SKAGIT COUNTY
COMMUNITY WILDFIRE PROTECTION PLAN

2019 UPDATE

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Skagit Conservation District

Approval of the Skagit County Community Wildfire Protection Plan

2019 Update

The applicable local government, local fire departments or their representative, and the state entity responsible for forest management approve the Skagit County Community Wildfire Protection Plan (CWPP). This plan is an update from the original document that was completed in 2009.

This plan is intended to serve as a planning tool for fire and land managers and residents to assess risks associated with wildland fire, and identify strategies and make recommendations for reducing those risks.

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4/27/2020

George Geissler, Washington State Forester
Washington State Department of Natural Resources

Date

01/02/2020

David Oliveri, Fire Chief
City of Anacortes Fire Department

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12/23/19

Rich Dodd, NW Region Fire District Manager
WA State Department of Natural Resources

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Dave Malsed, Board Supervisor
Skagit Conservation District

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01/02/2020

Bill Blake, District Manager
Skagit Conservation District

Date

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Preface

This Community Wildfire Protection Plan (CWPP) is an updated version of the original 2009 Skagit County Community Wildfire Protection Plan and builds upon the process that was followed in that plan. This version was updated in 2019 in sync with Skagit County's 5-year Natural Hazard Mitigation Plan update and is a section of that plan.

This CWPP is just one component of the larger effort of working on fire adaptation in Skagit County. The figure below shows the different components and activities that are part of a community effort to build resilience and continually adapt to living with wildfire as part of our ecosystem.

It is essential that we acknowledge and address the changing environmental conditions as well as the changing demographics in Skagit County so we can improve our ability to adapt to living with wildfire and continually increase our resilience. As new methods and strategies for understanding and addressing wildfire arise, they should be incorporated into planning and mitigation efforts.

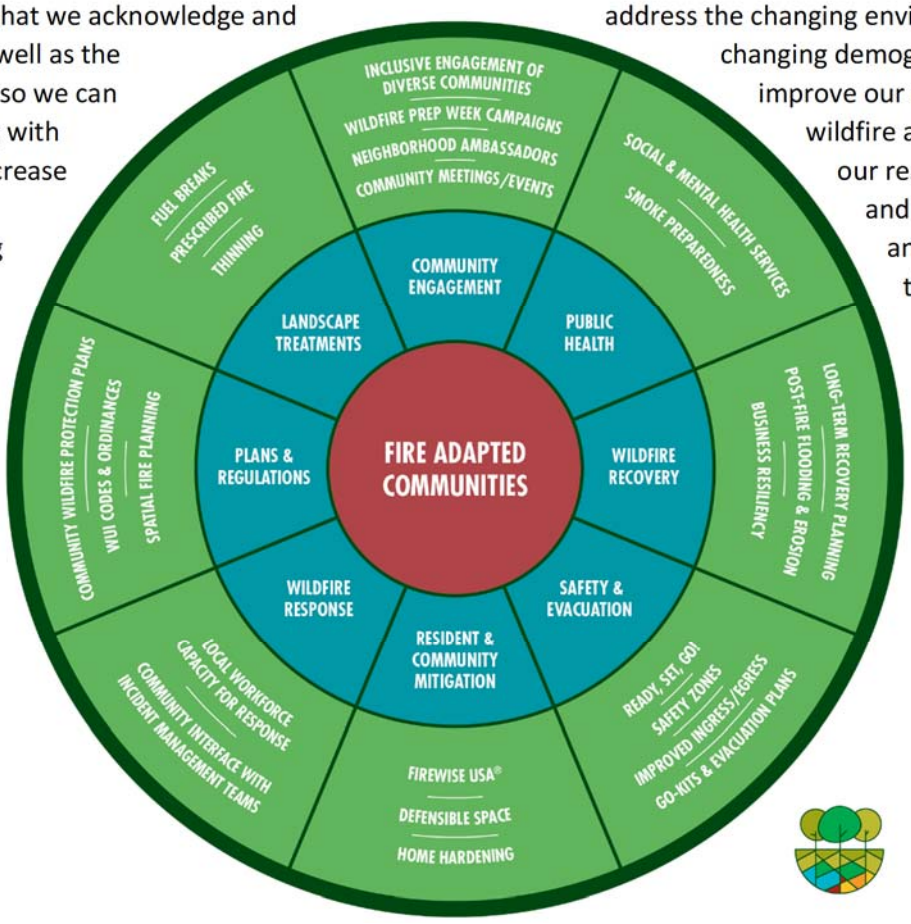

Figure 1. Fire Adapted Communities Learning Network graphic

As part of this updated 2019 CWPP, a new method for identifying areas of increased susceptibility to wildfire across the county was developed and reviewed by well-respected professional colleagues around the state. It is important to recognize that this is a landscape-scale assessment that provides a broad look at the county's susceptibility to wildfire. In order to inform community-level and individual parcel-level management decisions, additional field work and inventory will be needed to get the full picture of risk including the likelihood and intensity of wildfire and how it varies throughout a community.

The Skagit Conservation District and our partners hope that this new and improved county-wide CWPP will be used as the basis for understanding wildfire susceptibility in communities in Skagit County, inform prioritization of mitigation efforts and land-use planning decisions, and provide resources and tools for communities to address their risk on a smaller and more neighborhood-specific scale.

Introduction

In Washington State, 80% of the population resides west of the Cascade Mountain Range. A common misperception is that because the moisture levels are higher on the west side of the state there is little or no danger of wildfire occurrence. This is not the case during dry summer months, especially when there are heavy ground fuels from dead and downed vegetation resulting in more prevalent wildland-urban interface (WUI) problems.

Throughout history, the residents of Skagit County have dealt with various natural hazards affecting the area. Photographs, journal entries, and newspapers from the mid 1800's to the present show residents of the area dealing with natural disasters, including wildfire. Although there were fewer people in the area many years ago, wildfires did at times adversely affect the lives of those who depended on the land for food, shelter, and welfare. Past wildfires have threatened homes in Skagit County thereby causing concern among residents about the potential for damage to their property, and the safety of their families.

The ever-increasing population will continue to expose the wildland-urban interface to a greater wildland fire risk than experienced historically. In addition, our nation's history of suppressing fires has resulted in many of our woodlands becoming dense with fuel build-up. Often fuels accumulate to extreme conditions in areas where forest management is inactive. With the population moving out into the forested areas, development of resource lands, and changing environmental conditions, the impact of wildfire hazards will continue to escalate.

It is impossible to predict exactly when a wildfire will occur, or the extent to which it will affect the county, but they will occur – it is only a matter of time. Most people do not think of wildfire as a natural disaster they can effectively protect against; however, there are things we can do as stakeholders to prepare for and lessen the effects of wildfire.

Community Wildfire Protection Plans

Community wildfire protection plans have been in place throughout the nation since shortly after the Healthy Forests Restoration Act (HFRA) was signed into law in 2003. This legislation included incentive for the United States Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to local community priorities when developing forest management and hazardous fuels reduction projects.

In 2009, Congress passed the Federal Land Assistance, Management, and Enhancement Act (FLAME Act), which directed the U.S. Department of Agriculture (USDA) and the Department of Interior (DOI) to develop a national cohesive wildland fire management strategy.

The National Cohesive Wildland Fire Management Strategy is a collaborative process to seek national, all-lands solutions to wildland fire management issues. The Cohesive Strategy focuses on three key areas: (1) Restore and Maintain Landscapes, (2) Fire Adapted Communities and (3) Response to Fire.

The Cohesive Strategy has a long list of goals and performance measures establishing a common understanding among all entities interacting in the wildland-urban interface. All wildland fire protection entities are to assist in the development and implementation of Community Wildfire Protection Plans (CWPPs) and comparable land resource management plans to create fire-adaptive communities. www.forestsandrangelands.gov/documents/strategy/strategy/CSPhaseIIINationalStrategyApr2014.pdf

Community wildfire protection plans are the primary tool that communities use to prioritize wildfire risk reduction and resilience. They can bring together multiple sources of information, activities, and interests into one document.

There are three minimum requirements for a CWPP according to HFRA:

1. Show collaboration between local and state agencies, in consultation with federal agencies and other interested parties;
2. Identify and prioritize fuel treatments to reduce hazardous fuel areas;
3. Recommend strategies to reduce the ignitibility of structures

CWPPs are not legally-binding documents; however, given changing climate conditions and national budgets, they can be an effective local tool to help communities plan for unknowns and increase wildfire resilience. Within the State of Washington, there are 20 counties that have written and implemented these plans within their jurisdictions.

What are the benefits of developing a CWPP?

- Reducing the direct and indirect social, economic, and environmental costs of wildfire
- Coordinating wildfire risk reduction with other community values & priorities
- Bringing together diverse interests to tackle local wildfire challenges and opportunities
- Identifying potential resources and funding for mitigation activities
- Increasing community awareness and engagement in risk reduction

Initially, in 2008, Skagit County government recognized the need for cooperative county-wide wildfire planning and requested the Skagit Conservation District to lead efforts on the development of this plan.

The planning area boundary was established to include all of Skagit County based on the wide-spread areas of wildland-urban interface within the county as well as the pre-defined planning area boundaries in the Natural Hazard Mitigation Plan that this document is a component of. There are no changes to the original established planning boundary in this update.

In a 2012 USFS Technical Report NRS-89, it was recommended that a CWPP should fit into the larger picture of county-level planning for natural disasters as a best practice. A county-level CWPP should be nested within the Natural Hazards Mitigation Plan (NHMP).

According to FEMA's guidance document on *Integrating Community Wildfire Protection Plans and Natural Hazard Mitigation Plans*, "both Natural Hazards Mitigation Plans and Community Wildfire

Protection Plans benefit communities striving to reduce risk to natural hazards, their process and content requirements are very similar. There are many benefits to integrating CWPPs into NHMPs. Primarily, these benefits are fully realized when the two planning processes are unified and not separated."

Skagit County Department of Emergency Management (DEM) requested that the Skagit Conservation District (SCD) update the existing CWPP and insert it as the wildfire portion of the NHMP in an effort to maintain consistency. It is the intent of the SCD that this CWPP and the NHMP act as supporting documents to guide the implementation of wildfire mitigation efforts within Skagit County.

The specifics on the process of developing this CWPP update are provided in Appendix 1.

Planning Area Description

Overview

Skagit County is located in northwest Washington and stretches from Puget Sound in the western portion of the county to the Mount Baker-Snoqualmie National Forest in the eastern part of the County. It sits between Snohomish County to the south and Whatcom County to the north and is approximately 60 miles from the Canadian border to the north. Skagit County, comprises an area of approximately 1,109,112 acres, runs 95 miles west to east and 24 miles north to south. (Figure 2.)

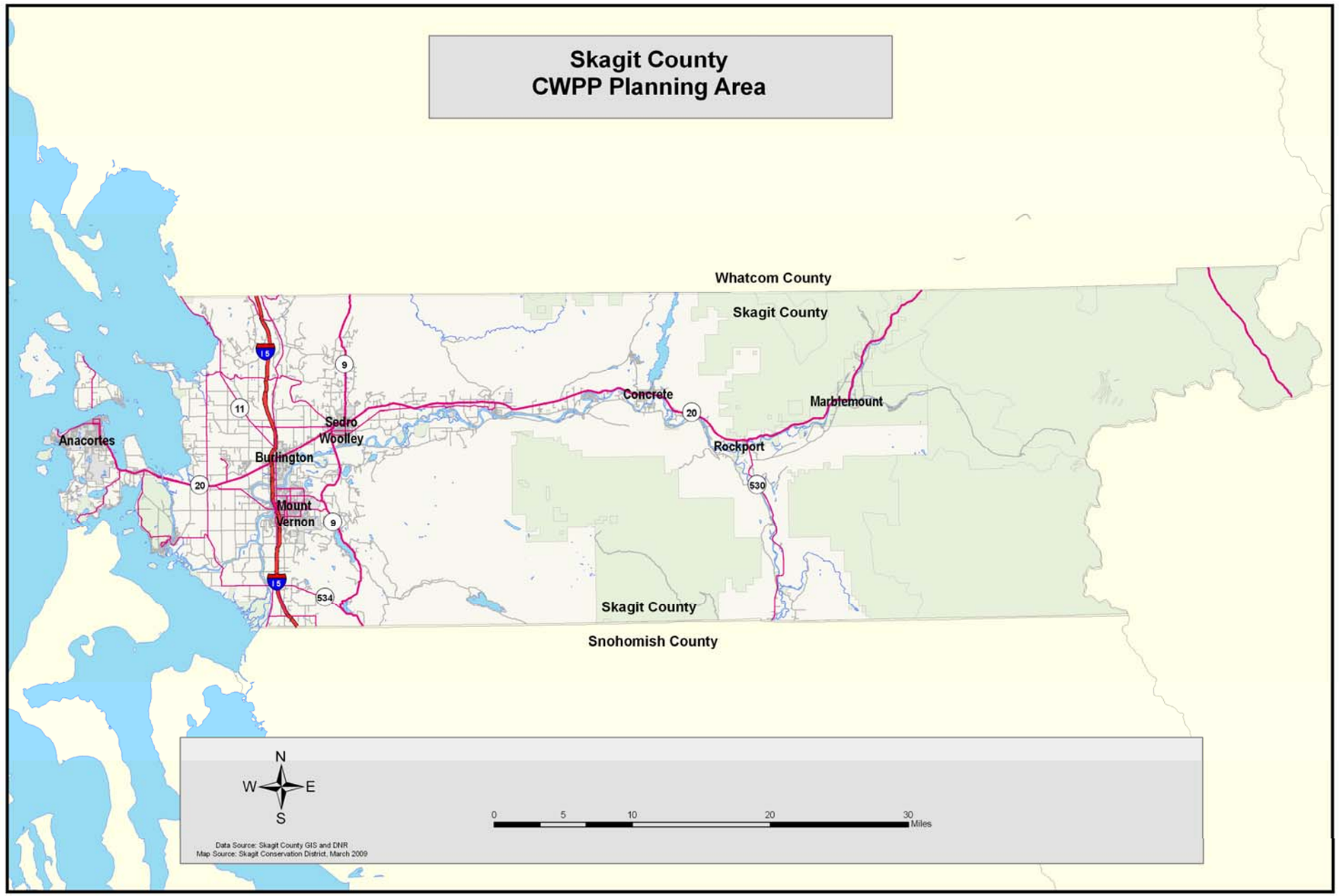

Figure 2. Skagit County CWPP Planning Area

Land Ownership

Skagit County is a mosaic of land management and ownership.

- U.S. Forest Service manages 282,812 acres, (26%)
- The National Park Service manages 214,378 acres, (20%)
- The Washington State Department of Natural Resources (WA DNR) manages 131,206 acres, (12%)
- Private forest lands (investment trusts, industrial lands, and family forest owners) own 331,700 acres, (30%) in Skagit County

The largest area of contiguously owned land is in the Mount Baker-Snoqualmie National Forest managed by the U.S. Forest Service. The Department of Natural Resources also manages large areas of land but the ownership is non-contiguous across the county. The National Park Service controls lands in North Cascades National Park and the Ross Lake National Recreation Area in the northeastern portion of the county. (Figure 3.)

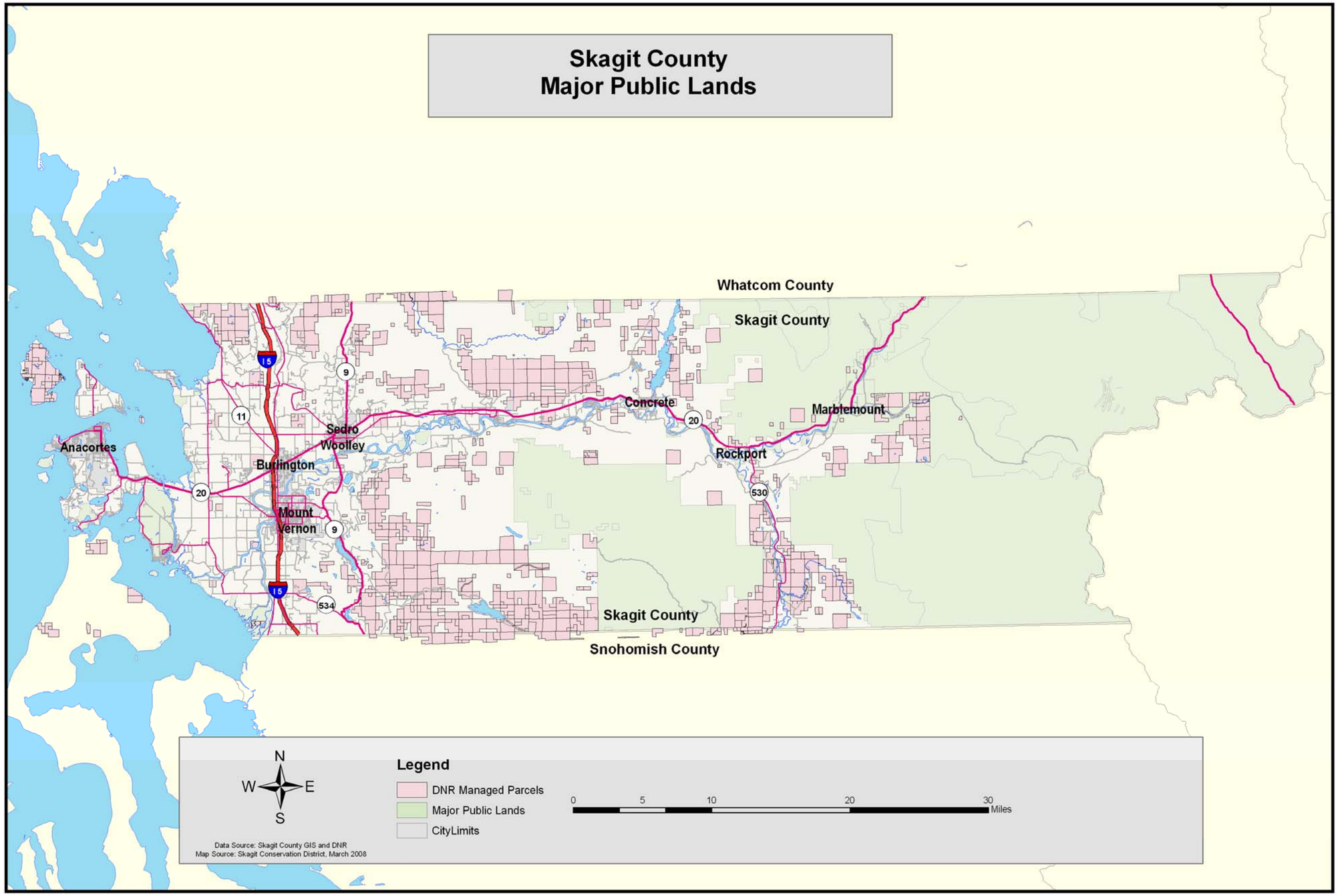

Figure 3. Skagit County Major Public Lands

Demographics

The most recent reported population in Skagit County is 128,206 people. Over the last ten years, there's been an average growth rate of 1.16%. As of 2017 the population density was 70 people/square mile with a continuing increasing trend.

In Skagit County, the planning goal is to have 80% of the growth occur in the incorporated areas, and 20% occur in the unincorporated areas. This is to discourage urban sprawl and preserve the character of rural areas. Also, public services and facilities such as fire protection can be most efficiently provided within the Urban Growth Areas (UGAs).

Building within the private forestland area requires meeting zoning regulations and certain building codes. According to Skagit County Code 14.16.410, a permitted use may include single family residential dwellings, together with the usual accessory buildings and uses only when all of the following criteria are met:

- The residence is located within 200 feet of an existing County road or State highway;
- The residence is located within the existing, as of July 26, 2005, boundaries of a fire district;
- The residence is an accessory use to timber resource management activities;
- Ingress and egress for fire vehicles meets the standards of the Uniform Fire Code Section 503, as amended
- There is a 200-foot slash abatement maintained around the exterior portion of the dwelling;
- There is a safety zone cleared of flammable vegetation 30 feet from any portion of the exterior of any structure on level ground and 100 feet downhill on sloped ground;
- The dwelling or any accessory structure is constructed of a noncombustible roofing material; and
- There is availability of 300 gallons of water on-site, 400 feet of 1-inch fire hose with nozzle, and an internal combustion engine powered pump.

Any new residential development in zoned industrial forest areas is limited to those with an existing fire protection district and within 200 feet of a county road or state highway. Skagit County requires owners of all structures built in these areas to address wildfire preparedness, reduction and control.

None of the industrial forest zone is in a fire district. Some of the secondary forest is located within a fire district. Development in secondary forest areas has been grandfathered in and doesn't have fire district protection. Secondary forest is a transitional area between industrial forest and rural zoned lands and is designated primarily for forestry with some residential allowed. Housing density is 1- 4 per 20 acres.

Figure 4 shows where residential building permits have been approved in the last five years across the planning area.

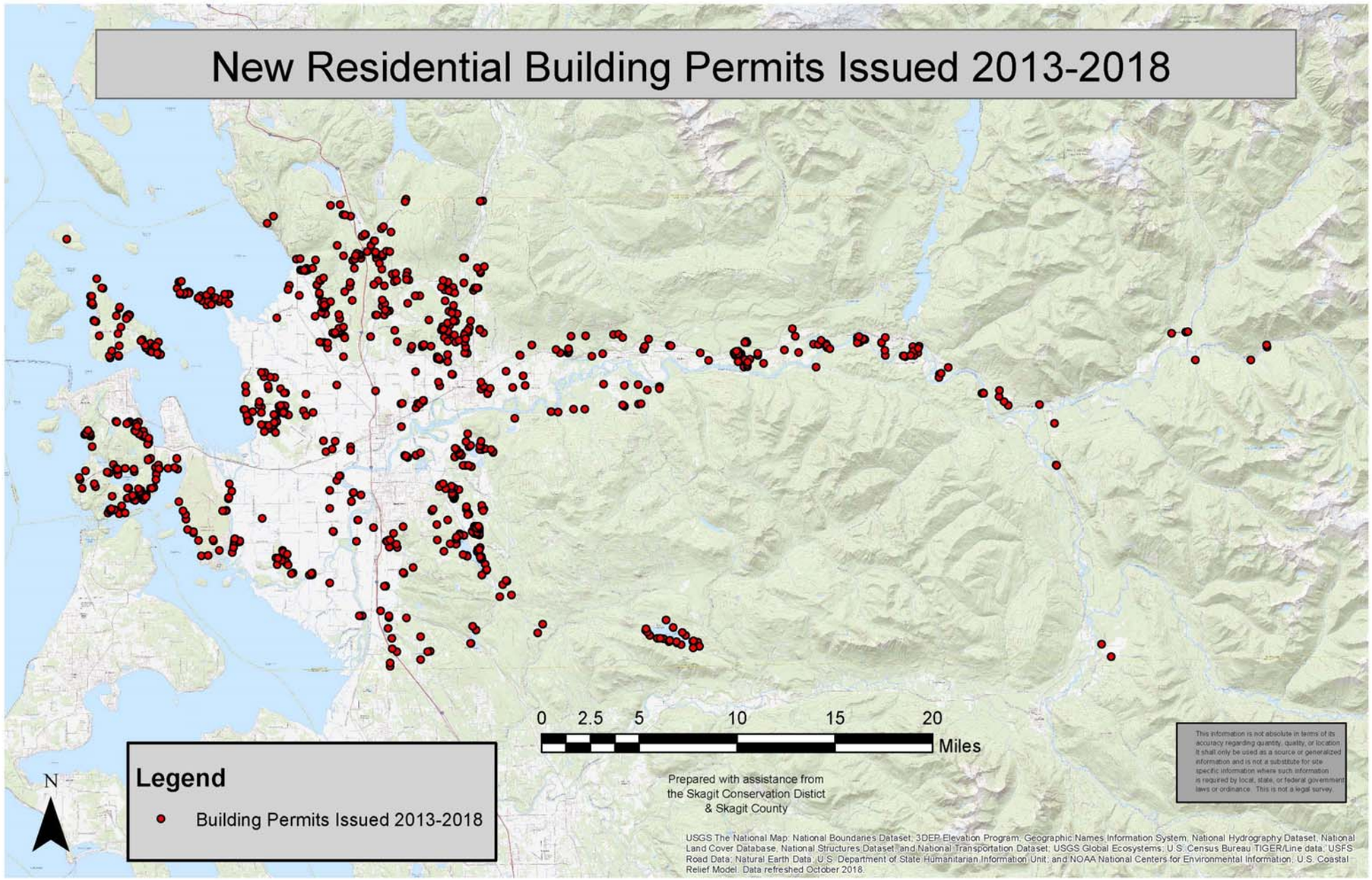

Figure 4. New residential building permits issued in Skagit County between 2013-2018 shows where growth is occurring.

Environment

Skagit County is geographically diverse from west to east. The Cascade Mountains stand to the east, overlooking a fertile agricultural valley. Carving through the valley is the Skagit River flowing westward toward the Puget Sound. Climate differences between western and eastern Skagit County are notable. The average annual rainfall in the County ranges from 26 inches in the west to 65 - 80 inches (rain/snow) in the eastern part of the county. Approximately 80% of Skagit County is forested with the majority of forested land in the eastern half of the county. Overall the climate is considered moderate; but temperature extremes are not uncommon.

Dominant vegetation ranges from Douglas fir, Western hemlock, Pacific silver fir in higher elevations, and Western red cedar. Red alder and big leaf maple occur in lower elevations in mixed stands.

Ecological Sites

Looking across any landscape it is not difficult to recognize that some parts are different from other parts in regard to the kinds and amounts of vegetation. To understand this variation across the landscape, we classify these different parts into units called ecological sites. An ecological site is defined by the USDA Natural Resources Conservation Service (NRCS) as a distinctive kind of land with specific characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. The Ecological Site Description describes the ecological dynamics and the common plant communities comprising the various vegetation states of the site. Fire is a disturbance factor that causes a shift from one state of the plant community to another vegetative state. Any environmental inventory, analysis, and resulting management decisions require knowledge of these individual sites and their interrelationships to one another on the landscape.

The data comprising an ecological site description (ESD) is presented in four major categories:

Site Characteristics - Identifies the site and describes the physiographic, climate, soil, and water features associated with the site.

Plant Communities - Describes the ecological dynamics and the common plant communities comprising the various vegetation states of the site. The disturbance factors that cause a shift from one state to another are also described.

Site Interpretations - Interpretive information pertinent to the use and management of the site and its related resources.

Supporting Information - Provides sources of information and data utilized in developing the site description and the relationship of the site to other ecological sites.

Criteria used to differentiate one ecological site from another include:

- Significant difference in the species or species groups that are in the plant community.
- Significant differences in the relative proportion of species or species groups in the plant community.
- Soil factors that determine plant production and composition, the hydrology of the site, and function of the ecological processes of the water cycle, mineral cycles, and energy flow.

- Differences in the kind, proportion, and production of the overstory and understory plants due to differences in soil, topography, climate, and environment factors, or the response of vegetation to management.

According to the USDA NRCS, the dominant ecological site type in Skagit County is Douglas-fir/Hemlock (902). (esis.sc.egov.usda.gov).

Figure 5. PC 1.3 Douglas-fir-western hemlock/Cascade Oregon grape – baldhip *rose/western bracken fern*

Fire plays a major role in this dominant ESD. The stand will typically regenerate after wildfire in partial shade cast by fire-killed trees. Seed is provided by scattered surviving trees or islands of trees. Often young stands are so dense that competition over time results in an unhealthy forest condition.

At this point, stands become susceptible to attack by insects, disease, wind and catastrophic fires.

There are two successional pathways for this ecological site, which is moderately dry to slightly moist. One pathway that has Douglas fir as the dominant species in the overstory; while Western hemlock is in the understory and would dominate eventually. Later stages can consist of both Douglas fir and Western hemlock in dominant positions.

Though Western hemlock is co-dominant, if undisturbed, it will eventually dominate the stand because it is more shade tolerant. Both natural and human-caused fire along with catastrophic wind events, are the primary natural causes of disturbance on these sites, thus resulting in a succession of Douglas fir. Other types of disturbance are insects and disease outbreaks. Western Hemlock is a shallow rooted species. Wind events can cause destruction to stands that contain a majority of this species. Western hemlock is also thin barked, and cannot withstand fires of more than moderate intensity. Many young stands are overstocked and are under stress due to competition for moisture, nutrients, and light. As stands develop to pole size or larger, the trees become stressed and mortality occurs. Ideal conditions are created for bark beetles, root pathogens, windthrow, suppression and catastrophic wildfires. These sites have understory vegetation, most of which is shade tolerant. Salal is the primary abundant understory species with various percentages of Oregon grape, swordfern, and red huckleberry.

Other Ecological Site Descriptions within Skagit County include:

901: Douglas-fir / Pacific Madrone / oceanspray / rattlesnake plantain

903: Western red cedar / Douglas-fir / salal / swordfern

904: Sitka Spruce / Red Alder / salmonberry / field horsetail

906: Western Hemlock / Western Redcedar / red huckleberry / salal / swordfern

----: Pacific Silver fir / Western Hemlock

----: Mountain Hemlock / Pacific Silver fir

Fish & Wildlife

This plan covers a large and geographically diverse area, and the wildlife presence is also very diverse. From birds of prey such as the bald eagle, to the many species of salmon, to large mammals like the Roosevelt elk, there is a dependence on healthy forest ecosystems within Skagit County to support these species and their habitat. It is important to recognize the wide-reaching impacts that a catastrophic wildfire in Skagit County could have on the fish and wildlife species here. A catastrophic wildfire can kill animals, destroy their habitat and food source, and displace them. Depending on the characteristics of the fire, certain species of wildlife can benefit from the burned landscape by taking advantage of things like new vegetation growth and uncovered, opened seeds.

Fuel treatments can substantially affect stand structure and, as a consequence, the habitat quality. Fires generally have a more extreme impact on habitat than any treatment option. While the no-action alternative might seem to benefit some species of wildlife, it assumes an unlikely eventuality of no fire, and produces unhealthy overstocked stand conditions. Small periodic fires of low intensity were part of the pre-settlement forest, with a more frequent fire interval. Large stand replacement fires would have been low in frequency (100 years), but moderate to high intensity. Habitat strategies associated with fire risk reduction are inherently local and should be integrated into other site specific wildlife objectives.

Economics

In 1990 the majority of the industrial forestlands were sold to investment trusts. These forest lands had been managed for decades by large industrial integrated forest products companies. Since then the industrial lands have been sold and re-sold many times. Previously, residents of Skagit County worked primarily in forestry-related industries. Employment shifted toward tourism/retail trade, home-based construction and service businesses, and government entities.

It is costly to remove small trees that make up fuel loads in dense stands. Large trees can be removed for lumber and other products as reflected in the market. The market value for the smaller logs often is less than the harvest and hauling costs.

In some locations forest products can be removed economically through commercial timber sales, thus reducing the fuel load and the risk to catastrophic fire; however, in many locations the material that needs to be removed are low value small wood or material that has no current market value. Currently, firewood is being generated and material less than 6 inches is being chipped and spread on the forest floor. Developing markets for woody biomass have the potential to offset the costs of non-commercial hazard reduction.

Much research has been done to analyze the economics of different fuel treatment strategies. The USFS Research Station examined fuel management activities in the WUI measuring fire risk reduction, economic cost, habitat protection and carbon sequestration to develop an optimal treatment guideline.

Taking the above factors into account, the optimal thinning treatment was to thin from below, removing 50 percent of the original basal area. The treatment removed all trees with a Diameter at Breast Height (DBH) less than or equal to nine inches and retained the largest trees with thick bark. An average Westside stand with 238 sq. ft. basal area would be thinned to a 114 – 118 sq. ft. basal area (the number of trees per acre removed varies depending on DBH). This treatment produced the greatest risk reduction and, with low cost assumptions, provided a positive net return. Removal of all trees over 12 inches DBH provided the highest revenue alternative, but not a significant fire risk reduction. *Ager, A.* (2011).

Assessing Susceptibility to Wildland Fire

Overview

Skagit County experiences three types of fire threats: structure fires, wildland fires, and wildland-urban interface fires. Structure fires do not typically pose a great threat to the community except when the fire spreads to other nearby structures and quickly expands to a size that could threaten large numbers of people and overwhelm local fire resources.

Wildland fires are a natural part of the ecosystem in Washington State; however, wildfires can present a substantial hazard to life and property. Although wildfire statistics are not readily available at the county level, the statewide trends illustrate the increasing risk. "We are experiencing nearly a four-fold increase from 117,000 average annual acres burned (2000 to 2011) to 460,500 average acres burned (2012 to 2017). In 2018, 48 large fires burned over 355,000 acres throughout Washington. Non-forested areas are not exempt from these trends; Washington's largest fire in 2016 burned 176,600 acres of mostly grassland.

The cost to manage large wildland fires in Washington State averaged nearly $37 million per year between 2008 and 2012. Between the years of 2013 and 2018, the average annual expense quadrupled ($153 million).

By the 2040s, the median annual area burned in the Northwest could more than double relative to 1916-2006. *Littell et al. (2010*).

As noted in WADNR's 2019 Wildland Fire Protection 10-Year Strategic Plan, "as the climate changes, forested areas of western Washington face the potential for increasing risks from wildland fire along with associated management challenges, costs, and consequences. The 2017 Norse Peak fire illustrates the potential costs and losses of wildland fire on the west side of Washington. This fire, located near Mt. Rainier, consumed 52,000 acres in heavy timber and cost nearly $20 million to suppress. While measures to reduce wildland fire risk are well understood in fire-prone forests such as those found on the eastern slopes of the Cascade Mountains, adaptation options are much less well understood on western slopes. Recent studies indicate adaptation measures for forests that historically experience stand-replacing wildland fire differ from those with a low-severity fire regime, with an emphasis on post-fire adaptation actions as opposed to pre- fire mitigation actions."

Most wildland fires are started by human causes including outdoor burning, discarded cigarettes, the discharge of fireworks, and deliberate acts of arson. Many of these fires are usually extinguished in their initial stages being less than one acre in area. Depending upon temperature, wind, topography, and

other factors, wildland fires can spread rapidly to over 100,000 acres and may require thousands of firefighters and equipment working several weeks to extinguish.

Defining the Wildland-Urban Interface

The formal definition of the wildland-urban interface (WUI) can be found in the Federal Register and describes conditions under which humans and their development meet or intermix with wildland fuel. This definition uses levels of structure density or population density to subdivide WUI into ***Interface*** and ***Intermix*** categories. *Interface* refers to areas where structures directly abut wildland fuels, but there is a clear line of demarcation between developed and wildland areas. *Intermix* refers to areas where structures are scattered throughout a wildland area. Geographically defining the WUI with a set of criteria that can be mapped is still a relatively vague process with no clear definitions. That said, this CWPP references the best available wildland-urban interface and intermix map that DNR has created as of summer 2019.

In Figure 6 below, you can see that the areas defined as intermix are more widespread than areas defined as interface. In addition, we know that there are areas of both intermix and interface that do not currently show up on this map, which is why it is important to identify those at the local level. Because this WUI map was created at a statewide level, it does not capture all of the interface and intermix areas within Skagit County known to those of us that work and live in the county. The information in this map is being presented as a general reference in order to show the difference between interface and intermix areas.

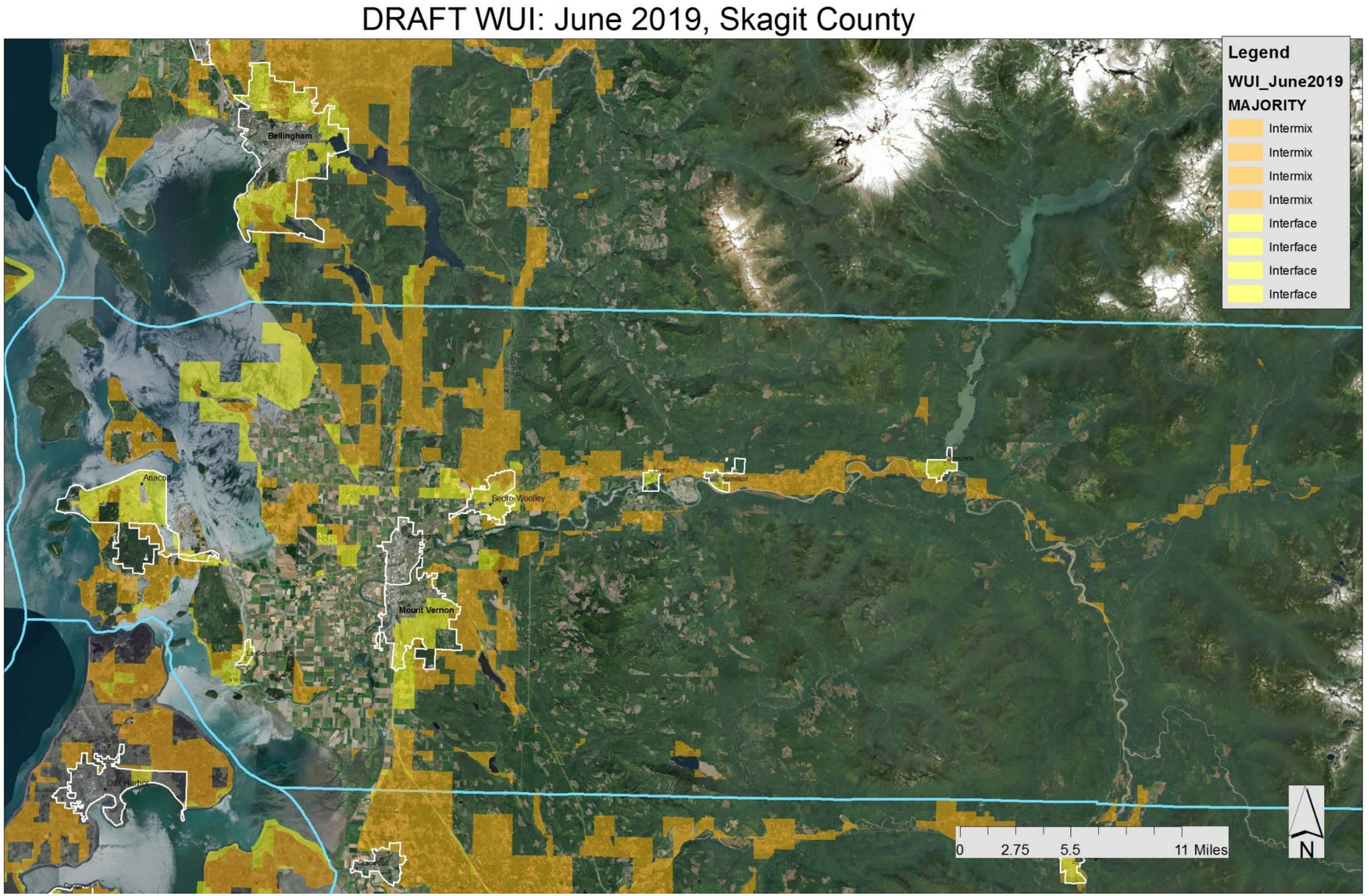

Figure 6. DNR's latest WUI map focused on Skagit County

Fire Regime & History

The west side of the Cascades is often perceived as not having a wildfire problem. History tells a different story; major events are not every year, but more like every 20 years.

A combination of factors is required for a large wildfire to occur: (fuel accumulation, fuel moisture, weather patterns, and ignition source). Fire spread rate is influenced by vegetation type, slope, aspect, and topography.

The historic fire regime would have been relatively low in frequency (100 to 200 years), but moderate to high intensity. These fires would, in effect, be stand-replacing although individual trees would survive, providing a seed source. Settlement activities since 1890 have altered the landscape resulting in a fire history and frequency (20 to 50 years) shift. Modern fire control methods have contained most fires to smaller burns, but the potential for a large fire of high intensity has increased as a result of these efforts. Fuel loads are higher than historic accumulation.

Western hemlock, with its thin bark and shallow root system, is not able to tolerate fire while Western red cedar is only somewhat more tolerant. Douglas-fir is well adapted to withstand fire. Even a moderate fire would likely change the species composition.

Figure 7. Stand replacement fire 90 – 100 years ago.

Between 2008 and August of 2019, Skagit County experienced a total of 209 wildland fires. 2009 had the highest occurrence of fires; 30 fires, most no larger than a tenth of an acre. 2017 and 2018 were close behind with 28 and 25 fires respectively. The largest fire was in 2017 at 216 acres in the Suiattle area. This does not include the Goodell Creek fire in 2015 that occurred just over the county border in Whatcom County, which burned 7,300 acres and effected both counties.

Skagit County typically has numerous fires that occur in forestlands each year, but almost all of these fires are extremely small (less than .2 acres in size) and remain so due to the relative high moisture content in fire fuels. Although in the last 11 years most of the fires have been very small, larger fires still occur that are costly and dangerous. The largest of these most recent fires (the Jordan Creek Fire) occurred near the community of Marblemount in 1998 and burned 1,162 acres of forestland and threatened several homes in the area. The costs to fight this fire were in excess of 3 million dollars. The Goodell Creek fire threatened the towns of Newhalem and Diablo and cost Seattle City Light $2.2M in damages, response and labor, along with $900,000 of power purchases and generation loss.

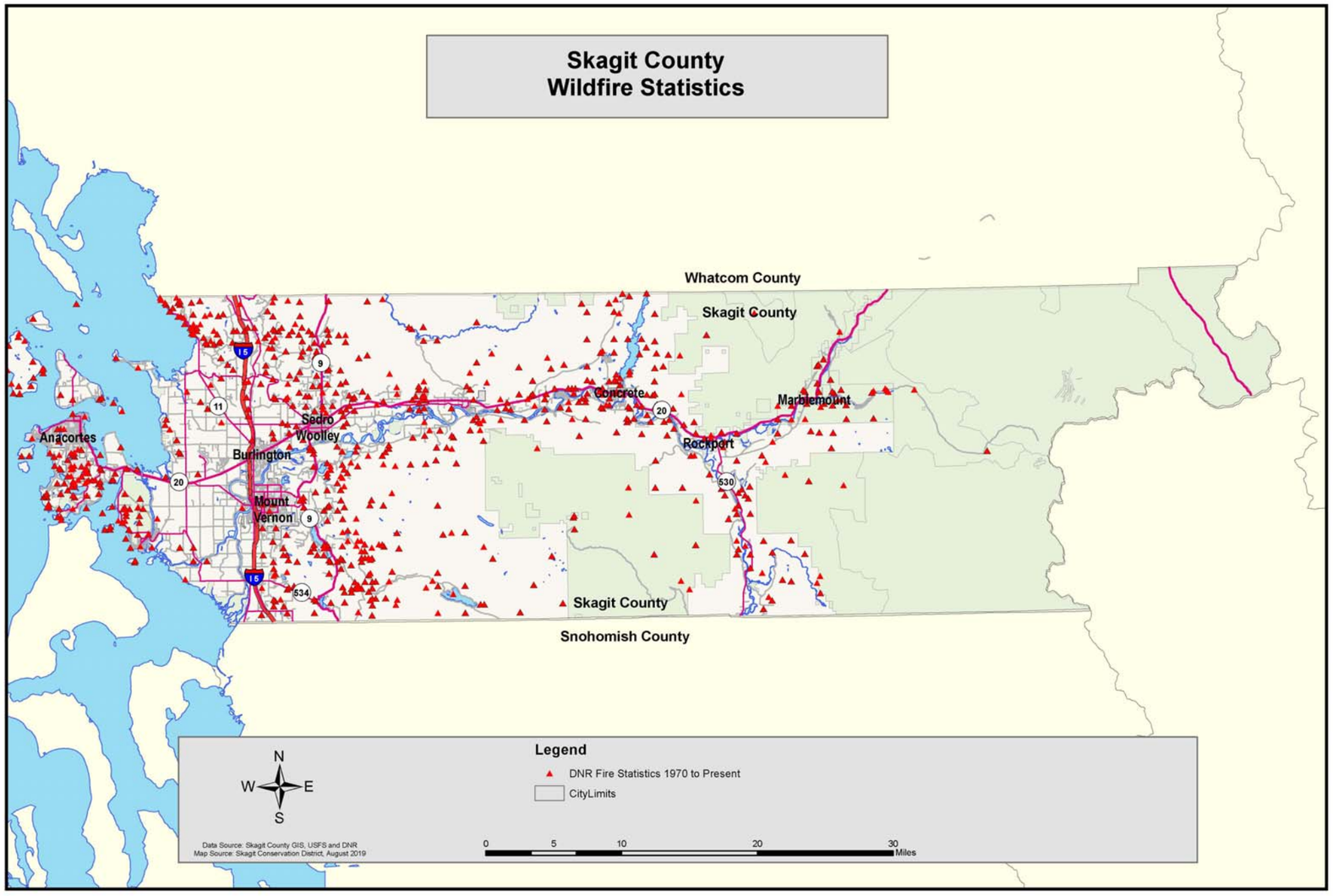

Figure 8. Skagit County Wildfire Statistics, 1970 to August 2019

Table 1. Large Skagit County Fires 20 acres+ or damaging

Fire Location	Year(s)
Alger Mountain	1978
Baker Lake	1970
Birdsview	1910, 2015
Burlington Hill	2012
Burpee Hill	2006
Butler Hill	1951
Chuckanut Mountain	1910, 1951, 1968, 2018
Cranberry Lake	2016
Cultus Mountain	1955, 1970
East Lake Shannon	1986
Fidalgo – Mt. Erie	2018
Goddell Creek	2015
Illabot/Powerline	2016
Jordan Creek	1998
Kitsap Lane	1990
Lake Cavanaugh	2009, 2013
Lake Tyee	1978
Larsen Bridge	1979
Marblemount	1960
Sauk River	1920, 1992
Suiattle	2017
Sauk/Suiattle	2018
Taylor Creek	2000

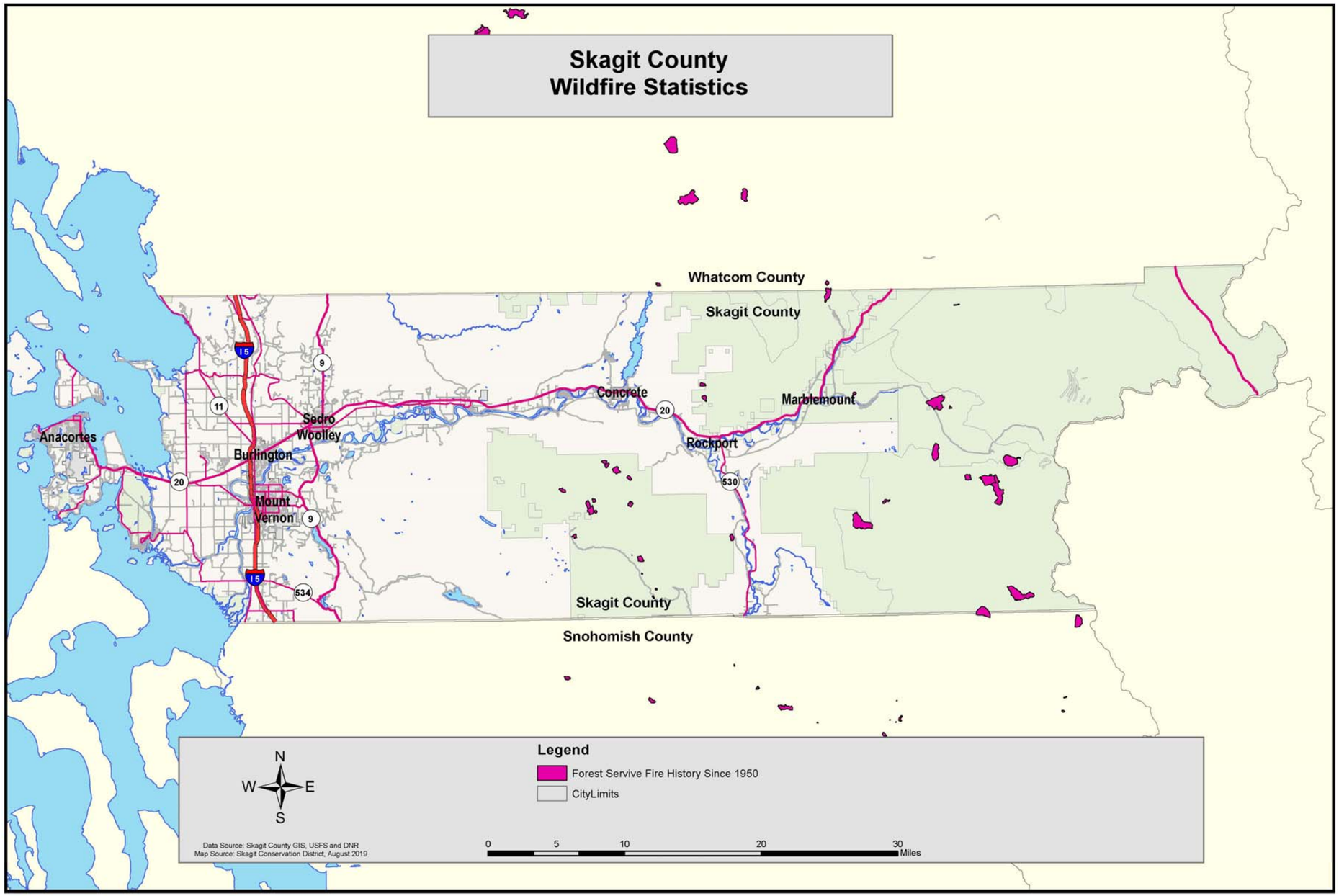

Figure 9. USFS Wildfire History from 1950.

Environmental Impacts

As wildfires trend toward being more catastrophic, forest animals are less able to escape their detrimental effects. Catastrophic fires can also increase water temperatures to lethal levels and cause death to aquatic life. It is most often the smoke inhalation as opposed to the heat that kills animals. Clouds of smoke can stretch far ahead of a fire suffocating mammals and birds in its path. Smoke and ash in the air also result in poor air quality and cause public health issues. Burning forests release a large amount of carbon monoxide pollution that can trigger ozone production. When a forest is not burning, it is helping to clean the air by absorbing greenhouse gases, approximately 17% of the total annual U.S. greenhouse gas emissions. Healthy Pacific Northwest forests sequester carbon at the rate of 8.3 metric tons per acre per year.

Intense fires can increase soil erosion and create hazardous mud and debris flows on some soil and geologic formations. This can cause dangerous conditions that threaten infrastructure and communities. It is suggested a model be developed for the Geology section of the NHMP to identify potential risk areas. A future model could be developed for this section on highly erodible soils as a result of fire.

Based on studies done by the PNW Research Station in 2010, soil exposed to prolonged intense heat during a wildfire forms a crust-like hydrophobic layer that greatly reduces the penetration of water. Since water cannot seep into the ground, topsoil, ash, and debris is washed into streams. The heat volatilizes soil nutrients and kills subterranean microbial communities. The heating process oxidizes the upper soil layers reducing soil permeability. Severe burning is associated with reduced soil productivity by killing the soil-dwelling fungi, bacteria, and other microorganisms that are required for tree growth. The beneficial relationship between below ground mycorrhizal fungi and tree growth is well documented. Mycorrhizae connect with plant and tree roots, helping them absorb soil nutrients and water. In turn, the fungi obtain carbon and sugars from trees and shrubs. The potential for severely burned soils increases where substantial areas of land have large amounts of down, dead wood before a fire. Plant cover is slow to return to severely burned soils.

Catastrophic fires can damage wildlife populations such as the spotted owl and Pacific fisher. It can burn den trees and destroy food sources and cover. Soil erosion can increase greatly without any forest cover. Soil erosion can clog up waterways and cause damage to fish and other aquatic species.

High-intensity fires can have severe effects on the health of a watershed.

> High intensity fire burns away the vegetation and duff that protect and build soils. Unnatural fuel accumulations lead to catastrophic, high intensity fires. High intensity fires create a crust like hydrophobic layer below the surface, an oil-based film that greatly slows the penetration of water. When rain follows catastrophic fire, water quickly saturates the exposed topsoil and hits the hydrophobic layer about 2 inches underground. Since the water cannot seep into the ground any further, the topsoil, ash and debris gets washed away. Mud fills nearby watercourses. Well-managed forests can reduce the threat of catastrophic high intensity wildfire that can leave a costly mark on watersheds. (Pillsbury, 2008).

Fire related damage does not stop when the fire is out. High severity fire can have profound long-term soil impacts and may result in soils void of almost all biological activity. Loss of vegetation can result in hill slope erosion and leaching causing post-fire damage. Soils are fundamental to a healthy and functioning ecosystem. Appendix 2 summarizes potential fire damage hazard to soil which affects long-term recovery.

Wildfire Susceptibility Assessment

In order to best facilitate the assessment of the wildland fire susceptibility in the county, the Skagit Conservation District and partners conducted a landscape level assessment using scientific data from a number of sources, local expert input, and wildland-urban interface data for Skagit County from the original CWPP.

The result of this assessment is a map (Figure 10) that shows areas of increased susceptibility to wildfire. The map was created by filtering out data from NRCS research (see explanation in Appendix 2) and overlaying various GIS layers and selecting for the areas where they intersect.

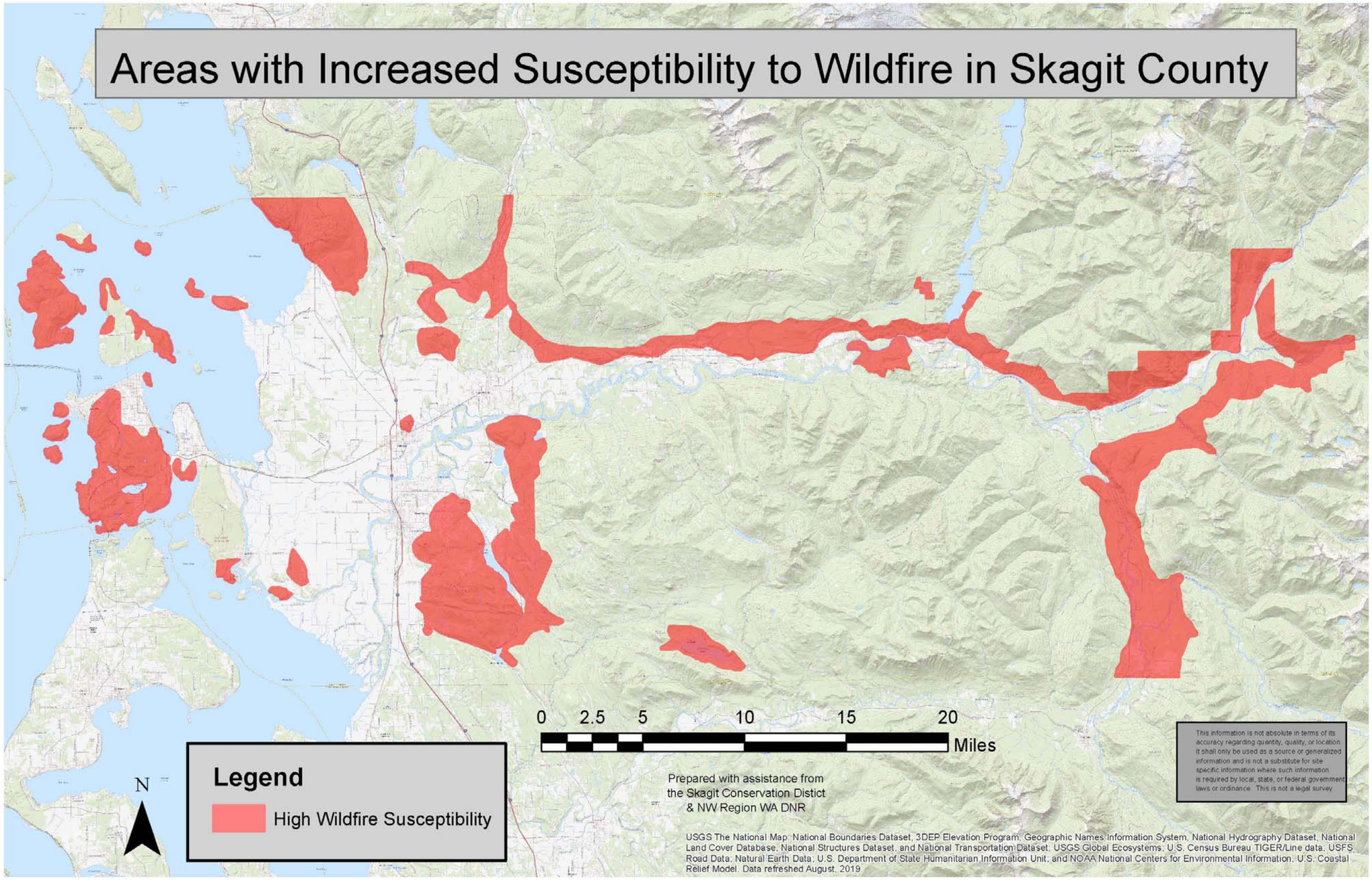

Figure 10. Areas with Increased Susceptibility to Wildfire in Skagit County

The GIS information used to create this map includes the following:

1. **Department of Natural Resources Geologic Map of Washington**
   Geologic units where bedrock or sedimentary rock is at or near the surface with shallow soil depth were selected. These geologic units included:
   - Mesozoic (Mzv) Volcanic rock
   - Paleozoic (Pzs), Mesozoic (Mzs) Sedimentary rocks
   - Quaternary Sediments (Qg) Unconsolidated deposits

   Source: https://www.dnr.wa.gov/geology

2. **NRCS Soil Data – Available Water Capacity Rating**
   Soil types were sorted out based on the Available Water Capacity Data (AWC).
   The soils found in Skagit County have an AWC range of 0.05 inches/in to 0.40 inches/in.
   The soils selected for this map have an **AWC rating of equal to or less than (0.15 inches/ in.)** because at that AWC rating, the vegetation experiences moisture stress and the flammability is elevated. The AWC available water capacity affects the degree to which soils are heated. The more water in the soil (i.e. finer textured soils) the more insulating capacity it has.
   Source: https://websoilsurvey.nrcs.usda.gov

3. **Aspect**
   All solar aspects were included in the data for this map except for north-facing aspects which were excluded.
   Sources: https://www.usgs.gov/products/maps/overview
   https://datagateway.nrcs.usda.gov/GDGOrder.aspx

4. **Slope/Topography**
   Slopes of 15% or greater were included in the map. Slope mainly affects the rate of fire spread once it starts.
   Sources: https://www.usgs.gov/products/maps/overview
   https://datagateway.nrcs.usda.gov/GDGOrder.aspx

5. **Population**
   - DNR WUI layer from 2009

   Sources: https://www.skagitcounty.net/Departments/PlanningAndPermit/main.htm

This assessment was developed in consultation with the following partners: Washington State Department of Natural Resources (WADNR); the U.S. Forest Service (USFS); Skagit County Department of Emergency Management (DEM); the Skagit County Commissioner's Office; Skagit County Rural Fire Districts; the University of Washington Climate Impacts Group and affiliated professors.

Feedback and input was gathered through the following activities:

- Wildfire risk and response surveys were sent to all Fire Districts in the county (letter to fire chiefs and survey questions can be found in Appendix 3)
- Meetings were held with Skagit County Department of Emergency Management
- Consultation meetings were held with UW Climate Impacts Group and affiliated professors
- Public Meetings were attended on Skagit County Natural Hazards Mitigation Plan & DRAFT Wildfire Susceptibility Map was presented
- Meeting and coordinating with Department of Natural Resources
- Consultation with U.S. Forest Service

- Consultation with Natural Resources Conservation Service

Out of the results of the survey previously mentioned, as well as verbal recommendations throughout the planning process, a list of areas/communities of the most concern due to wildfire susceptibility was created and updated. This list includes both organized neighborhoods in the interface as well as areas with shared risk in the intermix. Some of the residents in these areas have already been working to address their wildfire risk.

Communities/Areas in Skagit County with High Susceptibility to Wildfire
(A star next to the community name symbolizes that the community is an active recognized Firewise USA® site.)

- ❑ Communities adjacent to Anacortes Community Forest Lands
- ❑ Big Lake area
- ❑ Bow Hill area – Colony Mountain*
- ❑ Butler Hill/Valley View Estates*
- ❑ Burlington Hill
- ❑ Cape Horn area
- ❑ Cascade Ridge
- ❑ Cascade River Park*
- ❑ Chuckanut Ridge*
- ❑ Eagle's Nest
- ❑ Fidalgo Island – Fidalgo Estates, The Point, Seaview
- ❑ Guemes Island – Guemes Mountain, Island Crest Lane, Island View Rd, Holiday Hideaway
- ❑ Lake Cavanaugh
- ❑ Lake McMurray area -Camp Korey, Norway Park
- ❑ Lake Tyee
- ❑ Little Mountain area
- ❑ Marblemount Area - Emerald Lane, Honeysuckle Lane, Diobsud Creek areas*
- ❑ Newhalem, Diablo, Environmental Learning Center (technically in Whatcom County but accessed via Skagit County)***
- ❑ Pinelli Road area
- ❑ Rockport/Darrington area-Jenkins Lane*
- ❑ Samish Island
- ❑ Shelter Bay*

Wildfire Risk

As defined in the 2018 Missoula County CWPP, "wildfire risk is a measure of both the probability and consequences of uncertain future wildfire events." There are three components of wildfire risk – likelihood, intensity and susceptibility.

It is challenging to assess wildfire risk at the county-wide scale with accuracy given the amount of variability within even the smallest areas throughout the county. Delineating varying wildfire risk levels (Low to High or Extreme) should be done at the neighborhood scale so that site specific data can be incorporated and mitigation/management plans can be based on the best available science.

Figure 11. Wildfire Risk Triangle excerpted from Missoula County's 2018 CWPP

A useful tool for understanding varied risk potential and informing mitigation/management decisions at the neighborhood scale are the NRCS Ecological Site Descriptions (ESDs) previously described.

Not all sites within a community are at the same risk level. The photos below show very different ecological sites within Skagit County. ESDs vary by plant species, relative proportion of plant species, soil factors, hydrology, mineral cycles, and energy flow, the kind, proportion, and production of the overstory and understory plants due to differences in soil, topography, climate, and environment factors, or the response of vegetation to management.

Figures 12, 13, & 14. Examples of different ecological sites in Skagit County

As an example, stand density can affect the intensity of a wildfire, thereby increasing risk. Because of lack of vigor, dense forests are highly susceptible to insects and diseases and, consequently, increased tree mortality. Excess tree mortality causes increased fuel loading, resulting in hazardous wildland fire

conditions that can put homes, watersheds, wildlife habitat, and other forest values at risk. These conditions also increase fire suppression costs and make wildfire control more difficult.

Site specific prescriptions and practices can be employed to manage stand density, reduce vulnerability to insects and diseases, and reduce tree mortality, thereby reducing the buildup of hazardous fuels and the risk of catastrophic wildfire.

Assessing the likelihood of a wildfire start will be based on understanding where ignition sources could come (lightning, human-caused) from and how they could influence the surrounding area. Focusing on prevention measures can reduce the likelihood of a human-caused ignition source.

A number of community/neighborhood level CWPPs have been developed in Skagit County. They include:

- Butler Hill
- Colony Mountain
- Cascade River Park
- Diobsud Creek Area
- Guemes Island
- Seattle City Light – Newhalem & Diablo
- Hoxie Lane/Gibraltar Road
- Jenkins Lane

These plans are currently housed with the Skagit Conservation District and the communities.

Mitigation Strategies & Prioritization of Wildfire Risk Reduction Projects

In Skagit County, all aspects of wildland fire are addressed at an inter-agency cooperative level. Collaboration between federal, state, and local fire agencies results in strong cooperative relationships among the partnering agencies as well as the mobilization of a unified command. As part of the inter-agency cooperation process, basic fire prevention and mitigation strategy consists mainly of pre-suppression. Pre-suppression involves interagency training and communication; wildfire awareness, prevention and preparedness outreach and education; and collaboration among fire agencies.

Because Skagit County is a large area that encompasses many different land ownership and management types, the mitigation strategies in this CWPP have been written from a broad perspective. Recommendations and mitigation strategies for each of the major land ownership and management groups are provided below.

Homeowners & Private Forest Landowners

332,000 acres in private forest lands

The wildland-urban interface and intermix (WUI) is an area of great concern to the wildland fire fighting community. Because the lush, forested setting of Skagit County is often what draws people to live there, it also is the cause for much concern. The WUI areas in Skagit County are also the areas where fire preparedness and education activities can have the greatest positive impact. Only individual property owners have the power to enhance their resilience to wildfire by implementing wildfire risk reduction practices around their homes. These practices include things like using non-flammable

construction materials when building and/or remodeling, landscaping to prevent the ability of fire to travel from the wildlands to the home, and maintaining a survivable space around the home so that firefighters can safely defend it, or so it can survive on its own. By educating people and providing them tools with which to do this, they are empowered to protect themselves and their property from wildfire damage. While it is the government's responsibility to provide for the protection of public health, safety, and welfare, it is everyone's responsibility to protect homes, neighborhoods, and communities from the hazard of wildfire. We all have a role to play. (See Appendix 4 for Home Ignition Zone treatments.)

Fire is a natural part of the ecosystem. But when fuel levels are unnaturally high, after a century of aggressive fire suppression, recent drought, and insect outbreaks that have weakened or killed trees, a spark can lead to a fire much more severe than might have burned through the area historically. Thinning to reduce stand density is one way to make forests more resilient to fire, drought, and insects. Thinning treatments can be designed to reduce hazardous fuels so that when a fire does ignite, it remains a low intensity surface fire rather than becoming a more severe crown fire, moving through the tree tops. In dense stands, thinning not only lowers the amount of flammable material, it also reduces competition for water and nutrients among the remaining trees so they can better withstand a surface fire. (PNW Research Station, July 2008).

Wildland Fire Mitigation Strategies

1. Building awareness of risk through education and outreach throughout communities. Outreach efforts should be provided through collaborative partnerships between local, state, and federal agencies and organizations as well as communities. Education topics should focus on the following:
    - Understanding local wildland fire risk and behavior as well as changing risk due to a changing climate
        i. Provide current wildfire information through websites, social media, print materials
            1. Information should be based on best available science and research.
    - Forest health, forest stewardship and the relationship between healthy forests and wildfire risk reduction
        i. Community presentations
        ii. Forest health events
        iii. Forest health assessments & plan development
    - Creating survivable space within the different home ignition zones
        i. Neighborhood and community presentations
        ii. Free wildfire risk assessments and wildfire mitigation plans for individual landowners (See Appendix 5 for the wildfire risk assessment form)
    - Red card training for fire district personnel
    - Wildfire risk assessment training for fire district personnel
    - Outreach to professionals, i.e. contractors/builders, real estate businesses, insurance agents, nursery professionals on interface between wildfire preparedness and their business/clientele.

2. Empowering and assisting communities to work together to take action to mitigate wildfire risk.

- Encourage participation in the Firewise USA® program that provides a framework for communities to assess and address shared wildfire risk.
- Assist communities in meeting the requirements of participation in the Firewise USA® program.

3. Promote the Ready, Set, Go! Program messaging to help communities prepare for wildfires and evacuations.

4. Assist communities in developing and updating Community Wildfire Protection Plans.

5. Fuels reduction projects around individual homes and within community greenbelt areas for forest health and wildfire safety improvement.

6. Promote implementation of policies and regulations regarding building and survivable (defensible) space within communities and at the county planning level: community boards/committees, Skagit County PDS.
   - Use wildfire susceptibility maps to help guide growth decisions that avoid growth in the higher hazard areas and steer it toward more appropriate areas.
   - Evaluate effectiveness of building codes, subdivision and zoning regulations to help determine whether new measures are necessary for fire protection, such as the adoption of the wildland-urban interface (WUI) code.

Wildland Fire Mitigation Strategies in Family Forests

1. Education, outreach/awareness
   - Skagit County Forest Advisory Board
   - Farm Forestry Association events
   - Forest Stewardship short courses
   - Forest Owners Field Days
   - Provide EQIP information to landowners

2. Forest Stewardship Plans and associated activities
   a. Thinning
   b. Pruning
   c. Reduction of disease in stands
   d. Removal of ladder fuels
   e. Forest trails and landings
   f. Critical area seeding
   g. Pest control
   h. Fuel breaks
   i. Fire-resistant planting
   j. Use of a chipper for slash rather than burning
   k. Biomass utilization for slash treatment

3. Suppression
   - Payment of Forest Patrol Assessment tax for WADNR suppression

U.S. Forest Service

282,812 acres of land in Skagit County, (26%).

Wildland Fire Mitigation Strategies

1. Fire management/suppression

2. Education, outreach/awareness in heavy recreational use areas
   - Wildfire prevention education
   - Using media to promote prevention messages

3. Use of the *PNW Quantitative Wildfire Risk Assessment* that provides foundational information about wildfire hazard and risk to highly valued resources and assets across the geographic area.

4. Collaborate with WADNR, Counties and Conservation Districts as updates are made to the Skagit County CWPP.

5. Identify fuels reduction opportunities as needed and work with partnering agencies and communities to implement fuels reduction projects

6. Implement fire-resistant landscaping and construction practices around vulnerable structures on U.S. Forest Service lands

National Park Service

214,378 acres within Skagit County, (20%).

Wildland Fire Mitigation Strategies

1. Fire management/suppression
   The NPS manages wildland fire to protect the public, communities and infrastructure, and to restore and maintain ecological health. The program manages fire based on the best scientific information and monitors programs to ensure that objectives are being met. NPS fire program managers work in coordination with other natural resource disciplines and interagency partners to ensure that park resources and values are preserved, protected, and enhanced through the appropriate response to wildfire and the application of fuels treatments.

   Fire is an essential part of the ecosystem and is an important natural disturbance that is vital for healthy ecosystems. Rather than put out every fire, the park plans carefully to use it as a tool. The goal: to take advantage of fire's benefits while minimizing risks to people, property, and the health of the forest.

   Minimum Impact Tactics (MIT) are guidelines to significantly reduce environmental impacts. The use of natural barriers rather than constructing fire line are examples of MIT to help confine and contain fires. This helps to minimize the long-term effects of fires on the park's landscape.

Fire suppression may be utilized when there are threats to resources or boundaries. Resources that need protection could include: structures, data collection equipment, campgrounds or trail infrastructure, populated areas, highways, or endangered species habitat. Suppression could be utilized during wildfires or prescribed fires.

2. Education, outreach/awareness in heavy recreational use areas
    a. Fire prevention education
    b. Safe campfires
    c. Use of media to promote prevention messages

3. Implement fire-resistant landscaping and construction practices around vulnerable structures on Park Service lands
    a. This includes the vegetation management underneath the Seattle City Light-owned transmission lines that run through North Cascades National Park

4. Hazardous fuels reduction around structures
    a. A fuels reduction project was designed and implemented in partnership with Seattle City Light and the Environmental Learning Center around student cabins at the Learning Center.
    b. The Park continues to work in partnership with Seattle City Light on fuels reduction projects that include fire behavior modeling of fuel treatment options to develop plans for future treatment implementation in areas around the hydro-electric infrastructure and residential structures in the Upper Skagit Valley.

5. Use of prescribed fire
   Prescribed fire is a management-ignited fire during specified fuel weather conditions, with a signed burn plan to pre-determined boundaries. It is used for hazardous fuels reduction and/or ecosystem restoration. Prescribed burns have specific goals and objectives. Fire Managers at NOCA have been using prescribed fire since 1991 and will continue to do so where appropriate.

   Prescribed fire projects in the Skagit Valley have included hazardous fuels reduction burns around the Environmental Learning Center.

State Managed Timberlands (DNR)

131,206 acres in Skagit County, (12%).

Wildland Fire Mitigation Strategies

1. Fire management/suppression

2. Active abatement of fire hazards by removing and/or burning buildup of logging slash on state managed lands

3. Reduction of diseased stands and control of pests

4. Active management of both dispersed and developed outdoor recreation on state lands

Skagit Land Trust

8,200 acres owned, managed, and/or under easement in Skagit County

Wildland Fire Mitigation Strategies

The Skagit Land Trust does not currently have policies or wildfire mitigation strategies that they are implementing; however, they have expressed interest in working with partners to develop those in the future.

Tribal Lands

This includes the Upper Skagit, Swinomish, Samish & Sauk-Suiattle Tribes. Mitigation strategies are not currently identified. If information becomes available in the future, this section should be updated.

Major Travel Corridors/ Recreational Uses

I-5, Hwy 20, Hwy 530, Hwy 9

It is important to include temporary/short term visitor use of areas such as travel corridors and recreational use areas in this planning process because these areas are accessed by high volumes of people. Wherever there is a high volume of people in the proximity of forested areas, the potential for wildfire danger grows. In eastern Skagit County this is the case along the well-traveled Highway 20 corridor as well as the Highway 530 and Highway 9 corridors that are bordered by forestlands in many areas. Highway 20 closes in the winter but the towns of Marblemount and Rockport remain accessible year-round for travelers coming from the west. This highway experiences high volumes during the summer months when most of the traffic consists of travelers from the west heading east to the drier side of the mountains for recreation. In general, these highways are busier during the summer months due to people wanting to access the outdoor recreational activities that make this area so appealing. Most of these recreational use areas are managed by agencies that have previously been addressed above.

Wildland Fire Mitigation Strategies

1. Education/Outreach
2. Coordinate “Cross Cascades Prevention” efforts along Hwy 20 during fire season
3. Promote car maintenance to prevent oil leaks and car fires
4. Use of the media to promote fire prevention and safety messages during wildfire season
5. Fire danger signs
6. Clear burn restriction/ban information
7. No littering signs/cigarette butts
8. Fuel reduction projects along travel corridors where risk areas are highest

Prioritization Process for Community Wildfire Risk Reduction Projects

The process for identifying wildfire risk reduction projects was developed in 2009 in the original CWPP and has now been updated.

- Reference Areas of Higher Susceptibility to Wildfire map/list of communities/areas identified through the map, and input from local experts
    - Identify new areas of risk based on field work and tracking future potential wildland-urban interface and intermix areas

- Coordinate with agency partners
    - Discuss priorities and resources with WADNR, USFS, NPS, Skagit County

- Consideration proximity to federal lands
    - Title III funds supports prioritization of communities susceptible to wildfire within a certain distance of federal lands.

- Assess social factors of high-risk communities
    - Consider community interest
        - Willingness of the community to participate in mitigation efforts and keep moving forward

- Assess ecological impacts/benefits
    - Example: Consider current health of the forest
        - A fuels reduction project should not only reduce wildfire risk but also improve the health of the forest and wildlife

There are community/areas in Skagit County that are considered to have "High Susceptibility to Wildfire" who have been working to reduce their risk. Some have been working at it for more than 10-15 years. The following communities have or are currently working in some capacity to address wildfire risk as of this 2009 update.

Butler Hill/Valley View Estates

Fire District 8 was very involved in forming this Firewise USA® site in 2013. Community meetings were held at the Hickson Fire Hall and community leaders hosted demonstration fuels-reduction projects in partnership with the Conservation District and DNR. They also hosted and monitored a fire weather station in the community.

Cascade River Park

Cascade River Park is a community in the eastern part of Skagit County that is bordered by very steep heavily forested hillsides owned by both a private timber company and the U.S. Forest Service. This community has been identified over and over again by fire officials as having an extreme risk for wildfire. This community was threatened by the Jordan Creek wildfire in 1998. A CWPP was completed for Cascade River Park in September of 2006. Cascade River Park became a Firewise USA® site in 2010 and has continued to maintain participation in the Firewise USA® program. Cascade River Park residents also participated in fire weather station monitoring.

Chuckanut Ridge

Spread across the base of this mountain are train tracks and very popular recreation areas. The entire built area on Chuckanut Mountain has been identified by the Washington State Department of Natural Resources as high risk wildfire hazard area. The Chuckanut Ridge neighborhood, which borders Larrabee State Park became Skagit County's first recognized Firewise USA® site in 2003. This community is one of the pioneers of Firewise USA® program in WA State and has implemented some innovative projects within their neighborhood including using a prison crew to do fuels reduction around homes, and purchasing a chipper for the community to use once or twice a year to deal with down debris.

Colony Mountain

Fire District 14 was instrumental in forming this Firewise USA® site in 2017. Fire District personnel were trained to complete home risk assessments at a 2 day training held at the Alger Community Hall and hosted by the Conservation District, DNR, and an NFPA consultant in November 2016.

Jenkins Lane

This small community was identified by one of the Fire District 19 Commissioners in the original 2009 CWPP Fire District Survey as being a concern for wildfire because of its poor accessibility, topographic features that adversely affect wildland fire behavior, the condition of the structures, and health of the forest. The residents of Jenkins Lane have showed strong interest in improving their wildfire safety and the health of their forests.

One of the activities that this community has participated in is the Fire Weather Station monitoring. The fire weather stations are kits that were assembled by the Skagit Conservation District and placed within Firewise USA® sites as a hands-on way to understand what fire weather is and be able to track the warning signs so as to be better prepared.

This community is bordered by Washington State Dept. of Natural Resources and U.S. Forest Service lands. Jenkins Lane became a Firewise USA® site in 2009 and has continued to maintain their participation in the program. They are due for an update to their community CWPP.

Marblemount area / Diobsud Creek

On the north side of Highway 20 in Marblemount there are a number of properties tucked back against the base of steep U.S. Forest Service land. This is a classic example of intermix. A lot of this area is heavily forested. Some forested areas have evidence of disease. These areas also get very dry in the summer, with fuel moisture levels dropping below 20% toward the end of summer. The population density is lower in this part of the County however the structural ignitability tends to be greater. The Diobsud community became a Firewise USA® site in 2011 and continues to actively address their wildfire concerns and stay connected with agency and organization partners on their progress. They hosted and monitored a fire weather station within the community.

Newhalem / Diablo/ NPS Environmental Learning Center

These Seattle City Light communities started an extensive process with the Skagit Conservation District in 2012 to incorporate the Firewise USA® program into the existing fire and safety programs. Newhalem became a Firewise USA® site in 2013. Diablo became a Firewise USA® site in 2014. The following year the Goodell Creek fire burned 7,300 acres and threatened both communities, as well as the Environmental Learning Center (ELC). Work done prior to the fire had a significant impact on reducing damage to the communities. Although these communities are technically located in Whatcom County, Skagit Conservation District has worked with them because of ease of access and available resources. The Whatcom Conservation District was brought in as a partner to help assist Diablo and the ELC in their efforts.

In 2014 Seattle City Light was invited to be part of the Washington State Fire Adapted Communities Learning Network providing a unique perspective from both the utility end, community end, and fire response end. They continue to participate in the network and broaden their resources, learning, and sharing.

Shelter Bay

This community is perched on a steep, wind-exposed hill with one narrow, steep and windy road. Part of this community is located on the hill above a beach that allows recreational fires. The residents have expressed interest in the Firewise USA® program in the past. The Shelter Bay Community became a Firewise USA® site in 2005 and has since participated in numerous innovative projects and community engagement over the years. Some examples of these projects include, a fire-resistant landscape demonstration planting in one of their greenbelts, the use of goats to clear brush, and filming a Firewise Communities video with Ciscoe Morris. Shelter Bay also participated in the fire weather monitoring for a limited time.

There are numerous other communities that have been actively working to address their wildfire risk that either used to participate in the Firewise USA® program or have participated in some wildfire risk reduction activities. These include:

Eagles Nest

This community was identified by the Fire Chief of District 13 as a wildfire safety concern. It is connected to Shelter Bay and is accessed by going through the Shelter Bay even though it identifies as its own separate community. Eagles Nest is also on a steep exposed hillside with narrow roads. Highly flammable scotch broom grows on some of the hillsides. A community assessment was done for Eagles Nest in 2006 and the community has expressed interest in working toward becoming a Firewise USA® site off and on in the past.

Fidalgo Island & Communities Adjacent to ACFL

Meetings were held at the Anacortes Fire Department in January 2017. Organization efforts picked up following the Cranberry Lake fire of 2016. In 2019, the City of Anacortes Fire Dept. hosted a wildfire information night in July. Some Fidalgo Island residents also hosted a community potluck and wildfire information night. A number of small forest landowners in this area are looking for forest health assistance and are concerned about wildfire risk. There is a lot of potential for future collaboration and community engagement around wildfire risk reduction out here.

Gibraltar Road/Hoxie Lane

A community wildfire protection plan was written for the Gibraltar Road/Hoxie Lane area and they became a Firewise USA® site in 2009. A community fuels reduction project was implemented with the help of DNR and the Conservation District. Due to change of leadership and residents moving away, this is no longer an active Firewise USA® site.

Guemes Island

Not all of Guemes has increased susceptibility to wildfire. The high risk areas on the island are identified in the community hazard assessment that was written in 2012.
The Fire Chief has typically taken the lead on educating homeowners about wildfire risk reduction. Various neighborhood wildfire risk reduction presentations have been made over the years.

Lake Cavanaugh

This community is identified as having an extreme wildfire hazard. Lake Cavanaugh is nestled in a remote area of Skagit County, surrounded by very steep forested hills. The surrounding land is owned by the DNR. Fire officials have identified this area as a huge concern. A number of homes in this neighborhood are nestled deep in the forest with no survivable space. Also, because the buildable area is relatively small, the housing density is high. This community has expressed interest in Firewise

concepts in the past, specifically past fire department personnel. It is unknown whether the community has taken steps to reduce wildfire risk since the previous activities in 2006/2007 timeframe. This is a community that should be a high priority for wildfire risk reduction education and participation in the Firewise USA® program, among other preparedness activities.

Lake McMurray area – Camp Korey (formerly Camp Brotherhood)
Camp Brotherhood as it was formerly named became a Firewise USA® site in 2014. Soon after implementing some fuels reduction projects, the camp changed management and is no longer active in the Firewise USA® Program.

Samish Island
Concerned residents have reached out for wildfire risk assessments on their properties over the years as well as community presentations regarding wildfire risk reduction.

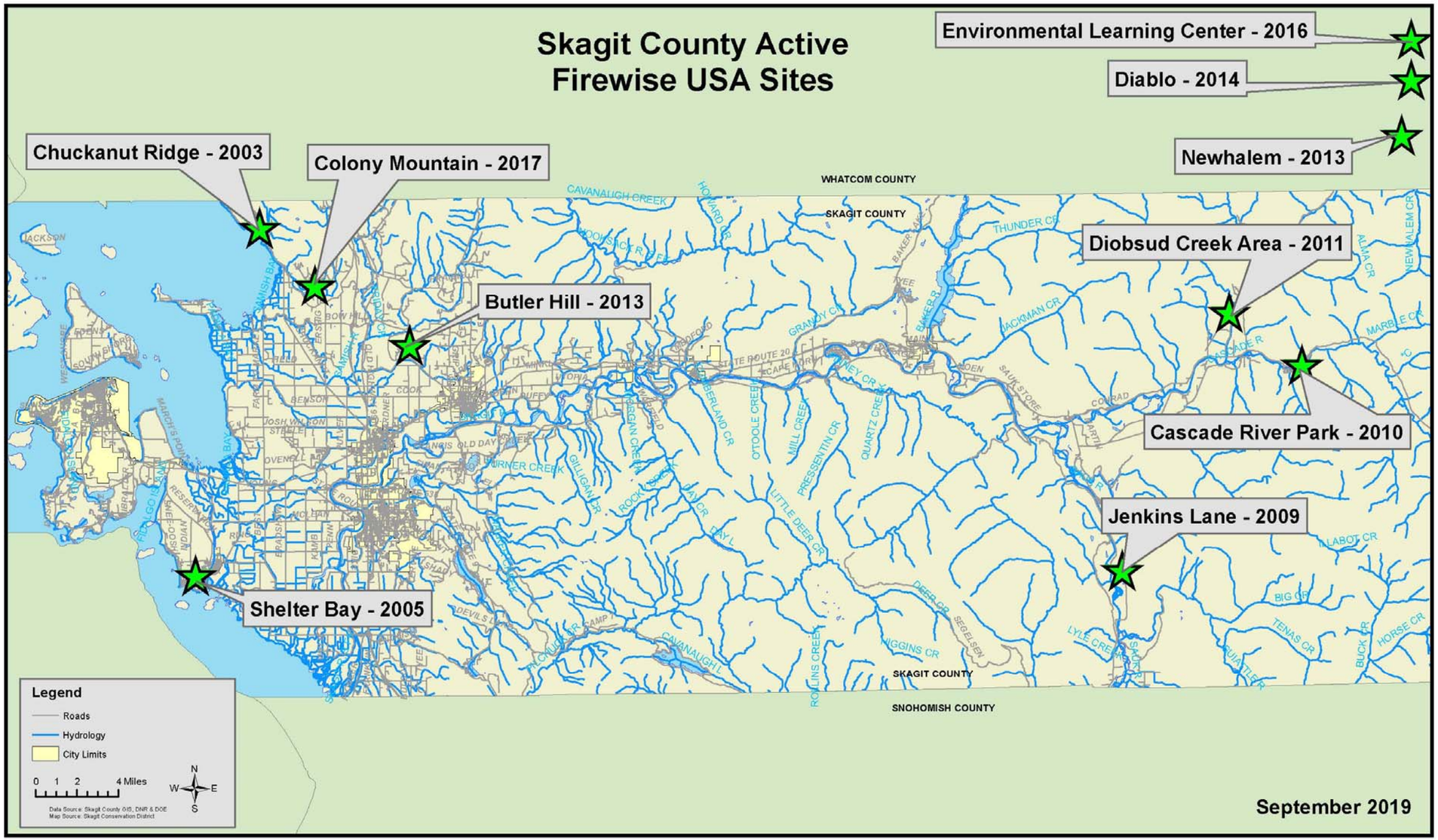

Figure 15. Active Firewise USA® Sites throughout Skagit County

Monitoring and Evaluation

Because the biggest concern for wildfire safety occurs in the wildland-urban interface areas of Skagit County, a majority of the mitigation efforts should be focused at this level. Efforts to date have been focused mainly on educating and working with homeowners in the WUI areas using the Firewise USA® concepts and recognition program as well as the Fire Adapted Communities concept.

Measuring how successful wildfire resilience work is can be challenging unless a disaster has occurred and the response and recovery is tracked and compared in relative terms. The concept of a Fire Adapted Community is one that is working toward building resilience. There is no endpoint, or program, but rather an ongoing effort to continually adapt before, during and after wildfire. This concept is depicted in the infographic below. (Figure 16.)

Figure 16. The Washington State Fire Adapted Communities graphic depicts the idea of working to adapt to living with fire before, during and after.

One tool that can provide some level of measurement of success is the Firewise USA® recognition program. This program focuses on reducing the ignition potential around individual homes and in within communities. This program has proven successful all over the country and is well supported by local fire

fighters and fire officials. When residents and communities take responsibility for mitigating their wildland fire risk, it helps save lives, homes, and resources. Fuels reduction efforts in the county thus far have focused on the creation of defensible space, shaded fuel breaks, reducing structural ignitability, and the implementation of forest stewardship and greenbelt plans. There are currently 6 nationally recognized Firewise USA® sites in Skagit County. Washington State has 138 recognized Firewise USA® sites. These communities perpetuate their success by renewing their membership in the program each year and promoting their accomplishments to other communities. The number of communities involved in this program is a partial measurement of success.

Long-term Success

According to the USFS document, "Best Management Practices for Creating a Community Wildfire Protection Plan" it is important to document accomplishments, share those accomplishments with those who have an interest in the goals of the plan, and identify how it fits into the bigger scope of planning within the County. Communities telling their story of how they're building resilience to wildfire and sharing it with others also helps perpetuate long-term successes. They can connect to others doing similar things and learn from each other.

The USFS document mentioned above states that it's important to *"help ensure long-term success by quickly showing progress on CWPP goals, linking the CWPP to other plans and frameworks, and allowing the CWPP to evolve as conditions change."* Suggested methods for ensuring long-term success include the following:

- Incorporate projects into the CWPP that can be accomplished quickly to foster homeowner buy-in and broaden support for the longer term effort.
- Nest local CWPPs within broader plans or link them with other types of plans to augment resources, broaden support, and enhance implementation.
- Where possible, incorporate the CWPP into a formal government structure.
- Quickly identify changes affecting the CWPP and adapt the plan to new conditions as they arise.

This CWPP is a working document that will be used as a tool for approaching wildfire safety and forest health improvement efforts across Skagit County. It will be updated and expanded as needed. It will serve as a benchmark for future accomplishments. Progress in partnerships, hazardous fuels reduction, Firewise USA® program participation, and Fire Adapted Communities focused actions and successes will all be tracked in this document.

Works Cited, References, Partners

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Washington State Fire Adapted Communities Learning Network

Partners

Bridgeview Consulting
National Parks Service, North Cascades National Park
Skagit County Commissioners Office
Skagit County Department of Emergency Management
Skagit County Fire Chiefs
Skagit County GIS Department
Skagit County Planning and Permit Office
Skagit Land Trust
University of Washington Climate Impacts Group
U.S. Forest Service, Mt. Baker-Snoqualmie Headquarters
USDA Natural Resources Conservation Service
Washington State Department of Fish and Wildlife
Washington State Department of Natural Resources
Western Governors' Association
Whatcom Conservation District

ACRONYM LIST

AWC – Available Water Capacity

BLM – Bureau of Land Management

CWPP – Community Wildfire Protection Plan

DBH – Diameter at Breast Height

DEM – Department of Emergency Management

DOI – Department of Interior

EQIP – Environmental Quality Incentive Program

ESD – Ecological Site Description

FEMA – Federal Emergency Management Agency

FLAME Act - Federal Land Assistance, Management, and Enhancement Act

HFRA (2004) – Healthy Forests Restoration Act

MIT – Minimum Impact Tactics

NFPA – National Fire Protection Association

NHMP – Natural Hazard Mitigation Plan

NOCA – North Cascades National Park

NPS – National Parks Service

NRCS – Natural Resources Conservation Service

PDS – Permitting & Development Services

RAMS – Risk Assessment and Mitigation Strategies

SCD – Skagit Conservation District

SCFMO – Skagit County Fire Marshal's Office

UGAs – Urban Growth Areas

USDA – United Stated Department of Agriculture

USFS – United States Forest Service

WADNR – Washington State Department of Natural Resources

WDFW – Washington State Department of Fish and Wildlife

WUI – Wildland Urban Interface

Appendix 1

6 Major Steps to Developing a CWPP

There are six major steps to developing a CWPP, but because this is an update, the way the steps have been carried out varies from the initial effort. They include the following:

Step 1: Convene Decision Makers

The Skagit Conservation District (SCD) lead the plan update process for this Community Wildfire Protection Plan (CWPP). SCD consulted with our partners including the Washington State Department of Natural Resources (WADNR), the U.S. Forest Service (USFS), Skagit County Department of Emergency Management (DEM), the Skagit County Commissioner's Office, Skagit County Rural Fire Districts, the University of Washington Climate Impacts Group and affiliated professors, Skagit Land Trust, and the public.

To gather feedback and input on this update we have participated in the following:

- Letters & surveys sent to all Fire Districts
- Meetings with Skagit County Department of Emergency Management
- Consultation meetings with UW Climate Impacts Group and affiliated professors
- Public meetings and events about the Skagit County Natural Hazards Mitigation Plan
- Meeting and coordination with Department of Natural Resources
- Meetings with U.S. Forest Service
- Meetings with Natural Resources Conservation Service
- Neighborhood meetings

Step 2: Involve Federal Agencies

See above.

This Community Wildfire Protection Plan (CWPP) identifies the various land owners/managers, stakeholders, and assesses and prioritizes risk areas, and recommends mitigation strategies. This plan is to be considered a working document that will allow for expansion and incorporation as well as monitoring of the changing risk levels over time.

Step 3: Engage Interested Parties

See above. The public has been invited to offer input throughout the development of this CWPP through the process of updating the NHMP. Steps 3 and 4 were combined since it was determined that the CWPP should cover all of Skagit County. The wildfire hazard map has been updated (2019) with data from the USDA Natural Resources Conservation Service (NRCS) and Washington State Department of Natural Resources (DNR) and reclassified as a Susceptibility to Wildfire map. The map identifies areas that have a higher susceptibility to wildfire on a landscape level. Best available science was used to

inform the updated wildfire susceptibility map. The original map used the state's RAMS tool, which is no longer applicable.

In the original 2009 CWPP hazard assessment development process, a letter and survey was sent to Skagit County fire chiefs. The survey requested identification of specific areas of wildland urban interface concern, information regarding the current protection resources available, level of community awareness regarding wildfire risk and preparedness, an opportunity to identify specific projects and provide input on changes to wildland fire prevention and protection approaches. For this CWPP update, a new letter and survey were sent out updated and emailed out. The letter and survey results can be found in Appendix 2.

Step 4: Establish a Community Basemap

A map from DNR showing wildland-urban interface and intermix areas is used in this document; however, an additional map that shows areas with high susceptibility to wildfire was created through the analysis process as described on page 21.

Step 5: Establish Community Hazard Reduction Priorities and Recommendations to Reduce Structural Ignitability

Based on results from the survey of the rural fire districts, local citizen input, and the map showing areas with higher susceptibility to wildfire, the CWPP team created a list of areas and communities to focus on for reduction of hazardous fuels and structural ignitability that can be found on page 22. Many of the communities on the list have already been working hard to reduce their risk. Descriptions of community actions are included on pages 29-32.

Step 6: Communicate Wildland Fire Protection Plan Information to Property Owners

Efforts to educate the public and inform them of the CWPP update have been ongoing and part of the outreach portion of the NHMP 5-year update. Using newsletter articles, public meetings, posters, and other types of outreach materials at local events, and neighborhood gatherings, this information has been made available to a wide audience.

Appendix 2

Potential Fire Damage Hazard Soil Interpretation (NRCS Soil Survey)

Interpretation name: **Potential Fire Damage Hazard**
Description:
The potential hazard of damage to soil nutrient, physical, and biotic characteristics from fire.

Ratings assess the impact of fires of moderate fireline intensity (116 – 520 btu's/sec/ft) that provide the necessary heat to remove the duff layer and consume soil organic matter in the surface layer.

Ratings assume the following:

- Soils with a shallow surface layer lack the capacity to safely absorb the effects of fire.
- Steep slopes are more likely to erode if the protective duff layer is removed.
- Soil texture and rock fragment content relate to soil erodibility, vegetative recovery rate, and vegetative productivity.
- Medium textured soils, with their greater inherent water holding capacity, are more likely to be cooler and provide higher productivity potential.
- Soils with large volumes of rock fragments transmit heat to a greater depth in a shorter period of time.
- Soils with less than 2 percent organic matter are more resistant to sheet and rill erosion and have greater water holding capacity.

Ratings do not assess the following:

- The time of year in which the fire occurs (winter versus summer).
- Fuel moisture content or volume.
- Weather conditions.

Rating Classes:

- None – No impact to the soil characteristic.
- Low – Little negative impact to the soil characteristic may occur.
- Moderate – negative impacts to the soil characteristic may occur.
- High – Negative impact to the soil characteristics are expected.

Ground fuel accumulation:
On the moderately dry ecological site (902), fuel accumulations were found to range from moderate (15 to 30 tons / acre) to heavy (30 to 45 tons per acre). Anticipated flame length can be projected combining these factors: weight of fuels per acre, type of fuels, size of fuels, and depth of fuels. Procedures are outlined in the publication: "Quantifying Forest Residues in the Douglas-fir –Western Hemlock Forest Type". U.S.F.S. Pacific Northwest Research Station, report # PNW-GTR-258, May, 1990.

Table 2–Examples of threshold temperatures for soil physical, chemical, and biological properties[a]

Soil property	Threshold (°C)	Source
	Low	
Microbial death:		
Bacteria	50 to 400	Hungerford et al. 1991
Nitrifying bacteria	75 to 140	DeBano et al. 1977
Vesicular arbuscular mycorrhizae	94	Klopatek et al. 1988
Seed mortality	50 to150	Beadle 1940
Fine-root mortality	40 to 70	Zeleznik and Dickman 2004
Soil water loss	60 to 100	Hungerford 1991
	Moderate	
Particle aggregation (e.g., clay conversion to sand)	200 to 500	Terefe et al. 2008
Carbon and organic matter oxidation	200 to 500	Raison et al. 1985
Nitrogen volatization	300 to 500	Hungerford et al. 1991
Soil structure and aggregate stability loss	300	
Amino acid loss	350	Hungerford et al. 1991
Water repellency	>270 to 300	DeBano and Krammes 1966
Ectomycorrhizal fungi death	100 to 155	Dunn et al. 1985
	High	
Nutrient volatization:		
Potassium	775	Raison et al. 1985
Phosphorus	775	Raison et al. 1985
Calcium	1240 to 1485	Raison et al. 1985
Manganese	1960	Raison et al. 1985
Magnesium	1107	DeBano 1991
Sulfur	375 to 900	Tiedemann 1987
Clay structure transformed or destroyed	>550	Certini 2005, Douglas 1986, Ketterings et al. 2000

[a] These values are not absolute and can vary depending on to the heterogeneity of soils in natural systems.

Appendix 3

Skagit County Fire Chiefs' Letter, Survey & Results

February , 2019

Dear Skagit County Fire Chief,

Back in 2009 the Skagit County Community Wildfire Protection Plan (CWPP) was developed by the Skagit Conservation District (SCD) in partnership with local fire districts, WA Department of Natural Resources, United States Forest Service, Skagit County, and local communities. This document is part of the County's Natural Hazard Mitigation Plan and provides an in-depth analysis of wildfire risk in Skagit County as well as recommendations for how to mitigate for that risk.

As part of the original process to gather feedback from Skagit County fire districts back in 2008, the Skagit Conservation District conducted a survey collecting information on each districts' wildfire hazards and concerns. After 10 years and a few iterations, it is time to update this document and collect your valuable input again.

SCD and our partners are inviting you and your fire district to share information on the wildfire hazards that are faced within your district boundaries by completing a survey.

The survey can be accessed online at
https://survey.whatcomcd.org/limesurvey/index.php/338996?newtest=Y&lang=en

It is very important that local fire districts be part of this process as you are the experts on the risks in the communities you serve. Thank you for your time in filling out this survey.

Your input is valuable and essential to updating Skagit County's Community Wildfire Protection Plan.

Please do not hesitate to call me if you have any questions or would like more information. To reference the most recent edition of the Skagit County CWPP, visit
https://www.skagitcounty.net/EmergencyManagement/Documents/wildfireprotectionplan2012.pdf

Sincerely,

Jennifer Coe
Community Wildfire Resilience Coordinator
Skagit & Whatcom Conservation Districts
Whatcom (360) 526-2381x106
jcoe@whatcomcd.org

Fire District Survey Questions

Name: _____ Fire District # _____

Please list any communities/neighborhoods/geographic areas that are a concern to your fire district as far as wildfire hazards. Please provide any specifics on the particular concerns with each area, if applicable.

Please check all wildfire protection resources that are currently available within your district.

Brushtrucks (how many?)

Fire engines (How many?)

Water tenders (how many?)

Red card certified personnel (how many if any)

Other – please list in the box below

On a scale of 1-10 (1 being low risk and 10 being high risk) how would you rate your fire district's preparedness to respond to wildland fire?

Option to add comments

On a scale of 1-10 (1 being low awareness and 10 being high awareness) how aware of wildfire risk and prevention practices do you think the communities in your Fire District are?

Option to add comments

Are there any communities or individuals you know who would like and/or need assistance with wildfire preparedness planning? (IF YES, PROVIDE INFO IN COMMENT BOX)If so, please identify the area/neighborhood or specific contact information.

Are you familiar with the NFPA Firewise Communities/USA program? (IF YES, ANSWER NEXT QUESTION)

If so, have you been involved in working with communities on this program?

(IF YES, NEXT QUESTION)

If so, what was/is your role?

Do you believe that your District's involvement with Firewise Communities program efforts was/is valuable? Why, or why not?

If you are not familiar the NFPA Firewise Communities Program, are you interested in learning more about it and how local fire districts can get involved?

What changes, if any would you like to see in the county regarding wildland fire prevention and protection?

Stricter building codes

Ban on fireworks

Improved resources for fire districts in wildfire prone areas

Individuals taking more responsibility for their own safety (better education)

Other (please list)

Are you interested in partnership opportunities for wildfire risk awareness & education with DNR and/or Skagit Conservation District?

Please list any outreach ideas or events you may have in mind.

Are you interested in partnership opportunities for wildfire hazard reduction projects with DNR and/or Skagit Conservation District?

Please list any project ideas you may have in mind.

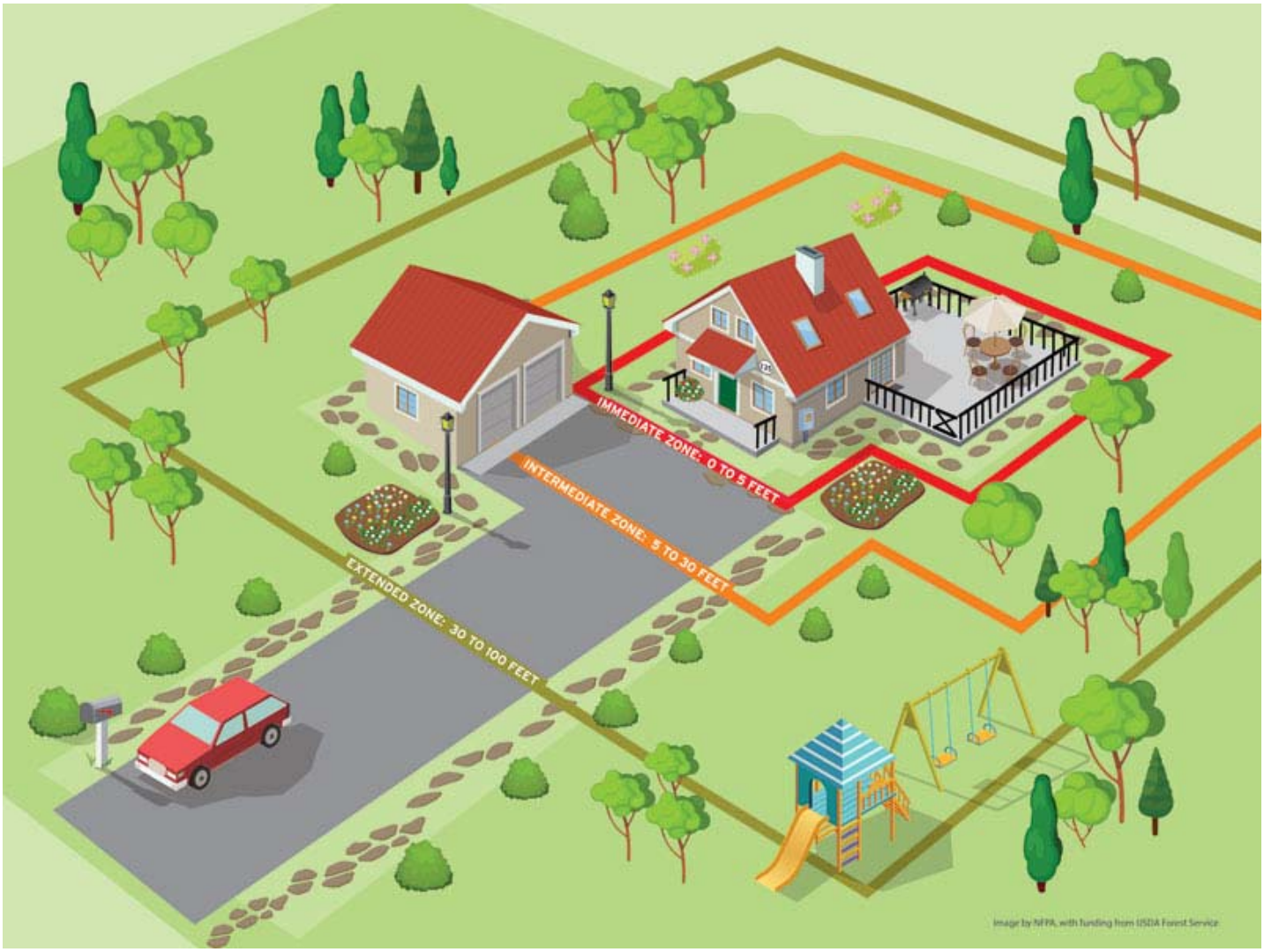
Fire Chief Survey Results

The results from this survey can be found on the Skagit Conservation District website. Visit www.skagitcd.org

Appendix 4

Home Ignition Zones & Treatments

The concept of the home ignition zone (HIZ) was developed by retired USDA Forest Service fire scientist Jack Cohen in the late 1990s, following some breakthrough experimental research into how homes ignite due to the effects of radiant heat. The HIZ is divided into three zones.



HOME IGNITION ZONE TREATMENT

Immediate zone (0 TO 5 FEET)

The home and the area 0-5' from the furthest attached exterior point of the home; defined as a non-combustible area. Science tells us this is the most important zone to take immediate action on as it is the most vulnerable to embers. START WITH THE HOUSE ITSELF then move into the landscaping section of the Immediate Zone.

- Clean roofs and gutters of dead leaves, debris and pine needles that could catch embers.
- Replace or repair any loose or missing shingles or roof tiles to prevent ember penetration.
- Reduce embers that could pass through vents in the eaves by installing 1/8 inch metal mesh screening.
- Clean debris from exterior attic vents and install 1/8 inch metal mesh screening to reduce embers.
- Repair or replace damaged or loose window screens and any broken windows Screen or box-in areas below patios and decks with wire mesh to prevent debris and combustible materials from accumulating.
- Move any flammable material away from wall exteriors – mulch, flammable plants, leaves and needles, firewood piles – anything that can burn. Remove anything stored underneath decks or porches.

Intermediate zone (5 TO 30 FEET)

5-30' from the furthest exterior point of the home. Landscaping/hardscaping- employing careful landscaping or creating breaks that can help influence and decrease fire behavior

- Clear vegetation from under large stationary propane tanks.
- Create fuel breaks with driveways, walkways/paths, patios, and decks.
- Keep lawns and native grasses mowed to a height of four inches.
- Remove ladder fuels (vegetation under trees) so a surface fire cannot reach the crowns. Prune trees up to six to ten feet from the ground; for shorter trees do not exceed 1/3 of the overall tree height.
- Space trees to have a minimum of eighteen feet between crowns with the distance increasing with the percentage of slope.
- Tree placement should be planned to ensure the mature canopy is no closer than ten feet to the edge of the structure.
- Tree and shrubs in this zone should be limited to small clusters of a few each to break up the continuity of the vegetation across the landscape.

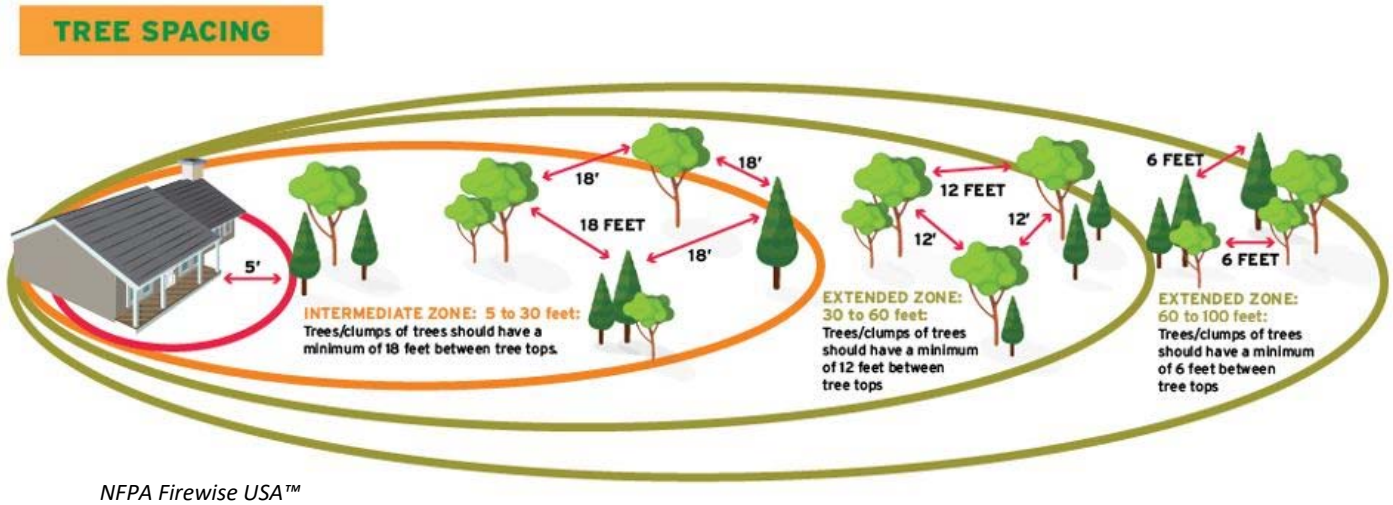
Extended zone (30 TO 100 FEET)/ FORESTED ZONE OUT TO 200 FEET

30-100 feet, out to 200 feet. Landscaping – the goal here is not to eliminate fire but to interrupt fire's path and keep flames smaller and on the ground.

- Dispose of heavy accumulations of ground litter/debris.
- Remove dead plant and tree material.

- Remove small conifers growing between mature trees.
- Remove vegetation adjacent to storage sheds or other outbuildings within this area.
- Trees 5 to 30 feet from the home should have at least 18 feet between canopy tops*.
- Trees 30 to 60 feet from the home should have at least 12 feet between canopy tops.*
- Trees 60 to 100 feet from the home should have at least 6 feet between the canopy tops.*
- Thin forest stands to improve forest health.
- Pruning of lower limbs in lifts over time, depending upon the size of the tree. Do not remove more than 50% of live crown.
- Remove dead material, slash and snags that are danger trees.
- Remove excess vegetation along roads.
- Construct trails on topographic breaks as fuel breaks.
- Prevent ladder fuels from developing.
- Allow adequate access for emergency vehicles.

**The distances listed for crown spacing are suggested based on NFPA's Firewise USA® guidance. Crown spacing needed to reduce/prevent crown fire potential could be significantly greater due to slope, the species of trees involved and other site specific conditions. Check with your local forestry professional to get advice on what is appropriate for your property.*



NFPA Firewise USA™

Appendix 5

Structure Assessment Guide

Date of Assessment: _____ **Assessor:** _____

Property Address: _____ **Property Owner:** _____

1. OVERVIEW OF SURROUNDINGS (Include supporting images) *Possible considerations: structure position in relation to severe fire behavior and type of construction*	
Items Assessed:	Mitigation Recommendations:
2. CHIMNEY TO EAVES (Include supporting images) *Possible considerations: the roof, and gutters*	
Items Assessed:	Mitigation Recommendations:
3. TOP OF THE EXTERIOR WALL TO FOUNDATION (Include supporting images) *Possible considerations: attic; eaves; soffit vents; crawl spaces; windows; decks; fences; flammable and combustible materials stored on, under, or near structure; nooks and other small spaces*	
Items Assessed:	Mitigation Recommendations:

STRUCTURE ASSESSMENT GUIDE (continued)

4. IMMEDIATE ZONE 0-5 feet from structure (Include supporting images)

Possible considerations: landscaped vegetation – hardscape materials, plant selection, propane tanks, vehicles, lawnmowers

Items Assessed:	Mitigation Recommendations:

5. INTERMEDIATE ZONE 5 – 30 feet (Include supporting images)

Possible considerations: ladder fuels and crown separations, lawns mowed and watered

Items Assessed:	Mitigation Recommendations:

6. EXTENDED ZONE 30 – 100 feet (Include supporting images)

Possible considerations: ladder fuels and crown separations, accumulation of litter/debris and dead plant and tree material,

Items Assessed:	Mitigation Recommendations:

Appendix 6

SKAGIT COUNTY FIRE DISTRICTS

Fire Marshal (911 Center)	428-3250
Alger District #14	724-3451
Allen District #5	755-0261
Anacortes (City)	293-1925
Bayview District #12	429-2343
Big Lake District #9	422-5391
Birdsview District #10	826- 3500
Bow District #5	707-5835
Burlington (City)	755-0261
Cedardale District #3	424-1661
Clear Lake District #4	856-6283
Concrete (City)	853-8821
Conway District #3	445-4345
Day Creek District #16	826-6060
Edison – Bow District #5	766-6325
Grassmere District #10	853-8361
Guemes District #17	293-8681
Hamilton (City)	826-3027
Hope Island District #13	466-3339
La Conner (City)	466-3125
Lake Cavanaugh District #7	422-7577
Lake McMurray District #15	445-4044
Lyman District #8	826-3033
Marblemount District #19	873-2501
McLean Road District #2	424-7296
Mount Vernon (City)	336-6277
Mt. Erie District #11	299-1281
Prairie District #8	724-4703
Rockport District #19	853-8889
Samish Island District #5	429-4693
Sedro-Woolley (City)	855-2252
Summit Park District #11	293-7432