

# Community Wildfire Protection Plan Tok



Prepared for: The Community of Tok

Prepared by: State of Alaska,  
Division of Forestry, Tok Area



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## ***Signature Page***

As administrator of a land management agency or community organization represented in the Tok Wildfire Protection Plan, I concur with the following recommendations to implement this plan.

### **Department of Natural Resources, Division of Forestry**

  
Jeff Hermanns - Area Forester


### **Department of Fish and game**

  
Jeff Gross - Area Biologist

### **U.S. Fish and Wildlife, Tetlin National Wildlife Refuge**

  
Peter Butteri - Fire Management Officer

### **Tok Volunteer Fire Department**

  
Dave Bergstrom - Fire Chief

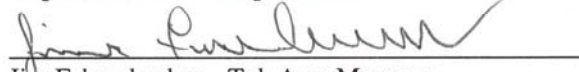
### **Tok Chamber of Commerce**

  
John Rusnyi - President

### **Tok Umbrella Corporation**

  
Kathy Morgan - President

### **Department of Transportation**

  
Jim Fehrenbacher - Tok Area Manager



## List of Interagency Planning Team Members

Jeff Hermanns	Tok Area Forester, State of Alaska, Division of Forestry
James Folan	Tok Fire Prevention Officer, State of Alaska, Division of Forestry
Peter Butteri	Fire Management Officer, US Fish and Wildlife Service, Tetlin NWR
Dave Bergstrom	Fire Chief, Tok Fire Department





Mosquito Fork – 2004 Chicken Fire

## I. Executive Summary

The Tok Community Wildfire Protection Plan (Tok CWPP) is a collaborative effort that has been developed in response to the 2003 Healthy Forest Reforestation Act (HFRA) which directs communities at risk of wildfire to develop a risk assessment and mitigation plan. Guidance for the Tok CWPP is based on Preparing a Community Wildfire Protection Plan: A Handbook for Wildland Urban Interface Communities (March 2004).

### The Tok CWPP

- Assesses the risk posed by wildfire to the community of Tok.
- Identifies local values of concern.
- Identifies local fire protection response and capabilities as well as natural and man made barriers.
- Develops mitigation measures designed to protect identified values from the threat of wildfire.

Completion of the CWPP will provide direction for ongoing and future wildfire hazard mitigation efforts and will allow the community of Tok to take full advantage of HFRA benefits including prioritization for federal funding and self-determination of Wildland Urban Interface (WUI) boundaries.

While the burn scar of the nearly 100,000 acre 1990 Tok River Fire to the East of town provides a natural barrier to the threat of a large fire approaching from that direction, the town itself, and most of the surrounding subdivisions, are vulnerable to catastrophic wildfire due to an almost uninterrupted stand of white spruce that encompasses nearly the entire community. Frequent thunderstorms and associated lightning strikes in and around the community are a constant cause for concern during the peak lightning season in June and July. An even greater threat is posed by human caused fires in the local area. The continued expansion of the community will likely lead to increases of human-caused fires.

## VALUES OF CONCERN

The State of Alaska, Department of Natural Resources, Division of Forestry is responsible for wildland fire protection in Tok and the surrounding area. The U.S. Fish and Wildlife Service and Tok Volunteer Fire Department also support Wildland fire protection efforts.

Firefighter safety, the safety of the residents of Tok and of the many travelers who are here during fire season is the highest priority for firefighting personnel. Private property, improvements and our natural resources are other values of concern that this plan addresses.

The following actions are proposed to mitigate the risk of wildfire impacting values of concern in Tok.

- Assess properties within the town for defensible space using Firewise guidelines and work with residents to improve the survivability of their homes;
- Strengthen local prevention programs and interagency cooperation;
- Create a priority matrix that identifies hazard fuels, values at risk, and areas to be treated. It is important that this matrix reflect hazards and mitigating measures within the community and work outwards;
- Thin or remove fuel within the community at identified locations;
- Construct fuel breaks along easements to provide access to sections that contain hazard fuels and create stand conversions (Removal of spruce trees and exposing the earth to promote the growth of Willows and Aspens) within those sections. As much as ¼ to ½ sections may be cut during this part of the operation. The sections identified are North of Red Fox Drive, East of Eagle Subdivision, West and Southwest of Fales Road and Fireweed Lane.
- Develop local capabilities to provide contracted fuel reduction services;
- Develop and maintain an emergency evacuation plan;
- Provide sustainability through private enterprise participation and use of wood for fuel and electricity;
- Develop and implement a house numbering system for emergency vehicles;
- Obtain additional funding for EMS and VFD;
- Become a certified Firewise community;
- Secure funding for the local radio station.

## II. Background

### A. Community of Tok

Tok Alaska, with a summer population of about 1400 people, is located 200 miles southeast of Fairbanks in the Upper Tanana Valley at the junction of the Alaska and Glenn Highways. Tok is an important transportation hub as well as the center of commerce for several villages in the area. The community is expanding, with people moving into the area for a variety of reasons and new subdivisions being built on the outskirts of town.

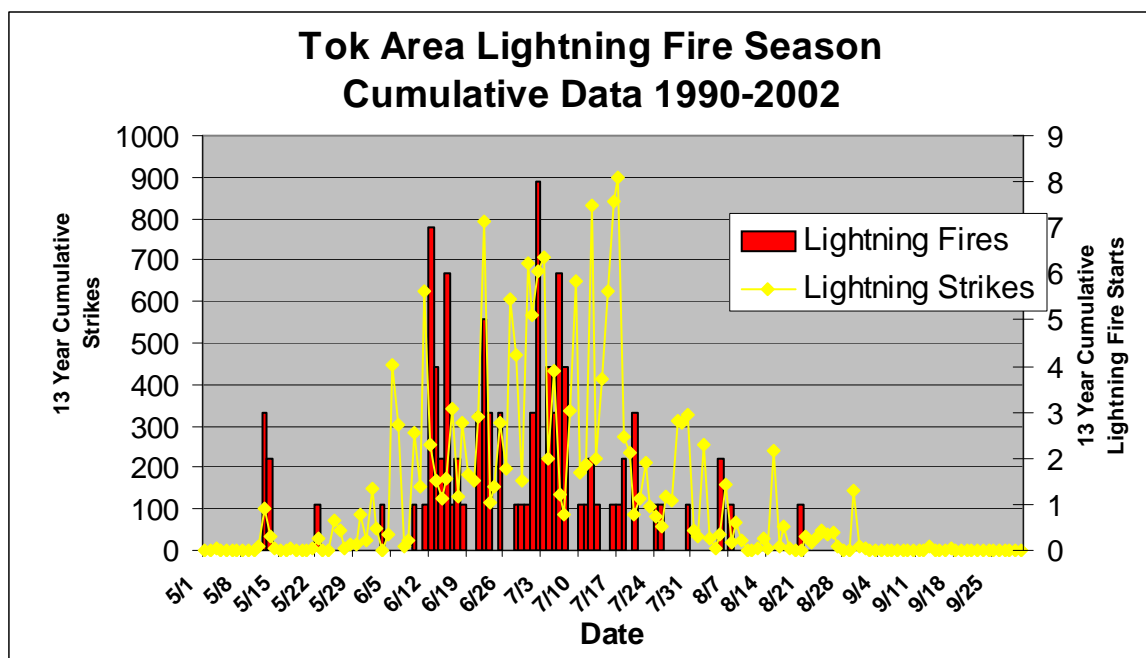
The community of Tok is part of the Unorganized Borough and has no local government. The Tok Community Umbrella Corporation was incorporated in 1986 and has served as a conduit for receiving State funding into the community.

### Tok Area Fire Season

Fire season in the Upper Tanana Valley is highly variable. It begins some years as soon as the snow has melted in early to mid May. Typically, these early fires are human caused, though lightning caused fires may also occur. Because of the low moisture content in local snow, the severity of this early season is more dependent on spring breakup conditions than it is on the amount of overwinter precipitation. Rapid thawing allows moisture to percolate downward leaving surface fuels dry, while a slow breakup impedes drying by holding moisture close to the surface above frozen layers. Early season fires tend not to burn deeply but may burn intensely and spread quickly across the surface.

As green-up progresses and live fuel moistures rise during late May and early June, fires become less frequent for a time. As days lengthen further, increased differential heating becomes more conducive to convective activity, and in the absence of significant rain causes surface fuels to dry. This effect peaks from mid June to mid July and is the basis for the “main” upper Tanana lightning fire season. This period coincides with increased human presence in the wildlands and the majority of human caused fires. The most active fire years are often characterized by large stable high-pressure systems over the interior which result in prolonged periods of hot, dry weather and more frequent low-precipitation thunderstorm. Other years are characterized by a series of low pressure systems that sweep across the valley and bring widespread rain.

By mid July, thunderstorm activity begins to lessen due to shorter days and less intense sunlight. Fuels can remain dry, allowing ongoing fires to continue burning, however new ignitions occur less often. Typically, large high-pressure systems give way to systemic moisture sometime in August. Without moisture, a late season can extend into September, usually relying on careless hunters for ignition sources. Although fires can burn into October if snowfall is delayed, rarely do they spread significantly.

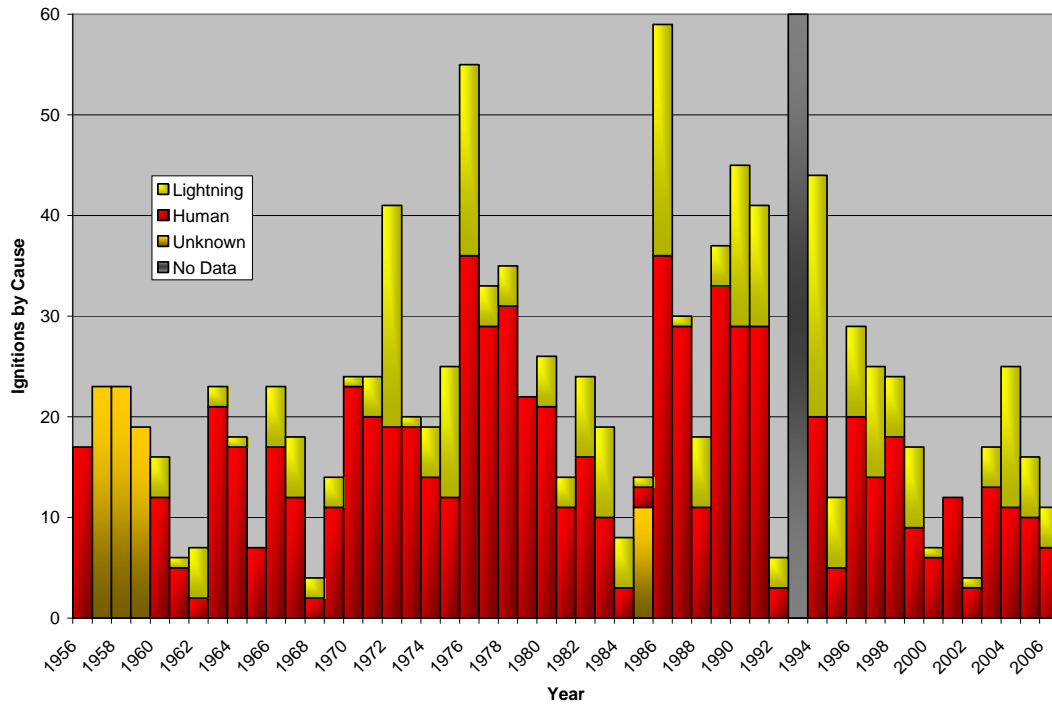


### Tok Area Fire History

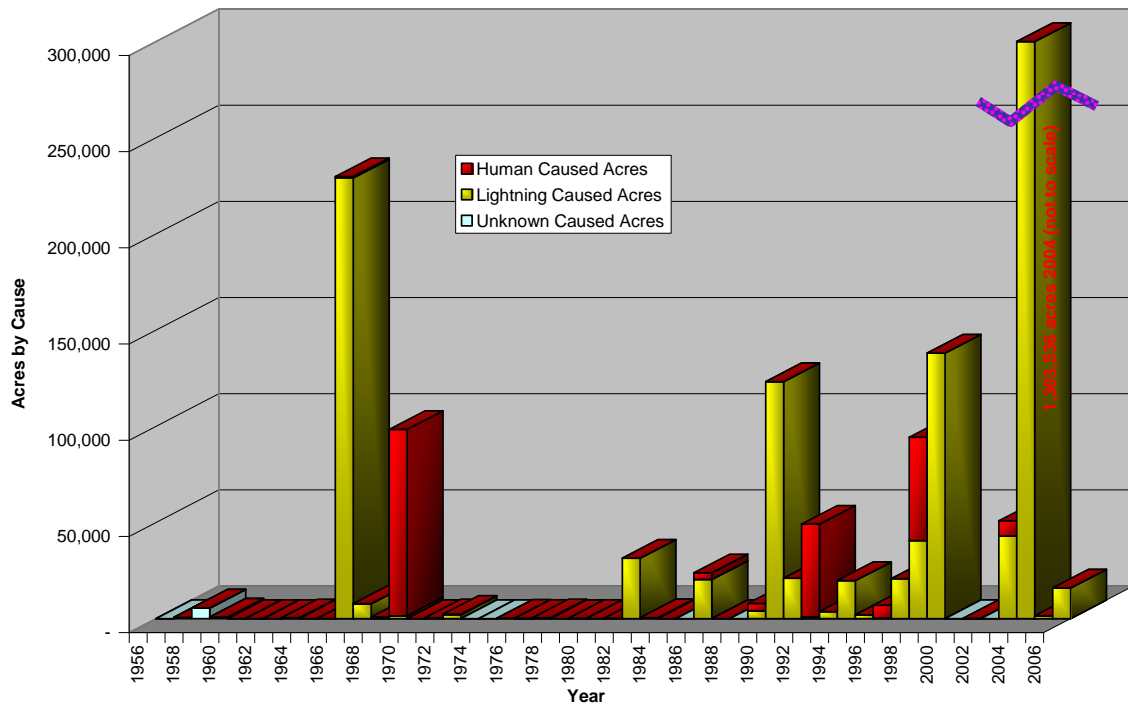
Between 1984 and 2006, 1,113 wildfires, have burned 2,382,143 acres at a cost of over 5 million dollars to the State of Alaska (*This amount does not reflect federal spending*). Just sixteen fires accounted for over two million of these acres and in 2004 alone, record temperatures and drought conditions allowed six lightning-caused fires to burn 1.3 million Tok Area acres- more area than all fires in the previous 45 years combined. Although lightning is responsible for only 33% of Tok Area ignitions, lightning fires account for nearly 90% of the total number of acres burned. Human caused fires are most prevalent in the immediate vicinity of the community of Tok and other populated areas where values at risk often require aggressive suppression efforts. Notable human caused fires within the Tok Area Wildland Urban Interface (WUI) include the 150 acre Red Fox fire in 2001 and the 6,000 acre Tok River 2 fire of 2003. The 100,000 acre lightning caused Tok River Fire of 1990 also burned into the WUI, and is widely recognized as the first large scale urban interface suppression effort in the State of Alaska.

Other areas of Alaska have also experienced serious wildfires in the urban interface. In 1996 the 37,366 acre Millers Reach Fire in Big Lake destroyed 344 structures. More recently, many structures were lost during the 55,638 acre Caribou Hills Fire of 2007. These fires serve as a reminder that towns and subdivisions are threatened each year by wildfire.

Tok Area Fires by Cause 1956-2006



Tok Area Burned Acres by Cause 1956-2006





### **Tok Area Fuels**

The community of Tok is constructed on well drained gravel soils of the Tanana River floodplain within a nearly contiguous 38,000 acre spruce/feather moss stand. White spruce predominates, however black spruce is also present. A fire that gains a foothold in these continuous and volatile fuels under severe weather conditions can quickly outstrip the ability of firefighters to contain it as was evidenced in 1990 and again in 2004, few natural barriers exist within this stand.

An increased awareness of the wildland fire threat has many Tok homeowners taking steps to make their property more fire resistant by removing some of the hazard fuels; however a 2005 satellite image is a stark reminder of how much work is still to be done. The suppression of wildfires during the last fifty years has allowed the highly flammable spruce forest to continue to mature.



Day one of the Chicken Fire - 2004

## Tok Area Fire Management

The primary wildland fire suppression provider in the Tok Area since 1984 has been the State of Alaska, Division of Forestry. Eight Wildland Firefighter and Resource Technicians, staff four engines and one helicopter, in order to provide initial attack response for over eight million acres. Other Wildland fire resources in Tok include an engine at the Tetlin National Wildlife Refuge and the Tok Fire Department, an all volunteer service equipped with six fire engines staffed by 9 firefighters that assist Forestry and responds to wildfires within its response area.

In addition to managing wildfires, area wildland fire personnel also respond to other emergencies through the Incident Command System (ICS). After the earthquake of 2002 multiple agencies, including FEMA, American Red Cross and DEC used Tok Forestry as an Incident Command Post to provide relief to those affected by the earthquake. Parts of this plan, such as evacuation procedures and interagency cooperation could also be used during other incidents.



Interagency Cooperation - Tok Fire Dept. Engine Filling a Forestry Engine during 2004 Chicken Fire

## B. Tok Fires- A Look at Two of Tok's Wildfires



1990 Tok River Fire

1. The Tok River Fire of 1990 was a lightning caused fire that burned nearly 100,000 acres and cost more than 25 million dollars, requiring the assistance of firefighters from the Western United States, Canada, and every corner of Alaska. This fire eventually destroyed one structure and threatened many more before firefighting efforts and a change in the weather helped to steer it away from town. This fire is a classic case of the need for fuel reduction on the outskirts of a town that has uninterrupted hazardous fuels leading from the lightning prone wild lands, up to, and into, a community.

2. The 150 acre Red Fox Fire of 2001 was a human caused fire on the northern edge of Tok that also destroyed at least one structure. While the 1990 Tok River Fire was pushed into Tok by general easterly winds, the relatively small Red Fox incident was driven by a brief local wind caused by a downdraft from a cumulus cloud that pushed it towards a populated area. The time elapsed from the first fire engine on scene until structures became involved was a mere 22 minutes. Tok Forestry's helicopter was on a search and rescue mission in the Wrangell Mountains when this fire started, and aerial resources from other stations were at least an hour away complicating suppression efforts and underscoring the need for homeowners to adopt Firewise tactics in regards to making their homes more survivable in the face of a WUI fire.

A home which survived the Red Fox Fire despite receiving enough radiant heat from the flames to discolor the paint on the siding and melt plastic rain gutters as well as candles sitting on the windowsills serves as an excellent example of the

effectiveness of these techniques. This home had been built to firewise specifications including metal siding and roofing, and vegetation had been cleared for 30' around the house.

Following the Red Fox Fire, Forestry ordered a National Fire Prevention and Education Team to help educate area residents about the Firewise steps necessary to make their homes more survivable. Many of this team's recommendations have been incorporated into this CWPP including:

- Updating and maintaining the house locator program initiated by Tok Forestry after the 1990 Tok River Fire.
- Creation of a permanent prevention position at Tok Forestry- a recommendation that was accomplished in the spring of 2007.



Red Fox Burn Scar





This structure had a 30' clearing down to mineral soil/gravel and metal siding.



Red Fox Fire 2001

## **C. Past and Current Prevention Programs**

Tok Forestry initiated a house locator program in the early nineties that put all of the houses in the Tok Management Area onto a GIS database. This information was then put into folders to be used by Initial Attack Firefighters. Maps containing this information can also be used during all phases of the fires. This program has since been used in other areas of the state.

A prevention booth is staffed at the fairgrounds during the Fourth of July activities.

Prevention staff visits the local schools and offers education materiel to students.

In an effort to reduce the amount of human caused fires in the area, Forestry has allowed landowners to bring their brush to a gravel pit where engine crews burn it. This program has been very successful and is expected to continue.

Firefighters from Tok Forestry also inspect each burn permit site when issuing permits and offer to provide a firewise assessment while on location.

The hazard fuel reduction program began in 2003 with the assistance of Fish and Wildlife. Fish and Wildlife personnel have also been involved with firewise education efforts and hazard fuel thinning projects in some of the villages in the Tok area.

Tok Forestry has an aggressive aerial detection program that combines flights chartered locally with detection flights from Fairbanks. Construction of two lookouts began in 2007, one on the Pump Station Hill and the other on the hill atop Seven Mile Curve.

A tool loan program allows homeowners to borrow tools for use while burning slash piles or grass. Engine crews are sometimes made available to standby while residents burn their lawns or during the initial ignition of large piles of slash.

Daily engine patrols while fire indices are high are standard operating procedure. These patrols visit campgrounds, active burn permit locations, lookouts, popular gathering areas for locals, and offer homeowners firewise information

A Fire Prevention Officer position was created in the summer of 2007

## **III. Collaboration**

This CWPP was initiated by Tok Forestry in accordance with the HFRA, which directs communities at risk of wildfire to develop a risk assessment and mitigation plan. Communities with a CWPP may receive significant benefits in the future should funding be appropriated for hazardous fuel reduction and fire prevention. State and Federal agencies were contacted, including BLM, Tetlin Wildlife Refuge, DOT, AST, and representatives of the Alaska Gateway School District, and input was received from the Tok Fire Department, Fish and Game and more than 20 members of the community of Tok during a meeting at Fast Eddy's restaurant on 2/20/07. A second meeting was conducted at Fast Eddies Restaurant on 3/29/07 with Alaska Village Initiative present as well as representatives from the Tok Chamber of Commerce and Tanacross Village.

Many meetings were held at Tok Forestry between individual members of the community and the Area Forester while this plan was being written. This plan was made available to the community and was mentioned in the local newspaper several times. It was widely distributed in draft form in the Tok area with the offer to review and make changes or contributions. Many people did make suggestions and they are reflected in the plan.



## IV. Wildland Urban Interface (WUI)

The Wildland Urban Interface (WUI) is the area where houses meet or intermingle with undeveloped wildland vegetation. Communities with a WUI face significant risk to life, property and infrastructure. Wildland fire within the WUI is one of the most difficult, dangerous and complicated situations firefighters face. Joint fire planning places a priority on working collaboratively within the community to reduce the risk of wildfire. Methods for reducing the risk of wildfire within the WUI include:

- Reducing the amount of fuels within the interface area;
- Fragmenting or breaking up continuous hazard fuels;
- Reducing the incidence of human caused fires;
- Involving individual landowners in implementing Firewise program measures on their own property.

Wildland firefighting agencies and local fire departments cannot always adequately protect the growing number of structures, especially in the sprawling wildland urban interface areas or where developments are remote or hidden within the wild lands. *It is therefore critical that landowners assume responsibility for protecting their property against wildfire.*

### Recommendations for Homeowners in the WUI

- Construct a driveway that is large enough for fire engines to easily navigate. Thin or remove the hazard fuels along the driveway and create a large turnaround near the structure. Place an identifying sign at the entrance to the drive way.
- Remove flammable vegetation within 30' of the structure. Beyond 30' and up to 100' thin the spruce trees to a distance of 10' between the trees. Remove the bottom limbs of spruce trees to a height of 6 feet.
- Remove all grasses, leaf litter and duff from the ground near the bottom of the structure, this will prevent a smoldering fire from burning the structure after the main fire front (and firefighters) have passed.
- Keep firewood piles 50' from the structure
- Plant and maintain a well watered green lawn.
- Install metal roofs and metal or fire resistant siding
- Keep a ladder, a hose with an outdoor faucet and hand tools available and in plain sight. Keep a swimming pool or drums of extra water stored near the house.
- Close or screen all openings in eaves and skirting.
- Do not store items against the structure.
- Use underground fuel tanks.
- Remove all junk cars and old sheds from around the house.
- Store all hazardous materials such as weed killers and flammable liquids in a marked area away from the structure.



2001 Red Fox Fire – Structure with metal siding and roof.

## **V. Fire Policies and Programs**

### **A. Alaska's history of fire ecology, policies and plans**

Prior to 1950 forest fires were largely allowed to burn naturally throughout Alaska because there was no comprehensive federal wildland fire policy or capabilities for effective fire suppression. On the average, fires burned approximately 1 percent of the 200 million acres of burnable forest annually. This natural and inevitable fire regime maintained a diverse mosaic of vegetation types from new burns to shrub lands and hardwood forests to late successional spruce forests.

In 1959 the Bureau of Land Management and the new State of Alaska adopted the Mandatory Initial Attack Policy. All wildland fires received aggressive initial and continuing attack within the limits of fire suppression resources. It has been estimated that more than 90 percent of fires were put out during initial attack by smokejumpers and helitack crews, preventing millions of acres of mature spruce forest from burning during the 1960s and 1970s.

In 1977 Alaska endured an extremely active forest fire season. Fire suppression resources were overwhelmed by millions of acres of wildland fires, many of which grew unnaturally large in areas spared from burning in the previous two decades. It became apparent to federal and state fire fighting and resource managers that the mandatory Initial Attack policy was neither ecologically wise nor operationally possible in the fire dependent boreal forest ecosystem.


In the early 1980s fire and resource managers with the Alaska Department of Fish and Game, Department of Natural Resources and Bureau of land management produced the Fortymile Interim Fire Management Plan covering the Upper Tanana and Fortymile River drainages. It placed a priority on suppressing fires near settled communities by not committing fire suppression resources to remote areas where fire was needed ecologically.


## B. Alaska Interagency Fire Management Plan


The Alaska Interagency Wildland Fire Management Plan (AIWFMP) was developed in the mid 1980s by the Fire Subcommittee of the Alaska Land Use Council, later renamed the Alaska Interagency Fire Management Council to provide a coordinated and cost effective approach to fire management to all lands in Alaska. All fire management decisions by land managers and owners are based on values warranting protection, protection capabilities, firefighter safety and or land resource management needs. Before the plans were developed existing strategy called for suppression of all wildfires. The AIWFMP requires all land managers review the fire protection needs on lands under their management authority. The fire protection levels are Critical, Full, Modified or Limited Management Option. The options selections are based on land manager's values to be protected as well as land and resource management objectives. The categorization and prioritization ensures that human life, private property and identified resources receive an appropriate level of protection with the available firefighting resources.


*-Historical data and text for Fire Policies and Programs submitted by Dave Kellyhouse, Fish and Game Biologist -retired*

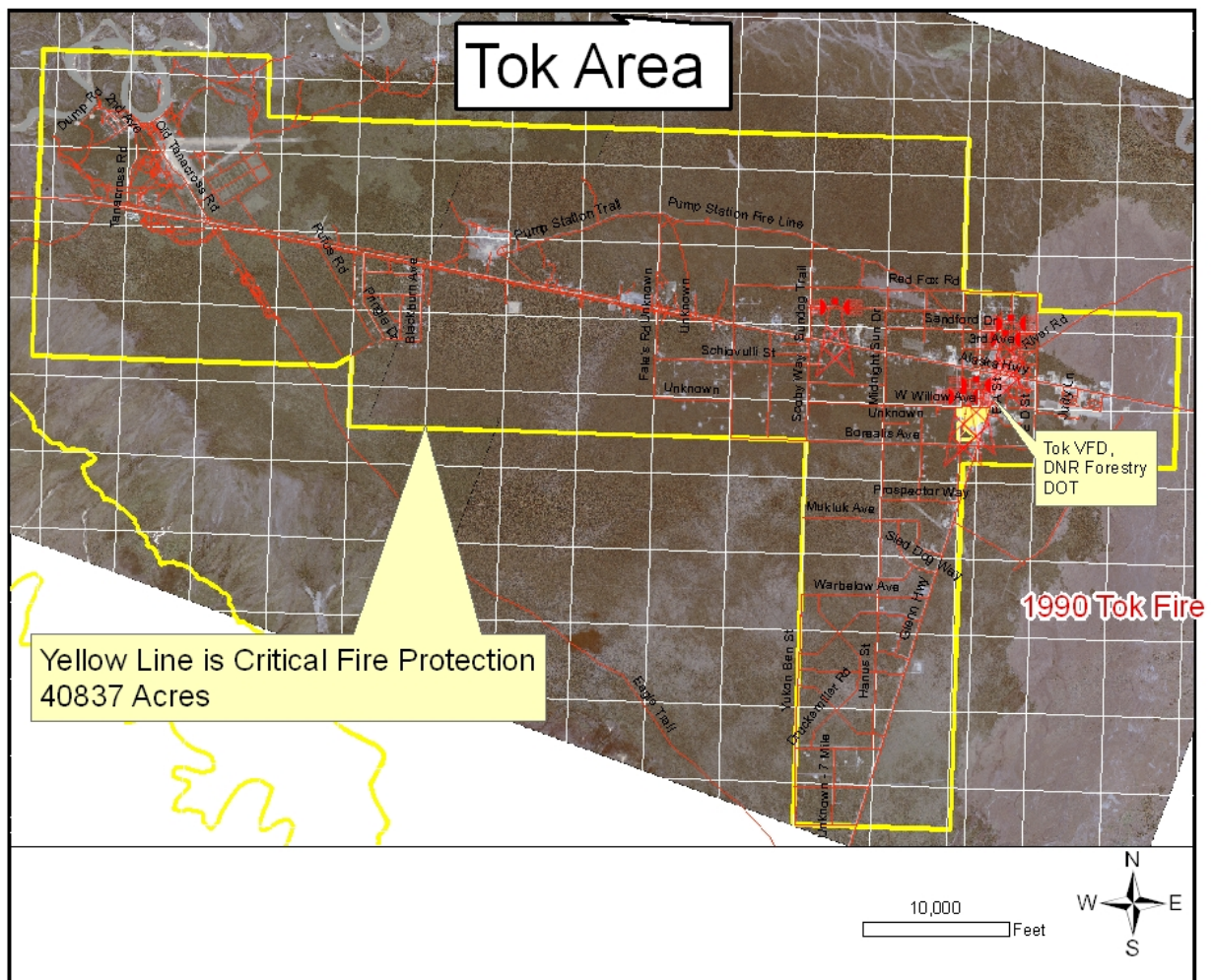
## B. Definition of Fire Protection Levels

 **Critical Protection** - Suppression action provided on a wildland fire that threatens human life, inhabited property, designated physical developments and structural resources such as those designated as National Historic Landmarks. The suppression objective is to provide complete protection to identified sites and control the fire at the smallest acreage reasonably possible. The allocation of suppression resources to fires threatening critical sites is given the highest priority.

 **Full Protection** - Suppression action provided on a wildland fire that threatens uninhabited private property, high-valued natural resource areas, and other high-valued areas such as identified cultural and historical sites. The suppression objective is to control the fire at the smallest acreage reasonably possible. The allocation of suppression resources to fires receiving the full protection option is second in priority only to fires threatening a critical protection area.

 **Modified Protection** - Suppression action provided on a wildland fire in areas where values to be protected do not justify the expense of full protection. The suppression objective is to reduce overall suppression costs without compromising protection of higher-valued adjacent resources. The allocation of suppression resources to fires receiving the modified protection option is of a lower priority than those in critical and full protection areas. A higher level of protection may be given during the peak burning periods of the fire season than early or late in the fire season.

 **Limited Protection** - Lowest level of suppression action provided on a wildland fire in areas where values to be protected do not justify the expense of a higher level of protection, and where opportunities can be provided for fire to help achieve land and resource protection objectives. The suppression objective is to minimize suppression costs without compromising protection of higher-valued adjacent resources. The allocation of suppression resources to fires receiving the limited protection option is of the lowest priority. Surveillance is an acceptable suppression response as long as higher valued adjacent resources are not threatened.



## B. Fire Ecology and Silviculture.

Prior to 1950, when large scale fire suppression began, Fires were allowed to burn across the landscape. Fires were started by lightning strikes and burned either small or large amounts of acreage depending on the fuel bed and fire weather. The result was a vast diversity of forest age classes in a mosaic thrown over the landscape.

When wildfires burn an area it sets forest succession back to age zero. Forest succession has been happening for as long as forests have existed in Alaska. The result is site conversion from white and black spruce to hardwoods and willows. Immediately following fire the sites begin to warm due to the removal of the forest canopy, consumption of insulating moss, and the blackening of the forest floor from the burn increasing warming from the sun. This warming cycle significantly increases nutrient recycling. The warmed burnt area rich in nutrients becomes an ideal environment for the growth of pioneering forest species such as birch, aspen and willow. Because new succulent growth is rich in nutrients, the young forest becomes a major food source for a vast diversity of wildlife, from voles and foxes to moose and wolves.

After about thirty years the hardwood forest canopy begins to close in. The forest floor is further cooled and insulating moss layers begin to develop. Due to this cold environment, pioneering species of hardwoods and



willows begin to die and are gradually replaced by spruce. The habitat value and diversity of wildlife are greatly diminished. The succession of forest back to spruce takes 80- 100 years. The process then starts all over again with a lightning strike.

With the start of fire fighting in 1950, the natural fire cycle and the creation of a diversity of forest age classes across the landscape was interrupted. Occasional fires escaped suppression and large fires resulted but overall the forest grew older as a whole. The forest tended to be one age with a lack of diversity. Overall forest health diminished. Continuous fuels were created, leading to more difficult fire suppression, and with nature's tendency to do things on a large scale, this can create a fire that would burn much bigger and hotter, sterilizing the soil and burning large areas. The goal of silviculture is to manage forested lands, and in this case, to break up the fuel beds creating diversity and a safer environment.

## **VI. Assessment to Prioritize Areas for Fuel Reduction**

Hazardous fuel areas were identified using a combination of 2005 Digital Globe satellite imagery, Geographic Information Systems (GIS), 2007 site visits by wildland firefighters, and community input. The assessment process will continue as mitigation efforts take place. It is hoped that 1000 acres or more can be treated each season. The total area of continuous hazard fuel around, and within Tok, is 38,000 acres. The contiguous nature of the fuels that are more than one mile from structures is what makes much of these fuels hazardous. A good example is the area north of Tok, a small fire located in the middle of the area between Red Fox and the Tanana River would be difficult to access and so would be a threat to Tok even though it might be located two or more miles from the nearest homes. The area south and west of Tok has similar issues.

Areas might not be treated in order of priority due to land ownership and other issues.



*Power-line in Tok area off of Birch Road*

These easements would be a priority for improvement.

## VII. Community Profile

### A. WUI Boundary

For the purposes of this plan, the Tok WUI boundary is considered to be the area immediately surrounding the town accorded the Critical Fire Management Option, extending to Mile Post 1324 to the west of Tok. The area around Tok that falls within the critical Management Option Plan is approximately 62 square miles. Due to the contiguous nature of the hazard fuels however, there are areas outside this boundary that have been targeted for hazard fuel reduction projects.

### B. Location and General Geographic Location

The Tok community center is located at mile 1314 of the Alaska Highway, where it intersects with the Tok Cutoff of the Glenn Highway.

The community lies at approximately: Latitude: 63.32 N, Longitude: 143.02 W  
(Sec 18, T18N, R13E, Copper River Meridian) Elevation 1632'

### C. Population

The 2000 U.S. Census estimates the population of Tok at 1,393. The State Demographer estimates the 2004 population as 1,439. During the peak wildfire season there are usually hundreds of travelers and tourists in the area. Tok is also a shopping and working destination for residents of nearby villages.

### D. Structures

During the 2000 U.S. Census, total housing units numbered 748, and vacant housing units numbered 214. Vacant housing units used only seasonally numbered 66. Emergency services will need to identify which houses are occupied and which are not in order to avoid confusion during an emergency. There are numerous businesses both on the highways and secondary roads.

### E. Infrastructure

Situated at the intersection of the Alaska Highway and the Tok Cutoff, Tok is an important transportation hub and travelers must pass through Tok to enter or leave Alaska by road. **All supplies (including food and fuel) that enter the State by road must also pass through Tok**, and these highways are subject to road closures in case of a wildfire threatening the highway, this could have serious consequences for the entire state. Limited supplies could also impact fire suppression activities. Power and telephone lines along this highway corridor service several surrounding villages as well as Tok. These power lines are the only source of electricity to the villages and they depend on the uninterrupted service that these lines offer. Other villages are soon to come online and will also depend on the power lines originating from Tok. This Highway corridor is also the proposed route for the natural gas pipeline to the lower forty eight states.

Tok is approximately 350 miles from Anchorage and 200 miles from Fairbanks, this distance could restrict the movement of supplies to Tok during an emergency. This distance also requires major medical cases to be flown to hospitals. These Medivac flights could be affected by smoke generated by a wildfire.

Several communication towers are located in Tok as well as the U.S. Coast Guards LORAN Station (Long Rang Aid to Navigation), which is 6 miles east of Tok.

There is one State owned runway in Tok. It is an asphalt runway operated by DOT and is 2,509' long and 50' wide. There are several private airstrips in the community.

### F. Industry

A large segment of the population of Tok is employed in government or the service/tourism industry.

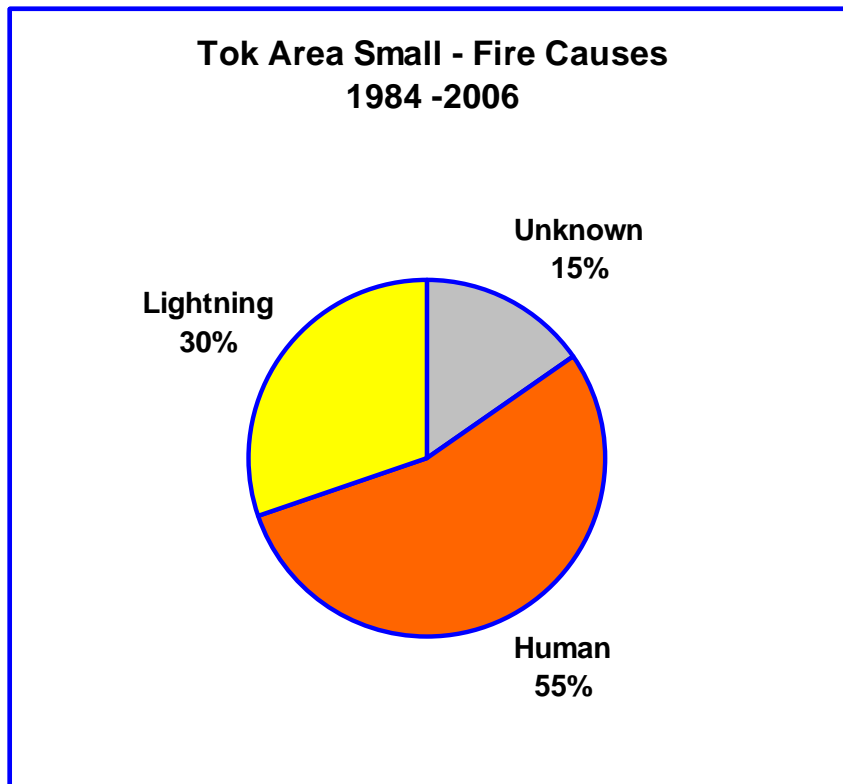
There are several saw mills in the area with a healthy demand for firewood, house logs and lumber. Tok is a natural stopping point on the highway for travelers and there are over two hundred motel rooms in Tok and several bed and breakfasts, RV parks, gas stations, repair shops and stores located within the community.



### **G. Subsistence**

A large number of people in Tok and the surrounding area rely on subsistence, especially moose. Active forest management, including hazardous fuel reduction, will improve moose habitat while contributing to abilities to protect the community from the threat of wildland fires. Small game also relies on the habitat a young forest provides and they are also important to the subsistence lifestyle and the overall health of the forest.

## **VIII. Community Risk Assessment**



Small fires are those that are less than 2 acres and do not escape initial attack.

## **A. Hazards**

### **1. Hazardous Fuel**

Hazardous fuels consist of burnable plant materials that foster or promote the ignition, spread, or increase the intensity of a wildland fire that would threaten the safety of people or property.

Most of the area on the outskirts of Tok has a hazardous amount of white spruce. Much of it is “dog hair” spruce, or, spruce that is 1-4 inches diameter breast height (DBH), and tightly packed, with some large spruce mixed in. This type of forest provides a fuel to air ratio for a dangerous wildfire that is difficult and dangerous to control (much like grass, only on a larger scale). Large tracts of land to the North, West and Southwest of Tok contain this type of fuel, creating the threat of a large fire moving into the community. With only a few trails into these areas, access is limited and firefighters would have few fire suppression options in the event of a wildfire.

### **2. Hazardous Fuel Mixed With Structures**

Most subdivisions or neighborhoods in Tok contain the same type fuels as mentioned above. These neighborhoods are sparsely populated and many have undeveloped lots between homes. A “House Locator” project conducted by Forestry in the late 1990s revealed that the vast majority of homes in Tok would not survive a wildfire unattended. With limited resources and the possibility of an intense wind driven fire quickly overwhelming limited resources available, entire subdivisions could be destroyed.

### **3. Ingress/Egress**

Most secondary roads as well as the Alaska Highway also have these fuels on both sides making ingress or egress dangerous. Many families live near the end of long roads with only one way in or out. This would make it difficult for people to evacuate in the event of a serious fire and dangerous for firefighters to attempt to protect the structures or assist in evacuations. Lack of an effective evacuation plan or notification system exacerbates this problem. Many of the fatalities that occurred during the 1991 Oakland Fire were the result of people becoming entrapped in their vehicles as they tried to flee the firestorm.

### **4. Hazardous Materials**

Many homes in Tok have above ground fuel storage tanks for home heating oil and propane. Some residences also have above ground gasoline tanks for their vehicles; these are particularly hazardous due to the volatile nature of gasoline and the typical location of the tanks (usually near the optimum parking spot for a fire engine). Greenhouses, garages and sheds typically contain chemicals and other types of haz-mat. Abandoned vehicles are also a hazard to firefighters.

### **5. Tourists and Travelers**

As mentioned earlier, Tok is an important junction in the State, but it is also an international border town and as such, has a number of issues that come with this designation, such as transients that are unable to cross the border and are forced to camp in Tok. It is also a natural stopping point for people who have traveled a long distance through a foreign country. In addition to the junction that leads to Anchorage and Fairbanks, Tok is also the jumping off point for folks who travel the Taylor Highway. There are numerous campgrounds and gravel pits in the area that these travelers use to camp and build warming/cooking fires.

### **6. Lack of Government**

Tok does not have a formal government or tax base. As such it also has no formal parcel base to help locate landowners, or fund full time Fire Department personnel.

## B. Barriers and Fuel Breaks

Barriers are natural or man made zones that block or restrict the movement of a wildfire. Natural barriers can be rivers or lakes, ridges or rocky areas, and non- flammable vegetation. Man made barriers include wide roads, airstrips, or areas where flammable vegetation has been removed.

The Tok River burn scar provides a natural barrier against wildfire to the East of Tok, and the Red Fox fire, in conjunction with the Red Fox fuel reduction project provides a fuel break against a wildfire approaching from the North of town, although this fuel break will not be adequate until it is expanded. The narrow roads and highways in Tok can not be considered to be adequate fuel breaks in the event to a wind driven wildland fire. The goal of fuel reduction is to construct fuel breaks that will allow firefighters a chance to stop the spread of a wildfire.



Red Fox Drive



Figure 14 Red Fox 2001

## **IX. Hazard Mitigation**

### **A. Goals and Objectives**

Interagency wildland fire policy identifies public safety as its top priority.

The primary goal of the CWPP is to reduce the risk of wildfire to the community of Tok and its essential infrastructure. The following is a list of objectives proposed to reduce the risk of wildfire in the community.

#### **Objective#1: Support and Encourage the Use of Firewise Programs**

**The first line of defense against a wildland fire is to create a Firewise landscape around your home and to construct your home to Firewise standards.** Fire breaks around the outskirts of the community and even within the community will not protect against all wildfires and resources are quickly stretched thin during a WUI fire. Only in conjunction with landowners will this plan succeed. Tok Forestry will continue to offer information and literature on defensible space and other Firewise tactics. Prevention personnel and firefighters will also be available to conduct home assessments.

#### **Objective #2: Develop a Hazard Matrix and Map that Prioritizes Areas for Hazard Fuel Reduction**

Forestry personnel will map the hazardous fuels from the ground and by using GIS and satellite imagery. With this map, a plan can be developed that will allow Forestry personnel to prioritize areas for hazard fuel reduction. Since public safety is of the highest concern, the matrix will prioritize removal of hazardous fuels from areas that most affect life safety, such as areas that might be used for emergency shelters, agencies that might be involved in the firefighting or evacuation effort, communication facilities, and critical ingress/egress roads. The next highest priorities will be areas that have large continuous stands of hazard fuels that would be difficult to access by firefighters. Firefighter access is critical to Initial Attack efforts that are designed to contain wildfires before they reach a size that makes them much more dangerous and expensive. The areas where these large stands of hazard fuels border the community will also be identified as areas that need to be treated to give firefighters a chance to stop a fire from entering the outskirts of town. The fuel reduction plan will allow for removal of hazard fuel in the most cost effective way and provide for public and firefighter safety. The map and matrix will be updated to show progress and to allow for flexibility within the plan.

#### **Objective #3: Reduce Hazardous Fuels within the Community**

Hazardous fuel reduction will provide the greatest benefit to fire suppression efforts in the event of a wildland fire threatening the community. Initial projects will consist of removing spruce trees and creating a predominately willow and aspen forest within the target area.

Initial steps have been taken by Tok Forestry and the Tetlin National Wildlife Refuge to reduce the extent of hazardous spruce fuels along the north side of Red Fox Drive on the north edge of Tok. Several different methods for removing the spruce trees were used. In some areas hand thinning was used to remove most small trees and ladder fuels (lower branches of larger spruce). Large spruce and aspen were left 10-30 feet apart to create a healthy shaded fuel break that will not sustain a crown fire. In other areas a feller buncher and other equipment were used to create a shaded fuel break. Unfortunately thick wild grasses became established between the trees and could present a flash fuel in early spring before greenup. Current studies show that a tree spacing of less than 10 feet will provide more shade, lessening the amount of grasses that

grow and providing for healthier moss and trees. A tree spacing of less than 10 feet however, cannot be relied upon to stop a crown fire.

Stand conversion using heavy equipment to remove all trees has also been used. Removing all trees allows more sunlight to reach and warm the ground. Removing all aspen trees promotes vigorous root suckering which will result in a thick stand of young aspen saplings. Of all the methods tried, stand conversion using heavy equipment is becoming the preferred method due to its relatively low cost and effectiveness.

This plan proposes stand conversion on the outskirts of Tok and within the community itself where land status allows, and shaded fuel breaks within the community where stand conversion is impractical due to land status or other considerations. This fuel reduction will take place primarily on state lands, utilizing easements and right of ways and in some cases removing fuel from large parts of sections. Removing fuel from section lines will also provide access to firefighters responding to fires in areas that were previously inaccessible. Forestry will also utilize its timber sale program to help in the removal of mature timber having commercial value.

Another method being planned is issuing wood permits for 1-10 acre lots for removal of standing green and dead spruce in hazard fuel areas. This method allows forestry to remove hazardous fuels in a cost effective manner while allowing members of the community to obtain firewood and participate in fuel reduction.

#### **Objective #4: Develop an Evacuation Plan**

A revised evacuation plan is needed along with primary evacuation routes identified and improved to provide the public with a safe means to escape a wildfire. A communication system to allow for better and timelier notification in the event of an emergency is also needed. Emergency shelters need to be identified and approved, and the plan exercised with cooperating agencies on an annual basis to ensure its effectiveness.

Tok does not have a local police force, relying instead on the State Troopers for law enforcement. This limits law enforcement capabilities in regards to emergency evacuation.

#### **Objective # 5: Improve Firefighter Effectiveness Through Use of Technology and Increased Training**

Increasing the use of satellite imagery and GIS data to provide the firefighter with better maps and data will enable them to improve their response time and success rate on Initial Attack fires while greatly increasing the effectiveness of the firefighters during large fires. Increasing the emphasis on training for local EFF will also enhance the ability of Forestry to quickly suppress fires before they become large fires that can threaten many homes. Working with cooperating agencies to utilize this data and exercising these skills on a regular basis will help to minimize the confusion inevitably created during WUI fires.

#### **Objective #6: Build the CWPP to be Sustainable**

It is in the best interest of the community of Tok to make the CWPP a sustainable plan. It is hoped that this can be done through increased use of contractors and members of the public to remove fuels and the use of those hazard fuels as energy or wood products. The CWPP will look to explore opportunities to use the wood and slash from the thinning projects for renewable energy, this should allow the project to be self sufficient while providing employment, inexpensive energy and improved wildlife habitat in the area.

# Hazard Fuel Reduction Plan

During the fall and winter of 2007, local EFF, Forestry and TNWR firefighters burned slash piles from the fuel reduction projects north of Red Fox. The next project will be reducing the amount of hazard fuels on Tok School property and planting fire resistant vegetation in its place. The property that borders the road into the school will also be treated before September of 2008. More hazard fuels will also be removed from Red Fox by September of 2008. This project will extend the current treated area westward past Mackenzie Road.

Forestry is working towards obtaining permits to continue hazard fuel reduction projects north of Red Fox and on the south and east side of Eagle Subdivision. Widening easements on primary roads (roads that connect to highways) and firewise landscaping on developed properties will be a continuing priority for local fire protection agencies.

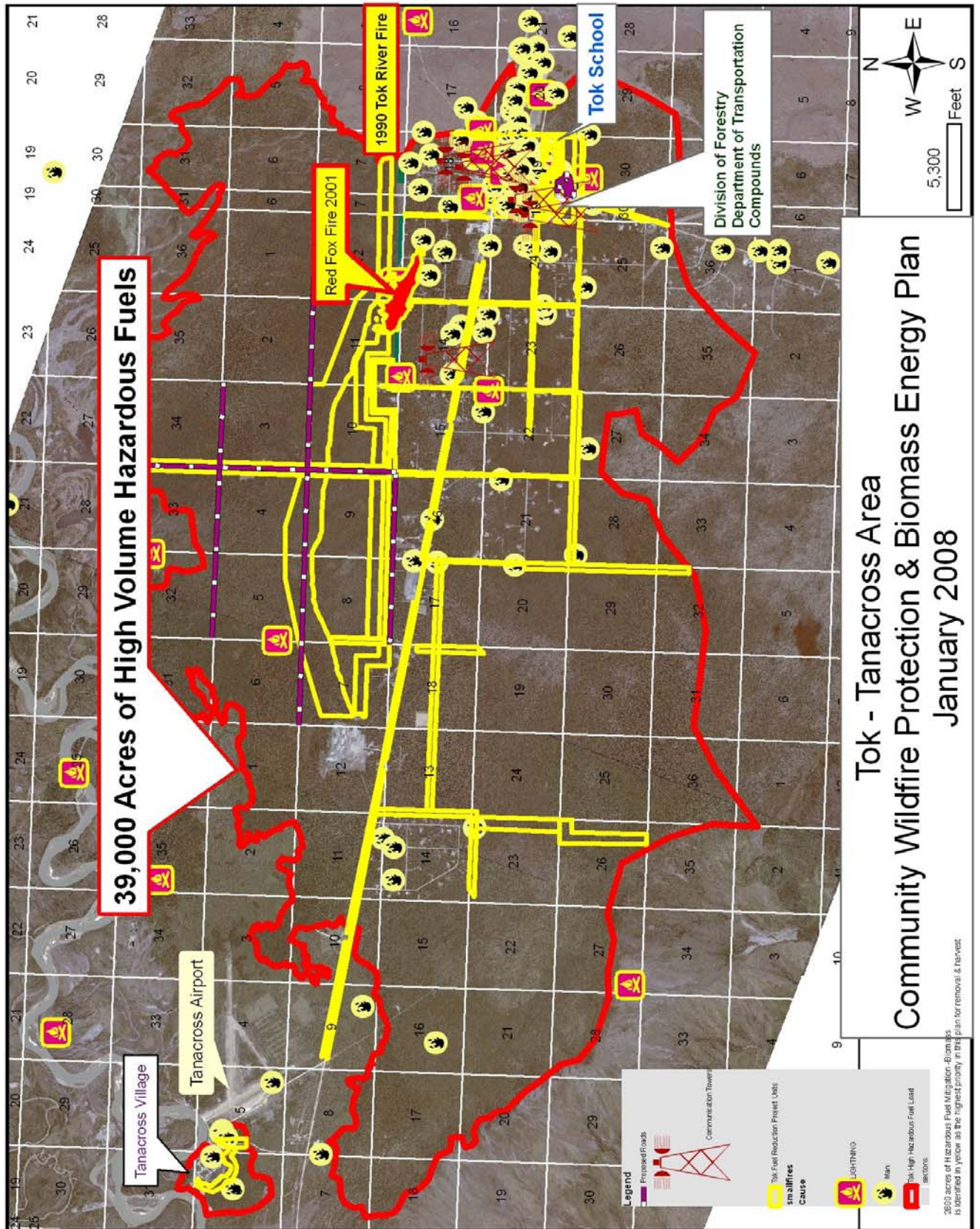
## A. Specific hazardous fuels reduction projects:

- Remove hazardous fuels around the Tok School, DOT, DNR, and Tok Volunteer Fire Department ---**145 acres**
- Remove or thin hazardous fuels adjacent to the Alaska Highway West 9 miles to Tanacross Airstrip – **54 acres**
- Remove hazardous fuels adjacent to critical ingress egress roads where possible, approximately 10 miles – **60 acres**
- Construct **4.5 mile** extension of Fireweed road South To Eagle Trail with a 660' hazardous fuel break -- **360 acres**
- Construct a **3 mile** extension of Borealis Road, West to Fireweed Road with a 660' hazardous fuel break – **240 acres**
- Improve Fales Road, North of Schiovulli Road **.5 Miles** North to Alaska Highway and remove hazardous fuels 100' on West side – **6 acres**
- Remove hazardous fuels West of Fales Road for three miles – **240 acres**
- Construct a **3 mile** extension of Red Fox to the West with a 660' hazardous fuels break – **240 acres**
- Extend Mackenzie Trail to the North 4 miles to the Tanana River crossing with a 660' hazardous fuel break – **320 acres**
- Construct a fire lookout road and facility on top of Seven Mile Curve hills – **3 miles**
- Remove hazardous fuels from, and make Firewise, 3 Tok area State Parks Campgrounds – **60 acres**
- Improve power line easements – **280 acres**

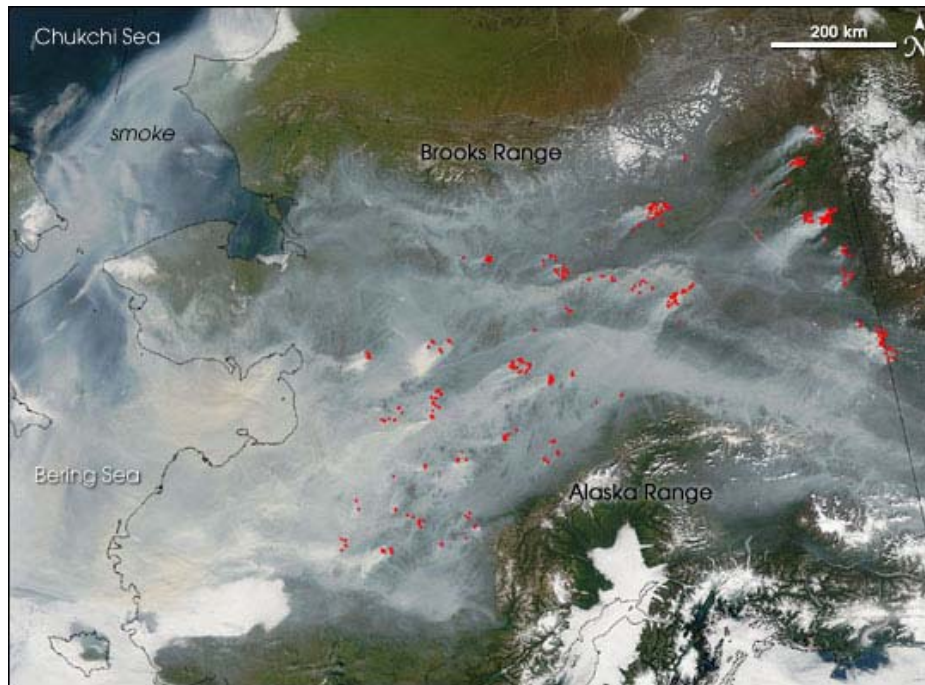
## B. Equipment, tools, materials and personnel required to implement the Tok CWPP.

- Full time Prevention Technician for DNR Tok Area Forestry.
- Community tree chipper and trailer.
- Dozer for the Tok Area Forestry to be used for Initial Attack, hazardous fuel reduction projects, fire breaks, forest roads and trails maintenance forest regeneration and wildlife enhancement projects.
- 10 ton off road rubber track crawler with water tank for initial attack.
- Two community Water Warden Wagons
- Compressed Air Foam System (CAFS) for urban interface firefighting
- Two permanent Initial Attack helicopter dip ponds
- A seasonal fuel reduction crew that can double as a firefighting crew.









Smoke Over Alaska- August 14, 2005 – Earth Observatory

## X. Summary

The community of Tok is in a difficult situation in regards to wildfire. It has no significant topographical features such as hills to hinder fire suppression efforts, nor does it have a nearby body of water to be used as an effective resource by firefighters. **It does have a continuous hazardous fuel load that encompasses nearly the entire town and areas immediately surrounding it.** This situation is conducive to a catastrophic wildfire that could threaten lives and property, possibly costing millions of dollars in damage. Residents of Tok are no strangers to wildfire, in fact many have been involved in firefighting efforts in some form or another, either by providing support, being employed as a firefighter, or, in some cases, actively fighting fire in their yards alongside firefighters. Lightning strikes are frequent during the summer months and human caused fires typically occur during times when fire indices are at their highest, a good example of this is trees being blown into power lines on windy days. It is therefore widely recognized by the citizens of this community that given the right conditions, a destructive wildfire could occur that would quickly overwhelm firefighting capabilities. In light of this, the surest way to prepare for a wildfire of this magnitude is through fire prevention. Congress also recognizes this and has taken steps to correct the situation by enacting the Healthy Forests Restoration Act which directs communities at risk to develop a plan to address this issue. This fuel loading that has developed in Tok is neither healthy nor desirable, and the primary goal of this initiative is to reduce the fire danger to the community.

Fuel reduction is by far the most effective way to protect Tok from a large scale destructive wildfire and return our forests to a healthier, more natural state. However, fuel reduction on the outskirts of Tok will not in itself solve the problem. A significant problem is the amount of fuel within the community itself. Neighborhoods with heavily forested yards, undeveloped lots between residences, long narrow roads choked with fuel on both sides and driveways in similar condition are contributing to this hazardous situation. It is the intent of this plan to reduce fuel from inside the community, working outwards. A higher priority will be given to removing fuel around essential infrastructure such as communication towers, power lines, primary evacuation routes and centers, and around agencies responsible for conducting or assisting in firefighting efforts. While it is true that fuel reduction on the outskirts of town is important and necessary, reducing fuel on private property within the community is of greater importance; *therefore it is imperative that members of the community become involved.* The most effective way for landowners to become involved is to incorporate Firewise measures into their home construction and landscaping; this includes fire resistant construction, improved ingress and egress, and fire resistant landscaping.

It is also the intent of Forestry to make this Community Wildfire Protection Plan sustainable in order to become independent of outside financial assistance, and to further community involvement. It is hoped that this can be accomplished by using the wood products acquired during hazard fuel thinning or removal, to heat homes and buildings or to provide energy.

This CWPP could also be used during other emergencies such as earthquakes, especially the evacuation and house locator sections of the plan.

Tok Forestry, with the assistance of Tetlin National Wildlife Refuge has begun implementation of this plan north of Red Fox Drive. This is just the beginning; The Red Fox project will be expanded and improved. More fuel reduction will occur within the community of Tok, much of it taking place on state land or easements bordering state land, but to be successful, many landowners will be asked to allow hazard fuel removal or thinning on easements that border their land. It is hoped that through interagency cooperation and public involvement, Tok can become a safer and more firewise community.