SOMERSET COUNTY

HAZARD MITIGATION PLAN

SOMERSET COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

FINAL PLAN UPDATE
JULY 2019

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Section 5.4.4:
RISK ASSESSMENT- WILDFIRE

Prepared by the Somerset County Mitigation Planning Committee

5.4.4 WILDFIRE

This section provides a profile and vulnerability assessment for the wildfire hazard.

HAZARD PROFILE

This section provides profile information including description, location, extent, previous occurrences and losses and the probability of future occurrences.

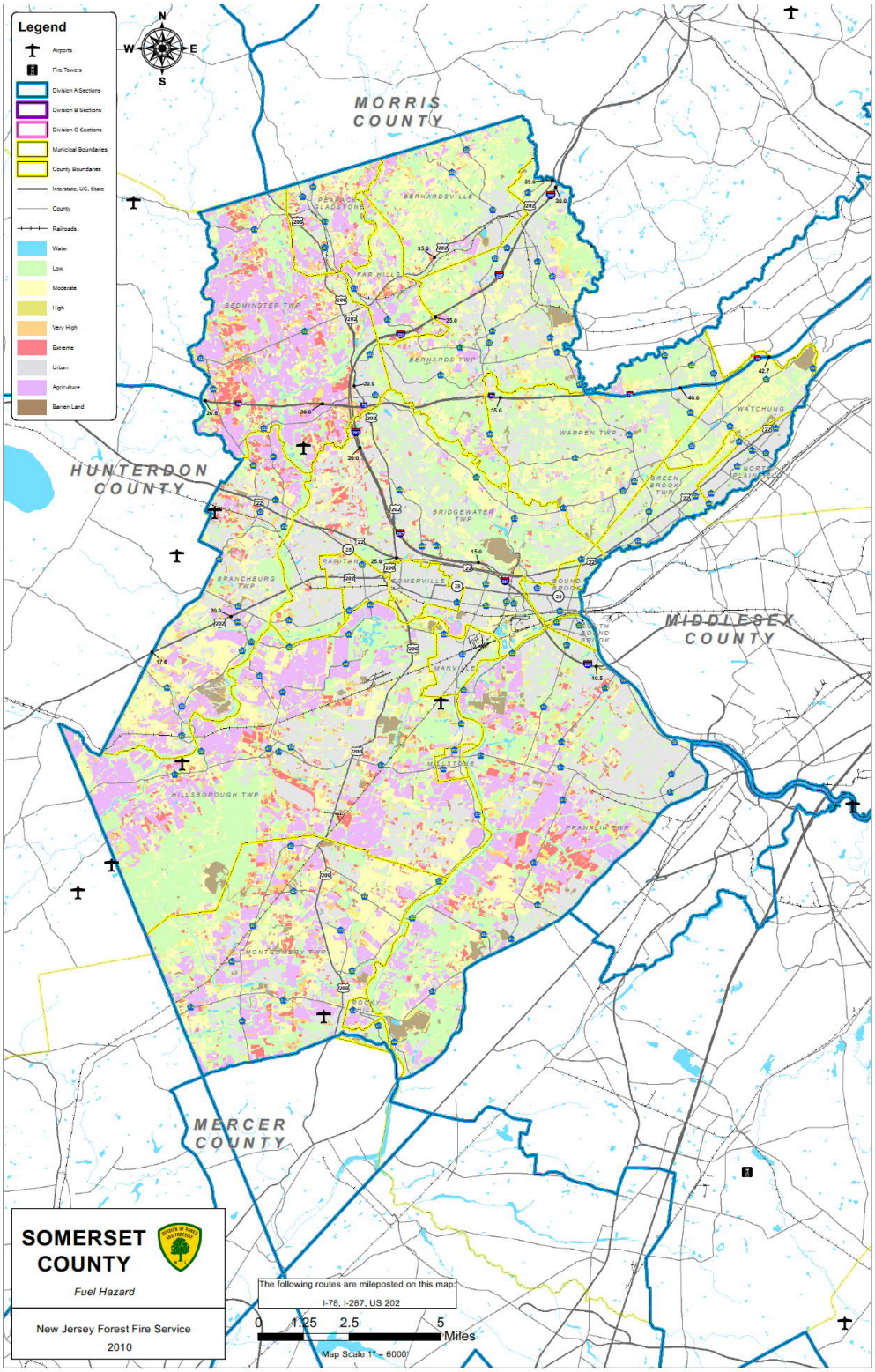
Description

Wildfire is the term applied to any unwanted, unplanned, damaging fire burning in forest, shrub or grass and is one of the most powerful natural forces known to people. The Federal Emergency Management Agency's (FEMA) Fire Management Assistance Grant Program (FMAGP) indicates that a wildfire is also known as a forest fire, vegetation fire, grass fire, or brush fire, is an uncontrolled fire requiring suppression action and often occurring in wildland areas, but which can also consume houses or agricultural resources. Common causes of wildfires include lightning, negligent human behavior and arson (FMAGP, Date Unknown).

The Legislature declares it to be the policy of the State to prevent, control, and manage wildfires on or threatening the forest or wwildlands of New Jersey in order to preserve forests and other natural resources; to enhance the growth and maintenance of forests; to protect recreational, residential, wildlife, plant life, watershed, airshed, and other values; to promote the stability of forest using industries; and to prevent loss of life, bodily injury and damage to property from wildfire and conflagrations.

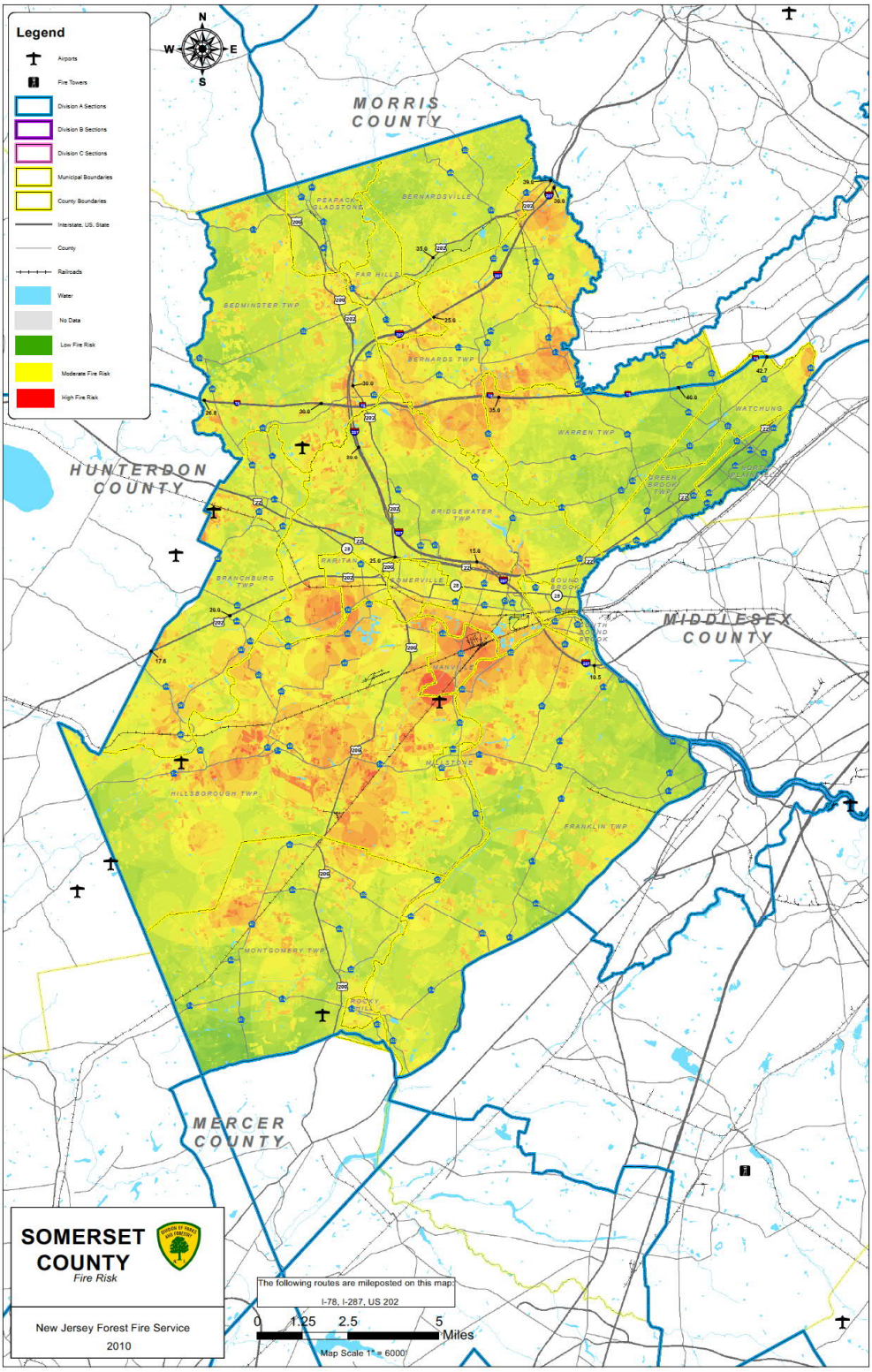
The State of New Jersey Forest Fire service attributes the threat of wildfire to two categories: hazard and risk. They define hazard as materials that burn in the ecological community. Drying vegetative materials act as fuel for the fires, for example, the materials within the New Jersey Pinelands is equated to over 1,300 gallons of gasoline per acre (NJDEP, 2007.) Risk is defined as what causes the fire. Since the vast majority of wildfires are caused by human activity, the highest risk areas are where humans interact with higher fuel areas. For example, the increased use of wildlands for various forms of recreation has increased the overall number of fire starts. The increased population has brought the hazard of the fuels closer to the risk of population. Figure 5.4.4-1 displays the fuel hazard risk areas within Somerset County, and Figure 5.4.4-2 displays the fire risk areas within Somerset County.

Figure 5.4.4-1 Fuel Hazard Risk Areas within Somerset County



Source: New Jersey Forest Fire Service, 2010.

Figure 5.4.4-2 Fire Risk Areas within Somerset County



Source: New Jersey Forest Fire Service 2010

There are three different classes of wildfires: surface fires, ground fires, and crown fires. Surface fires are the most common type and burns along the forest floor, moving slowly and killing or damaging trees. Ground fires are usually started by lightning and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees.

FEMA indicates that there are four categories of wildfires that are experienced throughout the U.S. These categories are defined as follows:

- Wildland fires – fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where Federal agencies are responsible for fire management and suppression.
- Interface or intermix fires – urban/wildland fires in which vegetation and the built-environment provide fuel
- Firestorms – events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted.
- Prescribed fires and prescribed natural burns – fires that are intentionally set or selected natural fires that are allowed to burn for beneficial purposes (FEMA, 1997).

The potential for wildfire, and its subsequent development (growth) and severity, is determined by three principal factors including the area's topography, the presence of fuel, and weather. These factors are described below:

Topography **-** Topography can have a powerful influence on wildfire behavior. The movement of air over the terrain tends to direct a fire's course. Gulches and canyons can funnel air and act as a chimney, intensifying fire behavior and inducing faster spread rates. Saddles on ridgetops tend to offer lower resistance to the passage of air and will draw fires. Solar heating of drier, south-facing slopes produces upslope thermal winds that can complicate behavior.

Slope is an important factor. If the percentage of uphill slope doubles, the rate at which the wildfire spreads will most likely double. On steep slopes, fuels on the uphill side of the fire are closer physically to the source of heat. Radiation preheats and dries the fuel, thus intensifying fire behavior. Terrain can inhibit wildfires: fire travels downslope much more slowly than it does upslope, and ridgetops often mark the end of wildfire's rapid spread (FEMA, 1997).

Fuel **-** Fuels are classified by weight or volume (fuel loading) and by type. Fuel loading can be used to describe the amount of vegetative material available. If this doubles, the energy released can also be expected to double. Each fuel type is given a burn index, which is an estimate of the amount of potential energy that may be released, the effort required to obtain a fire in a given fuel, and the expected flame length. Different fuels have different burn qualities and some burn more easily than others. Grass releases relatively little energy but can sustain very high rates of spread (FEMA, 1997). According to the U.S. Forest Service, a forest stand may consist of several layers of live and dead vegetation in the understory (surface fuels), midstory (ladder fuels), and overstory (crown fuels). Fire behavior is strongly influenced by these fuels. Each of these layers provides a different type of fuel source for wildfires.

- Surface fuels consist of grasses, shrubs, litter, and woody material lying on the ground. Surface fires burn low vegetation, woody debris, and litter. Under the right conditions, surface fires reduce the likelihood that future wildfires will grow into crown fires.
- Ladder fuels consist of live and dead small trees and shrubs; live and dead lower branches from larger trees, needles, vines, lichens, mosses, and any other combustible biomass located between the top of the surface fuels and the bottom of the overstory tree crowns.

- Crown fuels are suspended above the ground in treetops or other vegetation and consists mostly of live and dead fine material. When historically low-density forests become overcrowded, tree crowns may merge and form a closed canopy. Tree canopies are the primary fuel layer in a forest crown fire (U.S. Forest Service, 2003).

Weather / Air Mass **-** Weather is the most important factor in the make-up of a fire's environment, yet it is always changing. Air mass, which is defined by the National Weather Service (NWS) as a body of air covering a relatively wide area and exhibiting horizontally uniform properties, can impact wildfire through climate, including temperature and relative humidity, local wind speed and direction, cloud cover, precipitation amount and duration, and the stability of the atmosphere at the time of the fire (NWS, 2009). Extreme weather leads to extreme events and it is often a moderation of the weather that marks the end of a wildfire's growth and the beginning of successful containment. High temperatures and low humidity can produce vigorous fire activity. Fronts and thunderstorms can produce winds that are capable of radical and sudden changes in speed and direction, causing similar changes in fire activity. The rate of spread of a fire varies directly with wind velocity. Winds may play a dominant role in directing the course of a fire. The most damaging firestorms are typically marked by high winds (FEMA, 1997).

Fire probability depends on local weather conditions, outdoor activities (e.g. camping, debris burning, and construction), and the degree of public cooperation with fire prevention measures. Dry weather, such as drought, can increase the likelihood of wildfire events. Lightning can also trigger wildfire and urban fire events. Other natural disasters can increase the probability of wildfires by producing fuel in both urban and rural areas. Forest damage from hurricanes and tornadoes may block interior access roads and fire breaks; pull down overhead power lines; or damage pavement and underground utilities (NVRC, 2006).

Extent

The extent (that is, magnitude or severity) of wildfires depends on weather and human activity. There are several tools available to estimate fire potential, extent, danger and growth including, but not limited to the following:

Wildland/Urban Interface (WUI) is the area where houses and wildland vegetation coincide. Interface neighborhoods are found all across the U.S., and include many of the sprawling areas that grew during the 1990s. Housing developments alter the structure and function of forests and other wildland areas. The outcomes of the fire in the WUI are negative for residents; some may only experience smoke or evacuation, while others may lose their homes to a wildfire. All states have at least a small amount of land classified as WUI. To determine the WUI, structures per acre and population per square mile are used. Across the U.S., 9.3-percent of all land is classified as WUI. The WUI in the area is divided into two categories: intermix and interface. Intermix areas have more than one house per 40 acres and have more than 50-percent vegetation. Interface areas have more than one house per 40 acres, have less than 50-percent vegetation, and are within 1.5 miles of an area over 1,235 acres that is more than 75-percent vegetated (Stewart et al., 2006).

Concentrations of WUI can be seen along the east coast of the U.S., where housing density rarely falls below the threshold of one housing unit per 40 acres and forest cover is abundant. In the mid-Atlantic and north central regions of the U.S., the areas not dominated by agriculture have interspersed WUI and low density vegetated areas. Areas where recreation and tourism dominate are also places where WUI is common, especially in the northern Great Lakes and Missouri Ozarks (Stewart et al., 2006).

Wildland Fire Assessment System (WFAS) is an internet-based information system that provides a national view of weather and fire potential, including national fires danger, weather maps and satellite-

derived "greenness" maps. It was developed by the Fire Behavior unit at the Fire Sciences Laboratory in Missoula, Montana and is currently supported and maintained at the National Interagency Fire Center (NIFC) in Boise, Idaho (USFS, Date Unknown).

Each day during the fire season, national maps of selected fire weather and fire danger components of the National Fire Danger Rating System (NFDRS) are produced by the WFAS (NWS, Date Unknown). Fire Danger Rating level takes into account current and antecedent weather, fuel types, and both live and dead fuel moisture. This information is provided by local station managers (USFS, Date Unknown). Table 5.4.4-1 shows the fire danger rating and color code.

Table 5.4.4-1 Fire Danger Rating and Color Code

Fire Danger Rating and Color Code	Description
Low (L) (Dark 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 (M) (Light Green or Blue)	Fires can start from most accidental causes, but with the exception of 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 (H) (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 (VH) (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 (E) (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 tree tops) 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: USFS, Date Unknown

The ***Fire Potential Index (FPI)*** is derived by combining daily weather and vegetation condition information and can identify the areas most susceptible to fire ignition. The combination of relative greenness and weather information identifies the moisture condition of the live and dead vegetation. The weather information also identifies areas of low humidity, high temperature, and no precipitation to identify areas most susceptible to fire ignition. The FPI enables local and regional fire planners to quantitatively measure fire ignition risk (USGS, 2005). FPI maps are provided on a daily basis by the U.S. Forest Service. The scale ranges from 0 (low) to 100 (high). The calculations used in the NFDRS are not part of the FPI, except for a 10-hour moisture content (Burgan et al, 2000).

Fuel Moisture (FM) content is the quantity of water in a fuel particle expressed as a percent of the oven-dry weight of the fuel particle. FM content is an expression of the cumulative effects of past and present weather events and must be considered in evaluating the effects of current or future weather on fire

potential. FM is computed by dividing the weight of the "water" in the fuel by the oven-dry weight of the fuel and then multiplying by 100 to get the percent of moisture in a fuel (NWS, Date Unknown).

There are two kinds of FM: live and dead. Live fuel moistures are much slower to respond to environmental changes and are most influenced by things such as a long drought period, natural disease and insect infestation, annuals curing out early in the season, timber harvesting, and changes in the fuel models due to blow down from windstorms and ice storms (NOAA, Date Unknown). Dead fuel moisture is the moisture in any cured or dead plant part, whether attached to a still-living plant or not. Dead fuels absorb moisture through physical contact with water (such as rain and dew) and absorb water vapor from the atmosphere. The drying of dead fuels is accomplished by evaporation. These drying and wetting processes of dead fuels are such that the moisture content of these fuels is strongly affected by fuel sizes, weather, topography, decay classes, fuel composition, surface coatings, fuel compactness and arrangement (Schroeder and Buck, 1970).

Fuels are classified into four categories which respond to changes in moisture. This response time is referred to as a time lag. A fuel's time lag is proportional to its diameter and is loosely defined as the time it takes a fuel particle to reach two-thirds of its way to equilibrium with its local environment. The four categories include:

- 1-hour fuels: up to ¼-inch diameter – fine, flashy fuels that respond quickly to weather changes. Computed from observation time, temperature, humidity, and cloudiness.
- 10-hour fuels: ¼-inch to one-inch in diameter - computed from observation time, temperature, humidity, and cloudiness or can be an observed value.
- 100-hour fuels: one-inch to three-inch in diameter - computed from 24-hour average boundary condition composed of day length (daylight hours), hours of rain, and daily temperature/humidity ranges.
- 1000-hour fuels: three-inch to eight-inch in diameter - computed from a seven-day average boundary condition composed of day length, hours of rain, and daily temperature/humidity ranges (National Park Service, Date Unknown).

The ***Keetch-Byram Drought Index (KBDI)*** is a drought index designed for fire potential assessment. It is a number representing the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in deep duff and upper soil layers (USFS, Date Unknown). The index increases each day without rain and decreases when it rains. The scale ranges from 0 (no moisture deficit) to 800 (maximum drought possible). The range of the index is determined by assuming that there is eight inches of moisture in a saturated soil that is readily available to the vegetation. For different soil types, the depth of soil required to hold eight inches of moisture varies. A prolonged drought influences fire intensity, largely because more fuel is available for combustion. The drying of organic material in the soil can lead to increased difficulty in fire suppression (Florida Forest Service, Date Unknown).

The ***Haines Index***, also known as the Lower Atmosphere Stability Index, is a fire weather index based on stability and moisture content of the lower atmosphere that measures the potential for existing fires to become large fires. It is named after its developer, Donald Haines, a Forest Service research meteorologist, who did the initial work and published the scale in 1988 (Storm Prediction Center [SPC], Date Unknown).

The Haines Index can range between 2 and 6. The drier and more unstable the lower atmosphere is, the higher the index. It is calculated by combining the stability and moisture content to the lower atmosphere into a number that correlates well with large fire growth. The stability term is determined by the temperature difference between two atmospheric layers; the moisture term is determined by the temperature and dew point different. The index, as listed below, has shown to correlate with large fire growth on initiating and existing fires where surface winds do not dominate fire behavior (USFS, Date Unknown).

- Very Low Potential (2) – moist, stable lower atmosphere
- Very Low Potential (3)
- Low Potential (4)
- Moderate Potential (5)
- High Potential (6) – dry, unstable lower atmosphere (USFS, Date Unknown)

The Haines Index is intended to be used all over the U.S. It is adaptable for three elevation regimes: low elevation, middle elevation, and high elevation. Low elevation is for fires at or very near sea level. Middle elevation is for fires burning in the 1,000 to 3,000 feet in elevation range. High elevation is intended for fires burning above 3,000 feet in elevation (SPC, Date Unknown).

The ***Landscape Fire and Resource Management Planning Tools Project (LANDFIRE)*** is a five-year, multi-partner project. The project is producing comprehensive and consistent maps and data describing vegetation, fire and fuel characteristics for the entire U.S. LANDFIRE is a shared project between the U.S. Department of Agriculture Forest Service and the U.S. Department of the Interior. The project has several principal partners, which include the USFS Missoula Fire Sciences Laboratory, the USGS Center for Earth Resources Observation and Science, and the Nature Conservancy (LANDFIRE, Date Unknown).

Additionally, the U.S. Department of Agriculture Forest Service, Rocky Mountain Research Station developed a historical natural fire regimes dataset. The fire regimes are described in terms of frequency and severity and represent pre-settlement, historical fire processes. Fire regimes I and II represent frequent fire return intervals. The 0-35+ years/low severity fire regime (I) occurs mostly on forested land. The 0-35+years/stand-replacement regime (II) occurs mostly on grasslands and shrublands. Fire regimes III, IV, and V have longer fire return intervals and occur on forest lands, shrublands, and grasslands. These coarse-scale data were developed for national-level planning and were not intended to be used at finer spatial scales (Schmidt et al., 2002).

The ***Buildup Index (BUI)*** is a number that reflects the combined cumulative effects of daily drying and precipitation in fuels with a 10 day time lag constant. The BUI can represent three to four inches of compacted litter or can represent up to six inches or more of loose litter (North Carolina Forest Service, 2009).

Location

According to the U.S. Fire Administration (USFA), the fire problem in the U.S. varies from region to region. This often is a result of climate, poverty, education, demographics, and other causal factors (USFA, 2012). Wildfires occur in virtually all of the U.S. The western portion of the U.S. is subject to more frequent wildfires, due to their more arid climate and prevalent conifer and brush fuel types. Wildfires have proven to be the most destructive in California, but have become an increasingly frequent and damaging phenomenon nationwide (FEMA, 1997). States with a large amount of wooded, brush, and grassy areas, such as California, Colorado, New Mexico, Montana, Kansas, Mississippi, Louisiana,

Georgia, Florida, North and South Carolina, Tennessee, Massachusetts, and the national forests of the western U.S. are at highest risk for wildfires (University of Florida, 1998).

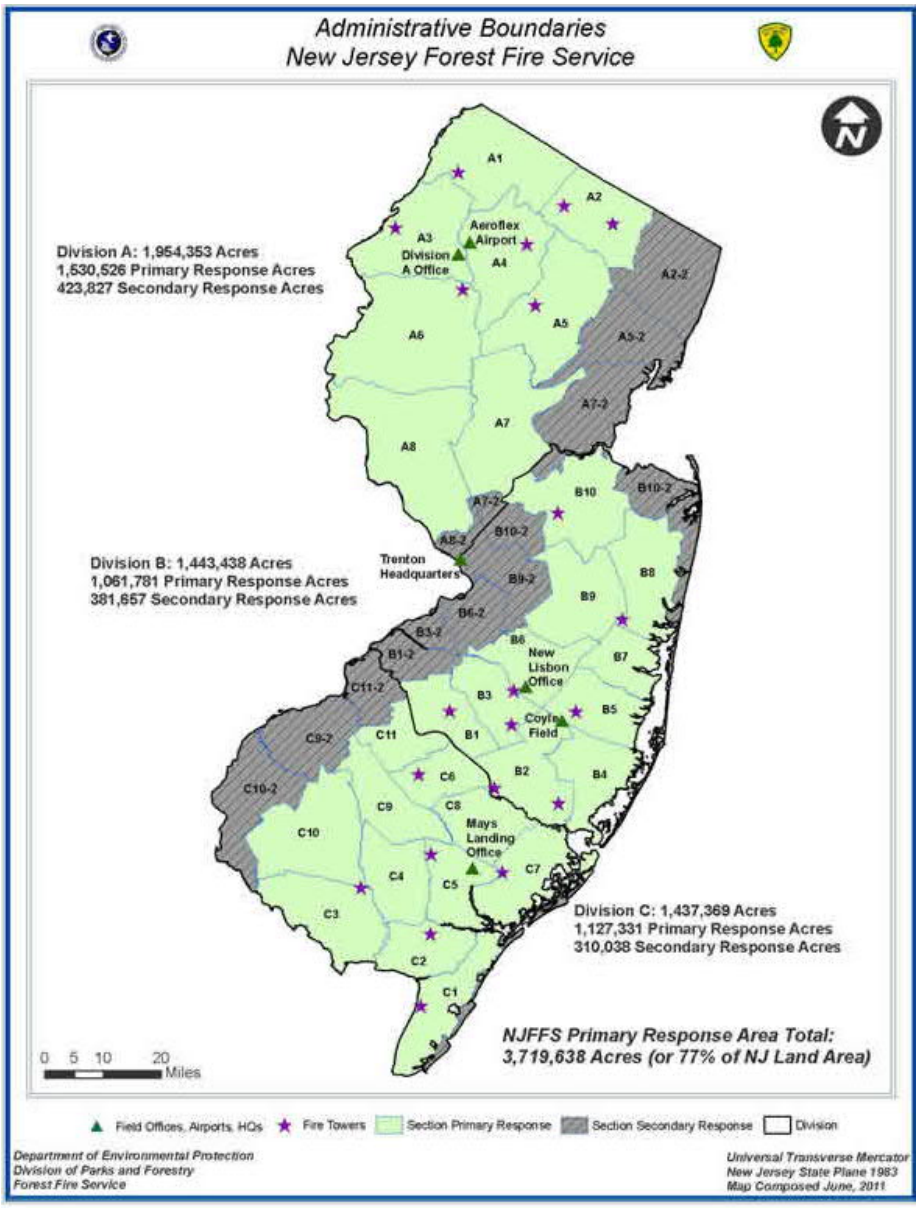
New Jersey's high population density has created land use pressures in which more people are moving from urban areas to build homes in rural wildland areas. With more people living in, and enjoying the state's wildlands for various forms of recreation, the number of fires started and the seriousness of their consequences increases. A potentially explosive combination is created when the factors of hazardous wildland fuels, interface home development, and an increased risk of human caused ignition come together under extreme fire weather conditions.

According to the State of New Jersey Forest Fire Service, in the 2011 calendar year, 792 acres of land burned from 698 fires. This number increased for 2012. Between January 1 and December 16, 2012 approximately 3, 095 acres of land have been burned from 1,072 wildfires.

Although wildfires can occur during all months of the year, spring is the period when the most devastating incidents typically happen. With the coming of longer days, drying conditions, stronger winds, the weather provides excellent conditions for the rapid spread of fire. A second "season" develops in the northern part of the State during the fall when the abundance of freshly fallen leaves provide a bed of fuel for wildfire to race rapidly up the slopes. Wildfire locations in the State tend to be in the less developed areas because they are more likely to have sources of fuel for fires, and because detection and suppression are somewhat less likely because there is lower population.

The New Jersey Forest Fire Service consists of three divisions: A, B, and C. Division A contains Bergen, Essex, Hudson, Morris, Passaic, Somerset, Sussex Warren, Hopewell township within Mercer, Union, Hunterdon, and northern Middlesex Counties. Division B contains Burlington, Monmouth, Ocean, southern Middlesex, and the remainder of Mercer. Division C contains Atlantic, Camden, Cape May, Cumberland, Gloucester, and Salem. Refer to Figure 5.4.4-3 below.

Figure 5.4.4-3 New Jersey Forest Fire Service Administrative Boundaries

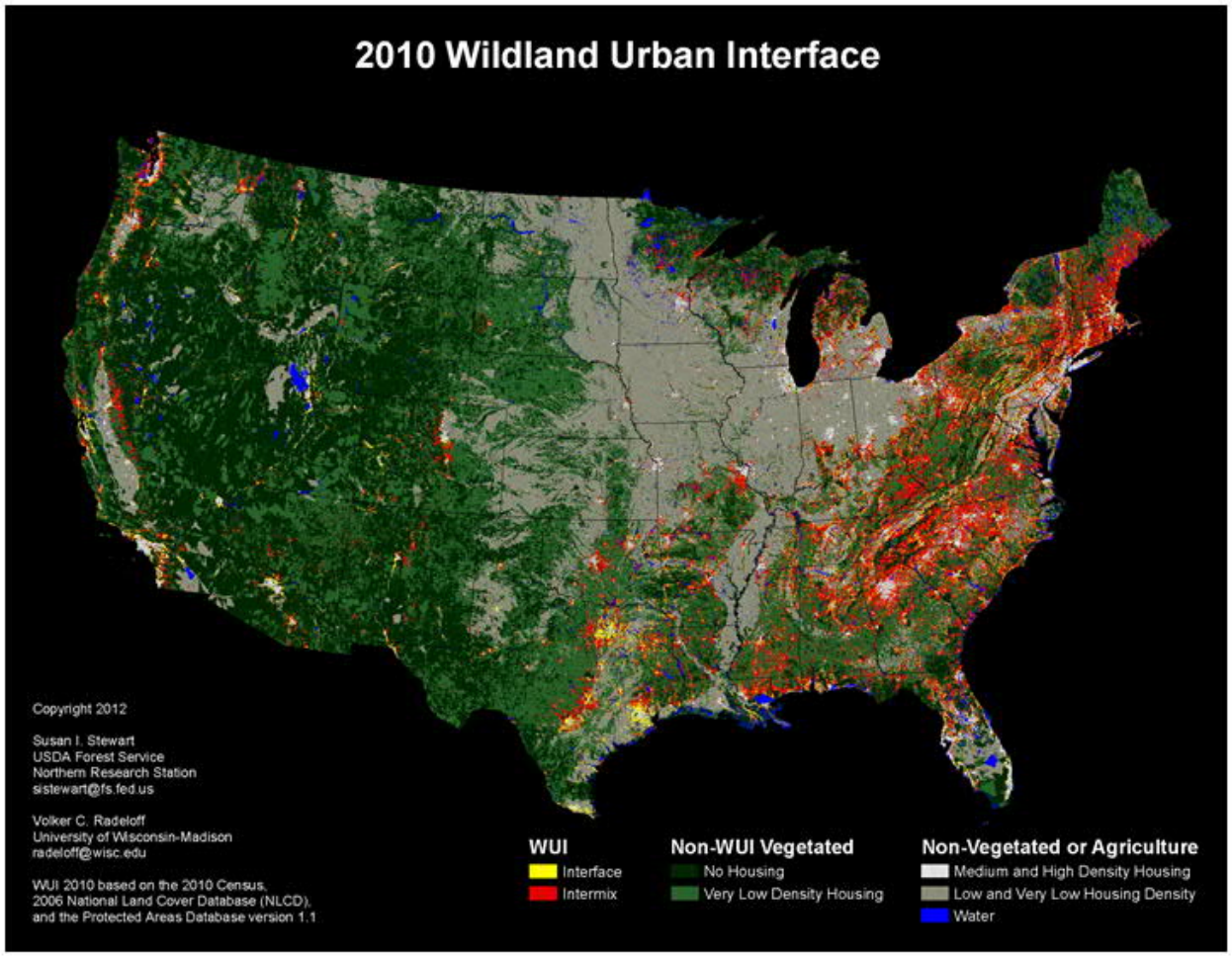


Source: State of New Jersey Forest Fire Service, 2011

Wildfire/Urban Interface (WUI) in the State of New Jersey/Somerset County

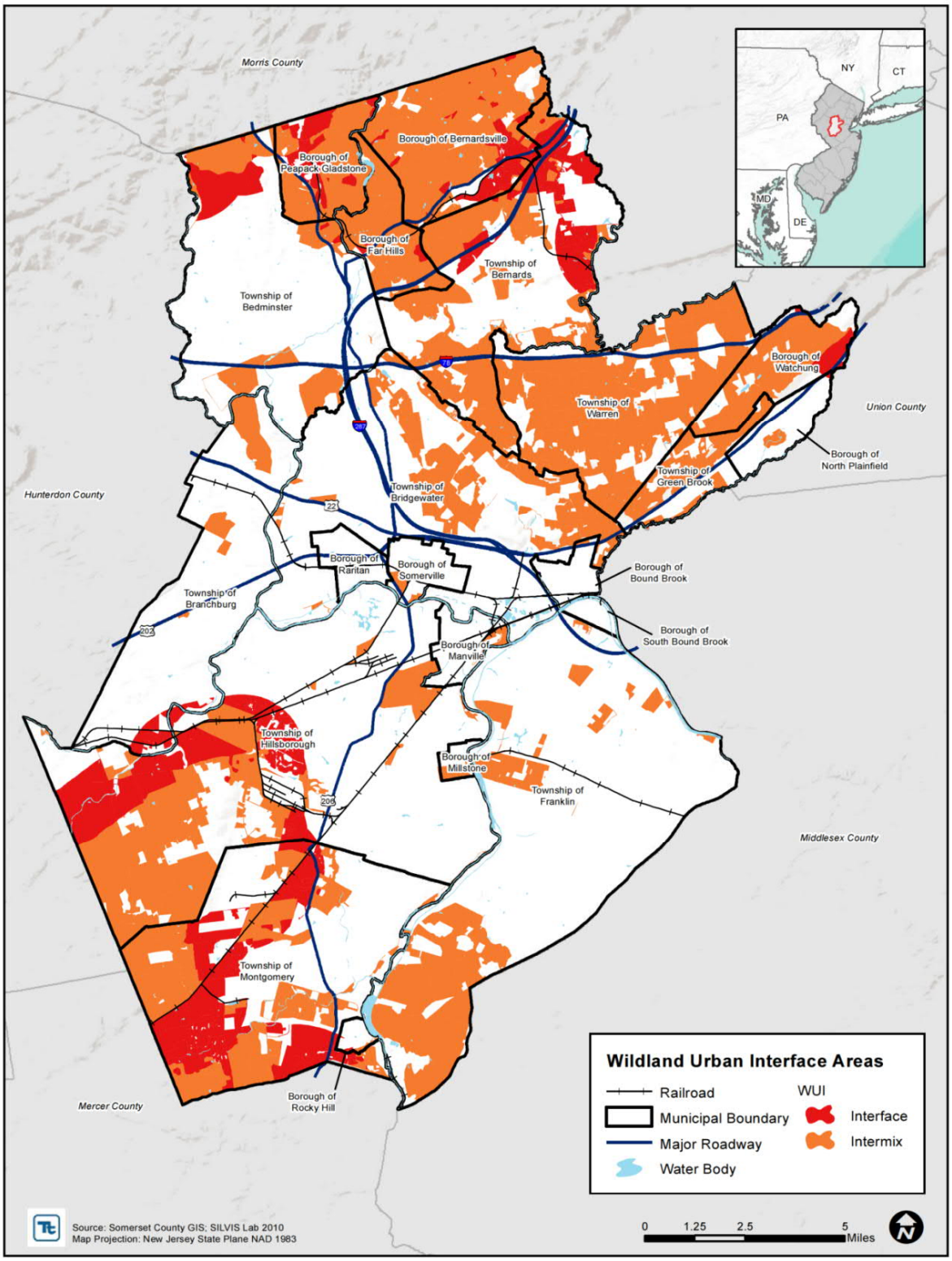
A detailed WUI (interface and intermix) was obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison which also defines the wildfire hazard area. The California Fire Alliance determined that areas within 1.5 miles of wildland vegetation are the approximate distance that firebrands can be carried from a wildland fire to the roof of a house. Therefore, even structures not located within the forest are at risk to wildfire. This buffer distance, along with housing density and vegetation type were used to define the WUI. Using this WUI, approximately 119.42 square miles or approximately 39.17-percent of the County is located in the WUI (interface and intermix). Figure 5.4.4-4 and Figure 5.4.4-5 display the 2010 Wildfire Urban Interface for the U.S. and Somerset County by 2010 U.S. Census block, respectively.

Figure 5.4.4-4 2010 Wildland Urban Interface for the U.S.



Source: SILVIS Lab, 2010

Figure 5.4.4-5 Wildland Urban Interface in Somerset County



Source: SILVIS Lab 2010

The New Jersey Forest Fire Service (NJFFS), a division of the New Jersey Departmental of Environmental Protection (NJDEP), has developed this Wildfire Fuel Hazard data based upon NJDEP's 2002 Land Use/Land Cover (LU/LC) datasets and NJDEP's 2002 10-meter Digital Elevation Grid datasets. The NJFFS took the NJDEP Modified Anderson Land Use/Land Cover Classification System 2002 and assigned Wildfire Fuel Hazard Rankings to it. The NJFFS used NJDEP's 2002 10-meter Digital Elevation Grids and calculated areas of 30% or greater slope throughout New Jersey. For areas of Wildfire Fuel Hazard 1 to 4 (i.e. Low to Very High) that were coincident with areas of 30% or greater slope, the Wildfire Fuel Hazard Ranking was increased by 1 value (i.e. Low was increased to Moderate, Moderate to High, etc.). For areas of Wildfire Fuel Hazard 0, and 5-8, the Wildfire Fuel Hazard Ranking remained the same. Once the LU/LC was coded according to Wildfire Fuel Hazard, taking into account 30% or greater slopes, the data was divided up by County. The project began in March 2009 and was completed in May 2009. Table 5.4.4-2 summarizes the area within each hazard ranked area across the County (NJDEP, 2013).

Table 5.4.4-2. Area in the Wildfire Fuel Hazard Ranking Zones in Somerset County

Wildfire Fuel Hazard Ranking Zone	Area (Square Miles)
Extreme	10.9
Very High	7.5
High	7.9
Moderate	60.4
Low	88.0

Source: NJDEP NJFFS, 2009
Note: The remainder of the County is classified as 'water', 'barren land', 'urban', or 'agriculture.'

Previous Occurrences and Losses

Impacts to human health and safety and property from major urban fires are often severe and direct. Fires have significant community-wide impacts, especially when lives and homes are impacted. Fires can also have significant economic impacts, especially if major transportation routes are closed.

The short-term effects of wildfires can include destruction of timber, forest, wildlife habitats, scenic vistas, and watersheds. Business and transportation disruption can also occur in the short-term. Long-term effects can include reduced access to recreational areas, destruction of community infrastructure and cultural and economic resources (USGS, 2006).

According to the State of New Jersey Forest Fire service, approximately ninety-nine percent of all New Jersey wildfires are human caused, either accidentally or intentionally. On average New Jersey experiences an average of 1,500 wildfires destroying a total of approximately 7,000 acres of forest each year (NJHMP 2014.). Of these, the 2014 NJHMP reports that the probability exists for New Jersey to continue to face an average of three fires greater than 100-acres each year.

From January 1, 2012 to September 2, 2013, 668 wildfires occurred statewide, burning approximately 930 acres (NJHMP 2014). From January to July 2016, New Jersey had recorded 742 fires burning more than 4,000 acres. From January to July 2017, the State had recorded 563 fire burning more than 4,900 acres.

In Somerset County, historic occurrences are far fewer. The 2014 NJHMP reports that Somerset County has 70 square miles of land in mapped extreme, high, or very high wildfire risk areas representing 13 percent of the County's total land area; in which 5.7% (18,375 persons) of the County's population

resides. The 2015 NJHMP also lists only one significant wildfire in Somerset County between 1905 and 2012, burning 105 acres. From a 1996 to 2017, Somerset County experienced two wildfires of more than 10 acres (a ten acre blaze in Hillsborough in February 2012, and a 12 acre blaze in Bridgewater in 2007). During the same study period, Somerset County experienced an average of 42.6 fire incidents per year, with an annual average of 31 acres burned per year.

Table 5.4.4-3 indicates past wildfire events throughout the State between 1755 and 2017. Table 5.4.4-4 indicates past wildfire events throughout Somerset County between 2002 and 2017.

Table 5.4.4-3. Past Wildfire Events in New Jersey, 1755 to 2017

Date	Location	Damages
1755	Pine Barrens	30 mile long wildfire from Barnegat to Little Egg Harbor
September 7-10, 1838	Burlington and Monmouth Counties	A 14-mile wide and 20-mile long fire reported, burned approximately 179,200 acres, property damage reported, possible fatalities
1871	Burlington County	50,000 acres burned in Bass River
May 20, 1872	Sussex and Morris Counties	Forest fire burned 25,000 acres and caused $1 M in property damage, houses and 2 churched destroyed in Coleville and Middle Forge (Green Pond Mountains)
July 25, 1885	Atco, Jackson, Atsion, and Barnegat	15,000-acre fire near Atco, 47,000-acre fire near Barnegat
1930	Multi-County	Worst year for fires, 267,547 acres burned, huge fire in May destroyed Forked River
1936	Bass River	58,000-acre fire killed 5 Civilian Conservation Corps fire fighters
1941	Lakewood and Lakehurst	Huge fires destroyed 400 structures
1954	Chatsworth and Moore's Meadows	20,000 acre wildfire threatened Chatsworth
1955	Ocean County	Easter Sunday fire killed the section firewarden
April 20-22, 1963 "Black Saturday"	Pine Barrens (37 fires from Long Beach Island to Atlantic City)	Series of 37 wildfires burned 193,000 acres, 186 homes and 197 buildings destroyed, 7 fatalities, $8.5 M in property damages, one fire burned 76,000 acres and traveled 21 miles from New Lisbon to the Garden State Parkway
1971	Manahawkin	Manahawkin Fire burned 21,000 acres in 7 hours and 13 minutes
1977	Burlington, Ocean, and Atlantic Counties	March 31st - 15,000-acre fire burned 6 homes and caused extensive damage July 22nd - 2,300-acre fire killed 4 firefighters and forced evacuation of the Bass River Recreation Area
1992	Ocean and Burlington Counties	Four major fires burned 14,000 acres on May 3rd; a 4,800-acre fire in Lacey threatened and closed down Oyster Creek Nuclear Power Plant; 2,900-acre fire in Woodland destroyed one home and threatened 100 others; June 13th – 5,400-acre fire burned through Lacey
April 4, 1995	Pine Barrens, Whiting, Ocean County	Wind-driven 19,225-acre fire burned through Manchester, Lacey, and Ocean prompting closure of 10 miles of the Garden State Parkway. Four hundred firefighters responded to the blaze.

Date	Location	Damages
July 1997	Ocean and Atlantic Counties	July 19th – Wrangle Brook wildfire - 800-acre fire damaged 52 homes and threatened over 300 homes in Ocean County July 29th – Rockwood II wildfire - 1,900-acre fire threatened Batsto Historic Site and 80 Atlantic County homes
April 30, 1999	Burlington County	Bass River fire burned 11,975 acres and threatened Bass River State Forest
2001	Multi-County	Airport Fire – 765-acre fire, 60 homes evacuated Cheesequake Creek Fire – 151-acre fire, 25 homes evacuated Warren Grove Fire – 1,600 acres destroyed
June 2002 "Double Trouble Fire" (FMAD-2411)	Berkeley and Beachwood	Jake's Branch Fire – started in Berkeley and destroyed 3 homes and 15 outbuildings before it was controlled at 1,277-acres, the fire seriously damaged 18 homes and outbuildings, forced the evacuation of 500 residents in Beachwood, closed the Garden State Parkway for 2 days
February 12, 2007	SC and Union County	Extremely dry weather caused brush fires in these two counties. In SC, dense brush burned near Bridgewater and headed towards the Darby Tract.
May 2007 "Warren Grove Fire" (FMAD-2695)	Southern New Jersey	2,500 homes evacuated, fire started in Little Egg Harbor and traveled toward Stafford and Barnegat, many neighborhoods evacuated in Burlington and Ocean counties. Over 12,000 acres (approximately 19 square miles) burned.
August 2007	Atsion, Wharton State Forest	Nearly 3,300 acres burned in Wharton State Forest.
October 2008	Waterford Township	A fire engulfed around 1,400 acres across Camden, Burlington and Atlantic counties, shutting down parts of Route 206 and leading to evacuations.
June 2010	Pine Barrens (Barnegat, Ocean County; and Burlington County near Fort Dix and Evesham)	Three blazes struck the Pine Barrens under dry conditions in June 2010, burning more than 1,000 acres as firefighters fought the separate blazes concurrently. The two smaller fires burned near Fort Dix and in Evesham, while the larger was in a remote area, where it did not pose threats to homes or people.
February 25, 2012	Hillsborough Township	The strong winds on the 25th ignited a ten acre wild fire in Hillsborough Township. The wildfire was caused by sparks from a blown transformer attached to a pole that was knocked down by the strong winds. This was the second wildfire of similar size to affect Somerset County in February. The former wildfire occurred in Bedminster Township when a tractor in a field caught fire. February 2012 was the 2nd warmest and 6th driest February on record in New Jersey dating back to 1895
April 7, 2012	Somerset, Ocean, and Monmouth counties	A large brush fire that consumed three acres occurred during the morning of the 7th near the Greenwood Forest Fire Tower in Lacey Township in Ocean County. The fire was extinguished before causing any hazard to property. Dry conditions and unseasonably dry weather that combined with gusty northwest winds continued to help quickly spread any wildfires that occurred. The peak wind gusts on the 7th included 31 mph in Trenton (Mercer County) and 36 mph at the Atlantic City International Airport. Other smaller wildfires also occurred in Monmouth and Somerset Counties.

Date	Location	Damages
April 2014	Wharton State Forest Fire, Washington Township, Burlington County	A fire in Wharton State Forest consumed approximately 1,500 acres. Smoke from the blaze could be smelled in Somerset County and areas as far north as New York City.
April 2014	Downe Township, Cumberland County	A major forest fire hit Cumberland County's Downe Township the same day in 2014 that Washington Township saw 1,500 acres singed. In Downe, dry conditions coupled low humidity and high winds allowed the fire to engulf some 1,500 acres.
April 2014	Beachwood, Ocean County	A "very large" brush fire broke out that same month, singeing as much as 200 acres near Exit 77 on the Garden State Parkway. The blaze led to evacuations of nearby homes and a school in the Ocean County town, but no injuries.
July 2017	Wharton State Forest Fire, Burlington County	A forest fire in Burlington County's Wharton State Forest burned for more than 48 hours and singed nearly 3,500 acres, sending smoke miles away to coastal communities and other parts of South Jersey. The fire was characterized by NJDEP as "significant," and possibly the largest Wharton State Forest fire in 10 years, but "far from historic."

Source: NJ OEM, 2005; NJDEP, 2006; FEMA, 2007; Star-Ledger, 2007; nj.com, 2017 (NJFFS cited)
Note: Table was prepared through review of NJ OEM and NJDEP archives as well as online articles from nj.com

Table 5.4.4-4 Wildfire Events between September 2002 and December 2017

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
13-Sep-02	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bernardsville	Somerset County HMP; NJDEP
3-Dec-02	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
24-Dec-02	Wildfire	N/A	N/A	During this event, approximately 1 acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
24-Jan-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
22-Mar-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
23-Mar-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bedminster	Somerset County HMP; NJDEP
6-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Franklin, 1/4 acre in Montgomery was destroyed by wildfire in Franklin and Montgomery	Somerset County HMP; NJDEP
14-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
15-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/2 acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
16-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Bernardsville, 1/4 acre in Branchburg was destroyed by wildfire in Bernardsville and Branchburg	Somerset County HMP; NJDEP
19-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Warren, 1/4 acre in Franklin was destroyed by wildfire in Warren and Franklin	Somerset County HMP; NJDEP
20-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
21-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/2 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
23-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
24-Apr-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
1-May-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
4-May-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
19-May-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
8-Jul-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by	Somerset County

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
				wildfire in Bridgewater	HMP; NJDEP
9-Jul-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
17-Jul-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Branchburg and 1/2 acre in Franklin was destroyed by wildfire in Branchburg and Franklin	Somerset County HMP; NJDEP
21-Jul-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
26-Jul-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Branchburg	Somerset County HMP; NJDEP
24-Aug-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bound Brook	Somerset County HMP; NJDEP
25-Aug-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Branchburg	Somerset County HMP; NJDEP
26-Aug-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
15-Oct-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Branchburg	Somerset County HMP; NJDEP
26-Oct-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Far Hills	Somerset County HMP; NJDEP
15-Nov-03	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Bedminster, 1/4 acre in Peapack-Gladstone was destroyed by wildfire in Bedminster and Peapack-Gladstone	Somerset County HMP; NJDEP
13-Mar-04	Wildfire	N/A	N/A	During this event, approximately 2 acres in Manville, 1/4 acre in Somerville was destroyed by wildfire in Manville and Somerville	Somerset County HMP; NJDEP
15-Mar-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
23-Mar-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Bridgewater and 1/4 acre in Franklin was destroyed by wildfire in Bridgewater and Franklin	Somerset County HMP; NJDEP
24-Mar-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
8-Apr-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Peapack-Gladstone	Somerset County HMP; NJDEP
10-Apr-04	Wildfire	N/A	N/A	During this event, approximately 2 1/2 acres was destroyed by wildfire in Far Hills	Somerset County HMP; NJDEP
18-Apr-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
21-Sep-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
27-Oct-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by	Somerset County

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
				wildfire in Warren	HMP; NJDEP
6-Nov-04	Wildfire	N/A	N/A	During this event, approximately 1/2 acre in Hillsborough, 1/4 acre in Branchburg, and 1/4 acre in Bridgewater was destroyed by wildfire in Hillsborough, Branchburg, and Bridgewater	Somerset County HMP; NJDEP
7-Nov-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
11-Nov-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
16-Nov-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
15-Dec-04	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
20-Feb-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
7-Mar-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
14-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1 acre in Hillsborough, 1/2 acre in Bernards was destroyed by wildfire in Hillsborough and Bernards	Somerset County HMP; NJDEP
15-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
16-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Warren, 1 acre in Bridgewater, and 1/4 acre in Hillsborough was destroyed by wildfire in Warren, Bridgewater, and Hillsborough	Somerset County HMP; NJDEP
17-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
18-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1/2 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
19-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
20-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Watchung	Somerset County HMP; NJDEP
21-Apr-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
9-May-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Warren	Somerset County HMP; NJDEP
10-May-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
11-May-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
13-May-05	Wildfire	N/A	N/A	During this event, approximately 1/2 acre in Bernards, 1/2 acre in	Somerset County

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
				Franklin was destroyed by wildfire in Bernards and Franklin	HMP; NJDEP
16-May-05	Wildfire	N/A	N/A	During this event, approximately 3/4 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
17-May-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
18-May-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Bernards and 1/4 acre in Franklin was destroyed by wildfire in Bernards and Franklin	Somerset County HMP; NJDEP
15-Jun-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
22-Jun-05	Wildfire	N/A	N/A	During this event, approximately 1/2 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
23-Jun-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
25-Jun-05	Wildfire	N/A	N/A	During this event, approximately 3/4 acre in Bridgewater, 1/4 acre in Bernards was destroyed by wildfire in Bridgewater and Bernards	Somerset County HMP; NJDEP
29-Jun-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
4-Jul-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Branchburg	Somerset County HMP; NJDEP
3-Aug-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Manville, 1/2 acre in Hillsborough, 1/4 acre in Bernards was destroyed by wildfire in Manville, Hillsborough, and Bernards	Somerset County HMP; NJDEP
26-Aug-05	Wildfire	N/A	N/A	During this event, approximately 2 3/4 acres in Hillsborough, 1/4 acre in Branchburg, and 1 1/2 acres in Bridgewater was destroyed by wildfire in Hillsborough, Branchburg, and Bridgewater	Somerset County HMP; NJDEP
27-Aug-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bernardsville	Somerset County HMP; NJDEP
30-Aug-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
2-Sep-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Hillsborough, 1/4 acre in Branchburg was destroyed by wildfire in Hillsborough and Branchburg	Somerset County HMP; NJDEP
3-Sep-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
5-Sep-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
7-Sep-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre was destroyed by wildfire in Far Hills	Somerset County HMP; NJDEP
11-Sep-05	Wildfire	N/A	N/A	During this event, approximately 1/2 acre was destroyed by	Somerset County

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
				wildfire in Hillsborough	HMP; NJDEP
12-Sep-05	Wildfire	N/A	N/A	During this event, approximately 1/4 acre in Bridgewater and 1/4 acre in Hillsborough was destroyed by wildfire in Bridgewater and Hillsborough	Somerset County HMP; NJDEP
13-Sep-05	Wildfire	N/A	N/A	During this event, approximately 2 1/2 acres was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
19-Sep-05	Wildfire	N/A	N/A	During this event, approximately 2 acres was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
2-Oct-05	Wildfire	N/A	N/A	During this event, approximately 3/4 acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
8-Jan-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
2-Feb-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
6-Feb-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
10-Feb-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
22-Feb-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Branchburg	Somerset County HMP; NJDEP
26-Feb-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre in Franklin and Bernards was destroyed by wildfire in Franklin, Bernards	Somerset County HMP; NJDEP
3-Mar-06	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Branchburg	Somerset County HMP; NJDEP
10-Mar-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
11-Mar-06	Wildfire	N/A	N/A	During this event, approximately 1 acre in various locations throughout Hillsborough was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
14-Mar-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
17-Mar-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
18-Mar-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre in Branchburg; ¼ acre in Hillsborough; 1 acre in Manville was destroyed by wildfire in Branchburg, Hillsborough, Manville	Somerset County HMP; NJDEP
19-Mar-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
22-Mar-06	Wildfire	N/A	N/A	During this event, approximately 1 acre in Hillsborough; ¼ acre in Franklin was destroyed by wildfire in Hillsborough, Franklin	Somerset County HMP; NJDEP
23-Mar-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
24-Mar-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Warren	Somerset County HMP; NJDEP
28-Mar-06	Wildfire	N/A	N/A	During this event, approximately 3 ¼ acres was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
30-Mar-06	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Far Hills, Hillsborough	Somerset County HMP; NJDEP
1-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¾ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
4-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¾ acre in Hillsborough; 1 acre in Montgomery was destroyed by wildfire in Hillsborough, Montgomery	Somerset County HMP; NJDEP
9-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
10-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
12-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
14-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
15-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bernardsville	Somerset County HMP; NJDEP
19-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
20-Apr-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre in Hillsborough and ¼ acre in Montgomery was destroyed by wildfire in Hillsborough, Montgomery	Somerset County HMP; NJDEP
2-May-06	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
6-May-06	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Bedminster	Somerset County HMP; NJDEP
12-Aug-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
13-Sep-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
1-Nov-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
7-Dec-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre in Franklin and ¼ acre in Warren was destroyed by wildfire in Franklin, Warren	Somerset County HMP; NJDEP
10-Dec-06	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
11-Dec-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire	Somerset County

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
				in Bernards	HMP; NJDEP
17-Dec-06	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
28-Dec-06	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
11-Feb-07	Wildfire	N/A	N/A	During this event, approximately 12 acres was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
12-Feb-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Branchburg	Somerset County HMP; NJDEP
24-Feb-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bridgewater	Somerset County HMP; NJDEP
6-Mar-07	Wildfire	N/A	N/A	During this event, approximately 1 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
14-Mar-07	Wildfire	N/A	N/A	During this event, approximately 11 acres was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
27-Mar-07	Wildfire	N/A	N/A	During this event, approximately 1 ½ acres was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
28-Mar-07	Wildfire	N/A	N/A	During this event, approximately 1 acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
29-Mar-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
31-Mar-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Green Brook	Somerset County HMP; NJDEP
3-Apr-07	Wildfire	N/A	N/A	During this event, approximately 1 ½ acres was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
11-Apr-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
18-Apr-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
21-Apr-07	Wildfire	N/A	N/A	During this event, approximately ½ acre in Bridgewater, ½ acre in Montgomery was destroyed by wildfire in Bridgewater, Montgomery	Somerset County HMP; NJDEP
22-Apr-07	Wildfire	N/A	N/A	During this event, approximately ¾ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
25-Apr-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
6-May-07	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
8-May-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Raritan	Somerset County HMP; NJDEP
23-May-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire	Somerset County

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts	Source(s)
				in Bridgewater	HMP; NJDEP
24-May-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
3-Jun-07	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
11-Jun-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Montgomery	Somerset County HMP; NJDEP
2-Jul-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
3-Jul-07	Wildfire	N/A	N/A	During this event, approximately 1 acre was destroyed by wildfire in Bernards	Somerset County HMP; NJDEP
10-Jul-07	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Manville	Somerset County HMP; NJDEP
9-Sep-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
21-Sep-07	Wildfire	N/A	N/A	During this event, approximately ½ acre was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
7-Oct-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
23-Oct-07	Wildfire	N/A	N/A	During this event, approximately ¼ acre was destroyed by wildfire in Franklin	Somerset County HMP; NJDEP
3-Nov-07	Wildfire	N/A	N/A	During this event, approximately 2 acres was destroyed by wildfire in Hillsborough	Somerset County HMP; NJDEP
25-Feb-12	Wildfire	N/A	N/A	The strong winds ignited a ten acre wild fire in Township of Hillsborough. The wildfire was caused by sparks from a blown transformer attached to a pole that was knocked down by the strong winds.	NOAA NCDC
No known historic occurrences since 2012. – *Emailed NJDEP FFS on 12/6/17; no response to date.*					

Sources: FEMA, NOAA-NCDC, NWS, SHELDUS, ONJSC, NJWCN, Weather Underground

Note: Monetary figures within this table were U.S. Dollar (USD) figures calculated during or within the approximate time of the event. If such an event would occur in the present day, monetary losses would be considerably higher in USDs as a result of inflation.

Probability of Future Events

New Jersey is unique, in that it is the most densely populated state with nearly 9 million residents, and over 50 percent of the land is used for individual residences and housing developments. The continual increase of developments expands into forested regions. This spread of development into the forested regions is known as the wildland urban interface. According to the New Jersey Hazard Mitigation Plan, the wildland urban interface is defined as the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildlands or vegetative fuel (NJHMP 2014.) The New Jersey Forest Fire Service is faced with a significant threat with the increase of wildland urban interface. New Jersey will continue to face wildfires as a threat due to growing population, development, and increased wildland urban interface areas.

Wildfire experts say there are four reasons why wildfire risks are increasing:

- Fuel, in the form of fallen leaves, branches and plant growth, have accumulated over time on the forest floor. Now this fuel has the potential to "feed" a wildfire.
- Increasingly hot, dry weather in the U.S.
- Changing weather patterns across the country.
- Ongoing land use development patterns which exert increasing pressure on the WUI zone(NJHMP 2014).

Although it is not necessary for a fire to be large to possess a serious threat or loss to homes and improved property, the New Jersey Forest Fire Service regards fires over 100-acres as "major". Analysis of fire data for the last several years reveal trends that can help predict the probability of major fire events. It can be argued that the probability of wildfire events will follow the "average" year as long as neither significant weather changes nor human ignition factors become more severe (NJ OEM, 2005). NJOEM management expects an average of three fires greater than 100 acres each year statewide (NJHMP, 2014.)

In Section 5.3, the identified hazards of concern for Somerset County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and input from the Planning Committee, the probability of occurrence for a major wildfire in Somerset County is considered 'Occasional' (likely to occur more than once every 100 years, as presented in Table 5.3-3).

VULNERABILITY ASSESSMENT

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. The following text evaluates and estimates the potential impact of the wildfire hazard on Somerset County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, safety and health of residents, (2) general building stock, (3) critical facilities, (4) economy and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2014 Somerset County Hazard Mitigation Plan
- Further data collections that will assist understanding of this hazard over time

Overview of Vulnerability

Wildfire hazards can impact significant areas of land, as evidenced by wildfires throughout the U.S. over the past several years. Fire in urban areas has the potential for great damage to infrastructure, loss of life, and strain on lifelines and emergency responders because of the high density of population and structures that can be impacted in these areas. Wildfire, however can spread quickly, become a huge fire complex consisting of thousands of acres, and present greater challenges for allocating resources, defending isolated structures, and coordinating multi-jurisdictional response. If a wildfire occurs at a WUI, it can also cause an urban fire and in this case has the potential for great damage to infrastructure, loss of life, and strain on lifelines and emergency responders because of the high density of population and structures that can be impacted in these areas.

Data and Methodology

Information regarding the wildfire hazard included input and data from NJ DEP NJ Forest Fire Service, University of Wisconsin - Madison, and the Steering Committee. The NJ Forest Fire Service Wildfire Fuel Hazard data assigns wildfire fuel hazard rankings across Somerset County. This data, developed in 2009, is based upon NJDEP's 2002 Land Use/Land Cover datasets and NJDEP's 2002 10-meter Digital Elevation Grid datasets. Refer to Figure 5.4.4-5 earlier in this section for an illustration of these defined wildfire fuel hazard rankings.

In addition, the WUI (interface and intermix) obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison was also used to define the wildfire hazard areas. The University of Wisconsin-Madison wildland fire hazard areas are based on the 2010 Census and 2006 National Land Cover Dataset and the Protected Areas Database. For the purposes of this risk assessment, the high-, medium- and low-density interface areas were combined and used as the 'interface' hazard area and the high-, medium- and low-density intermix areas were combined and used as the 'intermix' hazard areas. Figures 5.4.4-5 and 5.4.4-6 presented earlier in the profile displays the 2010 Wildfire Urban Interface for the U.S. and Somerset County by 2010 U.S. Census block, respectively.

The asset data (population, building stock and critical facilities) presented in the County Profile (Section 2) was used to support an evaluation of assets exposed and the potential impacts and losses associated with this hazard. To determine what assets are exposed to wildfire, available and appropriate GIS data was overlaid upon the hazard area. The limitations of this analysis are recognized, and as such the analysis is only used to provide a general estimate.

Impact on Life, Health and Safety

As demonstrated by historic wildfire events in New Jersey and other parts of the country, potential losses include human health and life of residents and responders, structures, infrastructure and natural resources. In addition, 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 and decrease in tourism. The most vulnerable populations include emergency responders and those within a short distance of the interface between the built environment and the wildland environment.

Wildfires can cost thousands of taxpayer dollars to suppress and control and 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 work to fight these fires.

As a way to estimate the County's population vulnerable to the wildfire hazard, the population located within the WUI were overlaid upon the 2010 Census population data (U.S. Census, 2010). The Census blocks with their center within the hazard area were used to calculate the estimated population exposed to the wildfire hazard (approximately 323,444 people in Somerset County). Table 5.4.4-5 summarizes the estimated population exposed by municipality.

Table 5.4.4-5 Estimated Population Located within the WUI in Somerset County

Municipality	US. Census 2010 Population	Estimated Population Exposed			% of Total Exposed
		Intermix	Interface	Total	
Bedminster (T)	8,165	2,817	906	3,723	45.6%
Bernards (T)	26,652	11,273	8,221	19,494	73.1%
Bernardsville (B)	7,707	361	7,346	7,707	100.0%
Bound Brook (B)	10,402	552	0	552	5.3%
Branchburg (T)	14,459	5,182	721	5,903	40.8%
Bridgewater (T)	44,464	17,882	0	17,882	40.2%
Far Hills (B)	919	99	820	919	100.0%
Franklin (T)	62,300	15,416	0	15,416	24.7%
Green Brook (T)	7,203	6,405	0	6,405	88.9%
Hillsborough (T)	38,303	5,436	12,089	17,525	45.8%
Manville (B)	10,344	1,442	0	1,442	13.9%
Millstone (B)	418	304	0	304	72.7%
Montgomery (T)	22,254	5,029	13,195	18,224	81.9%
North Plainfield (B)	21,936	4,476	165	4,641	21.2%
Peapack Gladstone (B)	2,582	4	2,578	2,582	100.0%
Raritan (B)	6,881	50	0	50	0.7%
Rocky Hill (B)	682	261	177	438	64.2%
Somerville (B)	12,098	855	0	855	7.1%
South Bound Brook (B)	4,563	257	0	257	5.6%
Warren (T)	15,311	14,978	35	15,013	98.1%
Watchung (B)	5,801	4,213	1,572	5,785	99.7%
Somerset County (Total)	**323,444**	**97,292**	**47,825**	**145,117**	**44.9%**

Source: Somerset County GIS

Impact on General Building Stock

The most vulnerable structures to wildfire events are those within the WUI. Buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. To estimate the buildings exposed to the wildfire hazard, the WUI was overlaid upon the updated building inventory at the structure level. The replacement cost value of the structures with their center in the WUI were totaled. Table 5.4.4-6 summarizes the estimated building stock inventory exposed by municipality.

Table 5.4.4-6 Building Stock Replacement Value Located within the WUI in Somerset County

Municipality	Total RV (Structure and Contents)	Building RV Exposed			% of Total Exposed
		Intermix	Interface	Total	
Bedminster (T)	$2,851,601,000	$65,075,000	$47,075,000	$112,150,000	3.9
Bernards (T)	$6,532,730,000	$853,558,000	$646,268,000	$1,499,826,000	23.0
Bernardsville (B)	$2,103,908,000	$497,875,000	$626,014,000	$1,123,889,000	53.4
Bound Brook (B)	$1,707,643,000	$0	$0	$0	0.0
Branchburg (T)	$5,002,826,000	$82,874,000	$53,968,000	$136,842,000	2.7
Bridgewater (T)	$11,821,265,000	$920,477,000	$0	$920,477,000	7.8
Far Hills (B)	$250,998,000	$100,948,000	$56,188,000	$157,136,000	62.6
Franklin (T)	$14,126,616,000	$362,972,000	$0	$362,972,000	2.6
Green Brook (T)	$2,070,286,000	$383,000,000	$0	$383,000,000	18.5
Hillsborough (T)	$7,571,339,000	$268,377,000	$592,384,000	$860,761,000	11.4
Manville (B)	$1,825,956,000	$0	$0	$0	0.0
Millstone (B)	$81,110,000	$15,348,000	$0	$15,348,000	18.9
Montgomery (T)	$5,441,757,000	$592,472,000	$1,037,560,000	$1,630,032,000	30.0
North Plainfield (B)	$3,470,574,000	$23,204,000	$17,446,000	$40,650,000	1.2
Peapack Gladstone (B)	$960,342,000	$157,505,000	$261,793,000	$419,298,000	43.7
Raritan (B)	$1,897,019,000	$0	$0	$0	0.0
Rocky Hill (B)	$193,789,000	$10,704,000	$0	$10,704,000	5.5
Somerville (B)	$3,143,720,000	$21,860,000	$0	$21,860,000	0.7
South Bound Brook (B)	$902,014,000	$0	$0	$0	0.0
Warren (T)	$4,245,940,000	$1,792,047,000	$0	$1,792,047,000	42.2
Watchung (B)	$1,505,575,000	$566,149,000	$159,429,000	$725,578,000	48.2
Somerset County (Total)	**$77,707,008,000**	**$6,714,445,000**	**$3,498,125,000**	**$10,212,570,000**	**13.1**

Source: Somerset County GIS; Radeloff et al, 2005
Notes: GBS = General Building Stock; RV = Replacement Value; WUI = Wildland Urban Interface

Impact on Critical Facilities

It is recognized that a number of critical facilities are located in the wildfire hazard area, and are also vulnerable to the threat of wildfire. Many of these facilities are the locations for vulnerable populations (i.e., schools, senior facilities) and responding agencies to wildfire events (i.e., fire, police). Table 5.4.4-7 summarizes critical facilities located within the wildfire hazard area.

Figure 5.4.4-7 Facilities in the WUI (Intermix or Interface) in Somerset County

Name	Municipality	Type
Pottersville Reformed Church	Bedminster (T)	Shelter
Purnell School	Bedminster (T)	School
Willow School	Bedminster (T)	School
Pottersville Volunteer Fire Dept	Bedminster (T)	Fire
DPW	Bernards (T)	DPW
Bishop James United Methodist Church	Bernards (T)	Shelter
Somerset Hills Baptist Church	Bernards (T)	Shelter
Ridge Oak, Ii	Bernards (T)	Senior
Sunrise At Basking Ridge	Bernards (T)	Senior
Fellowship Village	Bernards (T)	Senior
Ridge Oak, I	Bernards (T)	Senior
Ridge Oak, Iii	Bernards (T)	Senior
Lord Sterling Schools, Inc.	Bernards (T)	School
Pingry School	Bernards (T)	School
Basking Ridge Fire Co 1 First Aid Squad	Bernards (T)	Fire
Liberty Corner Fire House	Bernards (T)	Fire
Liberty Corner First Aid Squad	Bernards (T)	Fire
Bernards Twp Emergency Mgmt	Bernards (T)	EOC
St. Bernards Episcopal Church	Bernardsville (B)	Shelter
St. John Reception Center	Bernardsville (B)	Shelter
Old Mill Manor	Bernardsville (B)	Senior
St. Elizabeth School	Bernardsville (B)	School
Far Hills Country Day School	Bernardsville (B)	School
Bernards High School	Bernardsville (B)	School
Bedwell School	Bernardsville (B)	School
Raritan Valley Community College	Branchburg (T)	School
North Branch Volunteer Fire Co	Branchburg (T)	Fire
Police Academy	Branchburg (T)	County
Brandywine Assisted Living	Bridgewater (T)	Senior
Crim Primary School	Bridgewater (T)	School
Vocational And Technical High School	Bridgewater (T)	School
Green Knoll Rescue Squad	Bridgewater (T)	Fire
Green Knoll Volunteer Fire Co No 1	Bridgewater (T)	Fire
Martinsville Rescue Squad	Bridgewater (T)	Fire
Mental Health Ctr	Bridgewater (T)	County
Cedar House	Bridgewater (T)	County
Claremont	Far Hills (B)	Senior
Far Hills Borough Hall	Far Hills (B)	Town Hall
Far Hills Boro Pd	Far Hills (B)	Police
The Center For Great Expectations	Franklin (T)	Shelter
M.M. Mccarrick Care Center	Franklin (T)	Senior
Oakcrest Academy	Franklin (T)	School
Somerset Volunteer Fire & Rescue Co No 1	Franklin (T)	Fire
Green Brook Township	Green Brook (T)	Fire

Name	Municipality	Type
DPW	Hillsborough	DPW
Riverview/Laidlaw	Hillsborough	Bus Facility
Hillsborough Senior Center	Hillsborough (T)	Senior
Foothill Acres Rehab Nursing Center	Hillsborough (T)	Senior
Gateway At Sunnymeade	Hillsborough (T)	Senior
Plaza Grande	Hillsborough (T)	Senior
Sunnymead School	Hillsborough (T)	School
Woodfern School	Hillsborough (T)	School
Hillsborough Rescue Squad Station 1	Hillsborough (T)	Fire
Hillsborough Volunteer Fire Co No 1	Hillsborough (T)	Fire
Hillsborough Svc. Ctr.	Hillsborough (T)	County
Van Cleef Site	Millstone (B)	Senior
DPW	Montgomery (T)	DPW
Montgomery Senior Center	Montgomery (T)	Senior
Mckinly Courts	Montgomery (T)	Senior
Tapestry At Montgomery	Montgomery (T)	Senior
Cherry Valley Country Club	Montgomery (T)	Senior
Montgomery Promenade	Montgomery (T)	Senior
Rock Brook School	Montgomery (T)	School
Waldorf School	Montgomery (T)	School
Princeton Montessori	Montgomery (T)	School
Montgomery High School	Montgomery (T)	School
Montgomery Emergency Medical Services	Montgomery (T)	Fire
Montgomery Township Vol Fire Co 1	Montgomery (T)	Fire
Montgomery Emerg Medical Services	Montgomery (T)	Medical
DPW	Peapack Gladstone (B)	DPW
St. Luke'S Episcopal Church	Peapack Gladstone (B)	Shelter
Peapack Residential Assoc., Llc	Peapack Gladstone (B)	Senior
St. Lukes Village	Peapack Gladstone (B)	Senior
Matheny School	Peapack Gladstone (B)	School
Peapack Gladstone Fire Dept	Peapack Gladstone (B)	Fire
Peapack Gladstone Resque Squad	Peapack Gladstone (B)	Fire
Trinity Episcopal	Rocky Hill (B)	Shelter
DPW	Somerville (B)	DPW
Epiphany Evangelical Lutheran Church	Warren (T)	Shelter
Warren Ridge, Cooperative Housing	Warren (T)	Senior
Chelsea At Warren	Warren (T)	Senior
Promenade At Warren	Warren (T)	Senior
Warren Town Center	Warren (T)	Senior
Somerset Hills School, Inc.	Warren (T)	School
Middle School	Warren (T)	School
Mt. Horeb School	Warren (T)	School
Central School	Warren (T)	School
Mount Horeb Volunteer Fire Co 2	Warren (T)	Fire
Warren Towship Resque Squad	Warren (T)	Fire
DPW	Watchung (B)	DPW

Name	Municipality	Type
Mcauley Hall Health Care Center	Watchung (B)	Senior
Watchung Borough Hall	Watchung (B)	Town Hall
Mt. Saint Mary'S Academy	Watchung (B)	School
Bayberry School	Watchung (B)	School
Watchung Boro Pd	Watchung (B)	Police
Watchung Fire Department	Watchung (B)	Fire
Watchung Rescue Squad	Watchung (B)	Fire
Watchung EOC	Watchung (B)	EOC

Source: Somerset County GIS; Radeloff et al, 2005
Notes: B = Borough; T = Township

Impact on the 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 businesses and decreases in tourism. Wildfire can also severely impact roads and infrastructure. The Interstates I-78 and I-287, major east to west and north to south corridors through the County, both have portions that run through WUI areas. This should be considered for evacuation route purposes.

Due to a lack of data regarding past structural and economic losses specific to Somerset County or its municipalities, it is not possible to estimate future losses due to wildfire events at this time.

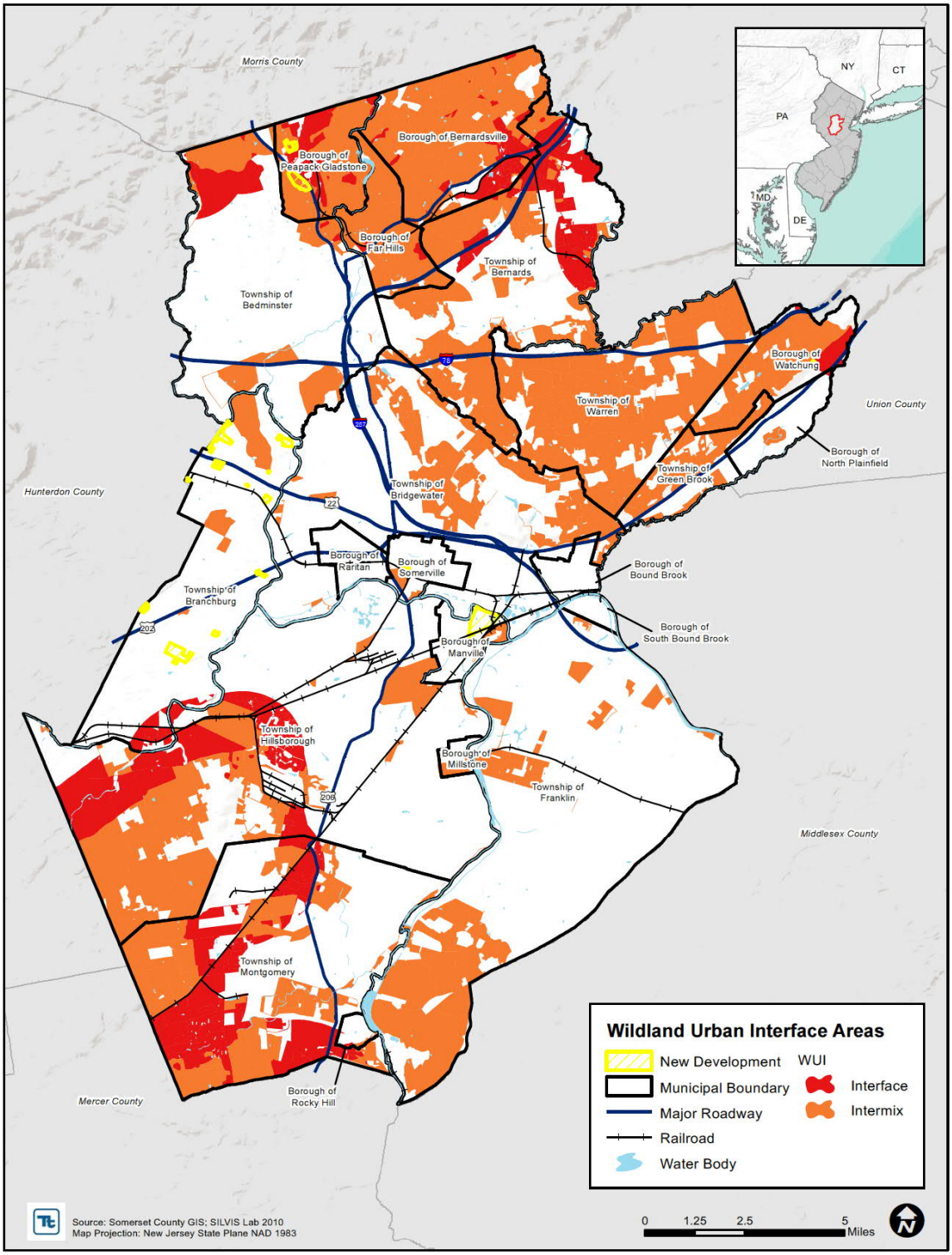
Change of Vulnerability

At the time of the original 2008 HMP, the NJ DEP NJ Forest Fire Service wildfire fuel hazard data (generated in 2009) and the WUI (interface and intermix) based on 2010 U.S. Census blocks obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison were not available to define the wildfire hazard areas. Differences in exposure and potential losses estimated from the 2008 HMP to the 2014 HMP Update was mainly due to the difference in these wildfire hazard areas which are at a higher resolution than the GeoMAC estimated WUI areas, as well the updated building stock inventory at the structure level and the release of the 2010 U.S. Census statistics. For this 2018 HMP Update, the NJ DEP NJ Forest Fire Service wildfire fuel hazard data (generated in 2009) and the WUI (interface and intermix) based on 2010 U.S. Census blocks obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison are still current sources to define the wildfire hazard area. HAZUS 4.0 Census 2010 population data is still the most current decennial census. Differences in exposure and potential losses are the result of updated building stock inventory data.

Future Growth and Development

Areas targeted for potential future growth and development in the next five (5) years have been identified across Somerset County at the municipal level. Refer to the jurisdictional annexes in Section 9 of this HMP. It is anticipated that any new development and new residents in the WUI will be exposed to the wildfire hazard. Refer to Figure 5.4.4-6 of the potential new development in the County and the WUI.

Figure 5.4.4-6 Potential New Development and the WUI



Sources: Somerset County GIS; Radeloff et al, 2005
Note: Figure may change based on future receipt of municipal WS#8 responses

Effect of Climate Change on Vulnerability

According to the U.S. Fire Service (USFS), 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 elevated greenhouse gas concentrations may create an atmospheric and fuel environment that is more conducive to large, severe fires (USFS, 2011).

Fire interacts with climate and vegetation (fuel) in predictable ways. Understanding the climate/fire/vegetation interactions is essential for addressing issues associated with climate change that include:

- 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 wildland-urban interface (USFS, 2011).

It is projected that higher summer temperatures will likely increase the high fire risk by 10 to 30 percent. Fire occurrence and/or area burned could increase across the U.S. due to the increase of lightning activity, the frequency of surface pressure and associated circulation patterns conductive to surface drying, and fire-weather conditions, in general, which is conductive to severe wildfires. Warmer temperatures will also increase the effects of drought and increase the number of days each year with flammable fuels and extending fire seasons and areas burned (USFS, 2011).

Future changes in fire frequency and severity are difficult to predict. Global and regional climate changes associated with elevated greenhouse gas concentrations could alter large weather patterns, thereby affecting fire-weather conducive to extreme fire behavior (USFS, 2011).

The United States Department of Agriculture Forest Service reports that wildfires will increase throughout the United States, causing at least a doubling of area burned by the mid-21st century (USDA 2012).

The New Jersey Climate Adaptation Alliance also reports that climate change is expected to bring about hotter, drier conditions in New Jersey affecting forests across the state, increasing the risk of wildfires that can put nearby communities in harm's way (NJCAA, 2014).

Additional Data and Next Steps

The structure inventory developed for this Plan should be updated as data regarding the construction of structures, such as roofing material, fire detection equipment, structure age, etc. are available. As stated earlier, buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. The proximity of these building types to the WUI should be identified for further evaluation. Development and availability of such data would permit a more detailed estimate of potential vulnerabilities, including loss of life and potential structural damages.