

Ruby Community Wildland Fire Protection Plan 2008



I. BACKGROUND

The Community Wildfire Protection Plan (CWPP) process assists communities in developing an appropriate and desired wildfire protection plan that addresses elements of community protection. Through discussion among interested parties about wildfire protection, communities develop, clarify, and refine their priorities for the protection of life, property, and critical infrastructure in the wildland urban interface (WUI). Minimum requirements for a CWPP; include: (1) collaboration, (2) prioritizing areas for treatment, and (3) recommended measures to reduce structure ignitability. The following process is an aid to help a community to complete a CWPP. It should not be overly complex. Three elements are addressed in this process the risk/hazard assessment, mitigation plan, and monitoring.

II. EXECUTIVE SUMMARY

A hazardous fuels assessment was conducted for Ruby during the summer of 2008. The majority (over 75%) of the structures within the town were rated poor for landscaping clearance, construction materials, flammable materials/debris present, water resource available, and adequate access. None of the homes had any identifying number or name on them. Most main roads have names; however, no street signs exist.

Hazardous fuel accumulation and fire risk adjacent to the town was rated high due to large areas of untreated black spruce and the potential for fire moving through these stands into the town.

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Collaboration among interested parties began at the onset of the project. Interested parties included the Alaska Fire Service (AFS), U.S. Fish & Wildlife Service (Service), Ruby Tribal Council, City of Ruby, Ruby Fire Department, and Deneega Corp. This group will henceforth be referred to as the planning team.

Areas of concern were initially identified and field verified during the summer of 2008. The field assessment provided the information needed to refine the initial list of areas of concern. The planning team then decided which areas to pursue in terms of treatment.

III. COLLABORATION

Collaboration may be accomplished through three processes. Convene decision makers, involve local, state and federal agencies and engage interested parties. Decision makers will be those responsible for the development of the CWPP. The make up of this group will depend upon the community. Involvement of local, state and government agencies, and other interested parties will depend upon the needs of the community. In the same way approval or adoption of the plan will be governed by the appropriate process identified by the community.

The Ruby CWPP involved key decision makers, the local, state and federal agencies while engaging interested parties. The key decision makers include the Ruby Tribal Council, City of Ruby and U.S. Fish & Wildlife Service (Service). Other important players are the Ruby Fire Department, Deneega Corp., and Alaska Fire Service (AFS). The collaborative process has been an integral part of this project from inception and is what keeps this project moving forward.

This risk assessment process provides information about four primary elements that either contribute to or mitigate wildfire danger within or near Ruby. The elements of the risk assessment include:

- 1) Risk(s)/Hazard(s)
- 2) Barriers
- 3) Fire Protection Response
- 4) Community Firewise Rating

IV. ASSESSMENT TO PRIORITIZE AREAS FOR FUEL REDUCTION

A. Introduction: A list of areas of concern and priority treatment areas was identified by the field assessment conducted during the summer of 2008. The planning team agreed upon a final list of areas of concern and potential treatment areas. The treatment areas include the Ruby Cemetery, the ridgeline to the west of the Poorman Hwy., the area adjacent to the south side of town, the ridgeline between the school and the airstrip, and the area around the landfill.

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B. Identification and Description of Community and Area: Ruby is located on the south bank of the Yukon River, in the Kilbuck-Kuskokwim Mountains. It is about 50 air miles east of Galena and 230 air miles west of Fairbanks. Ruby lies adjacent to the Nowitna National Wildlife Refuge. It lies at approximately 64.739440° North Latitude and -155.486940° West Longitude. (Sec. 04, T009S, R017E, Kateel River Meridian.)

The area encompasses 7.6 sq. miles of land and 0.0 sq. miles of water.

The area experiences a cold, continental climate with extreme temperature differences. The average daily high temperature during July is in the low 70s; the average daily low temperature during January ranges from 10 to below zero. Sustained temperatures of -40 degrees are common during winter. Extreme temperatures have been measured from -53 to 98. Annual precipitation is 17 inches, with 66 inches of snowfall annually. The Yukon River is ice-free from mid-May through mid-October.

Ruby's current residents are Koyukon Athabascans of the Nowitna-Koyukuk band, a nomadic group who followed game with the changing seasons. There were 12 summer fish camps located on the Yukon River between the Koyukuk River and the Nowitna River. Ruby developed as a supply point for gold prospectors. It was named after the red-colored stones found on the riverbank which were thought by prospectors to be rubies. A gold strike at Ruby Creek in 1907, and another at Long Creek in 1911, attracted hundreds of prospectors to the area. At one time, over 1,000 white miners lived in Ruby and the nearby creeks. Placerville, Poorman, Sulatna Crossing, Kokrines and Long Creek were some of the area's boom settlements. A post office was established in 1912, and Ruby incorporated as a city in 1913. Initially, the City was governed by miner's meetings, then later by Pioneer Igloo Number 5. After the gold rush, the population declined rapidly. By 1939, there were only 139 residents. During World War II the mining operations were shut down and most of the white residents left. After the war, the remaining residents of nearby Kokrines relocated to Ruby, and the population began to increase. Ruby incorporated as a second class city in 1973. A clinic, watering point and school were constructed in the 1970s. During the 1980s, telephones and television services were provided.

1. The WUI boundary includes the Town of Ruby and extends five miles out from Ruby proper. This delineation was based on direction from AFS.

2. This CWPP covers only the town of Ruby.

3. Location: Ruby is located on the south bank of the Yukon River – 230 air miles west of Fairbanks.

4. General Geographic Location:

a. 64.739440° North Latitude, -155.486940° West Longitude

b. Section 04, Township 009S, Range 017E, Kateel River Meridian

5. Population: 170 (2005 State Demographer estimate)

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6. Structures:

- a. Homes – 137
- b. Community buildings – approximately 6
- c. Commercial – approximately 6
- d. Seasonally inhabited structures – this number fluctuates considerably from year to year.
- e. Outbuildings – approximately 100

7. Infrastructure: The city operates the electrical power generating plant and is served by commercial telephone utilities. Approximately 85% of residents haul water from the washeteria and approximately 15% have their own individual wells. Approximately 70% of residents have their own septic systems, with the remainder using honey buckets or outhouses. The school operates on its' own septic system and water well.

The Marilyn A. Kangas School provides education K-12 and serves 35-40 students. Health care is provided by a health aide at the Ruby Health Clinic. The village has a community meeting hall, tribal offices, Post Office and one commercial store.

Ruby is accessible by air and water. A State-owned 4,000' long by 100' wide lighted gravel airstrip is available. There are two commercial air travel/delivery services. There are no docking facilities, but a boat launch and barge off-loading area are available. Barges make several deliveries each summer. The fuel storage facility is owned by the city and operated by Dineega Corp. Float planes land on the Yukon River. Trucks, snowmachines, ATVs and riverboats are used for local transportation. Numerous trails and the 35-mile road to Long Creek Mine to the south are used for subsistence and wood cutting.

8. Industry: The City, school, tribal council, Dineega Corp. and clinic are the largest employers. Ruby also has a number of small, family-operated businesses. BLM fire fighting, construction work, Native handicrafts and trapping are part-time cash sources. Subsistence activities provide some food sources. Salmon, whitefish, moose, bear, ptarmigan, waterfowl, and berries are utilized. Eight residents hold commercial fishing permits.

9. Natural Resource Values: The Yukon River and the surrounding plant and animal habitat are critical to supporting traditional subsistence activities.

10. Cultural Sites: There are no known registered historic sites, landmarks, or cultural sites present.

11. Dumps: the landfill is located approximately 1.5 miles south of the city. The landfill material is burned periodically.

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12. Hazards: (a) homes built in areas of dense white and black spruce and without adequate clearing, (b) proximity of flammable materials (gasoline, fuel oil, and propane) around homes, and (c) accumulations of other flammable materials around and under homes.

13. Fire Equipment: wildland fire suppression falls under the Alaska Fire Service which has its Galena Zone located in Galena. During the active fire season, AFS provides a wide range of firefighting equipment and personnel including air tankers, two helicopters (light and medium), Smoke jumpers, Emergency Firefighters, and miscellaneous equipment to support the suppression efforts.

The Ruby Volunteer Fire Department (VFD) provides fire protection for the city. The Department is currently being formed and recently acquired a new Type 6 engine which is housed in a heated building. The Department is in need of portable pumps, additional hose, nozzles and hardware, and additional structural and wildland fire training for its' members.

14. Local Fire Prevention Efforts: The VFD plans to provide periodic public Firewise training sessions for community members. There are also plans for youth groups to conduct Firewise mitigation around elder's homes in the community.

15. Other community values: several traditional subsistence activities are still practiced along with many other Athabascan traditions.

C. Areas or Values to be Protected: The highest risk of wildland fire in Ruby is from lightning or human-caused fire starting within the town, or a nearby wildland fire burning close enough to this naturally occurring basin to send embers into the black spruce fuel type adjacent to the south/southwest side of town.

Areas to be protected include the homes, businesses, school buildings and government offices within Ruby and the cemetery to the west of Ruby. Values to be protected include: (1) retaining the current vegetative cover within the community while providing for long-term health of the vegetation, (2) maintaining the aesthetic qualities of the city, and (3) provide for traditional subsistence activities associated with the forest and lowlands immediately adjacent to Ruby.

Critical areas for protection include the fuel storage facility along the shore of the Yukon River; the water well facility and power generating plants in the middle of the village; and the school facilities along the eastern ridgeline. Damage to any of these sites would create a tremendous financial impact to this small community.

D. Assessment of Risk/Hazard, Barriers, Fire Protection Resources, and Firewise

1. Fire Regime and Condition Class: IV – 35 to 200 year frequency and high severity.

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2. Rating Elements

a) Risk/Hazard Analysis

(1) Inside Community:

The rating area includes lands within one mile of the community in all directions. The rating is based on history/likelihood of fire in the community and the availability of hazard fuels. Provide a description of local fire history and fuel conditions and give High, Moderate or Low rating based on the Risk/Hazard Chart.

(2) Outside Community:

The rating area is from 1-10 miles outside the community and is based on the history/likelihood of fire in the area and the availability of hazard fuels. Provide a description of area fire history and fuel conditions and give a High, Moderate or Low rating based on the Risk/Hazard Chart.

b) Barriers

Alaska communities are situated in a variety of conditions through out Alaska. Some are along river corridors, others on uplands, and along coastal areas. Surrounding many of these communities are barriers. Barriers are zones that would help restrict large fire movement from coming into the community. Barriers may be water, natural or manmade. A natural barrier may be a topographic feature, vegetation change, or bare ground. An example of a manmade barrier would be a road. Describe any barriers that would provide protection or slow the progress from wildfires burning in fuels less than 1 mile from the community. Give an Excellent, Fair or Poor rating based on the Barrier Rating Chart.

c) Fire Protection Resources

Communities typically rely on the State of Alaska, Division of Forestry, or the BLM, Alaska Fire Service for protection from large wildfires. However, other protection resources may exist, and response times can vary widely in remote areas of Alaska. Describe the situation. Using the Fire Protection Response Chart, give an Excellent, Fair or Poor rating based on predicted response times to the community and nearby lands. List the types of resources that are available for initial attacking a wildland fire.

d) Firewise Ratings

Using the Firewise Home Rating Chart, perform cursory firewise ratings of all homesites and community buildings. Using the Firewise Community Rating Guidelines, give a rating of Excellent, Fair or Poor.

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RISK/HAZARD ANALYSIS CHART 1

Outside Community Area (1-10 miles)

	Alaska Fire Return Interval		
	High (0-99 years)	Moderate (100-300 years)	Low (>300 years)
FUELS (predicted fire behavior based on historic summertime weather with hot, dry conditions)			
Black Spruce Boreal Forest (CFFDRS=C2) <i>rate of spread: high</i> <i>intensity: high</i> <i>spotting potential: high</i>		H	
Black Spruce Lichen Woodland (CFFDRS=C1) <i>rate or spread: moderate</i> <i>intensity: moderate</i> <i>spotting potential: high</i>		[NA]	
Grass (cured tall standing or matted; CFFDRS = O1a/O1b) <i>rate of spread: high</i> <i>intensity: moderate:</i> <i>spotting potential: low</i>		M - H	
<i>Mixed Boreal Forest (may include white or black spruce, aspen and/or birch; CFFDRS=M1)</i> <i>rate of spread: moderate</i> <i>intensity: moderate</i> <i>spotting potential: moderate</i>		M	
Hardwood Forest (includes aspen & birch; CFFDRS use D1 or M1, M2) <i>rate of spread: low</i> <i>intensity: low</i> <i>spotting potential: low</i>		M Based on 2003-2005 fire activity.	
Deciduous Brush (includes willow & alder) <i>rate of spread: low</i> <i>intensity: low</i> <i>spotting potential: low</i>		L	
<i>Insect and Disease in Mixed Boreal Forest (may include white or black spruce, aspen and/or birch; rate of spread: moderate intensity: High spotting potential: High)</i>		L This is based on low incidence of insect and disease activity in the area.	

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RISK/HAZARD ANALYSIS CHART 2

Inside Community Area (within 1 mile)

	Alaska Fire Return Interval		
	High (0-99 years)	Moderate (100-300 years)	Low (>300 years)
FUELS (predicted fire behavior based on historic summertime weather with hot, dry conditions)			
Black Spruce Boreal Forest (CFFDRS=C2) <i>rate of spread: high</i> <i>intensity: high</i> <i>spotting potential: high</i>		H	
Black Spruce Lichen Woodland (CFFDRS=C1) <i>rate or spread: moderate</i> <i>intensity: moderate</i> <i>spotting potential: high</i>		[NA]	
Grass (cured tall standing or matted; CFFDRS = O1a/O1b) <i>rate of spread: high</i> <i>intensity: moderate:</i> <i>spotting potential: low</i>		H	
<i>Mixed Boreal Forest (may include white or black spruce, aspen and/or birch;</i> CFFDRS=M1) <i>rate of spread: moderate</i> <i>intensity: moderate</i> <i>spotting potential: moderate</i>		M	
Hardwood Forest (includes aspen & birch; CFFDRS use D1 or M1, M2) <i>rate of spread: low</i> <i>intensity: low</i> <i>spotting potential: low</i>		M This is based on 2003-2005 fire activity.	
Deciduous Brush (includes willow & alder) <i>rate of spread: low</i> <i>intensity: low</i> <i>spotting potential: low</i>		L	
<i>Insect and Disease in Mixed Boreal Forest (may include white or black spruce, aspen and/or birch;</i> <i>rate of spread: moderate</i> <i>intensity: High</i> <i>spotting potential: High</i>		L This is based on low incidence of insect and disease activity in the area.	

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BARRIER RATING CHART

Barrier Type (list specific type under excellent, fair or poor)	Excellent	Fair	Poor
Water (may include lakes, rivers, streams and sloughs - Yukon River)		X	
Natural features (may include barren landscape, rock, topographic features)			X
Human-made features (may include airstrips or other clearings - roads)			X
Overall Rating			Poor

Barrier Rating Chart Key:

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

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

Poor: Any barriers that exist provide protection from fuels less than 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.

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FIRE PROTECTION RESOURCES RESPONSE CHART

Response Time	Risk	Kind of Resource (List kinds of resources available for initial attack)
Adequate initial attack resources are more than 75 minutes away and adequate extended attack resources are more than 12 hours away.	High	
Adequate initial attack resources are 30-75 minutes away and adequate extended attack can be in place in 8-12 hours.	Moderate	Ruby VFD will respond to all city fires. AFS will initial attack fires beyond the effective reach of the VFD.
Adequate initial attack resources are less than 30 minutes away and adequate extended attack can be in place in less than 8 hours.	Low	

*Adequate initial and extended attack forces are defined as the minimum force necessary to stop the spread of a wildfire under 90th 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.

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STANDARDS FOR FIREWISE RATING

Landscaping: There is a clearing of flammable vegetation at least 30 feet around the home for firefighting equipment: coniferous brush and dead/overhanging branches are removed; trees are pruned 6-10 feet above the ground; lawn is mowed and watered regularly and ladder fuels are removed from the yard; remaining trees are spaced at least 30' apart at crowns; garden equipment (hoses and hand tools) are 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, 3 to 4 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 (at least 30 feet) from the house; all debris or refuse is picked up regularly.

3. Overall Assessment Rating of Risk/Hazard, Barriers, Fire Protection Resources, and Firewise:

OVERALL RATING CHART

Category	Rating
Risk/Hazard	
a) inside community	Moderate to High
a) outside community	Moderate to High
Barriers:	Poor
Fire Protection:	Moderate
Community Firewise Rating:	Poor

4. Other Contributing Factors to risk and mitigation of wildland fire: The effects of global climate change are evident in Alaska. What the future effects of climate

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change will be is an unknown at this time. It is important to be aware that there will be effects on fire activity in the area. The potential for increased fire activity and severity appear to be two factors that have already affected fires in interior Alaska. We are seeing an increased length of the fire season and have experienced two nearby major fires during 2005 and 2007.

V. WILDLAND FIRE HISTORY:

The majority of the fuels surrounding the Town of Ruby are Boreal Spruce (Fuel Type C-2), with some areas of Boreal Mixedwood (Fuel Type M-1&2). The Fire Regime within the Boreal Spruce is IV- 35-200 year frequency and high severity.

There have been numerous wildland fires that have burned in the immediate vicinity of Ruby. The most recent was the Big Creek fire which burned 3416 acres in 2007, approximately 12 miles ESE of town. The town dump has also burned and had minor escapes numerous times.

VI. SUMMARY:

Based on the assessment work performed in 2008, there is a definite need to decrease Ruby's vulnerability to wildland. Currently the city is vulnerable to fire from outside the city as well as from within the city because of natural fuel conditions and lack of good Firewise habits. Ruby would benefit by: (1) increasing the awareness of Firewise principles among residents, (2) performing hazardous fuels reduction work immediately around homes and adjacent areas, (3) developing a long-term (minimum of 10 years) fire protection plan/strategy, (4) continued collaboration among stakeholders.

VII. MAPS:

These are all found in Appendix A.

VIII. APPENDICES:

Appendix A. Maps

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MITIGATION PLAN

Executive Summary

The community of Ruby is located in west central interior Alaska on the south bank of the Yukon River about 230 miles west of Fairbanks. Ruby encompasses 7.6 square miles of area and supports a population of 170 (2005 State Demographer estimate). Ruby Volunteer Fire Department (VFD) provides protection for the city and the Alaska Fire Service, with a zone headquarters located in Galena, provides wildfire protection. Besides lives and structures, additional values to be protected include vegetative cover, aesthetic qualities, and traditional subsistence activities. Black Spruce fuels to the south pose the highest risk inside and outside the community. The Yukon River, the airstrip and the Poorman Highway provide fair barriers, however the community is lacking in other barriers, human or natural. The availability of the Ruby VFD should keep response times short and such resources can be effective in reducing risk in the event of ignition. However, this VFD is just forming and only has one Type 6 engine, these resource could quickly become over-matched by a major fire. Landscaping, construction, access, and fuel storage practices all contribute to a poor community fire wise assessment. Areas where overall risk is highest include fuel storage facility, the water well facility and power generating plants, and the school facilities. Overall assessment ratings indicate poor barriers, poor community fire wise rating, moderate to high risk/hazard inside the community, moderate to high risk/hazard 1 to 10 miles outside the community, and moderate fire protection.

Background

The landscape where the community of Ruby is located has been shaped and molded by periodic fire for centuries. Vegetation grows and accumulates at a faster rate than it can decompose due to a relatively cool dry climate. The area also experiences regular intervals of warm dry weather conducive to supporting fire. The final requirement, sources of ignition, comes from the sky in the form of frequent wet and dry lightning during the summer months. Humans have also provided ignition sources through purposeful or accidental starts for the many centuries that people have inhabited the region. Recent history provides numerous examples of fires in and near the community of Ruby including the Big Creek fire which burned 3416 acres in 2007. Vegetation like Black Spruce often burn with high rates of spread, intensity, and numerous spots that can be difficult for suppression crews to manage, especially during periods of hot, dry weather. A wildfire doesn't distinguish between natural vegetation and human values like homes and communities. The risk assessment portion of this CWPP provides a detailed analysis of specific risks associated with a variety of community values in Ruby.

Fire is not always a negative event around Ruby

For the reasons stated in the previous section, many people tend to view all fire in a negative light and historically, natural wildfire occurrence has been viewed as contrary to community values. The well known and successful Smokey Bear Campaign typifies our cultural response to the reality of wildfire in the U.S. for the past century. However, land

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managers and community members alike are recognizing the often beneficial role natural wildfire plays on the overall landscape. Recent scientific insight into disturbance prone ecosystems highlights the benefits of periodic fire to wildlife, vegetation communities, and natural fuel accumulations. Such benefits are coincidentally complementary to many values expressed in this plan. A genuine sense of well being that has originated from a proactive effort to reduce wildfire risks in and around Ruby also affords land managers greater flexibility to manage fires outside Ruby according to mutual goals between land managers, community members, and firefighters. Managers of the past, though aware that a wildfire could result in a number of positive outcomes for a nearby community, were often restricted to the management option of complete suppression due to risks assumed by a nearby unprepared community. If a wildfire's risk to Ruby has already been significantly reduced as proposed in this CWPP, managers could potentially have a much wider range of options to take, including those that would hopefully maximize the overall benefits to the landscape and the community.

Goals and Objectives

Implicit in this plan is the goal to protect life and property within the community. As stated in the risk analysis, other values to be protected include cultural resources, vegetative cover and aesthetic values, as well as traditional subsistence values. Objectives of the CWPP are to bring together the community of Ruby and cooperatively assess the condition of current values in Ruby, the risks those values face, where those risks come from (their source), and possible ways to reduce those risks. Desired results include a community surrounded by an aesthetically pleasing vegetative community that resembles the one currently in place in terms of vegetative cover and structure. Ideally, vegetative cover within the community would maintain a similar structure and cover value but won't be prone to the initiation or spread of fire. The community would be made up of fire wise neighborhoods who's landscaping and construction methods would minimize the initiation and spread of fire and prove easily defensible by existing protection resources like Ruby VFD and AFS. Access and egress for suppression resources would also be enhanced with wide roads, abundant turn around spots, and easily visible street signs and house numbers. Suppression capabilities would be maximized by careful pre-planning and familiarization with standardized communications, tactics and procedures. Suppression resources could also utilize any number of pre determined and accessible natural and man made areas where low fuel availability minimizes fire behavior.

Land managers faced with wildfire outside Ruby would have a broad range of options for dealing with the fire because the risks that fire poses to the community would be inherently low. Under specific conditions, such fires may be allowed to burn more naturally and benefits like nutrient recycling, vegetative diversity, fuel reduction, and overall natural system function could be realized by all.

Strategic Plan/Desired Condition

Priority values to be protected within the community of Ruby are listed as follows:

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Life
Property
Cultural Resources (including traditional subsistence lifestyle)
Aesthetics

The risk assessment portion of the CWPP analyzes the risk posed by a wildland fire to these values by separating exposure into 3 categories whose ratings vary.

1.) Community Fire wise Rating

Community fire wise ratings for defensible space were rated as poor in areas of landscaping, construction, access, and flammables/refuse/fuels storage and water supply. Homeowners who are the final authority as to what is done to change the landscaping, construction, locations of potential fuels, and to a certain extent access and water supply on their property. Therefore, homeowners will need to decide that they will be better off implementing fire wise practices than they would be otherwise. This plan may provide an avenue for informed individual homeowner decisions. Educating homeowners about what the risks are, where they come from, what fire suppression capabilities are available and what they are capable of, and what they as homeowners can do to minimize risk should be the foundation of any effort to manage risk in Ruby. It may also be particularly effective to educate young residents whose influence on the community will increase over time. Young people also tend to be more open to new ideas and may be more open to changing old habits.

Concepts that should be promoted to increase the communities understanding of the risks fire poses and the capabilities of authorities to eliminate risk include:

1. Fire is a normal and regular disturbance that wildlife and vegetative communities in this ecosystem need in order to maintain a health balance.
2. Fire exclusion in systems that historically experience regular wildfire can lead to unhealthy wildlife and vegetative communities.
3. During hot, dry, or windy weather conditions, suppression effectiveness can be limited. Such hot dry conditions have become increasingly common in recent years. Accumulations of fuel (perhaps exacerbated by previous suppression) can add to the problem.
4. Suppression resource may not always be available. Most federal resources are available on a nationwide basis and though other resource could potentially be mobilized to work in Ruby, the opposite is also true.
5. Encourage landscaping practices that approach the standards provided in the publication produced by the Alaska Wildland Fire Coordination Group (appendix B). Provide means to participate for those who want to, but are physically or economically unable. (community service for lawbreakers, volunteer service, grants to cut, haul, chip understory fuels, provide ember screening for spaces under houses or eve vents and openings)

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Outcomes may include:

Pros

- Reduced chance of unwanted fire becoming initiated and spreading
- Reduced damage to property and other values should unwanted fire occur
- Overall community landscaping may be orderly and aesthetically pleasing
- Participation may lead to a sense of community ownership and cooperation.

Cons

- May lead to hard feelings if individuals feel their neighbors are not participating to the extent they feel they should.
- Vegetation removal could increase visibility and reduce a home's feeling of isolation and privacy.
- Some may not find fire wise landscaping practices aesthetically pleasing due to a decrease in forest cover or conversion from conifers to deciduous trees.
- Landscaping practices require an output of resources (time, effort, money) that could be otherwise allocated.
- An overall sense of security derived from improved landscaping may lead to carelessness or lack of urgency which leads to an unwanted fire.

2.) Wildland Fuels In and Around the Community

The community risk assessment for Ruby indicated reduction of available fuels both inside and around the community of Ruby is another way of reducing risk.

Problem fuels include stands of Black Spruce vegetation types which often burn with high rates of spread, intensity, and numerous spots. Black Spruce has a high content of volatile chemicals that readily burn even when live fuel moistures are high.

Additionally black spruce forests exhibit a high level of horizontal and vertical fuel continuity. Continuous ground fuels like moss and lichen and forest litter support lateral fire spread. Tree limbs and branches usually extend right down to the forest floor providing vertical continuity of fuels right up into the canopy (ladder fuels). At best, Black Spruce fires produce common torching and spotting. Often, passive crown fire develops. Rarely, weather, topography, and fuels align in such a way as to support active crown fire where the canopy burns independently of ground fuels.

Removal of Black Spruce and subsequent reduction of crown bulk density has been shown to reduce propensity for crown fire and lowering spotting potential. However, reduced canopy cover increases exposure of ground fuels to sun and wind, causing increased drying, rates of spread, and problematic fire behavior. Instead of simply removing the canopy, another viable option might be a vegetative conversion from a Black Spruce dominated canopy to one that is less flammable such as those dominated by Aspen, Tamarack, Cottonwood or Birch. Such a conversion may reduce the flammability of the canopy while simultaneously sheltering the ground fuels from sun and wind and maintaining forest aesthetics. However, such a conversion is untested and may pose significant costs. A site where Black Spruce thrives may prove marginal for other

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tree species to survive and grow. Such a conversion could take decades to grow to a point where overstory shading and sheltering is effective.

In a mixed stand type situation, such as that prevalent around Ruby, This type of strategy may be more viable as the less flammable deciduous component is already partly in place. Beneath the canopy of a mixed hardwood forest, ground fuels like brush, moss, lichens, leaf and needle litter, and branches less than 3 inches in diameter carry fire through the hardwood and brush fuel types around Ruby. Removing ground fuels will generally decrease fire spread and intensity to a level where hand tools are effective.

Grass fuels, with high surface area to volume ratios, can dry out quickly and are often exposed to more winds than a timbered site. For this reason, Such fuels burn with a high rate of spread and a moderate intensity, though spotting potential is low.

Grass fuels can be burned or mechanically treated (mowed) in order to effectively decrease fire behavior. Such treatments are generally short lived and need maintenance every 1-3 seasons. Many of the homes in Ruby don't have cultivated lawns, but watering and manicuring an area around the structure makes those fuels less available to a wildfire and provides a fairly effective break between wildland fuels and structures.

Possible results from wildland fuels reduction/modification in and around the community of Ruby:

Pros

- Fuels reduction has been shown to reduce the propensity for crown fire, especially independent crown fire.
- Fuels reduction could reduce crown bulk density and percentage of the crown consumed during a crown fire thereby potentially reducing the number of firebrands and subsequent spotting.
- Fuels reduction could provide access by fire crews and limited equipment for the construction of hose lays and fire line.
- Fuels reduction could allow better penetration and effectiveness of aerial retardant and water drops.
- May facilitate desirable use through improved access.
- May provide a short term source of readily available firewood or timber.

Cons

- Entail costs for the labor, equipment, and administrative requirements for planning, carrying out, and monitoring of the treatment.
- Can lead to drier ground fuels and more wind exposure, thereby increasing fire behavior on the surface. *This impact can be mitigated by leaving some aerial cover in the form of a shaded fuel break (leave trees in 10x10 spacing). Remaining large and/or deciduous trees shade surface fuels and block winds but can also contribute somewhat to fire behavior.*
- Need periodic maintenance in order to maintain effectiveness

Ruby Community Wildfire Protection Plan

- Alter landscape and may be perceived as aesthetically undesirable
- Can create a false sense of security which may lead to complacency or carelessness.
- Generally still provide continuous surface fuels that won't stop the spread of a fire without active suppression.
- May lead to unanticipated undesirable use due to improved access.
- May remove a longer term source of readily available firewood or timber
- May contribute to unanticipated impacts e.g. Spruce beetle infestation of adjacent or remaining timber.

3.) Barriers

The Ruby risk assessment indicates that barriers in Ruby are fair to poor. Obviously water and natural barriers aren't going to be changes much in order to decrease risk. However, human made features (fuel breaks) may be strategically placed to stop wildfire from carrying into the community of Ruby.

- Cut linear fuel breaks between natural barriers that would provide a defensible ring from which to protect the community from a wildfire coming in.

Pros

- Fuel breaks have been shown to reduce the propensity for crown fire.
- Fuel Breaks reduce crown bulk density and percentage of the crown consumed during a crown fire thereby potentially reducing the number of firebrands
- Fuel breaks provide access by fire crews and limited equipment for the construction of hose lays and fire line.
- Fuel breaks allow better penetration and effectiveness of aerial retardant and water drops.
- Provides well defined landmarks that can facilitate pre-planning and communication while reducing confusion during an incident
- Provides a starting line from which to improve/expand/maintain either as a pre-incident precaution or tactically during an incident.
- May facilitate desirable use through improved access.
- May provide a short term source of readily available firewood or timber.

Cons

- Entail costs for the labor, equipment, and administrative requirements for planning, carrying out, and monitoring of the treatment.
- Can lead to drier ground fuels and more wind exposure, thereby increasing fire behavior on the surface. *This impact can be*

Ruby Community Wildfire Protection Plan

mitigated by leaving some aerial cover in the form of a shaded fuel break (leave trees in 10x10 spacing). Remaining large and/or deciduous trees shade surface fuels and block winds but can also contribute somewhat to fire behavior.

- Need periodic maintenance in order to maintain effectiveness
- Alter landscape and may be perceived as aesthetically undesirable
- Can create a false sense of security which may lead to complacency or carelessness.
- Generally still provide continuous surface fuels that won't stop the spread of a fire without active suppression.
- May lead to undesirable use due to improved access like off road vehicle use that leads to erosion or increased illegal dumping of garbage.
- May remove a longer term source of readily available firewood or timber
- May contribute to unanticipated impacts e.g. Spruce beetle infestation of adjacent or remaining timber.

Actions and Methodology (Tactical Plan)

Fuels Treatment Projects:

Large scale fuels treatment adjacent to the southern edge of town and the establishment of fuel breaks along the ridge to the west of the Poorman Highway and between the airstrip and the river bluff north of the school may be effective in reducing risks to privately owned parcels. Landowners will need to be identified and written approval/participation granted. See Appendix A Maps.

Fire wise:

Firewise practices (Appendix B) should be promoted to all community members and especially private property parcel owners. Firewise concepts will be promoted through a cooperative effort to distribute literature house to house and at key community functions, education efforts like radio broadcasts, and demonstration projects. Encourage VFD to continue public prevention messages

Specific fire wise practices that should be promoted to individual homeowners include:

1. Clear out under-story vegetation and accumulations of moss, leaves, grass and debris.
2. Thin over-story spruce and birch, and limb up spruce 6 feet. Remove snags, dead, standing trees, if possible, within 100 feet of structures.
3. Allow at least 20 feet between adjacent structures to prevent fire spread to adjacent structures should one of them ignite.
4. Use non-combustible building materials for home and deck like metal siding.

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5. Attempt to store propane tanks, fuel barrels, and woodpiles greater than 30 feet from the home to the extent practical while taking into consideration winter freezing/fuel flow issues.
6. Don't store woodpiles or other flammables below home.
7. Maintain an easily accessible source of water for pumps and suppression activities
8. Provide access to fire suppression equipment by keeping an adjacent area of firm ground large enough for trucks to turn around in clear and available.

To a certain extent, the community of Ruby can improve suppression response without extensive participation by individual homeowners:

1. Place street signs at all major intersections to assist Volunteer Fire Department and other emergency personnel.
2. Assign numbers to homes and require them to be visible to assist Volunteer Fire Department and other emergency personnel.
3. Widen roads currently less than 24 feet wide and make turn-arounds at the end whenever possible.
4. Produce easily accessible and readable maps for use by suppression resources to facilitate communication and spatial orientation.
 - a. Build a library of maps
 - b. Note structures, hazards, utilities, water sources, turn arounds, street signs,
 - c. Make hard copies available for use during an incident
 - d. Develop a system for updating the map set.
5. Improve incident communications between Ruby VFD and AFS/FWS. Look into programming each others frequencies into each others radios. If not, designate 1-2 king radios to provide to cooperators so that at least unified command positions within ICS can communicate via radio
6. Develop an evacuation plan and make available to everyone.

Roles and Responsibilities

The community will need to implement the mitigation plan:

- The Ruby Tribe and the City will play key role in grant writing for fuels reduction projects.
- City will secure or provide funds and means of requiring house numbers to be posted, installing street signs, and expanding hydrant systems.
- VFD, AFS, USFWS will produce and maintain maps, SOP's, and smooth working relations for incident response.
- VFD, AFS, USFWS will designate and maintain sites for portable pump use.
- VFD, AFS, USFWS, and City can cooperatively provide outreach and community education concerning fire wise strategies to protect homes.
- City, VFD, can provide support to dispose of vegetative refuse cleaned from neighborhoods.
- Individual homeowners will be responsible for implementing fire wise strategies on their own land. Assistance may be available if needed.

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Funding Guidelines

Funding can come from any combination of grants, cooperative agreements, operating budgets, donations, fundraising events, etc.

Fuels Treatment Project Costs:

Fuel treatment costs for thinning and firebreak construction are estimated at \$3900/acre.

Monitoring Plan

- Establish pre and post treatment photo points at strategic areas where fuel reduction projects will take place.
- Monitoring of the fuels treatment project to determine re-occurring maintenance needs.
- Review SOP's (incident response, evacuation) biennially or when there is significant change in the community's situation.
- Do periodic (every 5-10 years) risk assessments using the same criteria and compare whether ratings are lower.

Ruby Community Wildfire Protection Plan

Signatures

City of Ruby _____

Ruby Tribal Council _____

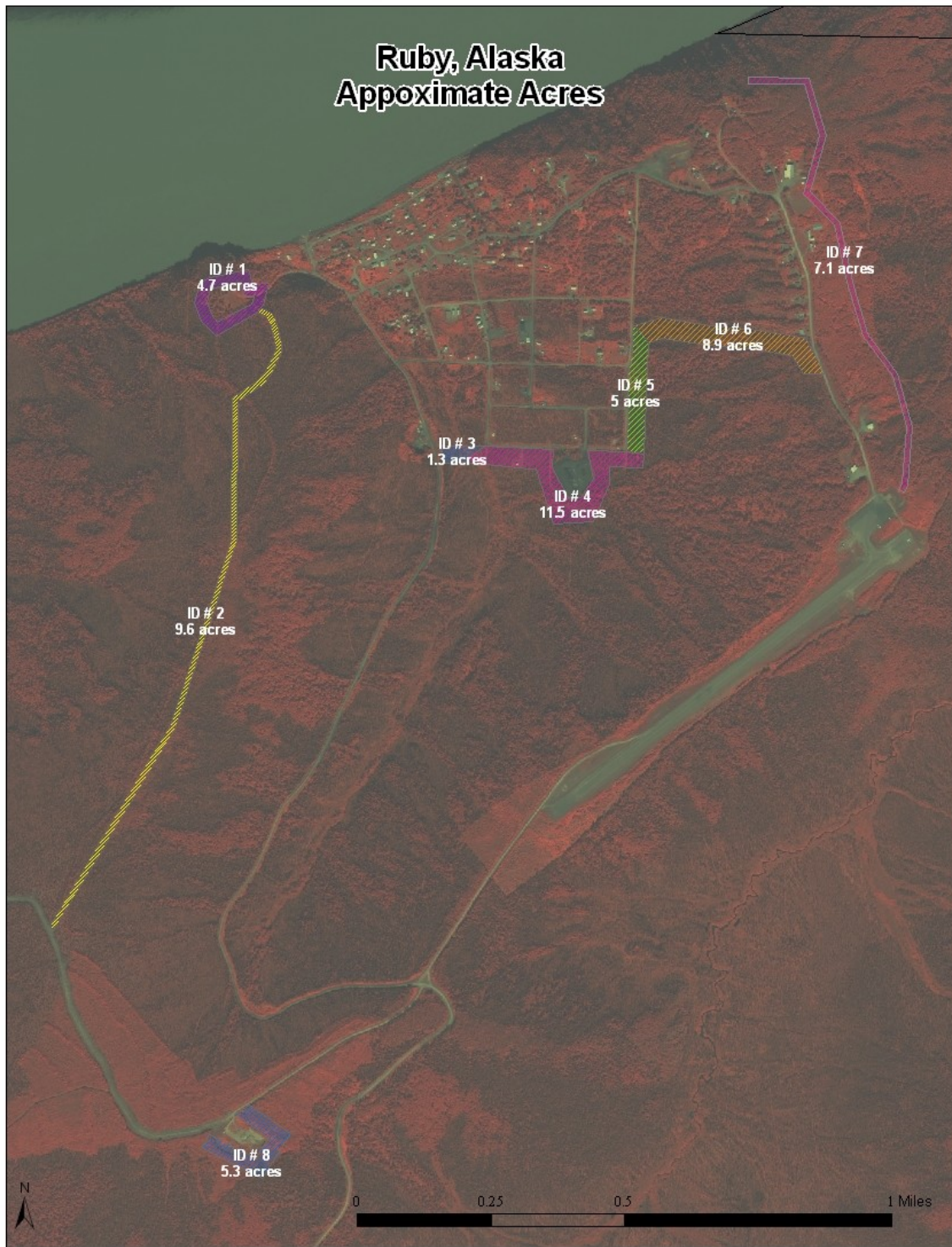
Deneega Corp. _____

BLM/AFS _____

USFWS _____

Alaska DOF _____

Appendix A: Maps



Map Legend-

Ruby Community Wildfire Protection Plan

ID #1- This is the area around the Ruby cemetery. Proposal is to thin a 200' buffer around the cemetery, all hand work with residue either piled on site and burned or hauled off.

ID #2- This is a new fuel break. 60' cleared area by hand, with 20-25' scraped fuel break created with a dozer (shear blade in winter with frozen ground). Residue either piled on site and burned or hauled off.

ID #3- 200' thinned buffer with 20-25' scraped fuel break along the north edge (shear blade in winter with frozen ground). Residue either piled on site and burned or hauled off.

ID #4- 200' thinned buffer, with residue either piled on site and burned or hauled off.

ID #5- 200' thinned buffer, with residue either piled on site and burned or hauled off.

ID #6- 200' thinned buffer with 20-25' scraped fuel break along the north edge (shear blade in winter with frozen ground). Residue either piled on site and burned or hauled off.

ID #7- This is a new fuel break. 60' cleared area by hand, with 20-25' scraped fuel break created with a dozer (shear blade in winter with frozen ground). Residue either piled on site and burned or hauled off.

ID #8- A 200' buffer created around the present dump site. This would be all hand thinned and then blade scraped to create a fuel break.

Appendix B: Firewise Alaska

WILDLAND FIRES: NECESSITY AND THREAT	
Step I: EVALUATION	
Step II: SIX ELEMENTS OF A FIREWISE COMMUNITY.....	
Element 1: Landscaping.....	
Element 2: Firewise Construction.....	
Element 3: Emergency Water Supply	
Element 4: Access and Signs	
Element 5: Home Planning	
Element 6: When Wildfire Threatens	
Resource List	
Appendix: Fire-Resistant Vegetation and Landscaping	

Wildland Fires: Necessity and Threat

Ruby Community Wildfire Protection Plan

INTRODUCTION

WILDLAND FIRES:

Fire plays a significant ecological role in Alaska's wildland environments. It helps to shape the wildlife habitats and wildlife populations Alaska is famous for. But many Alaskans enjoy living in or near wildlands, and an ever-increasing number of homes and other structures are being built in these areas. Firefighting agencies call places where human development meets or mixes with natural vegetation the *wildland/urban interface*. Wildland fires that occur in or near these areas, whether caused by lightning or by careless human behavior, can pose significant threats to homes and other structures. Although there are times when weather and burning conditions can overcome the best efforts of firefighters, firefighting agencies are committed to suppressing these fires and to protecting developed areas from the threat of wildland fires. Many wildland/urban interface areas in Alaska become susceptible to fire as soon as the snow melts. Both live and dead trees are extremely flammable. Fire in dry grasses can burn and spread rapidly, especially before the spring/summer season. Firefighting agencies are prepared to respond to wildland fire emergencies, but there are several factors that determine firefighting circumstances and effectiveness:

- The distance between a structure in your community and the nearest fire station or firefighting force greatly affects the emergency response time.
- If many fires are burning at once, or one very large fire, there will not be enough personnel and equipment available to protect every threatened structure.
- Some areas may not be safe for firefighters to enter.
- If a building has ignited because of a wildland fire, wildland firefighters may not be trained or equipped to do anything other than try to check the fire's further spread. Any of these factors could mean that firefighting efforts would not be feasible or effective for all structures threatened by a wildland fire.

You and your community members must evaluate the ability of your community to withstand an approaching wildland fire without the intervention of firefighting personnel and equipment. You must assume some responsibility for making preparations before a wildland fire occurs by preplanning and preparing for a safe evacuation.

What Can You Do?

During the 1996 Miller's Reach fire near Big Lake, Alaska, over 400 structures were lost when the fire overwhelmed firefighting efforts, yet over 1,000 threatened structures survived. Many were saved through the efforts of firefighters and community members, and many more as a result of *preparations made by community members*. Firewise focuses on pre-fire preparedness and community education and involvement. This booklet will show you how you and your neighbors can develop a *Firewise community action plan*. It addresses the six elements of a Firewise community and describes how to establish and implement your Firewise action plan.

Step I: EVALUATION

The first step toward developing a Firewise plan for defense against wildland fire is to look at your surroundings and evaluate them for susceptibility to fire. When you are doing your evaluation, imagine the worst wildland fire scenario: winds greater than 20 mph; hot, dry conditions; and dry vegetation. All wildland fire disasters have these conditions in common. Fires under these conditions are very difficult to control, even for professional firefighters.

Determine the Hazard

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Hazards can be defined simply as the fuels and topography of an area. Examining hazards will help you to identify the potential for a large fire. Work through the Home Hazard Assessment rating form provided in the handouts to determine the hazard level for your home and property. If you need help with the worksheet, you can contact your nearest fire response agency.

Identify Values

Values are defined here as things that are important enough to you that their destruction by wildland fire would be unacceptable. You should identify and rate your values at risk so you can clarify your goals and prioritize preventative actions. These values might be life, property, and keepsakes, or might include intangibles like the privacy created by a screen of trees, or the ability to view wildlife close at hand.

Recognize Risk of Ignition

Risks are defined as potential sources of wildland fire ignition. Wherever there are concentrations of people or their activities, there is the potential for human-caused fires. Examples would be RVs, campers, barbecues, cigarettes, mining, logging, and tourism. In many places in Alaska, there's also the potential for lightning to start fires.

Check Regulations

Examine codes, ordinances, covenants, and regulations that are applicable to your community. Make a list of these as you begin to develop your plan. Identify community leaders who may help you implement local programs.

Step II: SIX ELEMENTS OF A FIREWISE COMMUNITY

Element 1: Landscaping- Develop and Maintain a Firewise Landscape Around Your Home

Objective: Manage your landscape vegetation to reduce the amount of fuel available to any fire approaching your property.

Your first defense against wildland fires is to create a Firewise landscape around your home. You can do this by removing flammable vegetation and replacing it with fire-resistant plants, by spacing the plants in your yard, and by clearing away dead vegetation and debris around your home.

Create a Defensible Space: Landscape With Fire Prevention in Mind

You can start with the vegetation around your home. Many of the plants that grow naturally on your property are highly flammable during the summer and can actually fuel a wildland fire, causing it to spread rapidly through your neighborhood. See the appendix for a list of fire-resistant plants. More information about fire-resistant vegetation is available at your local Cooperative Extension Service or Division of Forestry office.

➤ *Remove or transplant* more flammable vegetation *within 30 feet of your home* and replace it with low-growing, fire-resistant plants; this is one of the easiest and most effective ways to create defensible space.

➤ Select landscape plants based on fire resistance and ease of maintenance as well as looks.

General characteristics of fire-resistant plants:

grow close to the ground

have a low sap or resin content

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grow without accumulating dead branches, needles, or leaves

are easily maintained and pruned

are drought tolerant in some cases

➤ Remove some of the trees from heavily wooded areas on your property to decrease the fire hazard and improve growing conditions. Also remove dead, weak, or diseased trees, leaving a healthy mixture of older and younger trees.

➤ Work together with your neighbors to clear common areas between houses and prune areas of heavy vegetation that are a threat to homes and other structures.

Defensible space is an area that will help protect your home and provide a safety zone for those who are battling the flames

➤ Electrical power lines should be clear of vegetation. Avoid planting trees near lines where they may grow into and contact the lines under windy conditions, causing a fire.

➤ Remove dead tree limbs hanging over your roof and any limb within 10 feet of your chimney.

➤ Roofs, gutters, and other areas around the house collect leaves, needles, and other woody debris. These areas must be cleared several times during the spring, summer, and fall. Burning embers carried to these areas can easily ignite the fine, dry fuels that collect in them.

➤ Create a three-foot nonflammable barrier around your home, such as a rock garden.

➤ Locate burn barrels at least 30 feet from any structure and clear the ground around the barrel for a minimum of 10 feet. A burn barrel must be in good condition and should be covered with a woven metal screen.

➤ Properly dispose of all cut vegetation by an approved method. Open burning may require a burning permit. Contact your nearest fire agency, department, or village public safety officer for local requirements.

Consider alternatives to burning:

Use as firewood if possible

Send through wood chipper; then scatter or use the chips for mulch or compost

Bury on site

Haul to landfill

➤ Stack firewood and scrap wood piles at least 30 feet from any structure; then clear away any flammable vegetation within 10 feet of the piles. Many homes have survived as a fire moved past, only to burn later from a woodpile that ignited after the firefighters moved on to protect other homes.

➤ Label and locate liquefied petroleum gas (LPG) or propane tanks or any fuel storage containers at least 30 feet from a structure. Use stone or iron instead of wood for cribs under tanks. If you store gasoline, label it.

➤ Clear flammable vegetation at least 10 feet around all such tanks.

➤ All-terrain vehicles, snowmachines, and other machinery should be parked away from your home.

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➤ Maintaining your Firewise landscape is important. You should irrigate to maintain moisture in the vegetation during dry periods. Your local fire agency or department is a good source of information about creating and maintaining a defensible space, and there is additional information about fire resistant plants and landscaping on pages 18 and 19. Use the zone concept for thinning, limbing, and clearing flammable vegetation from around from your home. Prune limbs 6 to 10 feet from the ground, depending on the height of the ground fuels, to prevent fire from spreading into the trees.

Element 2: Firewise Construction- Build or Remodel to Make Your Home Resistant to Fire

Objective: Your home and other structures should be able to survive a wildland fire without firefighters' presence.

Your home could be vulnerable to a wildland fire because of its design, construction, or location. If you are preparing to build, buy, or remodel a house, you should know what to look for in a Firewise house. A few modifications to your construction plans can reduce the chance of your house catching fire.

Consider Fire-safe Sites When Building

- If possible, locate a new house at least 30 feet from the boundary of your lot. This will allow you to design your landscape with at least 30 feet of defensible space.
- Don't build on ridge tops, in canyons, and between high points on a ridge. These are extremely hazardous locations because they become natural chimneys. A fire moves rapidly upslope, preheating the fuels in front of the fire and increasing its intensity. You should set the home back from the top edge of the slope to avoid direct impact by flames burning up the slope.

Choose Nonflammable Building Materials

- ☛ Choose exterior construction materials such as metal, which resists fire much better than wood. If you have a wood exterior, it is especially important that you follow the Firewise practices outlined in this booklet.
- ☛ Vinyl siding can melt from the heat of a fire.
- ☛ Generally, thicker siding materials are more fire resistant.
- ☛ Enclose, or skirt, the area underneath the house, porches, balconies, and decks with fire-resistant materials. If not enclosed, these areas can trap flames and burning embers that can ignite your home.
- ☛ Clear all debris from under the decks, steps, and around the base of the house to eliminate fuels for windblown embers.

Realize the Importance of Roof Materials and Maintenance

Your roof is the most vulnerable part of your house because it can easily catch fire from windblown sparks. The single most important step you can take to create a Firewise house is to build or reroof with a fire-resistant or noncombustible material. Contact your local wildland fire suppression agency, your insurance company, your local fire department, or a building supplier for specific roofing guidelines.

Other Building Considerations

- ☛ Roof eaves extending beyond exterior walls are also susceptible to flame exposure and should be limited in length and boxed, or enclosed with fire-resistant materials.
- ☛ Attic or ridge vents can allow easy entry of embers and sparks. Cover all vents with a nonflammable screen with $\frac{1}{4}$ -inch mesh. • Every chimney and stovepipe must be covered by a nonflammable screen with a mesh no larger than $\frac{5}{8}$ inch.

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- ☛ Limit the size and number of windows facing large areas of vegetation. Even from a distance of 30 feet, the heat from a wildland fire may be enough to ignite furniture or curtains in your house.
- ☛ Installing small-paned or dual-paned windows can reduce the potential for breakage from windblown debris and reduce the amount of heat transmitted from the fire to the inside of your home.
- ☛ Sliding glass doors and large picture windows should be made of tempered safety glass.
- ☛ Open windows should be screened to prevent entry of embers, in case you are away from home at the time of the fire and the window is left open.
- ☛ Plastic skylights may melt from the intense heat of a wildland fire and allow windblown embers to enter.
- ☛ Wooden fences act like fuel bridges, leading the fire to your house. Separate a wooden fence from the building with a space or partition built from fire-resistant materials such as stone or metal.
- ☛ A wooden trellis may also pose a fire hazard. Consider metal or iron for a decorative touch.
- ☛ Inspect your home annually for deterioration such as cracks or crevices that could trap embers.

Element 3: Emergency Water Supply- Establish Your Alternative Water Supply

Objective: Maintain water supply during a power outage and periods of high demand.

Even a Firewise home may not survive a wildland fire without an emergency water supply. Without an on-site water source, firefighters have little chance of protecting a threatened house or extinguishing one that is burning. Some communities have water systems with large storage facilities and well-spaced hydrants that generally meet the needs of wildland firefighters.

Identify or Create Your Personal Alternative Water Supply

If your home or cabin does not have access to an adequate community water system, you will need to develop an individual well or water source that provides suitable storage and fire equipment access. A minimum water storage supply of 2,500 gallons is recommended for use in emergency situations. Storage facilities may include perennial streams, lakes, or ponds; above- or below-ground tanks; or swimming pools. A dry hydrant may be installed to improve efficiency and accessibility to your water source. More information about dry hydrants can be found at www.firewise.org. You can cooperate with your neighbors to develop a common emergency water storage facility for your home and several others. You can obtain water storage or water delivery system designs or specific system requirements by contacting your local wildland fire service agency or by referring to the resource list at the end of this publication (page 17).

Create Access to Your Alternative Water Supply

Once you have established an alternative water supply, you must make sure firefighters can get to it.

- ☛ If your water comes from a well, you should have a gasoline-powered generator so firefighters can operate your well pump during a power failure. The generator **MUST** be installed with a safety transfer switch to prevent feedback into power lines!
- ☛ If you don't have a well with a submersible pump, you must have a gasoline-powered, portable pump to transfer water from your alternative water source.
- ☛ Firefighters must also be able to locate your water supply. Your water supply must be clearly marked.

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- ☛ In some situations you may plan for exterior sprinkler systems that can be deployed when needed. The water should not be turned on until the fire is close at hand. Remember that the water you use before the fire arrives will not be available to you or firefighters as the fire comes closer.
- ☛ Another option is to incorporate a foam system into your exterior home or portable water supply. (Contact a wildland firefighting agency for information on limitations and dangers involving the use of foam.)
- ☛ Assemble a portable 200- to 300-gallon water tank and pump on a trailer or pickup for use by the community.

Resource: *Planning for Water Supply and Distribution* (NFPA publication) www.nfpa.org

Element 4: Access and Signs- Make Sure Emergency Personnel Can Locate and Get to Your Home

Objective: Clearly marked signs and/or landmarks and adequate road access.

The first few minutes of a fire are the most critical for saving your home from a wildland fire. Firefighting personnel must be able to immediately find and safely travel to your home if they are to protect it.

Clearly Identify Road Signs and Addresses

- ☛ Road signs and house addresses must be clearly posted. Your street name and address should be printed in letters and numbers that are at least four inches tall, on a contrasting color background. They should be visible from all directions of travel for at least 150 feet. The sign should be made of fire-resistant and reflective materials.
- ☛ Each of the streets and roads in your area should be labeled, and each should have a different name or number.
- ☛ Your home should have its own house number, which should be in numerical order along your street or road.
- ☛ If your house is set back from the street, road, or trail, post your address or name at the entrance of your driveway.
- ☛ In situations where more than one home is accessed from a single driveway, all addresses should be posted at the street and at each appropriate intersection along that driveway.
- ☛ Cabins in remote areas can be protected from wildland fires only if fire suppression agencies know they exist. Make sure the proper suppression agency knows where your cabin is.

Provide Fast Access to Your House

Even if your street and house are clearly identified for firefighters, precious time can be lost if firefighters have difficulty getting to your house. *Narrow roads, dead-end streets, steep driveways, and weak bridges can delay firefighters or prevent them from arriving at all.*

Remember, firefighting equipment is much larger and heavier than your family car or truck.

- ☛ Roads must be able to accommodate busy traffic. At the same time that fire engines and other emergency equipment are trying to drive into your area, you must be able to escape in your car with your family, pets, and most valuable personal possessions.
- ☛ A minimum of two primary access roads should be designed into every subdivision and development.
- ☛ All private and public streets should provide two traffic lanes, each a minimum of nine feet wide, which is just enough space for a fire engine and car to pass each other. Curves and intersections should also be wide enough to allow large fire equipment easy passage and the ability to turn.

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- ☛ In communities with fire departments, the *roads driveways, and bridges should be built to carry at least 40,000 pounds*, the average weight of a fire engine. (By comparison, the average family minivan weighs about 4,000 lbs.)
- ☛ Streets and driveways must not be too steep or have sharp curves, which can prevent emergency equipment from arriving to protect your home.
- ☛ Every dead-end street or long driveway should have a turnaround area designed as either a “T” or a circle large enough to allow fire equipment to turn around.
- ☛ Single-lane, one-way roads and driveways should have turnouts constructed within sight of each other or at regular distances apart.
- ☛ You can improve visibility for emergency personnel by clearing away flammable vegetation at least 10 feet from all roads and at least five feet from driveways. If possible, cut back and prune vegetation even more than this and make sure trees and shrubs are widely spaced. Cutting back any overhanging tree branches above the road will give you and your neighbors a better evacuation route and will provide arriving firefighters with greater protection.
- ☛ If you have any questions about emergency access to your home, including construction widths, grades, or strengths, contact your local fire agency or public works department. Each of these steps will give wildland firefighters a better chance of finding and protecting your home and will give you a better chance of evacuating safely, if that becomes necessary. A delay of only a few minutes can mean the difference between saving your home and losing it.

Element 5: Home Planning- Create Fire Safety Inside Your Home

Objective: Ensure safety of all family members.

Smoke detectors have saved many lives and may save yours. More than half of all fatal residential fires take place at night. If a fire starts while your family is asleep, smoke detectors provide your best chance of waking in time to get out. They are your first line of defense.

Use Smoke Detectors Properly

- ☛ Position smoke detectors on the ceiling just outside each bedroom. If you have a multilevel home, install a detector on every level. If you sleep with your bedroom door closed, place an additional detector inside your bedroom.
- ☛ Before you buy a smoke detector, make sure it is listed and approved by an independent testing laboratory. Read the instructions that came with your smoke detector carefully to find out exactly how and where to install it.
- ☛ Be sure to test your smoke detector each month and change its batteries at least twice a year. A good habit to follow is to change the batteries in your smoke detectors in the spring and fall when you change your clocks.

Learn to Use Your Portable Fire Extinguisher

Portable fire extinguishers can save lives and property by helping you put out or contain small fires until the fire department arrives. But they must be used properly and under the right conditions.

- ☛ Be sure the fire extinguisher is listed and approved by an independent testing laboratory. Extinguishers are identified by the type of fire on which they can be used:

Type For Use On

- Type A wood or cloth fires
- Type B flammable liquid fires
- Type C electrical fires
- Type D flammable metal fires

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- ☛ Make sure that each member of your family can hold and operate the fire extinguisher and knows where it is located.
- ☛ Mount extinguishers in easy-to-get-to places.
- ☛ Remember that fire extinguishers need annual maintenance and must be recharged after every use.

Consider a Home Sprinkler System

Home sprinkler systems are one of the most reliable and effective forms of protection because they provide an immediate response to a house fire, whether you are awake, asleep, or away from home. Home sprinklers may pay for themselves in just a few years through reduced insurance premiums. Contact your local fire agency or insurance company for information on selecting an approved sprinkler system for your home.

Get a Carbon Monoxide Monitor

☛ A carbon monoxide monitor is also important for your home, to warn your family of invisible hazards.

Plan Your Escape!

It is important that all family members know what to do in an emergency. Even with an early warning from a smoke detector, escaping a fire can be difficult or impossible. Fire can spread very rapidly, blocking exits and creating poisonous blinding smoke.

- ☛ Even a few breaths of smoke and toxic gases can choke and kill you. If you become trapped in smoke, crawl low toward your escape route or exit and keep your head down. Smoke and heat rise, so cleaner air is near the floor.
- ☛ Contact your neighbors and local authorities to plan community emergency procedures such as standard escape routes and common meeting places. Also, it is helpful to develop a community alert system that can be used during a fire or other emergency. With an alert system, anyone who spots an emergency will know how to react so that everyone in your neighborhood will be notified in time to respond.

Take these steps to plan your escape:

- ☐ Draw a floor plan of your home and mark all possible escape routes. Make sure you know two safe ways out of every room, especially the bedrooms.
- ☐ Prepare a list of valuables to take with you in an emergency. If you can, store these valuables together to save time later.
- ☐ Remember that young, elderly, and disabled persons may need assistance. Their rooms should be located as close to an exit as possible. Train the rest of your family to help them get out in an emergency.
- ☐ Remind everyone to close doors behind them as they evacuate the house to slow the spread of fire, smoke, and heat.
- ☐ Decide on an outside meeting place to assemble your family and to make sure everyone is out.
- ☐ Practice your escape! Conduct home fire drills often, varying the drill to prepare for different fire situations. You may be blinded by smoke, so try practicing your escape plan with your eyes closed.

In the event of a fire, remember the following:

- ☐ Before you exit your room, feel the door. If it is hot, don't open it. Use your second way out.
- ☐ If smoke, heat, or flame block both of your escape routes, stay in the room with the door closed.
- ☐ Stuff sheets, blankets, or towels in the cracks around the door and around the heating and air conditioning vents to keep smoke and fumes out.
- ☐ Open a door only if smoke is no longer entering the room. Hang a bright sheet or cloth out the window to signal for help if you can't get out.
- ☐ If there is a phone in the room, dial 911.
- ☐ If your clothes catch fire, STOP, DROP, AND ROLL!

Element 6: When Wildfire Threatens- Emergency Planning

Objective: Make plans before potential emergency to avoid panic and confusion.

If you have followed the advance preparation steps outlined in this booklet, you have created a Firewise house that has a better chance of surviving a wildland fire. But when a wildland fire is immediately threatening your area, there are additional steps you can take to help protect yourself and your home.

• If you see a fire approaching your home, report it immediately by dialing 911 or your local emergency number. Remember to stay on the phone long enough to answer all questions the emergency dispatcher may ask.

IF THERE IS TIME BEFORE THE FIRE ARRIVES, DO THE FOLLOWING:

Prepare to Evacuate

- Park your car heading out (so you don't have to back out), with the windows closed and keys in the ignition.
- Close the garage door but leave it unlocked; disconnect the automatic garage door opener in case of power failure.
- Park your ATV, heading out, with the key in the ignition.
- Place valuable documents, family mementos, and pets inside the car in the garage for quick departure, if necessary.
- Keep a flashlight, portable radio, and fresh batteries with you at all times.
- If you do evacuate, use your preplanned route, away from the approaching fire front.
- If you are trapped by a fire while evacuating in your car, park in an area clear of vegetation, close all vehicle windows and vents, cover yourself with a blanket or jacket, and lie on the floor.
- If you are trapped by fire while evacuating on foot, select an area clear of vegetation along a road, or lie in the road ditch. Cover any exposed skin with a jacket or blanket. Avoid canyons that can concentrate and channel fire.

Outside Your Home

- Move combustible yard furniture away from the house or store it in the garage; if it catches fire while outside, the added heat could ignite your house.
- Cover windows, attic openings, eaves, vents, and subfloor vents with fire-resistant material such as 1/2-inch or thicker plywood. This will eliminate the possibility of sparks blowing into hidden areas within the house. Close window shutters if they are fire resistant.
- Attach garden hoses to spigots and place them so they can reach any area of your house.
- Fill trash cans and buckets with water and locate them where firefighters can find them.
- Shut off liquefied petroleum gas (LPG), propane, or natural gas valves.
- If you have an emergency generator or a portable gasoline-powered pump that will supply water from a hot tub, pond, well, tank, or river, clearly mark its location and make sure it is ready to operate.
- Place a ladder against the house on the side opposite the approaching fire to help firefighters get onto your roof.
- Place a lawn sprinkler on flammable roofs, but don't turn it on unless the fire is an immediate threat. You do not want to reduce the supply of water for the firefighters.
- If you choose to evacuate by your private aircraft, do so before the fire's arrival. Remember, the airspace surrounding the fire will be filled with suppression aircraft and a collision could occur. Once you are evacuated, do not re-enter the airspace until all flight restrictions are lifted.

Inside Your Home

- Close all windows and doors to prevent sparks from blowing inside.

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- Close all doors inside the house to slow the spread of fire from room to room.
- Turn on a light in each room of your house, on the porch, and in the yard. This will make the house more visible in heavy smoke or darkness.
- Fill sinks, bathtubs, and buckets with water. These can be important extra water reservoirs.
- Move furniture away from windows and sliding glass doors to keep it from igniting from the heat of fire radiating through windows.
- Remove your curtains and drapes. If you have metal blinds or special fire-resistant window coverings, close them to block heat radiation.

If You Stay in Your Home When a Fire Approaches

- Stay inside your house, away from outside walls.
- Close all doors, but leave them unlocked.
- Keep your entire family together and remain calm. Remember: If it gets hot in the house, it is many times hotter and more dangerous outside.

After the Fire Passes

- Check the roof immediately, extinguishing all sparks and embers. If you must climb onto the roof, use caution, especially if it is wet.
- Check inside the attic for hidden burning embers.
- Check your yard for burning woodpiles, trees, fence posts, or other materials.
- Keep the doors and windows closed.
- Continue rechecking your home and yard for burning embers for at least 12 hours. For more information on evacuation, contact your nearest wildland fire suppression agency.

RESOURCE LIST

Firewise - www.firewise.org

Alaska Division of Forestry Fire Information - www.dnr.state.ak/forestry/fire/

Bureau of Indian Affairs - www.doi.gov/bureau-indian-affairs

Bureau of Land Management, Environmental Education - www.blm.gov/education

Bureau of Land Management, Alaska Fire Service - <http://fire.ak.blm.gov>

California Fire Safe Council - www.firesafecouncil.org

Canadian Forest Service Fire Management Network - www.nofc.forestry.ca/fire/

Federal Emergency Management Agency - www.fema.gov

Municipality of Anchorage - www.muni.org

National Assn. of State Foresters Forestry Links - www.stateforesters.org/nasflinks.html

National Fire Protection Assn. Fire Resource Links - www.nfpa.org

National Interagency Fire Center - www.nifc.gov

National Park Service Alaska Support Center Home Page - www.nps.gov/akso/Fire/firehome.htm

National Park Service Fire Management Program Center - www.nps.gov/fire

National Wildland Fire Coordinating Group - www.nwccg.gov

U.S. Fish & Wildlife Service Alaska Region Home Page - www.r7.fws.gov

U.S. Fish & Wildlife Service Fire Management Home Page - www.fws.gov/fire/

U.S. Forest Service Fire Site - www.fs.fed.us/land/#fire

WeatherNet - cirrus.sprl.umich.edu/wxnet

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RESOURCE TELEPHONE NUMBERS AND ADDRESSES

General Information Numbers

Alaska Dept. of Natural Resources - 907-269-8400, 550 West 7th Ave., Suite 1260, Anchorage, Alaska 99501

Alaska Dept. of Fish & Game - 907-459-7259, 1300 College Rd., Fairbanks, Alaska 99701

Anchorage Fire Department, Wildfire Mitigation - 907-267-4980, PO Box 196650, Anchorage, Alaska 99519

BLM Alaska Fire Service - 907-356-5600, P.O. Box 35005, Fort Wainwright Alaska 99703

Chugachmiut. - 907-562-4155, 1840 South Bragaw Street, Suite 110, Anchorage, Alaska 99508

National Park Service - 907-257-6423, PO Box 9, Denali National Park, Alaska 99755

U.S. Fish & Wildlife Service - 907-786-3654, 1011 E. Tudor Rd., Anchorage, Alaska 99503

U.S. Forest Service - 907-271-2500, 3301 C St., Anchorage, Alaska 99503

Division of Forestry numbers in your area to call for more information

Anchorage/Mat-Su.....	907-761-6300
Delta	907-895-4225
Fairbanks	907-451-2600
Valdez/Copper River	907-822-5534
Juneau	907-465-2491
Kenai/Kodiak.....	907-260-4200
Tok	907-883-5134
Haines	907-766-2120
Ketchikan	907-225-3070
McGrath	907-524-3010

Landscaping Notes

Alaska Department of Natural Resources

Division of Forestry

Community Forestry Program

550 W. 7th Ave., Suite 1450

Anchorage, AK 99501-3566

907-269-8465 or 907-269-8466

www.dnr.state.ak.us/forestry/

Create Defensible Space

Many Alaskans live in areas where wildfire is a threat each spring and summer. You may not be able to eliminate the threat, but you can take steps to protect your home or cabin. Fire-resistant vegetation and appropriate landscaping can slow or stop the spread of fire and provide a safety zone for firefighters near your home. Firewise landscapes do not have to be stark and boring. Selecting, placing, and maintaining the proper plants can create a beautiful landscape that is also a defense from wildfire or an escaped debris or structure fire. To protect your home, create three zones of defensible space.

Zone 1: Within 30 Feet of Your Home

On a steep slope, increase this distance to 100 feet on the downhill side.

- Plant ground covers and low-growing, herbaceous perennials, which retain more moisture than grass. Use only plants less than 18 inches tall near buildings.
- Don't plant or keep trees or shrubs with volatile foliage, such as evergreen needles, in Zone 1.
- Deciduous trees may be planted or retained on the outer edges of Zone 1 if they are at least 20 feet apart, with crowns at least 10 feet apart at maturity. For trees taller than 18 feet, remove branches within eight feet of the ground.

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- Use rock or herb gardens and flower beds to create islands of vegetation.
- Use stone, gravel, concrete, and other nonflammable materials in walls, walkways, driveways, borders, and other landscape features to create fire breaks.
- Don't use a wooden walkway, fence, or wood chips in a way that could lead a fire to your house.
- Remove tall trees or shrubs that could drop debris on the roof or in gutters. Trees and branches within 10 feet of a building should be removed.
- Remove thick shrubs, tall grass, and dead trees.
- Keep vegetation well watered, pruned, and mowed.
- Create a three-foot nonflammable barrier around your home, such as a rock garden.

Zone 2: 30 to 100 Feet Beyond Zone 1

- Use more deciduous trees and shrubs and a few widely spaced conifers. Larch is a deciduous conifer that is less flammable than other conifers.
- Remove tree branches within eight feet of the ground and space, or thin, trees so that crowns remain 10 feet apart at maturity. Surround trees with low-growing ground covers.
- Separate shrubs or massed plantings of shrubs a distance of two or three times their height.
- Use flower and vegetable gardens and nonflammable features, such as rock, to break up areas of vegetation.

Zone 3: 100 Feet Beyond Zone 2

- Retain deciduous trees and shrubs but clear areas of dense shrubs.
- Thin spruce and remove lower branches so there are no dense stands.
- Mow tall grass or replace with less flammable broadleaf plants.
- Retain the healthiest plants and a variety of species and ages.
- A trail in Zone 3 can serve as a firebreak.

Maintenance

The key to a fire-safe landscape is proper and regular maintenance.

- Prune to eliminate ladder fuels—fuels at different heights and close enough together to allow a fire to climb from the ground into the crowns of trees, where it can spread rapidly.
- Thin vegetation to eliminate a continuous fuel source from wildlands to the house and to slow the spread of fire.
- Create islands of plants separated by less flammable material. Islands, or beds, of plants with similar needs also allow for easier watering and maintenance. Plants that are well watered are less likely to burn.

Access

Safe access can help you escape a fire and help firefighters reach your home.

- Create two access routes to your home if possible. A circular driveway in Zone 1 or 2 provides good access and a firebreak for your home.
- A two-way driveway should be at least 18 feet wide and have an all-weather surface to accommodate fire engines. Remove overhanging branches and create at least 15 feet of overhead clearance.
- Fire engines need a minimum turnaround radius of 60 feet on dead-end roads and cul-de-sacs. Clearly mark your driveway and display your address so firefighters can find your home if necessary.

Fire-resistant Vegetation

All plants will burn under extreme conditions such as drought. However, plants burn at different intensities and rates. Fire-resistant plants burn at a lower intensity, with slower rates of spread, and with shorter flame lengths.

Characteristics of fire-resistant plants and landscapes:

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- Plants with a high water content and supple, moist leaves
- Plants with water-like sap (birch vs. pine)
- Little or no accumulation of dead vegetation, either on the ground or on the plant
- Slow-growing vegetation that requires less care
- Landscape with low volumes of vegetation—sparse, deciduous trees rather than dense forest or shrubs
- Forest stands without ladder fuels—small, fine branches between the ground and canopy that allow the fire to spread

Characteristics of plants that ignite readily and burn intensely:

- Resinous plants, such as spruce, pine, juniper, and fir
- Leaves and wood containing waxes, terpins, or oils
- Blade-leaf or needle-leaf evergreens
- Stiff, leathery, or fine, lacy leaves
- Aromatic crushed leaves
- Gummy, resinous sap with a strong odor

Following are a few of the plants that may be used in Firewise landscapes in Alaska if placed and maintained appropriately. Some ground covers are invasive and not appropriate for all locations. Check horticultural references and local garden centers for plants recommended for your area and for information on required growing conditions and uses of these plants.

Shrubs

Currant *Ribes alpinum*, *R. Triste**

Flowering almond *Prunus triloba*

Lilac, dwarf varieties *Syringa meyeri*, *S. Patula*

Nanking cherry *Prunus tomentosa*

Potentilla *Potentilla fruticosa**

Rose *Rosa rugosa*, *R. glauca*, *R. acicularis**

Servicberry *Amelanchier alnifolia**

Silverberry *Eleagnus comutata**

Spirea *Spirea bumalda*, *S. betulifolia**

Viburnum *Viburnum lantago*, *V. trilobum*

Trees

Amur chokecherry *Prunus maackii*

Amur maple *Acer tatarica* spp. *ginnala*

Apple and crab apple *Malus*

Birch *Betula papyrifera*, * *B. pendula*

Chokecherry *Prunus virginiana*

Japanese tree lilac *Syringa reticulata*

Larch *Larix russica*, *L. decidua*, *L. laricina**

May day *Prunus padus*, pruned as tree, not shrub

Mountain ash *Sorbus aucuparia*, *S. decora*

Quaking aspen *Populus tremuloides**

Ground Covers and Perennials

Bearberry *Arctostaphylos uva-ursi**

Bergenia *Bergenia crassifolia*, *B. cordifolia*

Bleeding heart *Dicentra spectabilis*, *D. eximia*

Buttercup, creeping *Ranunculus repens*

Chocolate lily *Fritillaria camschatcensis**

Creeping Jenny *Lysimachia nummularia*

Dogwood *Cornus canadensis*, * *C. suecica**

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Ferns, native and non-native
Goutweed *Aegopodium podagraria*
Hosta
Iris, *Iris sibirica*, *I. setosa**
Jacob's ladder *Polemonium**
Johnny-jump-up *Viola tricolor*
Lily of the valley *Convallaria majalis*
Nagoonberry *Rubus arcticus** "Kenai Carpet"
Phlox, creeping *Phlox stolonifera*
Rhubarb *Rheum rhabarbarum*
Speedwell *Veronica**
Yarrow *Achillea**
Tulip *Tulipa*
*native plants

For More Information

Contact the Alaska Community Forestry Program or the Cooperative Extension Service for information on plant selection, care, and pruning. Proper care can help keep your plants safe, healthy, and attractive.

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Does Your Home Pass This Test?

1. Tree and brush cover is thinned within 30 feet of my home creating a defensible space.
True False
2. My home is on a slope and the defensible space increases on the downhill side.
True False
3. I've disposed of all the slash and debris left from thinning. My family and I have removed all dead limbs, leaves, and other ground litter within defensible space.
True False
4. The firewood is stacked uphill at least 15 feet from the buildings.
True False
5. There is a greenbelt immediately around the house using grass, fire resistant plantings, rock, or other noncombustible material. There is no bark or wood chip mulch in this area.
True False
6. I keep the grass and weeds mowed and keep the vegetation well watered, especially during periods of high fire danger.
True False
7. The branches of trees within my defensible space are pruned to a minimum of 6–10 feet (15 feet on large trees with under story ladder fuels) above ground. Shrubs, small trees, and other potential ladder fuels are removed from beneath large trees so they cannot carry a ground fire into the tree crown.
True False
8. Branches do not extend over the eaves of the roof. Roof and gutters are kept free of leaves and other debris.
True False
9. Emergency personnel can locate and safely access my home.
True False
10. I have prepared and practiced an evacuation plan with my family.
True False