Forest Treatment

Fire Science

Homeowner Assistance

Neighborhood Forest Treatment

Danger Tree Removal

Brush Fire Case Studies

Fire Science

Anchorage Fire Exposure Model

The Anchorage Fire Exposure Model (AFEM), created by Geographic Resource Solutions (GRS), calculates the community's exposure to wildland fire through an objective assessment of four key variables. From this model, AFD plans neighborhood forest treatment projects and communicates with the residents about the potential fire behavior in a community council area.

Through the development of the AFEM, AFD has located the wildfire hazards in the wildland-urban interface (WUI), identified the values at risk, and determined and prioritized hazard fuel reduction projects. Model results are based on 30 x 30 meter pixels, represented by the resolution of the satellite imagery used to develop the base layer. Exposure is the relative ranking of a location's exposure to the impact of wildfire. It uses the relative weights of the variables around it to determine the pixel's susceptibility to impact from fire, not necessarily within the pixel itself. The exposure is based on the cumulative effect of four components (GRS 2007):

- ***Hazard***, the potential to burn, is based on the structure of forest fuels (horizontal-vertical arrangement) combined with slope and aspect to yield flame length and rate of spread. This is a measure of how much of the forest vegetation is available for combustion. The AFEM uses nationally accepted fuel models, Anderson and Scott & Burgan, to estimate expected fire behavior .
- ***Risk***, the potential for a fire to ignite, stems primarily from human caused fires: residential brush burning, recreational fires, fireworks and homeless person camps. Roads and trails are considered access for humans to ignite fires.
- ***Values***, the potential for loss of life and property, including homes, public facilities, businesses and utility infrastructure. This element does not include the monetary value associated with each structure or pixel, but rather evaluates its size and land use.
- ***Suppression***, AFD's response capability, estimates how quickly water can be applied to the fire with consideration for the distance from a fire station, accessibility and proximity to a water source. AFD catalogues all of its available water resources and reviews each site annually.

The AFEM is used in conjunction with two other software programs that calculate fire spread at different scales. FlamMap software was developed by Systems for Environmental Management in Missoula, Montana. It models fire behavior characteristics including spread rate, flame length, and crown fire activity by evaluating the fuel model, wind and other conditions at the pixel level. FarSite software applies to the designated landscape area, a combination of many pixels. It models the growth of a fire across the landscape file using wind and weather data, fuel types, aspect, and slope to interpret fire behavior outputs. The resulting maps show the extent of a fire over a specified time period. This type of output can be used to determine the best use of available fire suppression resources such as fire engines, helicopters, air tankers and fire crews.

In evaluating each component of the AFEM, AFD has selected areas where mitigation through forest treatment may limit the area's exposure to wildfire. For example, a publicly owned parcel that has high fuels hazard, high ignition risk and is close to a subdivision would be prioritized for fuels reduction. Next, AFD would work with the local community to write a suitable site prescription that addresses the forest fuels and forest health while carefully adjusting for stream and riparian zone protection and aesthetic values.

AFD uses the model's output maps to characterize a neighborhood's potential fire behavior. This is a useful tool in community council meetings where residents can see the colors indicating flame length and exposure to wildfire in their neighborhood.

Sample of the AFEM in Eagle River, east of the Briggs Bridge, demonstrates how wildfire exposure and flame length from the model are used to develop a forest treatment plan. The yellow dot represents the location of the 2008 Briggs Bridge Fire.

Flame length indicated by the colored squares overlaying the imagery help WMO staff locate the high hazard fuels for field reconnaissance. Red and orange colored pixels represent high flame lengths (8 – 50 feet) associated with the fuel types in this area.

Wildfire exposure on this map illustrates that the homes (value) are exposed to fire due to the suite of variables used in the model. Note the red and orange pixels to indicate high exposure.

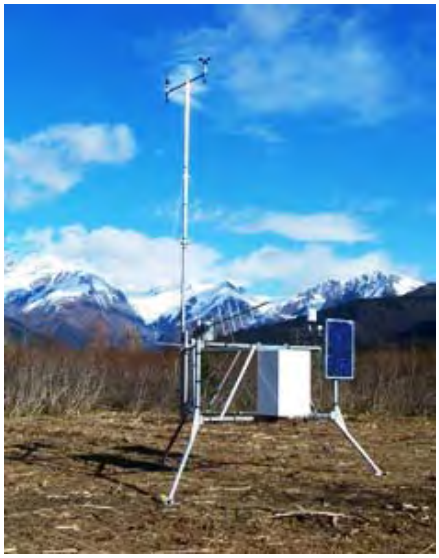
In the two maps above, note how the exposed pixels on the right correlate to the high flame length pixels on the left. They are often adjacent to one another which illustrates how flame length exposes an area to fire. High flame lengths in certain fuel types have a greater potential to spread to adjacent areas due to burning embers that help spread fire.

AFD treated the forested area on the publicly owned side of the property line to separate fuels on Chugach State Park from the subdivision. This project was done in 2005 and 2006. In 2008, a brush fire occurred at the river (see yellow dot above) which was quickly suppressed by AFD firefighters and Rotor 1.

Special considerations for many neighborhoods throughout the Municipality include the topography and water availability. Due to the east-west orientation of steep drainages on the Anchorage Hillside, for example, north-south road corridors are often discontinuous. This increases fire suppression response times. Water availability is severely limited because much of the WUI area supports well and septic tank systems with limited pressure instead of hydrants pressurized by the Municipal water system.

Remote Automated Weather Stations

The WMO maintains four weather stations called Remote Automated Weather Stations (RAWS). These RAWS are strategically placed throughout the 1,697.2 square miles that defines the wildland urban interface in the Municipality of Anchorage. The RAWS locations reflect the geographical areas and elevations of primary concern for wildland fire. The four RAWS owned by AFD are part of statewide interagency network of 175 stations that provide essential weather data for wildland fire management coordinated through the Alaska Interagency Coordination Center in Fairbanks.



Girdwood RAWS installed 2007

AFD RAWS Locations

- Rabbit Creek - located on the ridge north of Bear Valley
- Campbell Creek – located near the BLM Science Center
- Girdwood – located at the Girdwood Airport
- Eagle River – located at mile 8 of the Eagle River Road, central to the Eagle River drainage

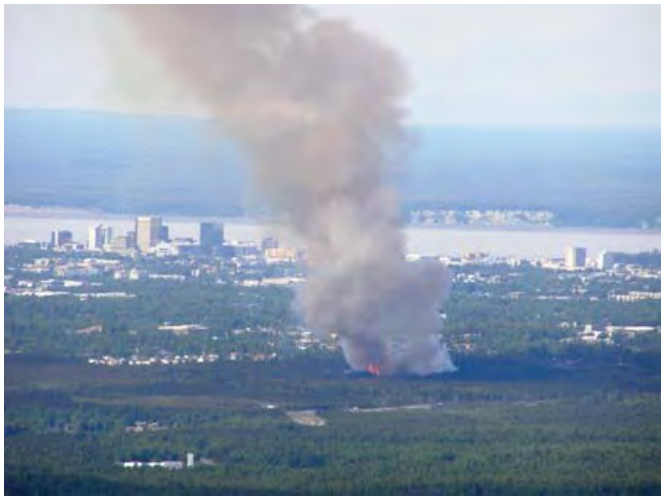
Additionally, WMO staff monitors two other interagency RAWS in the Municipality:

- Grazelka – Located on Ft. Richardson, north of the Anchorage Bowl
- Anchorage – Located at Ted Stevens International Airport, near Pt. Woronzof

During the period of March through October, the RAWS provide crucial weather data that is monitored and tracked by the WMO staff. Each station operates from solar power stored on a battery for hourly transmissions. Each RAWS collects a suite of weather data using sensors mounted to the structure in addition to converting that data to the Canadian Fire Weather Index (FWI) for local fire danger interpretation.

- Air temperature
- Relative humidity (%)
- Wind speed (mph)
- Precipitation (in)
- Peak wind speed
- Wind direction
- Peak wind direction

These stations are routinely checked through-out the year and the sensors are removed annually by the WMO staff and shipped back to the company to be recalibrated. The RAWS transmit hourly weather observations and a daily FWI to the web: http://fire.ak.blm.gov.



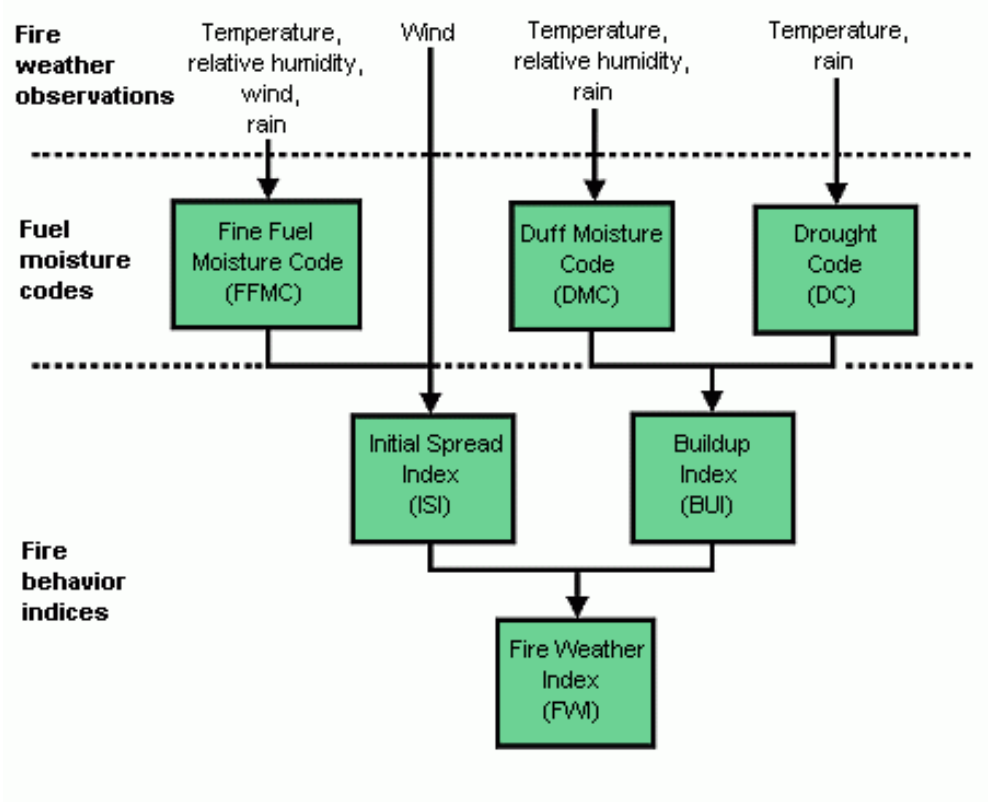
July 2, 2008 Piper Incident occurred after only two days of warm drying weather.

Strategic placement of RAWS throughout the Municipality of Anchorage provides the WMO staff the ability to monitor weather in specific geographic areas using the internet. Hourly weather observations are produced by each RAWS which are shared with fire department personnel and aid in determining suppression needs for staffing brush rigs, extended operating hours for Rotor 1, and guidance toward the burn hotline protocols. The WMO staff pays close attention to air temperatures, relative humidity, wind speed and wind direction which could have a significant effect on wildland fire rate of spread, if ignited.

Wildland Fire Fuel Analysis

The Canadian Fire Weather Index (FWI) is used throughout the entire state of Alaska. The FWI is produced daily at 2:00 pm by each RAWS based on consecutive daily observations of temperature, relative humidity, wind speed and 24 hour rainfall amounts. The six standard fire indices are:

- Fine Fuel Moisture Code (FFMC)
- Duff Moisture Code (DMC)
- Drought Code (DC)
- Initial Spread Index (ISI)
- Build Up Index (BUI)
- Fire Weather Index (FWI)



The six fire indices are components of two categories defined as:

- Fuel moisture codes – below ground fire severity
- Fire behavior indices – above ground fire effects

Each index produces a numerical rating that represents the relative potential wildland fire growth. Developed by interagency staff from the Alaska Fire Service and the Alaska Division of Forestry, the chart below provides the thresholds for relative fire danger in Alaska. It is based on empirical data from past wildland fires and associated weather observations.

AFD Wildland Fire Weather Indices

							Trigger Points	
	FFMC	DMC	DC	ISI	BUI	FWI	RH%	ATF
Extreme	> 90	> 90	> 400	> 10	> 90	> 28	> 10	> 80
Very High						24 - 28	11 - 20	70 - 79
High	87 - 90	81 - 90	351 - 400	6 - 10	81 - 90	14 - 23	21 -30	60 - 69
Moderate	81 - 86	71 - 80	151 - 350	3 - 5	71 - 80	4 - 13	31 - 40	50 - 59
Low	< 80	< 70	< 150	< 2	< 70	< 3	<50	< 49

2008 FWI Chart provided by AICC

Fuel Moisture Codes

Comprised of FFMC, DMC and DC, the fuel moisture codes represent moisture content at each of the three major soil layers in the forest floor between the surface and ~20 cm below ground. The thickness of each layer and its relative moisture content determine the severity of a wildland fire. The relative moisture related to the current weather provides fire managers with an indication of how quickly wildland fire will spread and how deep it will burn into the soil, thereby indicating the extinguishment challenges associated with fire that day.

Fine Fuel Moisture Code (FFMC)

- The litter layer represents cured fine fuels like spruce needles, leaf litter and dead grass
- ~1-2 cm deep
- Represents the ease of ignition and fuel flammability
- Sensitive to hourly changes in temperature, rainfall, relative humidity and wind speed

Duff Moisture Code (DMC)

- The duff layer represents loosely compacted, decomposing organic matter
- ~5-10 cm deep
- Represents resistance to control (initial attack)
- Sensitive to daily changes in temperature, rainfall and relative humidity

Drought Code (DC)

- This decomposing layer represents compacted organic matter and indicates seasonal drought
- ~10-20 cm deep
- Represents resistance to extinguishment (duration of suppression efforts)
- Sensitive to seasonal temperature and rainfall

Fire Behavior Indices

The fire behavior indices consist of ISI, BUI and FWI. These values reflect fire behavior that occurs at the surface, burning litter like dry needles, grass and leaves along with other vegetation in the understory. Temperature, wind, relative humidity, FFMC and the amount of 24-hour rain fall influence the fire behavior indices. An increase in the numerical rating correlates to increased danger associated with a potential wildland fire.

Caribou Hills 2007. This fire on the Kenai Peninsula was ignited by sparks from sharpening tools on a grinder.

Initial Spread Index (ISI)

- Defined by FFMC and wind
- Represents fire spread immediately after ignition without influence of variable fuel quantity
- Sensitive to wind speed and time of day

Build-Up Index (BUI)

- Defined by DMC and DC
- Represents total fuel available for combustion (in the absence of rain)

Fire Weather Index (FWI)

- Defined by ISI and BUI and influenced by the other indices
- Represents the intensity of a spreading fire

Seasonal Trends

As the season transitions through spring, summer and fall, wildland fire danger in the Municipality of Anchorage varies substantially. As soon as the snow melts and patches of dead grass and leaf litter start drying, the WMO staff assesses and monitors the wildland fire danger using the following parameters:

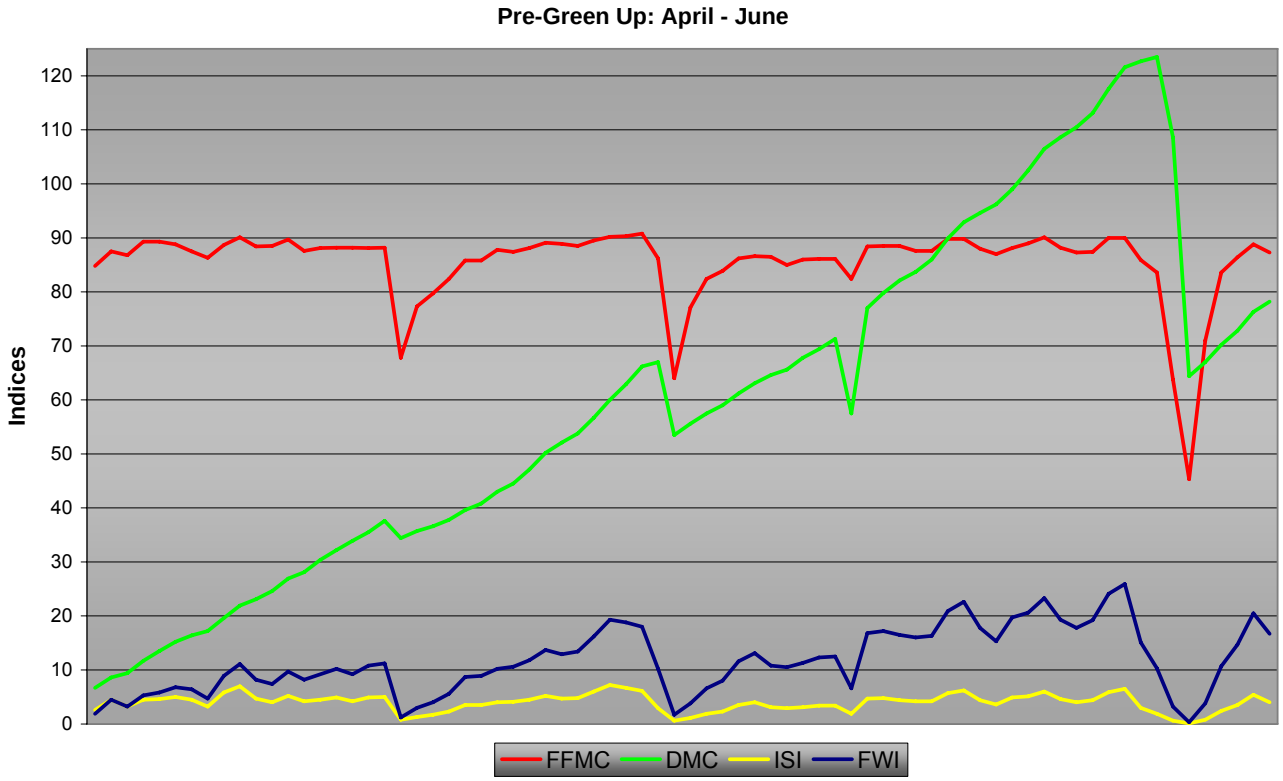
- Daily predicted weather forecast
  - temperature
  - wind speed
  - wind direction
  - relative humidity
  - last recorded rainfall
  - atmospheric air stability (high or low pressure)
- Previous day's hourly weather fluctuations (from RAWS)
- All six Fire Weather Indices

Weather trends and the Fire Weather Indices provide the WMO staff intelligence towards seasonal changes which affect the wildland fire danger. During these seasonal changes, the WMO staff evaluates the indices based on the green up phase of the vegetation: pre-green up and post-green up.

In the spring and early summer *before* the trees and shrubs have produced new leaves and annual grasses have greened up, pre-green up fires often demonstrate rapid consumption of surface fuel and high rates of spread. The following variables are most influential during this time:

- Daily predicted weather forecast
  - maximum air temperature
  - maximum wind speed and direction
  - minimum relative humidity

- Canadian Fire Weather Index
  - Fine Fuel Moisture Code (FFMC)
  - Duff Moisture Code (DMC)
  - Initial Spread Index (ISI)
  - Fire Weather Index (FWI)



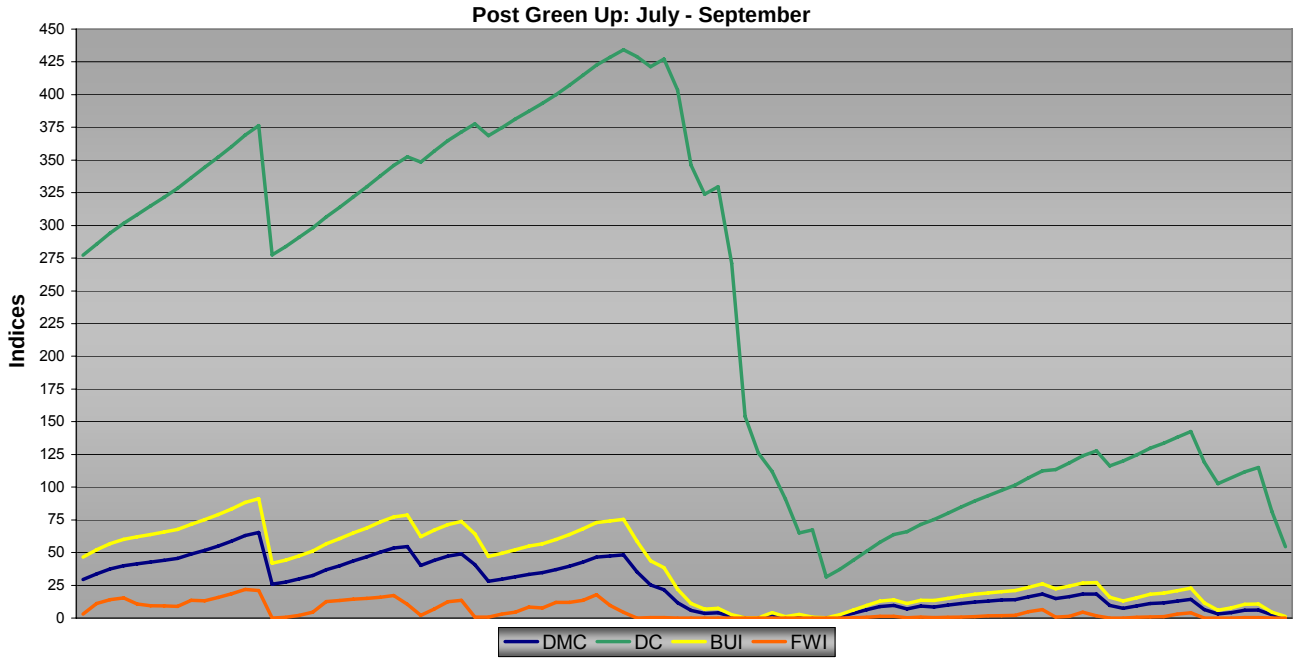
This pre-green up graph illustrates how the Fine Fuel Moisture Code (FFMC) red line, Duff Moisture Code (DMC) green line, Initial Spread Index (ISI) yellow line and Fire Weather Index (FWI) purple line fluctuate during the spring months April to June. Each index has a numerical value that reflects its relative danger rating for wildland fire behavior which correlates to the Anchorage specific chart delineating low, moderate, high, very high and extreme classifications. The four dips in all four index lines represent rain events that decrease fire danger. FFMC is the most sensitive to moisture and drying, literally able to increase to very high levels within hours of a change in humidity. The DMC value continues to build throughout the early season indicating the increased depth of drying in the soil and a correlating increase in burn severity. The next two indices have different scales: an ISI >6 is considered high while FWI >14 is considered high. Although wildland fire danger is assessed daily, this pre-green up chart demonstrates high seasonal fire danger.

In the summer and fall, after leaves have budded out and new grass has grown in, the post-green up guides are implemented. This is a gradual transition starting at lower elevations and progressing higher up the slopes as warm weather persists. Tree canopy impacts the seasonal change in fire intensity due to shading which helps retain moisture in the soil. Un-shaded areas may experience higher severity fires, burning deeper into the soil. The set of variables that influence fire behavior during this time of year is slightly modified from pre-green up:

- Daily predicted weather forecast
  - maximum air temperature
  - wind speed and direction
  - minimum relative humidity
  - last day of recorded rain & amount
  - atmospheric air stability

- Canadian Fire Weather Index
  - Duff Moisture Code (DMC)
  - Drought Code (DC)
  - Build Up Index (BUI)
  - Fire Weather Index (FWI)

The post-green up graph illustrates how the Duff Moisture Code (DMC) dark blue line, Drought Code (DC) teal line, Build-Up Index (BUI) yellow line, and Fire Weather Index (FWI) orange line vary during the months July through September. Again, the dips in this graph represent rain events where fire danger was initially reduced. The difference between the two graphs is the increased time it takes for the indices in post-green up to recover compared to the rapid recovery in the pre-green up season. This is directly related to the sensitivity of the respective variables to drying from temperature, relative humidity and wind. Compare the values below to the high danger values for the Anchorage area: DMC ≥81, DC ≥351, BUI ≥81 and FWI ≥14. This chart illustrates moderate fire danger in the post-green up season with periods of high fire danger.



Monitoring the Fire Weather Indices and daily weather observations supports the fire suppression response that AFD can provide to brush fires. During high fire danger, AFD increases brush rig staffing and may extend the availability of Rotor 1 to improve response capability to limit the spread of fires.

On May 20, 2008, a brush fire burned ½ acre along Eagle River near the Briggs Bridge. Less than three months later, as shown here on August 7, 2008, the burn area has filled in completely with Calamagrostis spp. *grass and other shrubs. Next spring, this site will have the potential to burn again because of the dry cured grass available for consumption during pre-green up.*

The fuels that contribute to the Fire Weather Indices represent a portion of the fuel complex that is monitored by the WMO staff for treatment and maintenance of forested sites exposing life and property to wildland fire. In addition to the fine fuels of the forest floor and deeper layers of soil that contribute to daily and seasonal fire danger, field plots are measured annually to evaluate the horizontal and vertical structure of the entire fuel complex.

Measuring the forest stand structure includes evaluating the fuel available for consumption (available fuel), total amount of fuel on an area (fuel loading), in addition to the health of the forest (tree mortality and regeneration) and the shading provided by the canopy (influencing soil moisture and the growth of *Calamagrostis spp.* grass).

Transects of downed wood analyze four sizes of woody material that impact fire's rate of spread and intensity. Over time, these transects reflect fuel loading pertinent to the spruce bark beetle epidemic and the accumulation of woody debris on the forest floor from these dead trees. Annually, this measurement indicates the available fuel which will burn during the passage of a flaming front under specific burning conditions. Here, the measurements are used to correlate the FWI to fuels for predicting potential fire behavior from weather conditions throughout the MOA. Surface fuels measured for this analysis are categorized into 1, 10, 100 and 1,000 hour fuels that correlate to the diameter of the material: ≤ 0.25 in., 0.26 – 1.0 in., 1.1 – 3.0 in., and > 3.0 in., respectively. Small diameter fuels impact the initial ignition potential of a fire. Larger fuels, once ignited, burn longer to create a more intense fire that further challenges fire suppression response.

Spruce bark beetle killed trees have little foliage to shade the forest understory. This photo shows how Calamagrostis spp. *grass has taken over the forest floor where spruce have been killed by the bark beetle near Southport. A fire burned through this stand on May 17, 2008. The grass out-competes tree seedlings in some areas thereby changing the cover type from closed forest to open savannah. This trend is common on the Kenai Peninsula and in Anchorage near Southport and Goldenview.*

Tree regeneration in treated and untreated sites indicates the vitality of the forest. In most stands around the municipality, tree seedlings are present in high numbers. This translates to healthy residual trees with vigorous seed crops every few years. During the inventory, dead standing trees are also tallied and marked whether they have been attacked by spruce bark beetles.

Taken in Bear Valley in winter 2007, this photo shows how the spruce seedlings are growing well in a treated site intended for no spruce. This is the fire break along Height's Hill Road that was cleared of all trees and shrubs in 2002 to provide for safe egress of residents during a wildland fire event.

Shading of the forest floor impacts several variables pertinent to fire behavior. Where the forest canopy is contiguous, moisture retention in the understory reduces ignition potential and surface fire spread. Shading also limits the growth potential of *Calamagrostis spp.* grass. Both in treated areas and where the spruce bark beetle has killed the mature trees, forest openings expose the forest floor to drying and grass growth resulting in increased fire behavior. Natural openings in forested stands host vegetation that has demonstrated high fire spread and intensity as a component of the boreal forest. Mosses, lichens and Labrador tea common to open black spruce stands are known to support surface fire spread that often climbs into the canopy of this forest cover type.

Caribou moss (lichen), kinnikinnick and Labrador tea cover the ground in this black spruce stand in Eagle River.

Data on forest canopy closure combined with fuel availability improves forest treatment site prescriptions to meet fire mitigation objectives. As the WMO staff monitor treatment sites and employ new techniques, the long term results are continually improved for both forest health and community safety. Local treatment results are shared with the interagency research community around the state. Local site prescriptions are also adopted from lessons learned from agency partners in Alaska and the Lower 48.

Mechanical treatment of beetle killed spruce in Bear Valley without planting the site to fescue and bluegrass resulted in dense Calamagrostis spp. *grass growing throughout the site. Whether the site was treated or not,* Calamagrostis spp. *grass would still be the dominant understory species due to increased sunlight to the ground.*

The WMO uses the State Division of Forestry Student Intern Program to conduct a portion of the inventory plots each summer. This crew works around the state on various forest projects for borough, state and federal agencies. These technicians are graduates of the Natural Resources Program at the King Career Center, taught by Mike Woods. The interns typically work for AFD for two weeks taking inventory on permanent plots in addition to transects designed to monitor fuel loading.

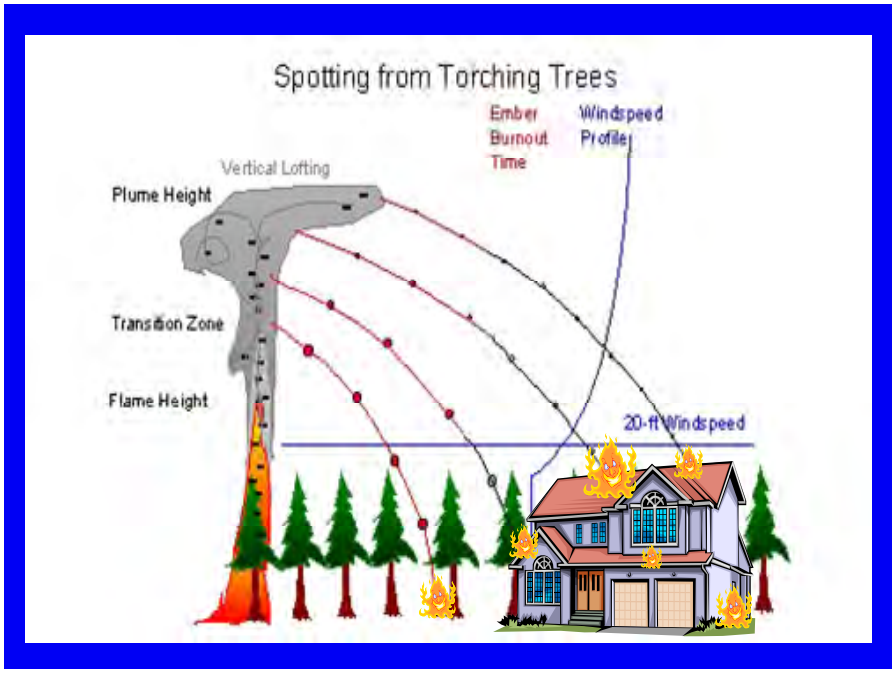
AFD forester Sue Rodman trains Division of Forestry interns how to take forest stand structure inventory. Bird 2007.

Homeowner Assistance

Firewise Home Assessments

Homeowners are their own best and first defense to protect their home from wildland fire. AFD promotes homeowner responsibility and self reliance in preparing for wildland fires and other emergencies. Firewise homes and neighborhoods can survive a wildland fire without having an associated residential disaster.

Firewise home assessments are provided by the AFD Wildfire Mitigation Office for residents of Anchorage, Eagle River & Chugiak, and the Turnagain Arm communities living in neighborhoods exposed to wildfires. These assessments are free to homeowners upon request. AFD WMO staff provides an on-site visit to discuss specific ways to reduce the potential of a home ignition through vegetation management and property maintenance. In this case, Firewise applies to the “home ignition zone,” the 100 – 300 foot radius around the home that influences fire spread. Numerous case studies across the country demonstrate how the vegetation and other combustible materials within the home ignition zone, including the construction materials of the home, affect the home’s survivability during a wildland fire. Furthermore, the homeowner has control over these elements, at least the elements within their property lines. This correlates to each homeowner being responsible for their contribution to a Firewise neighborhood. In the case where a residential, permitted fire burns out of control and ignites a home, that structure fire now becomes an ignition source for other structure fires from both radiant heat and burning embers landing on adjacent homes. This example illustrates how a brush fire can lead to a residential disaster.



During a Firewise home assessment, residents are schooled on how to prepare the home ignition zone. Many of the tasks can be done in a few days or even hours. As a supplement to the on-site discussion, residents can use the checklist provided by the WMO to prepare and maintain their Firewise landscape. An important part of creating a Firewise home and landscape is to start at the front door and work out toward the borders of the property. Too

often, residents are distracted by one or two dead trees on their land, thinking that the fire spread to the home would be solely due to this one factor. Often people forget to remove their firewood from the deck in spring or to clean out the grass and tree needles from under decks and exterior stairs.

Anchorage Fire Department - Wildfire Mitigation Office
907.267.4980
www.muni.org/fire

Firewise Self Assessment

Within 10 feet of structure
- ❑ Remove all conifers and dry or dead vegetation
- ❑ Edge the building with small plants, flowers or gravel

From 10-30 feet of structure
- ❑ Thin or clump conifer trees to ~15 feet between extending branches
- ❑ Prune limbs of mature conifers to 8 feet or less
- ❑ Remove shrubs beneath trees
- ❑ Remove all dry or dead vegetation

From 30 - 100 feet of structure (increase distance if slope is >30%)
- ❑ Thin conifers to 10 -15 feet between extending branches.
- ❑ Thin black spruce in clusters <10 feet in diameter with 15 feet between clusters
- ❑ Prune limbs of remaining conifers to 8 feet or less
- ❑ Remove shrubs beneath trees
- ❑ Remove all dry or dead vegetation

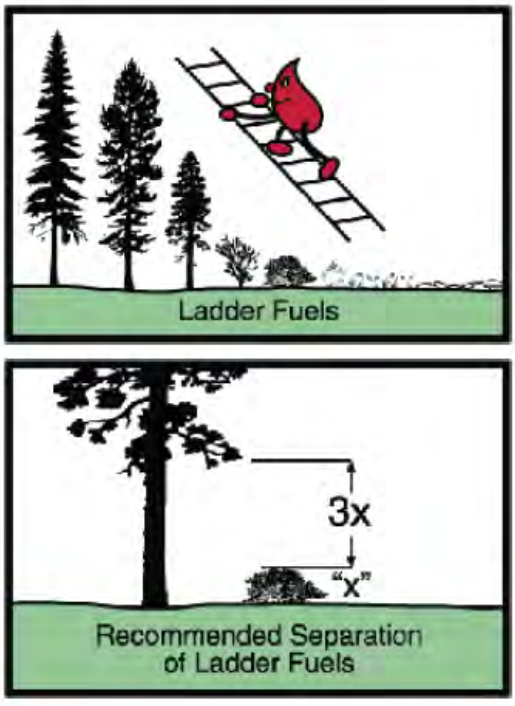
A portion of the WMOs Firewise Assessment is shown here. AFD modified national and State Firewise principles for the Municipality.

In case studies of wildland fires burning homes, it was found that given a non-flammable roof, 95% of the homes in a neighborhood survived with 30 to 60 feet of clearance (1961 Bel Air Brentwood Fire). The roofing material is of critical importance. Cedar shake roofs are similar to kindling considering the exposed surface area of a roof covering a home at the wildland urban interface. While the replacement cost of the roof is high, equally high is the potential to lose the structure to fire if burning embers land on it. Many other options for non-combustible roofing are available.

Cost Share Tree Removal

During the home assessment, WMO staff evaluates the location of trees, particularly spruce and hemlock trees which are part of the boreal forest fuel complex. If the WMO recommends the removal of dead, beetle killed spruce and / or densely growing conifer trees, AFD provides financial assistance. This cost sharing program reimburses homeowners for 70% of the cost of tree removal, not to exceed $2000 per acre.

Candidates for removal include conifer trees that are standing within 10 to 30 feet of the house, especially if branches are overhanging onto the roof or deck. However, during the home assessment, the trained WMO staff will help the homeowner through this potentially difficult decision. Not all conifers must be removed. If the tree is given adequate defensible space, lower limbs are removed and a non-combustible perimeter surrounds the home, removal of the tree may not be necessary. Fire follows the laws of physics: fire



needs fuel to support combustion. If the path of fuel is interrupted, fire cannot continue.

Connectivity of fuel is shown here: note the wood walkway, firewood stacked under the stairs, and wood T1-11 siding. Embers from a brush fire could land in the firewood, igniting the pile and thereby igniting the home. The stairs act as a ceiling to the fire by trapping the heat, allowing the fire to increase in intensity.

Grasses must be mowed and raked away from wood exteriors and decking. In spring, before green up, dry bluejoint reedgrass is the primary fire carrier in Southcentral Alaska.

The stand of black spruce shown adjacent to this home is less than 30 feet away. Even at that distance, the resident burning time and fire intensity is likely sufficient to ignite the siding through radiant heat ignition. Wind blowing toward the house from the flames would increase the potential for ignition.

	2002	2003	2004	2005
Firewise Home Assessments	286	200	266	345
Number of parcels treated		16	82	189
Acres treated		30.24	102.29	215.58
Total cost of tree work		$16,617.50	$114,066.08	$726,463.85
Reimbursements issued by AFD		$12,183.50	$79,846.26	$630,125.98

	2006	2007	2008	Total
Firewise Home Assessments	169	97	42	1405
Number of parcels treated	87	52	9	435
Acres treated	89.72	81.57	13.25	532.65
Total cost of tree work	$265,654.60	$118,371.25	$22,880.00	$1,264,053.28
Reimbursements issued by AFD	$110,928.90	$75,083.88	$15,719.50	$923,888.02

The number of home assessments conducted per year has varied from more than 300 in 2005 to less than 100 for 2007. Trends in demand are heavily influenced by the weather, with more assessments requested during hot, dry periods. Also, when there are news-making wildland fires in Alaska, whether in Anchorage or around the state, demand for assessments increases.

Firewise education and home assessments are the most effective ways to protect life and property as homeowners take responsibility for preparing their homes and families while learning how to respond to brush fires. The Wildfire Mitigation Office has hired summer staff in the past to support homeowner requests when AFD has promoted the program through planned newspaper and other media advertisements. While the vision for the wildfire program is to promote self reliance for residents and make components of the program sustainable through private enterprise or Municipal institution, Firewise home assessments and Firewise Communities/USA are fully supported by AFD with wildfire funds through localized promotion to neighborhoods exposed to wildland fire. WMO staff continue to facilitate resident participation through community council meetings.

Wood Lots & Brush Disposal

In 2001, the wood lot concept was first implemented through a partnership between AFD and the Anchorage Soil & Water Conservation District. Since then, wood lots have been available in Anchorage, Eagle River and Girdwood as locations where residents could dispose of their brush and woody material as part of creating their Firewise landscape.

Alaskans, self reliant people that represent the nature of the State, have demonstrated that self-serve wood lots are a successful method to facilitate Firewise around the home. Additionally, residents need a place to dispose of other brush such as alder.

Since 2001, various partnerships and contracts have support wood lots and brush disposal options for residents across the Municipality. Primarily funded by federal appropriations and grants, these operations have been scheduled for incorporation into government or private enterprise to accommodate the need and demand for biomass disposal related to wildfire prevention and any other land management or clearing.

Through the evolution of the wood lot program, the three primary geographical areas have found ways to utilize the material after it is ground or chipped. In Anchorage, the material was ground up and then screen to sort out similar sized material. A coloring machine then dyed the chips for landscaping applications.
The brush at the Anchorage Regional Landfill in Eagle River is also processed with a tub grinder. It is then incorporated into the landfill as cover for the daily deposits made there. This is a useful application and the grinding process reduces the volume that would otherwise take up valuable space at the landfill. In Girdwood, the chips are used locally as trail cover and dog kennel cover.

AFD will coordinate with local and municipal organizations to facilitate the incorporation of the area wood lots into long term operations that can be self sustainable. Kudos to homeowner associations that have supported brush disposal on their own. Several Hillside neighborhoods annually contract a tree service company to chip their material during a specified month; others rent large containers to collect the brush and pay for disposal through the association's dues. These examples demonstrate the self reliance of Alaskans and their understanding of getting the task accomplished.

The frontier of wood energy is opening for Alaska. In the future, we anticipate that technology for biomass utilization will be adaptable to our urban, suburban and bush communities. Pilot projects have been implemented around the state; results in the coming years will provide the needed baseline for expanding operations to use wood for heat and energy on a broader scale.

Neighborhood Forest Treatment

Shaded Fuel Breaks

Treating forested areas through thinning and pruning reduces the spread potential of fire while supporting the forest's resilience to climate change, diseases and insects. The WMO partners with Municipal, state and federal agencies to treat forested public lands adjacent to residential development that are prone to high fire spread. The Anchorage Fire Exposure Model provides an objective evaluation of the site's potential for fire spread, fire intensity and suppression response capability. The WMO staff conducts field reconnaissance to measure fuel loading and assess site characteristics to determine the appropriate site prescription for cutting, slash treatment and rehabilitation for the site. Review of the proposal is conducted by the partnering land manager and then forwarded to the respective community council and commissions.

Forest treatment projects are completed through long term contracts with the State of Alaska Division of Forestry and a private mechanized crew Fuels Reduction of Alaska. Professional firefighters from the State's Pioneer Peak Interagency Hotshot Crew and Forestry Technicians conduct tree removal and thinning. These crews have also conducted many burn operations to treat the slash in these projects. Most slash treatment in recent years has been completed through the mechanized "mowing" process. The decision to burn or mow is dependent upon the project location with respect to wetlands and population density. Other private crews have also been used in the past.

Treating forested lands within and around neighborhoods reduces an area's exposure to wildfire. There are two approaches to treating forested areas for wildfire mitigation: direct treatments and buffer treatments, both address hazardous fuels. Hazardous fuel refers to vegetation or forest type that is associated with high fire behavior potential it burns due to its structure. Forest stand structure is defined by species composition, species density, and the vertical and horizontal arrangement of fuels (or vegetation that is available to burn, dead and alive). High fire behavior means that a fuel type (forested or grass) has high potential rates of fire spread, high potential flame lengths (greater than four feet), severe intensity (burns hot and

is difficult to extinguish) and would likely start spot fires ahead of the advancing flame front due to burning embers being launched by the force (wind) of the fire's momentum.

Reducing the volume of hazardous fuel available to burn means that the forest stand structure and composition is altered, meeting three objectives:

1. Slow fire's rate of spread: giving time for firefighters to suppress the fire before it consumes life, property or natural resources.
2. Reduce the fire's intensity: the severity of the burn determines the impact to the site, such as soil erosion potential, invasion of the site by noxious invasive plants, and subsequent availability of nutrients in the soil for regeneration.
3. Keep the fire on the ground: separating fuels in the horizontal and vertical planes to limit the potential for crown fires and consequential expansion of the fire perimeter by spot fire ignitions that occur when fire brands are projected ahead of the fire.

Direct fire mitigation treatment impacts the fire behavior on the land being treated. Treating the home ignition zone around a structure is a prime example of direct fire mitigation. The intent is to limit the spread of fire in the area surrounding the structure to reduce the potential of that structure to ignite. Much of this work is done on the private parcel scale. Additionally, land surrounding schools and other infrastructure would also need direct treatment to protect these specific values from fire.

The land base with values exposed to wildfire needs to be protected or "mitigated for". In the Municipality of Anchorage, the study area for wildfire exposure is 345,309 acres. Approximately 17,088 acres within the study area have values at risk due to exposure to hazardous wildfire conditions. A location is considered exposed to fire if the AFEM's variables exceed certain thresholds. These thresholds consider fire behavior, ignition potential, suppression limitations and whether a structure is on the land.

Buffer fire mitigation treatment impacts the values beyond the treatment area, such as homes, watershed, or a fire station. Creating a buffer is done by constructing what is termed a shaded fuel break or fire break to slow the spread of fire. This treatment is done to protect areas exposed to fire, allow for safe egress of an area exposed to fire, reduce the ignition potential of an area, and to provide for increased fire suppression capability. By forming a barrier that slows or hinders the spread of fire into an area of values (homes), buffer treatments can

effectively mitigate for fuels and values encompassing an area much larger than the buffer treatment itself.

Examples of buffer fire mitigation treatments with multiple benefits are easily seen in Bear Valley. Jamie Avenue and Clark's Road are the egress routes for residents living in Bear Valley. It is important to note that all residents in Bear Valley are dependent on Clark's Road for egress. AFD partnered with Parks & Recreation to develop the shaded fuel breaks along Jamie Avenue and Clark's Road and the adjacent fire break on Height's Hill in Section 36. The forest cover type throughout Section 36 and most of the Bear Valley area has high potential fire behavior: long flame lengths, fast rates of spread and severe intensity. The fire mitigation projects along these roads substantiate all three objectives for forest treatment projects.

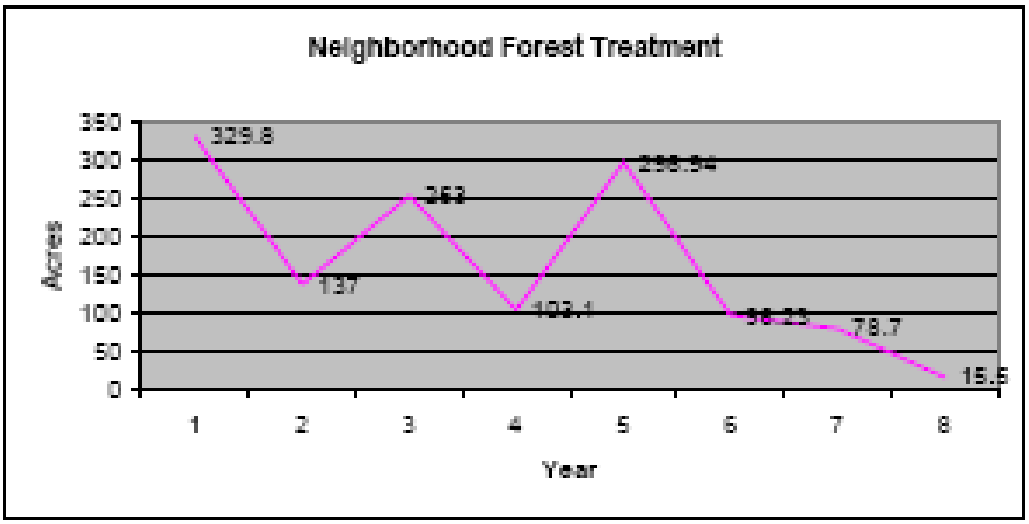
Forest and grass cover types that expose parcels to fire need treatment, either directly in the case of the home ignition zone, or indirectly to protect an area by slowing fire spread. Within the study area, there are 15,360 acres exposing values to fire. Many of these acres overlap with "exposed" acres (17,088). In order to effectively mitigate the exposing acres, approximately 11,327 acres are candidates for treatment. Of these, approximately 4,904 acres are candidates for buffer treatments and 6,423 acres for direct treatments. These treatments, notably the buffer treatments, effectively mitigate a greater number of exposed acres by limiting both the potential intensity and spread of wildfire.

Implementing treatments involves a prioritization of needs that are based on the AFEM results, land owner cooperation, and public involvement. In reviewing the candidate acres for buffer and direct treatments, the AFEM results are used in combination with field reconnaissance. Model results show the degree of exposure: low, moderate, high, very high and extreme.

Direct treatments usually involved private residential parcels which are accommodated through the Firewise assessment and cost share tree removal program. Buffer treatments are considered for very high and extreme, pending land owner management objectives, feasibility of the project, and the funding status of the wildfire program.

AFD has conducted forest treatment projects since 1998, when the department first received fire mitigation funds from the Federal Emergency Management Agency (FEMA). In 2001, the concerted efforts of AFD partnered with local, state and federal agencies resulted in additional funding to support a comprehensive wildland fire mitigation program in the Municipality of Anchorage. Forest treatment projects were again initiated in 2001, on a much larger scale, when the department hired two full time foresters to manage the program.

Large, critical projects were implemented first, resulting in the majority of the acres treated through the program being completed in the first five years. In subsequent years, the refinement of operations and advancement of the AFEM gave way to smaller, more site specific projects providing continued mitigation for public land with very high and extreme ratings for fire exposure.



Since 2005, funding for forest treatment projects have been partially supported through Forest Health Protection grants from the US Forest Service to mitigate the impacts of the spruce bark beetle epidemic on Anchorage area forests. This partnering of funds extends the work of wildfire mitigation and support forest health simultaneously.

For the duration of the program since 2001, AFD has implemented neighborhood forest treatment projects on 1,310 acres for $2,781,512. There is much variability in treatment across all of these acres due to stand density and applicable tree cutting and slash removal operations. The average cost per acre is $2,123.

Site Prescription

Each proposed forest treatment site is given a specific site prescription to manage fuels and forest health. The objectives for conducting a treatment direct how a treatment project is implemented. To attain the objectives, the structure of the forest is modified to separate fuels and provide the residual trees with space and resources to maintain their vigor. Depending on the site, the prescription may be adjusted to accommodate natural regeneration of trees or limit the growth potential for the native *Calamagrostis spp*. grass.

The general prescription for treating a forested area is to remove the dead, spruce bark beetle killed trees. This takes out a large fuel component that, left standing or on the ground, contributes to the total tons of fuel per acre that increases the severity of a fire. Dead spruce

trees that ultimately fall down in a “jack-straw” pattern burn like a giant bonfire. The heat from this fire is intense and usually it will produce very high flame lengths. For suppression, this fire cannot be fought by firefighters on the ground. It is not safe for them to be in the woods where the fire intensity is high and the escape routes are plugged with trees.

Trees are thinned to reduce the volume of live trees on the site. Many believe that the fire danger is based on the dead, beetle killed trees. However, the boreal forest is a volatile fuel type in its green, healthy state. The chemical composition in the needles combined with the structure of the trees and the associated plants in the understory provide for high fire behavior in terms of flame length and spread potential.

Thinning trees gives the residual trees more room to grow in addition to further separating the fuels. Residual trees are then pruned for two reasons: bark beetles prefer the habitat at the base of the tree where there are lower branches, and branches low on the tree act as ladders for fire to climb into the crown. Wildfire that spreads into the canopy of the forest spreads quickly and is very difficult to suppress.

All slash from the treatment site must be mulched or burned. This is a major component of the fuel that contributes to fire spread and intensity. Once trees are felled and limbed, the brush is piled for burning. This photo shows the Division of Forestry Pioneer Peak Interagency Hotshot Crew burning slash at Forsythe Park in 2007.

Grass fires are common throughout Southcentral Alaska. This fuel type supports flashy fires that travel quickly in spring, before green-up. This photo illustrates a grass fire during a prescribed burn on Ft. Richardson in 2007. The grasses often support flame lengths in excess of four feet. At this height, firefighters can no longer safely attack the flames. AFD plants Arctared red fescue and Alpine bluegrass on treated sites to reduce the growth of Calamagrostis spp. grass. These two alternate species green up faster in spring and do not form as dense of a mat over the course of years that would otherwise support hotter fires.

At the Hanshew Springhill project site, near Abbott Road and Lake Otis Parkway, the completed forest treatment resulted in an open mixed hardwood stand with spruce and birch trees widely spaced. The site was planted to fescue and bluegrass, shown growing in the understory of the forest. Fire behavior in this stand is expected to be low due to the wide spacing of trees, limited surface fuel and elimination of ladder fuels allowing fire into the tree crowns.

The Hanshew Springhill project was completed in 2007. It covered 35 acres surrounding the schools, adjacent to Ruth Arcand Park. Dense black spruce with few birch dominated the area. Portions of the project had a mix of mature white spruce and birch. Many of the spruce trees were killed by the spruce bark beetle.

The site was treated mechanically. Trees were felled by sawyers and slash was mowed by Fuels Reduction of Alaska. Mowing means that the slash was mulched on site and the resulting chips and woody debris covered the forest floor. This process truly reduces the surface fuel load because it includes the tree parts that were felled in addition to the shrubs that act as ladders for fire to climb into the tree crowns.

After the fuel treatment was completed, Division of Forestry firefighters planted spruce seedlings and Arctared red fescue (grass). The seedlings help the next successional forest stand become established while the fescue limits the invasion of Calamagrostis spp. grass. Calamagrostis, commonly known as bluejoint reedgrass, is the primary carrier of fire in Southcentral Alaska in pre-green up springtime. It is a native pioneer species, meaning that it inhabits a site after disturbance through fire or other event that removed the previous vegetation.

The photos below show the resulting "mulch" residual from the mowing process.

Fire behavior in this setting is limited by the fuels available to burn. This mulch has low potential to support fire due to its shape and moisture retention. WMO staff will continue to monitor these sites to track the progress of grass plantings for continued application in Anchorage and other parts of the State.

Many forested areas that AFD treats are impacted by the spruce bark beetle. This stand is typical: mature white spruce killed between 5-10 years ago, the openings in the forest allow for grasses, herbs and shrubs to flourish.

In wetlands and sites with limited access, the slash is burned in piles that are staffed by Division of Forestry firefighters. This project in Old Rabbit Creek Park in Anchorage shows how the slash piles burn the material completely, but the resulting understory is of a much different structure than when the slash is treated mechanically.

Slash pile burns are also planted to grass after treatment. The additional benefit of planting after treatment is to limit the available space for noxious invasive plants.

Forest Health Protection

Through the USDA Forest Service, AFD has received three grants to support forest health protection in three areas. These grants are awarded on the basis of need to respond to the damaging impacts of disease or insects in an effort to restore the health of a forest system. The spruce bark beetle population reached epidemic proportions in the mid 1990s throughout much of the Anchorage area. Recently, it has also had devastating effects on the communities of Bird and Indian.

Treating forested areas to mitigate the fire spread potential relative to the spruce bark beetle and the inherent forest stand characteristics of the boreal forest is intended to improve the forest health simultaneously. Removing dead beetle killed spruce opens up the canopy and the forest floor to allow for spruce and birch regeneration. Thinning dense stands of trees provides for the same result. Both operations yield a more vigorous forest with increased health of mature trees.

In partnering with the Forest Health Protection grant program (FHP), the operations of widland fire mitigation could be augmented to substantiate more acres treated. AFD has been awarded three grants that have been applied to both public and private lands. Federal appropriations for the existing wildfire program can be applied as the match to these grants. This program has truly expanded the capacity of the forest treatment component and increased the vigor of local forests.

The Rabbit Creek grant supported projects at Hanshew – Springhill schools, section 36 in Bear Valley, Old Rabbit Creek, South Anchorage High School, and hundreds of private acres across the South Anchorage Hillside. Under this grant, AFD treated 197 acres for the period September 2005 through September 2007. More acres were treated by AFD in support of these efforts, however. The match ratio for this grant was 75% AFD and 25% USFS. In this drainage, AFD treated 199 acres of public land where 90 were supported by FHP. AFD treated approximately 220 acres of private land where 107 were supported by the FHP program. AFD was awarded $100,000 for putting up a $300,000 match.

The Eagle River grant is a 50/50 match for $100,000. Projects are still in progress. AFD has been treated forested areas between subdivisions and Chugach State Park, where ignition potential by river users has caused several brush fires in the past including the Briggs Bridge fire in May 2008. Additionally, AFD is working with private residents to support forest health on private lands throughout Eagle River, South Fork and the Chugiak & Peter's Creek areas.

In Indian and Bird, AFD was awarded $100,000 for another 50/50 matching grant to manage the recovery of forests after the recent spruce bark beetle attack. Private land owners have actively sought out the program to give their land an opportunity to regenerate spruce and hemlock in forest openings. Additionally, the Division of Forestry and Chugach State Park have partnered on forest health & wildland fire mitigation projects surrounding both communities.

Maintaining the Effectiveness of Treated Sites

Treating forested stands throughout the Municipality to reduce fire's spread and intensity is a challenging and expensive process. Through partnerships and federal funding, AFD's Wildfire Mitigation Office has collaborated with agencies and community councils to implement effective forest management strategies that support neighborhood safety from wildland fire. While the initial treatment is labor intensive, subsequent maintenance treatments will cost less and are critical to sustaining a forest stand structure that limits fire behavior.

Calamagrostis spp. *grass has filled in the understory at the Hilltop fuel break, treated in 2002-2003.*

AFD started treating forested areas in 1998 and expanded the wildfire program in 2001 to address more acreage. While shaded fuel breaks are created to reduce the volume of conifers in an area, the healthy regeneration that grows immediately after treatment requires maintenance every 5-10 years to retain its effectiveness. Follow-up treatments are due on some sites now to thin out regenerating spruce and hemlock in addition to implementing AFDs grass conversion plan. Sites treated early in the program were not planted to the alternate species of fescue or bluegrass. Maintenance treatments scheduled to be tested in 2009 will compare small area burns with mechanical mowing. Both sample plots will be planted to grass after treatment. WMO staff will be addressing the first maintenance interval through continued collaboration with agency partners.

The photo above shows a treatment done in 2002. The resulting forest stand structure shown to the right is what AFD intends to maintain for the future. This healthy forest has vigorous tree growth and separation between fuels that limit fire spread.

2007 – 2008 Project Highlights

The Wildfire Mitigation Office partners with Municipal departments and Chugach State Park to mitigate wildland fire on public lands adjacent to neighborhoods throughout the Municipality. In the last two years, several major projects were completed while additional smaller acreages were treated as well.

All of the tree work and slash treatment is done by two crews: Alaska Division of Forestry firefighters and a private mechanized crew Fuels Reduction of Alaska. Applying both crews to a site results in effective forest treatment in a timely manner.

Having been severely affected by the spruce bark beetle, there was a substantial volume of dead trees both standing and downed throughout Forsythe Park. This photo was taken while the tree work was in progress on June 11, 2007.

In 2007, the entire 26 acres of Forsythe Park was treated to reduce the total volume of fuel while improving the forest health. This park is located near the intersection of Birch Road and O'Malley Road on the South Anchorage Hillside. Homes surround the park on two sides. O'Malley Elementary borders the east side of the park and a church lies to the north. Fire in this area would impact many residents and structures.

During the treatment, the Division of Forestry's Pioneer Peak Interagency Hotshot Crew felled dead trees, thinned densely growing trees and pruned the residual healthy trees. Slash piles near Campbell Creek were burned while the mechanized crew treated the sites away from the creek with the mower.

During the winter of 2007, Fuels Reduction of Alaska treated 35 acres around Hanshew Middle School and Springhill Elementary School. To the east, this project also included several acres of Ruth Arcand Equestrian Park. Treatment at this site limited the incidence of fire ignition by reducing the

Slash was burned in Forsythe Park. All piles are plumbed with charged forestry hose bringing water to the site and professional firefighters staff the operation. Each burn pile is completely extinguished at the end of each work day.

“cover” sought by children playing with fire and the homeless camps to the north of the schools. It also provided a buffer that would limit fire spread toward the schools. Forests in this area were a mix of dense black spruce stands and mixed hardwood where many of the spruce trees throughout were impacted by the spruce bark beetle.

Both projects, Forsythe Park and Hanshew Springhill, were planted to fescue and bluegrass after treatment. This limited the invasion of Calamagrostis spp. *grass into the site that would ultimately increase the fire spread potential in the treated area. Spruce seedlings were planted at Hanshew to support the next forest.*

Also in 2007, the WMO supported Municipal Parks & Recreation in two projects that addressed homeless people and fire ignitions. In Folker Park in the University area, WMO crews felled the dead, spruce bark beetle killed trees and chipped the slash. Parks cleared out brush and pruned the residual trees. Along the trails next to Goose Lake and continuing along Northern Lights Boulevard, Parks crews thinned black spruce and limbed the residual trees. WMO crews chipped the slash. These partnership projects make the most effective use of volunteers, contract crews and a combination of funds to reduce fire ignitions and fuels in local parks neighboring homes and facilities.

Division of Forestry Technicians and Fuels Reduction of Alaska worked on Chugach State Park lands in Indian to reduce the volume of fuel resultant of the spruce bark beetle epidemic that recently struck that valley. This effort was also a combination of funds. The Division of Forestry supported the Technicians through a Western States Fire Assistance grant while the WMO supported Fuels Reduction of Alaska through a Forest Health Protection grant. If a fire were started on park lands, it would likely impact the community of Indian. This same scenario holds true for Bird. Projects are planned to continue in both valleys in 2008 and 2009.

In 2008, the WMO partnered with Municipal Parks & Recreation to treat Muldoon Park between 32nd Avenue and Northern Lights Boulevard. Division of Forestry and Fuels Reduction of Alaska treated the southern perimeter of Muldoon Park covering 11 acres. Parks used a Forest Health Protection grant to treat portions of the park to the north with volunteers and students from the King Career Center's Natural Resources Program. Again, homeless person activity in the park combined with fuel loading from the spruce bark beetle epidemic justified treatment. Portions of this park are already experiencing the conversion to a savannah cover type where *Calamagrostis spp.* grass dominates the forest openings where spruce trees have fallen. Birch regeneration is prolific, but growth is stunted by moose browse which is a typical progression after any disturbance throughout the Anchorage area. This site was planted to fescue after treatment.

Muldoon Park before treatment in April 2008. This photo illustrates the density of Calamagrostis spp. *grass and birch regeneration in forest openings.*

Evidence of campfires in Muldoon Park. May 2008.

Fuels Reduction of Alaska typically uses two machines. The small excavator moves the logs to a landing site where local homeowners can collect firewood. The mower comes in next to treat the slash from limbs and tree tops.

Danger Tree Removal

Partnership with Chugach Electric Association

The spruce trees in South Anchorage were attacked by the spruce bark beetle in the mid 1990s, resulting in thousands of dead standing trees. Commonly, these trees will fall down after 5-10 years from rot and subsequent wind throw. Trees falling across power lines often ignite thereby causing a brush fire in the vegetation below. Federal law requires the power utility to only remove vegetation within 10 feet of both sides of the line; this does not account for the volume of spruce trees that can grow upwards of 80 to 100 feet tall and are within falling distance of the lines. This work requires journeymen line clearance tree trimmers to work near power lines.

To deter an associated brush fire, AFD partnered with Chugach Electric Association to remove dead beetle killed spruce within falling distance of the overhead power lines. Additionally, this project would help maintain the power supply to private well systems, especially during emergencies. The Danger Tree Removal program also supported AFDs existing cost share tree removal program to remove dead, beetle killed spruce within the home's ignition zone. All slash was removed by CEA.

The danger tree removal program was conducted along 85 miles of overhead power lines throughout the South Anchorage Hillside, Indian and Bird.

2005 – 2006 South Anchorage Hillside
- Total cost $499,955.39
- Spruce trees removed 4,303
- Cost per tree $116.19
- Average tree diameter 12-28 inches

2007 Bird and Indian
- Total cost $99,792.88
- Spruce trees removed 300
- Cost per tree $332.64
- Average tree diameter 24-40 inches

The spruce bark beetle epidemic arrived in Bird and Indian in 2004 resulting in a fresh round of spruce mortality. AFD expanded the existing the Danger Tree Removal program with CEA to capitalize on the existing agreement and the efficiency of the program by removing the fire ignition potential and reducing the fuel load around homes adjacent to the overhead power lines. The trees along Turnagain Arm however, are mostly Sitka spruce and are much larger in diameter and height. Almost every tree had to be climbed and topped.

Brush Fire Case Studies

Briggs Bridge Fire, Eagle River – May 20, 2008

Chugach State Park lands provide a wild and scenic corridor along Eagle River. The corridor protects the natural course of the river benefiting salmon, birds, wildlife and recreation. To protect the homes and private land from wildland fire, AFD treated the areas highlighted in yellow in 2005 – 2006 by removing beetle killed spruce, thinning densely growing spruce trees and pruning the residual healthy trees. The map below shows the subdivision east of the Briggs Bridge along Eagle River Loop Road. In May 2008, a brush fire was reported near the river. It burned ½ acre before being extinguished by AFD firefighters and flight crew in Rotor 1.

The treatment area on Chugach State Park land created a barrier to slow fire before it would encroach upon the private land on the other side of the property line. Had the Briggs Bridge fire advanced up the hill toward the homes, the treatment area would have kept the fire on the ground, giving firefighters the needed time to extinguish it.

Taken from Rotor 1 after extinguishing the fire with the helicopter's bucket, this scene shows a typical boreal forest stand common to Southcentral Alaska. The firefighter dressed in yellow Nomex can be seen on the ground. In an effort to reduce fire spread in the tree crowns, many burning trees were felled by firefighters during the suppression operation.

Projects like Driftwood Bay are common throughout the MOA due to the vast acreages of public land that enrich the quality of life in our community. They limit fire spread to adjacent homes, thereby protecting life and property.

Alaska Division of Forestry firefighters cut dead trees and burn slash to reduce fire spread potential.

Piper Fire, Anchorage – July 2, 2008

A similar project and fire event occurred in Anchorage near Piper Street on July 2, 2008. AFD treated Municipal park land along Campbell Creek directly adjacent to several subdivisions in 2005 - 2006. Additionally, MOA Park's Trail Watch program treated the trail corridor between Grumman and Bragaw. The area is forested with dense black spruce that can support intense and fast moving fire.

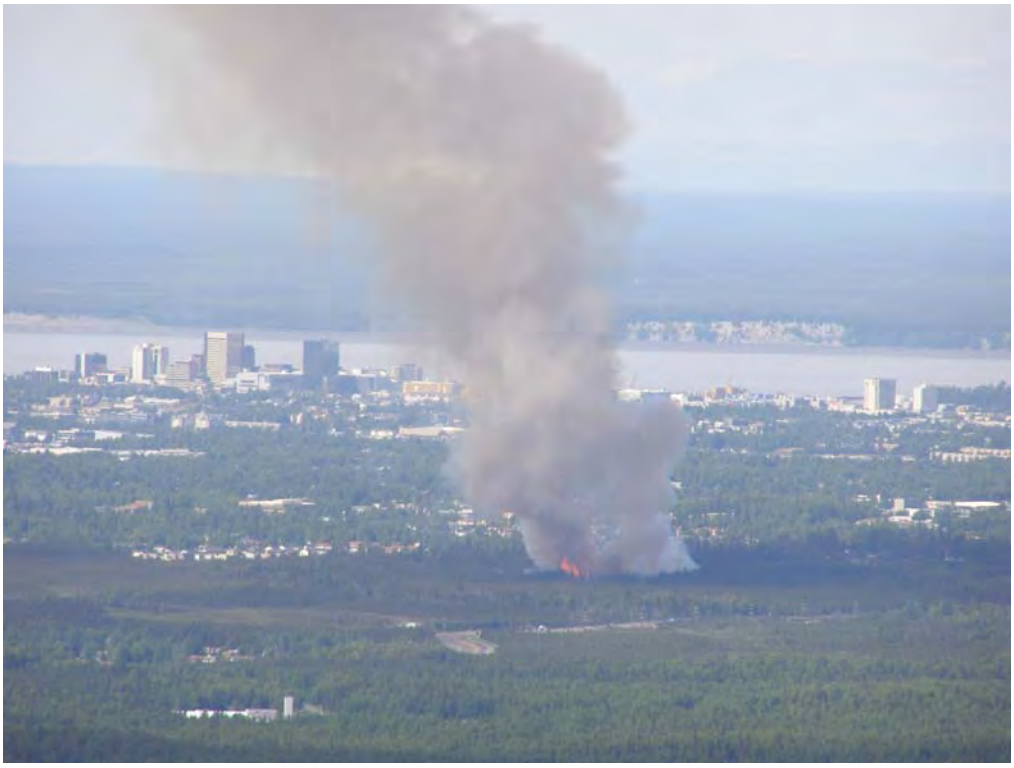
Ignited by a homeless person's campfire, the Piper Fire burned 10 acres of park land. Fortunately, winds were calm and fire spread was slow. AFD firefighters and Rotor 1 flight crew were supported by Division of Forestry firefighters, helicopter and air tanker along with BLM Alaska Fire Service smokejumpers. AFDs Rotor 1 dropped 43 buckets on the fire. The Division of Forestry air tanker secured lines along the perimeter and head of the fire.

A homeless person campfire was the ignition source for the Piper Fire, burning 10 acres of Municipal park land.

Division of Forestry air tanker dropped retardant on the Piper Fire to keep the flames from spreading to nearby subdivisions.

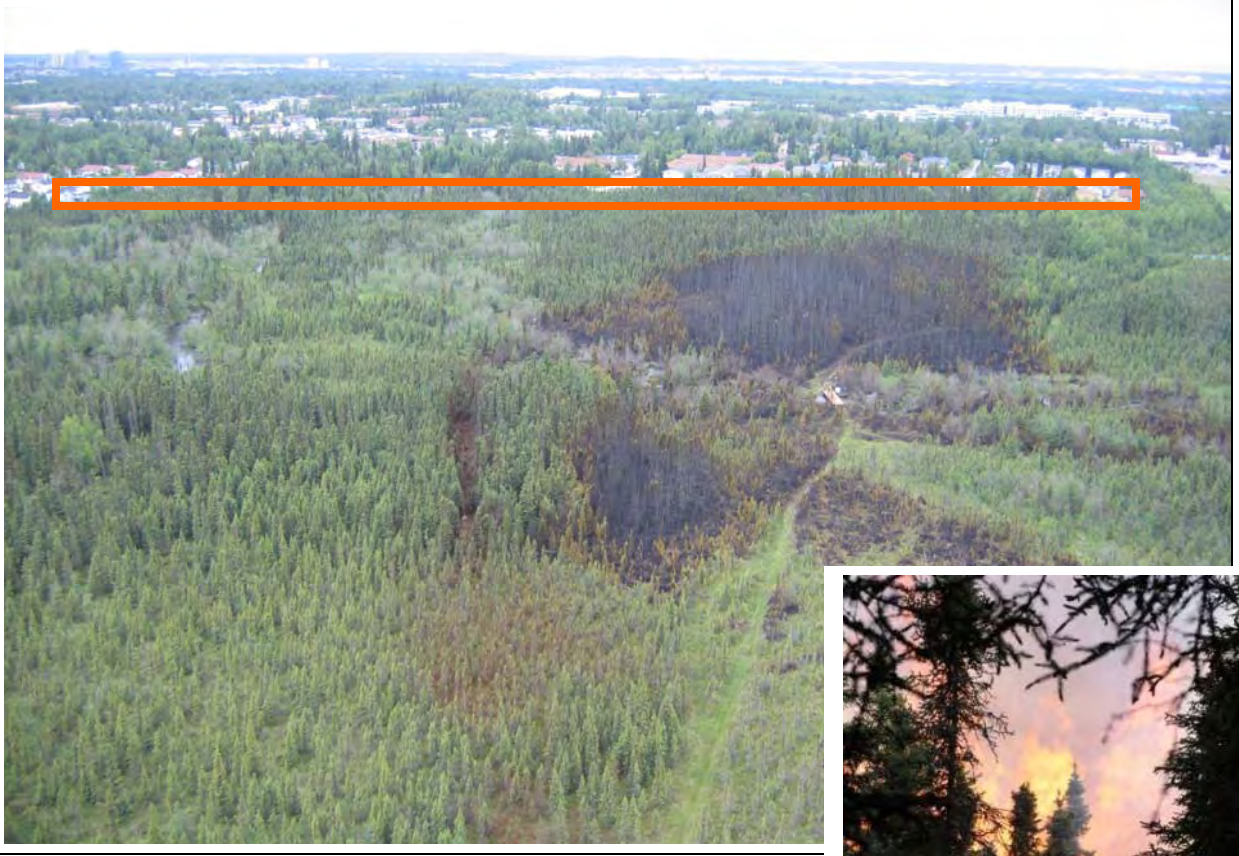
Anchorage Daily News

The Piper Fire burned 10 acres on July 2, 2008. Downtown Anchorage lies in the background to the north.



Homes stay safe to the north of the Piper Fire.

Rotor 1 dropped 43 buckets of water on the Piper Fire on July 2, 2008.



AFDs Wildfire Mitigation Office coordinated a forest treatment project on the north perimeter of Campbell Park in 2005 – 2006. Division of Forestry crews treated 150 feet of black and white spruce at the edge of the subdivision between Grumman and Piper Streets. MOA Trail Watch thinned black spruce along the trail corridor to Elmore.

Just south of the Piper Fire, a homeless person's fire ignited a brush fire, burning over 2 acres near the east end of Dowling in 2003. AFD firefighters and helicopter were on scene immediately to extinguish the flames. No homes were lost.