Anchorage Fire Department

Wildfire Mitigation

Program Report - January 2010

Executive Summary

The Anchorage Fire Department (AFD) supports homeowner preparedness and mitigation of wildfire hazards at the urban interface through grants and federal appropriations. The Wildfire Mitigation Office (WMO) has provided technical and financial support to homeowners for nine years. For the tenth operating season 2010, the three staff members look forward to operating at full capacity with limited services in 2011.

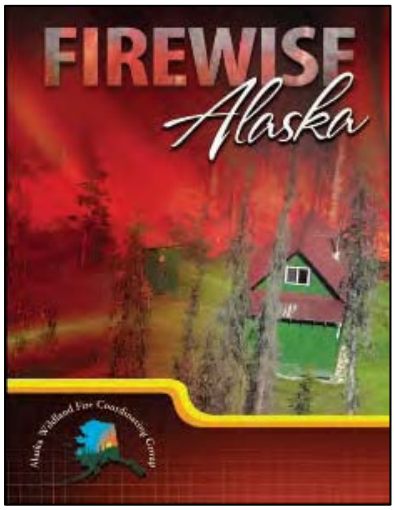
Through all of the wildfire program elements, AFD continues to provide the Municipality of Anchorage with high quality Firewise education for residents, forest treatment projects to protect neighborhoods and a skillful fire suppression force to meet the challenges of fire at the wildland urban interface. Funding through federal appropriations has been supported by the Alaska Delegation and their recognition of local needs throughout the State to prevent catastrophic fires in and near communities. Additional support is funded through federal grants for Rural Fire Prevention & Control, American Reinvestment & Recovery act, and US Forest Service Forest Health Protection.

Thousands of residents across the Municipality have benefitted from the program with respect to brush disposal at the wood lots, Firewise home recommendations, financial support for tree removal, hazard fuel reduction projects to slow fire's spread near homes, and elevated security from wildfires due to residential and Municipal preparedness.

In 2001, the Federal Register published "Urban Wildland Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire" (Federal Register, Vol. 66, No. 160, 8/17/2001). In that list, 20 communities in Alaska were listed including Anchorage. Funding to support community assistance and hazard fuel reduction was then provided through the National Fire Plan. The Municipality of Anchorage received these funds through support from the Alaska Delegation.

After initiating the program per direction from the National Fire Plan, the subsequent Healthy Forests Restoration Act of 2003 required communities to complete Community Wildfire Protection Plans (CWPP). The MOA published the local CWPP in January 2008. AFD has

continued its partnerships with local, state and federal agencies to forward the most up to date technical assistance to homeowners through Firewise education. Additionally, AFD has furthered its integration of wildland fire operations and training to the Anchorage Firefighters.



Anchorage annually experiences over 100 brush fires, a few of which have burned acres of forest land. While the MOA has not yet lost homes to wildland fire, the potential for this incident exists every year with the drying of grass and the welcoming of spring. Through continued Firewise education, forest treatment, and effective fire suppression, Anchorage can survive a wildland fire without experiencing an associated residential disaster.

Submitted by the AFD Wildfire Mitigation Office Staff:

Sue Rodman, Forester & Program Manager

Jason Kohler, Fuels Specialist & Aviation Manager

Jennifer Collins, Fire Education Specialist

Wildfire Mitigation Office

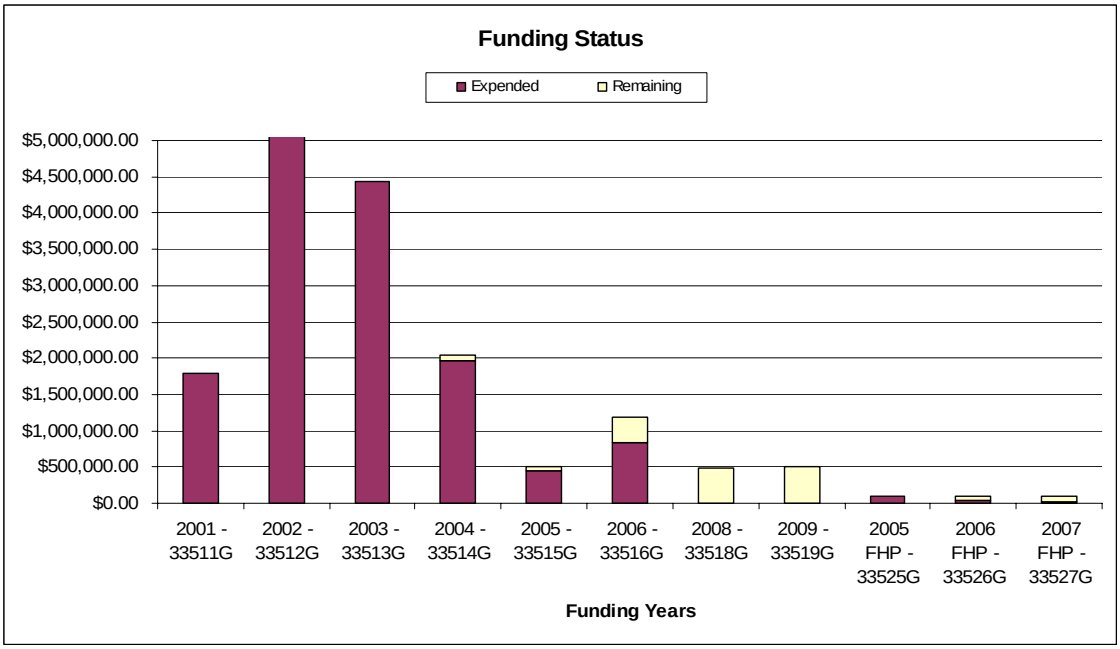
- Financial Summary
- Program Administration

Financial Summary

Wildfire Funding

	Appropriation	Expended	Remaining	Description
2001 - 33511G	1,750,000	1,785,336.90	1.10	fire fighting equipment & response to wildfires
2002 - 33512G	5,000,000	5,100,316.83	3,536.17	reduce fire danger: mitigation & hazard tree removal
2003 - 33513G	4,173,000	4,429,773.38	2,866.62	hazardous fuel reduction
2004 - 33514G	1,975,000	1,959,203.55	88,709.45	remove dead & dying trees
2005 - 33515G	493,000	446,676.42	59,165.58	remove dead & dying trees
2006 - 33516G	1,182,000	832,104.68	350,063.32	remove dead & dying trees
2008	492,000	0	492,000.00	Rural Fire Prevention & Control
2009	497,000	0	497,000.00	American Reinvestment & Recovery Act
Subtotal	**15,562,000**	**14,553,412**	**1,493,174**	
Accrued interest	484,586			
Total	**16,046,586**			
2005 FHP -33525G	100,000	100,000.00	0.00	Forest Health Protection grant - Rabbit Creek
2006 FHP -33526G	100,000	37,686.51	62,313.49	Forest Health Protection grant - Eagle River
2007 FHP -33527G	100,000	14,968.00	85,032.00	Forest Health Protection grant - Indian & Bird
Subtotal	300,000	152,655	147,345	
Total	**16,346,586**	**14,706,066**	**1,640,520**	

To date, the Municipality of Anchorage has received $15,562,000 in federal appropriations and grants to mitigate the risks and hazards of wildland fire. With accrued interest, the total value of the appropriations is $16,046,586. Additionally, the MOA has received $300,000 in grants to support forest health. The MOA has spent $14,553,412 on Firewise education, forest treatment, wildfire suppression, program administration and municipal indirect. The remaining funds available to the program total $1,493,174. This includes the recent grants from the US Forest Service for Rural Fire Prevention & Control and from the State of Alaska under the American Reinvestment & Recovery Act, also known as Economic Stimulus funds. Both of these recent grants are in the process of being appropriated through the Municipal Assembly.



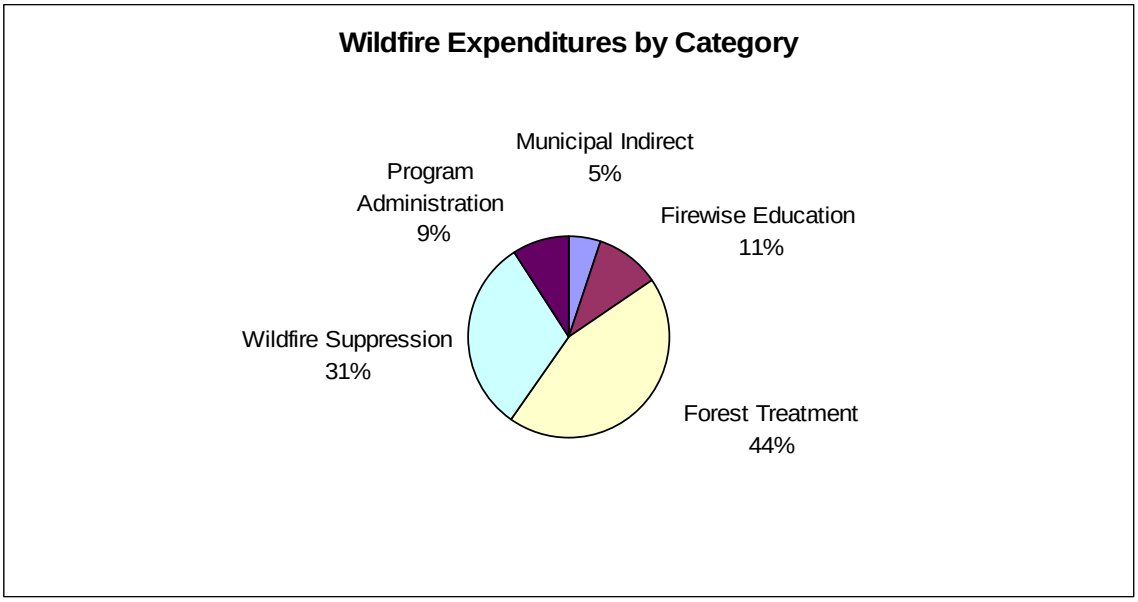
Discussion

Since 2001, each federal appropriation to the Municipality has been accompanied by legislative text guiding the operational activities and applicable expenditures. AFD anticipates that the remaining funds available to the program will sustain limited operations through 2011 with several caveats.

The funds remaining from appropriations through 2006 will be used to match the Rural Fire Prevention & Control grant. Between this grant for $492,000 and the American Reinvestment & Recovery Act grant for $497,000, AFD can support Firewise education, forest treatment projects and staffing of the Wildfire Mitigation Office at the current level through 2010. There are no funds available to support a helicopter in 2010. Program operations and staffing will be severely limited in 2011. Without further appropriations, the wildfire program is expected to sunset by December 2011.

The boreal forest within and surrounding Anchorage combined with a consistently high number of brush fires every summer exposes the residents and the city to the potential of a catastrophic residential wildfire. Without due diligence on behalf of Anchorage residents, the Anchorage Fire Department and local land managers, brush fires can and will happen. Considering that Anchorage experienced a 300-acre wildland fire in 1973 and a 10-acre fire in 2008, the area is ripe for the next large scale wildland fire. Trees and grass grow vigorously here and a Firewise home needs annual upkeep.

Wildfire Expenditures 2001 - 2009



FIREWISE EDUCATION	***1,473,084***
FOREST TREATMENT	***6,376,264***
Fire Science	516,689
Homeowner Assistance Programs	2,082,370
Neighborhood Forest Treatment	3,231,853
Danger Tree Removal	545,352
WILDFIRE SUPPRESSION	***4,406,876***
Apparatus & Equipment	1,192,284
Infrastructure Improvements	141,994
Wildfire Training & Response	1,214,149
Pre-positioned Helicopter	1,858,449
PROGRAM ADMINISTRATION	***1,755,643***
MUNICIPAL INDIRECT	***694,199***
Total funding spent	***14,706,066***

Program Administration

Operational Plan

The Anchorage Fire Department has supported community awareness and wildfire preparedness diligently for the last nine years. In that time, neighborhood fuel treatments and Firewise homes have captivated substantial attention toward wildfire hazard and risk reduction across the Municipality of Anchorage. Through partnerships, AFD has developed and maintained a highly effective wildfire mitigation program. With the anticipated culmination of the wildfire mitigation funds, it is critical for the Municipality and its residents to be aware of the brush fire incidents during the past years and the potential for a large scale fire to require mutual aid response from local, state and federal agencies.

Through recent grant funding and continuation of existing wildfire staff, the program's components and homeowner assistance will extend through 2010 at its full operational level. AFD expects to reduce the community outreach and fuel treatment projects along with the staffing support for 2011.

Staffing

AFDs Wildfire Mitigation Office maintains a staff of three members to carry out Firewise education, homeowner assistance, neighborhood fuel treatment projects and support the analysis and reporting requirements to the State of Alaska and the US Forest Service. Through annual work plans and reliance on their respective talents and areas of oversight, the three WMO staff members coordinate departmental staff and agency partnerships to conduct meaningful wildfire mitigation projects throughout the year.

Relevance to the National Fire Plan

The National Fire Plan is an interagency plan that addresses the firefighter response needs to wildland fires and fire's impact on communities across the country. Primary partners to this effort are the USDA Forest Service and the Department of Interior. Funding for the wildfire program in Anchorage comes from National Fire Plan dollars, as sponsored by the Alaska Delegation to Congress. Development and implementation of the Anchorage program are modeled after the National Fire Plan and fit to our local community.

Five key points form the basis for the National Fire Plan in providing technical, financial, and resource guidance and support for wildland fire management in the United States. AFD aligns the wildfire program and suppression response and training with these points: firefighting, rehabilitation, hazardous fuels reduction, community assistance and accountability.

Partnerships

- Local
- State
- Federal
- Interagency

Local Partnerships

Community Councils

Across the Municipality, community councils link local homeowners with city government and various issues pertinent to their area. WMO staff have been attending council meetings regularly to engage homeowners in Firewise principles to save homes and lives during a wildfire event. When WMO plans neighborhood forest treatment projects, staff attend council meetings as part of the public scoping and notification process.

Homeowner Associations

At the center of preparing for wildfire, neighborhoods can provide the strongest defense when homeowners act together. Many homeowner associations have met with AFD staff to connect their strengths and extend their expertise to emergency and disaster relief.

MOA Parks & Recreation

Municipal parks are havens for residential activities and sports. The extent of spruce bark beetle mortality in these parks has been a focal point of wildfire mitigation activities for years. Additionally, black spruce stands near subdivisions are ideal locations for thinning since fire behavior can be very intense in this forest type.

MOA Solid Waste Services

In the disposal of woody material, residents have sought meaningful avenues to remove bark beetle killed material from their property. SWS annually provides space at the Anchorage Regional Landfill for the Eagle River wood lot where homeowners can deposit their brush for free. Keeping woody material out of the landfill in its raw form saves this valuable property. Furthermore, chips from processing this material serve as a useful cover to regular landfill deposits.

MOA Information Technology

Through the development of the Anchorage Fire Exposure Model and all of the subsequent updates and improvements to aerial images, wildfire incident tracking and vegetation mapping, the IT department has supported AFD in connecting the Municipal GIS data into the model. Additionally, IT has continued their technical support of improving the wildfire database and plans to project brush fire incidents and WMO accomplishments to the web. The Reprographics Section has printed many of the WMO publications, reports and forms used in daily operations.

MOA Heritage Land Bank

Among the primary land holders in the Municipality, HLB has a stake in managing forested land to retain the value that is held by the city and its residents. Many of these properties have suffered from spruce mortality resulting in the wake of the bark beetle epidemic.

MOA Anchorage School District

As another primary land holder, ASD parcels are often ideal locations for safety zones and incident command posts during wildfire incidents. Also critical is the response and protection served to these locations when wildfires occur during the school year. Forest treatment projects around schools offer protection to the neighborhood, the forest and the school itself.

MOA Department of Health & Human Services

DHHS supports the approval of burning for residential applications through an agreement with AFD regarding daily air quality and smoke ventilation. Through adhering to these national standards set for the MOA by the Environmental Protection Agency, AFD can continue to support residential burning through AMC 15.100.35. Burning outside of the air quality standards will relinquish the privilege of residents burning in the MOA.

State Partnerships

Alaska Division of Forestry

While DOF has been a partner to the Municipality and the Anchorage Fire Department for many years, they have also been a key player in initiating formal wildfire mitigation strategies in the last ten years. The Mat Su Crew started cutting out beetle killed trees in Municipal parks in 2001. The evolution of this crew to the Pioneer Peak Interagency Hotshot Crew has fostered many acres of fuel reduction in Anchorage and Eagle River. When brush fires occur in the MOA, DOF is a mutual aid responder providing engines, firefighters and air attack to support AFD. Additionally, the DOF resources are often taxed when multiple fires break out in the Mat Su and Kenai Peninsula Boroughs initiating their request of AFD support via task forces and strike teams. In supporting DOF fires, AFD recovers the expense of sending resources through a reimbursement process.

Chugach State Park

Sharing a long border along the wildland urban interface brings Chugach State Park and AFD together on fire issues. State Park officials have been supportive of fire mitigation on park

lands to reduce the threat of fire spread across that boundary. From Bird to Eagle River, this partnership has supported multiple forest treatment projects since 2001.

Mental Health Trust Land Office

Since the wildfire program's inception in 2001, the Alaska Mental Health Trust Land Office has been a partner to AFD through the Eagle River wood lot and fire mitigation in Goldenview. For 2010, AFD will provide contract administration and implementation of fuel treatment on Trust land at Northern Lights and Bragaw.

Federal Partnerships

US Forest Service

Through technical and financial assistance, the US Forest Service has supported all aspects of forest health and wildfire mitigation to the Municipality of Anchorage. USFS provides field reviews of program accomplishments. They also distribute funds to the MOA for wildfire mitigation from the National Fire Plan and other grants. AFD submits program reports to the USFS for reconciliation of grant funds. Forest Service staff has provided technical assistance to the program since its inception.

Bureau of Land Management

Being land owners of the Campbell Tract within the Municipality and land managers for the military lands between Anchorage and Eagle River, the BLM is a primary partner for mitigating wildfires and fire suppression. Additionally, the BLM is a primary mutual aid provider to the MOA for fire suppression.

Interagency Partnerships

Alaska Wildland Fire Coordinating Group

As the clearing house of wildland fire management and coordination in the state of Alaska, the AWFCG supports interagency cooperation for statewide fire suppression; ensures consistency in fire training; advances safety on the fire line; coordinates research and application of fire science. AWFCG facilitates these processes through annual meetings, subcommittees and regular updates to formal agreements. This coordination of state, federal, tribal and local entities provides for consistency in fire management objectives where complex issues prevail.

Firewise Education

- Educational Media
- Community Outreach

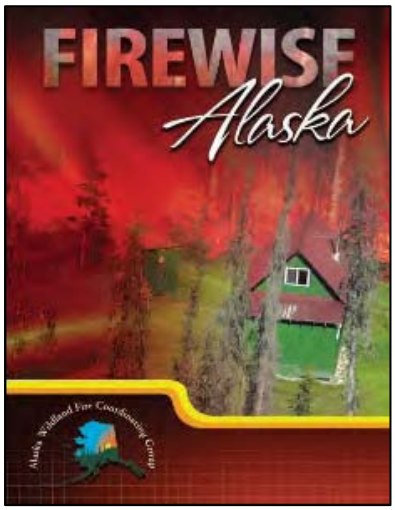
Educational Media

Annual Wildfire Calendars

For four years, the AFD Wildfire Mitigation office has produced and distributed calendars promoting Firewise principles and wildland fire awareness. Each month covers a specific fire safety topic. The calendars are designed by Jennifer Collins, AFD Fire Education Specialist, and printed locally. Approximately 4,000 calendars are distributed around Anchorage and throughout the state each year. Calendars are given to all homeowners who request Firewise home assessments, and they are available at all AFD fire stations and offices. The Alaska Division of Forestry also distributes the calendars.

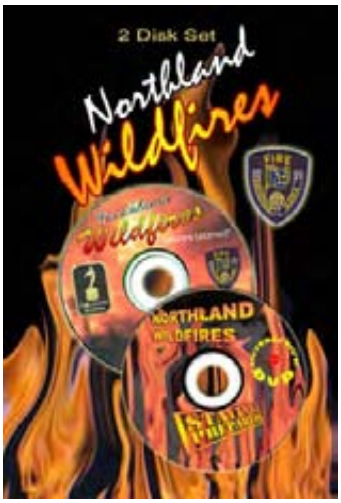
The 2009 AFD calendar borrowed the “Firewise for All Seasons” concept developed by the Kenai Peninsula Firewise program. This approach highlights a different action that homeowners can take every month of the year to prepare themselves and their homes for wildfire season. This serves as a reminder that even though our Alaskan summers seem brief, homeowner accountability and preparation for wildfire season should be a year-round consideration.

Firewise Alaska Guide



The original Firewise Alaska Guide was produced over ten years ago by the Alaska Wildland Fire Coordinating Group (AWFCG) in response to the 1996 Miller’s Reach Fire. Since then, a few small edits have been made, however much of the content was in need of an update. Through the AWFCG Education & Prevention Committee, AFD Forester Sue Rodman worked with several agencies and a graphic designer to improve the content and reformat the entire guide while retaining the Firewise concepts of the original document. The result is a 32-page, full-color guide with modern graphics and new photos, along with the most up-to-date information based on research in wildland fire. This publication is distributed in Anchorage and throughout the state of Alaska.

Municipal Video Center



The Municipal Video Center produced three DVDs in the Northland Wildfires series on fire in Alaska. “Northland Wildfires: Lessons Learned” describes the 1996 Miller’s Reach Fire and the reasons why this large, wind driven fire at the wildland urban interface burned over 400 structures. In 2004, the Video Center produced a DVD about AFDs efforts in mitigating wildland fire: “Northland Wildfires: Staying Prepared.” In 2006, the production of “Northland Wildfires: Firewise Landscaping” translated the message of Firewise vegetation and preparation of the home ignition zone into easy-to-follow steps for the homeowner. This series in addition to many other wildland fire videos are aired on Municipal Channel 10 throughout the spring and summer months.

The WMO staff works regularly with the Video Center to produce updated Firewise programming for Channel 10. These include public service announcements, short videos, and current events within the Anchorage Fire Department.

Website www.muni.org/fire

The WMO posts useful information for homeowners on the Anchorage Fire Department’s web page including details on Firewise homes, burn permits and brush fire incidents.

Community Outreach

Public Service Announcements

The WMO conducted surveys several years ago to determine where Anchorage residents receive their information about public safety hazards such as wildfire. An overwhelming majority responded that television was their primary source of information over newspaper, radio, and even word of mouth. It is for this reason that three Public Service Announcements (PSAs) were produced in 2009 by Jennifer Collins to directly reach the residents of Anchorage. The first of three PSAs focused on wildfires during spring and utilized a child's voice and crayon drawings to illustrate a simple preparedness message. This PSA was also converted for use on the radio. The second PSA features an AFD Fire Captain discussing the risk of wildfires in Anchorage and how applying Firewise principles to the home can greatly improve the chances of the home surviving a wildfire. The third PSA focuses on tree care and pruning. The instructional format illustrates proper pruning technique through hands-on demonstration and diagrams. These public service announcements were aired throughout the summer of 2009 on KTVA, KTUU, and KIMO along with several radio stations. They have also been used in the Fairbanks area to promote Firewise concepts to residents of interior Alaska. The WMO plans to begin airing these PSAs in winter 2010 and continue through the fall.

Public Events

Face to face contact remains one of the most effective ways to motivate and educate residents to take action. WMO staff attends the AFD annual open house, community council meetings, and other events throughout the year to promote emergency preparedness and Firewise homes.

Advertisements and Media Exposure

AFD maintains a positive relationship with local television and radio stations in Anchorage and Eagle River. Several times throughout the summer, these news agencies will promote wildfire mitigation efforts as a special feature.

Television and newspaper feature stories captivate the attention of local residents, providing the connection to the AFD wildfire mitigation program. Oftentimes, this is the best mechanism to conduct outreach to the community for Firewise education and homeowner assistance programs.

Additionally, all news coverage on brush fire incidents throughout the summer reiterates the message to homeowners that wildfires do happen, and they happen often.


NEWS

Eagle River resident works to keep her 'Bambi land' fire free

By JILL FANGHAUSER

Mary Sundt calls the forest near her house at the end of Eagle Lane "Bambi-land" because of the number of moose and calves that visit her property, a 5-acre plot facing Hiland Mountain, surrounded by tall spruce and birch trees.

Sundt's trees have been trimmed, or limbed up, and the forest floor doesn't have tall grass - an easy fuel for fires. Except for a few trees that were knocked down by a windstorm last fall, the property is in really good shape and in a strong position to ward off wildfires, said Jennifer Collins of the Anchorage Fire Department.

Collins was onsite for a "Firewise Assessment" to help Sundt make her home safer from wildfires.

Collins has visited about 72 homes this summer - up from the 52 homes she visited all last season. The drier weather this year might be influencing homeowners to have a property assessment done, Collins said. She expects to assess a total of 100 properties by the fall.

There are many cozy residential areas in the municipality, and especially in Eagle River, covered in boreal forests, and easily ignitable spruce trees and dry grasses.

The fire department has been working for several years to help homeowners create defensible property by offering recommendations, such as removing or trimming trees too close to homes, creating a home perimeter with gravel or natural plants. The department also discusses risks homeowners might not be aware of - like not stacking firewood next to the house, or the danger of overhanging tree limbs.

Sundt's home, originally built as a homestead cabin 60 years ago on Eagle Lane, is a good example of a well-maintained property, Collins said.

Sundt's husband, who recently passed away, was a forestry employee and the couple took good care of the forest and trees that line the property. They sprayed many of the trees with pesticides to protect them from spruce bark beetles and got rid of leaning or low-hanging branches over the years. The care they put into their home and forest has made the property more enjoyable. They liked to walk under the trees on their land.

In 2009, both KTUU and the Alaska Star wrote stories highlighting the WMO Firewise Home Assessment program. Reporters followed Jennifer Collins into the field while she provided Firewise technical assistance to homeowners.

Local media coverage during times of high fire danger keeps residents alert to weather conditions and the need for continued vigilance for fires in the area.

The WMO also uses paid advertisements in local newspapers such as the The Alaska Star and The Turnagain Times to remind residents about programs such as wood lots, burn permits, and Firewise assessments.

GIRDWOOD WOOD LOT
SATURDAYS 9:00 AM—6:00 PM • MAY 2—SEPTEMBER 26

Industrial Park on Ruane Road
- Free Residential Use Only
- Brush & tree parts
- No land clearing debris
- No stumps or construction materials
- Loads must be covered & tied down
- Max size: 6 ft in length, 8 inches diameter

Limit bark beetles by pruning spruce trees after August 1
More spruce bark beetle information at http://www.fs.fed.us/r10/spf/fhp/

Anchorage Fire Department – Wildfire Mitigation Office
267.4980 - www.muni.org/fire

- Free Firewise Home Assessments & Cost Share Tree Removal
- Free Burn Permits
- Girdwood Fire Weather Station http://raws.wrh.noaa.gov/roman/

Forest Treatment

- Fire Science
- Homeowner Assistance
- Neighborhood Forest Treatment
- WUI Fires Ignited in Illegal Camps

Fire Science

Summary

WMO staff continued maintenance of the Anchorage Fire Exposure Model (AFEM) and the corresponding GIS layers updating Firewise Home Assessments, Neighborhood Forest Treatment projects, and fuel inventory. Additionally, WMO staff integrated several new products to correlate fire danger and fire suppression: 1) wildfire ignitions have been mapped back to 2006; 2) daily wildfire danger report issued to AFD Command Staff and line personnel; and 3) daily fire danger briefing included in the department's teleconference.

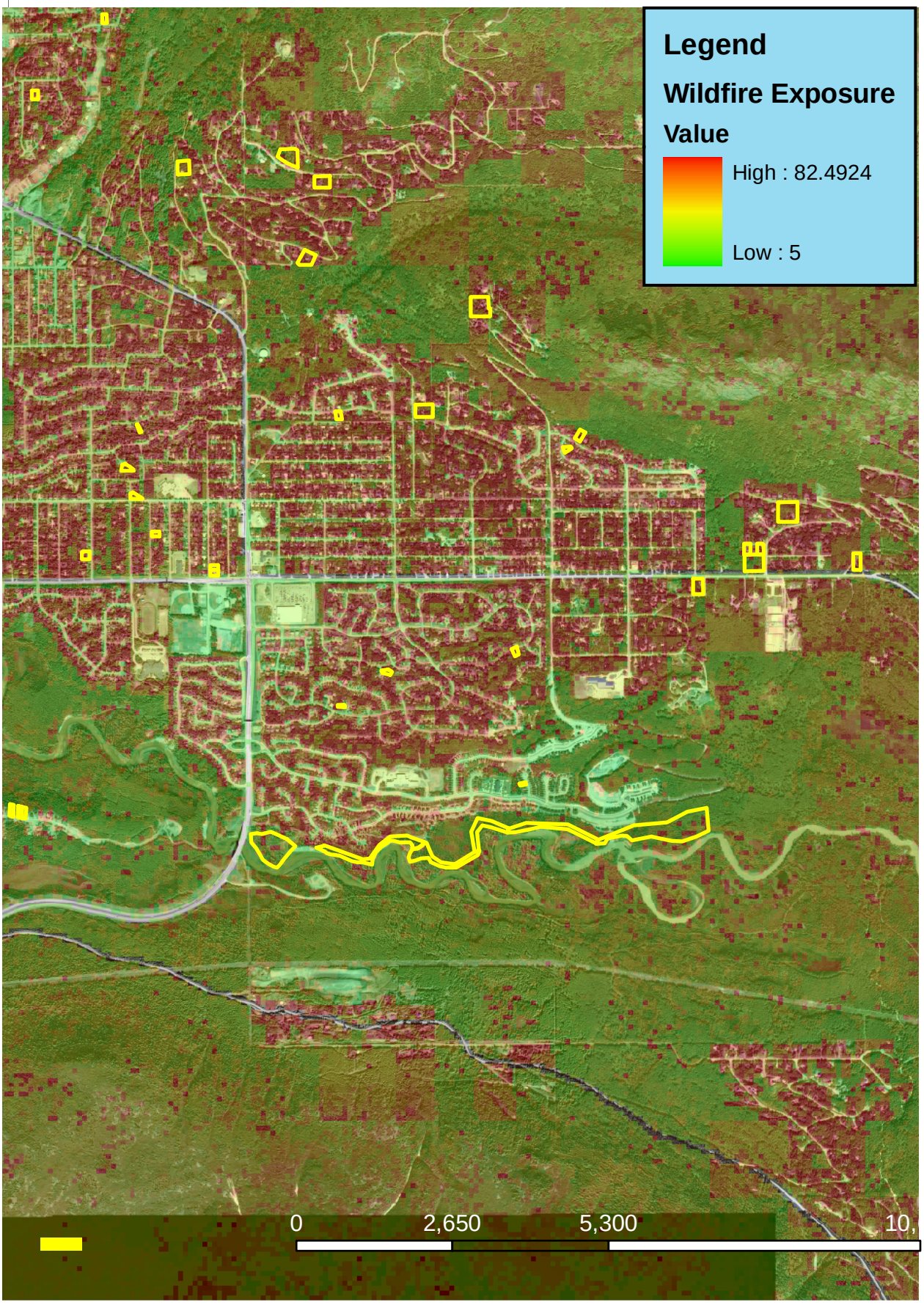
The Anchorage Fire Exposure Model (AFEM), created by Geographic Resource Solutions (GRS), calculates the community's exposure to wildland fire through an objective assessment of four key variables: hazard, risk, values and suppression. Through the AFEM, AFD examines hazardous fuels across ownerships and coordinates neighborhood forest treatment projects and directs Firewise education toward these areas.

Mapping wildfire ignitions presents a useful visual display for AFD and MOA staff to use in addressing mitigation in these areas and often contributes to the fire's cause determination. Currently the map displays brush fires from 2006 through 2009. Data is available back to 1999; the WMO intends to map these fires eventually. With support from the Municipal IT/Geographic Information Systems expert Terry Lamberson, WMO staff is planning to launch a new webpage in 2010 that would display ignitions, completed home assessments, past and planned field projects and the AFEM model showing fire exposure and hazard.

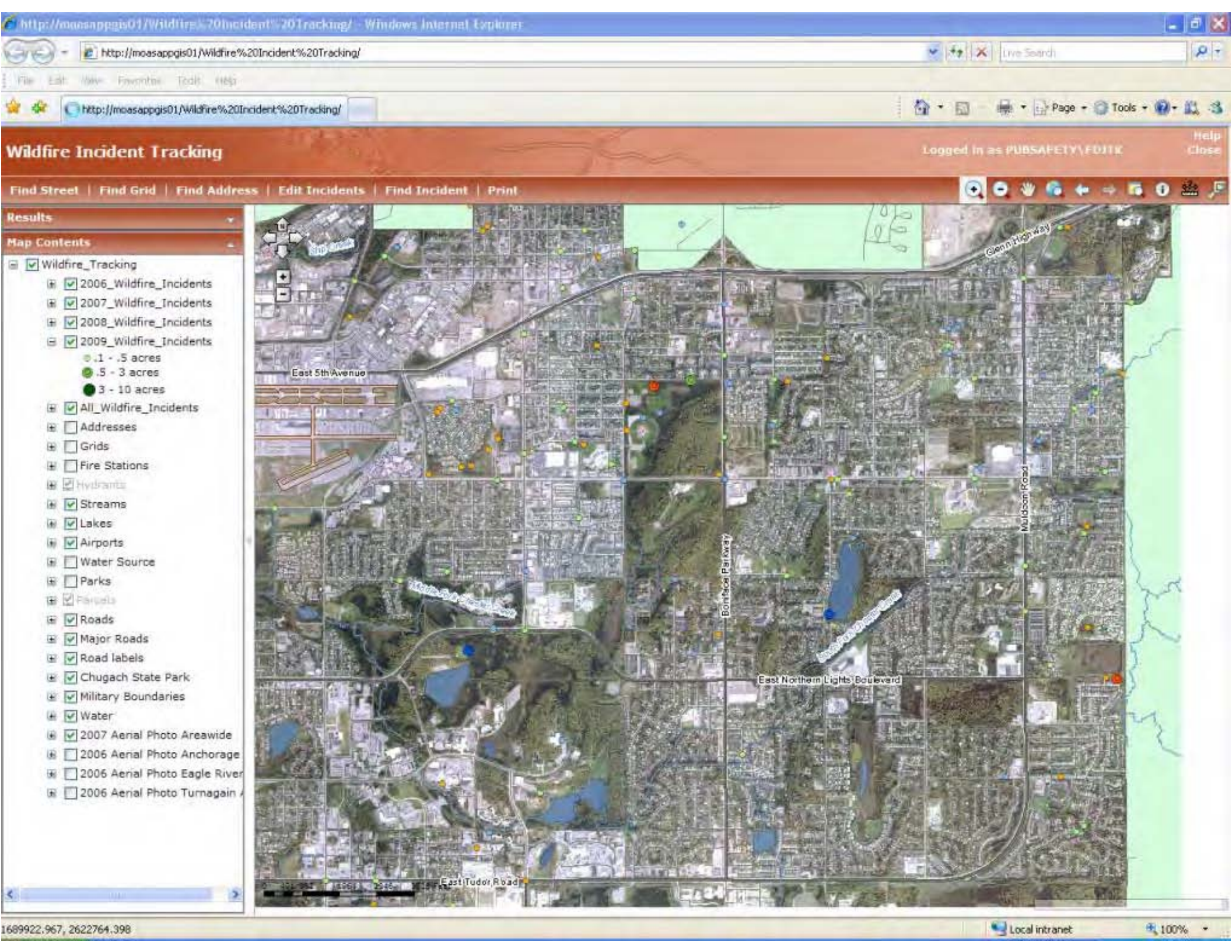
In 2009, the WMO staff produced a trial product that incorporated both a written and verbal morning fire danger briefing. This briefing was successful in raising wildfire situational awareness within the department for the high fire danger months of May through August. The Fire Weather Indices and corresponding wildfire danger rating correlate directly to the RAWS Fire Weather Station data and a daily prediction of fire behavior using Remsoft's Behave software. It addresses two of the primary fuel types found throughout the Municipality: C2 Boreal Spruce and M2 Boreal Mixed – Green.

Brush fire at Russian Jack Springs Park – North on May 26, 2009. AFD Firefighters and Rotor One responded. This fire was likely from an illegal camp. Despite overcast conditions, it burned quickly in black spruce completely scorching the trees. In spring, just after snow melt, trees have not yet taken up much water from the soil. Black spruce trees are very low in moisture content compared to other tree species.

Eagle River Sample Area
Anchorage Fire Exposure Model
Neighborhood Forest Treatments & Firewise Home Assessments



02/25/10 Anchorage Fire Department. S.Rodman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Wildfire Incident Tracking
Logged in as PUBSAFETY\FDITK
Help
Close
Find Street | Find Grid | Find Address | Edit Incidents | Find Incident | Print
Results
Map Contents
Wildfire_Tracking
2006_Wildfire_Incidents
2007_Wildfire_Incidents
2008_Wildfire_Incidents
2009_Wildfire_Incidents
.1 - .5 acres
.5 - 3 acres
3 - 10 acres
All_Wildfire_Incidents
Addresses
Grids
Fire Stations
Hydrants
Streams
Lakes
Airports
Water Source
Parks
Parcels
Roads
Major Roads
Road labels
Chugach State Park
Military Boundaries
Water
2007 Aerial Photo Areawide
2006 Aerial Photo Anchorage
2006 Aerial Photo Eagle River
2006 Aerial Photo Turnagain
East 5th Avenue
Glenn Highway
Muldoon Road
Boniface Parkway
East Northern Lights Boulevard
East Tudor Road
1689922.967, 2622764.398
Local intranet
100%

A.F.D Wildfire AM Briefing

DATE: July 10, 2009 | **Today's Wildfire Danger:** Very High

Is today a Burn Day: No Burning | Yesterday's Wildfire Danger: Very High

Fire Weather & Behavior Concerns:

- Fires need to be overhauled extremely well because potential for rekindles is very high – cold trail fire edges and ensure your fires are out – Consider post fire checks due to hot and dry weather
- Utilize staging areas/managers if needed and communicate resource needs through Alarm - Go big early
-

SECTION I: *Fire Weather Indices:* *(Indices are from previous day's actual 1400 reading)*

Location:	FFMC:	DMC:	DC:	ISI:	BUI:	FWI:
Campbell Creek	89.7	118.5	430.9	5.7	140.9	24.6
Grazelka Range	89.0	74.0	409.1	4.7	101.9	18.8
Eagle River	89.5	106.5	429.8	5.1	131.6	22.2
Rabbit Creek	88.7	82.8	424.8	4.9	111.3	20.2
Girdwood	88.4	32.3	237.2	4.4	48.2	11.6
Anchorage	87.3	76.1	399.0	4.7	103.1	18.7

Weather Warnings	Yes or None	Hours in Effect
Fire Weather Watch:	None in zone	
Red Flag Warning:	None in zone	

Wildfire Weather Indices Chart

	FFMC	DMC	DC	ISI	BUI	FWI
Extreme	92-101	> 100	> 450	> 11	> 110	> 35
Very High	89-91	80-99	400-449	8-10	90-109	28-34
High	86-88	60-79	350-399	5-7	60-89	18-27
Moderate	80-85	40-59	150-349	2-4	40-59	9-17
Low	< 79	< 39	< 149	< 1	< 39	< 8

Forecasted Weather:
http://fire.ak.blm.gov/predsvcs/weather.php
Local Weather Zone: AKZ101

FFMC (Fine Fuel Moisture Code) – Surface layer light fuels

DMC (Duff Moisture Code) – Soil moisture depth 2–5 cm

DC (Drought Code) – Soil moisture that is 5+ cm

ISI (Initial Spread Index) – Characterizes rate of spread (ROS)

BUI (Build Up Index) – Indicates how deep the fire will burn into the ground

FWI (Fire Weather Index) – Represents fire intensity

SECTION II: *Fire Behavior with a fire starting at 1300*

Fire Behavior: Utilizing forecasted weather and Fire Weather Indices for an ignition occurring between 1400 and 1600 worse case potential. Note: All output values are based on 15 minutes after the ignition has occurred.

Output Values:

Input Values:

Predicted Weather - Bench Marks	
Fuel Type	C-2 & M-2
10 meter wind speed (mph)	5
Wind Direction	South West
Ground Slope Percent	3 %
Slope Aspect	West
Air Temperature	78
Relative Humidity	40 %
24 Hr. Precipitation (inches)	0
Elapsed Time (min)	**15 MIN.**

Fire Intensity - C-2 Boreal Spruce:			
	Flame Length	Fire Behavior	Rate of Spread: Distance (feet/min)
Head	16	Continuous Crown Fire	24
Flanking	12	Intermittent Crown Fire	12
Backing	9	Intermittent Crown Fire	7

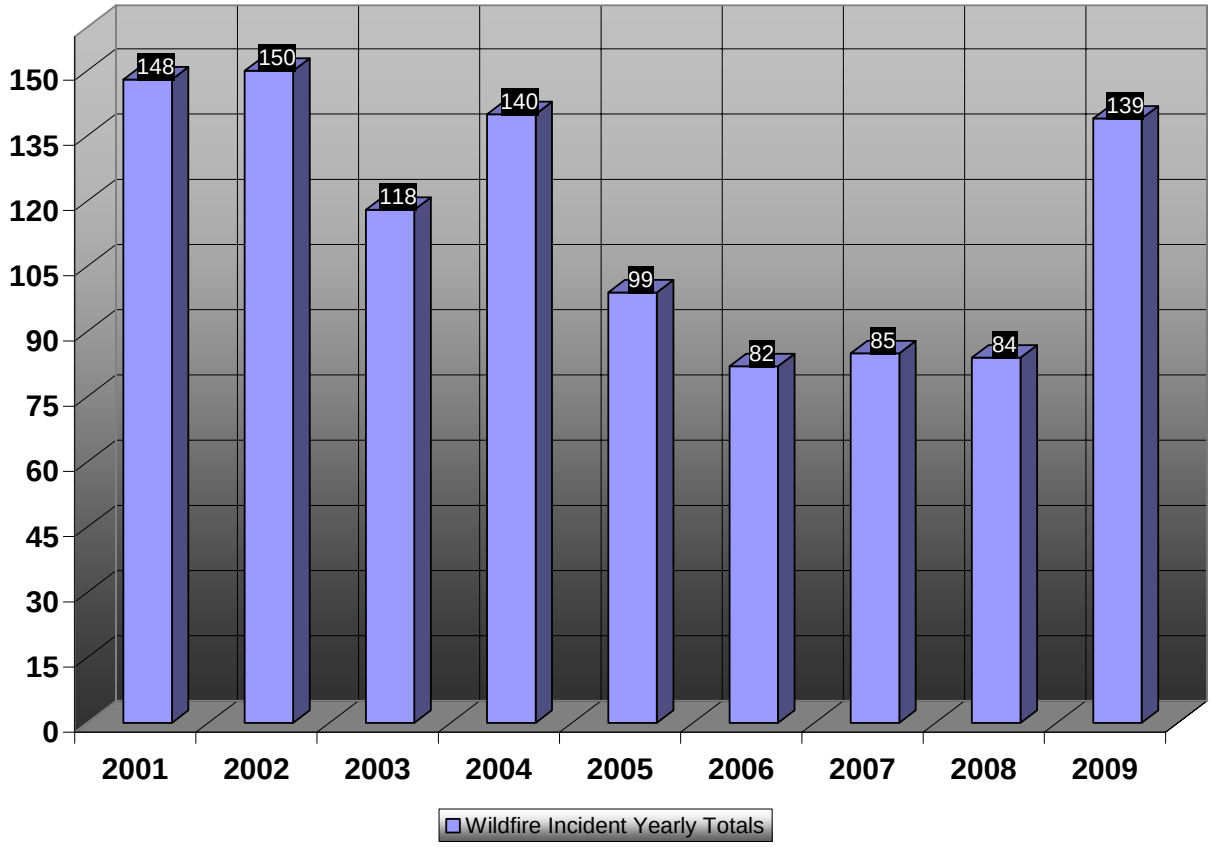
Probability of Ignition %	**100 %**
Acres Burned (15 min)	**1.3**

Fire Intensity - M-2 Boreal Mixed Green:			
	Flame Length	Fire Behavior	Rate of Spread: Distance (feet/min)
Head	9	Surface Fire	10
Flanking	6	Surface Fire	5
Backing	5	Surface Fire	2

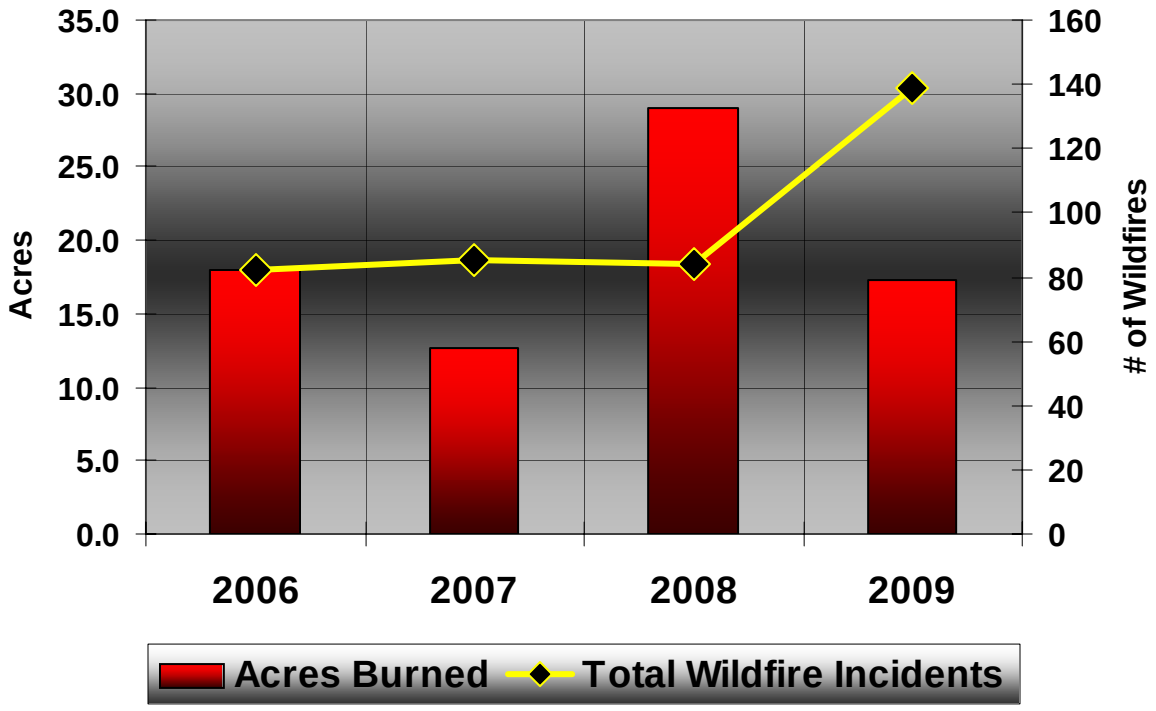
Probability of Ignition %	**88 %**
Acres Burned (15 min)	**0.3**

Brush Fires & Fire Danger

Having tracked the number of wildfire incidents over the past nine years, we see a range of variability between 82 fires in 2006 and 150 fires in 2002. The causes for brush fires can generally be traced to a few sources: escaped embers from an otherwise safe and permitted residential fire, careless burning practices on a permitted residential fire, industrial triggers such as welding, illegal camps, juvenile fire setters, or intentional vagrant activities. Rarely does lightning start fires in the Anchorage area.

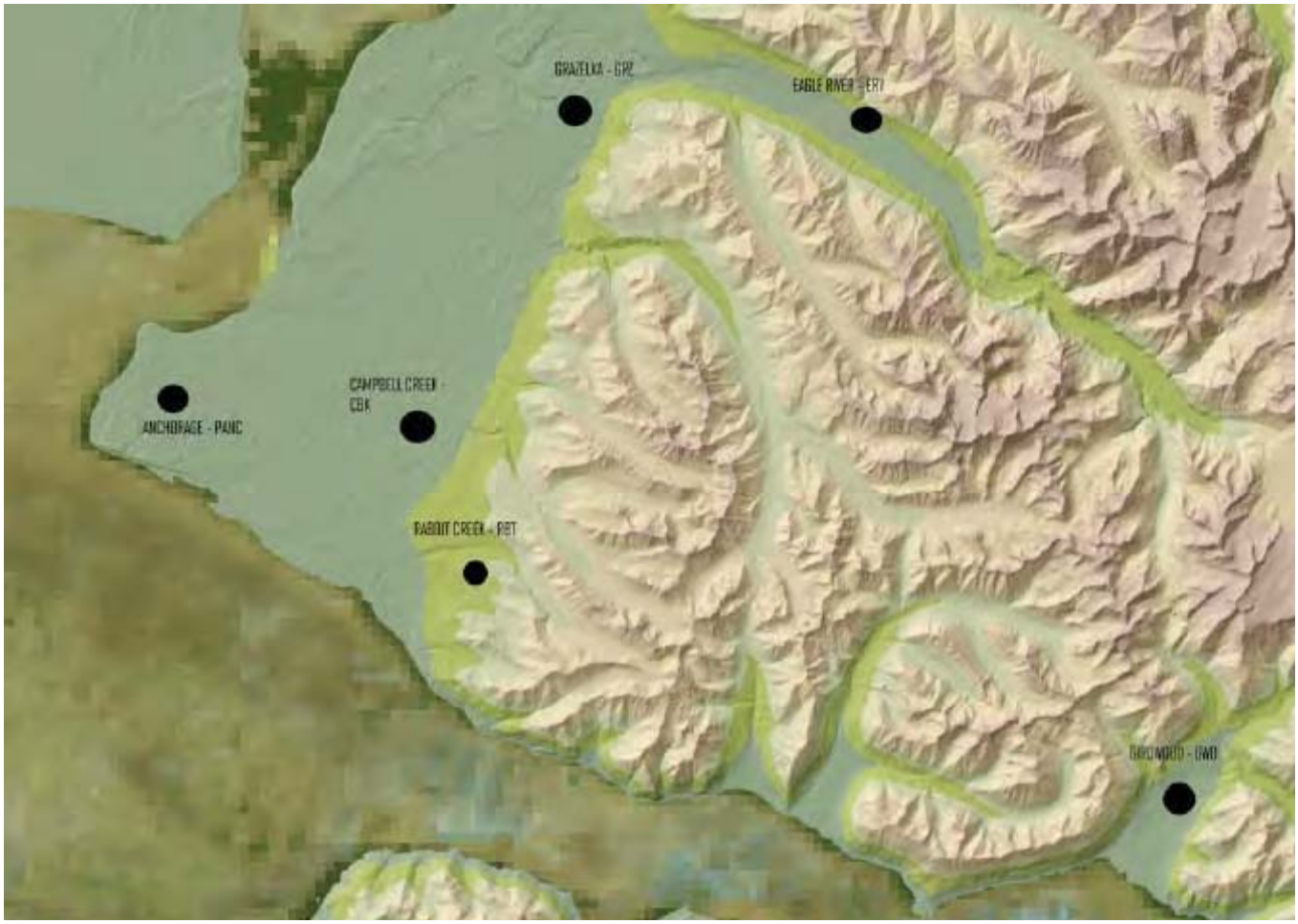


Recognizing that the number of wildfire incidents is one component of this analysis, we look also at the acres burned per year with respect to the weather, the number of incidents and where exactly the ignitions are located. In the next chart, the 82 fires in 2006 burned 18 acres. The 85 fires in 2008 burned 29 acres; this was the year of the 10-acre Piper Street Fire. Last year, we had 139 ignitions burning 17 acres. The weather in 2008 was not un-seasonally dry, nor was the fire danger notably high. However, the combination of warm temperatures and moderate humidity applied to an accumulation of dryness in the deeper layers of soil allowed the ignition in black spruce to spread quickly through the fine fuels of spruce tree needles and penetrate the moss layers to burn the tree roots. Since this fire started several hundred feet from the closest parking location for AFD apparatus, it developed enough heat and momentum to challenge ground resources thereby requiring the aid of two helicopters and an air tanker. **The lesson learned from Piper Street and many other fires in the past, including the 1973 300-acre Hillside Fire, shows that we can have large acreage fires during moderate fire danger conditions.**



As we look closer toward the specific geographic regions of the Anchorage Bowl and the Eagle River Valley, we note differences in fire cause. Due to the residential nature of the Valley and the recreational use of Eagle River, brush fires are more often caused by escaped embers from permitted residential fires and recreational fires along the river in Chugach State Park. For this reason, AFD has treated over 30 acres of spruce forests in partnership with the Park in the past nine years.

The Briggs Bridge brush fire burned ½ acre along Eagle River on May 20, 2008.



Six RAWS fire weather stations monitor weather and fire danger throughout the Municipality of Anchorage.

Zooming back out to the greater Anchorage area, the Municipality of Anchorage covers roughly 1,697 square miles, a very large area when it comes to monitoring weather for fire danger amidst a population of 300,000 residents. Due to the wildland urban interface fire exposure to our entire community, AFD operates and maintains four Remote Automated Weather Stations (RAWS) strategically placed throughout the MOA. In 2009, the Eagle River RAWS came online completing the local network. The RAWS network is crucial because it monitors weather hourly and produces the Fire Weather Indices (FWI) which aid in determining local fire danger. Comprehensive coverage of this system can be found in the 2008 Wildfire Mitigation Program Report.

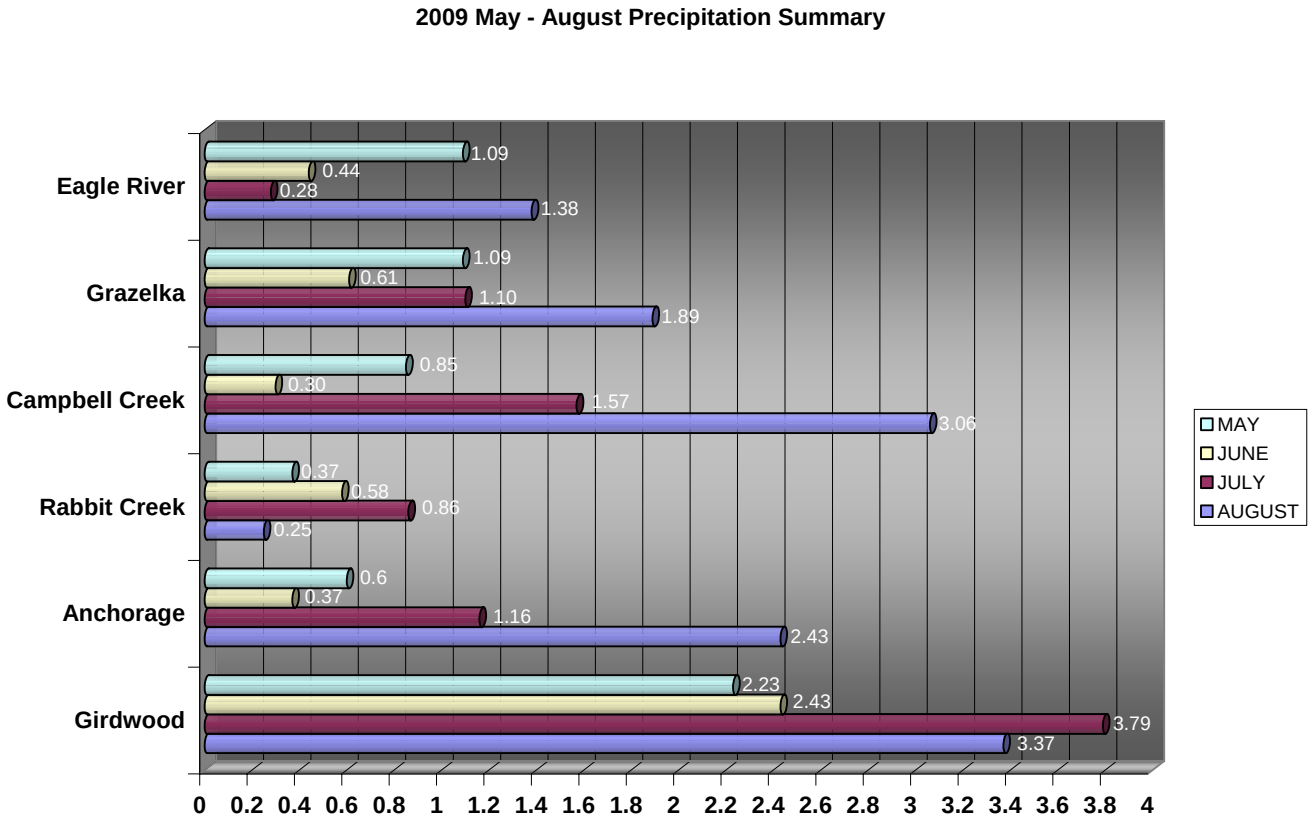
2009 May – August Precipitation Totals	
Station Name:	**In Inches:**
Girdwood	11.82
Rabbit Creek	2.06
Anchorage	4.56
Campbell Creek	5.78
Grazelka	4.69
Eagle River	3.19

The Eagle River RAWS had its first operational summer in 2009. Although only one season's data has been collected to date, the weather data collected supports AFD's notion that fire danger is generally higher in the Eagle River drainage than in the Anchorage Bowl. Weather elements that contribute to fire danger include precipitation, relative humidity and wind.

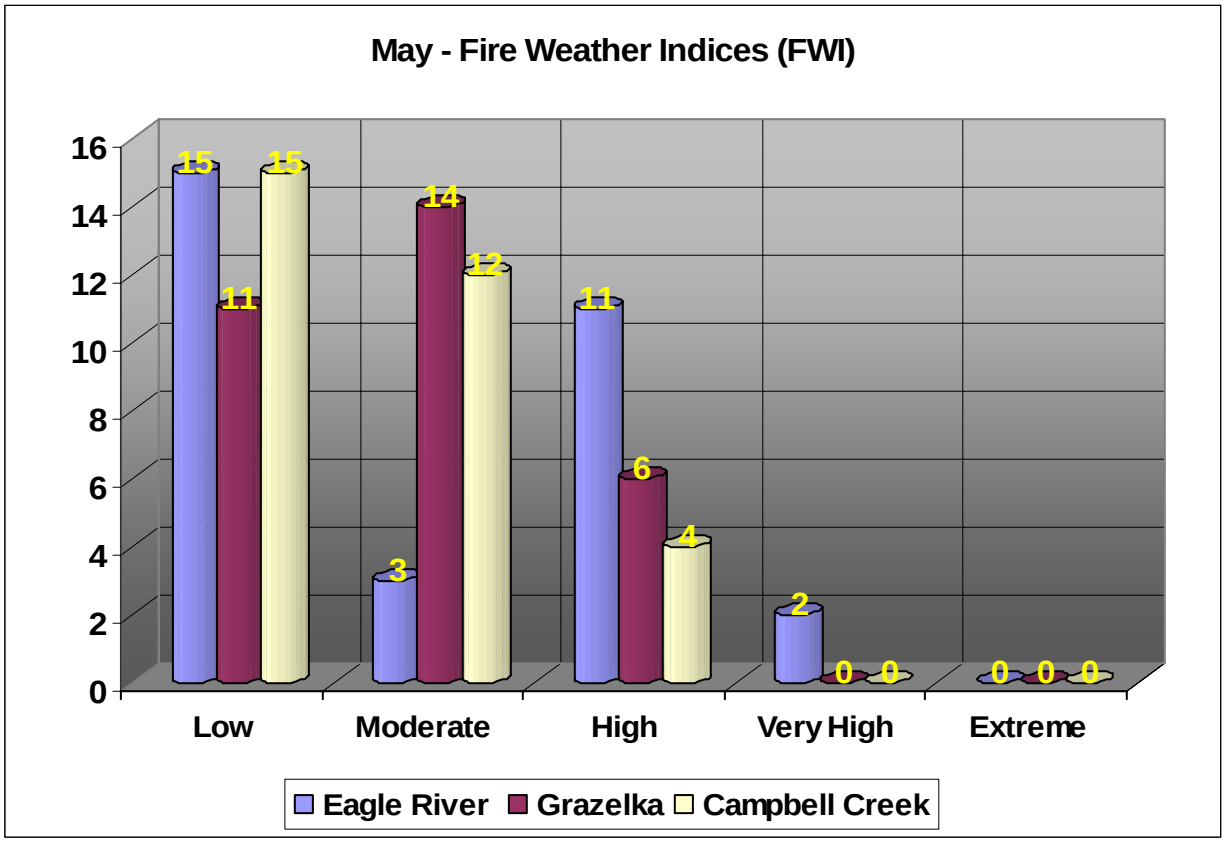
In a closer analysis of the precipitation of all six RAWS stations, Eagle River has the second lowest level of precipitation to Rabbit Creek for the months of May through August. Interestingly, the Rabbit Creek RAWS is located on the ridge top just north of Bear Valley while the Eagle River RAWS is situated at mile 8 of Eagle River Road on the river side of the road, much lower in elevation.

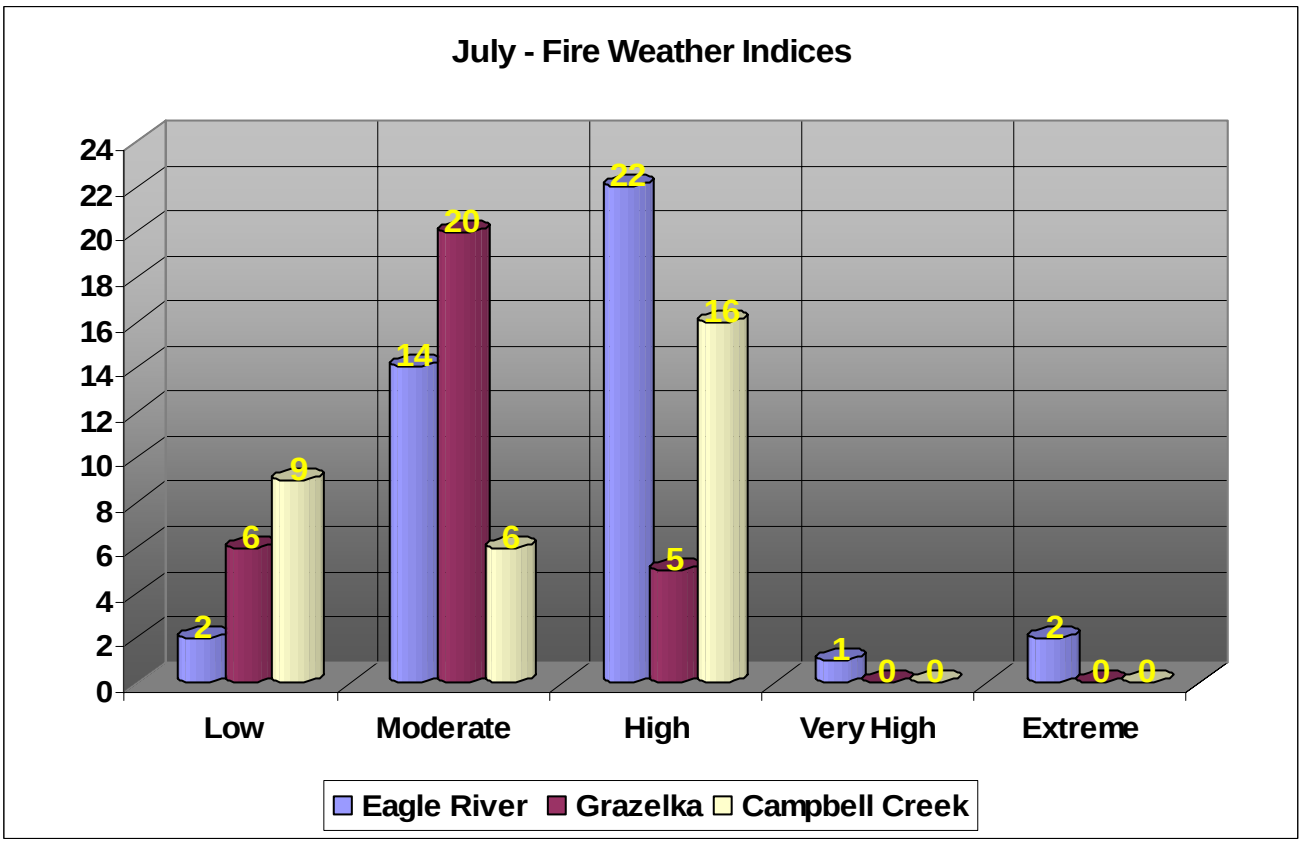
As we look ahead to 2010, the WMO fuels specialist will be closely monitoring precipitation and fire danger across these RAWS sites and referencing these values with brush fire incidents. Precipitation directly affects the fire danger of an area. In review, the precipitation is ultimately absorbed into the soil and vegetation, contributing to fuel moisture. Wind can cancel out the influence of precipitation by drying first the fine fuels such as grass, then small twigs both on the ground and on trees, and finally leaving large fuels such as downed logs dry and able to sustain fire's burn time.

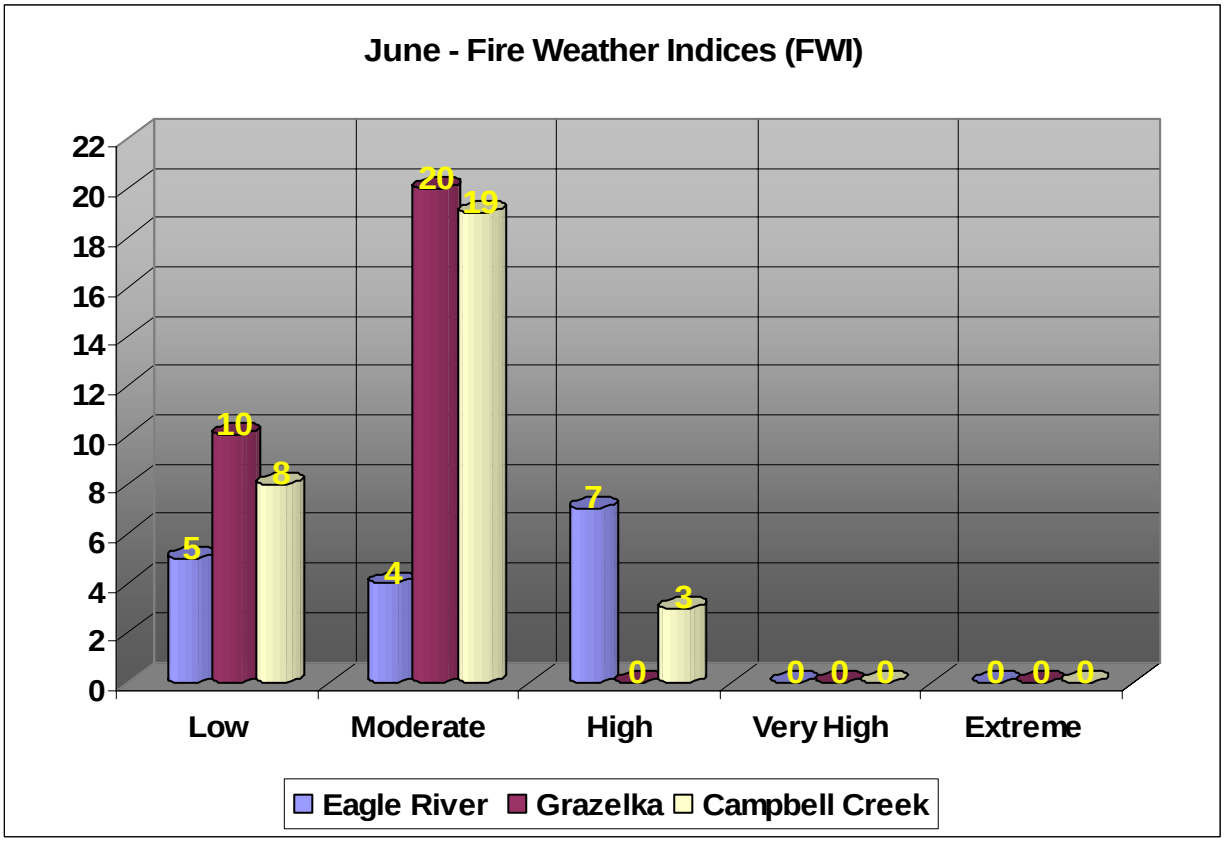
Over the course of the summer months, fire danger can vary substantially. The following chart examines precipitation by month for each of the six Anchorage area RAWS fire weather stations. In the subsequent pages, we will look at the fire weather indices across three of these stations to reflect the wide variability in fire danger we see within our Municipality. Of note to residential home owners is that the Anchorage Fire Department will not approve open burning in the Municipality if just one of these stations shows high fire danger. Keeping the community safe from fires includes limiting ignitions even for permitted burns.

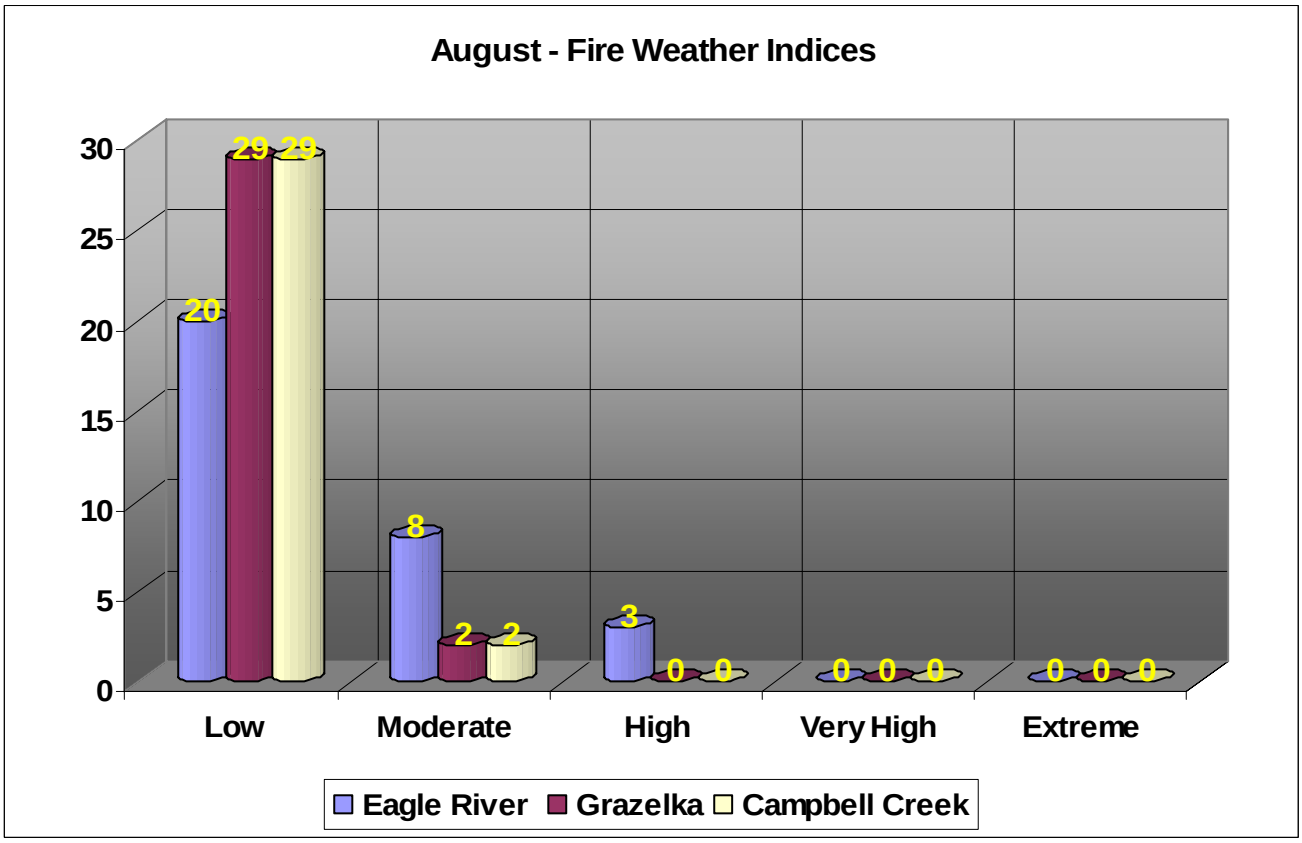


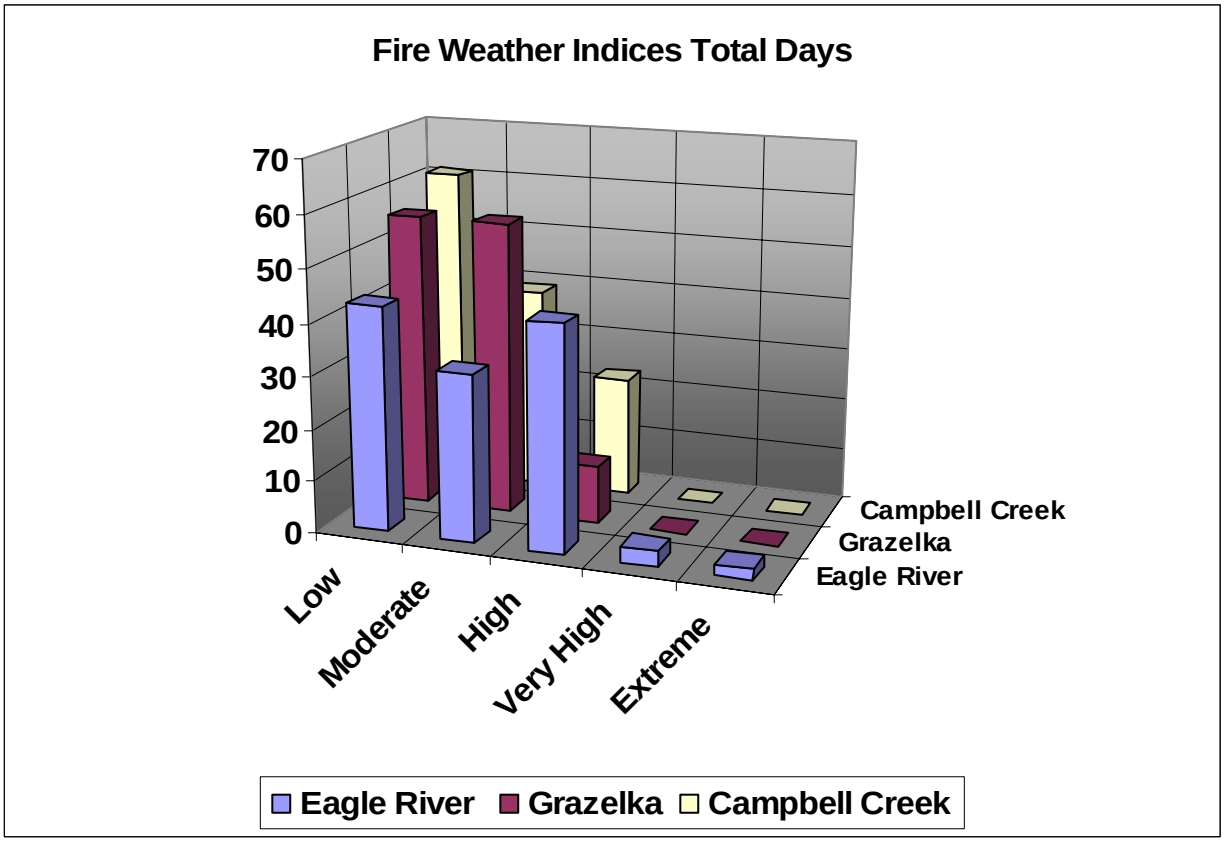
2009 Fire Weather Indices across the 4 RAWS stations in the MOA. The yellow number indicates the number of days in the respective category of fire danger for the month, by station.






June - Fire Weather Indices (FWI)
22
20
18
16
14
12
10
8
6
4
2
0
5
10
8
4
20
19
7
0
3
0 0 0
0 0 0
Low
Moderate
High
Very High
Extreme
Eagle River
Grazelka
Campbell Creek


August - Fire Weather Indices
30
25
20
15
10
5
0
20
29
29
8
2
2
3
0
0
0 0 0
0 0 0
Low
Moderate
High
Very High
Extreme
Eagle River
Grazelka
Campbell Creek



Note that despite having many days in 2009 in the moderate category of fire danger, we had more ignitions in 2009 that we have experienced since 2004. When we extend these fire weather indices to past fires and compare them to current conditions, we find interesting relationships.

Campbell Creek RAWS

Date	ATF	RH%	FFMC	DMC	DC	ISI	BUI	FWI
Briggs 5/20/08	61	32	89.4	34.1	79.2	5.9	34.0	12.3
Piper 7/3/08	71	56	87.9	58.3	316.4	3.7	79.8	13.8
RJS 5/26/09	69	36	90.8	57.4	152.8	6.1	59.2	16.9

The May 20, 2008 Briggs Bridge fire in Eagle River burned ½ acre during low humidity and moderate fire danger through white spruce and shrubs. Also an early season fire, the Russian Jack Springs fire of May 26, 2009 burned ¼ acre in dense black spruce with similarly moderate fire danger and low humidity. Comparing these to the 10-acre Piper Street Fire on July 3, 2008 also in dense black spruce during moderate fire danger, we see that the humidity was much higher due to the recent rains, yet the fine fuels were only slightly more moist allowing this fire to spread and burn very hot.

MOA Wildfire Weather Indices Chart						
	FFMC	DMC	DC	ISI	BUI	FWI
Extreme	92 - 101	> 100	> 450	> 11	> 110	> 35
Very High	89 - 91	80 - 99	400 - 449	8 - 10	90 - 109	28 - 34
High	86 - 88	60 - 79	350 - 399	5 - 7	60 - 89	18 - 27
Moderate	80 - 85	40 - 59	150 - 349	2 - 4	40 - 59	9 - 17
Low	≤ 79	≤ 39	≤ 149	≤ 1	≤ 39	≤ 8

Daily monitoring of the six RAWS fire weather stations compares the Fire Weather Indices of the stations to this chart, specific to the MOA, to determine the relative danger to the community for fire spread and intensity.

C2 Boreal Spruce

Fuel Components that carry fire:

Surface fire: feather moss and/or Cladonia lichen, Labrador tea
Torching: live & dead black spruce
Crown fire: almost always, ladders from surface fuel direct into spruce branches

Coyote Shaded Fuel Break—Far North Bicentennial Park @ Abbott Loop Park—Fall 2002

Potential surface fire behavior:

Flame Length: 8—12 ft

Rate of Spread: 21—38 ch/hr
23—42 ft/min

(Reference: Alaska (3) Closed Black Spruce Forest: FBFM40—TU3, Scott&Burgan 12,13,14%moisture, 30%herb, 60%woody, 4-6 mph, 0%slope)

Sue Rodman, AFD Forester—February 2009

Examining the Eagle River drainage, we note that there are several fuel types with dense black spruce existing in the river bottom and extending the length of the valley. The single 12-mile road is the only egress route for hundreds of home owners. Looking at the chart indicating Fire Weather Indices Total Days by month and weather station, the Eagle River station had the least (32) moderate fire danger days, but the most (43) high fire danger days of the three stations compared. Considering the size and intensity of fires in the Anchorage Bowl that burned under moderate conditions, the potential exists for the same caliber of fire to occur in Eagle River with even greater intensity due to the fire weather parameters needed to cause 43 high fire danger days. The translated danger poses a threat to the lives, property and natural resources giving so much value to this drainage.

Looking toward Eagle River Loop Road, the proximity of Eagle River and Chugach State Park to the homes gives this area value and aesthetics along with the exposure to fire. Not only should residents be vigilant of brush fires spreading to their homes, but also of structure fires igniting one another in their close proximity. AFD has partnered with Chugach State Park to treat ~30 acres of forest land adjacent to the subdivisions to limit fire spread between the park and the neighborhoods.

Homeowner Assistance

Firewise Home Assessments

Firewise homes protect homeowners from loss and help firefighters do their job safely. We experienced 139 brush fires in 2009 alone. Had any of those fires escaped control and ignited homes, we may have lost more than one home. Brush fires that ignite homes create a more challenging problem because fire can spread quickly between homes, especially when they are situated within 50 feet of one another.

The AFD Wildfire Mitigation Office provides free Firewise home assessments for residents of Anchorage, Eagle River & Chugiak, and the Turnagain Arm communities. These on-site visits help homeowners understand specific ways to reduce the potential of a home ignition from a brush fire through vegetation management and property maintenance.

Firewise focuses on the “home ignition zone,” the 100 – 300 foot radius around the home that influences fire spread. Numerous case studies demonstrate how the vegetation and other combustible materials within the home ignition zone, including the construction materials, affect the home’s survivability during a wildland fire.

To make a home Firewise, residents can take simple steps to dramatically improve their home’s safety. Most tasks can be completed in a few days or even hours. The WMO publishes an annual calendar along with the Firewise Alaska guide to outline these important principles.

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, assuming 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, exterior stairs, and rain gutters.

One of the most important elements of a Firewise home is a non-combustible perimeter that is 3 feet wide around the entire structure.

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 fires and other emergencies. Firewise homes and neighborhoods can survive a wildland fire without having an associated residential disaster.

Firewise principles do allow us to have trees around our homes. The key is to keep the trees healthy with regular pruning and watering. We should also keep the trees spaced 15 feet or more away from our home.

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.

In 2009, the Anchorage Fire Department Wildfire Mitigation Office was kept very busy with the demand for Firewise home assessments. A total of 123 assessments were completed in just 5 months with 53 homeowners submitting requests for reimbursement. An atypically warm summer that began early with warm temperatures in late April melted snow and quickly reminded residents of the hazards that hid under the snow all winter. The warm temperatures persisted through August and demand for assessments remained steady all summer. In addition, two windstorms hit the Anchorage Hillside and Eagle River during the winter and contributed to thousands of downed trees. These trees were quickly covered with snow; and many homeowners were forced to wait until the summertime to remove the dead trees from their property. The majority of the promotion of the wildfire program is word-of-mouth, and word seemed to spread quickly that the Firewise program was available to help with the removal of spruce trees in wildfire-prone areas.

Many homeowners in Eagle River experienced wind damage to their live spruce trees. Additionally, on the river side of Eagle River Road, many homes are situated proximal to extensive stands of black spruce, a "fuel" that carries fire quickly.

Dry leaves accumulate next to this cedar fence. If ignited, fire could travel directly to the homes in this neighborhood.

Firewise Home Assessments by Year

	2003	2004	2005	2006
Firewise Home Assessments	200	266	345	169
Number of parcels treated	16	82	189	87
Acres treated	30.24	102.29	215.58	89.72
Total cost of tree work	$16,617.50	$114,066.08	$500,056.50	$320,763.35
Reimbursements issued by AFD	$12,183.50	$79,846.26	$403,718.64	$109,996.40

	2007	2008	2009	Total
Firewise Home Assessments	110	51	123	**1264**
Number of parcels treated	52	26	53	**505**
Acres treated	68.32	34.83	125.32	**666.31**
Total cost of tree work	$120,396.25	$60,323.75	$129,709.00	**$1,262,852.43**
Reimbursements issued by AFD	$75,628.38	$40,999.13	$84,175.30	**$806,547.59**

While 286 Firewise home assessments were done in 2002, AFD did not initiate the reimbursement program until 2003. The values in the table reflect this program from 2003 through 2009.Values shown in the 2008 report were incorrect due to a spreadsheet error.

Wood Lots & Brush Disposal

AFD operates two wood lots in the Municipality: one in Eagle River at the Anchorage Regional Landfill and one in Girdwood in the Industrial Park. The Anchorage wood lot is operated by the Anchorage Soil & Water Conservation District through support from the Municipality to use the snow storage site on C Street. Wood lots provide residents a place to dispose of their brush and woody material as part of creating their Firewise landscape. Each location grinds its wood chips for local use in landscaping, trail cover, animal bedding and waste cover.

Alaskans have demonstrated that wood lots are a successful method to facilitate a Firewise approach around the home. For almost ten years, multiple partnerships and contracts have supported wood lots and brush disposal options for residents across the Municipality.

Nenana Ridge prescribed burn operated by Alaska Fire Service with research by the University of Alaska Fairbanks. Photo by Chris Rogers

Neighborhood Forest Treatment

TrailWatch

In 2009, AFD coordinated its hazard fuel reduction projects with the Municipal Parks & Recreation Department's TrailWatch program. Many brush fires occur in the greenbelt zones along the trail system. Fires in Russian Jack Park and Tikishla Park were both ignited in dense black spruce directly adjacent to neighborhoods. In previous years, the Piper Street and Goose Lake fires, among other greenbelt fires, encouraged AFD to look closer at these areas for mitigation projects. With respect to juvenile and vagrant activity supporting the causes of these fires, thinning trees along the trail system is a start in mitigating fire's spread potential. Additionally, increasing the visibility into the forest from the trail deters fire starts in these corridors.

Three primary projects in 2009 were trail corridors and adjacent areas in Russian Jack Park, along the Campbell Creek Greenbelt, and the North Bivouac trailhead in Far North Bicentennial Park.

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 remove and thin trees. Slash treatment is conducted through the mechanized "mowing" process, and sometimes slash is chipped along trails.

AFD Rotor 1 douses the fire at Tikishla Park in July 2009. AFD Firefighters spent many hours ensuring that all hot spots were cooled and no fire remained in the deep organic layers.

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.

The trail project in Far North Bicentennial Park supported maintenance of the 2001 shaded fuel break in that area. The Tank Trail that departs from the North Bivouac parking lot extends northeast to the Ft. Richardson boundary. AFD widened this trail in 2009 supporting access for fire apparatus and limiting fire spread. Fire crews cut beetle killed spruce and the trees were hauled out of the woods during the original 2001 project. This original project served to slow fire spread by reducing the volume of forest fuel, helping to protect egress along the Campbell Airstrip Road and homes in Stuckagain Heights.

Along the trail in the Campbell Creek Greenbelt, trees were thinned and visibility was dramatically increased. This was the site of the 2008 Piper Street fire where 10 acres burned in dense black spruce.

Mitigation for fire also supports forest health. After thinning and pruning, the residual trees have more resources to maintain health and vigor.

Municipality of Anchorage
Anchorage Fire Department • Wildfire Mitigation Office
Parks & Recreation Department

2009 Wildfire Mitigation & Trail Watch Project
Russian Jack Springs Park - North

Contacts: Sue Rodman 267-4902 at Anchorage Fire Department
Teri Peters 343-4297 at MOA Parks & Recreation
04/08/2009

To mitigate the risk and hazard of wildfire and to improve trail safety, the Anchorage Fire Department has partnered with the MOA Parks & Recreation Department for a Trail Watch project this spring in Russian Jack Springs Park. The trail designated for treatment connects Lions Campground at Boniface Boulevard with the Cartee Softball Complex and Russian Jack soccer fields along Pine Street.

There has been evidence of fire use in Russian Jack Springs Park over the past several years. Dense trees and fallen limbs provide the fuel for these fires. Homes adjacent to the park may be impacted by fire. By removing dead woody material and pruning the live residual trees, less fuel (wood) is available to burn. Also, the increased visibility into the forest dissuades fire use.

Tree work is scheduled to begin in late May with professional wildland firefighters thinning and pruning trees along the trail. Tree limbs will be chipped on site. **For the primary project, outlined in** green, tree thinning will extend from the ball fields to Lions Campground and returning to the main trail by a northern route. If there is time, **a secondary project, outlined in** yellow, will start at the campground and extend north to 6th Avenue.

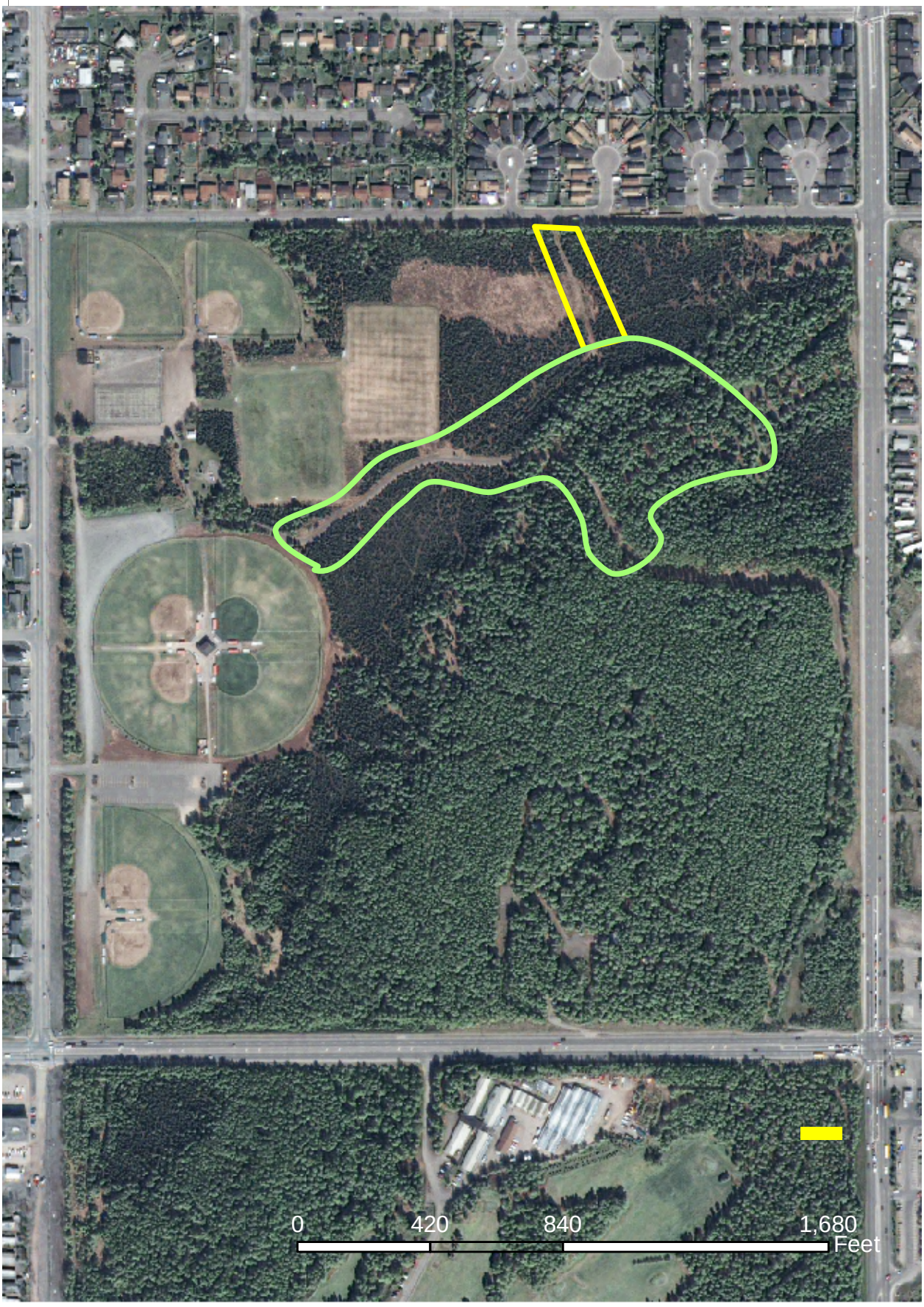
Dense black spruce trees will be thinned into small clumps. Residual trees will be pruned, removing the lower branches near the ground. This treatment removes “fuel” for fires between trees and improves visibility through the forest near the trail for safety. Firefighters will treat to a depth of 25 feet on both sides of the trail.

Tree work will be done by the State of Alaska Pioneer Peak Hotshots. These are professional firefighters working on fire mitigation projects in the Anchorage area since 2001. Chipping will be done by a private contractor Fuels Reduction of Alaska.

- Please watch for signs indicating that the crew and chipper are working. Give them plenty of space while using the trail.
- Nesting birds use both trees and the forest floor during the spring to raise their young. The crews have been instructed to be watchful for nests and leave those trees and areas alone.

http://www.muni.org/fire **-** ***http://www.muni.org/parks***

Russian Jack Springs Park - North
2009 Trail Watch - Firewise



04/06/09 Anchorage Fire Department. S.Rodman

Municipality of Anchorage
Anchorage Fire Department • Wildfire Mitigation Office
Parks & Recreation Department

2009 Wildfire Mitigation & Trail Watch Project
Campbell Creek Trail: Piper to Elmore

Contacts: Sue Rodman 267-4902 at Anchorage Fire Department
Shawna Popovici 343-4202 at MOA Parks & Recreation
04/08/2009

To mitigate the risk and hazard of wildfire and to improve trail safety, the Anchorage Fire Department has partnered with the MOA Parks & Recreation Department for a Trail Watch project this spring along the Campbell Creek Trail between Piper Street and Elmore Road. Tree thinning and pruning along this trail is a continuation of efforts by these two groups started in 2003. This is also the site of the Piper Fire which burned 10 acres of forest on July 3, 2008.

There is substantial evidence of fire use throughout this area. Dense trees and fallen limbs provide the fuel for these fires. Homes adjacent to Campbell Park could be impacted by a wildland fire in this area. By thinning black spruce trees and pruning the live residual trees, less fuel (wood) is available to burn. Also, the increased visibility into the forest dissuades fire use.

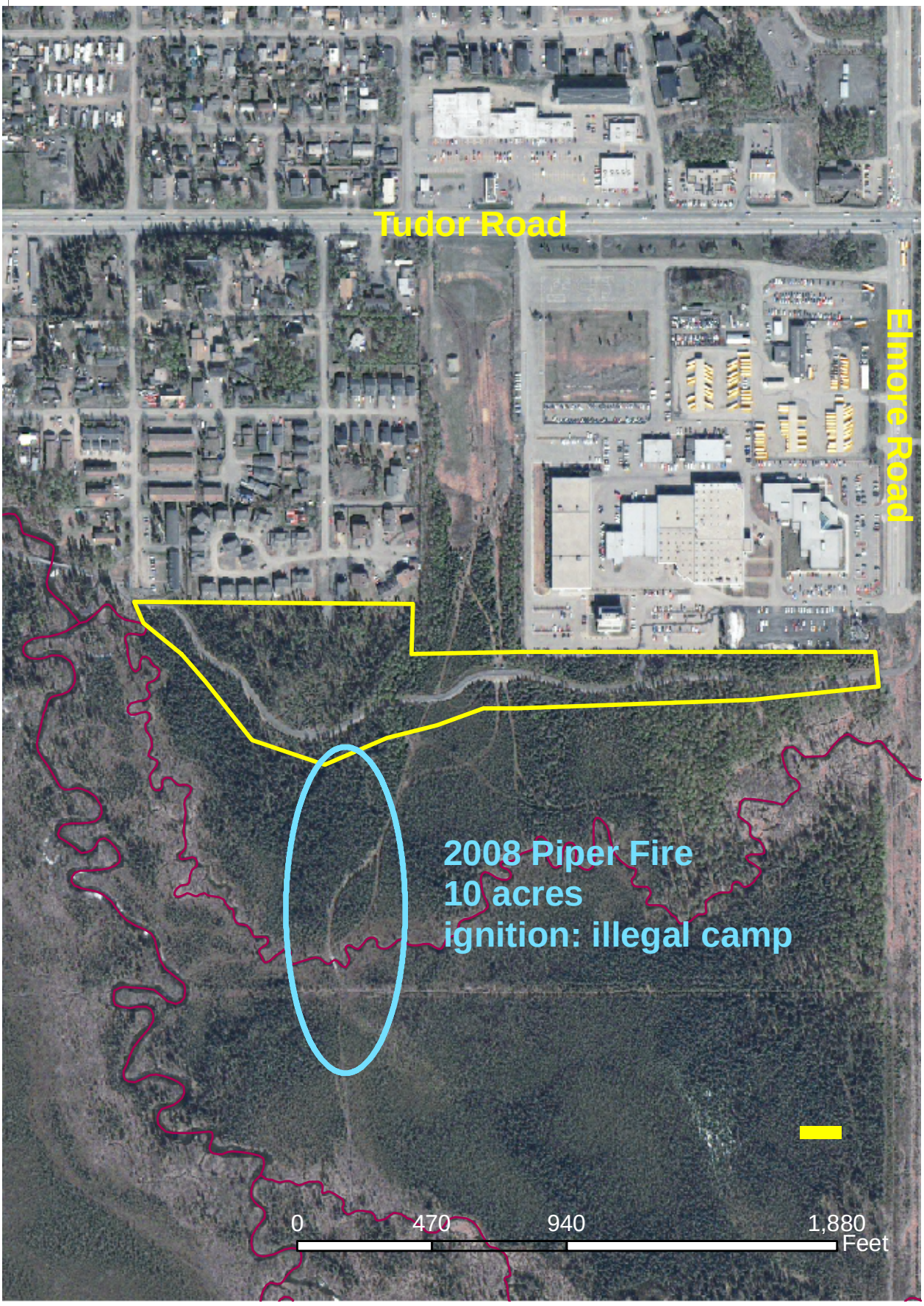
Dense black spruce trees will be thinned into small clumps. Residual trees will be pruned, removing the lower branches near the ground. This treatment removes “fuel” for fires between trees and improves visibility through the forest near the trail for safety. Firefighters will treat both sides of the trail 25 – 50 feet into the forest, depending on forest type. Additionally, dead trees will be removed in the forested area north of the trail between Grumman and Piper. A buffer will be maintained between the parking lot of the Permit Center and the trail.

Tree work is scheduled to begin in early May. Thinning and pruning will be done by the State of Alaska Pioneer Peak Hotshots. These are professional firefighters working on fire mitigation projects in the Anchorage area since 2001. Chipping will be done by a private contractor Fuels Reduction of Alaska.

- Please watch for signs indicating that the crew and chipper are working. Give them plenty of space while using the trail.
- Nesting birds use both trees and the forest floor during the spring to raise their young. The crews have been instructed to be watchful for nests and leave those trees and areas alone.

http://www.muni.org/fire **-** ***http://www.muni.org/parks***

Campbell Creek Trail: Piper to Elmore
2009 Trail Watch - Firewise



WUI Fires Ignited in Illegal Camps

Special Report

This report was written in support of the Mayor's Action Plan for Chronic Public Inebriates and the Related Issues of Homelessness. While brush fires from illegal camps are a source of fire ignitions in the Wildland Urban Interface in Anchorage, they are only one source among others: juvenile fire setters, careless residential fires, other arson, escaped permitted fires, and other causes.

Introduction

Between 2001 and 2009, AFD has suppressed 1,045 wildland fires. Illegal camping in the Anchorage Bowl has caused numerous brush fires, several of which have lead to significant wildland urban interface (WUI) fires, as shown in Table 1. AFDs initial attack response is to be commended for containing these fires before any structural fires were ignited. This is due to diligent training and fast response times.

Chart 1 below illustrates the high volume of brush fires that occur between May and July. The potential for a large WUI fire does not lie dormant along the Anchorage Hillside, but rather extends throughout the city due to the vast number of green belts, park lands and vacant parcels that foster illegal camps. In the past seven years, illegal camps have contributed to several significant wildland fire incidents (Table 1) and an increased threat to residential safety as recent weather and increased fuels have caused greater fire intensity.

July 2, 2008 The Piper Street Fire was started by an illegal camping fire that burned 10 acres of municipal park land.

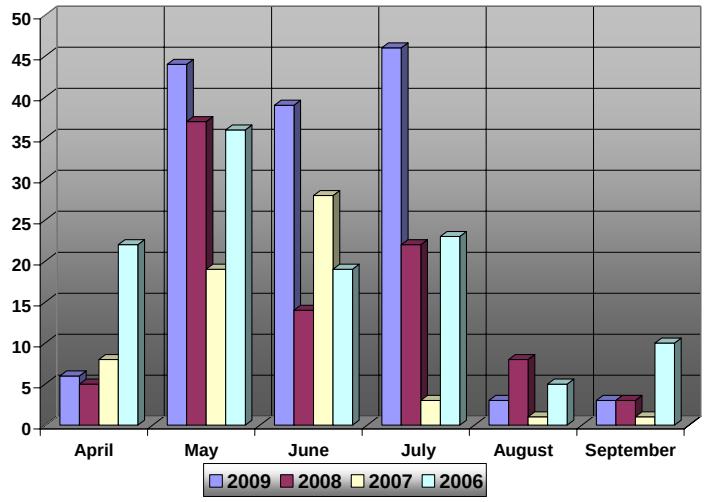


Chart 1: Monthly wildland fire occurrences for summer months, 2006-2009.

Table 1: Large illegal camp fires

Year:	Illegal Camp - Large Wildland Fires:	Acres Burned:
2003	Dowling Fire	2.5
2005	International Rd Fire	0.5
2006	Russian Jack Park Fire	1.0
2008	Russian Jack Park Fire	1.0
2008	Piper Street Fire	10.0
2008	North Bicentennial Park Fire	1.0
2009	Russian Jack Park Fire	1.0

The acres burned in the fires shown in Table 1 may seem negligible compared to wildland fires seen on national news coverage. However, in the Anchorage WUI where homes are nestled amid the boreal forest, a real threat to life and property exists. Our local forest type with its spruce trees and frequent summer dry spells lends to hot, fast burning fires that can severely challenge local fire suppression forces in the first hour or less. This primary and initial response to a fire is termed "initial attack" or IA. **Due to the high fire spread potential, AFD focuses on providing rapid and effective initial attack (IA)[1] thereby minimizing both acres burned and threats to life, property and natural resources.**

If conditions exist to support a wildland fire in the MOA, then it is likely for fires to also be occurring in other parts of Southcentral, such as the Mat-Su or Kenai Peninsula Boroughs. While the MOA counts on mutual aid responders from state and federal agencies if a fire spreads beyond our initial attack suppression efforts, those agency firefighters may well be committed to other incidents. Under the right wildland fire conditions, a fire burning less than half of an acre could lead to a structural ignition thereby tarnishing our polished Municipal record of no homes lost to wildland fire to date on record. **It is critical that fire starts are suppressed immediately to avoid a residential disaster.**

[1] Initial Attack (IA) – A planned response to a wildland fire given the potential fire behavior. The objective of initial attack is to stop the fire and put it out in a manner consistent with firefighter and public safety and values to be protected. The goal of IA within the MOA is to keep fires under one tenth of an acre.

Camp Site Locations

Large fires from Table 1 total 17 acres burned within the MOA since 2003. Three primary commonalities in all of these fires add to the threat of loss of life and property:

- Secluded forested areas usually in dense spruce stands that support intense, fast moving fire;
- Off-road access causing delayed fire response;
- Proximity to residential developments increasing the potential for structural ignition.

Point of origin for the 2003 Dowling Fire.

The initial attack goal is to contain these wildland fires within one tenth of one acre in size. Firefighter and public safety is the first priority at the scene. If initial attack fails, firefighters must reconsider their position and need for additional resources. In spruce forests, and other vegetation types as well, fire can spread quickly. Fire moving through the tree tops is an extremely dangerous scenario for any firefighter and requires aerial support with water or retardant.

Suppression Costs for Wildland Fires in the MOA

In 2009 alone, AFD suppressed 139 wildland fires[2] within the Municipality for an estimated total suppression cost of $72,000. AFD was very successful with 72% of the wildfire incidents requiring a single 3-man company to provide IA, leaving 28% of the brush fires requiring multiple units. The MOA was very fortunate this past summer considering 2009 was the 4th busiest IA season since 2001 and that the weather was hot and dry leaving the MOA with 34 days of high to extreme wildland fire danger.

Piper Street Fire 2008 burned 10 acres near Piper Street and Tudor Road. Once crews made access, extreme fire behavior with short range spotting occurred.

In 2008, AFD provided IA on one of the largest wildland fires the municipality has seen in years totaling 10 acres. On July 2, 2008 at 2:00 pm, several calls were placed to the 911 system stating that there was a large column of smoke in Midtown. The Piper Street Fire was later associated with an illegal camp upon investigation. This fire embodied the three common characteristics of dangerous fires: dense fuel type, off-road access, and proximity to structures. The Piper Street Fire took roughly 14 hours to contain[3] and an additional 10 hours to control.[4] Command was terminated 6 hours later for a total of 30 hours spent on the Piper Street wildland fire incident.

The total cost for the Piper Street Fire exceeded $123,000. This “two alarm” incident required AFD to request mutual aid support from the Alaska Division of Forestry (DOF) and the Alaska Fire Service - Bureau of Land Management (BLM). Collectively, all three agencies provided 10 fire engines (8 – AFD, 2 – DOF), 2 tenders (AFD), 2 Helicopters (1 AFD, 1 DOF), 1 Air Attack Platform (DOF), 1 Retardant Plane (DOF), 2 Type 2 hand crews (DOF), and more than 18 individual command and general staff members from all three agencies.

Mitigation Efforts

AFDs Wildfire Mitigation Office (WMO) annually conducts neighborhood forest treatment projects to address forest fuels on public lands in addition to providing more than 100 individual Firewise home assessments to residential home owners. The combined effort of both homeowners and public land management provide a buffer within the WUI to limit fire’s spread and intensity. The result is greater protection of life and property in the event of a wildland fire. In the case of the Piper Street Fire, forested areas were treated on the north end of the fire to protect homes between the park and Tudor Road due to the parks wildland fire potential. Additionally, several homeowners made

[2] Wildland fire totals for the MOA came from AFD FireRMS reporting system specifically at incident types: 140 Natural vegetation fire, other; 141 Forest, woods, or wildland fire; 142 Brush or brush and grass mixture fires; and 143 grass fire.
[3] Contain – The status of wildland fire suppression action signifying that a control line has been completed around the fire and any associated spot fires, which can reasonably be expected to stop the fire’s spread.
[4] Control-The completion of control lines around a fire.

Firewise improvements to their properties. Continuing wildland fire mitigation and prevention efforts on private and public lands supports the reality that Anchorage can experience a fire at the urban interface without having an associated residential disaster. Diligent management of fuels in these buffer zones and upkeep of Firewise homes is critical to maintaining this status over time.

Retardant plane dropping retardant to protect homes from the Piper Street Fire.


Extreme fire behavior burning in a dense spruce stand during the Piper Street Fire.

Conclusion:

The entire Municipality of Anchorage is considered the wildland urban interface and is susceptible to the threats of wildland fire. Mitigation of wildland fires in Anchorage's urban interface requires diligence and awareness through hazard fuel mitigation; Firewise home assessments; public education; monitored fire danger, weather & fuels; and a strong, local initial attack suppression force.

The Piper Street Fire cost $123,000 to suppress. No structures were ignited. AFD's wildfire mitigation program addresses the potential of this fire to burn into the adjacent subdivision potentially causing the loss of life and numerous structures valued at much more than this fire's suppression cost.

The social dynamic of fire in the MOA is captured in the fact that more than 90% of fires in Anchorage are human-caused. Illegal camps are one element of fire cause in the MOA. Camp location, typically in off-road, dense forests, increases the likelihood of a wildland urban interface fire that does involve homes due to delayed suppression response and resulting increase in fire size and intensity.

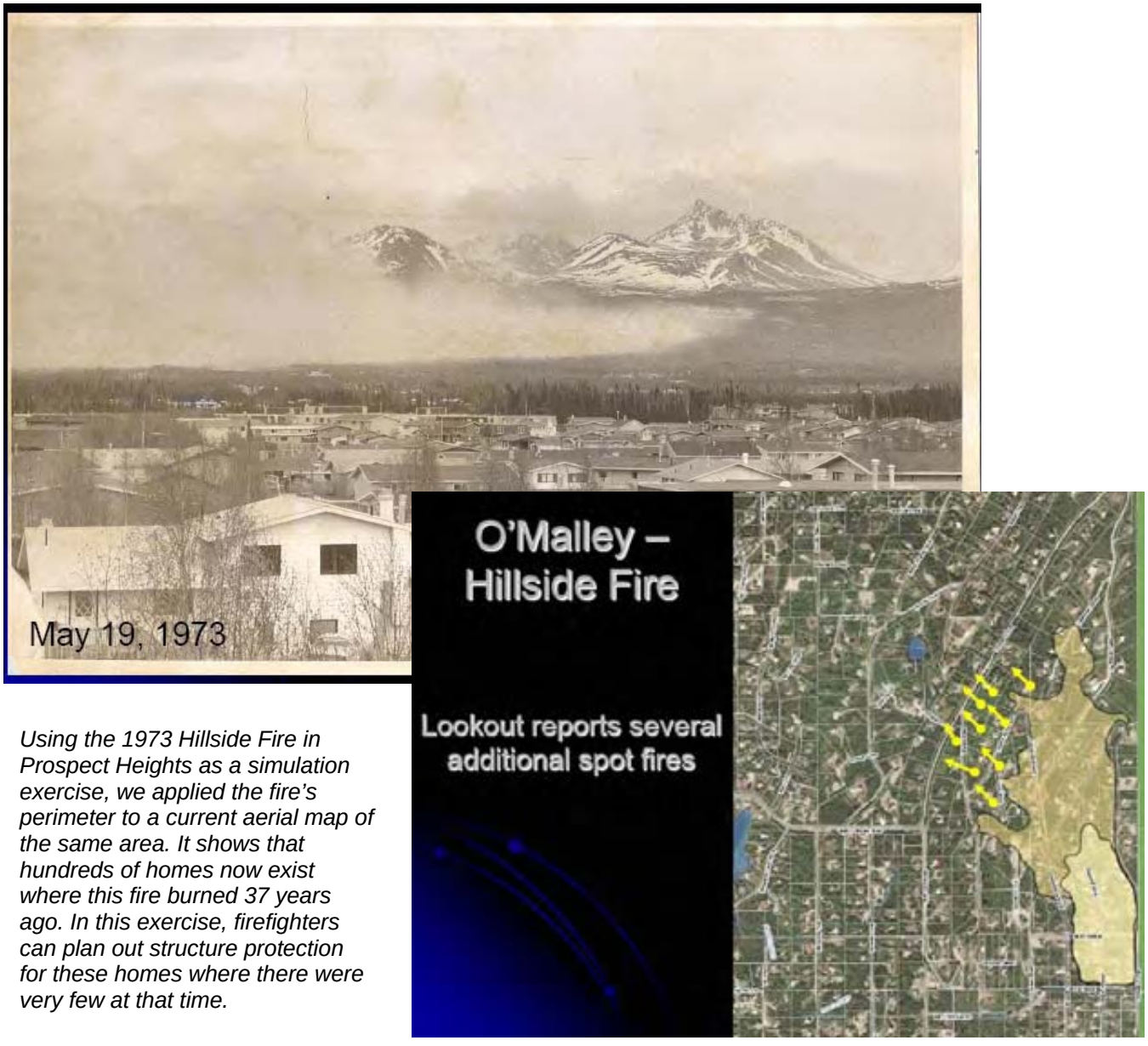
Wildfire Suppression

- Wildfire Training
- Rotor 1 Helicopter

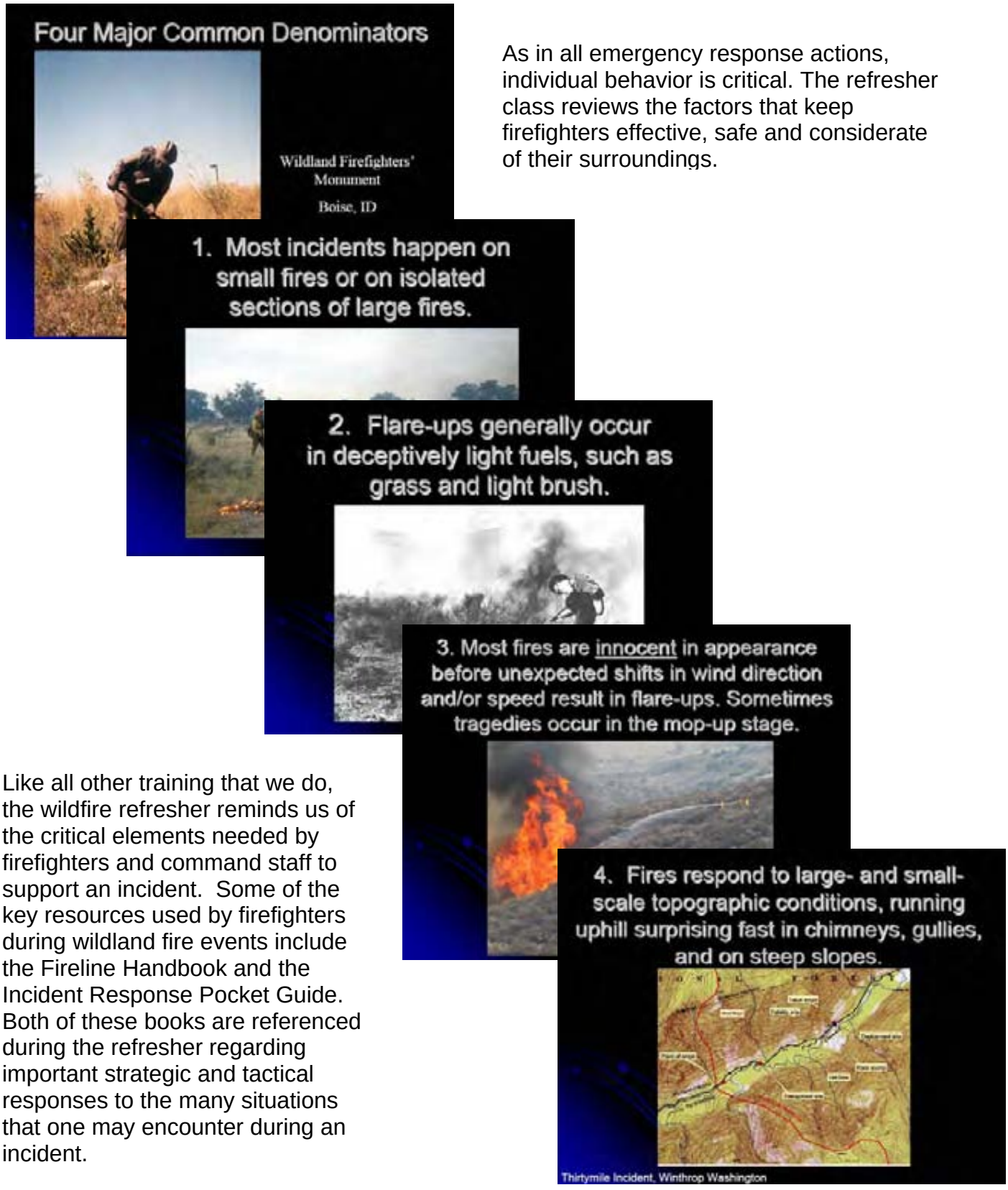
Wildfire Training

Annual Wildfire Safety Refresher

Each year, AFD holds the annual wildfire safety refresher class, mandatory for all AFD firefighters and staff. The class reviews national, state and local issues in wildfire safety along with case studies where lessons learned can save lives. Many of these case studies are grim reminders of how firefighter lives were lost in the line of duty. Others, such as the Hillside Fire of 1973, remind us that Anchorage can easily lose homes if we do not take all measures to mitigate fire before it happens *and* use fast, effective suppression techniques when it does happen.



Using the 1973 Hillside Fire in Prospect Heights as a simulation exercise, we applied the fire's perimeter to a current aerial map of the same area. It shows that hundreds of homes now exist where this fire burned 37 years ago. In this exercise, firefighters can plan out structure protection for these homes where there were very few at that time.



As in all emergency response actions, individual behavior is critical. The refresher class reviews the factors that keep firefighters effective, safe and considerate of their surroundings.

Like all other training that we do, the wildfire refresher reminds us of the critical elements needed by firefighters and command staff to support an incident. Some of the key resources used by firefighters during wildland fire events include the Fireline Handbook and the Incident Response Pocket Guide. Both of these books are referenced during the refresher regarding important strategic and tactical responses to the many situations that one may encounter during an incident.

Topography

Esperanza Fire, 5 Deaths

California 2006

Do we have any similar topography in your local area?

Topography Situational Awareness

Anchorage Hillside Topography

Eagle River Drainage

Any questions on topography?

Anchorage Fire Department

Aviation Section

2009 “Rotor 1”

Review & Accomplishments

Prepared by: Jason Kohler – Aviation Manager

2009 Wildland Fire Season

It was another successful year for AFD Rotor 1 as we continued to provide aerial coverage for the Municipality of Anchorage (MOA) and continued to further develop interagency partnerships at the local, state and federal levels. We served the 2009 wildfire season from May 21 through July 21 for a total of 61 days on contract. Columbia Basin Helicopters, based in Baker City, OR, provided a restricted, medium category platform with a fixed, 324-gallon water tank.


Columbia Basin Helicopter – UH1H with a fixed tank

Unlike prior contracts, this year we were provided with a restricted category helicopter, rather than a standard type as certified through the Federal Aviation Administration. While this restricted the helicopter's mission capabilities, it provided us the opportunity to adapt and learn about regulations new to us, to narrow the scope of the program, and to work with the fixed tank water delivery system, the first ever fixed tank system contracted in the state of Alaska.

For the 2009 Wildland Fire season Rotor 1 flew a total of 15.8 flight hours with 9.5 of those flown on emergency missions and 6.3 in evaluation and training.

Wildland Fire Missions

May 23	Initial Attack on Russian Jack Fire
May 26	Aerial support on Huffman Fire
July 4	Callback on Kincaid Fire
July 8	Initial Attack on E 20th Ave Fire
July 8	Initial Attack on Connors Bog Fire
July 15	Initial Attack on Kincaid Bluff Fire
July 16	Initial Attack on Kincaid Bluff Fire

Search and Rescue Aerial Support Missions

May 26	Two hikers struck by lighting
June 9	Two youth stranded between Kincaid Park and Fire Island
June 10	Sand Lake dive team support
June 25	Report of downed paraglider in Eagle River
June 27	Injured hiker on Flat Top – staged only
July 5	Eagle River swift water support
July 14	Turnagain Arm response – deceased four legged animal found
July 20	Eagle River swift water support – overturned canoe

Contracting Costs

Rotor 1 has provided seasonal aviation assistance since 2001 and is funded through a federal wildfire appropriation grant. The 2009 contract was written with the option for a 2010 renewal; however, the wildfire grant may not be enough to cover the projected cost. The following table illustrates the cost per year for the past three years.

Year	Days on Contract	Emergency Flight Hours	Non-emergency Flight Hours	Contract Cost
2007	66	31.4	15.0	$238,008.70
2008	49	6.2	17.1	$240,402.98
2009	61	9.5	6.3	$235,968.00

The contracted amount for Rotor 1 under the current contract is a maximum of $320,000. In 2009 Rotor 1 spent $235,968. The 2010 contract guarantees a minimum of $184,032 which covers the daily availability for the initial contract period of 54 days. The additional variable cost is flight time at $1,500 per flight hour plus the two optional 7-day extension periods.

Accomplishments

This year brought many new challenges to work with and opportunities for learning new regulation, new equipment and to continue expanding the capability of the aviation unit within the fire department.

Modified Program to Adapt to Restricted Category Helicopter

When it comes to contracting helicopters the contract has to specify whether you want a standard or restricted category helicopter, a certification administered through the Federal Aviation Administration (FAA). In the past Rotor 1 has been contracted as a standard category helicopter which allowed the fire department/MOA to use the helicopter for both emergency and non-emergency missions. The main difference between the two type certificates is that a standard type allows passengers on board as long as the pilot approves the planned mission and there are seat belts for every passenger while the a restricted type only allows essential crewmembers on board, restricting the mission capabilities to its special purpose.

Three main reasons affected the contracting of the restricted category helicopter:

1. The fire department was concerned with staffing and budget through the summer months
2. The instate/national helicopter availability for standard category helicopters was very competitive
3. There was a shortage of qualified pilots because other agencies contracts were put out to bid at earlier dates.

Because Rotor 1 was being contracted as a restricted helicopter the aviation program had to limit our operation compared to past summers by:

- Eliminating aerial reconnaissance and familiarization for both fire department special teams (i.e. dive, swift water, search and rescue, and forestry) and other city departments (i.e. planning, zoning, and the police department). Only the pilot and helicopter manager were allowed on board.

- Adjusting all flight protocols due to the loss of the flight crewmember position ensuring that the pilot and flight manager provided a safe and effective operation through out the contract period.
- Ensuring that the aviation program was compliant with the additional FAA regulation Title 14 Part 91.313 Restricted Category Civil Operating Limits.

Although there were several limitations, the aviation program continued to offer the best aerial support for the Municipality by focusing on a narrower scope of work to advance AFDs expertise in fire suppression with the fixed tank and providing an aerial platform for search and rescue missions. Through consultation with both Columbia Basin Helicopter staff and the FAA - Flight Standards District Office (FSDO) AFD was able to maximize utilization of a restricted category contract. This consultation improved not only the aviation mission operation but also safety standards and protocols.

Evaluation of Fixed Tank Operations

In the past, Rotor 1 has operated with a collapsible bucket system, the traditional water delivery system for aerial wildfire suppression. This summer, AFD had its first opportunity to operate with a 324 gallon fixed tank which performed very well. In the previous summers, the collapsible bucket was stowed internally when dispatched to any wildfire incident due to several safety issues. Once on scene the flight crew would establish a landing zone and determine the closest water source. After contact with the incident commander, the flight crew would land and deploy the collapsible bucket, perform safety checks and then take off to fill the bucket and proceed with water drops on the fire. This process generally took ten to fifteen minutes. With the fixed tank, however, Rotor 1's initial response to the fire with water and subsequent turn around time was dramatically reduced to less than five minutes and the fixed tank further provided:

- Safer operations with reduced accident potential and equipment malfunction such as dropping the collapsible bucket and damaging property or causing a serious injury
- Enhanced the capability towards filling the tank and getting water delivered to wildfire incidents or: decreased the response time for more effective fire suppression
- More effective drop patterns and improved penetration through the forest canopy in all local forest fuel types
- More time on scene assisting ground resources and addressing wildfire safety concerns

62 total water drops totaling 18,600 gallons – 28 drops were provided for initial attack wildfire suppression within the Municipality of Anchorage

The fixed tank is the ideal water delivery system while operating in a heavily populated urban environment like the Municipality of Anchorage and surrounding Southcentral communities. All fixed tank systems are hard mounted to the belly of the helicopter which enabled Rotor 1 to fly more directly from the designated water source to the wildfire incident. It takes roughly 90 seconds to fill the tank at either a natural water source or by using a manmade reservoir like a fold-a-tank. Although most collapsible buckets are generally faster to fill, the fixed tank makes up the time difference once in flight because it is more aerodynamic; allowing the helicopter to maximize air speed. With a filled collapsible bucket, the helicopter cannot exceed a certain air speed depending on the size of bucket and helicopter model because of air drag on the bucket and the need to maintain control of an external load.

Operating with a fixed tank also improved delivering water to wildfire incidents by giving more precision in flanking and spot drop requests. The fixed tank was impressive when it came to penetrating through all forest canopies and getting water onto the forest floor which is rarely the case with a collapsible bucket system. Performing a flanking drop pattern with collapsible bucket is variable with light and medium helicopters because they do not carry enough water volume and tend to miss the desired target. However the fixed tank provided a consist 10' x 150' flanking drop with no problem; a functionality that would have been valuable on the Piper Fire that occurred July 2, 2008 that burned 10 acres in Far North Bicentennial Park.

Piper street fire burnt 10 acres in the middle of Anchorage.

Working with the fixed tank was very beneficial and highly effective with the 2009 summer fire season. The flight crew would recommend that future contracts specify the fixed tank over the collapsible bucket system due to rapid response capabilities, water drop effectiveness and safety for both ground resources and air crew.

Expanded Capability for Rotor 1

Rotor 1 assisted AFD with several backcountry and water rescue/recovery missions this summer due to the lack of Southcentral aerial emergency resources. Rotor 1 provided AFD ground resources with a better incident size-up, location and coordinates, along with visibility of access routes. Once ground crews formalized a rescue plan, Rotor 1 provided incident commanders with periodic status updates. Both backcountry and water rescues take a lot of resources and time; Rotor 1 has the potential to reduce the total time on scene and fire department resources assigned to each of these incidents in the future.

Although the flight crew was reduced, AFD continued with flight manager training for one trainee flight manager, which will support future staffing. AFDs goal is to maintain a minimum of three qualified flight managers for Rotor 1 operations. The trainee flight manager continued to demonstrate his capability and after three summers of training, the aviation program is moving forward with recommendations to qualify this flight manager trainee for 2010.

Additionally, the aviation program successfully provided quality aviation awareness and training throughout AFD at all levels of command with single and multi-company discussions and drills.

Interagency Relations
AFD continued to maintain a cooperative agreement with the Alaska Division of Forestry (DOF) Mat-Su Area for Rotor 1 to provide aviation mutual aid support on wildland fires. Under this agreement, DOF understands that Rotor 1 has a maximum of a one-hour radius from Anchorage and all associated costs would be covered by DOF if the request was approved.

Although Rotor 1 didn't effectively launch under this agreement in 2009, DOF has activated Rotor 1 in the past for both initial attack and extend attack wildfire suppression needs in both the Mat-Su and Kenai Areas. There were several coordinated requests between DOF and AFD for Rotor 1 to provide aerial coverage for Mat-Su while DOF sent Mat-Su air resources to other fires within the state.

Opportunities for the Future

The Anchorage Fire Department's Aviation Section continues to make significant advances in developing and demonstrating the effectiveness of Rotor 1 while providing a much needed, centrally located emergency response resource in the State's population center. As an aviation resource, Rotor 1 is crucial due to the vast geographical area for all response types. This is underscored by the State of Alaska's limited airborne civilian emergency response capabilities.

Rotor 1 continues to grow and demonstrate its capabilities by providing:

- Wildland fire suppression
- Urban and backcountry search and rescue
- Aerial reconnaissance during emergency and non-emergency events
- Transport of equipment inside and outside of the aircraft
- Assistance to other agencies and Municipal departments when needed

While the AFD Aviation Program continues to grow, many opportunities are still available that would allow us to gain even more value from the investment such as:

- Extending the capabilities of Rotor 1 within the fire department to include:
  - Aerial hoisting
  - Remote extrication response
  - Swift water, inlet, or flood rescue
  - Initial EMS response to remote events
  - Natural disaster preparedness (?) and response for floods, landslides and earthquakes
  - FLIR capability for USAR and SAR events
- Strengthening the Municipality of Anchorage and Southcentral emergency response plans through interagency coordination and cooperation (and/or through expansion of mutual aid agreement capabilities?)
- Developing Operational Readiness Exercises to strengthen the Flight Crew's experience repertoire
- Continuing to develop Rotor 1 public safety operations for the Municipality of Anchorage, such as offering expanded aerial reconnaissance
- Coordinating training and drills to include Girdwood VFD and Chugiak VFD

Conclusion

AFD's Rotor 1 helicopter served the public and emergency responders on more emergency calls in 2009 than it has in past years. The AFD Aviation Program responded with efficiency to fire suppression and airborne reconnaissance demands. Rotor 1 has been instrumental in several critical life safety missions and supported many fire incidents.

Alaska's Southcentral Region continues to develop and expand; the current emergency aviation infrastructure must also expand to serve that growth. Providing an aerial platform from the Anchorage Fire Department is the best mechanism to serve not only the Municipality of Anchorage but the tri-borough emergency needs due to the central location and established operating protocols developed in Alaska's population center. Securing funding for a 2010 helicopter contract in Anchorage is the barrier to continuing this service to the residents of Southcentral.