021,882
Watha	-	-	\$-	27	11	\$452,713
Unincorporated Area	15,977	8,930	\$1,051,578,353	24,170	13,842	\$1,636,731,700
Southeastern NC Regional Total	164,390	118,053	\$23,199,526,130	245,054	176,641	\$32,939,970,427

Source: NC Department of Transportation, Local Governments

SECTION 6: VULNERABILITY ASSESSMENT

**TABLE 6.24: EXPOSURE OF IMPROVED PROPERTY TO HAZARDOUS SUBSTANCES
(MOBILE ANALYSIS – RAILROAD)**

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Brunswick County	9,616	5,128	\$833,416,590	18,789	10,269	\$1,829,100,400
Bald Head Island	-	-	\$-	-	-	\$-
Belville	-	-	\$-	-	-	\$-
Boiling Spring Lakes	2,944	1,460	\$170,926,720	4,863	2,116	\$298,498,350
Bolivia	-	-	\$-	-	-	\$-
Calabash	-	-	\$-	-	-	\$-
Carolina Shores	-	-	\$-	-	-	\$-
Holden Beach	-	-	\$-	-	-	\$-
Leland	2,153	1,261	\$249,791,510	4,946	3,407	\$661,123,410
Navassa	696	436	\$40,516,040	854	511	\$54,781,030
Northwest	276	144	\$9,646,430	456	241	\$16,379,510
Oak Island	-	-	\$-	-	-	\$-
Ocean Isle Beach	-	-	\$-	-	-	\$-
Sandy Creek	-	-	\$-	-	-	\$-
Shallotte	-	-	\$-	-	-	\$-
Southport	92	45	\$17,606,740	834	583	\$153,900,500
St. James	-	-	\$-	-	-	\$-
Sunset Beach	-	-	\$-	-	-	\$-
Varnamtown	-	-	\$-	-	-	\$-
Unincorporated Area	3,455	1,782	\$344,929,150	6,836	3,411	\$644,417,600
New Hanover County	13,194	10,548	\$2,579,800,792	21,234	17,425	\$4,353,496,599
Carolina Beach	-	-	\$-	-	-	\$-
Kure Beach	-	-	\$-	-	-	\$-
Wilmington	10,518	8,659	\$ 2,062,401,909	16,584	14,050	\$3,602,710,348
Wrightsville	-	-	\$-	-	-	\$-
Unincorporated Area	2,676	1,889	\$517,398,883	4,650	3,375	\$750,786,251
Onslow County	1,160	712	\$53,964,473	2,424	1,677	\$133,989,077
Holly Ridge	-	-	\$-	-	-	\$-
Jacksonville	12	7	\$2,949,643	12	7	\$2,949,643
North Topsail Beach	-	-	\$-	-	-	\$-
Richlands	-	-	\$-	-	-	\$-
Swansboro	-	-	\$-	-	-	\$-
Unincorporated Area	1,148	705	\$51,014,830	2,412	1,670	\$131,039,434
Pender County	3,339	2,053	\$264,746,986	5,720	3,461	\$431,125,507
Atkinson	-	-	\$-	-	-	\$-
Burgaw	1,137	751	\$134,824,835	1,712	1,143	\$203,780,414
St. Helena	199	96	\$9,699,715	349	194	\$19,587,511
Surf City	-	-	\$-	-	-	\$-

SECTION 6: VULNERABILITY ASSESSMENT

Location	0.5 Mile Buffer			1.0 Mile Buffer		
	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value	Approx. Number of Parcels	Approx. Number Improved	Approx. Improved Value
Topsail Beach	-	-	\$-	-	-	\$-
Watha	161	93	\$5,684,181	161	93	\$5,684,181
Unincorporated Area	1,842	1,113	\$114,538,255	3,498	2,031	\$202,073,401
Southeastern NC Regional Total	27,309	18,441	\$3,731,928,841	48,167	32,832	\$6,747,711,583

Source: NC Department of Transportation, Local Governments

SOCIAL VULNERABILITY

Given high susceptibility across the entire Southeastern NC Region, it is assumed that the total population is at risk to hazardous materials incidents. It should be noted that areas of population concentration may be at an elevated risk due to a greater burden to evacuate population quickly.

CRITICAL FACILITIES

Fixed Site Analysis:

The critical facility analysis for fixed TRI sites revealed that there are 70 facilities located in a HAZMAT risk zone. The primary impact zone (0.5-mile buffer) includes 19 facilities throughout the region. Onslow County has the most facilities in the primary impact zone with 10 facilities, New Hanover has 9, while Brunswick and Pender County have none. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

Mobile Analysis:

The critical facility analysis for road and railroad transportation corridors revealed that there are 504 critical facilities located in the primary (0.5 mile) mobile HAZMAT buffer areas for roads and railroads throughout the region. Although this is a worst-case scenario model, it indicates that most of the critical facilities in the Southeastern NC region are vulnerable to a potential mobile HAZMAT incident. Additionally, there are 601 critical facilities located in the secondary (1 mile) buffer area of both roads and railroads, accounting for over 85 percent of the total number of critical facilities in the region. This may be the result of many critical facilities being located near major roadways for ease of access, but it is nonetheless important to recognize what a large percentage of critical facilities in the region are located in the smaller buffer area. A list of specific critical facilities and their associated risk can be found in **Table 6.26** at the end of this section.

In conclusion, a hazardous material incident has the potential to impact many existing and future buildings, critical facilities, and populations in the Southeastern NC Region. Those areas in a primary buffer are at the highest risk, though all areas carry some vulnerability due to variations in conditions that could alter the impact area such direction and speed of wind, volume of release, etc.

6.6 CONCLUSIONS ON HAZARD VULNERABILITY

The results of this vulnerability assessment are useful in at least three ways:

- ◆ Improving our understanding of the risk associated with the natural hazards in the Southeastern NC region through better understanding of the complexities and dynamics of risk, how levels of risk can be measured and compared, and the myriad of factors that influence risk. An understanding of these relationships is critical in making balanced and informed decisions on managing the risk.
- ◆ Providing a baseline for policy development and comparison of mitigation alternatives. The data used for this analysis presents a current picture of risk in the Southeastern NC Region. Updating this risk “snapshot” with future data will enable comparison of the changes in risk with time. Baselines of this type can support the objective analysis of policy and program options for risk reduction in the region.
- ◆ Comparing the risk among the natural hazards addressed. The ability to quantify the risk to all these hazards relative to one another helps in a balanced, multi-hazard approach to risk management at each level of governing authority. This ranking provides a systematic framework to compare and prioritize the very disparate natural hazards that are present in the Southeastern NC Region. This final step in the risk assessment provides the necessary information for local officials to craft a mitigation strategy to focus resources on only those hazards that pose the most threat to the Southeastern NC counties.

Exposure to hazards can be an indicator of vulnerability. Economic exposure can be identified through locally assessed values for improvements (buildings), and social exposure can be identified by estimating the population exposed to each hazard. This information is especially important for decision-makers to use in planning for evacuation or other public safety related needs.

The types of assets included in these analyses include all building types in the participating jurisdictions. Specific information about the types of assets that are vulnerable to the identified hazards is included in each hazard subsection (for example, all building types are considered at risk to the winter storm hazard and commercial, residential, and government owned facilities are at risk to repetitive flooding, etc).

Table 6.25 presents a summary of potential annualized loss estimates for each hazard in the Southeastern NC Region. Due to the reporting of hazard damages primarily at the county level, it was difficult to determine an accurate annualized loss estimate for each municipality. Therefore, an annualized loss was determined through the damage reported through historical occurrences at the county level and/or through modeling techniques described at the beginning of this section. If no historical occurrences were reported, or if modeling has not been conducted for a particular hazard, an accurate annualized loss estimate could not be obtained. These values should be used as an additional planning tool or measure risk for determining hazard mitigation strategies throughout the region.

TABLE 6.25: POTENTIAL ANNUALIZED LOSSES FOR THE SOUTHEASTERN NC REGION

Hazard	Brunswick County	New Hanover County	Onslow County	Pender County	Total
Drought	Negligible	Negligible	Negligible	Negligible	Negligible
Excessive Heat	Negligible	Negligible	Negligible	Negligible	Negligible
Hurricane and Coastal Hazards	\$53,436,605	\$167,594,285	\$90,454,925	\$19,447,689	\$330,933,504
Tornadoes/Thunderstorms	\$1,284,177	Negligible	\$18,982	\$416,457	\$1,719,616
Severe Winter Weather	Negligible	Negligible	Negligible	Negligible	Negligible
Earthquakes	Negligible	Negligible	Negligible	Negligible	Negligible
Geological	Negligible	Negligible	Negligible	Negligible	Negligible
Dam Failure	Negligible	Negligible	Negligible	Negligible	Negligible
Flooding	\$791,848	\$2,319,798	\$216,407	\$233,189	\$3,561,242
Wildfires	Negligible	Negligible	Negligible	Negligible	Negligible
Infectious Disease	Negligible	Negligible	Negligible	Negligible	Negligible
Hazardous Substances	Negligible	Negligible	Negligible	Negligible	Negligible
Radiological Emergency	Negligible	Negligible	Negligible	Negligible	Negligible
Terrorism	Negligible	Negligible	Negligible	Negligible	Negligible
Cyber	Negligible	Negligible	Negligible	Negligible	Negligible
Electromagnetic Pulse	Negligible	Negligible	Negligible	Negligible	Negligible

As noted previously, all existing and future buildings and populations (including critical facilities) are vulnerable to natural hazards including drought, hurricane and coastal hazards, tornadoes/thunderstorms, and severe winter weather. Some buildings may be more vulnerable to these hazards based on locations, construction, and building type. **Table 6.26** shows the critical facilities vulnerable to additional hazards analyzed in this section. The table lists those assets that are determined to be exposed to each of the identified hazards (marked with an “X”).

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Brunswick County																		
Brunswick County Emergency Management	Other	X	X	X	X	X	X					X			X	X		
Bald Head Island Volunteer Fire and Rescue	EMS	X	X	X	X	X	X	X	X									
Bolivia Volunteer Fire Department	EMS	X	X	X	X	X	X					X			X	X		
Brunswick County EMS	EMS	X	X	X	X	X	X					X			X	X		
Brunswick Co Regional Emergency Services Training and Operations Facilities HQ	EMS	X	X	X	X	X	X								X	X		
Calabash Fire Department Station 12-1 - HQ	EMS	X	X	X	X	X	X								X	X		
Calabash Fire Department Station 12-2	EMS	X	X	X	X	X	X					X						
Calabash Volunteer EMS	EMS	X	X	X	X	X	X								X	X		
Civietown Volunteer Fire Department	EMS	X	X	X	X	X	X					X			X	X		
Coastline Rescue Squad	EMS	X	X	X	X	X	X					X			X	X		
Dak Americas Emergency Response Team	EMS	X	X	X	X	X	X										X	X
Grissettown - Longwood Fire and Rescue	EMS	X	X	X	X	X	X					X			X	X		
Leland Fire and Rescue	EMS	X	X	X	X	X	X					X			X			X
Navassa Volunteer Fire Department	EMS	X	X	X	X	X	X					X					X	X
Northwest Volunteer Fire Dept.	EMS	X	X	X	X	X	X										X	X
Oak Island Fire and Rescue Department	EMS	X	X	X	X	X	X								X	X		
Oak Island Fire and Rescue Dept. - Substation	EMS	X	X	X	X	X	X	X	X									
Oak Island Water Rescue Team	EMS	X	X	X	X	X	X	X	X									
Saint James Fire Department	EMS	X	X	X	X	X	X					X						
Shallotte Point Volunteer Fire Department	EMS	X	X	X	X	X	X					X						
Shallotte Rescue Squad	EMS	X	X	X	X	X	X		X			X			X	X		
Southport Rescue Squad	EMS	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Sunny Point Fire Department-DOD	EMS	X	X	X	X	X	X									X	X	X
Sunset Beach Fire Department	EMS	X	X	X	X	X	X								X	X		
Town Of Ocean Isle Beach Fire Department	EMS	X	X	X	X	X	X								X	X		
Town of Shallotte Fire Department Station 1	EMS	X	X	X	X	X	X					X			X	X		
Town of Shallotte Fire Department Station 2	EMS	X	X	X	X	X	X					X			X	X		
Town of Shallotte Fire Department Station 3	EMS	X	X	X	X	X	X								X	X		
Tri-Beach Volunteer Fire Dept. Station 1	EMS	X	X	X	X	X	X					X				X		
Tri-Beach Volunteer Fire Dept. Station 2	EMS	X	X	X	X	X	X	X	X									
Tri-Beach Volunteer Fire Dept. Station 3	EMS	X	X	X	X	X	X											
Waccamaw Volunteer Fire and Rescue	EMS	X	X	X	X	X	X								X	X		
Winnabow Volunteer Fire Department	EMS	X	X	X	X	X	X								X	X		
Bald Head Island Volunteer Fire and Rescue	Fire Stations	X	X	X	X	X	X	X	X									
Boiling Spring Lakes Volunteer Fire Dept. 1	Fire Stations	X	X	X	X	X	X					X			X	X		
Boiling Spring Lakes Volunteer Fire Dept. 2	Fire Stations	X	X	X	X	X	X					X						X
Boiling Spring Lakes Volunteer Fire Dept. 3	Fire Stations	X	X	X	X	X	X					X				X	X	X
Bolivia Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Calabash Fire Department Station 12-1 - HQ	Fire Stations	X	X	X	X	X	X								X	X		
Calabash Fire Department Station 12-2	Fire Stations	X	X	X	X	X	X					X						
Civietown Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Grissettown - Longwood Fire and Rescue	Fire Stations	X	X	X	X	X	X					X			X	X		
Leland Fire and Rescue	Fire Stations	X	X	X	X	X	X					X				X		X
Navassa Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X					X	X
Northwest Volunteer Fire and Rescue Dept.	Fire Stations	X	X	X	X	X	X										X	X
Oak Island Fire and Rescue Department	Fire Stations	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Oak Island Fire and Rescue Dept. - Substation	Fire Stations	X	X	X	X	X	X	X	X									
Progress Energy Brunswick Nuclear Power Plant	Fire Stations	X	X	X	X	X	X										X	X
Saint James Fire Department	Fire Stations	X	X	X	X	X	X					X						
Shallotte Point Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X						
Southport Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Sunny Point Fire Department-DOD	Fire Stations	X	X	X	X	X	X									X	X	X
Sunset Beach Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Sunset Harbor and Zion Hill Vol. Fire Dept.	Fire Stations	X	X	X	X	X	X		X			X						
Supply Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Town of Ocean Isle Beach Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Town of Shallotte Fire Department Station 1	Fire Stations	X	X	X	X	X	X					X			X	X		
Town of Shallotte Fire Department Station 2	Fire Stations	X	X	X	X	X	X					X			X	X		
Town of Shallotte Fire Department Station 3	Fire Stations	X	X	X	X	X	X								X	X		
Tri-Beach Volunteer Fire Dept. Station 1	Fire Stations	X	X	X	X	X	X					X				X		
Tri-Beach Volunteer Fire Dept. Station 2	Fire Stations	X	X	X	X	X	X	X	X									
Tri-Beach Volunteer Fire Dept. Station 3	Fire Stations	X	X	X	X	X	X											
Waccamaw Volunteer Fire and Rescue	Fire Stations	X	X	X	X	X	X								X	X		
Winnabow Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Boiling Spring Lakes Police Department	Law Enforcement	X	X	X	X	X	X					X			X	X		
Brunswick Community College Campus Police	Law Enforcement	X	X	X	X	X	X								X	X		
Brunswick County Sheriff’s Department / Brunswick County Jail	Law Enforcement	X	X	X	X	X	X					X			X	X		
Caswell Beach Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
City of Bald Head Island Police Department	Law Enforcement	X	X	X	X	X	X	X	X									

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FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
City of Leland Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
City of Northwest Police Department	Law Enforcement	X	X	X	X	X	X										X	X
City of Oak Island Police Department	Law Enforcement	X	X	X	X	X	X		X									
City of Southport Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
Holden Beach Police Department	Law Enforcement	X	X	X	X	X	X	X	X						X	X		
Navassa Police Department	Law Enforcement	X	X	X	X	X	X										X	X
Ocean Isle Beach Police Department	Law Enforcement	X	X	X	X	X	X	X	X			X			X	X		
Shallotte Police Department	Law Enforcement	X	X	X	X	X	X					X			X	X		
Town of Sunset Beach Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
Assistedcare Home Health	Medical Facility	X	X	X	X	X	X								X	X		
Assistedcare, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Austin Facility	Medical Facility	X	X	X	X	X	X					X			X	X		
Autumn Care of Shallotte	Medical Facility	X	X	X	X	X	X					X			X	X		
Brunswick Community Hospital	Medical Facility	X	X	X	X	X	X								X	X		
Brunswick County DSS	Medical Facility	X	X	X	X	X	X					X			X	X		
Brunswick Cove Nursing Center	Medical Facility	X	X	X	X	X	X					X			X	X		
Brunswick Interagency Program	Medical Facility	X	X	X	X	X	X							X	X	X		
C&R Precious Stone	Medical Facility	X	X	X	X	X	X								X	X		
Carolina Hospice and Palliative Care, LLLC.	Medical Facility	X	X	X	X	X	X								X	X		
Conley’s Home Place	Medical Facility	X	X	X	X	X	X					X			X	X		
D&E Precious Stone	Medical Facility	X	X	X	X	X	X								X	X		
Eldo Family Care Home #1	Medical Facility	X	X	X	X	X	X		X			X			X	X		
Human Interactive Services Respite	Medical Facility	X	X	X	X	X	X					X		X		X		
Interim Health Care	Medical Facility	X	X	X	X	X	X	X	X						X	X		

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FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
J. Arthur Doshier Memorial Hospital	Medical Facility	X	X	X	X	X	X							X	X	X		
Liberty Home Care	Medical Facility	X	X	X	X	X	X								X	X		
Liberty Nursing Services, LLC	Medical Facility	X	X	X	X	X	X								X	X		
Life, Inc./Folly Street Group Home	Medical Facility	X	X	X	X	X	X					X			X	X		
Life, Inc./Lockwood Street Group Home	Medical Facility	X	X	X	X	X	X										X	X
Lower Cape Fear Hospice, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		
Mary And Tasha Home	Medical Facility	X	X	X	X	X	X								X	X		
McCray Home	Medical Facility	X	X	X	X	X	X					X				X		
My Brother’s Keeper - Cornwallis	Medical Facility	X	X	X	X	X	X					X			X	X		
Ocean Trail Convalescent Center, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		
Palliative Care Center of Lower Cape Fear Hospice	Medical Facility	X	X	X	X	X	X					X			X	X		
Ramsey Facility	Medical Facility	X	X	X	X	X	X								X	X	X	X
Shallotte Assisted Living, Inc.	Medical Facility	X	X	X	X	X	X									X		
Shallotte Group Home	Medical Facility	X	X	X	X	X	X								X	X		
Smigiel Home	Medical Facility	X	X	X	X	X	X											
Smith Home	Medical Facility	X	X	X	X	X	X					X			X	X		
South Brunswick Counseling Services	Medical Facility	X	X	X	X	X	X	X	X						X	X		
Southeastern Mental Health	Medical Facility	X	X	X	X	X	X								X	X		
The Counseling Center	Medical Facility	X	X	X	X	X	X								X	X		
Well Care Health Services, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		
Wilmington Treatment Ctr-Outpatient Services Shallotte	Medical Facility	X	X	X	X	X	X		X						X	X		
Windsor R.T.P.	Medical Facility	X	X	X	X	X	X					X			X	X		
Belville Elementary	Public School	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Bolivia Elementary	Public School	X	X	X	X	X	X								X	X		
Brunswick County Academy	Public School	X	X	X	X	X	X								X	X		
Brunswick County Early College	Public School	X	X	X	X	X	X								X	X		
Cedar Grove Middle	Public School	X	X	X	X	X	X											
Charter Day School	Public School	X	X	X	X	X	X								X	X		
Jessie Mae Monroe Elementary	Public School	X	X	X	X	X	X					X				X		
Leland Middle	Public School	X	X	X	X	X	X								X	X		
Lincoln Elementary	Public School	X	X	X	X	X	X					X				X	X	X
North Brunswick High	Public School	X	X	X	X	X	X								X	X		
Shallotte Middle	Public School	X	X	X	X	X	X								X	X		
South Brunswick High	Public School	X	X	X	X	X	X									X		X
South Brunswick Middle	Public School	X	X	X	X	X	X								X	X		
Southport Elementary	Public School	X	X	X	X	X	X					X				X		
Supply Elementary	Public School	X	X	X	X	X	X								X	X		
Town Creek Elementary	Public School	X	X	X	X	X	X								X	X		
Union Elementary	Public School	X	X	X	X	X	X					X			X	X		
Virginia Williamson Elem	Public School	X	X	X	X	X	X					X			X	X		
Waccamaw	Public School	X	X	X	X	X	X								X	X		
West Brunswick High	Public School	X	X	X	X	X	X								X	X		
New Hanover County																		
New Hanover County Emergency Management	Other	X	X	X	X	X	X								X	X	X	X
Castle Hayne Volunteer Fire Department	EMS	X	X	X	X	X	X					X			X	X	X	X
Federal Point Fire and Rescue	EMS	X	X	X	X	X	X					X			X	X		
General Electric Company	EMS	X	X	X	X	X	X						X	X	X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Invista Emergency Medical Technician	EMS	X	X	X	X	X	X						X	X	X	X	X	X
Kure Beach Volunteer Fire Department	EMS	X	X	X	X	X	X					X			X	X		
Myrtle Grove Volunteer Fire Department	EMS	X	X	X	X	X	X								X	X		
New Hanover Regional EMS - Airlink Station	EMS	X	X	X	X	X	X									X		X
New Hanover Regional EMS Station 1	EMS	X	X	X	X	X	X					X			X	X		
New Hanover Regional EMS Station 2	EMS	X	X	X	X	X	X								X	X	X	X
Ogden Volunteer Fire Department	EMS	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 1 - HQ	EMS	X	X	X	X	X	X								X	X		X
Wilmington Fire Department Station 10	EMS	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 11	EMS	X	X	X	X	X	X		X									
Wilmington Fire Department Station 2	EMS	X	X	X	X	X	X					X			X	X		X
Wilmington Fire Department Station 3	EMS	X	X	X	X	X	X								X	X	X	X
Wilmington Fire Department Station 4	EMS	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 5	EMS	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 6	EMS	X	X	X	X	X	X								X	X		
Wilmington Fire Department Station 7	EMS	X	X	X	X	X	X								X	X		
Wilmington Fire Department Station 8	EMS	X	X	X	X	X	X					X		X	X	X		
Wilmington Fire Department Station 9	EMS	X	X	X	X	X	X					X			X	X		
Wilmington Int. Airport Rescue Base	EMS	X	X	X	X	X	X									X		X
Wrightsville Beach Fire Department	EMS	X	X	X	X	X	X					X			X	X	X	X
Wrightsville Beach Fire Department	EMS	X	X	X	X	X	X	X	X						X	X		
Carolina Beach Fire Department	Fire Stations	X	X	X	X	X	X									X		
Castle Hayne Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X	X	X
Federal Point Fire and Rescue	Fire Stations	X	X	X	X	X	X					X			X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
General Electric Company	Fire Stations	X	X	X	X	X	X						X	X	X	X		
Kure Beach Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Myrtle Grove Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
NC Div. Of Forest Resources District 8	Fire Stations	X	X	X	X	X	X									X	X	X
Ogden Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 1 - HQ	Fire Stations	X	X	X	X	X	X								X	X		X
Wilmington Fire Department Station 10	Fire Stations	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 11	Fire Stations	X	X	X	X	X	X		X									
Wilmington Fire Department Station 2	Fire Stations	X	X	X	X	X	X					X			X	X		X
Wilmington Fire Department Station 3	Fire Stations	X	X	X	X	X	X								X	X	X	X
Wilmington Fire Department Station 4	Fire Stations	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 5	Fire Stations	X	X	X	X	X	X					X			X	X		
Wilmington Fire Department Station 6	Fire Stations	X	X	X	X	X	X								X	X		
Wilmington Fire Department Station 7	Fire Stations	X	X	X	X	X	X								X	X		
Wilmington Fire Department Station 8	Fire Stations	X	X	X	X	X	X					X		X	X	X		
Wilmington Fire Department Station 9	Fire Stations	X	X	X	X	X	X					X			X	X		
Wilmington International Airport Rescue Base	Fire Stations	X	X	X	X	X	X									X		X
Wrightsboro Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X	X	X
Wrightsville Beach Fire Department	Fire Stations	X	X	X	X	X	X	X	X						X	X		
Alcoholic Beverage Control Law Enforcement - District III Office	Law Enforcement	X	X	X	X	X	X								X	X	X	X
Bureau of Alcohol Tobacco Firearms and Explosives - Wilmington Field Office	Law Enforcement	X	X	X	X	X	X									X	X	X
Carolina Beach Police Department	Law Enforcement	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Kure Beach Police Department	Law Enforcement	X	X	X	X	X	X					X			X	X		
New Hanover County Sheriff - Narcotics Vice Squad and Detective Unit	Law Enforcement	X	X	X	X	X	X								X	X	X	X
New Hanover County Sheriff’s Office- Patrol Division	Law Enforcement	X	X	X	X	X	X								X	X	X	X
New Hanover Sheriff’s Office / New Hanover County Detention Center	Law Enforcement	X	X	X	X	X	X					X				X	X	X
NC Division of Parks - Carolina Beach State Park	Law Enforcement	X	X	X	X	X	X								X	X		
NC Division of Parks - Fort Fisher	Law Enforcement	X	X	X	X	X	X	X	X						X	X		
NC State Highway Patrol Troop B District Vi	Law Enforcement	X	X	X	X	X	X								X	X		
NC State Ports Authority - Wilmington Police Department	Law Enforcement	X	X	X	X	X	X						X	X		X	X	X
US Customs and Border Protection - Port of Entry - Wilmington	Law Enforcement	X	X	X	X	X	X					X		X	X	X		X
US Drug Enforcement Administration - Wilmington	Law Enforcement	X	X	X	X	X	X		X			X			X	X		X
US Internal Revenue Service Criminal Investigation Division - Wilmington	Law Enforcement	X	X	X	X	X	X									X	X	X
US Marshals Service - Wilmington	Law Enforcement	X	X	X	X	X	X		X			X			X	X		X
University Of NC-Wilmington	Law Enforcement	X	X	X	X	X	X					X				X		
Wilmington International Airport - Airport Public Safety	Law Enforcement	X	X	X	X	X	X									X		X
Wilmington Police Department	Law Enforcement	X	X	X	X	X	X								X	X	X	X
Wrightsville Beach Police Department	Law Enforcement	X	X	X	X	X	X	X	X						X	X		
Alandale	Medical Facility	X	X	X	X	X	X					X			X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Alpha-Omega Health, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		
Alterra Clare Bridge of Wilmington	Medical Facility	X	X	X	X	X	X					X			X	X		
American Homepatient	Medical Facility	X	X	X	X	X	X									X	X	X
Americare	Medical Facility	X	X	X	X	X	X								X	X	X	X
Apria Healthcare, Inc.	Medical Facility	X	X	X	X	X	X									X	X	X
Arcadia Health Care	Medical Facility	X	X	X	X	X	X					X			X	X		X
Assistedcare, Inc.	Medical Facility	X	X	X	X	X	X		X							X	X	X
Autumn Care of Myrtle Grove	Medical Facility	X	X	X	X	X	X					X			X	X		
Banks Therapeutic Home	Medical Facility	X	X	X	X	X	X								X	X	X	X
Barker Residence	Medical Facility	X	X	X	X	X	X	X	X						X	X		
Bethel	Medical Facility	X	X	X	X	X	X									X		
Bonds Home	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Brighton Road Facility	Medical Facility	X	X	X	X	X	X					X				X		
Britthaven Of North Chase	Medical Facility	X	X	X	X	X	X								X	X		
Britthaven Of Wrightsville	Medical Facility	X	X	X	X	X	X								X	X		
Bryant Home	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Cape Fear Group Homes Day Program	Medical Facility	X	X	X	X	X	X								X	X	X	X
Cape Fear Home Care of Wilmington, Inc.	Medical Facility	X	X	X	X	X	X								X	X		X
Cape Fear Hospital	Medical Facility	X	X	X	X	X	X					X			X	X		
Cape Fear Respicare, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Cape Fear Respite Home	Medical Facility	X	X	X	X	X	X	X	X			X			X	X		
Cardiac Rehab Program of The Coastal Heart Center	Medical Facility	X	X	X	X	X	X									X		
Carolina Hospice and Palliative Care	Medical Facility	X	X	X	X	X	X					X			X	X		X
Carolyn's Home	Medical Facility	X	X	X	X	X	X								X	X	X	X

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Champions at Porters Neck	Medical Facility	X	X	X	X	X	X					X						
Chester Street Home	Medical Facility	X	X	X	X	X	X					X			X	X		
Coastal Horizons Center, Inc.	Medical Facility	X	X	X	X	X	X							X	X	X		X
Continuum Home Care of Northchase	Medical Facility	X	X	X	X	X	X								X	X		
Copymatic Of Wilmington	Medical Facility	X	X	X	X	X	X								X	X	X	X
Cornelia Nixon Davis Health Care Center	Medical Facility	X	X	X	X	X	X					X						
Cypress Pointe Rehabilitation and Health Care Center	Medical Facility	X	X	X	X	X	X									X		X
Dixon Home	Medical Facility	X	X	X	X	X	X					X				X		
MS Services, Inc	Medical Facility	X	X	X	X	X	X									X	X	X
Drug and Alcohol Assessment Services	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
East Coast Solutions	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
El Ogden	Medical Facility	X	X	X	X	X	X					X			X	X		
Eldo Family Care Home #3	Medical Facility	X	X	X	X	X	X								X	X	X	X
Eltringham Facility	Medical Facility	X	X	X	X	X	X	X	X			X			X	X		
Evergreen Health Services	Medical Facility	X	X	X	X	X	X								X	X		
Fannie Norwood Memorial Home	Medical Facility	X	X	X	X	X	X								X	X		X
Farr Facility	Medical Facility	X	X	X	X	X	X					X				X		
Gingrich Home	Medical Facility	X	X	X	X	X	X		X			X	X	X	X	X		X
Greenville Loop Group Home	Medical Facility	X	X	X	X	X	X		X							X		
Harvest of Wilmington	Medical Facility	X	X	X	X	X	X					X			X	X		X
Healthmate Home Care	Medical Facility	X	X	X	X	X	X									X	X	X
Hermitage House Rest Home	Medical Facility	X	X	X	X	X	X					X			X	X		X
Herring Associates Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		X

SECTION 6: VULNERABILITY ASSESSMENT

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Holland Facility	Medical Facility	X	X	X	X	X	X								X	X		
Hospice Care Center	Medical Facility	X	X	X	X	X	X					X		X		X		
House of Love	Medical Facility	X	X	X	X	X	X					X			X	X		
Howell Support Services, LLC	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Human Interactive Services Inc,	Medical Facility	X	X	X	X	X	X					X				X		X
Hunters Trail RTP	Medical Facility	X	X	X	X	X	X					X	X	X	X	X		
Interim Healthcare	Medical Facility	X	X	X	X	X	X								X	X	X	X
Jordan's Family Care Home	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Judge Family Care Home #1	Medical Facility	X	X	X	X	X	X							X	X	X		
Judge Family Care Home #4	Medical Facility	X	X	X	X	X	X							X	X	X		
Kelly House	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Kerr House	Medical Facility	X	X	X	X	X	X		X							X		
Keys Community Rehabilitation Program	Medical Facility	X	X	X	X	X	X								X	X	X	X
Kight's Medical Corp.	Medical Facility	X	X	X	X	X	X								X	X		
Lancaster Home	Medical Facility	X	X	X	X	X	X							X	X	X		
Liberty Commons Nursing and Rehabilitation Center	Medical Facility	X	X	X	X	X	X							X	X	X		
Liberty Home Care	Medical Facility	X	X	X	X	X	X					X			X	X		X
Liberty Medical Specialties, Inc.	Medical Facility	X	X	X	X	X	X									X	X	X
Liberty Nursing Services, LLC	Medical Facility	X	X	X	X	X	X					X			X	X		X
Life, Inc./Cherokee Trail Group Home	Medical Facility	X	X	X	X	X	X					X				X		
Life, Inc./Masonboro Sound	Medical Facility	X	X	X	X	X	X					X						
Lifetime Resources, Inc. Echo Farms Group Home	Medical Facility	X	X	X	X	X	X		X			X			X	X		
Lincare, Inc.	Medical Facility	X	X	X	X	X	X							X	X	X	X	X

SECTION 6: VULNERABILITY ASSESSMENT

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		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Longleaf Hills Drive	Medical Facility	X	X	X	X	X	X								X	X		
Lowe Family Care Home #2	Medical Facility	X	X	X	X	X	X					X			X	X		
Lowe Family Care Home #3	Medical Facility	X	X	X	X	X	X					X			X	X		
Lower Cape Fear Hospice, Inc.	Medical Facility	X	X	X	X	X	X					X		X	X	X		X
Lower’s Family Care	Medical Facility	X	X	X	X	X	X								X	X	X	X
Lowe's Family Care Home #1	Medical Facility	X	X	X	X	X	X					X			X	X		
Mariner Health of Wilmington	Medical Facility	X	X	X	X	X	X					X		X	X	X		X
Maxim Healthcare Services	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Maxim Healthcare Services, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Medox Healthcare, Inc.	Medical Facility	X	X	X	X	X	X								X	X		X
Mega Force Staffing	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Mill Creek Court	Medical Facility	X	X	X	X	X	X					X				X		X
Myrtle Grove Group Home	Medical Facility	X	X	X	X	X	X					X			X	X		
New Directions Counseling Center	Medical Facility	X	X	X	X	X	X								X	X		
New Hanover Regional Medical Center	Medical Facility	X	X	X	X	X	X									X		
New Hanover Treatment Center	Medical Facility	X	X	X	X	X	X								X	X		X
New Visions	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Nielsen’s Rest Home	Medical Facility	X	X	X	X	X	X								X	X		
Ocean House	Medical Facility	X	X	X	X	X	X								X	X	X	X
Option Care of Wilmington	Medical Facility	X	X	X	X	X	X								X	X		
Oxy-Care Equipment Company	Medical Facility	X	X	X	X	X	X					X			X	X		X
Palliative Care Center of Lower Cape Fear Hospice	Medical Facility	X	X	X	X	X	X					X		X	X	X		X
Partners in Healing Counseling Center	Medical Facility	X	X	X	X	X	X								X	X		
Patrick Home	Medical Facility	X	X	X	X	X	X	X	X			X			X	X	X	X

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Plantation Village	Medical Facility	X	X	X	X	X	X											
Plum Nearly 1	Medical Facility	X	X	X	X	X	X	X	X						X	X		X
Plum Nearly 2	Medical Facility	X	X	X	X	X	X	X	X						X	X		X
Port City Plantation	Medical Facility	X	X	X	X	X	X					X			X	X		
Port South Village/Carmen D. Villa	Medical Facility	X	X	X	X	X	X								X	X	X	X
Port South Village/Catherine S. Villa	Medical Facility	X	X	X	X	X	X								X	X	X	X
Port South Village/Crystal L. Villa	Medical Facility	X	X	X	X	X	X								X	X	X	X
Port South Village/Lorraine B. Villa	Medical Facility	X	X	X	X	X	X								X	X	X	X
Port South Village/Tara L. Villa	Medical Facility	X	X	X	X	X	X								X	X	X	X
Port South Village/Teresa C. Villa	Medical Facility	X	X	X	X	X	X								X	X	X	X
Portofino Home	Medical Facility	X	X	X	X	X	X					X		X	X	X		X
Professional Healthcare Consultants	Medical Facility	X	X	X	X	X	X					X			X	X		X
PSA Healthcare	Medical Facility	X	X	X	X	X	X								X	X		
Robert E. Lee Group Home	Medical Facility	X	X	X	X	X	X									X		
Robin Hood Group Home	Medical Facility	X	X	X	X	X	X									X		X
Rubinstein Facility	Medical Facility	X	X	X	X	X	X									X		
Sci Day Program	Medical Facility	X	X	X	X	X	X							X	X	X		X
Sci-Coastal House I and II	Medical Facility	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
Searise	Medical Facility	X	X	X	X	X	X								X	X	X	X
Setter Lane RTP	Medical Facility	X	X	X	X	X	X					X				X		
Shelley	Medical Facility	X	X	X	X	X	X					X		X	X	X		
Sherwood Manor Rest Home	Medical Facility	X	X	X	X	X	X									X		X
Southeastern Center For MH/DD/SAS	Medical Facility	X	X	X	X	X	X									X		X
Southeastern Center-DWI/ Criminal Justice	Medical Facility	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Spring Arbor of Wilmington	Medical Facility	X	X	X	X	X	X								X	X		
Stepping Stone Manor	Medical Facility	X	X	X	X	X	X								X	X	X	X
Tab Ballis LCSW, CCAS	Medical Facility	X	X	X	X	X	X								X	X		X
The Commons at Brightmore	Medical Facility	X	X	X	X	X	X								X	X		
The Kempton At Brightmore	Medical Facility	X	X	X	X	X	X								X	X		
The Meadows of Wilmington, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
The Russell Home	Medical Facility	X	X	X	X	X	X								X	X		
The W.A.V.E. (Wilmington Adult Vocational Enhancement)	Medical Facility	X	X	X	X	X	X		X						X	X	X	X
The Wilmington Treatment Center, Inc.	Medical Facility	X	X	X	X	X	X							X	X	X		
UCP-Lakewood	Medical Facility	X	X	X	X	X	X									X		
Watshare Today and Beyond	Medical Facility	X	X	X	X	X	X								X	X	X	X
Well Care Health Services, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Well Care Home Health	Medical Facility	X	X	X	X	X	X								X	X		
Wilmington Day Program	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Wilmington Health Associates	Medical Facility	X	X	X	X	X	X							X		X		
Wilmington Surgcare	Medical Facility	X	X	X	X	X	X									X		X
Wilmington Treatment Center Outpatient Services	Medical Facility	X	X	X	X	X	X					X			X	X		
A H Snipes Academy of Arts/Des	Public School	X	X	X	X	X	X								X	X	X	X
Bradley Creek Elementary	Public School	X	X	X	X	X	X					X				X		
Cape Fear Center for Inquiry	Public School	X	X	X	X	X	X								X	X		
Carolina Beach Elementary	Public School	X	X	X	X	X	X	X	X						X	X		
Castle Hayne Elementary	Public School	X	X	X	X	X	X					X			X	X	X	X
Charles P Murray Middle	Public School	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
College Park Elementary	Public School	X	X	X	X	X	X					X			X	X		
D.C. Virgo Preparatory Academy	Public School	X	X	X	X	X	X								X	X	X	X
Dr Hubert Eaton Sr Elem	Public School	X	X	X	X	X	X					X			X	X		
Dr John Codrington Elem	Public School	X	X	X	X	X	X					X			X	X		
Edwin A Alderman Elementary	Public School	X	X	X	X	X	X					X				X		
Edwin A Anderson Elementary	Public School	X	X	X	X	X	X									X		
Emma B Trask Middle	Public School	X	X	X	X	X	X					X			X	X		
Emsley A Laney High	Public School	X	X	X	X	X	X		X						X	X		
Eugene Ashley High	Public School	X	X	X	X	X	X								X	X		
Forest Hills Elementary	Public School	X	X	X	X	X	X					X				X	X	X
Gregory Elementary	Public School	X	X	X	X	X	X								X	X		X
Heyward C Bellamy Elem	Public School	X	X	X	X	X	X					X				X		
Holly Shelter Middle	Public School	X	X	X	X	X	X								X	X	X	X
Holly Tree Elementary	Public School	X	X	X	X	X	X					X			X	X		
Isaac M Bear High	Public School	X	X	X	X	X	X								X	X		
John J Blair Elementary	Public School	X	X	X	X	X	X								X	X		
John T Hoggard High	Public School	X	X	X	X	X	X								X	X		
Lake Forest Academy	Public School	X	X	X	X	X	X									X	X	X
Lakeside	Public School	X	X	X	X	X	X	X	X			X		X		X	X	X
M C S Noble Middle	Public School	X	X	X	X	X	X								X	X		
Mary C Williams Elementary	Public School	X	X	X	X	X	X									X		
Mary Sidberry Mosley Plc	Public School	X	X	X	X	X	X	X	X			X		X		X	X	X
Murrayville Elementary	Public School	X	X	X	X	X	X									X		
Myrtle Grove Middle	Public School	X	X	X	X	X	X					X				X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
New Hanover High	Public School	X	X	X	X	X	X								X	X		X
New Hanover Reg Detention Ctr	Public School	X	X	X	X	X	X					X				X	X	X
Ogden Elementary	Public School	X	X	X	X	X	X					X				X		
Pine Valley Elementary	Public School	X	X	X	X	X	X									X		
R Freeman Sch Of Engineering	Public School	X	X	X	X	X	X	X	X						X	X		X
Rolandgrise Middle	Public School	X	X	X	X	X	X					X			X	X		
Sunset Park Elementary	Public School	X	X	X	X	X	X						X	X	X	X	X	X
Walter L Parsley Elementary	Public School	X	X	X	X	X	X											
Williston Middle	Public School	X	X	X	X	X	X								X	X		X
Wilmington Early College High	Public School	X	X	X	X	X	X						X	X	X	X		
Wilmington Preparatory Academy	Public School	X	X	X	X	X	X					X			X	X		
Winter Park Model Elementary	Public School	X	X	X	X	X	X								X	X		
Wrightsboro Elementary	Public School	X	X	X	X	X	X								X	X		X
Wrightsville Beach Elem	Public School	X	X	X	X	X	X	X	X						X	X		
Onslow County																		
Onslow County Emergency Management	Other	X	X	X	X	X	X								X	X		
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X					X				X		
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X					X				X		
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X											
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X									X		
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X											
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X											
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X					X			X	X		
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X					X						
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X					X		X	X	X		X

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X								X	X		
Camp Lejeune Fire Department-DOD	EMS	X	X	X	X	X	X					X						
Camp Lejuene Fire Department-DOD	EMS	X	X	X	X	X	X									X		
Jacksonville Fire Department Station 1 - HQ	EMS	X	X	X	X	X	X					X			X	X		
Jacksonville Fire Department Station 2	EMS	X	X	X	X	X	X		X									
Jacksonville Fire Department Station 3	EMS	X	X	X	X	X	X							X	X	X		
Jacksonville Fire Department Station 4	EMS	X	X	X	X	X	X								X	X		
Onslow County EMS Station 1 & 11	EMS	X	X	X	X	X	X								X	X		
Onslow County EMS Station 2	EMS	X	X	X	X	X	X					X				X		
Onslow County EMS Station 3	EMS	X	X	X	X	X	X								X	X		
Onslow County EMS Station 4	EMS	X	X	X	X	X	X					X				X		
Onslow County EMS Station 5	EMS	X	X	X	X	X	X					X			X	X		
Onslow County EMS Station 6	EMS	X	X	X	X	X	X								X	X		
Onslow County EMS Station 7	EMS	X	X	X	X	X	X								X	X		
Onslow County EMS Station 8	EMS	X	X	X	X	X	X					X			X	X	X	X
Onslow County EMS Station 9	EMS	X	X	X	X	X	X								X	X		
Onslow County EMS Station 10	EMS	X	X	X	X	X	X								X	X		
Albert J Ellis Airport Crash Fire and Rescue	Fire Stations	X	X	X	X	X	X					X				X		
Back Swamp Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X					X				X		
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X					X				X		
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X											
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X									X		
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X											

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X					X			X	X		
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X					X						
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X					X		X	X	X		X
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X								X	X		
Camp Lejeune Fire Department-DOD	Fire Stations	X	X	X	X	X	X					X						
Camp Lejuene Fire Department-DOD	Fire Stations	X	X	X	X	X	X									X		
Half Moon Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X						
Haws Run Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X						
Holly Ridge Volunteer Fire and Rescue Dept.	Fire Stations	X	X	X	X	X	X						X	X	X	X		
Hubert Volunteer Fire Department – Main Station	Fire Stations	X	X	X	X	X	X					X			X	X		
Hubert Volunteer Fire Department – White Oak Station	Fire Station	X	X	X	X	X	X											
Jacksonville Fire Department Station 1 - HQ	Fire Stations	X	X	X	X	X	X					X			X	X		
Jacksonville Fire Department Station 2	Fire Stations	X	X	X	X	X	X		X									
Jacksonville Fire Department Station 3	Fire Stations	X	X	X	X	X	X							X	X	X		
Jacksonville Fire Department Station 4	Fire Stations	X	X	X	X	X	X								X	X		
Maysville Fire Department - Belgrade Station	Fire Stations	X	X	X	X	X	X					X						
Maysville Fire Department - Loco Station	Fire Stations	X	X	X	X	X	X								X	X		
Nine Mile Voluntary Fire Department	Fire Stations	X	X	X	X	X	X	X	X			X						
North Topsail Beach Fire Department – Station 1	Fire Stations	X	X	X	X	X	X	X	X			X						
North Topsail Beach Fire Department – Station 2	Fire Stations	X	X	X	X	X	X	X	X						X	X		
Onslow County Fire & Rescue – Bear Creek Station	Fire Station	X	X	X	X	X	X											
Onslow County Fire & Rescue – Freedom Way Station	Fire Station	X	X	X	X	X	X								X	X		
Piney Green Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X	X	X

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Pumpkin Center Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Rhodes town Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Richlands Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Southwest Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X				X		
Swansboro Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Turkey Creek Volunteer Fire Department – Main Station	Fire Stations	X	X	X	X	X	X					X						
Turkey Creek Volunteer Fire Department - Sneads Ferry Station	Fire Stations	X	X	X	X	X	X					X				X		
Verona Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Albert J Ellis Airport Police	Law Enforcement	X	X	X	X	X	X					X				X		
City of Jacksonville Police Department	Law Enforcement	X	X	X	X	X	X					X			X	X		
Holly Ridge Police Department	Law Enforcement	X	X	X	X	X	X						X	X	X	X		
NC Division of Parks - Hammocks Beach State Park	Law Enforcement	X	X	X	X	X	X		X									
NC State Highway Patrol Troop B District III	Law Enforcement	X	X	X	X	X	X								X	X		
North Topsail Beach Police Department	Law Enforcement	X	X	X	X	X	X	X	X						X	X		
Onslow County Sheriff’s Office / Onslow County Jail	Law Enforcement	X	X	X	X	X	X		X						X	X		
Richlands Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
Swansboro Police Department	Law Enforcement	X	X	X	X	X	X								X	X		
A Caring Heart Case Management	Medical Facility	X	X	X	X	X	X									X		
Agape Health Services	Medical Facility	X	X	X	X	X	X								X	X		
Anna’s Care, Inc.	Medical Facility	X	X	X	X	X	X					X						
Bridge of Hope	Medical Facility	X	X	X	X	X	X								X	X		
Brynn Marr Hospital	Medical Facility	X	X	X	X	X	X								X	X		
Cameron House	Medical Facility	X	X	X	X	X	X											

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural							Geological		Other							
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Cape Cod	Medical Facility	X	X	X	X	X	X											
Carobell Day Program/Day Activity Program	Medical Facility	X	X	X	X	X	X					X						
Carobell Group Home	Medical Facility	X	X	X	X	X	X						X	X	X			
Carolina Home Medical, Inc	Medical Facility	X	X	X	X	X	X									X		
Carolina Rivers Nursing & Rehabilitation	Medical Facility	X	X	X	X	X	X									X		
Changing Lives	Medical Facility	X	X	X	X	X	X											
CDTEG, Inc.	Medical Facility	X	X	X	X	X	X											
Coastal Transitional Services, Inc.	Medical Facility	X	X	X	X	X	X						X	X	X			
Continuum Home Care and Hospice	Medical Facility	X	X	X	X	X	X									X		
Cottages of Swansboro I-VI	Medical Facility	X	X	X	X	X	X									X		
Countryview Day Program	Medical Facility	X	X	X	X	X	X		X			X		X		X		
Countryview Residential	Medical Facility	X	X	X	X	X	X					X				X		
Eagles Nest Retreat	Medical Facility	X	X	X	X	X	X								X	X		
East Carolina Gastroenterology	Medical Facility	X	X	X	X	X	X											
F.A.C.T. Day Treatment Program	Medical Facility	X	X	X	X	X	X								X	X		
Faith Therapeutic Services	Medical Facility	X	X	X	X	X	X					X						
Guardian Care Adult Day Program	Medical Facility	X	X	X	X	X	X								X	X		
Greenbriar-J	Medical Facility	X	X	X	X	X	X						X	X	X			
Hampton Home	Medical Facility	X	X	X	X	X	X									X		
Harris Home	Medical Facility	X	X	X	X	X	X					X				X		
Healthy Living Cardiac Rehabilitation	Medical Facility	X	X	X	X	X	X					X		X	X	X		
Heritage of Richlands	Medical Facility	X	X	X	X	X	X					X						
Hillside Court	Medical Facility	X	X	X	X	X	X								X	X		
IQUOLIOC, Inc.	Medical Facility	X	X	X	X	X	X											

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Idlebrook House	Medical Facility	X	X	X	X	X	X									X		
Interim Healthcare	Medical Facility	X	X	X	X	X	X					X		X	X	X		
Jacksonville Treatment Center, LLC	Medical Facility	X	X	X	X	X	X									X		
Kenwood House	Medical Facility	X	X	X	X	X	X											
Lennox House	Medical Facility	X	X	X	X	X	X											
Liberty Commons Assisted Living	Medical Facility	X	X	X	X	X	X									X		
Liberty Home Care & Hospice	Medical Facility	X	X	X	X	X	X									X		
Lighthouse Village	Medical Facility	X	X	X	X	X	X								X	X		
Linda Shorts Home	Medical Facility	X	X	X	X	X	X								X	X		
Lower Cape Fear Home Health & Hospice	Medical Facility	X	X	X	X	X	X								X	X		
McCullen Home	Medical Facility	X	X	X	X	X	X											
Naval Hospital Camp Lejeune	Medical Facility	X	X	X	X	X	X											
Nantucket	Medical Facility	X	X	X	X	X	X					X				X		
Onslow House	Medical Facility	X	X	X	X	X	X								X	X		
Onslow Memorial Hospital	Medical Facility	X	X	X	X	X	X					X		X	X	X		
Onslow Senior Services	Medical Facility	X	X	X	X	X	X								X	X		
Pearl’s Family Care Home #1	Medical Facility	X	X	X	X	X	X											
Pearl’s Family Care Home #2	Medical Facility	X	X	X	X	X	X											
Pearl’s Family Care Home #3	Medical Facility	X	X	X	X	X	X											
People of Potential, Inc	Medical Facility	X	X	X	X	X	X											
Premier Nursing & Rehabilitation Center	Medical Facility	X	X	X	X	X	X											
Positive Influences, Inc	Medical Facility	X	X	X	X	X	X					X		X		X		
Port Health Services	Medical Facility	X	X	X	X	X	X											
Pine Valley House	Medical Facility	X	X	X	X	X	X											

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Project Vision	Medical Facility	X	X	X	X	X	X											
Project Voice	Medical Facility	X	X	X	X	X	X					X			X	X		
Quality Home Staffing, Inc	Medical Facility	X	X	X	X	X	X											
Queen’s Pond	Medical Facility	X	X	X	X	X	X											
Sandridge	Medical Facility	X	X	X	X	X	X					X						
Shadowridge Retreat	Medical Facility	X	X	X	X	X	X									X		
Shining Hearts Home Care of North Carolina, LLC	Medical Facility	X	X	X	X	X	X											
Silverleaf Lodge	Medical Facility	X	X	X	X	X	X							X	X	X		
South Shore House	Medical Facility	X	X	X	X	X	X											
Suffolk Home	Medical Facility	X	X	X	X	X	X									X		
Surgicare Of Jacksonville	Medical Facility	X	X	X	X	X	X							X	X	X		
Sweet Waters Homecare, LLC	Medical Facility	X	X	X	X	X	X											
The Arc Community	Medical Facility	X	X	X	X	X	X					X			X	X		
Thrive Skilled Pediatric Care	Medical Facility	X	X	X	X	X	X											
Victress Healthcare Staffing Solutions	Medical Facility	X	X	X	X	X	X								X	X		
Well Care Home Care, Inc	Medical Facility	X	X	X	X	X	X								X	X		
Bell Fork Elementary	Public School	X	X	X	X	X	X						X	X	X	X		
Bitz Intermediate School	Public School	X	X	X	X	X	X											
Blue Creek Elementary	Public School	X	X	X	X	X	X								X	X		
Brewster Middle	Public School	X	X	X	X	X	X					X		X				
Carla Johnson Primary School	Public School	X	X	X	X	X	X					X						
Carolina Forest Elementary	Public School	X	X	X	X	X	X					X				X		
Clyde Erwin Elementary	Public School	X	X	X	X	X	X							X	X	X		
Delalio Elementary	Public School	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Dixon Elementary	Public School	X	X	X	X	X	X								X	X		
Dixon High	Public School	X	X	X	X	X	X								X	X		
Dixon Middle	Public School	X	X	X	X	X	X								X	X		
Heroes Elementary	Public School	X	X	X	X	X	X		X									
Hunters Creek Elementary	Public School	X	X	X	X	X	X					X						
Hunters Creek Middle	Public School	X	X	X	X	X	X									X		
Jacksonville Commons Elem	Public School	X	X	X	X	X	X								X	X		
Jacksonville Commons Middle	Public School	X	X	X	X	X	X								X	X		
Jacksonville High	Public School	X	X	X	X	X	X											
Lejeune High	Public School	X	X	X	X	X	X					X		X				
Meadow View Elementary	Public School	X	X	X	X	X	X					X						
Morton Elementary	Public School	X	X	X	X	X	X											
New Bridge Middle	Public School	X	X	X	X	X	X								X	X		
Northside High	Public School	X	X	X	X	X	X									X		
Northwoods Elementary	Public School	X	X	X	X	X	X											
Northwoods Park Middle	Public School	X	X	X	X	X	X	X	X									
Parkwood Elementary	Public School	X	X	X	X	X	X											
Queens Creek Elementary	Public School	X	X	X	X	X	X								X	X		
Richlands Elementary	Public School	X	X	X	X	X	X								X	X		
Richlands High	Public School	X	X	X	X	X	X								X	X		
Richlands Primary	Public School	X	X	X	X	X	X								X	X		
Sand Ridge Elementary	Public School	X	X	X	X	X	X											
Silverdale Elementary	Public School	X	X	X	X	X	X											
Southwest Elementary	Public School	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Southwest High	Public School	X	X	X	X	X	X					X			X	X		
Southwest Middle	Public School	X	X	X	X	X	X								X	X		
Stateside Elementary	Public School	X	X	X	X	X	X											
Summersill Elementary	Public School	X	X	X	X	X	X											
Swansboro Elementary	Public School	X	X	X	X	X	X								X	X		
Swansboro High	Public School	X	X	X	X	X	X								X	X		
Swansboro Middle	Public School	X	X	X	X	X	X					X			X	X		
Tarawa Terrace I Elementary	Public School	X	X	X	X	X	X								X	X		
Tarawa Terrace II Elementary	Public School	X	X	X	X	X	X					X			X	X		
Trexler Middle	Public School	X	X	X	X	X	X								X	X		
White Oak High	Public School	X	X	X	X	X	X											
Pender County																		
Pender County Emergency Operations Center	Other	X	X	X	X	X	X					X			X	X		X
Pender County Emergency Operations Center-Alternate	Other	X	X	X	X	X	X								X	X	X	X
Hampstead Volunteer Fire Department	EMS	X	X	X	X	X	X					X			X	X		
NC Division of Forest Resources District 8 - Pender County	EMS	X	X	X	X	X	X					X			X	X		
Pender EMS	EMS	X	X	X	X	X	X								X	X		
Pender Volunteer EMS and Rescue Station 1	EMS	X	X	X	X	X	X								X	X	X	X
Pender Volunteer EMS and Rescue Station 2	EMS	X	X	X	X	X	X					X			X	X		
Pender Volunteer EMS and Rescue Station 4	EMS	X	X	X	X	X	X	X	X						X	X		
Pender Volunteer EMS and Rescue Station 5 - Union Rescue Squad	EMS	X	X	X	X	X	X								X	X	X	X
Pender Volunteer EMS and Rescue Station 6	EMS	X	X	X	X	X	X					X			X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Pender Volunteer EMS and Rescue Station 7 - Headquarters	EMS	X	X	X	X	X	X								X	X	X	X
Pender Volunteer EMS and Rescue Station 8	EMS	X	X	X	X	X	X								X	X		
Rocky Point Volunteer Fire Department Station 22	EMS	X	X	X	X	X	X					X			X	X	X	X
Shiloh-Columbia Volunteer Fire Department Station 1900	EMS	X	X	X	X	X	X								X	X		
Topsail Beach Fire Department	EMS	X	X	X	X	X	X	X	X						X	X		
Union Rescue Squad	EMS	X	X	X	X	X	X								X	X	X	X
Atkinson Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Burgaw Fire Department	Fire Stations	X	X	X	X	X	X								X	X	X	X
Hampstead Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Long Creek Grady Volunteer Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Maple Hill Volunteer Fire Department	Fire Stations	X	X	X	X	X	X		X			X			X	X		
NC Division of Forest Resources District 8 - Pender County	Fire Stations	X	X	X	X	X	X					X			X	X		
Penderlea Volunteer Fire Department	Fire Stations	X	X	X	X	X	X		X			X			X	X		
Rocky Point Volunteer Fire Department Station 22	Fire Stations	X	X	X	X	X	X					X			X	X	X	X
Shiloh-Columbia Volunteer Fire Department Station 1900	Fire Stations	X	X	X	X	X	X								X	X		
Sloop Point Fire Department	Fire Stations	X	X	X	X	X	X					X			X	X		
Surf City Fire Department	Fire Stations	X	X	X	X	X	X	X	X			X			X	X		
Surf City Volunteer Fire Department	Fire Stations	X	X	X	X	X	X								X	X		
Topsail Beach Fire Department	Fire Stations	X	X	X	X	X	X	X	X						X	X		
Burgaw Police Department	Law Enforcement	X	X	X	X	X	X								X	X	X	X

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
NC State Highway Patrol Troop B District IV - Substation	Law Enforcement	X	X	X	X	X	X								X	X	X	X
Pender County Sheriff’s Office	Law Enforcement	X	X	X	X	X	X					X			X	X		X
Surf City Police Department	Law Enforcement	X	X	X	X	X	X	X	X			X			X	X		
Topsail Beach Police Department	Law Enforcement	X	X	X	X	X	X	X	X						X	X		
Carr Facility	Medical Facility	X	X	X	X	X	X		X									
CDTEG, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		X
Forest Lane Family Care Home #1	Medical Facility	X	X	X	X	X	X					X			X	X		
Forest Lane Family Care Home #2	Medical Facility	X	X	X	X	X	X					X			X	X		
Huntington Health Care	Medical Facility	X	X	X	X	X	X								X	X	X	X
Huntington Health Care	Medical Facility	X	X	X	X	X	X								X	X	X	X
Janice Nichols Home	Medical Facility	X	X	X	X	X	X								X	X	X	X
Karon’s Family Care Home	Medical Facility	X	X	X	X	X	X								X	X		
Karon’s Family Care Home	Medical Facility	X	X	X	X	X	X								X	X		
Liberty Home Care	Medical Facility	X	X	X	X	X	X	X	X			X			X	X	X	X
Liberty Home Care	Medical Facility	X	X	X	X	X	X	X	X			X			X	X	X	X
Major Home Care	Medical Facility	X	X	X	X	X	X								X	X		
Major Home Care	Medical Facility	X	X	X	X	X	X								X	X		
Pender Adult Services, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		X
Pender Adult Services, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X		X
Pender County Center	Medical Facility	X	X	X	X	X	X								X	X		X
Pender County Center	Medical Facility	X	X	X	X	X	X								X	X		X
Pender County DSS	Medical Facility	X	X	X	X	X	X								X	X		X
Pender County DSS	Medical Facility	X	X	X	X	X	X								X	X		X

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Pender Home Health	Medical Facility	X	X	X	X	X	X								X	X	X	X
Pender Memorial Hospital, Inc.	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Piney Wood Family Care Home	Medical Facility	X	X	X	X	X	X					X			X	X		
Robert Ayers Home	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
Robert Ayers Home	Medical Facility	X	X	X	X	X	X					X			X	X	X	X
The Meadows of Burgaw	Medical Facility	X	X	X	X	X	X		X						X	X	X	X
The Meadows of Burgaw	Medical Facility	X	X	X	X	X	X		X						X	X	X	X
Well Care Health Services, Inc.	Medical Facility	X	X	X	X	X	X								X	X	X	X
Woodbury Wellness Center, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Woodbury Wellness Center, Inc.	Medical Facility	X	X	X	X	X	X								X	X		
Burgaw Elementary	Public School	X	X	X	X	X	X								X	X	X	X
Burgaw Middle	Public School	X	X	X	X	X	X		X			X			X	X	X	X
Cape Fear Elementary	Public School	X	X	X	X	X	X					X			X	X		
Cape Fear Middle	Public School	X	X	X	X	X	X					X			X	X		
Heide Trask High	Public School	X	X	X	X	X	X					X			X	X	X	X
Malpass Corner Elementary	Public School	X	X	X	X	X	X								X	X		
North Topsail Elementary	Public School	X	X	X	X	X	X					X						
Pender Early College High	Public School	X	X	X	X	X	X					X			X	X	X	X
Pender High	Public School	X	X	X	X	X	X								X	X		
Penderlea Elementary	Public School	X	X	X	X	X	X		X						X	X		
Rocky Point Primary	Public School	X	X	X	X	X	X								X	X		X
South Topsail Elementary	Public School	X	X	X	X	X	X					X				X		
Topsail Elementary	Public School	X	X	X	X	X	X					X			X	X		
Topsail High	Public School	X	X	X	X	X	X								X	X		

SECTION 6: VULNERABILITY ASSESSMENT

FACILITY NAME	FACILITY TYPE	Natural								Geological		Other						
		Drought	Excessive Heat	Hurricane & Coastal Hazards	Tornadoes/Thunderstorms	Severe Winter Weather	Earthquakes	Flood 100-year	Flood 500-year	Landslide - High Incidence	Landslide - Mod. Incidence	Wildfires	Fixed HAZMAT 0.5 Mile	Fixed HAZMAT 1 Mile	Mobile HAZMAT 0.5 Mile (Road)	Mobile HAZMAT 1 Mile (Road)	Mobile HAZMAT 0.5 Mile (Rail)	Mobile HAZMAT 1 Mile (Rail)
Topsail Middle	Public School	X	X	X	X	X	X								X	X		
West Pender Middle	Public School	X	X	X	X	X	X					X			X	X		