Dec. 1, 2008

# VENETIE Community Wildfire Protection Plan

## Executive Summary

The village of Venetie is located on the northeast bank of the Chandalar River about 45 miles northwest of Fort Yukon, and 190 miles from Fairbanks, in northeastern interior Alaska. Venetie has been identified as community at high risk from catastrophic wildland fire. Venetie has exhibited a dramatic recent fire history in the immediate area. A traditional housing development, composed of log homes and outbuildings, has grown up on a site northeast of the Chandalar River. Unfortunately, the houses have been constructed in a dense, continuous, black spruce stand. This black spruce stand continues unabated to the north and east into surrounding Venetie Reservation lands, and further southwest into the Federal lands of Yukon Flats National Wildlife Refuge, across the Chandalar River.

After a long period of relative quiet from fire danger (since the 1950's) the village was potentially threatened again in 2003 by the Hadweenzic Fire, which originated on FWS lands to the west of the Reservation, but was stopped by an area of wet lowlands between the fire and Venetie. The record-breaking 2004 wildland fires (cf. the Pingo Fire), in a dry and windy summer, however, then burned large areas of Venetie Reservation lands to the north and east of the village. The 2004 Winter Trail Fire also burned large areas of FWS lands immediately to the east of the Reservation. In June 2008, an escaped dump fire from the Venetie landfill itself required considerable suppression resources costing 1.7 million dollars. The fire fortunately burned northeast away from the village into the margins of Venetie Lake. The suppression actions, although very costly, were successful in containing the fire away from the village.

Following a statewide Firewise conference in May 2003 in Fairbanks, which was sponsored by wildland fire agencies, including FWS, an initial hazardous fuels assessment had been conducted by local officials at Venetie (summer 2003). This conference had been attended, by invitation, by the Venetie Natural Resources Director, Mr. Lance Whitwell. As a result of the fuels assessment, four hazardous fuel treatment areas were then identified in Venetie. These treatment areas identified were the following: (1) the immediate area surrounding the homes in the main village, (2) along a potential fuels break in an arc extending east of the main village, (3) along the road continuing to the landfill (near the airport), with a firebreak to be constructed perpendicular to the road, and (4) potential construction of an additional fuels break on FWS lands west of the village, located across the Chandalar River.

The initial fuels reduction project at Venetie, i.e., around the houses in the main village, was completed by a locally hired Youth Conservation Corps crew later in 2003. This program was conducted under the auspices of the Natural Resources Department of the local tribal government. Venetie thus became one of the first communities to take Firewise steps to reduce fuels density around homes in Alaska. The village elders fully

supported this community service project. The second project identified above, a fuels break, was completed on an emergency basis by the emergency firefighters from the Venetie fire crews during the summer of 2004, as the Pingo Fire burned large areas of the Venetie Reservation just to the north and east of the village. The third and fourth projects, identified above, remain to be initiated. Treating these four areas identified in and around Venetie will reduce hazardous fuels, protect values at risk, and improve the defensibility of the village. Venetie will be nearly encircled by fuels breaks at the conclusion of this proposed project. The project will be administered cooperatively by the Venetie Tribal Council and the US Fish and Widlife Service and take a year (2009 - 2010) to complete. Funding may be secured through Region 7 Fish & Wildlife Service.

## Introduction

The following 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:** Venetie, AK (Village)

**Location:** T025N, R006E, Sec. 10, Fairbanks Meridian (N67.014° and W146.42W°)

**Population:** 188

**Structures:**

**Homes:** 79

**Other community buildings:**

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

**Infrastructure**

The city water system is derived from a well near the Chandalar River. The water is treated and stored in a tank. Residents haul water. A flush/haul system is under construction in Venetie but the system has not been completely connected.

Electricity is provided by Venetie Village Electric.

The Venetie School provides education for grades K-12.

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

**Industry**

Subsistence activities are the dominant industry. Many men in the village, however, gain seasonal employment by wildland firefighting. There are two (2) Emergency Firefighter (EFF) crews residing in the village. These trained crews have been frequently employed fighting fires in Alaska and the Lower 48.

**Local Fire Prevention Efforts**

The Village has no volunteer fire department, but most adult men in the village are trained in wildland firefighting. However, the village itself lacks basic structural firefighting equipment, except for one pump and a hose.

The land area of the Venetie Reservation itself had previously been intentionally placed in an Unplanned fire suppression category in the early 1980's by the local tribal council. The Council chose not to participate with the Statewide fire management system at the time. This Unplanned category was then treated as Full Suppression by Alaska Fire Service. The Venetie Council formally moved to correct this unplanned fire protection situation in Spring 2004, by chosing to participatefully in the Alaska fire management system. The Venetie Council then requested the Reservation be placed in a designated "Full Suppression" fire protection category in Spring 2004. Most of the Reservation lands had then not burned since the early 1950's. Unfortunately, the fuel loading of the surrounding black spruce forest had increased since the early 1950's, and the natural black spruce fire return interval soon became evident.

During the active all-time record summer 2004 fire season, as the very large Pingo Fire (lightning-caused) approached the village from the northeast, the local fire crew constructed a fuelbreak between the village and the fire. This fuels break was completed under duress, on an emergency basis, with AFS support. Fortunately, Firewise work around structures had already been completed within the village by the local Youth Conservation Corps in 2003. This previous Firewise work within the community allowed all available firefighting resources to be deployed directly on the fireline, to protect the village. This suppression effort was successful and the village was not burned over by the Pingo Fire.

**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 Venetie.

**Values to be Protected**

Along with protecting their homes, two areas of concern were brought up by the village: (1) protecting the fuel site/electrical plant, (2) the road to landfill (note discussion below). An independent (FWS) fuels assessment for Venetie also identified a need for another fuel break that could be constructed on FWS lands across the Chandalar River, opposite from the village of Venetie. This fuel break would provide an additional defensible line to the southwest of the village. The proposed work will help to protect the village and its infrastructure from the threat of wildland fire originating on Federal lands to the west of the Reservation.

**Natural Resources**

The village is surrounded by a vast area of Reservation lands, which contain black spruce/lichen forest, interspersed wetlands, and the associated wildlife. The intertwined ecological relationships of Yukon Flats National Wildlife Refuge lie to the southwest across the Chandalar River and to the east of the Reservation across the Christian River.

**Cultural Sites**

The cemetery is the nearest cultural site.

**Landfills**

The new landfill began operation in 1996. 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 in the vicinity. Landfills also clearly pose concerns because the hazardous materials deposited there are unknown. Landfills are a distinct and proven source of ignition for wildland fire in other Alaska villages. The Venetie landfill is also located in the black spruce stand east of the main village of Venetie. A fire originating in the landfill and driven by northeast winds could run directly into the main village.

During June 2008 a human-caused fire escaped from the landfill and required a major AFS suppression effort costing the Federal government 1.7 million dollars. The resulting fire fortunately burned northeast away from the village towards Venetie Lake, as a result of the normal southwesterly summer wind pattern. Another wind direction, such as from

the northeast, (under an incoming high pressure system) would have been catastrophic for the village because the fire originating from the landfill would have burned directly into the village.

**Other Hazards**

The fuel site near the new airport contains two large oil tanks and is also considered a major hazard in itself.

**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 landfill, and the surrounding area. These dirt roads 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 <70 years; fuels have accumulated since the area burned in the early 1950's; there have been two recent fires on the upland areas of the reservation east of Venetie – one in 2003 and the other in 2004. The large Pingo Fire (2004) threatened Venetie itself, and the 2008 Venetie landfill fire could have burned directly into the village itself under certain (NE) wind conditions.

B) **Outside Community**: **HIGH**; same fuel type description as above. Venetie Reservation lands surround the village, with Federal Fish and Wildlife lands to the southwest, across the Chandalar River and to the east of the Reservation across the Christian River. The closest Service land is 2.75 miles from the center of Venetie.

**2) Barriers**

**FAIR**; the Chandalar River borders Venetie on the southwest; Venetie Lake and associated wetlands borders the Village to the east and north; the southeast side of the village is however, bordered by continuous black spruce extending into the associated boreal forest for miles.

**3) Fire Protection Resources**

**FAIR**; Venetie and the surrounding area is under the protection of the Upper Yukon 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)<br>*rate of spread: high*<br>*intensity: high*<br>*spotting potential: high* | **[H]** | **M** | **M** |
| Black Spruce Lichen Woodland (CFFDRS=C1)<br>*rate or spread: moderate*<br>*intensity: moderate*<br>*spotting potential: high* | **[H]** | **M** | **M** |
| Grass (cured tall standing or matted; CFFDRS = O1a/O1b)<br>*rate of spread: high*<br>*intensity: moderate:*<br>*spotting potential: low* | **H** | **M** | **L** |
| *Mixed Boreal Forest (pre-green-up; may include white or black spruce, aspen and/or birch; CFFDRS=M1)*<br>*rate of spread: moderate*<br>*intensity: moderate*<br>*spotting potential: moderate* | **M** | **M** | **L** |
| Hardwood Forest (pre-green-up; includes aspen & birch; CFFDRS use D1 or M1)<br>*rate of spread: low*<br>*intensity: low*<br>*spotting potential: low* | **M** | **L** | **L** |
| Deciduous Brush (includes willow & alder)<br>*rate of spread: low*<br>*intensity: low*<br>*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.

## Fire Protection Response Chart

| **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 | |

### *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 Rating Chart for Defensible Space

| **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 |

**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: | FAIR |

**Appendices**

Appendix A. Completed Hazardous fuels assessment sheets.

Appendix B. Treatment area acreage calculations.

Appendix C. Venetie Fuels Treatment Project cost estimate.

**Mitigation Plan**

The Venetie Village Council has encouraged and will continue to encourage homeowners to create a defensible space around their homes. This includes the 2003 YCC Firewise project. Homeowners in most cases still 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 deciduous brush in and around some of the existing homes in the core of the village. In the other home sites in the black spruce additional Firewise work can be done with defensible space in conjunction with the extensive thinning in the development.

**Summary**

The village of Venetie is located northeast of the Chandalar River, about 190 air miles north of Fairbanks. Venetie lies just northeast of a part of the Yukon Flats National Wildlife Refuge, across the Chandalar River. The village is found at approximately 67.01° North Latitude and 146.42° West Longitude (Sec. 10, T25N, R006E, Fairbanks Meridian). The Venetie Reservation 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 6.6 inches, with 43.4 inches of snowfall. The Chandalar River, just southwest of the village, is ice-free from late May through mid-September; however the riparian corridor is not wide enough to provide a sufficient firebreak from a major wind-driven wildland fire approaching from the southwest, especially during the periodic dry summers.

The village has expressed an interest in fuels reduction work since the spring 2003 Firewise conference in Fairbanks. Venetie became one of the first Alaska Firewise communities. An initial fuels assessment of the village and surrounding area was completed in summer 2002. A local Youth Conservation Corps crew began fuels reduction work in 2003. There are three critical areas where fuels reduction work has been needed: (1) around the houses in the main village site, (2) the area west of the landfill, (3) along the road to the landfill (airport), with a potential firebreak constructed perpendicular to the road. Some additional Firewise fuels reduction work (primarily more thinning and limbing of black spruce) can also be done around those home sites located in the core of the village.

Venetie 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 Chandalar River) to the southwest, and Venetie Lake is located northeast of 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, available for fuels reduction projects when not called on out fires elsewhere.

**Background**

The residents of Venetie 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 recent fires. Several large wildland fires (such as the Pingo Fire in 2004, and the 2008 Venetie landfill fire, have affected the immediate area of the Venetie Reservation, as well as the village. The Pingo Fire was a very large lightning-caused fire which approached the village from the northwest in late June and early July 2004. The fire would have entered the village except for the dedicated combined efforts of the local fire crew, the Alaska Fire Service, and other national firefighting crews. The 2008 landfill fire would have burned directly into the village under certain NE wind conditions. Fuels have naturally accumulated over years of previous fire suppression on Reservation lands. The fuels in the black spruce forest throughout the Reservation are continuous and very responsive to drying trends. Homes, infrastructure, and cultural sites in and around the village of Venetie have been and remain at risk from both natural (lightning) and human-caused fires.

**Goals and Objectives**

The goal of this project is to reduce the threat of wildland fire to Venetie; 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 on FWS lands adjacent to the main village, as well as the access road, and landfill, (2) create a fire break north and west of the landfill (airport) extending from the new access road, and (3) present Firewise information at community and City and Tribal Council meetings, and (4) create a cleared fire lane or "blackline" on FWS lands southwest of Venetie across the Chandalar River.

**Strategic Plan/Desired Condition**

Priority values include: (1) protection of the main village site, (2) thinning along the access road to the airport, and, (3) creating a defensible fuel break between the landfill and the village.

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 (airport) and the main village, 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 northeast (i.e., under high pressure conditions). 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 Chandalar 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 Venetie Fuels Reduction Project which will be implemented by the people of Venetie, notably the local fire crews. The work to be done is mechanical or 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 own 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 Venetie Tribal Council. How the Venetie 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 Venetie Tribal Administrator will oversee the implementation of the project.

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

The Yukon Flats NWR Fire Management Specialist (Patten) will coordinate all activities associated with the formulation/continuation of the project and the project implementation monitoring. The Fire Management Specialist will write and oversee implementation of the prescribed fire plan for pile burning. The village of Venetie 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 addressed.

**Funding Guidelines**

The project will be funded with fiscal year 2009 U.S. Fish & Wildlife Service 9264 Wildland Urban Interface funds.