

3.9 – Wildfire Hazard Profile

The profile outlined in this section has been developed from but not limited to the following sources:

- Department of Environmental Conservation, Forest Protection and Fire Management; *Wildfire Annex*
- Department of Environmental Conservation, NYS Forest Rangers; *Wildland Fire Management Plan 2007 Draft*
- Institute for Business and Home Safety; *Is Your Home Protected from Wildfire Disaster?*
- Federal Emergency Management Agency; *At Home in the Woods: Lessons Learned in the Wildland/Urban Interface*
- National Fire Protection Association
- New York Wildfire Academy
- Wildfire Central, a service of The Wilderness Society
- United States Department of Agriculture, Forest Service
- Wildland Fire Assessment System; <http://www.fs.fed.us/land/wfas/welcome.htm>
- The Nature Conservancy; <http://nature.org/wherewework/northamerica/states/newyork/preserves>
- *The 1995 Adirondack Blowdown: Analysis of the Ecological and Sociological Phenomena*; Jonathan Meade

The following chart provides the definition of a wildfire:

Term	Definition
Wildfire	An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around. Naturally occurring and non-native species of grasses, brush, and tree fuel wildfires

The Mitigation Plan identifies and evaluates the State’s vulnerability to wildfires, focusing primarily on potential hazards in the Long Island Pine Barrens, the Adirondack (1995 blowdown) area and Wildland/Urban Interface areas. A major population shift from urban to suburban and rural living has greatly expanded these interface areas. This population migration will continue. Unless wildfire mitigation efforts are undertaken, major losses of life and property to a wildfire may be inevitable.

The Concept of Wildfire

In the last century, nearly every state has been devastated by wildfire; more than 140,000 wildfires occur on average each year. Since 1990, more than 900 homes are destroyed each year from wildfire.

Huge fires are not required for substantial losses in the Wildland/Urban Interface (WUI). The 1991 Tunnel Fire in Oakland and Berkeley, California burned nearly 3,000 homes on just 1,610 acres of land.

In just three years, between 1985 and 1987, wildland fires devastated 17,000 square miles throughout our nation. That's an area approximately the size of Vermont and New Hampshire combined. Over the same period, those same fires consumed more than 2,500 homes and other structures, representing a total loss of over \$60 million in property.

The risks to life, property, natural resources and economic welfare are much higher today than ever before in our history. Extremely dry weather conditions create a natural potential for disaster, and there are an increasing number of people living in or near wildlands. During wildfire, firefighters must turn away from the wildland fires to protect lives and property in the wildland.

Increase in Wildfires

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

- The way forests were handled in the past allowed fuel in the form of fallen leaves, branches and plant growth, to accumulate. Now this fuel is lying around the forest with potential to “feed” a wildfire.
- Increasingly hot, dry weather in the U.S.
- Changing weather patterns across the country.
- More homes built in the areas called the Wildland/Urban Interface, meaning homes are built closer to wildland areas where wildfires can occur.

Wildfire as a Natural Process

Fire has proved to be an essential component to some ecosystems. Fire is a natural cleaning agent that serves to wipe away unwanted growth, encourage biological diversity, renew soil and allow natural competition for sun and space among species of trees and plants.

With wildfires being snuffed out for decades, species such as the Atlantic white cedar tree have all but disappeared, as have certain flowers, insects, and fauna previously found in local marshes and woods.

According to scientists, when it comes to human safety and property, fire can actually reduce the risks of a devastating wildfire. Periodic fires burn away shrub and underbrush that, if left alone, can collect and become fuel.

Conditions Affecting the Wildfire Hazard

A combination of available fuel, weather, and topography, work together to determine when a wildfire will ignite, how quickly it will travel, and the fire's intensity. In general, the vulnerable times of the year for wildfire in New York are from the end of the snow pack until leaf out in the end of August.

Fuels: The two basic fuel types in the wildland/urban interface are vegetation and structures.

Vegetation: Fuel in its natural form consists of living and dead trees, bushes and grasses. Typically, grasses burn more quickly and with less intensity than trees. Any branches or shrubs between 18 inches and 6 feet are considered to be ladder fuels. Ladder fuels help convert a ground fire to a crown fire (tree tops) which moves much more quickly.

Structural Density: The closer the homes are together, the easier it is for the flames to spread from one structure to another.

Weather: High temperatures, low humidity, and swift winds increase the probability of ignitions and difficulty of control. Short and long-term drought further exacerbates the problem.

Slope: Slope is the upward or downward incline or slant of terrain. For example, a completely flat plain represents a 0% slope and a hillside that rises 30 feet for every 100 feet horizontal distance represents a 30% slope. Hot gases rise in front of the fire along the slope face, pre-heating the up-slope vegetation, moving a grass fire up to four times faster with flames twice as high as a fire on level ground.

Monitoring Fuel Conditions

Dead fuel moisture responds solely to ambient environmental conditions and is critical in determining fire potential. Dead fuel moistures are classed by timelag. A fuel's timelag is proportional to its diameter and is loosely defined as the time it takes a fuel particle to reach two-thirds (2/3) of its way to equilibrium with its local environment. Dead fuels fall into four classes:

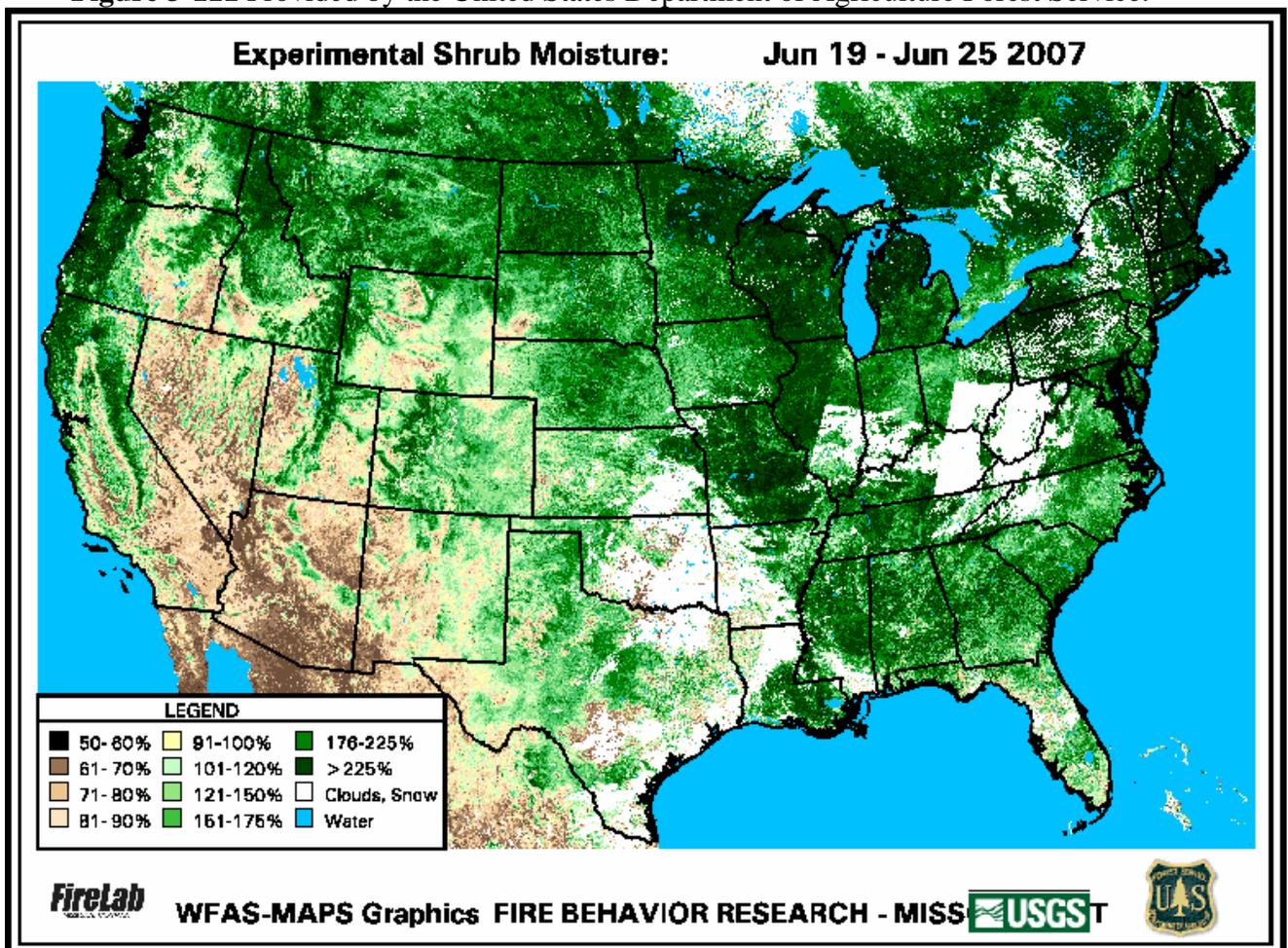
- 1-h, less than 1/4" diameter: Fine, flashy fuels that respond quickly to weather changes; computed from observation time temperature, humidity, and cloudiness.
- 10-h, 1/4 to 1" diameter: Computed from observation time temperature, humidity, and cloudiness; or can be an observed value, from a standard set of "10-Hr Fuel Sticks" that are weighed as part of the fire weather observation.
- 100-h, 1 to 3" diameter: Computed from 24-hour average boundary condition composed of day length, hours of rain, and daily temperature/humidity ranges.
- 1000-h, 3 to 8 " diameter: Computed from a seven-day average boundary condition composed of day length, hours of rain, and daily temperature/humidity ranges.

The *Experimental Live Fuel Moisture* image **Figure 3-111** portrays an estimate of live shrub moisture contents and will give best estimates in plant communities that are dominated by

shrubs. The base moisture content range for each pixel has been determined using maximum and minimum images for the historical period dating back through 1989. For example, areas with historically low minimum and maximum images generally correspond to arid communities and yield minimum calculated moisture contents as low as 50% on a dry weight basis. Maximum moisture content in the most arid sites will be at least 100% but may range higher. Very moist sites may range from a minimum of 90% to a maximum of 250%. On average, New York State ranges from 100% to greater than 225%. In general, this corresponds to a low threat of wildfire; however, a prolonged period of little to no precipitation can increase the risk.

The Relative Greenness image data is used to determine the weekly moisture estimate within each pixel's potential moisture range as follows: $\text{pixel mc} = ((\text{RG}/100) * \text{pixel mc range}) + \text{pixel mc minimum}$. Where mc is moisture content on a dry weight basis and RG is the Relative Greenness pixel value for the week. The moisture image will be most useful in those shrub communities where users have measured live fuels (ground truthed) and developed correlations between measured and image moisture values (**Figure 3-111**).

Figure 3-111 Provided by the United States Department of Agriculture Forest Service.



Fire Danger Rating level takes into account current and antecedent weather, fuel types, and both live and dead fuel moisture. The adjective class rating (**Table 3-42**) is a method of normalizing rating classes across different fuel models, indexes, and monitoring station locations. It is based on the primary fuel model cataloged for the station, the fire danger index selected to reflect staffing levels, and climatological class breakpoints. This information is provided by local

monitoring station managers. Staffing class breakpoints are set by local managers from historical fire weather climatology.

**Table 3-42
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 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.

Remote Automatic Weather Station (RAWS) Network

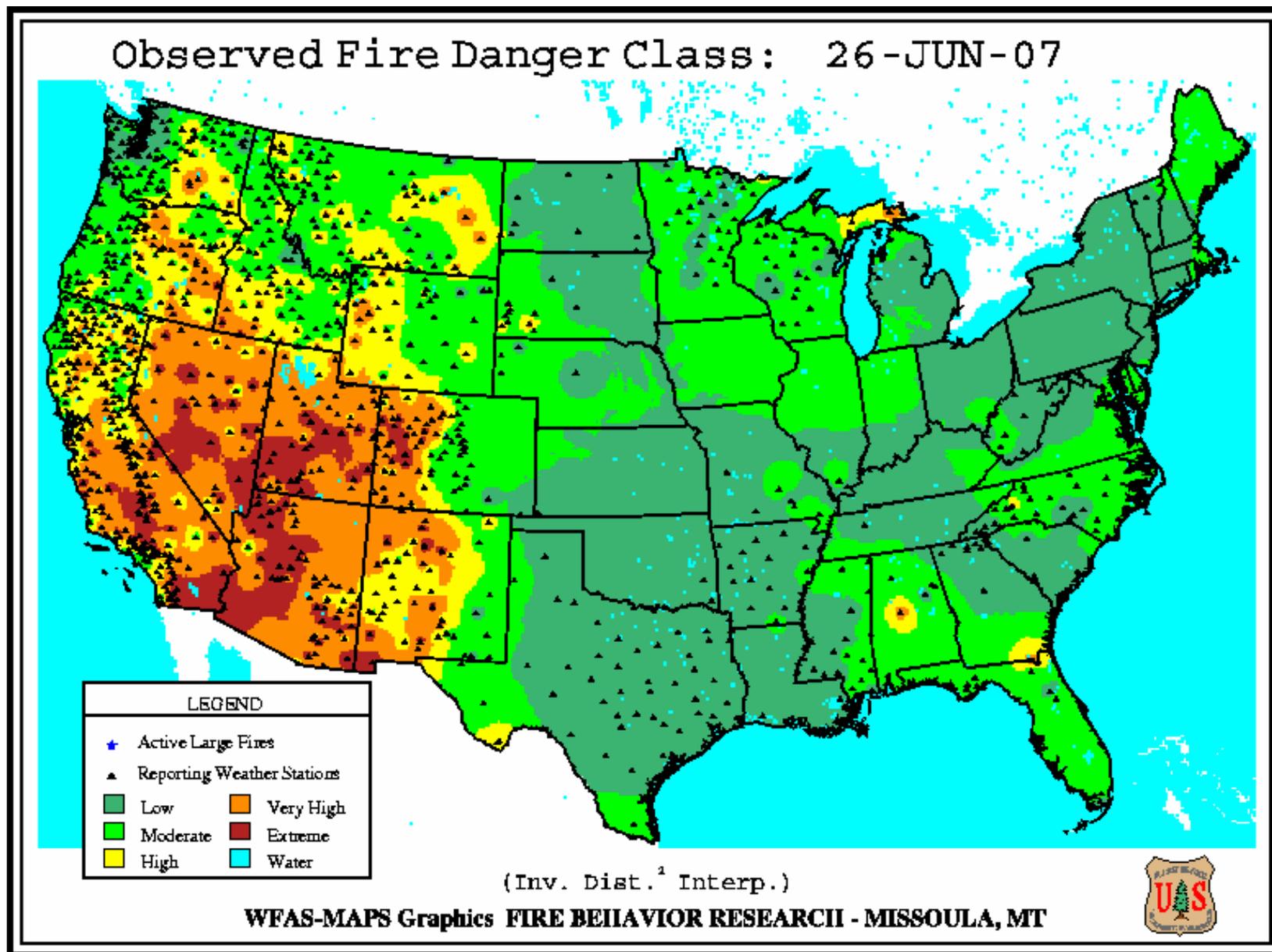
The NYS Forest Rangers utilizes a Remote Automatic Weather Station (RAWS) Network. The NYS Forest Ranger RAWS network is comprised of 17 interagency, remote, automatic fire weather stations (See **Table 3-43**). Adjective ratings (See **Table 3-42**) are determined for each Fire Danger Rating Area, using the data collected at the weather station(s) located within the particular or adjoining area.

Table 3-43 NYS FOREST RANGER REMOTE AUTOMATIC WEATHER STATION NETWORK				
STATION NAME	STATION ID # REGION	COUNTY	FDRA	OWNER
Wertheim	305803	1 - Suffolk	Long Island	USF&WS
Eastport	305702	1 - Suffolk	Long Island	LIPBC
Hudson Highlands	300711	3 - Rockland	Hudson Valley	NYSFR
Belleayre Mt.	301111	3 - Ulster	Catskill	NYSFR
Stony Kill	305103	3 - Dutchess	Hudson Valley	NYSFR
Saratoga	301901	5 - Saratoga	Upper Hudson/Champlain	NPS
Albany Pine Bush	300011	4 - Albany	Hudson Valley	TNC
Schroon Lake	300311	5 - Essex	Upper Hudson/Champlain	NYSFR
Schuyler Falls	399191	5 - Clinton	Upper Hudson/Champlain	NYSFR
Mt. Van Hoevenberg	300312	5 - Essex	High Peaks	NYSFR
Brasher Falls	300892	6 - St. Lawrence	St. Lawrence	NYSFR
Wanakena	300891	6 - St. Lawrence	Adirondack	NYSFR
Lake Pleasant	300411	5 - Hamilton	Adirondack	NYSFR
Sherburne	300171	7 - Chenango	Leather stocking	NYSFR
Gang Mills	301011	8 - Steuben	Southern Tier	NYSFR
Iroquois	301101	9 - Monroe	Lake Ontario Plains	USF&WS

Observed Fire Danger maps (**Figure 3-112**) are provided on a daily basis by the United States Department of Agriculture Forest Service. Observation maps are based on the mid-afternoon (2 pm LST) observations from the fire weather network as reported to the Weather Information Management System, WIMS ([USDA 1995](#)), by 5:00pm Mountain Time.

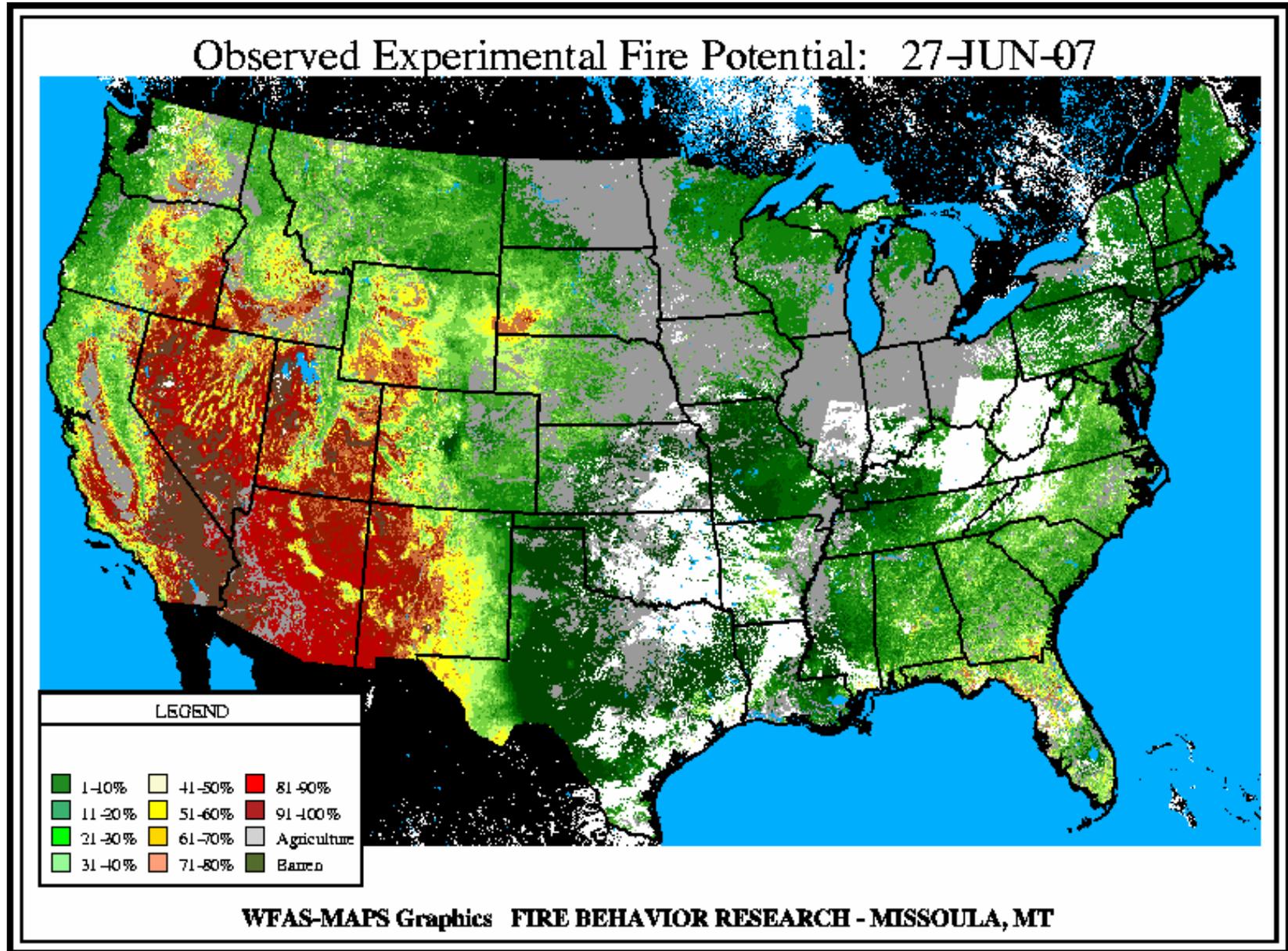
Observed Experimental Fire Potential maps (**Figure 3-113**) are provided on a daily basis by the United States Department of Agriculture, Forest Service. The experimental fire potential index map uses satellite derived Relative Greenness, an NFDR fuel model map (both 1 km resolution), and an interpolated 10-hour time lag map as inputs to weight the relative influence of live and dead vegetation to fire potential. The scale ranges from 0 (low) to 100 (high). Except for 10-h moisture content, the calculations used in the National Fire Danger Rating System are not part of the Fire Potential Index.

Figure 3-112



Source: United States Department of Agriculture Forest Service

Figure 3-113



Source: United States Department of Agriculture Forest Service

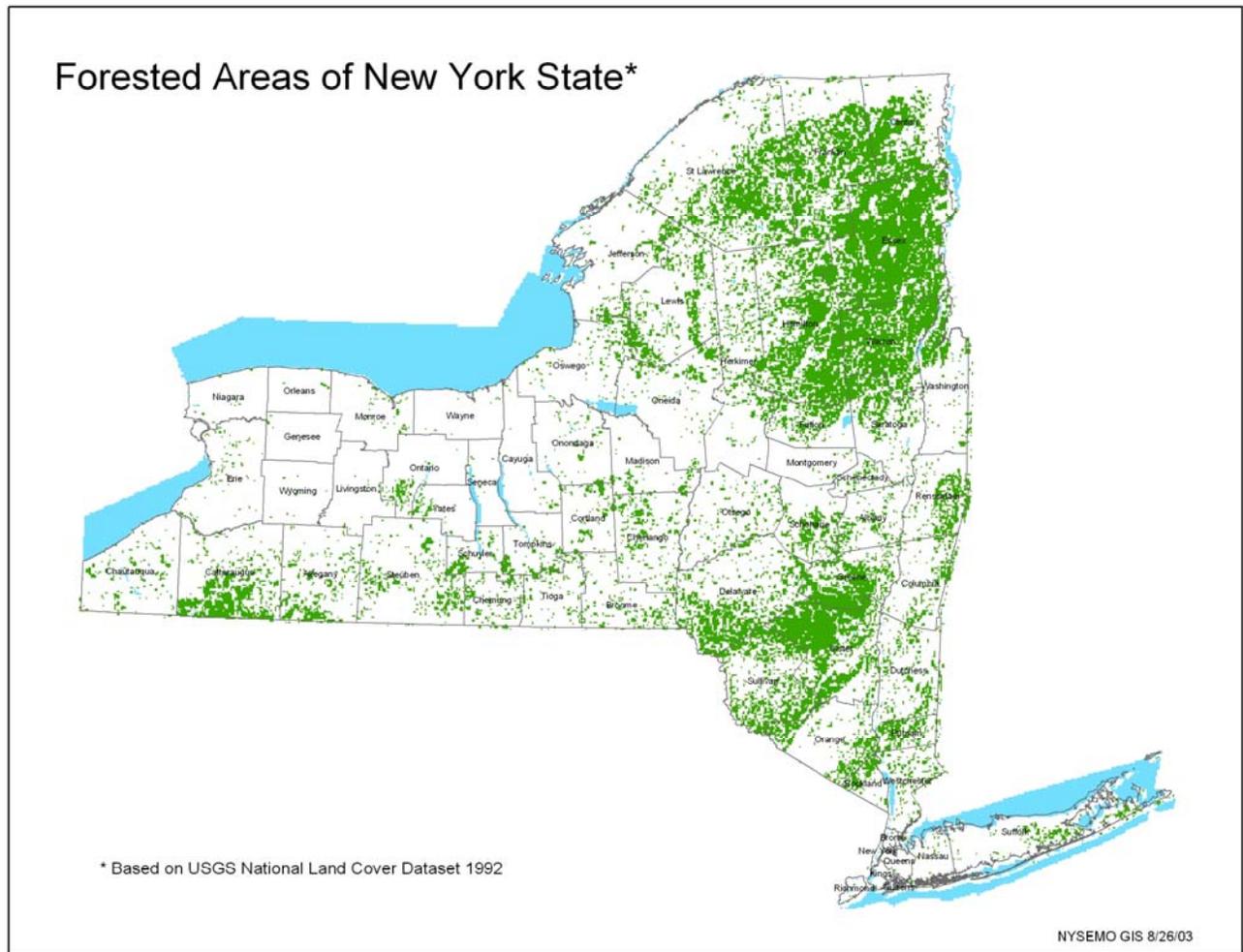
Wildland/Urban Interface (WUI) Issue

A great wildfire danger exists where homes are intermixed with the wildland, thus creating the Wildland/Urban Interface (WUI). A major population shift from urban to suburban and rural living has greatly expanded the WUI. Many New York residents are seeking to avoid the noise, smog, crowds, rules, taxes, and hectic pace of city life.

This shift has greatly increased the number of homes and businesses in or near the wildlands areas, mixing high value properties with flammable vegetation. The result has been that structural fire losses have increased, and major losses of life and property to a wildfire may become common place.

A large population and a number of structures are at risk, heightening our awareness of wildfire in interface areas is a key safety issue. In general, the State and Local governments, as well as the State's residents, are not well prepared to deal with significant wildfires despite the presence of substantial areas of heavily wooded forest and parkland. A map of the State's forested areas is included as **Figure 3-114**.

Figure 3-114



Geographic Location/Extent/Severity

Fire Danger Rating Areas (FDRAs)

The NYS Forest Rangers have divided the State into ten different Fire Danger Rating Areas. The main criteria used to develop the boundaries of these areas are similar vegetation, fire climate, and topography. These criteria are supplemented by DEC Regional boundaries; NWS fire weather zones, political boundaries, fire occurrence history and other influences. See **Figure 3-115**.

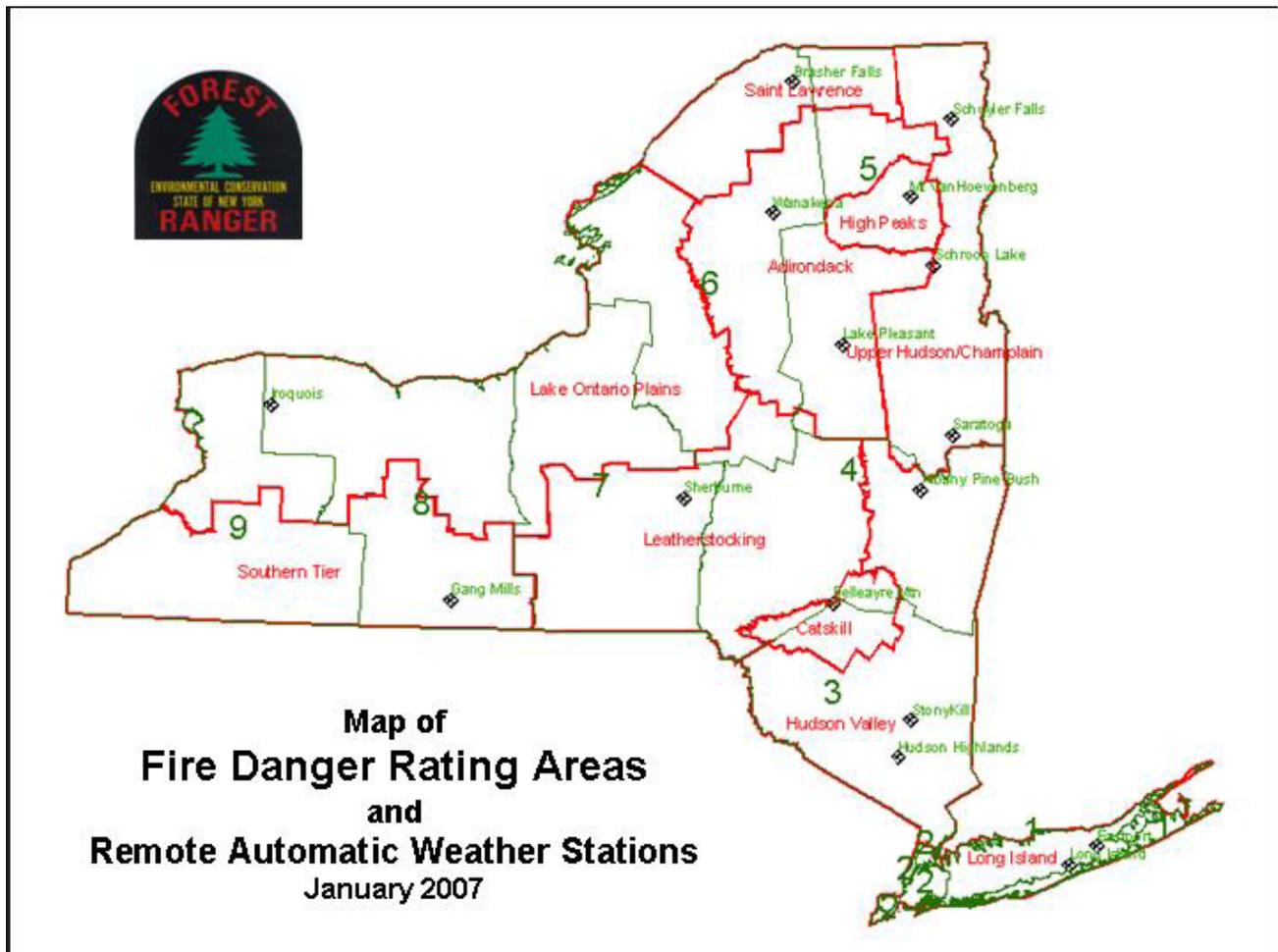


Figure 3-115 The main criteria used to develop the boundaries of these areas are similar vegetation, fire climate and topography. These criteria are supplemented by DEC Regional boundaries; NWS fire weather zones, political boundaries, fire occurrence history and other influences.

Wildland/Urban Interface Assessment

New York State has a diverse and vast landscape. The southern part of New York contains New York City, with heavily populated areas stretching 70 miles north into the lower Hudson Valley and 60 miles to the east on Long Island. The central and western parts of the State contain rolling hills with a mix of forests, farmland and open space. In the north central part of the State, are the Adirondack Mountains and in the southeast lie the Catskill Mountains. These two mountain ranges contain 6,750,000 acres of forest land with few roads and scattered communities.

At the turn of the century, much of New York was farmland with industrial-based cities concentrated along the major rivers and ports. Since the early 1950's, much of this farm land has turned into forests with scattered communities and subdivisions. Mountainous areas, which were once sparsely populated are now dotted with housing developments.

Traditionally, wildfires burn in forests or brush lots, but the shifting of housing from urban to rural areas has created a new type of environment – the Wildland/Urban Interface. The Interface has three classifications: classic, mixed, and occluded.

- A classic interface occurs where many structures, often on small lots, border wildlands on a broad front.
- The mixed interface is characterized by large wildland areas with scattered structures.
- The occluded interface is defined as isolated areas of wildland within an urban area.

New York State has all three types of interfaces. The Adirondack and Catskill Mountains contain large tracts of forests with the mixed, and to a lesser extent, the classic interface occurring throughout. The remainder of the State contains classic and mixed interfaces with some major cities containing an occluded interface.

The population migration from an urban to suburban and rural living will continue, increasing the possibility of loss and/or damage to structures in the WUI. Many property owners are unaware that a threat from a wildfire exists or that their homes are not defensible from it. Water supplies at the scene in the WUI are often inadequate. Access by firefighting equipment is often blocked or hindered by driveways that are either narrow, winding, dead-ended, have tight turning radii or have weight restrictions. Most wildland fire suppression personnel are inadequately prepared for fighting structural fires and local fire departments are not usually fully-trained or equipped for wildfire suppression. Further, the mix of structures, ornamental vegetation, and wildland fuels may cause erratic fire behavior. These factors and others substantially increase the risk to life, property, and economic welfare in the WUI.

While there are many interface communities throughout New York, a list that details the location, type of interface and surrounding fuel make-up does not exist. New York will continue to have wildfires and a percentage of these fires will be interface fires. Without a detailed listing, an accurate assessment of the potential wildfire hazard within the WUI can not be made.

Long Island Pine Barrens Risks and Hazards

The Long Island Pine Barrens Protection Act was passed on July 14, 1993. This amendment to Article 57 of the Environmental Conservation Law, *The Long Island Pine Barrens-Maritime Reserve Act*, delineated a terrestrial and marine planning area for Eastern Long Island. This management area, known as the Central Pine Barrens, consists of 100,000 acres covering portions of the Towns of Brookhaven, Riverhead, and Southampton.

Of the twenty-two “pine barrens” on the United States East Coast, the Long Island Pine Barrens rank second in size, exceeded only by the New Jersey Pinelands. Roughly 52,000 acres are considered open space and therefore prone to larger wildland fires. **Figure 3-116** shows the approximate location and extent of the Pine Barrens.

The Long Island Pine Barrens consists of many upland species, with three forest types that are predominately fire generated/fire dependent. These are the pitch pine-oak forest covering approximately 50% of the area, the pitch pine-oak-heath woodlands covering approximately 25%

of the area and the dwarf pine plains covering approximately 5% of the area. With high resin contents and rapidly drying rates, these forest types can, with above average temperatures and below average humidity and rainfall, produce high to extreme fire danger. The resin contained in the pines increases ignition potential, flammability, and fire intensity. Wildland fires play a very prominent role in the Pine Barrens which are considered by scientists and others as "fire dependent" natural communities. Many rare or unique species have adapted to and actually depend on periodic fires for long term survival. With the ever-increasing effectiveness of fire control efforts, fires have become less frequent leading to declining forest health and greater risk of uncontrollable wildfires like the Sunrise Fires of 1995. The Nature Conservancy is working with partners to implement carefully controlled prescribed fires in the Pine Barrens to restore forest health while reducing the risk of severe wildfires.

Figure 3-116



With these forest types, the inherent mild weather patterns resulting from the Atlantic Ocean and Long Island Sound create the potential for year round fires. Having fifty to seventy-five brush fires on a typical spring day is normal.

Years of successful fire suppression in the Pine Barrens, while greatly reducing the ordinary "brush fire" has also increased the quantity of fuels available for fire. In the absence of fire, dense overstory and understory vegetation layers develop. There is also a marked increase in surface fuel loadings, the material lying on or immediately above the ground. Surface fuels are responsible for fire spread and provide the heat necessary for crown fires to develop. These fuels include needles, leaves, duff (the layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles and leaves and immediately above the mineral soil), grass, small dead wood, downed limbs, and low vegetation.

The Wildfire/Urban Interface has a significant influence on the method and techniques used for fire suppressions. Approximately 60,000 people live in the Central Pine Barrens; roughly 370 people per square mile. Located within the Central Pine Barrens are over 23,000 housing units with an average value of \$165,000. These figures create a unique wildland/urban interface. This situation is so unique and potentially devastating that the closest comparison would be the Bel air/Malibu area of California.

Adirondack Windstorm Hazard Assessment

In the early morning hours of Saturday, July 15, 1995, a fast-moving thunderstorm complex of near record proportions passed through New York State. The storm's strong winds blew down and damaged a large number of trees in a triangular area bounded roughly by the communities of Gouverneur, Blue Mountain Lake, and Lyons Falls. Storm damage, power outages, and injury occurred elsewhere in the State; however, the predominant impacts were concentrated in the area noted above.

The blowdown caused by a "gust front" with up to 100-knot winds from the west-northwest as part of a "derecho" event. A derecho is a long-lasting bow echo radar image.

As the event was unique, so were the conditions preceding its occurrence in upstate New York. On Friday, August 14, 1995, the Albany County Airport reported a maximum temperature of 99 degrees Fahrenheit, the second highest temperature ever recorded at this location. Many other locations reported similar readings. Excessively warm temperatures, combined with rapidly decreasing temperatures and high moisture levels near the ground surface provided ideal conditions for thunderstorm formation. For thunderstorms to form, a mechanism to lift the unstable air must be present. In this case, a cold front was stretched from east to west across the Great Lakes Region through southern Ontario, Canada near the New York border on the night of August 14, 1995. A large area of thunderstorms formed along this front. Outflows from these storms created a small scale boundary of converging air oriented east-northeast to west southwest that moved across Lake Ontario and spawned a new line of heavy thunderstorms from Watertown to Buffalo. Once strong storms develop in an unstable air mass, their evolution and persistence are strongly correlated to the rate of increase in the environmental wind speed with height or the vertical shear. The greater the vertical shear, the more likely the damaging storms will persist and affect a wide geographical area. The vertical wind profile on Friday and early Saturday (August 14 and 15, 1995) indicated significant shearing which allowed the destructive storms in northwest New York to continue tracking eastward across the Adirondacks and into eastern sections of New York with little variation in storm intensity.

The storms generated damaging winds across their entire path with the potential for tornadoes. The vertical shear and strongly unstable air mass also combined to generate strong straight-line surface winds (called downbursts) as the strong winds aloft were transported to the surface in the thunderstorm down draft. Albany Airport recorded its second strongest wind gust ever (78 mph) with some reports in other locations of near 100 mph.

Falling trees and branches killed five people and injured several hundred other people. More than 300,000 customers lost electric service and more than 1,000 residents and farms suffered structural damage. It is estimated that over \$5,000,000 in damage was done to public and private property. Fallen trees blocked roads and foot trails, stranding several hundred campers and hikers. Besides causing death, injury, and damage to structures and utilities, the storm also blew over and damaged an extensive number of trees in more than 900,000 acres of publicly and privately owned lands. These downed trees created a great fire potential in the following years as the wood dried out.

Six days after the Adirondack windstorm had passed, New York State Forest Rangers, assisted by Wildlife Management Officers from the United States Forest Service and National Park Service conducted a fuel hazard assessment survey. Preliminary sampling was done on various fuel types to determine typical wildfire fuel models and fuel loads.

The storm blowdown created an abnormally high volume of forest residue throughout the woodlands of northern New York State. This residue (made up of tree stems, branches, twigs, and bark) was evaluated to assist Department land managers in determining whether the accumulation of slash-like debris (which can create a hazardous fuel situation) presents an acceptable or unacceptable fire hazard to the surrounding areas, improvements and exposures, and forest users.

The residue was measured as a volume, in tons per acre of residue, with a subsequent breakdown of fuel sizes into the 10, 100, and 1,000 hour time lag fuel moisture classes. The volume of fuel, measured in tons per acre, is of primary concern to fire control personnel as the intensity with which a fire burns is directly proportional to the volume of fuel present. Additional observations include vegetation type, fuel bed shading and exposure, fuel model and the depth and arrangement of the duff and litter layer. These categories include all the fuel descriptors required by Forest Rangers for predicting fire behavior. Fuel load data was obtained at fifty-six random sample plots located throughout and adjacent to the blowdown affected areas. Evaluation of the data reveals that the representative fuel loadings within the storm affected areas have increased dramatically from an average of eight tons per acres (as measured in unaffected areas) to 30 tons per acre on recently logged private industrial forests and 150 tons per acre on the old-growth forest preserve. This reflects various ownership policies and past silvicultural practices. Major increases have occurred in the 1000 hour time lag class fuels, primarily in the three to nine inch dbh (diameter at breast height) range in conifer stands and the nine inch to sixteen inch dbh range in hardwoods. The average depth of the residue is eight to ten feet, with depths greater than twelve feet found in the most heavily damaged areas.

As these fuels cure, there is a significant potential for intense wildfire activity. Wildfires in the blowdown area will be difficult to access and extinguish. The ignition potential within the blowdown area comes mostly from campfires, lightning, and debris burning. A large portion of the affected area is State-owned wilderness area where recreational use in the form of hiking and camping occurs. Unattended campfires from these activities could be a source of wildfires. Lightning could also be an ignition source in the Adirondack Mountains. Although rain is usually associated with lightning in the mountains, the unusual amount of dried fuel and openness within the blowdown area could cause a smoldering lightning strike to flare up after several days of dry weather. Wildfires may also be caused by landowners burning debris in areas adjacent to or in the blowdown area.

The likelihood of a causal agent actually starting a wildfire is directly related to weather conditions. The potential for ignition increases as moisture and humidity levels decrease. In the area affected by the blowdown, the weather is usually wet, but a dry spring or summer could set the stage for a large wildfire to occur.

Previous Wildfire Hazard Occurrences:

The following **Table 3-44** provides a brief list of wildfires in New York State. Select wildfires have been described in more detail in the following section.

Table 3-44 Past Wildfire Events in New York		
Date	Location	Damages
1903	Adirondacks	Economic loss to lumber industry
1908	Adirondacks	Economic loss to lumber industry
1911	Adirondacks	Economic loss to lumber industry
1913	Adirondacks	Economic loss to lumber industry
1915	Adirondacks	Economic loss to lumber industry
1950	Adirondacks	Economic loss to lumber industry
1995	Suffolk County	Sunrise Fires, 7,000 acres burned, \$5million in damage.
2001	Washington County	\$95k in property damage, 34 acres of land burned.
2001	Schenectady County	\$5k, 6 acres burned, threatened several homes
2001	Rensselaer County	\$2k, 3 acres of a corn field destroyed.
2001	Suffolk County	2injuries, dollar amount damage unknown.
2002	Adirondacks	340 acres burned, dollar amount damage unknown.
2006	Catskill Park	933 acres burned in Cherrytown Fire

Source: SEMO archives, NCDC and Jonathan Meade

Adirondack Fires – Early 1900s

The development of the Adirondacks depended entirely upon the mining, lumbering, and agricultural industries.

Early industry in the region consisted of mining operations and lumber operations. In 1903, the Delaware and Hudson Company, after acquiring the Chateaugay and Lake Placid Railway Company, secured control of the Chateaugay Ore and Iron Company, with the view of increasing the mining and smelting operations at Lyon Mountain and Standish and, subsequently, freight movements on its railroad lines. Shortly after these acquisitions, during the summer and fall of 1903, destructive forest fires burned over approximately three-fourths of the Chateaugay Company's forest. A portion of the acreage, burned clean of timber, was later considered as entirely denuded. The major portion of the burned area was probably affected by serious ground fires, which did not entirely damage the remaining stands of timber, but necessitated placing this timber on an early market.

Forest fires continued burning year after year. These fires, most severe in 1903, 1908, 1911, 1913, and 1915, destroyed practically all timber that was ready for market and scorched the ground so badly that the humus, needed by the soil to establish another ground-cover of valuable hard and soft woods, was burned down to sand and stones, on which a fire cover of inferior woods began to grow in order to assist nature in enriching the soil cover. The Dock and Coal Company continued cutting in the burned areas from which salvage could be obtained, and from the lands which had not been burned until 1918, when operations ceased as the timber supply was exhausted. There remained only scattered areas of cull hardwoods that had been lumbered once and burned over several times. Other than such hardwoods, nothing remained but

undersized swamp balsam and spruce which, because of its location in wet areas, had not been badly burned.

Sunrise Fires – 1995

August of 1995 will be remembered as a record breaker for the residents of New York and Long Island. Residents suffered through at least 22 consecutive days without measurable precipitation, with only 0.44 inches reported for the entire month at Brookhaven National Weather Service Forecast Office. This drought had been developing throughout the year (see Drought History); with year-to-date precipitation on Long Island reported to be 11.45 inches below normal (18.85 inches compared to a normal of 30.30 inches). Unusual heat accompanied this unpredicted drought for the entire month of August. Long Island was so parched that by August lawns crackled underfoot like hay for harvest and the woods were dry as kindling. Daily mean temperatures were averaging 3.2 degrees above normal for the month. These weather conditions were conducive to extreme fire behavior. The extreme drought and heat conditions caused dead fuel moisture to reach dangerously low levels and live fuel moisture was approaching end of winter levels.

Figure 3-117



Source: Newsday Photo/Bill Davis: Sunrise Highway in August, 1995.

From August 21, 1995 at 11:00 am to September 4, 1995 at 6:00 pm, four wildfires constituting the “Sunrise Fire Complex” burned more than 7,000 acres of brush and forest land in Suffolk County. The fires forming the Sunrise complex included: the Rocky Point, Sunrise, Medford, and Calverton fires, (**Figure 3-117**).

The initial ignition at Rocky Point was detected at approximately 11:00 am, Monday, August 21, 1995. It was quickly attacked and contained shortly thereafter. At approximately 12:00 pm, a second start was detected and attacked by forces still on the scene. The fire quickly escaped control and burned 1800 acres by the evening of August 22, 1995.

On Thursday, August 24, 1995, a second major fire, named the Sunrise Fire (after the interstate it closed down), was ignited in the vicinity of the Suffolk County Community College East Campus, just east of Speonk-Riverhead Road. It was initially attacked by the Eastport Fire Department, but due to extreme fire conditions, quickly escaped control. By Friday afternoon, it

had grown to 5,050 acres, damaged or destroyed three structures in the vicinity of the Westhampton Train Station, and brought a mobilization of firefighters never before seen on Long Island.

All incidents of the Complex occurred in the “pine barrens” that dominate the undeveloped portions of Long Island. These areas are dominated by Pitch Pine and a variety of oaks, with an understory of pine, oak, sweet fern, blueberry and grasses, and a thin layer of litter and duff. Successful fire suppression over many years allowed these Pine Barrens to develop dense overstory and understory layers.

The fire complex was the worst to hit the State and the first ever on Long Island. It was also the first major fire in the Wildland/Urban Interface (WUI) in New York State. A large population and a number of structures were at high risk.

The threat from the fires was so great that Governor George E. Pataki requested, and President Clinton approved, a Fire Suppression Assistance Declaration for the impacted area. The declaration was received on August 24, 1995 and various federal resources were provided to help bring the fire under control and extinguish it. Mr. Jim Lyons, United States Undersecretary of Agriculture was assigned to directly manage the federal firefighting effort. Additionally, certain eligible costs incurred by State and Local agencies in the effort were reimbursed.

At the height of the event, hundreds of Local fire companies and scores of State and Federal agencies were involved in suppressing the fires. The United States Forest Service provided comprehensive fire fighting assistance, including all necessary equipment and teams of experts. This extraordinary effort by a multi-governmental partnership was a major factor in the successful suppression of these major fires with minimum property losses and without loss of life.

Adirondack Fires – 2002

New York Department of Environmental Conservation (DEC) Forest Rangers, along with the State Police Aviation Unit, Department of Correction Services inmate crews, and Local volunteer fire departments fought more than 36 active forest fires, encompassing more than 320 acres in the Adirondack Mountains during August of 2002. Dry summer conditions made forest fires easy to start, and when coupled with the gusty winds, the fires spread quickly. Certain regions of the Adirondacks received less than two inches of rain in July and less than one inch in the month of August.

DEC banned campfires on all State Forest Preserve lands in the Adirondack Park, except DEC campgrounds. In addition, to prevent additional human-caused wildfires, the DEC suspended all burn permits issued by the Agency in the counties comprising DEC Region's 5 and 6, which include Clinton, Essex, Franklin, Hamilton, Fulton, Saratoga, Warren, Washington, St. Lawrence, Jefferson, Lewis, Herkimer, and Oneida counties.

While the majority of the fires were caused by lightning strikes, unattended campfires were the cause of at least twelve of the fires in the month of August.

The majority (28), and largest (6 fires ranging from 4 to 75 acres in size), of the fires were located in Essex (15) and Warren (13) Counties. Fires also burned in Clinton, Hamilton, Lewis, Saratoga, and Washington Counties.

The six largest fires were:

- 75 acres on Huckleberry Mountain, Town of Johnsbury, Warren County;
- 45 acre Gooseneck Fire, Town of Ticonderoga, Essex County;
- 25 acre Ridge Fire on Hail Mountain, Town of Crown Point, Essex County;
- 8 acres on Whiteface Mountain, Town of Wilmington, Essex County;
- 7 acre fire on Hail Mountain, Town of Crown Point, Essex County;
- 4 acres on Beach Mountain, Town of Bolton, Warren County

Cherrytown Fire – 2006

The Cherrytown Fire started on April 30, 2006 in the Catskill Park, outside the town of Rochester. The fire consumed 933 acres near the Vernoooy Falls Ridge in the Catskill State Park. The Cherrytown Fire was the largest wildfire since 2002. The fire was fought by a dozen Ulster County fire teams led by the Accord Fire Department Firefighters. Firefighters from Orange County and three volunteer departments from Sullivan County also assisted in the fire effort. Two inmate crews, State Department of Environmental Conservation forest rangers and fire teams from two local nature preserves also offered their assistance. The fire was officially extinguished on May 12, 2006.

Mitigation Activities

New York Wildfire Academy

In 1995, New York's largest wildfire in a century occurred on Long Island. From that incident was born the non-profit New York Wildfire and Incident Management Academy.

In 2003, the Academy matriculated a record-breaking 612 students representing more than two-dozen organizations and 35 states, plus one Canadian province. Their goal remains providing a safe learning environment for wildland firefighters and incident managers, and fostering partnerships.

Sponsoring organizations include the Arizona and Colorado wildfire academies, the USDA Forest Service, National Park Service, Federal Emergency Management Agency, New York State Emergency Management Office, Central Pine Barrens Wildfire Task Force, and the Suffolk County Department of Fire Rescue. These sponsors also provide training equipment and staffing. The New York State DEC provides most of the logistical support, including the use of Brookhaven National Laboratory, site of most academy classrooms and dormitories.

2007 DEC Wildfire Management Plan Draft

The 2007 DEC Wildfire Management Plan Draft outlines the DEC's goals pertaining to wildfire:

- **Fire Danger Operating Plan** – which outlines the organization, management, and implementation of the National Fire Danger Rating System (NFDRS) by the Ranger Division.
 - Fire danger may be assessed and communicated using the adjectives *low*, *moderate*, *high*, *very high*, and *extreme*.
 - The Fire Danger Operating Plan establishes Fire Danger Rating Areas which are the geographic areas with similar characteristics of *fuels*, *weather*, *topography*, and *fire occurrence history*.
 - The fire danger rating is one of many factors which influence the setting of **Regional and Statewide Preparedness Levels**.

- Preparedness levels are intended to ensure that the division's ability to respond is commensurate with wildfire activity and values at risk.
- **Fire and Fuels Management** - which includes:
 - an active prescribed fire program;
 - attentiveness to fire situations and fire danger;
 - active fire suppression;
 - post-fire investigation,
 - and statewide fire reporting.
- **Incident Complexity** is a tool which is used to assess the severity and intensity of an incident, usually a wildfire.
 - Incidents are assigned one of five types of complexity.
 - Complexity is a guiding factor in the development of incident management response. It is especially useful when organizing statewide response to multiple incidents.
- **Incident Management Teams (IMT)** are composed of trained personnel, prepared for action.
 - The Ranger Division will have Suppression Resources in place, including personnel and equipment.
 - Forest Rangers are intended to lead incident management and fire suppression activities with the assistance of Fire Wardens and other volunteers.
 - The division, through cooperative agreements, regularly dispatches personnel on out-of-state firefighting mobilizations, thereby assisting agencies in need and gaining valuable experience
 - All personnel are expected to adhere to Standards and Safety protocols.
- In addition, the division will work to improve **Wildfire Prevention and Education** through established programs and new programs which show promise.

Northeastern Forest Fire Prevention Compact

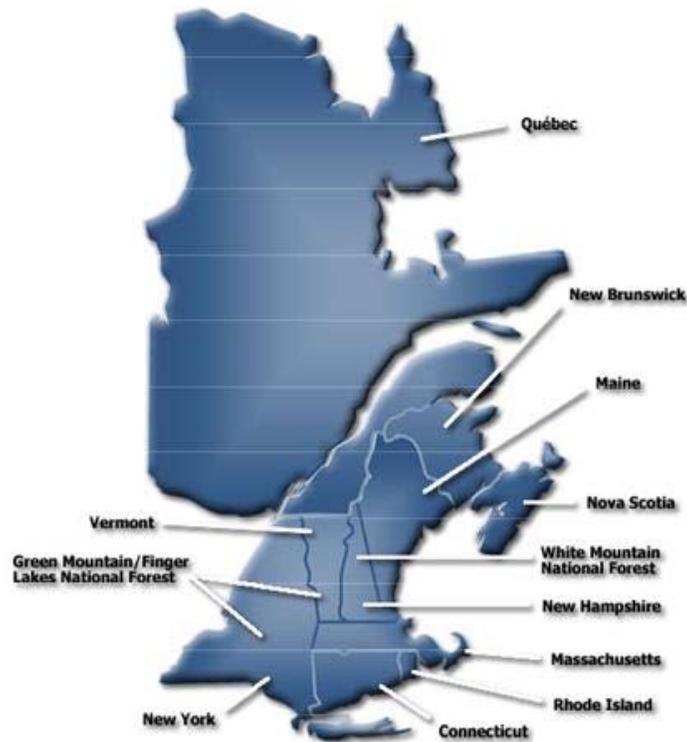
The Department of Environmental Conservation and the Division of Forestry and Fire Management represent New York State in the Northeastern Forest Fire Prevention Compact (NFFPC). The international compact is comprised of 7 U.S. States, 3 Canadian Provinces and the New England National Forests.

The NFFPC mandates that participating members:

- Provide resource sharing (mutual aid) among members and establish procedures to facilitate this aid. The sharing of resources may include fire crews, fire management (overhead) staff, fire equipment, and fire aircraft
- Provide fire related information and technology sharing among members
- Support the development of integrated forest fire plans and the maintenance of appropriate forest fire fighting services by its members
- Maintain a central agency (the Compact) to coordinate the services needed by member States and Provinces

Each State and Province is required to fund the cost of training, equipping, and maintaining an effective forest fire force to meet the usual conditions in their jurisdiction. Yet through the Compact, they also have immediate access to the additional resources of other Compact members, in cases of severe forest fires.

Figure 3-118 The Northeastern Forest Fire Prevention Compact



Probability of Future Wildfire Events

It is hard to predict the likelihood of wildfires as a generic statement of “once every five years” as many factors contribute to the ignition of a wildfire. The likelihood of a fire starting and maintaining itself can be gauged on a daily basis through the methods described previously in this section.

Modern scientific thought has led to the emergence of prescribed fires or “controlled burns” in wildfire vulnerable areas. These controlled burns have *reduced* the risk for extreme wildfires, but the risk still exists. We are likely to see small wildfires throughout the State on a yearly basis (as we have regularly experienced in the past), however, advanced methods of fire control and a better understanding of the fire ecosystems, should reduce the number of devastating fires in the future.

Jurisdictions Most Threatened by and Vulnerable to Wildfire Hazard and Estimating Potential Losses

As stated previously, any area of the State where the built environment infringes upon or is incorporated within the wildland/urban interface is vulnerable to the damaging effects of wildfire. Areas with high loads of fuel are at increased risk of a wildfire, specifically areas that have experienced a “blowdown” in recent years, allowing for the build up of fuels. Currently the area of the State that falls into that category is the Adirondack Region, which has increased levels of fuel from recent blowdown events and ice storm damages. Other areas of the State that have a higher level of wildfire hazard include areas with fire-dependent vegetative species. As indicated above, this area encompasses the Pine Barrens region of Suffolk County on Long Island and the Albany Pine Bush. As the dry weather increases the threat of wildfire, the areas of concern take steps to minimize the threat. For example, in July of 1999, during a drought, all

State Department of Environmental Conservation lands in Suffolk County were closed to recreational users. The lands were closed until the fire danger risk was lowered. In 2002, during a drought in the Adirondack Region, concern for the increased fire hazard led officials to ban open-burning and to ban camp fires in State campgrounds.

State Facilities – Assessing Vulnerability and Estimating Loss for Wildfire Hazard

Table 3-45 presents the State facility vulnerability assessment and loss estimation analysis.

**Table 3-45
Wildfire Hazard Exposure to New York State Agency
Facilities within Adirondack Park and
Long Island Pine Barrens**

NY State Agency	Total Facilities	Total # and % in *Adirondack Park and Long Island Pine Barrens	Critical Facilities, total number and percent in*Adirondack Park and Long Island Pine Barrens
Department of Environmental Conservation	1880	1070 (56.9%)	0
	\$104,611,361	\$40,568,402 (38%)	0
Department of Transportation	908	236 (26.0%)	0*
	\$232,514,852	\$10,650,805 (4.6%)	0*
Office of General Services	130	0	0
	\$2,133,659,048	0	0
State Emergency Management Office	4	0	0
	\$3,365,434	0	0
Number of facilities Total	2922	1306 (44.7%)	0

Source: NYS Fixed Asset information -Offices of General Services and Cyber Security Critical Infrastructure Coordination data bases. **Buildings within Adirondack Park and Long Island Central Pine Barren Areas*