



13. WILDFIRE

13.1 HAZARD PROFILE

13.1.1 Hazard Description

A wildfire is any non-structural fire that occurs in forested, semi-forested, or less developed areas (NPS 2023). Wildfires can be highly destructive and difficult to control, resulting in the uncontrolled destruction of forests, brush, field crops, grasslands, real estate, and personal property. They also threaten homeowners who live in or adjacent to forest environments (NJFFS 2023).

Each year, an average of 1,500 wildfires damage 7,000 acres of New Jersey's forests. Some are naturally caused (typically by lightning) and others are caused by human activities. Human-caused wildfires include prescribed burns, which are intentionally set to achieve wildland management objectives, as well as wildfires caused by accident, carelessness, or arson. Most wildfires in New Jersey are caused by humans (NPS 2023).

The height of wildfire season in New Jersey runs from March through May, corresponding with the driest live fuel moisture periods of the year (NJOEM 2019). However, wildfires can occur every month of the year. Drought, snow pack, and local weather conditions can expand the length of the fire season. Early and late season fires usually are human-caused. Lightning generally is the cause of most fires in the peak season (NJOEM 2019).

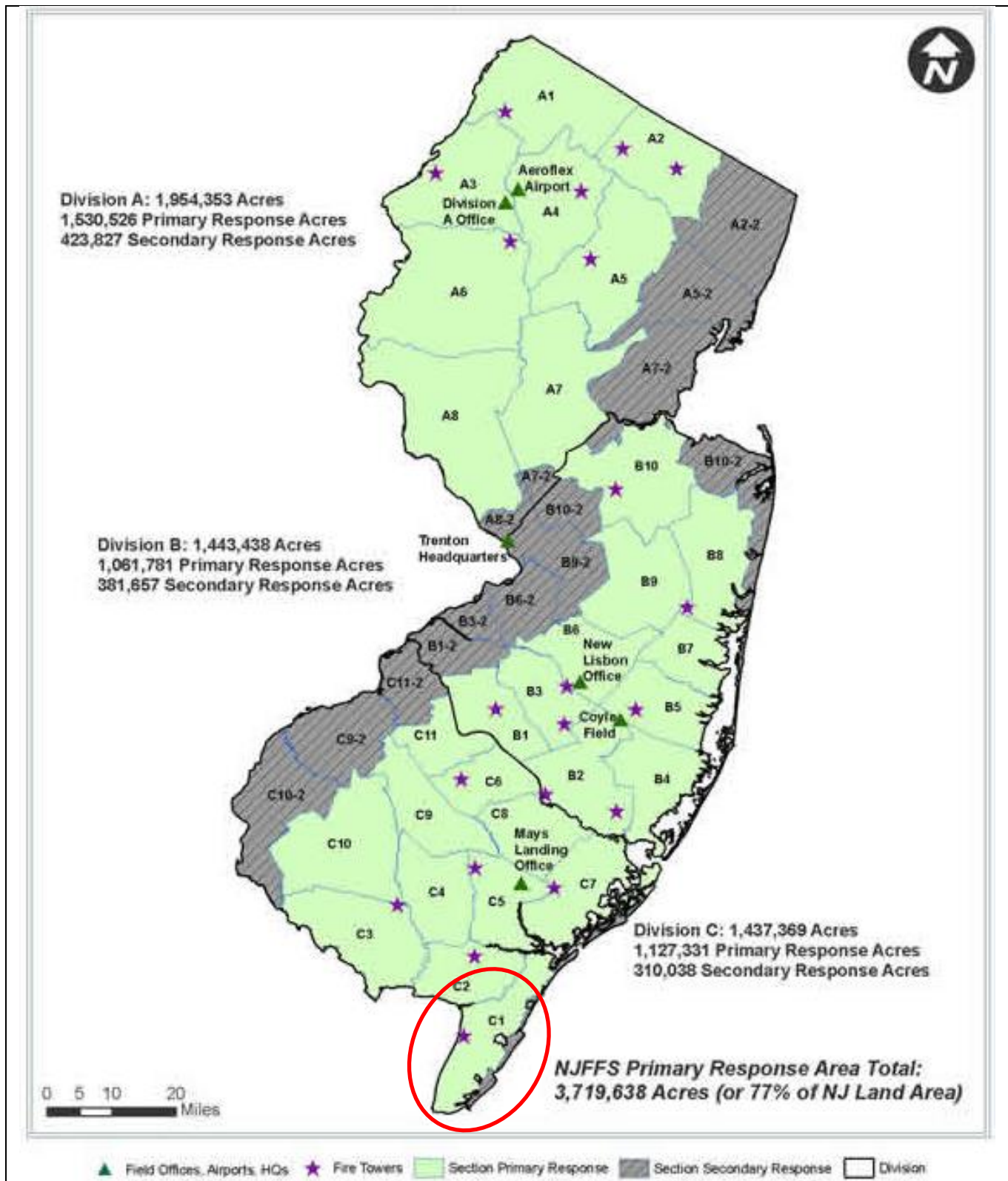
The New Jersey Forest Fire Service (NJFFS), a division of the New Jersey Department of Environmental Protection (NJDEP) under the direction of the state fire warden, is responsible for protecting the 3.15 million acres of wildland in the state. NJFFS has 85 full-time employees that provide an array of services including staffing the state's 21 fire towers, which are operational during in March, April, May, October, and November.

13.1.2 Location

NJFFS divides the state into three divisions (Northern, Central, Southern) each totaling about 1,250,000 acres. The divisions are further divided into 29 sections of about 125,000 acres with a forest fire warden in each and 269 districts of 15,000 to 20,000 acres. The 29 section forest fire wardens, 269 district forest fire wardens, and 2,000 trained crew members respond to fires on an as-needed basis (NJFFS 2020).

Figure 13-1 shows the NJFFS divisions and sections. Wildfire risks varies across these divisions, due to a combination of factors, including climate, poverty, education, demographics, and other causal factors (USFA 2013). Cape May County is in Division C (Southern), and wildfires have the potential to occur anywhere in the County.

Figure 13-1. Fire Divisions of New Jersey



Source: NJDEP 2013

Note: The red circle indicates the location of Cape May County. The County is located in Fire Division C



Wildland-Urban Interface and Intermix

The wildland-urban interface (WUI) is a zone where human development meets or intermingles with wildland vegetation. This area is particularly susceptible to wildfires due to the proximity of structures to natural fuels. There are two main types of WUI (Hermansen-Baez, Seitz and Montroe n.d.):

- Interface WUI—Areas where housing is adjacent to wildland vegetation but not intermingled. Vegetation occupies less than 50 percent of the area.
- Intermix WUI—Areas where housing is intermingled with wildland vegetation. Vegetation occupies more than 50 percent of the area.

Figure 13-2 illustrates the WUI interface and intermix wildfire hazard areas within Cape May County, showing that many of the WUI areas are located near major roadways which are critical facilities during hazard events.

Wildfire Fuel Hazard Areas

NJFFS developed Wildfire Fuel Hazard data for the entire state (NJHC 2000). NJFFS also created the New Jersey Wildfire Risk Assessment as a consistent, comparable set of scientific results to be used as a foundation for wildfire mitigation and prevention planning in the state. This assessment tool was used to prepare a report for the wildfire hazard potential (WHP) for Cape May County, as shown in Figure 13-3. The WHP quantifies the relative potential for wildfire that may be difficult to control. Table 13-1 shows the number of acres of each WHP category in Cape May County

Table 13-1. Wildfire Hazard Potential in Cape May County

Wildfire Hazard Potential Category	Acres	Percent
Minimal Direct Wildfire Impacts	55,673	30.4 %
1-Low	0	0.0 %
2	30	0.0 %
3	7,523	4.1 %
4	16,392	9.0 %
5	29,164	15.9 %
6	52,515	28.7 %
7	16,025	8.8 %
8-High	5,720	3.1 %
Total	183,042	100.0 %

Source: New Jersey Forest Fire Service 2024

Figure 13-2. WUI Interface and Intermix Wildfire Hazard Area

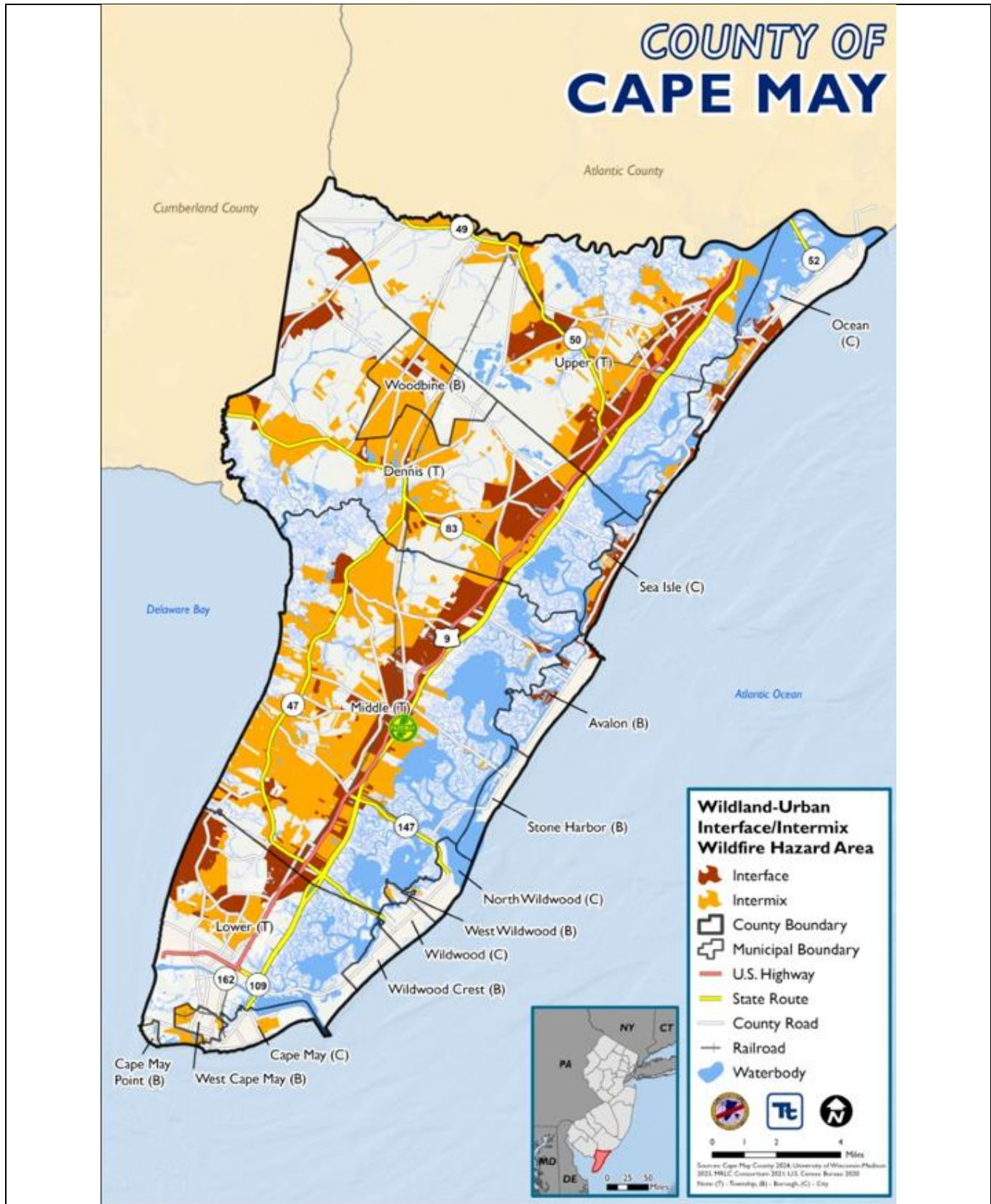
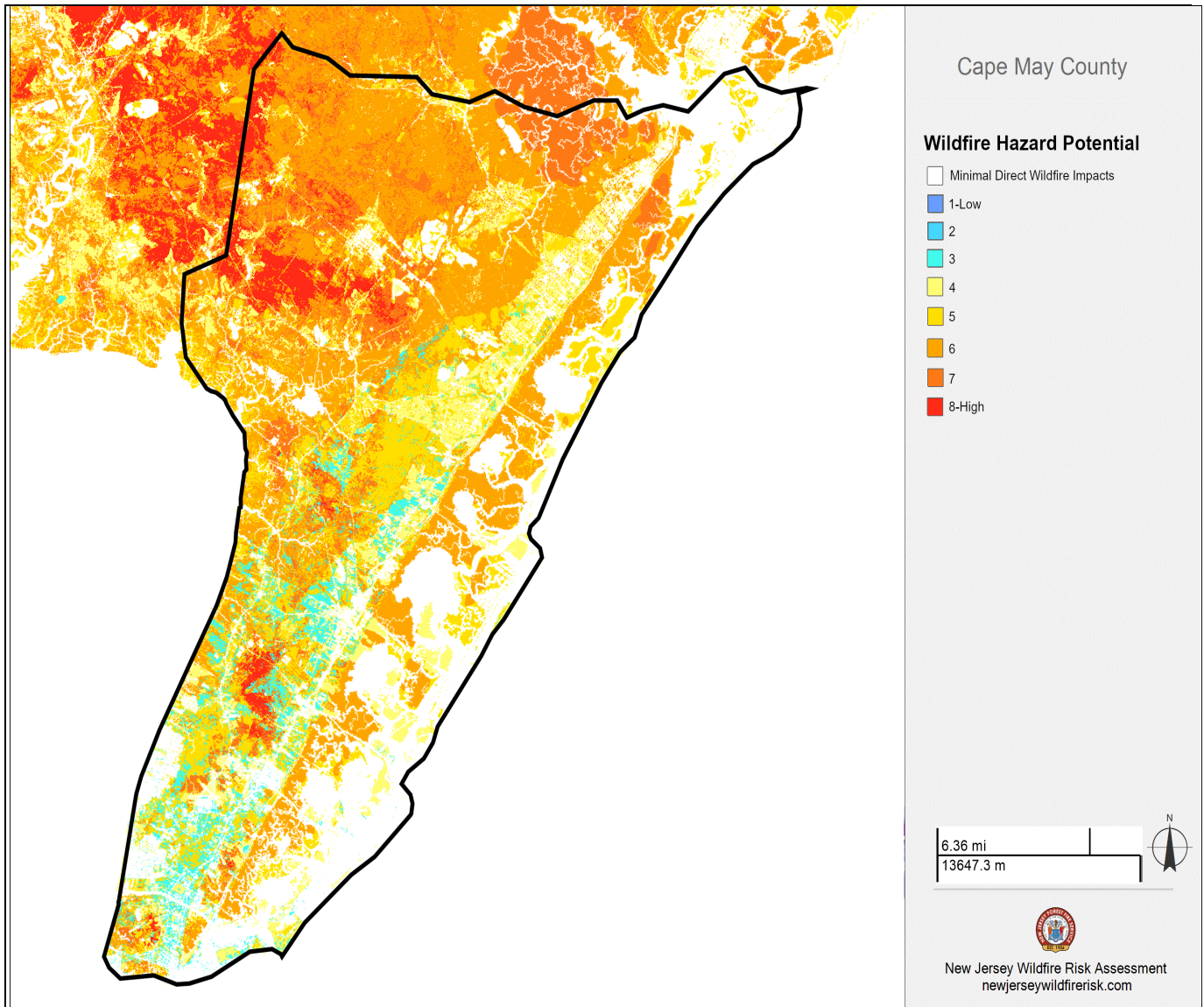


Figure 13-3. Wildfire Hazard Potential in Cape May County



Source: New Jersey Forest Fire Service 2024

Burn Probability

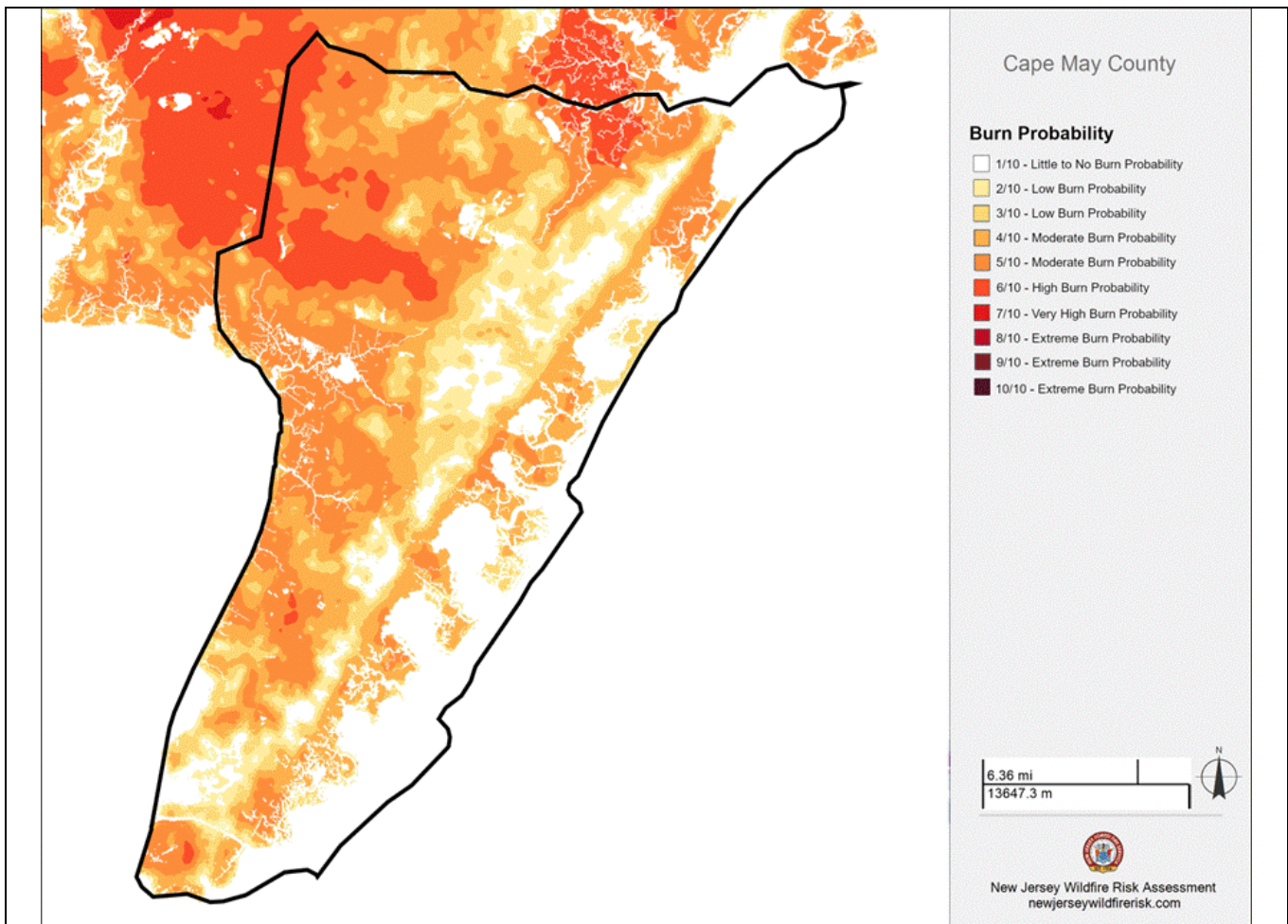
Burn probability is the annual probability of wildfire burning in a specific location, based on fire behavior modeling across thousands of simulations of possible fire seasons. Each simulation varies the factors contributing to the probability of a fire—including weather, topography, and ignitions—based on observations in recent decades (NJFFS 2024). Burn probability is not predictive and does not reflect any currently forecasted weather or fire danger conditions. Rather, it is a probability that any specific location may experience wildfire in any given year. It does not indicate the intensity of fire if it occurs (NJFFS 2024). Burn probability in Cap May County is listed in Table 13-2 and mapped in Figure 13-4.

Table 13-2. Cape May County Burn Probability

Burn Probability Category	Acres	Percent
1/10 - Little to No Burn Probability	55,463	30.3 %
2/10 - Low Burn Probability	15,412	8.4 %
3/10 - Low Burn Probability	21,248	11.6 %
4/10 - Moderate Burn Probability	36,383	19.9 %
5/10 - Moderate Burn Probability	43,391	23.7 %
6/10 - High Burn Probability	11,145	6.1 %
7/10 - Very High Burn Probability	0	0.0 %
8/10 - Extreme Burn Probability	0	0.0 %
9/10 - Extreme Burn Probability	0	0.0 %
10/10 - Extreme Burn Probability	0	0.0 %
Total	183,042	100.0 %

Source: New Jersey Forest Fire Service 2024

Figure 13-4. Cape May County Burn Probability



Source: New Jersey Forest Fire Service 2024

The Pinelands and Pine Barrens

A portion of Cape May County—including the Townships of Upper and Dennis and the Borough of Woodbine—is located within the New Jersey Pine Barrens. The Pine Barrens are characterized by low, dense forests of pine and oak, ribbons of cedar and hardwood swamps bordering drainage courses, pitch pine lowlands, and bogs and marshes.

Congress created the Pinelands National Reserve in 1978, the first National Reserve in the United States and a biosphere reserve under the Man and the Biosphere Program. The Pinelands National Reserve encompasses 1.1 million acres statewide, occupying 22 percent of New Jersey's land area and covering portions of seven counties and all or parts of 56 municipalities. It is the largest body of open space on the Mid-Atlantic seaboard between Richmond and Boston and is underlain by aquifers containing 17 trillion gallons of pure water (NPS 2018).

Through the creation of the Pinelands Commission, the State of New Jersey formed partnerships to preserve, protect and enhance the natural and cultural resources of the Pinelands. In Cape May County, 19 percent municipalities (3 of the 16 municipalities) are located within the Pinelands Area, as shown in Figure 13-5 (NJ Pinelands Commission 2018). Based on 2010 population data, the Pinelands area accounts for 5.5 percent of Cape May County's population and 21.6 percent of the County's total land area (34,820 acres) (NJ Pinelands Commission 2014).

Naturally occurring wildfires burning several thousands of acres per year have been a common occurrence in the Pinelands for hundreds of years. The unique flora of the Pinelands is closely related to the occurrence of fire, with many plant species relying on fire for a part of their reproductive cycle (NJOEM 2024). Pinelands fires tend to burn extremely hot and spread rapidly. Crown fires (spreading from treetop to treetop) are fairly common. While Pinelands fires generally do not cause casualties due to the low population residing within its limits, property loss can run in the thousands of dollars per event, not including costs associated with emergency response and firefighting. Often, state roads have closed because of smoke conditions (NJOEM 2024).

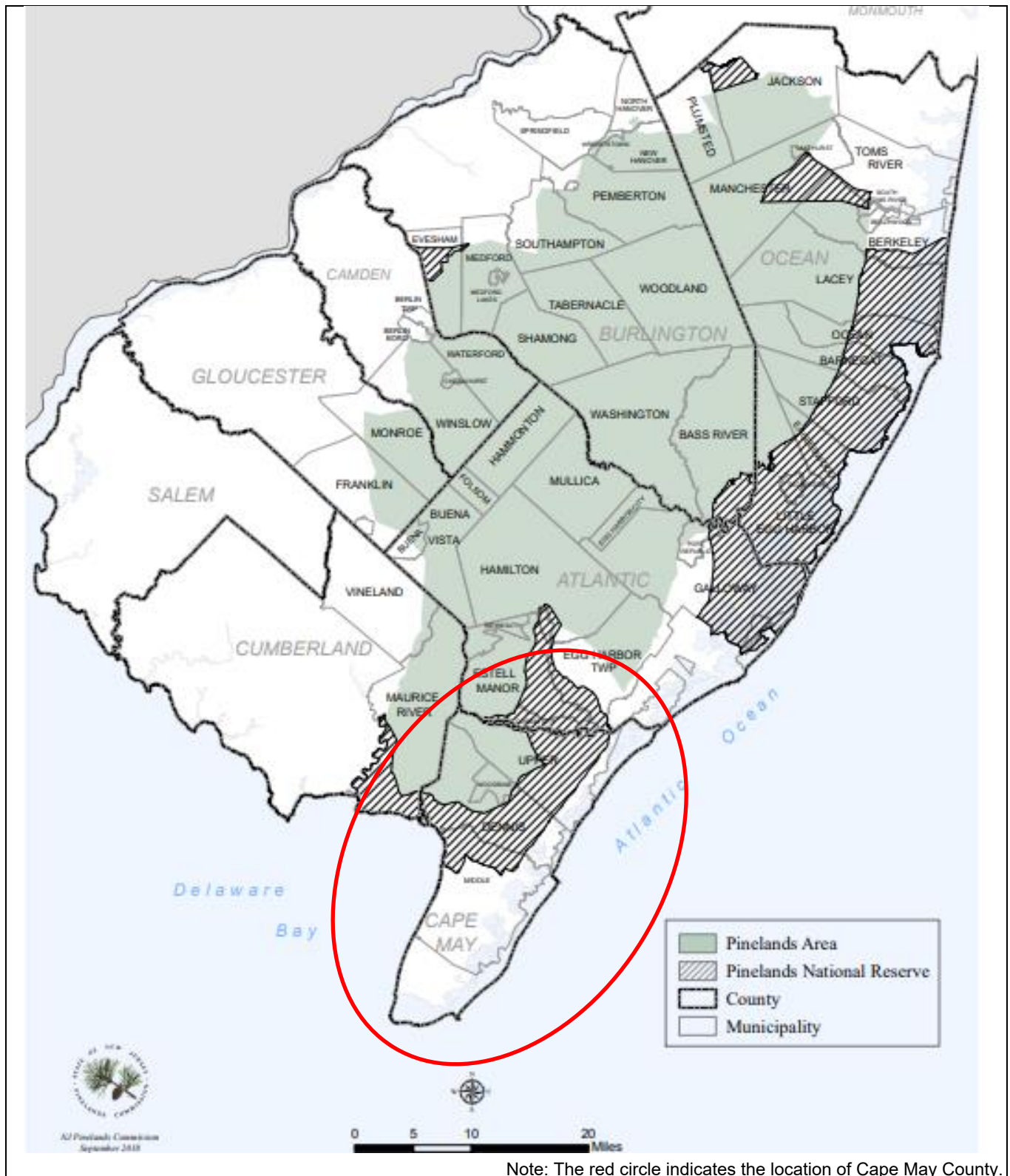
Drying conditions in the Pine Barrens favor the combustion of forest fuels. Generally, a relative humidity of less than 40 percent, winds greater than 13 miles an hour, and precipitation of less than 0.01 inches during a month are ideal conditions for forest fires in the Pine Barrens. The season of greatest fire threat runs from March through May, though extensive fires have occurred in the summer and autumn months (NJOEM 2024).

13.1.3 Extent

The extent (i.e., magnitude or severity) of wildfires depends on climate factors, such as dryness or presence of drought, and human activity. The NJFFS uses two indices to monitor the dryness of forest fuels and the possibility of fire ignitions becoming wildfires:

- The National Fire Danger Rating Systems Buildup Index reflects the combined cumulative effects of daily drying and precipitation fuels with a 10-day time lag constant. It is a rating of the total amount of fuel available for combustion (National Wildfire Coordinating Group 2023).
- The Keetch-Byram Drought Index determines forest fire potential based on a daily water balance, where a drought factor is balanced with precipitation and soil moisture (assumed to have a maximum storage capacity of 8 inches). It is expressed in hundredths of an inch of soil moisture depletion (NOAA NIDIS 2023).

Figure 13-5. Pinelands Management and Planning Areas in Cape May County



Source: NJ Pinelands Commission 2018



Both indices are used for fire preparedness planning, which includes campfire and burning restrictions, fire patrol assignments, staffing of fire lookout towers, and readiness status for observation and firefighting aircraft.

The NJFFS also uses the National Fire Danger Rating System to provide a relative measure of the daily fire danger for a given area in the state (Western Fire Chiefs Association 2023). The rating system uses a five-color coded system to help the public understand fire potential. The NJFFS slightly adapted the color system; Table 13-3 shows the rating system, with the NJFFS color scheme.

Table 13-3. Fire Danger Rating and Color Code

Fire Danger Rating and Color Code	Description
Low (Green)	Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering and burn in irregular fingers. There is little danger of spotting.
Moderate (Blue)	Fires can start from most accidental causes, but except for lightning fires in some areas, the number of starts is generally low. Fires in open-cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur but is not persistent. Fires are not likely to become serious, and control is relatively easy.
High (Yellow)	All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
Very High (Orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
Extreme (Red)	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash (trunks, branches, and treetops) or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes, or the fuel supply lessens.

Source: NJFFS 2023

Table 13-4 and Figure 13-6 visualize the surface fuel in Cape May County (New Jersey Forest Fire Service 2024). Surface fuels are generally defined as burnable materials less than 6 feet above the ground. They typically are categorized into one of the following fuel types based on the primary carrier of the surface fire:

- Grass
- Grass/shrub
- Shrub
- Timber/understory
- Timber litter
- Slash

Surface fuels are defined by fire behavior fuel models, which contain parameters required by a surface fire spread model to compute surface fire behavior characteristics such as rate of spread, flame length, fire line intensity, and other fire behavior metrics.



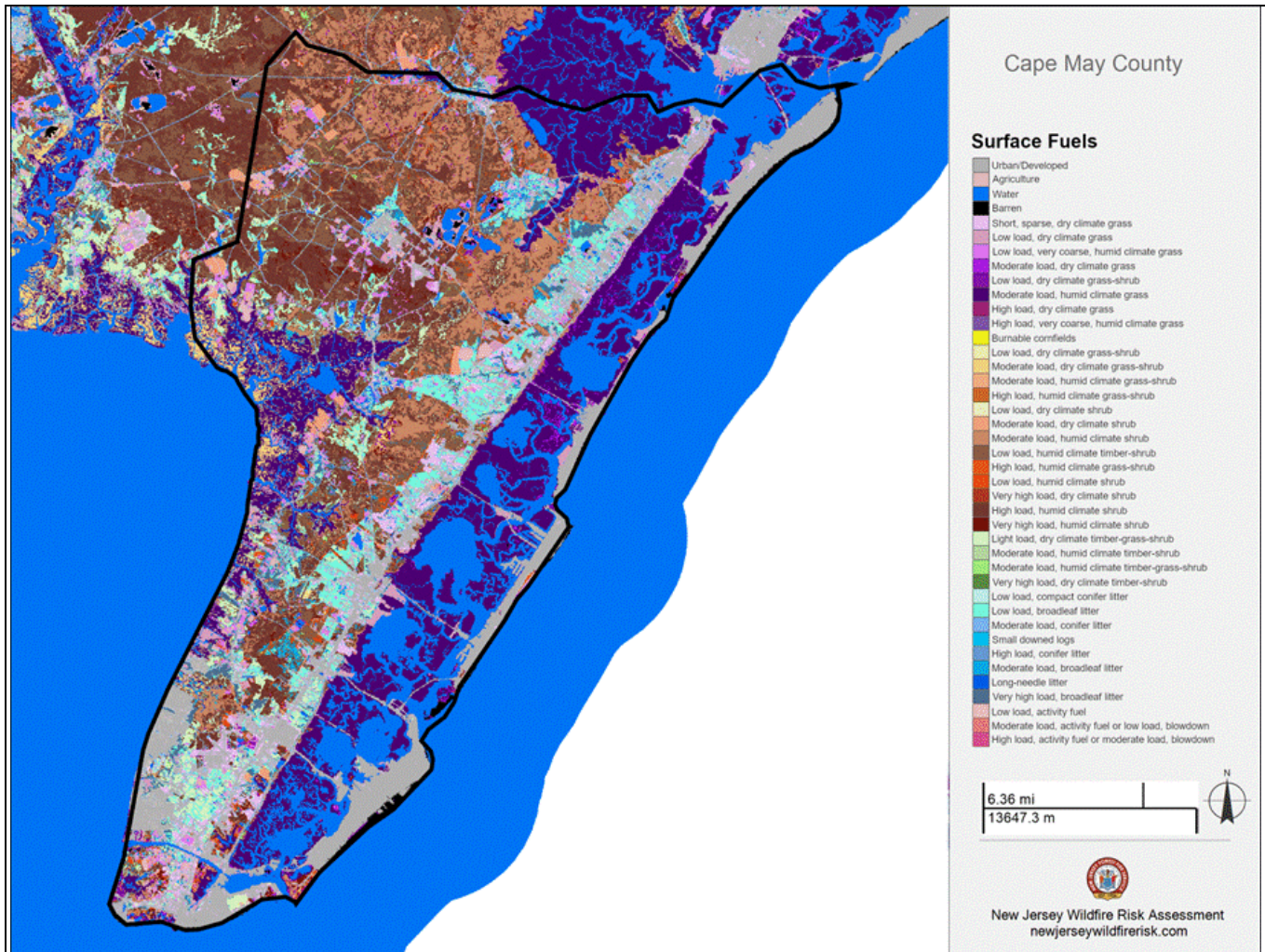
Table 13-4. Surface Fuels in Cape May County

Surface Fuel Model	Description	Acres	Percent
NB1	Urban/Developed	23,765	13.0 %
NB3	Agriculture	1,080	0.6 %
NB8	Water	29,491	16.1 %
NB9	Barren	1,426	0.8 %
GR1	Short, sparse, dry climate grass	5,453	3.0 %
GR2	Low load, dry climate grass	3,868	2.1 %
GR3	Low load, very coarse, humid climate grass	2,941	1.6 %
GR4	Moderate load, dry climate grass	987	0.5 %
GR5	Low load, dry climate grass-shrub	1,355	0.7 %
GR6	Moderate load, humid climate grass	31,864	17.4 %
GR7	High load, dry climate grass	0	0.0 %
GR8	High load, very coarse, humid climate grass	0	0.0 %
AG9	Burnable cornfields	0	0.0 %
GS1	Low load, dry climate grass-shrub	1,275	0.7 %
GS2	Moderate load, dry climate grass-shrub	2,784	1.5 %
GS3	Moderate load, humid climate grass-shrub	123	0.1 %
GS4	High load, humid climate grass-shrub	0	0.0 %
SH1	Low load, dry climate shrub	0	0.0 %
SH2	Moderate load, dry climate shrub	991	0.5 %
SH3	Moderate load, humid climate shrub	15,248	8.3 %
SH4	Low load, humid climate timber-shrub	13,124	7.2 %

Surface Fuel Model	Description	Acres	Percent
SH5	High load, humid climate grass-shrub	0	0.0 %
SH6	Low load, humid climate shrub	2,354	1.3 %
SH7	Very high load, dry climate shrub	0	0.0 %
SH8	High load, humid climate shrub	19,894	10.9 %
SH9	Very high load, humid climate shrub	2,124	1.2 %
TU1	Light load, dry climate timber-grass-shrub	4,988	2.7 %
TU2	Moderate load, humid climate timber-shrub	104	0.1 %
TU3	Moderate load, humid climate timber-grass-shrub	296	0.2 %
TU5	Very high load, dry climate timber-shrub	16	0.0 %
TL1	Low load, compact conifer litter	0	0.0 %
TL2	Low load, broadleaf litter	7,236	4.0 %
TL3	Moderate load, conifer litter	3,664	2.0 %
TL4	Small downed logs	0	0.0 %
TL5	High load, conifer litter	295	0.2 %
TL6	Moderate load, broadleaf litter	2,495	1.4 %
TL8	Long-needle litter	441	0.2 %
TL9	Very high load, broadleaf litter	3,358	1.8 %
SB1	Low load, activity fuel	0	0.0 %
SB2	Moderate load, activity fuel or low load, blowdown	0	0.0 %
SB3	High load, activity fuel or moderate load, blowdown	0	0.0 %
		183,040	100.0 %

Source: New Jersey Forest Fire Service 2024

Figure 13-6. Surface Fuels in Cape May County



Source: New Jersey Forest Fire Service 2024

13.1.4 Previous Occurrences

FEMA Major Disaster and Emergency Declarations

Between 1954 and 2025, Cape May County was not included in any major disaster (DR) or emergency (EM) declarations for wildfire-related events (FEMA 2025).

USDA Declarations

The USDA can designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in contiguous counties. Between August 2019 and March 2025, Cape May County was not included in any USDA wildfire-related disaster declarations (USDA 2024).



Previous Events

The NJFFS keeps records of wildfires and prescribed burns in the State of New Jersey, as shown in Table 13-5. In Cape May County, between 2018 and 2023, there were 205 fires with a total of 85.75 acres burned. During the same timeframe, there were 219 prescribed burns with 1,870 acres burned. For events prior to 2019, refer to the 2019 Cape May County HMP.

Table 13-5. Wildfires and Prescribed Burns in Cape May County 2018-2023

Year	Wildfires		Prescribed Burns	
	Number of Fires	Acres Burned	Number of Treatments	Acres Treated
2018	31	15.5	47	251
2019	38	10.5	41	106
2020	31	15.25	37	246
2021	34	9.5	38	394
2022	38	22	40	298
2023	33	13	16	575
Total	205	85.75	219	1,870

Source: New Jersey Forest Fire Service 2024

13.1.5 Probability of Future Occurrences

Probability Based on Past Events

Information on previous wildfire occurrences in the County was used to calculate the probability of future occurrence of such events, as summarized in Table 13-6. Based on historical records and input from the Planning Partnership, the probability of occurrence for wildfire in the County is considered “occasional.”

Table 13-6. Probability of Future Wildfire Events in Cape May County

Hazard Type	Number of Occurrences Between 2018 and 2023	Percent Chance of Occurring in Any Given Year
Wildfire	205	100%

Source: New Jersey Forest Fire Service 2024

Effect of Climate Change on Future Probability

A gradual change in temperatures will alter the growing environment of many tree species, reducing the growth of some trees and increasing the growth of others. Tree growth and regeneration may be affected more by extreme weather events and climatic conditions than by gradual changes in temperature or precipitation. Warmer temperatures may lead to longer dry seasons and multi-year droughts, creating triggers for wildfires, insects, and invasive species. An increase in invasive species, such as the emerald ash borer, can lead to the destruction and death of ash trees, adding more fuel for fires. Increased temperature and change in precipitation will also affect fuel moisture during wildfire season and the length of time during which wildfires can burn during a given year (US EPA 2022).

Climate change may also increase the frequency of lightning strikes. A warmer atmosphere holds more moisture which is one of the key items for triggering a lightning strike. If the frequency of lightning strikes increases, the potential for wildfires from these strikes also increases (National Geographic 2014).

According to the temperature projections for Southern New Jersey, including Cape May County, this area can expect warmer and drier conditions, which may increase the frequency and intensity of wildfires. Higher temperatures are expected to increase the amount of moisture that evaporates from land and water. These changes have the potential to lead to more frequent and severe droughts, which, in turn, increases the likelihood of wildfires (US EPA 2022).

13.1.6 Cascading Impacts on Other Hazards

Debris and ash left after a wildfire can form mudflows. During and after a rain event, as water moves across charred and denuded ground, it can pick up soil and sediment and carry it in a stream of floodwaters. These mudflows have the potential to cause significant damage to impacted areas. Areas directly affected by fires and those located below or downstream of burn areas are most at risk (FEMA 2020).

Wildfires, particularly large-scale fires, can dramatically alter the terrain and ground conditions, making land already devastated by fire susceptible to floods. Normally, vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water, creating conditions perfect for flash flooding. Flood risk in these impacted areas remains significantly higher until vegetation is restored, which can take up to five years after a wildfire (FEMA 2016).

When wildfire hits in drought-stricken areas, watersheds and reservoirs can be further impacted by ash and debris flows, water treatment facilities may shut down with damage or loss of power, crops can be destroyed, and smoke can affect animal and human health (NIDIS 2023).

Intense wildfire events that destroy existing ecosystems can result in an increase in invasive species that may be able to move into an area with a lack of natural competitors (U.S. Department of the Interior 2012).

13.2 VULNERABILITY AND IMPACT ASSESSMENT

WUI interface and intermix data from the University of Wisconsin – Madison was referenced to delineate wildfire hazard areas. The hazard areas are based on the 2020 Census and 2021 National Land Cover Dataset. High-, medium-, and low-density interface areas were combined and used as the “Interface” hazard area. High-, medium-, and low-density intermix areas were combined and used as the “Intermix” hazard area. The boundaries of these hazard areas were overlaid on the centroids of inventoried Cape May County assets. Centroids that intersect the wildfire boundaries were totaled to estimate buildings and population vulnerable to wildfire.

13.2.1 Life, Health, and Safety

Overall Population

Wildfires have the potential to impact human health and life. Public health impacts associated with wildfire include difficulty in breathing, odor, and reduction in visibility. First responders and nearby residents are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke. Smoke generated by wildfire consists of visible and invisible emissions that contain particulate matter (soot, tar, water vapor, and minerals), gases (carbon monoxide, carbon dioxide, nitrogen oxides), and toxics (formaldehyde, benzene).



Emissions from wildfires depend on the type of fuel, the moisture content of the fuel, the efficiency (or temperature) of combustion, and the weather.

Table 13-7 summarizes estimated population in the WUI interface and intermix hazard areas. Total county population in the WUI interface hazard area is 40,755. The Township of Middle has the highest population in that hazard area at 11,201. Total county population in the WUI intermix hazard area is 16,677. The Township of Middle has the highest population in that hazard area at 7,901.

Table 13-7. Population located in the WUI Interface and Intermix Hazard Areas

Jurisdiction	Total Population (U.S. Census Bureau 2020 Decennial)	Population in the WUI Interface Hazard Area		Population in the WUI Intermix Hazard Area	
		Number of Persons	% of Jurisdiction Total	Number of Persons	% of Jurisdiction Total
Avalon (B)	1,243	240	19.3%	0	0.0%
Cape May (C)	2,768	0	0.0%	42	1.5%
Cape May Point (B)	305	0	0.0%	0	0.0%
Dennis (T)	6,285	2,938	46.7%	2,432	38.7%
Lower (T)	22,057	10,846	49.2%	1,618	7.3%
Middle (T)	20,380	11,201	55.0%	7,901	38.8%
North Wildwood (C)	3,621	0	0.0%	31	0.9%
Ocean (C)	11,229	3,946	35.1%	155	1.4%
Sea Isle (C)	2,104	1,958	93.1%	98	4.7%
Stone Harbor (B)	796	0	0.0%	0	0.0%
Upper (T)	12,539	8,533	68.1%	3,337	26.6%
West Cape May (B)	1,010	0	0.0%	55	5.4%
West Wildwood (B)	540	0	0.0%	30	5.6%
Wildwood (C)	5,157	0	0.0%	0	0.0%
Wildwood Crest (B)	3,101	0	0.0%	0	0.0%
Woodbine (B)	2,128	1,093	51.4%	978	46.0%
Cape May County	95,263	40,755	42.8%	16,677	17.5%

Source: U.S. Census Bureau 2020; University of Wisconsin-Madison 2023, MRLC Consortium 2021

Note: (B) Borough; (C) City; (T) Township

Socially Vulnerable Population

Economically disadvantaged populations are more vulnerable to wildfire because they are likely to lack financial resources for evacuation. The population over age 65 is also more vulnerable because they are more likely to need medical attention that may not be available due to isolation during a wildfire event, and they may have more difficulty evacuating. Smoke and air pollution from wildfires can be a severe health hazard, especially for sensitive populations, including children, the elderly, and those with respiratory and cardiovascular diseases.

Table 13-8 and Table 13-9 list the number of vulnerable persons living in the WUI interface and intermix hazard areas. There is a total of 10,744 persons over the age of 65, 1,935 persons under the age of 5, 523 non-English speaking persons, 5,681 persons with disability, and 3,295 persons in poverty located within the WUI interface



hazard area of the County. There is a total of 3,970 persons over the age of 65, 900 persons under the age of 5, 288 non-English speaking persons, 2,361 persons with disability, and 1,370 persons in poverty located within the WUI intermix hazard area of the County.

13.2.2 General Building Stock

Buildings in the WUI interface and intermix areas are particularly vulnerable to wildfires because they are close to natural vegetation, which can serve as fuel for fires. The primary risks include the following (FEMA 2022):

- **Embers**—Small, burning pieces of material that can be carried by the wind and ignite buildings by landing on combustible surfaces like roofs or entering through vents.
- **Direct Flame Contact**—Flames from nearby vegetation or other burning structures can directly ignite buildings.
- **Radiant Heat**—Intense heat from nearby fires can cause buildings to ignite without direct flame contact, especially if they are close to other burning structures or vegetation.

Table 13-10 and Table 13-11 list the number of buildings in the WUI interface and intermix hazard areas. There are 49,292 buildings, with a replacement cost value of over \$76 billion, located in the WUI interface hazard area. The Township of Lower has the largest number of buildings in the hazard area (12,053). Sea Isle City has the highest replacement cost value (\$22 billion).

There 19,496 buildings, with a replacement cost value of over \$21 billion, located in the WUI intermix hazard area. The Township of Middle has the largest number (8,793) and highest replacement cost value (\$7 billion) of buildings in the hazard area.

Table 13-12 and Table 13-13 list the number of buildings in the WUI interface and intermix hazard areas by general occupancy class. There are a total of 39,816 residential buildings, 8,803 commercial buildings, 8 industrial buildings, and 665 government, religion, agriculture, and education buildings located within the WUI interface hazard area. The Township of Lower has the highest number of residential (9,194) and commercial (2,726) buildings located in the WUI interface hazard area. The Township of Middle has the highest number of industrial (6) and government, religion, agricultural, and education (216) buildings located within the WUI interface hazard area.

There are a total of 12,960 residential buildings, 5,734 commercial buildings, 2 industrial buildings, and 799 government, religion, agriculture, and education buildings located within the WUI intermix hazard area. The Township of Middle has the highest number of residential (5,697), commercial (2,733), and government, religion, agriculture, and education (363) buildings located in the WUI intermix hazard area. Both Ocean City and the Township of Upper have one industrial building located within the WUI intermix hazard area.



Table 13-8. Estimated Number of Vulnerable Persons Located in the WUI Interface Hazard Area

Jurisdiction	Persons Over 65	Percent of Total	Persons Under 5	Percent of Total	Non-English Speaking Persons	Percent of Total	Persons with a Disability	Percent of Total	Persons in Poverty	Percent of Total
Avalon (B)	148	19.4%	4	19.0%	0	0.0%	31	19.4%	13	18.3%
Cape May (C)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Cape May Point (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Dennis (T)	610	46.7%	225	46.6%	16	46.3%	278	46.6%	151	46.5%
Lower (T)	2,713	49.2%	546	49.1%	107	49.0%	1,786	49.2%	1,164	49.1%
Middle (T)	2,656	55.0%	525	54.9%	273	55.0%	1,632	54.9%	979	54.9%
North Wildwood (C)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ocean (C)	1,342	35.1%	72	35.0%	14	34.1%	519	35.1%	401	35.1%
Sea Isle (C)	956	93.0%	5	83.3%	12	92.6%	244	92.8%	105	92.9%
Stone Harbor (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Upper (T)	2,065	68.0%	482	68.0%	44	67.9%	800	68.0%	150	67.9%
West Cape May (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
West Wildwood (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Wildwood (C)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Wildwood Crest (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Woodbine (B)	254	51.3%	76	51.0%	57	50.7%	391	51.3%	332	51.4%
Cape May County	10,744	40.5%	1,935	47.0%	523	37.1%	5,681	40.4%	3,295	39.0%

Source: U.S. Census Bureau, American Community Survey 2018-2022; University of Wisconsin-Madison 2023, MRLC Consortium 2021, U.S. Census Bureau 2020

Note: (B) Borough; (C) City; (T) Township

Table 13-9. Estimated Number of Vulnerable Persons Located in the WUI Intermix Hazard Area

Jurisdiction	Persons Over 65	Percent of Total	Persons Under 5	Percent of Total	Non-English Speaking Persons	Percent of Total	Persons with a Disability	Percent of Total	Persons in Poverty	Percent of Total
Avalon (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.00%
Cape May (C)	11	1.4%	2	1.4%	0	0.0%	2	1.2%	2	1.4%



13. Wildfire

Jurisdiction	Persons Over 65	Percent of Total	Persons Under 5	Percent of Total	Non-English Speaking Persons	Percent of Total	Persons with a Disability	Percent of Total	Persons in Poverty	Percent of Total
Cape May Point (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Dennis (T)	505	38.7%	186	38.5%	13	37.6%	230	38.6%	125	38.5%
Lower (T)	404	7.3%	81	7.3%	15	6.9%	266	7.3%	173	7.3%
Middle (T)	1,873	38.8%	370	38.7%	192	38.6%	1,151	38.7%	691	38.8%
North Wildwood (C)	14	0.8%	0	0.0%	0	0.0%	6	0.9%	2	0.7%
Ocean (C)	52	1.4%	2	1.0%	0	0.0%	20	1.4%	15	1.3%
Sea Isle (C)	47	4.6%	0	0.0%	0	0.0%	12	4.6%	5	4.4%
Stone Harbor (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Upper (T)	807	26.6%	188	26.5%	17	26.2%	313	26.6%	58	26.2%
West Cape May (B)	20	5.4%	2	4.8%	0	0.0%	6	4.8%	1	3.7%
West Wildwood (B)	10	5.6%	1	2.9%	0	0.0%	5	4.7%	1	5.6%
Wildwood (C)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Wildwood Crest (B)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Woodbine (B)	227	45.9%	68	45.6%	51	45.4%	350	45.9%	297	46.0%
Cape May County	3,970	15.0%	900	21.9%	288	20.4%	2,361	16.8%	1,370	16.2%

Source: U.S. Census Bureau, American Community Survey 2018-2022; University of Wisconsin-Madison 2023, MRLC Consortium 2021, U.S. Census Bureau 2020

Note: (B) Borough; (C) City; (T) Township



Table 13-10. Buildings in the WUI Interface Hazard Area

Jurisdiction	Jurisdiction Total Buildings		Buildings in the WUI Interface Hazard Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Avalon (B)	6,696	\$25,723,512,232	1,213	18.1%	\$5,956,660,259	23.2%
Cape May (C)	4,650	\$16,203,622,284	0	0.0%	\$0	0.0%
Cape May Point (B)	850	\$1,686,539,666	0	0.0%	\$0	0.0%
Dennis (T)	8,700	\$8,299,131,210	3,666	42.1%	\$3,426,210,595	41.3%
Lower (T)	25,387	\$22,775,836,898	12,053	47.5%	\$8,777,144,160	38.5%
Middle (T)	20,691	\$27,392,475,766	10,331	49.9%	\$14,463,996,024	52.8%
North Wildwood (C)	5,843	\$11,753,681,214	0	0.0%	\$0	0.0%
Ocean (C)	19,235	\$44,649,077,467	6,799	35.3%	\$10,277,155,518	23.0%
Sea Isle (C)	7,416	\$23,896,778,328	6,901	93.1%	\$22,218,922,913	93.0%
Stone Harbor (B)	4,202	\$8,177,015,155	0	0.0%	\$0	0.0%
Upper (T)	10,936	\$14,864,714,357	7,297	66.7%	\$10,049,009,002	67.6%
West Cape May (B)	1,760	\$2,893,441,733	0	0.0%	\$0	0.0%
West Wildwood (B)	920	\$1,064,788,340	0	0.0%	\$0	0.0%
Wildwood (C)	4,460	\$12,875,631,194	0	0.0%	\$0	0.0%
Wildwood Crest (B)	6,159	\$11,797,908,652	0	0.0%	\$0	0.0%
Woodbine (B)	2,107	\$3,249,453,892	1,032	49.0%	\$1,055,766,040	32.5%
Cape May County	130,012	\$237,303,608,388	49,292	37.9%	\$76,224,864,511	32.1%

Source: Cape May County 2024; RSMeans 2024; University of Wisconsin 2023, MRLC Consortium 2021, U.S. Census Bureau 2020
 Note: (B) Borough; (C) City; (T) Township



Table 13-11. Buildings in the WUI Intermix Hazard Area

Jurisdiction	Jurisdiction Total Buildings		Buildings in the WUI Intermix Hazard Area			
			Number of Buildings		Replacement Cost Value	
	Count	Replacement Cost Value	Count	% of Jurisdiction Total	Value	% of Jurisdiction Total
Avalon (B)	6,696	\$25,723,512,232	0	0.0%	\$0	0.0%
Cape May (C)	4,650	\$16,203,622,284	72	1.5%	\$337,616,802	2.1%
Cape May Point (B)	850	\$1,686,539,666	0	0.0%	\$0	0.0%
Dennis (T)	8,700	\$8,299,131,210	3,826	44.0%	\$4,048,837,503	48.8%
Lower (T)	25,387	\$22,775,836,898	2,122	8.4%	\$1,624,354,513	7.1%
Middle (T)	20,691	\$27,392,475,766	8,793	42.5%	\$7,909,453,791	28.9%
North Wildwood (C)	5,843	\$11,753,681,214	56	1.0%	\$66,539,272	0.6%
Ocean (C)	19,235	\$44,649,077,467	267	1.4%	\$474,036,270	1.1%
Sea Isle (C)	7,416	\$23,896,778,328	336	4.5%	\$1,270,007,178	5.3%
Stone Harbor (B)	4,202	\$8,177,015,155	0	0.0%	\$0	0.0%
Upper (T)	10,936	\$14,864,714,357	2,979	27.2%	\$4,171,146,368	28.1%
West Cape May (B)	1,760	\$2,893,441,733	115	6.5%	\$334,811,938	11.6%
West Wildwood (B)	920	\$1,064,788,340	45	4.9%	\$141,438,016	13.3%
Wildwood (C)	4,460	\$12,875,631,194	0	0.0%	\$0	0.0%
Wildwood Crest (B)	6,159	\$11,797,908,652	0	0.0%	\$0	0.0%
Woodbine (B)	2,107	\$3,249,453,892	884	42.0%	\$659,258,635	20.3%
Cape May County	130,012	\$237,303,608,388	19,495	15.0%	\$21,037,500,286	8.9%

Source: Cape May County 2024; RSMeans 2024; University of Wisconsin 2023, MRLC Consortium 2021, U.S. Census Bureau 2020

Note: (B) Borough; (C) City; (T) Township



Table 13-12. Buildings in the WUI Interface Hazard Area by General Occupancy Class

Jurisdiction	Buildings in the WUI Interface Hazard Area by General Occupancy Class			
	Residential	Commercial	Industrial	Other ^a
Avalon (B)	1,127	83	0	3
Cape May (C)	0	0	0	0
Cape May Point (B)	0	0	0	0
Dennis (T)	2,707	867	0	92
Lower (T)	9,194	2,726	0	133
Middle (T)	8,076	2,033	6	216
North Wildwood (C)	0	0	0	0
Ocean (C)	6,264	522	0	13
Sea Isle (C)	6,193	691	0	17
Stone Harbor (B)	0	0	0	0
Upper (T)	5,411	1,768	0	118
West Cape May (B)	0	0	0	0
West Wildwood (B)	0	0	0	0
Wildwood (C)	0	0	0	0
Wildwood Crest (B)	0	0	0	0
Woodbine (B)	844	113	2	73
Cape May County	39,816	8,803	8	665

Source: Cape May County 2024; University of Wisconsin-Madison 2023, MRLC Consortium 2021, U.S. Census Bureau 2020

Note: (B) Borough; (C) City; (T) Township

a. Other = Government, Religion, Agricultural, and Education

Table 13-13. Buildings in the WUI Intermix Hazard Area by General Occupancy Class

Jurisdiction	Buildings in the WUI Intermix Hazard Area by General Occupancy Class			
	Residential	Commercial	Industrial	Other ^a
Avalon (B)	0	0	0	0
Cape May (C)	62	8	0	2
Cape May Point (B)	0	0	0	0
Dennis (T)	2,241	1,358	0	227
Lower (T)	1,372	697	0	53
Middle (T)	5,697	2,733	0	363
North Wildwood (C)	40	16	0	0
Ocean (C)	247	10	1	9
Sea Isle (C)	310	23	0	3
Stone Harbor (B)	0	0	0	0
Upper (T)	2,116	810	1	52
West Cape May (B)	76	15	0	24
West Wildwood (B)	44	0	0	1
Wildwood (C)	0	0	0	0
Wildwood Crest (B)	0	0	0	0
Woodbine (B)	755	64	0	65
Cape May County	12,960	5,734	2	799

Source: Cape May County 2024; University of Wisconsin-Madison 2023, MRLC Consortium 2021, U.S. Census Bureau 2020

Note: (B) Borough; (C) City; (T) Township

a. Other = Government, Religion, Agricultural, and Education

13.2.3 Community Lifelines and Other Critical Facilities

Wildfires can have an impact on because of pollutants landing in water resources that can clog wastewater pipes, culverts, etc. Wildfires may also impact transportation routes, blocking residents and commuters from getting in and out of the County during a wildfire event because of char and debris polluting the air or flames next to roadways making travel unsafe. Fires can create conditions that prevent access and isolate residents and emergency service providers.

Table 13-14 and Table 13-15 provide information on the distribution of community lifelines in the WUI interface and intermix hazard areas. Overall, Cape May County has 194 facilities in the WUI interface hazard area, representing 25 percent of the County's total facilities; in the WUI intermix hazard area, there are 94 facilities (12.1 percent).

13.2.4 Economy

Wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed business. These events may cost thousands of taxpayer dollars to suppress and control and may involve hundreds of operating hours on fire apparatus and thousands of volunteer man hours from the volunteer firefighters. There are also many direct and indirect costs to local businesses that excuse volunteers from working to fight these fires.



Table 13-14. Number of Facilities in the WUI Interface Hazard Area, by Lifeline Category

Jurisdiction	Number of Facilities in the WUI Interface Hazard Area, by Lifeline Category									Total Facilities in Hazard Area	
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Total
Avalon (B)	1	0	0	0	0	0	0	1	2	4	12.5%
Cape May (C)	0	0	0	0	0	0	0	0	0	0	0.0%
Cape May Point (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Dennis (T)	3	0	0	0	0	5	0	12	3	23	39.7%
Lower (T)	0	0	0	1	1	1	0	15	5	23	18.9%
Middle (T)	10	0	1	3	16	13	0	8	13	64	41.6%
North Wildwood (C)	0	0	0	0	0	0	0	0	0	0	0.0%
Ocean (C)	0	0	0	0	0	2	1	5	6	14	18.2%
Sea Isle (C)	0	0	0	1	2	4	1	9	5	22	75.9%
Stone Harbor (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Upper (T)	4	2	2	1	5	8	2	3	8	35	48.6%
West Cape May (B)	0	0	0	0	0	0	0	0	0	0	0.0%
West Wildwood (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Wildwood (C)	0	0	0	0	0	0	0	0	0	0	0.0%
Wildwood Crest (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Woodbine (B)	0	0	0	0	1	3	0	0	5	9	32.1%
Cape May County	18	2	3	6	25	36	4	53	47	194	25.0%

Source: Cape May County 2022,2024; HIFLD 2024; USACE 2024; University of Wisconsin-Madison 2023, MRLC Consortium 2021, U.S. Census Bureau 2020

Note: (B) Borough; (C) City; (T) Township



Table 13-15. Number of Facilities in the WUI Intermix Hazard Area, by Lifeline Category

Jurisdiction	Number of Facilities in the WUI Intermix Hazard Area, by Lifeline Category									Total Facilities in Hazard Area	
	Communications	Energy	Food, Hydration, Shelter	Hazardous Materials	Health & Medical	Safety & Security	Transportation	Water Systems	Other Critical Facilities	Count	% of Total
Avalon (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Cape May (C)	0	0	0	0	0	0	0	0	1	1	2.4%
Cape May Point (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Dennis (T)	4	0	0	0	3	5	0	6	2	20	34.5%
Lower (T)	0	0	0	0	1	1	0	5	4	11	9.0%
Middle (T)	5	0	0	3	0	6	2	12	4	32	20.8%
North Wildwood (C)	0	0	0	0	0	0	0	0	0	0	0.0%
Ocean (C)	0	0	0	0	0	0	0	4	0	4	5.2%
Sea Isle (C)	0	0	0	0	0	0	0	2	1	3	10.3%
Stone Harbor (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Upper (T)	4	0	0	0	1	1	4	0	3	13	18.1%
West Cape May (B)	0	0	0	0	0	0	0	0	0	0	0.0%
West Wildwood (B)	0	0	0	0	0	1	0	1	0	2	20.0%
Wildwood (C)	0	0	0	0	0	0	0	0	0	0	0.0%
Wildwood Crest (B)	0	0	0	0	0	0	0	0	0	0	0.0%
Woodbine (B)	0	0	0	0	1	1	0	4	2	8	28.6%
Cape May County	13	0	0	3	6	15	6	34	17	94	12.1%

Source: Cape May County 2022,2024; HIFLD 2024; USACE 2024; University of Wisconsin-Madison 2023, MRLC Consortium 2021, U.S. Census Bureau 2020

Note: (B) Borough; (C) City; (T) Township

13.2.5 Natural Resources

While wildfire is a necessary part of ecosystem health in Cape May County, intense wildfire that burns too hot can result in severe damage to the environment, including burning and killing of plant and animal life. Intense fire can also heat narrow and shallow waterways, resulting in damage to aquatic systems. Post-fire runoff polluted with debris and contaminants can be extremely harmful to terrestrial ecosystems and aquatic life (USGS 2023). Intense wildfire events that destroy existing ecosystems can result in an increase in invasive species that may be able to move into an area with a lack of natural competitors (U.S. Department of the Interior 2012).

13.2.6 Historic and Cultural Resources

Wildfires are a major threat to historic and cultural resources, with the potential to cause extensive damage, and in some cases, complete destruction. The potential impacts on historic resources, particularly infrastructure, from wildfire depend heavily on the materials used for construction. Many historic structures are made of wood, which is a highly flammable material. Historic structures often house cultural resources and artifacts; many historic structures are made of wood, which is a highly flammable material. Outdoor events are likely to be postponed or cancelled as the result of wildfire conditions, as smoke conditions can have harmful impacts to the human body.

13.3 FUTURE CHANGES THAT MAY AFFECT RISK

13.3.1 Potential or Planned Development

Any changes in development can impact the County's risk to the wildfire hazard of concern. Fire suppression capabilities are high at the state and local levels, but new development with a mix of additional structures, ornamental vegetation, and wildland fuels will require continued assessment of the hazard and mitigation needs.

To mitigate these risks, it is crucial to create defensible space around buildings, use fire-resistant building materials, and maintain vegetation to reduce fuel loads. The County should implement wildfire management strategies in existing building code to protect structures against wildfire impacts such as heat, debris, and char. Furthermore, development should be built with access to transit routes that will enable easier evacuation during a wildfire event.

13.3.2 Projected Changes in Population

Any changes in the density of population can impact the number of persons exposed to the wildfire hazard. Fire suppression capabilities are high at the state and local levels. However, changes in population with a mix of additional structures and landscape features will require continued assessment of the hazard and mitigation needs.

13.3.3 Climate Change

Climate change will likely alter the atmospheric patterns that affect fire weather. Changes in fire patterns will, in turn, impact carbon cycling, forest structure, and species composition. Climate change associated with warmer temperatures, changes in rainfall, and increased periods of drought may create an atmospheric and fuel environment that is more conducive to large, severe fires (United Nations 2021).

Understanding the climate/fire/vegetation interactions is essential for addressing issues associated with climate change that include (USFS 2011):



- Effects on regional circulation and other atmospheric patterns that affect fire weather
- Effects of changing fire regimes on the carbon cycle, forest structure, and species composition, and
- Complications from land use change, invasive species and an increasing WUI.

Climate change associated with warmer temperatures, changes in rainfall, and increased periods of drought may create an atmospheric and fuel environment that is more conducive to large, severe fires (United Nations 2021). Average temperatures are anticipated to increase in New Jersey, with potential impacts on the suitability of habitats for specific types of trees, altering the fire regime and resulting in more frequent fire events and changes in intensity. Prolonged and more frequent heat waves and droughts have the potential to increase the likelihood of a wildfire. Changes in climate patterns may impact the distribution and perseverance of insect outbreaks that create dead trees (increase fuel). Climate change also may increase winds that spread fires. Faster fires are harder to contain and are more likely to expand into residential neighborhoods.