



ORCAS HIGHLANDS ASSESSMENT  
Orcas Island, Washington

Prepared for  
Orcas Highlands Homeowners Association  
and  
Orcas Island Volunteer Fire Department

Prepared by  
Firewise Communities/USA

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FIREWISE COMMUNITIES/USA  
Orcas Highlands

The Firewise Communities/USA program is designed to provide an effective management approach for preserving wildland living aesthetics. Support from this educational program gives communities like Orcas Highlands a way to balance sustainable ecological lifestyles with an effective means of wildland fire protection. The Firewise Communities/USA program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum wildfire protection.

This community assessment is intended as a resource that can be used by the Orcas Highlands residents for creating a wildfire protection plan. The plan should be implemented in a collaborative manner, and updated and modified as needed.

The Firewise Communities/USA project seeks input from participating communities and agencies regarding modifications that can be made which will make this program more effective. The assessment was prepared by a team representing Firewise Communities/USA that included Judith Leraas Cook of the National Firewise Program and Jack Cohen, Research Scientist, Intermountain Fire Sciences Laboratory, USDA-Forest Service. Max Jones of the Orcas Island Volunteer Fire Department accompanied the team during the site visit.



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Firewise Communities/USA Project

2003

Orcas Highlands is located in a wildfire environment. Fire happens, but not by choice. The variables in a fire scenario are when the fire will occur, and where. This assessment addresses the wildfire-related characteristics of Orcas Highlands. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but examines the community as a whole.

Included in this assessment are observations made while visiting Orcas Highlands. This assessment addresses the ease with which home ignitions can occur under severe wildfire conditions and how these ignitions might be avoided within the home ignition zones in the Highlands.

A house burns because of its interrelationship with everything in its surrounding home ignition zone---the house and its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the fire's potential relationship with a house. This can be accomplished by interrupting the natural path a fire takes. Changing a fire's path by clearing a home ignition zone is an easy-to-accomplish task that can result in avoiding home loss. To accomplish this, flammable items such as dead vegetation must be removed from the area immediately around the structure to prevent flames from contacting it. Also, reducing the volume of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone.

The Highlands residents can reduce their risk of destruction during a wildfire by taking actions within their home ignition zones. The home ignition zone principally determines the potential for home ignitions during a wildfire and it includes a house and its immediate surroundings within 100 to 150 feet.

The result of the assessment is that fuels were highlighted as a concern. The good news is that the Highlands residents can take actions that carry little or no cost and will substantially reduce the quantity of fuels surrounding their houses. Very small investments of time and dollars will reap great rewards in wildfire safety.

### ORCAS HIGHLANDS AREA BACKGROUND

The Orcas Highlands area was logged approximately 30 years ago and home construction began soon thereafter. The development now contains approximately 85 homes and 25 undeveloped lots. The homeowners association is responsible for its road system. Water is supplied by the Rosario water system. The majority of the homes in the development are currently year-round residences.

Douglas fir is the dominant tree species in the Orcas Highlands area. Also found are mixed conifers indigenous to the West, including lodgepole pine and white fir---much of



it very dense. Stands of red alder and big leaf maple <sup>CIA</sup> and be found in the development, and salal, Oregon grape, snowberry and ocean spray are abundant.

During the summer of 2002, residents learned that, should a wildfire occur in the development, they faced serious ingress/egress issues. In the summer of 2003, meetings were held in each of the three tiers of homes in the Highlands to discuss wildfire issues. Over 30 homeowners attended these meetings and voiced a keen interest in crafting solutions that would allow them to better prepare the Highlands for a wildfire event. Jes  
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#### DESCRIPTION OF [SIZE AND NATURE OF] THE SEVERE CASE WILDLAND FIRE CHARACTERISTICS THAT COULD THREATEN THE AREA

Wildfire intensity (rate of heat release) and spread rate depend on the vegetation fuel (live and dead), the weather conditions prior and during a fire, and topography. Generally the following relationships hold between the fire behavior and the fuel, weather and topography.

- Fuel beds of fine fuels ignite more easily with faster spread rates than coarser fuel beds. For a given mix of fine and coarser fuels, the greater the amount and continuity, the higher will be the fire intensity and the rate of spread. Fine fuels (live and dead) take a shorter time to burn out (consume the fuel) than coarser fuels.
- The weather conditions affect the moisture content of the dead and live fuels. Prior weather conditions principally affect the fuel moistures of the large dead woody fuels and live fine fuels. The relative humidity and sun exposure a few hours prior and at the burning time principally determine the fine dead fuel moisture content. The lower the relative humidity and higher the sun exposure, the lower will be the fuel moisture content. For a given fuel, lower fuel moistures produce higher spread rates and fire intensities along with a higher likelihood of spot fire occurrence.
- Wind speed is another weather consideration that significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the higher the fire's spread rate and intensity.
- Topography influences fire behavior principally by the steepness of the slope. For a given fuel bed, the steeper the slope, the higher the uphill fire spread and intensity. However, the configuration of the terrain such as narrow draws, saddles, and so forth can enhance fire spread and intensity.

Extreme fire behavior in the Orcas Highlands development will be largely determined by a fire burning in areas of dense, continuous conifer forest accompanied by drought and episodes of low relative humidity (<30%) and strong winds (>20 mph). The presence of steep slopes throughout the area will significantly enhance uphill crown fire spread. The



forest in this area was previously harvested and initially did not have the tree canopy height, density and continuity to readily support crown fire. It is now developing into a forest canopy that can produce high intensity crown fire. Locations of heavy accumulations of down and dead woody surface fuel will enhance the crown fire potential. The extent of the high intensity crown fire spread will be limited by the presence of hardwoods. However, under extreme fire behavior conditions, extensive firebrand showering will likely generate numerous downwind spot ignitions and thus, high rates of area involvement—including structures. The highest likelihood for generating high intensity crown fires exists in the continuous dense conifer stands largely dominated by Douglas-fir (*Pseudotsuga menziesii*) with associated conifers such as western hemlock (*Tsuga heterophylla*) and western redcedar (*Thuja plicata*). Locations of steep slopes with accompanying heavy accumulations of down and dead surface fuel will enhance this crown fire potential in these dense conifer stands. High intensity, active spreading crown fires will not occur in the areas having high proportions of red alder (*Alnus rubra*), big leaf maple (*Acer macrophyllum*) and madrone (*Arbutus menzeisii*). However, areas of hardwoods and mixed hardwoods-conifers having heavy accumulations of surface fuels can produce persistent burning with torching conifers in the mixed wood areas. Under extreme conditions, fields of cured grass and/or dense shrubs with high proportions of dead material can produce high spread rates and moderate to high intensities.

## ASSESSMENT PROCESS

The on-site inspection of Orcas Highlands occurred August 6, 2003. The team conducted a thorough inspection from all the roads in the homeowners' association. Areas of interest were photographed for later discussion. On the evening of August 7, a presentation titled "How Homes Ignite" was staged at the Orcas Island Volunteer Fire Department. Over 50 people attended the session.

## IMPORTANT CONSIDERATIONS

The Firewise Communities/USA program seeks to create a sustainable balance that will allow communities to live safely while maintaining environmental harmony in a wildland/urban interface setting. Homeowners already balance their decisions about fire protection measures against their desire for certain flammable components on their properties. It is important for them to understand the implications of the choices they are making. These choices directly relate to the ignitability of their home ignition zones during a wildfire. Fire is inevitable. However, fire occurrence does not necessarily equal fire disaster.

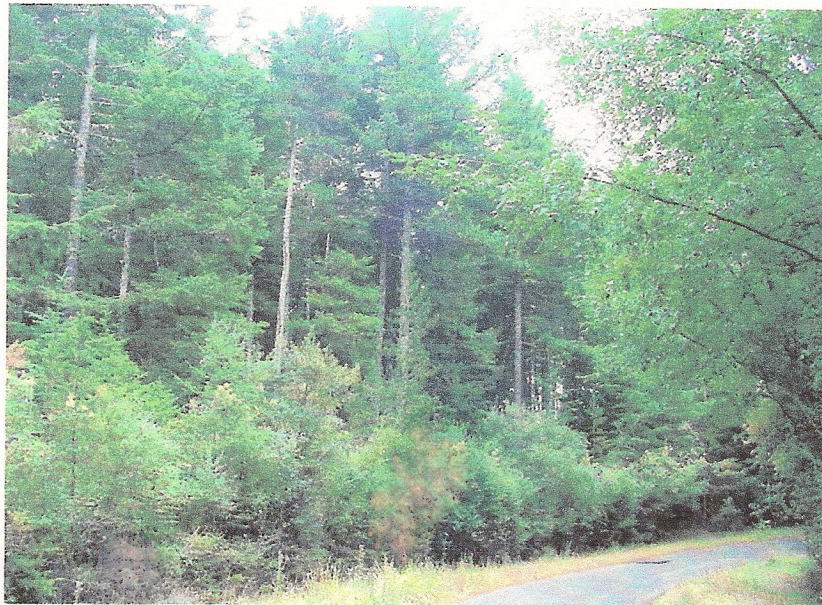
\* Orcas Highlands has a serious issue with the buildup of down and dead timber. This vegetation should be removed 200 feet out from the houses located in the areas with mature Douglas fir trees. It also needs to be removed from the many steep slopes within



the community. Because of the vulnerability of the homes in the Highlands, low and moderately high vegetation should be reduced or removed where practicable.



The Highlands maintains a common area within the loop made by Discovery Way. The homeowners association may consider mechanical thinning in that area. By removing the smaller trees that populate the mid- and understories of the common area's vegetation, potential fire intensity would be greatly reduced. In this way, crown fire may be prevented. When such thinning is done, care should be taken to retain the large trees and the deciduous varieties.





Vegetation is thick around the structures in the Highlands. Because it grows so rapidly, annual pruning should be the standard procedure. The existence of hardwoods like the big leaf maple and the red alder is a great benefit, and significant gains in reducing fire vulnerability can be made by encouraging hardwoods in general.



Evacuation from the Orcas Highlands during a wildfire is not a practical option for many of the residents. The roads within the Highlands are very narrow and there is only one way in and out of the development. The exit could be blocked during a fire. If an evacuation occurs, it must be well in advance of an actual wildfire event. The proposed evacuation route down to the Youngren property was not considered a safe option by the assessment team. ?





## OBSERVATIONS AND RECOMMENDATIONS

- Vegetation thinning is the key to reducing home loss in the Orcas Highlands, starting in the home ignition zones. Dead vegetative material and heavy concentrations of live material should be cleared from at least ten feet around each house. Annuals and perennials should be irrigated and conifers should be widely spaced.





- Exterior walls should be inspected regularly to ensure that dead and/or dry vegetation has not built up along the sides of the structures. All flammable and/or dead vegetation should be kept away from wood siding. This includes pine and fir needles as well as the dead material beneath ground covers.



- Residents should take extra care to keep their gutters and roofs free of dry needles and other vegetative debris. These are extremely vulnerable areas with respect to wildfire.





- Items stored adjacent to a house are considered ‘attached’ to the house by a wildfire. This is also true of wood fences and walkways that connect to the house. Metal flashing can be inserted between the houses and these attachments; it will stop the progress of a fire.



- Vegetative and other flammable materials should be removed from beneath decks and porches. If a wildfire threatens the area, furniture should be removed from decks and placed either inside, or away from, the house.





- The mixed conifer stands within Orcas Highlands are very dense and flammable. Commercial thinning of some of the stands should be considered. In this case, hardwoods and large Douglas fir should be maintained. Another alternative is to remove ladder fuels within the stands and prune everything up from the ground to approximately six feet. When the mixed conifer stands are thinned and opened, care must be taken that flammable brush like ocean spray does not invade the area. Should this occur, the high-intensity canopy fire potential would be traded for a fast-spreading ground fire.
- The development of safe zones is recommended. It would be advisable for residents to identify safe zones, or safe homes, in the event they are needed for shelter. Pockets of the Highlands could share specific zones or areas.

### SUCCESSFUL FIREWISE MODIFICATIONS IN THE ORCAS HIGHLANDS

When adequately prepared a house can withstand a wildfire without the intervention of the fire service. Further, a house and its surrounding community can be both Firewise and compatible with the area's ecosystem. The Firewise Communities/USA program is designed to enable communities to achieve a high level of protection against wildland/urban interface fire loss even as a sustainable ecosystem balance is maintained.

For home landscaping purposes, deciduous trees like big leaf maple, red alder, madrona and fruit varietals are excellent alternatives to conifers and offer huge opportunities for reducing ignition potential. Low-maintenance native trees, shrubs and other plantings are also Firewise choices. They are less flammable than the existing conifers and ocean spray.

The Highlands has very few flammable roofs. This is good news. Flammable roofs are a major source of firebrands during a wildfire, so can contribute to fire spread.

A homeowner/community must focus attention on the home ignition zone, and eliminate the fire's potential relationship with the house. This can be accomplished by disconnecting the house from high and/or low-intensity fire that could occur around it. The following photographs were taken in Orcas Highlands during the assessment, and are examples of good Firewise practices.





This house has carefully prepared its home ignition zone to withstand wildfire.



Gravel walkways and non-flammable building materials were used to advantage here.





Low-growing, healthy vegetation and gravel paths slow the spread of wildfire.



Flowers can be Firewise choices near the house.





*Cook's*

Rock pathways and rock walls create fire-free areas along the side of the house.

#### NEXT STEPS

After reviewing the contents of this assessment and its recommendations, the Orcas Highlands Homeowners Association, in cooperation with the Orcas Island Volunteer Fire Department, may consider whether it wishes to participate in the Firewise Communities/USA program. Assuming Orcas Highlands seeks to achieve national Firewise Communities/USA recognition status, it must meet the following standards into its approach to the wildfire issue:

- Sponsor a local Firewise task force, committee, commission or department that maintains the Firewise Community program and status.
- Enlist a wildland/urban interface specialist to complete an assessment and create a plan from which it identifies agreed-upon, achievable local solutions.
- Invest a minimum of \$2.00 annually per capita in its Firewise communities/USA program. (Work done by municipal employees or volunteers, using municipal or other equipment, can be included, as can state/federal grants dedicated to that purpose.)
- Observe a Firewise Communities/USA Day each spring that is dedicated to a local Firewise project.
- Submit an annual report to Firewise Communities/USA. This report documents continuing participation in the program.

For more information about the Firewise Communities/USA program, visit [www.firewise.org/usa](http://www.firewise.org/usa) or call Judith Leraas Cook at 376-5023.

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