Wildfire Risk Assessment Guide for Alaska Villages and Communities

March 24, 2005

ALLAKAKET

Executive Summary

Allakaket has been identified in the U.S. Congressional Record as one of the communities most at risk, nationally, from catastrophic wildland fire. A new housing development was constructed on an upland site south of the old Athabaskan village on the banks of the Koyukuk River, after the disastrous lowland floods of 1994. Unfortunately, the new housing development was constructed on a ridge in a dense, continuous, black spruce stand. This black spruce stand continued unabated into the Federal lands of Kanuti National Wildlife Refuge. A hazardous fuels assessment was initially done at Allakaket in 1997. Three hazardous fuel treatment areas were identified: (1) the land surrounding the new houses in the development, (2) the area around the adjoining lots where additional new house lots extend west of the first development, with thinning continuing along the access road from the old village, and (3) along the road continuing south to the landfill, with a firebreak to be constructed perpendicular to the road. The first two projects, above, have been completed in 2003 and 2004. The third project remains to be done. Treating these three areas at Allakaket will reduce hazardous fuels, protect values at risk, and improve the defensibility of the village. The project will be administered by the Allakaket Tribal Council and take one addditional year (2006) to complete. Funding will be secured through Region 7 U.S. Fish & Wildlife Service.

Introduction

This risk assessment system provides information about four primary elements contributing to or mitigating wildfire danger within or near a given Alaskan village. These elements are 1) Risk/Hazard, 2) Barriers, 3) Fire Protection Response, and 4) Community Firewise Rating.

Identification and Description of Community and Area

Community: Allakaket, AK (Village)

Location: T20N, R24W, Sec. 15 (N 66° 34'W ¬152°39')

Population: 133

Structures:

Homes: 41

Other community buildings:

1. Fuel site and electrical plant (1)

2. Airport maintenance shed (1)
3. School (1)
4. Community Hall (1)
5. Allakaket Tribal Office (1)
6. City Office (1)
7. Laundromat (1)
8. City Maintenance shed (1)
9. Community Church (1)
10. Allakaket Store (1)
11. Allakaket Social Services/Health Clinic (1)
12. Miscellaneous large buildings (2)

Infrastructure

The city water system with a water main is under construction, along with a sewage collection system and lagoon, but the system has not been completely connected.

A new landfill was opened the fall of 1996.

Electricity is provided by the Alaska Village Electrical Cooperative.

A new airstrip was completed during Fall 1998. The old airstrip is used as a site for slash pile burning.

The Allakaket School provides education for grades K-12.

The Allakaket Health Clinic provides basic health care. Emergency service is provided by volunteers and a health aid.

The small Kobuk Eskimo village of Alatna (12 additional houses and an airstrip) lies on the north bank of the Koyukuk River across from Allakaket.

Industry

Cottage industry and subsistence activities are the dominant industry. Many men in the village gain seasonal employment by wildland firefighting.

Local Fire Prevention Efforts

The village has no volunteer fire department. However, the village supports two active EFF crews. Most adult men in the village are trained in wildland firefighting. The Allakaket crewboss and the two squadbosses are very experienced. The Allakaket crews are sent to fight forest fires all over the western United States. However, the village itself lacks basic structural firefighting equipment, except for one pump and a hose. During

summer fire seasons, all trained community members might be on duty away from the village and unavailable to fight a local fire.

A partial shaded fuelbreak was constructed by the Allakaket crews with limited FWS funds along the south side of the new housing development in 1997. This fuels reduction work was considerably expanded with FWS funds in 2003 when 35 acres surrounding the new housing development were treated. An additional ten acres was thinned by the village crews in 2004 to the west of the existing houses, including new lots where additional houses are being constructed.

The village has voluntarily suppressed nearby <1 to 5 acre wildland fires, including an escaped 1 acre burn barrel fire in the middle of the village in June 2004. This fire was extinguished by the quick action of the WUI thinning crew on duty at the time at the nearby new housing development. The single pump and hose lay available were installed within minutes of the alarm by the squad boss at a small pond across from the City Office, where the burn barrel was located.

Fire Equipment

The village owns a small caterpillar tractor which has been used for local fuels reduction projects. A State DOT Airport hydroax (Brush Hog) was used during the time of the new airport construction to create an additional fuelbreak in the dense black spruce stand to the south of the new housing development on the ridge. However, the hydroax is no longer available in Allakaket.

Values to be Protected

Along with protecting their new homes, two areas of concern were brought up by the village: (1) protecting the fuel site/electrical plant, (2) the road to landfill. The fuels assessment also identified a need for another fuel break that could be constructed perpendicular to the access road which extends to the landfill through the new housing development. This fuel break would provide an additional defensible line in the black spruce south of Allakaket. The proposed work will help to protect the village and its infrastructure from the threat of wildland fire originating on Federal lands.

Natural Resources

The Village is surrounded by a vast area of black spruce/lichen forest, interspersed wetlands, the associated wildlife, and the intertwined ecological relationships of Kanuti National Wildlife Refuge.

Cultural Sites

The cemetery is the nearest cultural site. The cemetery is located approximately one-half mile east of the old village, overlooking the Koyukuk River.

Landfills

The new landfill began operation in 1996. The landfill is located approximately one mile to the south of and downslope from the new housing development. A gravel road connects the landfill to the village, through the new housing development. Landfills are unfortunately a frequent source of ignition for wildfires near Alaska villages. Discarded material accumulates and is not incinerated unless accidental or intentional ignition occurs.

Hazards

The fuel site near the new airport contains two large oil tanks and is considered a major hazard in itself. However, this site is down the hill, just to the north of the new housing development and is bordered by a road on one side and the airport on the other, and is thus less susceptible to wildland fire.

The landfill may also pose some concern as one does not know what hazardous materials have been deposited there. The landfill –a potential source of ignition-- is located in the black spruce stand south of the new housing development. A fire originating in the dump and driven by south winds could readily run uphill and into the new housing development on the ridge.

Improvements

See the items listed under Infrastructure above. There are several miles of dirt roads and/or ATV/snowmobile trails connecting the Village to the new airstrip, the new housing development, the landfill, and the surrounding area. These dirt roads may serve as de facto fire lines in and near the village.

Assessment of Risk, Hazard and Fire Protection Preparedness and Capacity:

1) Risk/Hazard Analysis

A) **Inside Community**: **HIGH**; C-1(spruce-lichen) fuel type (from the Canadian Forest Fire Danger Rating System - CFFDRS); fire return interval <100 years; fuels have accumulated since the area burned in 19--; portions re-burned in the 19--s; there have been two recent fires –- miles south of Allakaket – one in 19-- and the other in 20-- and one fire (2004) within Allakaket.

B) **Outside Community**: **HIGH**; same fuel type description as above. Intermixed DOYON and U.S. Fish and Wildlife Service (Service) lands surround the whole village. The closest Service land is 2.75 miles from the center of Allakaket.

2) Barriers

FAIR; the Koyukuk River borders Allakaket on the north and west; there is a series of lakes/riparian wetlands bordering the Village on the east and west; the south side is, however, continuous black spruce uplands extending down from the ridge upon which the new housing development was been constructed. This was built after the 1994 flood severely damaged the old village along the river.

3) Fire Protection Resources

FAIR; Allakaket and the surrounding area is under the protection of the Tanana Zone – Alaska Fire Service.

4) Firewise Ratings - FAIR to POOR.

Risk/Hazard Chart
(for use inside & outside village area)

Alaska Fire Return Interval

FUELS (predicted fire behavior based on historic summertime weather with hot, dry conditions)	High (0-99 years)	Moderate (100-300 years)	Low (>300 years)
Black Spruce Boreal Forest (CFFDRS=C2) *rate of spread: high* *intensity: high* *spotting potential: high*	**[H]**	**M**	**M**
Black Spruce Lichen Woodland (CFFDRS=C1) *rate or spread: moderate* *intensity: moderate* *spotting potential: high*	**[H]**	**M**	**M**
Grass (cured tall standing or matted; CFFDRS = O1a/O1b) *rate of spread: high* *intensity: moderate:* *spotting potential: low*	**H**	**M**	**L**
Mixed Boreal Forest (pre-green-up; may include white or black spruce, aspen and/or birch; CFFDRS=M1) *rate of spread: moderate* *intensity: moderate* *spotting potential: moderate*	**M**	**M**	**L**

Hardwood Forest (pre-green-up; includes aspen & birch; CFFDRS use D1 or M1) *rate of spread: low* *intensity: low* *spotting potential: low*	**M**	**L**	**L**
Deciduous Brush (includes willow & alder) *rate of spread: low* *intensity: low* *spotting potential: low*	**L**	**L**	**L**

Barrier Rating Chart

Barrier Type (list specific type under excellent, fair or poor)	**Excellent**	**Fair**	**Poor**
Water (may include lakes, rivers, streams and sloughs)		X	
Fuels (may include non-flammable varieties, such as riparian willow and alder)			X
Other natural features (may include barren landscape or rock)			X
Human-made features (may include airstrips or other clearings)		X	
Overall Rating		X	

Key:

Excellent: Village has a barrier(s) that provides thorough protection from fuels >1 mile away in at least 3 cardinal directions. An example of this would be a small village sandwiched between a major river and a runway (Sleetmute), or a village on an island (Stony River).

Fair: The village has a barrier(s) that provides thorough protection from fuels >1 mile away in at least two cardinal directions. Villages may have multiple barriers affecting a rating. Examples are airstrips separating a village from significant outside fuels, villages set amidst certain vegetation types or some villages situated on major rivers (Red Devil).

Poor: Any barriers that exist provide protection from fuels >1 mile away in fewer than two cardinal directions. Examples of insignificant barriers are small streams or sloughs with narrow riparian zones situated in the midst of highly flammable fuel types.

Resource Type& Location (list specific type under Excellent, Fair or Poor)	**Excellent**	**Fair**	**Poor**
AFS (smokejumpers, hotshots or other personnel)	X		
DOF (helitack, engine, or other personnel)			X
Other (may include other Federal agencies or professional & volunteer Fire Departments)		X	

Fire Protection Response Chart

***Key:**

High: adequate initial attack resources are more than 75 minutes away and adequate extended attack resources are more than 12 hours away.

Moderate: adequate initial attack resources are 30-75 minutes away and adequate extended attack can be in place in 8-12 hours.

Low: adequate initial attack resources are less than 30 minutes away and adequate extended attack can be in place in less than 8 hours.

*****Adequate initial and extended attack forces are defined as the minimum force necessary to stop the spread of a wildfire under 90^{th} percentile weather and fuels conditions. Calculating percentile weather can be done by downloading RAWS data into FireFamilyPlus from WIMS/KCFAST. Response times are based on resource location and historical response times.

Firewise Elements (list any specific comments under excellent/fair/poor)	**Excellent**	**Fair**	**Poor**
Landscaping			X
Construction			X
Water Supply	X		
Access	X		
Clear of Flammables/ Refuse/Debris (flammables stored properly & area cleared)			X
Overall Rating (Based on average of 5 elements)			X

Firewise Rating Chart for Defensible Space

KEY

Landscaping Guidelines:
There is a clearing of at least 40 feet around the home for firefighting equipment: flammable brush and dead/overhanging branches are removed; trees are pruned 6-10 feet above the ground; lawn is mowed regularly and ladder fuels are removed from the yard; remaining trees are spaced at least 30' apart at crowns; garden equipment is kept on the property.

Construction Guidelines:

Home is made of fire-resistant or non-combustible construction materials (especially important for roofing); vents are covered with wire mesh no larger than 1/8 inch; at least two ground-level doors exist; at least two means of escape exist in each room.

Water Supply Guidelines:
Home has a reliable water source, sprinklers and enough hose to circle the home.

Access Guidelines:
Access roads are at least 2 lanes wide and clearly marked; ample turnaround space exists for vehicles/fire equipment.

Clear of Flammables/Refuse/Debris Guidelines:
Combustible materials are not located in the yard or under decks or porches; firewood is stored away from the house; all debris or refuse is picked up regularly.

Firewise Community Rating Guidelines:

Excellent: At least 75% of homesites and community buildings have excellent defensible space (as defined by the Firewise rating chart).

Fair: At least 75% of homesites and community buildings have at least fair defensible space.

Poor: More than 25% of homesites and community buildings have poor defensible space.

SUMMARY RATING SHEET

Category	Rating
Risk/Hazard	
a) Inside community:	HIGH
b) Outside community:	HIGH
Barriers:	FAIR
Fire Protection:	FAIR
Community FireWise Rating:	POOR

Appendices

Appendix A. Completed Hazardous fuels assessment sheets.

Appendix B. Treatment area acreage calculations.

Appendix C. Allakaket Fuels Treatment Project cost estimate.

Mitigation Plan

The Allakaket Village Council has encouraged and will continue to encourage homeowners to create a defensible space around their homes. In some cases the vegetation around the home is needed to provide a wind/snow barrier. Homeowners in most cases only need to limb up black spruce trees 3-4 feet to provide a break in the continuity of fuels. There is a relatively high proportion of white spruce and deciduous brush in and around the existing homes in the core of the old village, and fire risk is considered lower around these homes. It is in the outlying home sites in the new housing development in the black spruce where some Firewise work can be done with defensible space in conjunction with the extensive thinning surrounding the development.

Summary

Allakaket is located on the south bank of the Koyukuk River, about 190 air miles northwest of Fairbanks. It lies just west of the Kanuti National Wildlife Refuge. It lies approximately 66°34' North Latitude and 152°39" West Longitude (Sec. 15, T20N, R21W, Fairbanks Meridian). The area has a cold, continental climate with extreme temperature differences. The average daily maximum temperature is 72° F during July; the average minimum is below zero during January. The annual precipitation averages 13 inches, with 70 inches of snowfall. The Koyukuk River is ice-free from May through September.

The Village expressed an interest in fuels reduction work since the construction of the new housing development after the disastrous 1994 flood. An initial fuels assessment of the village and surrounding area was completed in 1996. There are three critical areas where fuels reduction work has been needed: (1) the new housing development, (2) the area west of the new housing development where additional homes will be constructed, (3) along the road to the landfill, with a potential firebreak constructed perpendicular to the road. Some additional Firewise fuels reduction work (primarily limbing of black spruce) can also be done around those home sites not located in the core of the Village.

Allakaket has no volunteer fire department. There is no fire hydrant system that can be used for wildland or structure fire suppression. The village is bordered by a water source (the Koyukuk River) to the north and west, and has several small ponds located within the village, but only one small pump and a limited amount of hose are available. The village, however, has two well-trained and experienced EFF crews.

Background

The residents of Allakaket understand how an accumulation of natural fuels can increase the potential for wildland fire. Wildland fire has affected most of the residents over time in one way or another. They have either been on an EFF crew or have a family member on an EFF crew, and/or have been directly affected by a recent fire. Several large wildland fires have affected the immediate Allakaket area in the past 70 years. Natural fuels have accumulated and are continuous and very responsive to drying trends. Homes, infrastructure, and cultural sites are at risk.

Goals and Objectives

The goal of this project is to reduce the threat of wildland fire to Allakaket; protect homes, infrastructure, and cultural sites from wildland fire; and, further Firewise principles.

The objectives of this project are: (1) reduce the hazardous fuel accumulations adjacent to the new housing development, the access road, and landfill, (2) create a fire break north of the landfill extending from the new access road, and (3) present Firewise information at community and City and Tribal Council meetings.

Strategic Plan/Desired Condition

Priority values include: (1) protection of the new housing development, (2) thinning along the access road and the additional housing lots on the ridge, and, (3) creating a defensible fuel break between the landfill and the new housing development.

The buffer area along the shoulders of the access **road** will be increased to 2 chains. The desired condition for the access road is to have shoulders with a discontinuous natural fuel bed.

Along the new firebreak between the landfill and the new housing development, all black spruce will be removed along the line east of the road. This fuel break will extend past the end of the fenced landfill. The desired condition for the fuel break is to provide a first line of defense to an on-coming fire from the landfill to the south. This will require periodically (every 5-10 years) clearing the area of black spruce and dead trees and shrubs. Slash from these areas will be hand piled, covered, and burned in the winter. Some of the slash may get hauled to the bank of the Koyukuk River to help stop erosion.

Homeowners will be encouraged to remove black spruce and flammable brush within 30 feet of their homes and out buildings and prune the lower branches of all black spruce (3-4 feet up) on trees situated 30-50 feet from their homes and out buildings. A defensible space is the desired condition for all homes.

Actions and Methodology (Tactical Plan)

The above section describes the projects to be carried out by the Allakaket Fuels Reduction Project which will be implemented by the people of Allakaket. This will be their project from the beginning to the end. The work to be done is all hand work (slashing, piling, and burning). Safety will be emphasized throughout the whole operation. The Tribal Administrator will ensure that proper training will be given to all employees unfamiliar with the project and equipment they have not used before. Chainsaw operators will have either a Faller A or B "redcard" classification. The proper personal protective equipment will be used by all workers at all times.

Private homeowners will be responsible for the fuels reduction work around their homes.

Firewise information will be presented during refuge community meetings and Tribal Council meetings. Firewise principles will continue to be furthered after this project is completed.

The project will be monitored during implementation and after completion at years 1, 5, and 10. A minimum of one permanent photo point will be established (by the Service) in each treatment area to document pre, during, and post-treatment (years 1, 5, and 10) conditions. Monitoring in general will be done by both the Service and the Allakaket Tribal Council. How the Allakaket Tribal Council decides to monitor the project will be up to them. Monitoring will determine whether or not the work done has accomplished the project's objectives. Periodic monitoring will determine the need for maintenance work.

It will take periodic maintenance for this to be a long-lasting and effective fuels treatment project. The treatment areas need to be examined at the minimum of every 10 years – except for the fuel site which needs to be monitored annually.

It is anticipated that the project will be completed one year from initiation.

Roles and Responsibilities

The Allakaket Tribal Administrator will oversee the implementation of the project.

The Allakaket Tribal Financial Administrator will manage the payroll portion of the project.

The Kanuti NWR Fire Management Officer (FMO) will coordinate all activities associated with the formulation/continuation of the project and the project implementation monitoring. The FMO will write and oversee implementation of the

prescribed fire plan for pile burning. The village of Allakaket will provide qualified firefighters type 2 to assist in pile burning.

The Tribal Administrator is responsible for out year monitoring (years 1, 5, and 10) and ensuring that the long-term maintenance needs of the project are taken care of.

Funding Guidelines

The project will be funded with fiscal year 2006 U.S. Fish & Wildlife Service 9264 Wildland Urban Interface funds.