SAN JUAN COUNTY WASHINGTON

COMMUNITY WILDFIRE PROTECTION PLAN

2025

FUNDED AND FACILITATED BY: THE SAN JUAN ISLANDS CONSERVATION DISTRICT

PREPARED BY: NORTHWEST MANAGEMENT INC.

Acknowledgments

This CWPP represents the efforts and cooperation of a number of organizations and agencies working together to improve preparedness for wildfire events while reducing factors of risk.

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Executive Summary

The 2025 San Juan County Community Wildfire Protection Plan (CWPP) establishes the strategies and actions necessary for comprehensive wildfire prevention, mitigation, and response throughout San Juan County.

The Plan updates the county's original CWPP from 2012 and has been developed in accordance with federal standards, including collecting input from a diverse steering committee of over twenty federal, state, tribal and local governments, local fire departments, community organizations and the general public.

Public feedback in the form of open meetings, surveys and document review were provided throughout the update process and indicate that citizen concern about wildfire in the San Juan Islands is high; perceived community preparedness for a wildfire is low; and many members of the community are highly motivated to be part of the solution. Residents note the following as causes for concern: dense forests surrounding homes, neighborhoods and narrow roads, drier summers from drought and global warming, and logistical difficulties of living on remote islands.

Local fire departments provide initial attack response for islands within an official fire district, while the Washington Department of Natural Resources (WA DNR) offers additional support and extended attack capabilities. On outer islands without an official fire department, WA DNR assumes primary responsibility for initial attack, though volunteer fire brigades may offer some level of response. In certain cases, WA DNR may formally delegate initial attack responsibility to a local fire district. For larger wildfires, support comes from WA DNR, mutual aid agreements with neighboring fire departments, or State Fire Mobilization resources. Since the 2012 CWPP, both WA DNR and local fire response resources have expanded, though challenges remain.

With regard to overall wildfire risk, key findings show:

- Overall wildfire risk in San Juan County is relatively low when compared to many other counties in Washington, but wildfire events can and do occur.
- Nearly all fire starts in San Juan County are caused by human activity and are therefore preventable. Activities such as pile burning, recreational fires, and operating metal-bladed tools are frequent ignition sources, especially during the summer.
- Climate change trends like hotter summers and extended drought are increasing the likelihood of wildfires starting and/or increasing in intensity.
- Fires are most likely to occur in the county's larger grasslands and pastures. Even with different wind directions, models show fires starting and propagating more readily in the grassland areas than they do in areas with heavily timbered slopes.
- Seventy-eight percent structures in the county have "direct exposure," where structures could be ignited by adjacent vegetation, flying embers, or nearby structures and would benefit from some kind of fuels reduction treatment around critical infrastructure, housing, and other development to reduce the threat of damage from wildfire.

Considering this, the plan sets out a list of actions to be taken through site-specific fuel reduction projects, education programs, policy changes, and infrastructure and resource improvements.

Chapter 1 – Plan Overview and Development

This plan is an update of the 2012 San Juan County CWPP which establishes the strategies and actions necessary for comprehensive wildfire prevention, mitigation, and response throughout San Juan County. Residents, government agencies, fire districts and brigades, businesses, tribes, nonprofits and other community groups voluntarily participated in this collaborative update.

Implementation of this plan will orient San Juan County on a path to reduced likelihood of catastrophic high intensity wildfires while improving forest ecosystem health and resiliency to climate change impacts. The plan is also intended to improve resource sharing, provide a framework for coordinated responses, maximize human health and safety measures, and maintain ecological integrity in the face of wildfire.

This plan is meant to be consulted during other planning processes that occur in the county. It does not set policy or influence decision making related to emergency response during a live fire event.

Funding for this plan was generously provided by the United States Bureau of Land Management (BLM) and Washington State Conservation Commission (WSCC). Plan development was facilitated by the San Juan Islands Conservation District with the assistance of Northwest Management, Inc. consulting group.

The 2024-25 CWPP steering committee includes:

Bureau of Land Management (BLM)
Lopez Island Fire & EMS
Orcas Power and Light Company (OPALCO)
Orcas Island Fire & Rescue (OIFR)
Roche Harbor Neighborhood Association
Samish Indian Nation
San Juan County Department of Emergency Management
San Juan County Department of Environmental Stewardship
San Juan County Fire Marshall
San Juan County Conservation Land Bank
San Juan County Noxious Weed Control Program
San Juan Island Fire & Rescue (SJIFR)
San Juan Island National Historical Park
San Juan Islands Conservation District (SJICD)
San Juan Preservation Trust
Town of Friday Harbor
US Forest Service (USFS)
Washington Department of Natural Resources (DNR)
Washington State University Extension Forestry

CWPP Mission Statement and Goals

Mission Statement

The overarching mission of the CWPP is to increase the resiliency of San Juan County to wildfire. This is achieved by presenting risks and identifying strategies that prevent and reduce the impacts of wildfire, and by using a collaborative, community-wide approach.

Goals

The CWPP process shall:

1. Be inclusive. Solicit the participation and understand the priorities of residents, government agencies, businesses, tribes, nonprofits and other community groups.
2. Provide clear guidance, recommendations, and communications that improve wildfire response and mitigation practices.
3. Prioritize the protection of people, infrastructure, island ecosystems, and the overall economic well-being of San Juan County.
4. Promote an ethic of wildfire resiliency and preparedness throughout San Juan County through planning, self-sufficiency, and education.
5. Integrate with existing guidance plans and documents at the local, state and federal level.
6. Make recommendations based on best available science, local knowledge and historical context.
7. Provide a data driven assessment of wildfire risk and hazards in San Juan County, both on a large scale (within the larger context of Washington State or beyond), and more locally.
8. Support local fire agencies, conservation organizations, land managers, decision makers and the general public in their understanding of, and ability to respond to, wildland fire threats, vulnerabilities, and mitigation opportunities or options.
9. Assess current regulatory measures such as building codes and road standards intended to reduce potential wildland fire impacts and propose improvements to address any identified gaps.
10. Ensure interagency actions to prevent wildfire complement each other and make the best use of available public and private resources.

State and Federal CWPP Guidelines

This CWPP adheres to the guidelines set forth in the Healthy Forests Restoration Act (HFRA)[1]. The three primary requirements established by HFRA are:

- The CWPP be developed in a collaborative context and agreed upon by the applicable local government, local fire departments, the state agency responsible for forest management, interested stakeholders, and federal land management agencies in the area.
- The CWPP identifies and prioritizes areas for hazardous fuel reduction treatments, recommending methods that will protect at-risk communities and infrastructure.
- The CWPP recommends measures to reduce structural ignitability in at-risk communities or areas.

The Washington Department of Natural Resources has recognized that this plan meets the requirements of HFRA and has completed their own accountability checklist to ensure that the CWPP followed best practices in its development.

Maintenance and Monitoring

The CWPP should be reviewed at least annually among the CWPP steering committee or with the San Juan County Council. The review should be open to the public and identify implementation progress, gaps, financing and adaptive management strategies. Amendments to the plan should be documented and attached to the formal plan. The Plan is required to be updated every 5 years to meet HFRA requirements.

Integration with other Local Planning Documents

The CWPP may inform and cross references the goals, policies and planning objectives set forth in other local guiding documents, including those below.

Table 1: Local Planning Documents in San Juan County

Plan	Description
San Juan County – Town of Friday Harbor Comprehensive Emergency Management Plan[2]	The (2019) Comprehensive Emergency Management Plan (CEMP) is an all-hazard plan that describes how San Juan County will organize and respond to emergencies and disasters. It is based on, and compatible with, other applicable federal and state laws, regulations, plans, and policies, including the National Response Framework and the State of Washington Comprehensive Emergency Management Plan.

[1] Healthy Forests Restoration Act, Public Law 108-148 (2003).

[2] San Juan County/Town of Friday Harbor, Washington Comprehensive Emergency Management Plan. May 2019.

San Juan County Comprehensive Plan[3]	The Comprehensive Plan, together with its supporting documents and the ordinance by which it is adopted, is the official policy statement of the County. The Comprehensive Plan provides a long-range framework to guide citizens, County government, and private agencies and service providers in their planning, design and location decisions about growth, land uses, conservation of natural resources, and major capital facility expenditures. The goals and policies in the Comprehensive Plan direct future decisions on land use actions, ordinance amendments, capital expenditures, procedures and programs.
San Juan County-Town of Friday Harbor Natural Hazards Mitigation Plan[4]	The creation of the San Juan County Natural Hazards Mitigation Plan (NHMP) is a step toward a comprehensive assessment of disasters and what can be done to protect local communities and resources. The NHMP, adopted by San Juan County in 2018, contains a detailed section on wildland urban interface fires. Much of the information included in this section was integrated into the previous CWPP. The findings from the current CWPP will likely be integrated into the next version of the NHMP.
Climate Action Plan	The (2025) Climate Action Plan (CAP) is under development at the time of the CWPP publication and expected to provide an implementation strategy for reducing greenhouse gas emissions and prepare San Juan County for current and future climate impacts. The CAP will establish clear targets and schedules aligned with the policies outlined in the SJC Comprehensive Plan's Climate Element and climate-related policies. It will define actionable steps to develop projects and programs that adhere to these policies, ensuring a cohesive approach to achieving climate goals.

Description of the Planning Process

The CWPP was developed through a collaborative process involving all of the organizations and agencies detailed on Page 1 of this document. The process included the following key components:

1. **Scoping Study** of the previous plan was conducted by Northwest Management Inc. to determine where the plan needed updates and to meet all the required regulations.
2. **Steering Committee Meetings** were held throughout the planning process to ensure stakeholders from each jurisdiction brought their own expertise in the planning process to update the CWPP.
3. **Mapping and Analysis** of data relevant to pre-wildfire mitigation and treatments, structures, resource values, infrastructure, risk assessments, and related data.
4. **Public Involvement** including formation of the steering committee, publishing news releases and invitations to public meetings, hosting three public meetings (Orcas Island,

[3] San Juan County Comprehensive Plan. November 2022.

[4] San Juan County Hazard Mitigation Plan. 2018.

Lopez Island, and San Juan Island), public review of draft documents, and acknowledgement of the final plan by the steering committee (see Appendix A and E).

5. **Finalization of the Report** to integrate the results of the feedback and obtain endorsement of all required stakeholders.

Public Feedback

Community feedback through online surveys and public meetings showed three important themes emerge:

1. High level of concern for wildfire conditions throughout San Juan County,
2. Low level of perceived community-wide awareness of, and preparedness for risks, and
3. High level of interest in being a part of the solution.

When asked, “How concerned are you about the risk of wildfire in your area?” most respondents chose “very concerned,” with one choosing “extremely concerned” and one choosing "somewhat concerned.”

When asked, “Do you believe your community is adequately prepared for a wildfire?” zero respondents said “Yes.” Responses suggested it was not an issue taken seriously, that there are too few water resources and pumps to draw from around the islands, and that “people aren’t aware of issues with fire breaks, fuel loads and evacuation planning.”

All respondents claimed “Yes” when asked if they had taken steps to reduce wildfire risk on their properties.

- “Yes, we have had our fire chief out to our property to learn from his experience. We have cleared our access road, thinned some of our forest, re-sided an outbuilding with fire resistant metal, and replaced our mossy roof with a metal roof.”
- “Removing noxious weeds. [Receiving a] Wildfire Readiness evaluation.”
- “Yes. More defensible space, limb removal along driveways, removal of some downed fuels, significant forest thinning.”

Public survey results and public review comments are available in Appendix E. Notable comments left by San Juan County residents are shared throughout the plan where related concepts are discussed.

Chapter 2 – County Overview and Fire History

Overview

San Juan County is located off the west coast of Washington State. It is comprised of more than 100 islands, and at 175 square miles, is the smallest of Washington's 39 counties. Approximately 15 islands in the archipelago have year-round residents. The four largest islands in the county include Orcas, San Juan, Lopez, and Shaw. These islands are navigable by the Washington State ferry system and support a vast majority of the area's population. Friday Harbor on San Juan Island is the county's only incorporated municipal area and is the county seat.

Elevation ranges from sea level to the highest point in the county, Mount Constitution, at 2,400 feet on Orcas Island. The county's landscape is heavily influenced by Pleistocene glaciation and its accompanying sea level fluctuations. The topography is varied; islands may rise abruptly out of the water and/or have gently rolling terrain. Most often, the topography is more hilly than mountainous.

Slopes are primarily forested with conifer species, although remnant oak savannahs exist on drier aspects. Many of the islands also have broad valley bottoms and seasonally inundated wetlands which were, and in many cases still are, the focus of agricultural efforts.

This plan determined that 65% of the county's acreage faces direct or indirect wildfire exposure due to the proximity to wildlands and vulnerability to embers and nearby structures. The Washington Department of Natural Resources (DNR) identified the San Juan Islands as a Forest Stewardship Priority Landscape for Washington State, and a top 10 priority of concern for Western Washington in the 2020 Washington Forest Action Plan[5].

Figure 1: San Juan County Boundary

One of the key findings for this prioritization was the elevated fire risk from the current and growing drought conditions in the Washington archipelago. Extended dry periods during the summer months are predicted to rise, as the 2020 Washington Forest Action Plan predicted the

[5] Forest Action Plan. Washington Department of Natural Resources. 2020.

San Juan Islands to have the highest increase in drought conditions of any urban area in Western Washington from 2020 through 2040. These conditions are even more concerning due to the lack of wildfire emergency response infrastructure in the San Juan Islands due to the geographic constraints of the archipelago. This lack of firefighting resources means that preventative restoration strategies of fuels reduction play an even more critical role in community preparedness.

Fire History

While the San Juan Islands archipelago is often mischaracterized as having a traditional Western Washington forest structure and fire regime, it is more accurately described as a dryland, fire-adapted ecosystem. Studies of fire scars within this region report the mean fire return interval prior to settlement to be ~6-20 years where now the return interval is over 100 years. Post-settlement, the fire regime changed, and forests have become more dry, dense, and homogenous without fire as a regular disturbance for around 130 years. Fire exclusion and historical logging practices have created dense stands with low vigor trees, and elevated risk factors for catastrophic wildfire.

Recent Fires

The following six fires have occurred since the 2012 CWPP update. These incidents were selected to highlight the most common types of fires on the islands, their typical causes, challenges faced during firefighting efforts in the county, and the strategies employed to manage them.

Mount Dallas Road – June 27, 2022

This was a wildfire started by work near a home. The ~5-acre fire quickly spread through grass and into brush and trees. A quick response by San Juan Fire and Rescue contained the fire and prevented a nearby structure from damage. A similar fire was started by a mower in a nearby grassy area on Mount Dallas less than a week later.

Orcas Road Fire – August 28, 2021

This was a grassfire in the 4200 block of Orcas Road on a grazing field and was started by spontaneous combustion of a hay bale on a loaded wagon. The fire threatened power poles and entered nearby timber. Crews kept the fire from impacting the power poles and the timber was only moderately impacted before it was contained at 4.5 acres.

Pleasant Valley Road Fire – July 29, 2021

This was a wildfire started by routine yard work. The fire extended through 3.3 acres of grass and brush damaging two outbuildings. Local fire crews plus the deployment of two firefighting helicopters worked to extinguish the fire.

Hannah Heights– July 21, 2019

This was a wildland fire caused by human activity. The fire quickly spread through the grass and brush. Fire teams were able to successfully contain the fire to an area of approximately ½ acre in size. The conditions of vegetation and terrain made a difficult effort to fully extinguish the fire.

Teams worked through the night on Sunday and into Monday to continue containment and to fully extinguish the fire. In addition to San Juan Island Fire and Rescue teams, a wildland fire crew from the Washington State Department of Natural Resources arrived Monday afternoon to fully complete mop-up operations, consisting of cleaning up the containment area by dousing any embers and spot fires that had made their way across control lines and under the soil.

White Point Fire – June 11, 2019

Residents reported a house fire near White Point on San Juan Island. San Juan Island Fire and Rescue responded to the incident and were able to contain the fire that had engulfed the two-story house along with a couple of vehicles. San Juan Island Fire and Rescue also extinguished some nearby trees on the property and prevented the fire from spreading. Over 20 firefighting personnel responded to this fire along with the San Juan Island logistics team to provide support. While this fire was extinguished before it became a wildfire, it demonstrates a human-caused ignition, the leading cause of wildfires in the county.

Goose Island – June 26, 2015

After illegal fireworks were set off on Goose Island, there were two separate attempts to put it out by the San Juan Island Fire and Rescue using over 100,000 gallons of saltwater. It was determined that adding firefighting chemicals would be the quickest way to extinguish the fire, but it would be detrimental to the marine and island ecosystem which is an important nesting area for various seabirds. Since the island is covered in a thick layer of grassy duff, attempts to extinguish the fire would likely be unsuccessful. The decision was made to let the fire burn itself out.

Climate/Weather

San Juan County experiences a varied climate throughout the year. From October to February, the region is characterized by windy and wet conditions. In March through May, the weather starts off wet but gradually becomes warmer and drier. From June to September, the climate is very dry with low winds.

San Juan County's traditional fire season extends from summer to early fall. While summer winds are usually light, they generally come from the west or southwest. This prevailing wind, though mild, brings in moisture from the ocean, helping to maintain higher humidity and reduce the risk of large wildfires.

During summer months it is not uncommon for it to be dry enough for a fire to start in fine fuels like grassy fields. Fires have been known to moderate once they encounter shaded, forested areas with tree canopy and understory vegetation like salal and larger fuels that hold moisture later into the season.

Climate change is a significant factor in the increasing frequency and intensity of wildfires, as seen in the islands and western Washington, where wetter winters and drier summers are becoming more prevalent, a trend expected to continue.

For communities on the west side of the Cascade Mountains, the most concerning fire weather scenario is a summertime east wind event, especially if it occurs during an unusually dry period. This weather pattern results in warmer and drier winds that originate from the arid terrain east of the mountains. Strong winds and low-humidity air can rapidly dry out larger fuels, cure vegetation in shaded terrain, and increase fire behavior and risk.

Fortunately, these extreme conditions are reliably forecasted several days in advance. This often allows time to organize and prepare suppression forces, initiate a robust public information campaign to minimize likely ignition sources, and notify residents to watch closely for any fire starts. Public information and awareness are critical to reducing catastrophic fires. Thunderstorms in San Juan County are uncommon and nearly all fires in the islands are caused by human behavior.

Freshwater is a limited resource in San Juan County. The islands are in the rain shadow of the Olympic Mountains, annual precipitation is relatively low, and there are a few perennial streams. Additionally, underground aquifers are limited and not well understood, and surface reservoirs are scattered. County residents rely on a variety of sources of freshwater including private wells (40%), reservoir-based systems that augment groundwater aquifers and provide potable water (40%), and small water systems with less than ten connections (20%). Desalination systems also provide water to a relatively small number of residential areas.

Red Flag Warnings

A Red Flag Warning is issued by the National Weather Service to highlight weather conditions that could significantly increase wildfire risk and jeopardize firefighter safety. In San Juan County, these warnings have historically been rare, occurring only every few years, but may become more frequent with climate change. During a Red Flag Warning, follow local officials' instructions and stay especially cautious about any activity that could create sparks or flames.

A Red Flag Warning is reserved for three general weather scenarios:

1) A combination of wind and low humidity

2) An extremely dry and unstable atmosphere

3) Scattered coverage of lightning which could cause enough fire starts to overwhelm available firefighting resources.

Historic and Current Landscape

For millennia, the San Juan Islands were home to diverse cultures including the Coast Salish people. The Coast Salish people relied on and stewarded the land and surrounding waters as they were avid cultivators and fishers. They used fire as a tool in a small and controlled context to clear out underbrush, promote berry shrubs, and help suppress weeds from camas patches.

Starting in the 1800s, European-style settlement and the displacement of indigenous cultures led to significant changes in the island landscape. By the 1880s industrial activities such as large-scale land clearing, logging for timber and lime production, ditching and draining wetlands, and grazing, greatly altered ecological condition and function. The intentional introduction of grasses to support livestock, and the introduction of noxious weeds, also greatly altered native plant communities.

As the economic gains associated with industrial agricultural and lime production declined, aggressive clearing and harvesting also began to wane. This, combined with the cessation of indigenous burning, has increased forested areas across in the county over the past century (see Appendix A- Supporting Information for more photos).

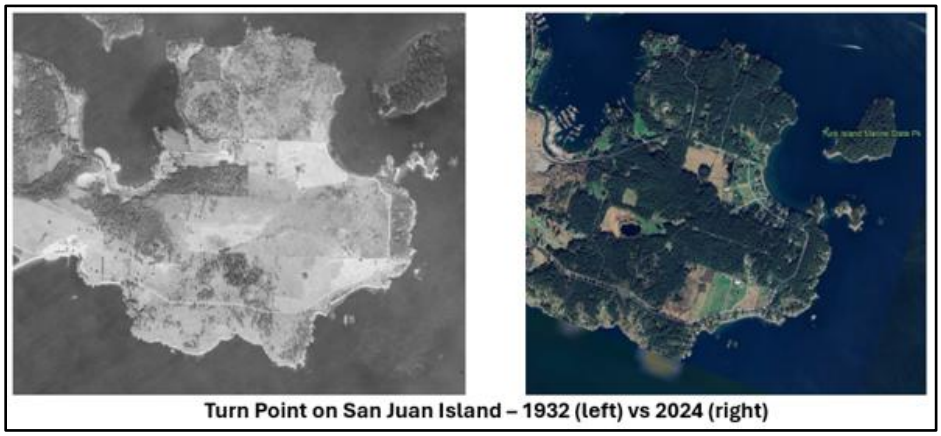


Figure 2: Photos showing forest density in 2024 substantially increased from 1932 at Turn Point.

These past practices have diminished the landscape's resilience over time. As a by-product there are many forested areas that face overstocking, an increased vulnerability to drought, insects, disease and susceptibility to wildfire. Restoration efforts are being implemented and focus on thinning smaller diameter trees in historically open areas and dense timber stands to promote forest health and resilience.

Demographics and Social Vulnerability

The impacts of wildfires on vulnerable populations can be exacerbated by various social and economic factors. Limited access to resources, such as financial means or transportation, can hinder the ability to evacuate or find suitable shelter during a wildfire event. Additionally, cultural and institutional barriers, such as language or lack of awareness regarding emergency preparedness measures, can further impede the ability to effectively respond to and recover from wildfires.

The estimated population of San Juan County in 2024 was 18,475. This is an approximate 15% increase from 2014. Projections for 2034 predict a total of 21,035 residents in the islands. Currently, San Juan is the 8th least populous county in Washington, though it has the 11th greatest population density.[6]

U.S. Census data estimates that approximately 93% of the county identifies as white and as speaking only English. Nearly 8% of residents identify as Hispanic or Latino, although local school districts report anecdotally that the proportion of Hispanic school-aged children may be somewhat higher. Even though census data for the county on language is considered unreliable,

[6] April 1 official population estimates. *State of Washington Office of Financial Management*. Accessed January 2024. https://ofm.wa.gov/washington-data-research/population-demographics/population-estimates/april-1-official-population-estimates

efforts to prevent or respond to wildland fires in the islands should consider the need for multilingual communication.

Other demographic information related to age and poverty prevalence helps to reveal vulnerable populations that may face additional challenges during wildfires. According to Washington Department of Health data, nearly 36% of county residents are aged 65 or older; this is more than twice the statewide average in Washington.[7] The U.S. Census Bureau estimates that 9.4% of individuals in the county are living below poverty. These statistics help reveal what emergency services could further support vulnerable populations during a major fire event. Considerations may include notifying and ensuring the safe evacuation of older populations, providing shelters during evacuations, notifying of smoke and pollutants for those with pre-existing conditions, assistance with creation of defensible space around housing for low-income residents, and other approaches to better support vulnerable populations.

Economy

The natural beauty of San Juan County is inseparable from its economic health. The islands provide a sense of nature, cleanliness, tranquility, and isolation, which is a driving force for people wanting to either visit the islands or call them home. This leads to construction, retail sales, and lodging & hospitality being the strongest contributors to the local economy.[8]

The impacts of a major fire in the islands would likely be significant, affecting property, the environment, and human health. It's also important to recognize that any event that disrupts the islands' natural beauty—both in how it is perceived from afar and how it is experienced in person— could also extend beyond the island where it occurs and have economic effects county-wide.

Land Ownership and Development

Most of the land within San Juan County is under private ownership (81%) and public lands comprise roughly 17% of the county. The quasi-rural nature of San Juan County is viewed as a top priority by citizens.

The extensive private land ownership in the county could lead to further development of residential areas, create further demand on freshwater resources, suppression forces, and increase the risk and complexity of wildfire.

[7] County Demographic Dashboard. *Washington State Department of Health*. Accessed January 2025. https://doh.wa.gov/data-and-statistical-reports/washington-tracking-network-wtn/demographics/county-dashboard

[8] San Juan County Economic Profile. 2024. *Western Washington University Center for Economic and Business Research. Accessed January 2025. https://cbe.wwu.edu/sites/cbe.wwu.edu/files/2024-09/2024%20San%20Juan%20County%20Profile.pdf*

Table 2: Land Ownership in San Juan County.[9]

Entity	Acres	Percent of total area
Private	90,596[10]	81%
WA State Parks	6,747	6%
SJC Conservation Land Bank	5,008	4%
San Juan Preservation Trust	3,241	3%
National Park Service	2,068	2%
University of Washington	1,370	1%
Bureau of Land Management	936	<1%
Town of Friday Harbor	593	<1%
Other Public	560	<1%
U.S. Fish and Wildlife Service	346	<1%
SJC Parks	312	<1%
WA State DNR	187	<1%
WA State Fish and Wildlife	187	<1%
Other Federal	24	<1%
Total	**112,173**	**100%**

Infrastructure

As a relatively small and isolated jurisdiction, San Juan County does not contain regionally important critical infrastructure, other than an array of communication towers on the summit of Mt. Constitution on Orcas Island. Still, a wide variety of local facilities provide essential services to residents and visitors including, but not limited to, airports, fire stations, medical facilities, ferry terminals, and utility infrastructure. In general, the islands have a somewhat broad but minimal coverage of services, meaning the loss of just one facility can have major long-lasting

[9] The data used to develop this table was provided by the San Juan County GIS Department.

[10] Land protected by the San Juan Preservation Trust is shown separately.

impacts across the islands. The county lacks sufficient sawmills and wood processing facilities that could help offset the costs of fuel reduction projects, provide economic incentives, and lower wildfire risk.

Homes in the islands are primarily single-family residences built with wood frame construction. Fire resistance of San Juan County building stock varies widely depending on year of construction, materials used in roofing and siding, maintenance of home and property, and other variables. Many island residences are “nestled in the woods” in a way that increases fire risk. Improving local awareness of how to protect private property from fire is a vital and ongoing effort, led primarily by the county’s fire agencies and the San Juan Islands Conservation District.

OPALCO, the local power co-operative, is responsible for electricity distribution. A majority of their power transmission infrastructure in San Juan County is underground. However, there are some major overhead transmission lines across the islands. Thoughtful maintenance of these utility corridors helps to minimize outages due to treefall, particularly in winter windstorms, and reduce fire risk by minimizing likelihood of a live line ignition. OPALCO’s fault detection system is also adjusted in the summer to immediately disconnect power at the first sign of a system fault, which additionally reduces fire risk.

Transportation

San Juan County depends on Washington State Ferries (WSF) for marine transport between Orcas, San Juan, Lopez, and Shaw Islands and the mainland terminal in Anacortes. However, with an aging fleet, staffing challenges, and historically limited budget support from the State Legislature, WSF has faced increasing operational difficulties over the years. While recent investments may help slow the decline, reliable public transportation remains a challenge for residents, especially those who depend on tourism and marinas for their livelihoods.

Residents and visitors to the outer islands rely on personal watercraft and/or the existing private network of water taxis and cargo-carrying barges that operate locally. These services are typically limited to travel to and from the non-ferry-served islands, or to move fuel, which cannot be transported on the ferries.

Air transport plays a vital role in distributing mail to and from the islands, and there is limited but regularly scheduled commercial air service between the major islands and Seattle, and to a lesser extent Victoria, BC, Anacortes, and Bellingham.

Road systems on the ferry-served islands are relatively extensive, and few areas lack road access, which can be crucial for fire response and firebreak use. However, many roads are privately-owned and may not be maintained as defensible space, which can compromise the safety of emergency personnel and residents. The road networks on the outer islands, in contrast, are much more limited.

Emergency Response

As a community of islands, San Juan County faces several logistical and operational challenges to providing efficient emergency response.

For ferry-served islands, travel between Anacortes and the islands can take between 50 to 90 minutes. This means that help from the mainland or other islands is always somewhat distant. Peak season for tourism occurs in the summer, and its associated heavy traffic, ferry delays and cancellations, can further compound response times. Visitors often have expectations for emergency response on the islands that is not realistic due to the isolation and resource capacity. The ferry system does not operate 24/7 which further complicates logistics. Unserved islands are that much more challenging.

The political and logistical complexities of providing fire protection in the islands have led to the establishment of five separate Fire and Emergency Medical Services (EMS) agencies. While there is a relatively high number of firefighters and EMT's for a county with less than 20,000 residents, the majority are dedicated volunteers who augment a relatively small career responder force. Ensuring that all responders are trained, available, equipped, and ready to respond at a moment's notice is an ongoing challenge. Cost of living further reduces local emergency response capacity. Although initial responses to fires are typically quick and well-coordinated, local agencies may struggle to manage larger fires, multiple simultaneous fires, or fires that span more than one operational period.

Pressurized hydrants are available in several high population density areas, but these systems are limited and can be exhausted quickly during a large-scale fire event. The limited availability of freshwater is a consideration for suppression. Local fire departments are experienced withdrawing from surface waterbodies. Ponds and lakes with good access or improvements for fire department connections are available to varying degrees, and seasonal droughts can significantly reduce availability. There is an endless supply of saltwater, however, it is avoided whenever possible because it requires extraneous equipment maintenance and cleanup.

Additional challenges include the fact that many residents live in densely wooded areas, with homes surrounded by trees and brush, and accessible only via narrow, often steep, unpaved roads with only one entrance and exit which limits evacuation and accessibility to responders.

On the EMS side, air transport (both rotor and fixed-wing) is crucial for moving patients off the islands, where access to advanced medical care is available. Weather conditions, especially in winter, can frequently limit or prevent air transport and further complicate emergency response.

Wildland fire resources from the mainland would primarily be provided by the Washington Department of Natural Resources (DNR). Mutual aid from other fire districts is also available, and when there are events that threaten or involve structures, support from the Washington State Patrol Fire Marshals Office can be requested. In addition to crews and vehicles, DNR has a helicopter based nearby in Skagit County with the capability to drop water and provide aerial firefighting, which is a vital tool to support quick suppression of fires. DNR resources are, however, responsible for a broad service area and may be unavailable if there are multiple fires in the region. Similarly, in times of high or extreme fire danger, local jurisdictions will likely be hesitant to release resources and support mutual aid requests outside of their immediate service area.

Chapter 3 – Wildland Fire Characteristics

An informed discussion of fire mitigation requires that the basic concepts governing fire behavior are understood. In the broadest sense, wildland fire behavior describes how fires burn, how fuel ignites, how flames develop, and how fire spreads across the landscape.

The three major physical components that determine fire behavior include:

- the fuels supporting the fire,
- the topography in which the fire is burning, and
- the weather and atmospheric conditions during a fire event.

At the landscape level, both topography and weather are beyond human control, and include physical components such as wind, temperature, relative humidity, atmospheric instability, slope, aspect, elevation, and landforms.

The only aspect of the fire environment that humans can control on a landscape scale is the availability and arrangement of fuels that sustain a fire. By managing fuel loads and reducing fuel continuity across the landscape, we have directly influenced how fires ignite and burn.

A brief description of each of the fire environment elements follows that illustrates their effect on fire behavior:

Weather

Weather conditions contribute significantly to determining fire behavior. Wind, moisture, temperature, and relative humidity ultimately determine the rates at which fuels dry and vegetation cures, and whether fuel conditions become dry enough to sustain an ignition. Once conditions can sustain a fire, atmospheric stability and wind speed and direction can have a significant effect on fire behavior. Winds fan fires with oxygen, increasing the rate at which fire spreads across the landscape. Weather is the most unpredictable component governing fire behavior, constantly changing in time and across the landscape[11].

Topography

Fires burning in similar fuel types will burn differently under varying topographic conditions, which include the hills, mountains, and valleys common in the islands. Topography alters heat transfer and localized weather conditions, which in turn influences vegetative growth and resulting fuels. Changes in slope and aspect can have significant influences on how fires burn. Typically, north slopes tend to be cool, moist, and more heavily treed as opposed to south facing slopes which tend to be dry with more open grassland. Thus, slopes with south and west aspects tend to be "available to burn" a greater portion of the year.

Slope also plays a significant role in fire spread, by allowing preheating of fuels upslope of the burning fire. As slope increases, rate of spread and flame lengths tend to increase. Therefore, we

[11] Fire Weather, PMS 425-1. *National Wildfire Coordinating Group*. Accessed September 2024. https://www.nwcg.gov/publications/pms425-1/fire-weather-pms-425-1

can expect the fastest rates of spread on steep, warm south and west slopes with fuels that are exposed to the wind.[12]

Fuels

Fuel is any material that can ignite and burn. Fuels describe any organic material, dead or alive, found in the fire environment. Grasses, brush, branches, logs, logging slash, forest floor litter, conifer needles, and buildings are all examples of fuels. The physical properties and characteristics of fuels govern how fires burn. Fuel loading, size and shape, moisture content, and continuity and arrangement all influence fire behavior.

The smaller and finer the fuels, the faster the potential rate of fire spread. Small fuels such as grasses, needle litter and other fuels less than a quarter inch in diameter are most responsible for fire spread. These "fine" fuels burn fast and spread quickly across a landscape and are responsible for many surface fires. As fuel size increases, the rate of spread tends to slow down due to a decrease in the surface to volume ratio. Fires in large fuels generally burn at a slower rate but they release much more energy and burn with much greater intensity. This increased energy release, or intensity, makes these fires more difficult to control. Thus, it is much easier to control fire burning in grass than to control fire burning in timber.

When burning under a forest canopy, the increased intensities can lead to torching (single trees becoming completely involved) and the potential development of crown fires. That is, they release much more energy. Fuels are found in combinations of types, amounts, sizes, shapes, and arrangements. It is the unique combination of these factors, along with the topography and weather, which determines how fires will burn.

The study of fire behavior recognizes the dramatic and often-unexpected effect small changes in any single component have on how fires burn. It is impossible to speak in specific terms when predicting how a fire will burn under any given set of conditions. However, through countless observations and repeated research, some of the principles that govern fire behavior have been identified and are recognized.

National Wildfire Extent Profile

Across the United States, wildfire frequency, extent and cost have varied greatly in the past decade. Data summaries for 2012 through 2024 are provided and demonstrate the variability of the frequency and extent of wildfires nationally.

The National Interagency Fire Center maintains records of fire costs, extent, and related data for the entire nation. Table 3 summarizes some of the relevant wildland fire data for the nation and some trends that are likely to continue into the future unless targeted fire mitigation efforts are implemented and maintained. Since 2000, the number of acres burned has not significantly changed but has varied from 2 to 10 million acres per year across the country.

[12] Basic Concepts of Wildland Fire Summary. *National Wildfire Coordinating Group*. Accessed September 2024. https://training.nwcg.gov/classes/S190/508Files/071231_s190_m2_508.pdf

These statistics are based on end-of-year reports compiled by all wildland fire agencies after each fire season. The agencies include the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, US Fish and Wildlife Service, US Forest Service, and all state agencies.

Table 3: National Fire Season Summaries.

Statistical Highlights	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of Fires	67,774	47,579	63,312	68,151	67,743	71,499	58,083	50,477	58,950	58,985	68,988	56,580	64,897
10-year Average ending with indicated year	78,396	74,560	73,138	73,277	70,413	68,993	66,903	64,072	62,769	61,255	61,377	62,277	62,435
Acres Burned (million acres)	9.3	4.3	3.6	10.1	5.5	10	8.8	4.7	10.1	7.1	7.6	2.7	8.9
10-year Average ending with indicated year (million acres)	7.3	7.3	6.8	7.0	6.5	6.6	7	6.8	7.5	7.4	7.2	7	7.5
Structures Burned	3,969	1,869	1,833	4,410	4,107	12,992	24,488	834	17,716	5,875	4,456	4,386	4,552
Estimated Cost of Fire Suppression (Federal agencies only)	$1.9 billion	$1.7 billion	$1.5 billion	$2.1 billion	$2 billion	$2.9 billion	$3.1 billion	$1.6 billion	$2.3 billion	$4.4 billion	$3.5 billion	$3.2 billion	N/A

Recent Wildfire Events

An analysis of DNR and WFIGS data over the past 13 years since the 2012 CWPP recorded a total of 74 wildfires, with 73% attributed to human causes. In contrast, only 4 fires (5%) were determined to be naturally caused (Table 4). Human-caused ignitions were linked to debris burning, celebrations, fireworks, smoking, and equipment or vehicle use.

The highest number of fire ignitions occurred in 2017 (10 fires) and 2012 (9 fires). Despite these incidents, acres burned remained low throughout the period. The largest recorded fire was the Orcas Road Fire in 2021, which burned 4.5 acres, while the average fire size reported by DNR was just 0.6 acres (see Appendix A- Supporting Information for list of wildfires from 2012-2024).

It is important to note that this dataset only includes fires reported and fought by DNR. Wildfires suppressed solely by local fire districts were not included, meaning the actual number of ignitions may be higher. See Figure 3 for a map of DNR ignitions in San Juan County.

Table 4: Ignitions by Fire Year and Cause from 2012 to 2024.

Cause	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Human	7	3	5	4	4	8	5	4	2	3	1	1	1
Natural	1	0	0	0	0	0	0	1	0	0	0	1	0
Unknown	1	0	1	0	1	2	2	3	3	3	0	5	2
Total	**9**	**3**	**6**	**4**	**5**	**10**	**7**	**8**	**5**	**6**	**1**	**6**	**3**

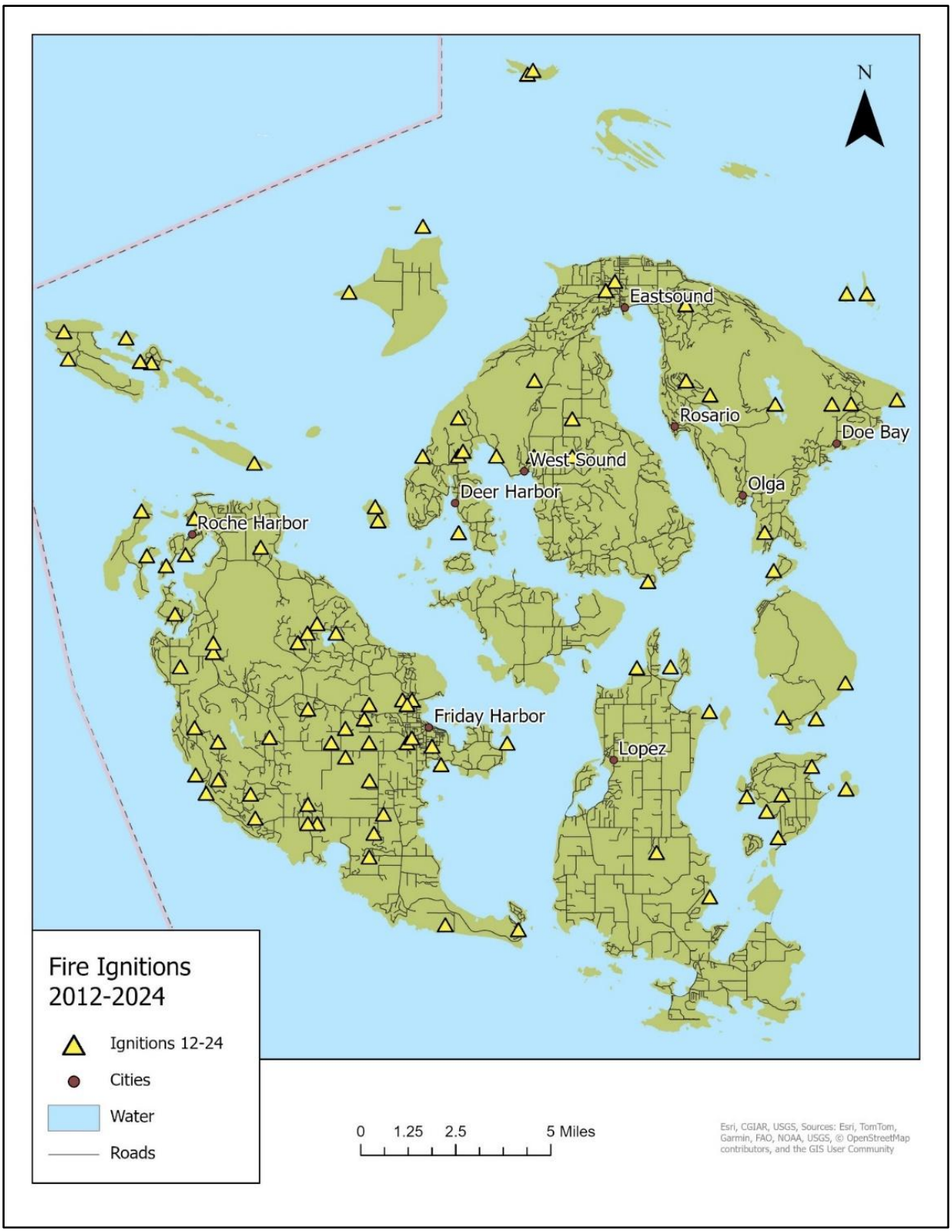


Figure 3: Ignition History in San Juan County from 2012-2024 (DNR reported fires).

Chapter 4 – Wildfire Risk Assessment

Purpose

A wildfire risk assessment is an evaluation of the potential for a wildfire to impact a specific area, taking into account factors like vegetation type, terrain, weather conditions, past fire history, and human activity and values. The purpose of assessing wildfire risk is to identify areas and conditions most susceptible to wildfires, allowing for proactive measures to be taken to protect lives, mitigate potential damage, and inform land management decisions. More specifically, wildfire risk assessment results can be used to:

- **Identify high-risk areas.** By analyzing factors like topography, vegetation, weather patterns, and past fire history, assessments pinpoint locations with a higher likelihood of experiencing wildfires.
- **Inform mitigation strategies.** The data from a wildfire risk assessment can be used to develop targeted strategies for wildfire prevention, including fuel management, community preparedness plans, and structural hardening measures.
- **Improve response planning.** Knowing where vulnerabilities are allows emergency services to better prepare.
- **Foster community awareness.** Sharing wildfire risk information with residents helps them understand their personal risk and take steps to protect their homes and families.
- **Provide a decision-making tool.** Land management agencies and policymakers can use wildfire risk assessments to guide land use planning, prioritize funding for mitigation projects, and make informed decisions about fire management strategies.

Several factors contribute to an increased wildfire risk in San Juan County. A significant concern is the lack of awareness about wildfire dangers during peak fire season (June–September), which may lead to insufficient caution in preventing ignitions. The presence of highly combustible fuels, such as dead or dying vegetation, ladder fuels, and flammable invasive species, further heightens the risk.

> *"I think the risk is basically everywhere there is vegetation. It is very dry in the summer."*
>
> *- San Juan County Resident*

Additionally, environmental conditions like prolonged heat, low humidity, strong winds, and lightning storms increase the likelihood of wildfire ignition and spread. Climate change may exacerbate these risks by extending summer drought periods and increasing fuel loads across the landscape. Many homes and neighborhoods are also vulnerable due to inadequate defensible space, steep slopes, and limited access routes for emergency responders. The growing presence of residential developments within the Wildland-Urban Interface further complicates fire management efforts. Furthermore, the high percentage of part-time residents, vacation homeowners, and absentee landowners in many communities can lead to a lack of consistent fire mitigation efforts, as these properties may not be regularly maintained for wildfire resilience.

This risk assessment aims to identify where these factors overlap on the landscape, providing a clearer understanding of wildfire risk. The ultimate goal is to use this insight to develop targeted mitigation measures that effectively reduce the threat of wildfires (Chapter 6).

Wildland-Urban Interface Overview

The Wildland Urban Interface (WUI) is an important definition and map of identified areas where wildland fuels and human development intermix and where wildfire mitigation projects should be focused. The WUI is intended to represent where areas of high wildfire hazard and susceptibility meet areas of high wildfire likelihood and intensity. Thus, the WUI delineation is the culmination of the wildfire risk assessment process and, taken with the other planning tools used, will help guide the mitigation strategy moving forward.

The Washington DNR Wildland-Urban Interface[13]

The following definition was developed and published by the Washington Department of Natural Resources.

- **Urban areas** are areas in Washington with both dense human development, as well as less than 50% vegetative (wildland) cover and are defined by their high density of structures.
- The **Interface** is often found along the outskirts of urban area.
    - The **Wildland-Urban Interface** is defined as areas where human development MEETS areas that are covered with more than 50% wildlands.
    - To be considered **Interface**, development/structures must be bordered by wildlands on at least one side.
- **Wildland-Urban Intermix** are areas where structures intermingle with wildlands. To be considered intermix, a development OR structure must be surrounded on 2 or more sides by wildlands.
    - **Intermix** is often found between the **Interface** and the **Wildlands**.
    - **Intermix** can also be found in undeveloped/low-density pockets of urban areas.
- **Wildlands** are areas without any structures or human development that also have more than 50% burnable vegetative cover.
    - However, most **Wildlands** could eventually become **Intermix, Interface**, or even **Urban Areas**.
    - **Wildlands** are also "Potential future WUI."
- There are certain areas of our state where new structures have little to no likelihood of being built--spaces like National Parks, as well as designated wilderness areas.
    - These areas are defined as **Long-Term Non-buildable Areas**. These should NOT be considered "potential future WUI."

[13] The Wildland-Urban Interface. *Washington Department of Natural Resources*. May 2024. https://storymaps.arcgis.com/stories/7016c437623a445997c072a05e26afbb

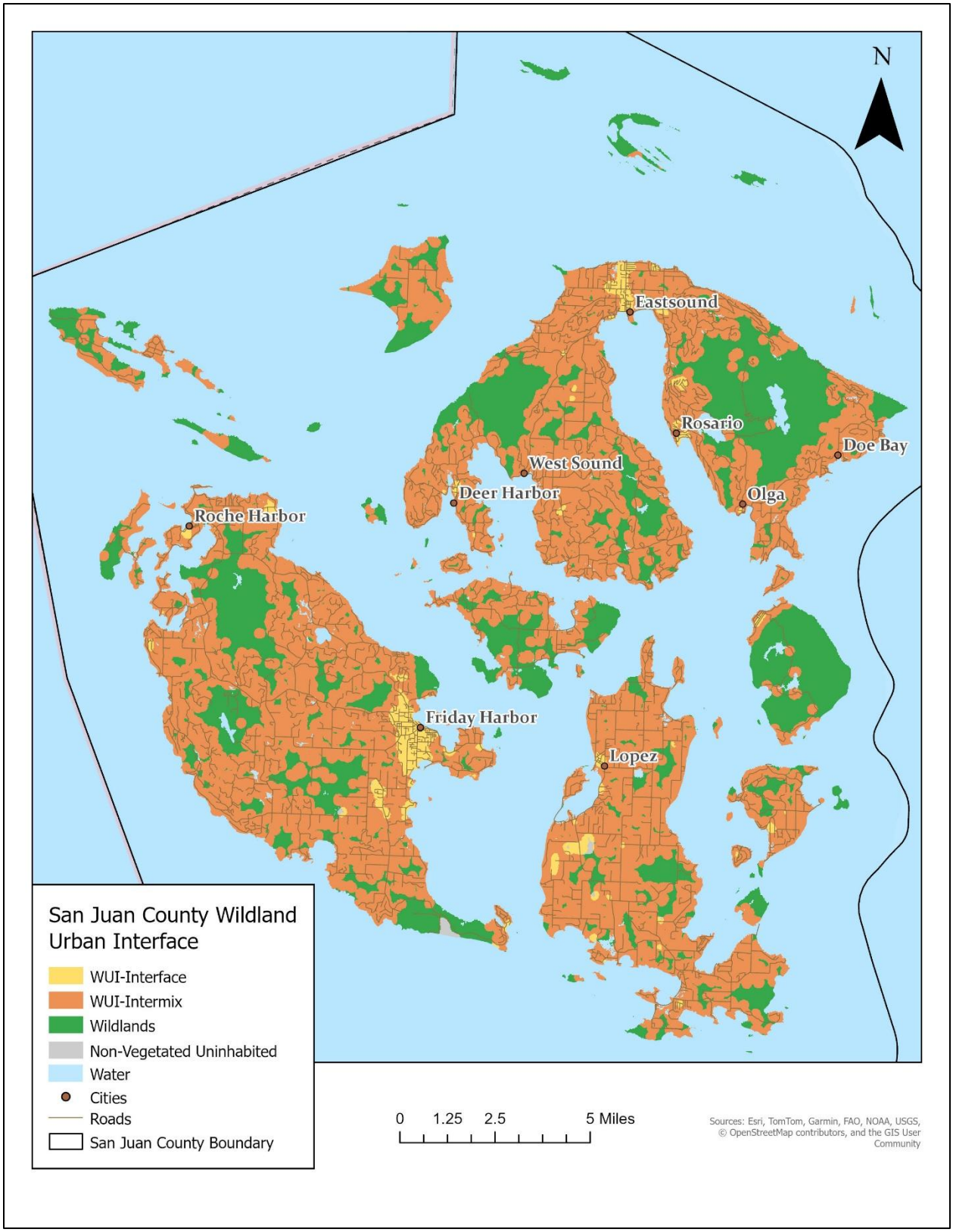


Figure 4: San Juan County Wildland-Urban Interface.

The San Juan County WUI

The Healthy Forests Restoration Act makes a clear designation that the location of the WUI is at the determination of the county or reservation when a formal and adopted CWPP is in place. It further states that the federal agencies are obligated to use this WUI designation for all Healthy Forests Restoration Act purposes.

The San Juan County CWPP steering committee evaluated a variety of different approaches to determining the WUI for the county and selected this approach and has adopted it for these purposes. In addition to providing a formal WUI map for use with the federal agencies, the map will serve as a planning tool for the county, state and federal agencies, and local fire districts.

The steering committee has selected the WUI map created by the Washington Department of Natural Resources to represent their image of the San Juan County Wildland Urban Interface because of its clear delineation between Intermix, Interface and Wildlands. The steering committee agreed this map would be simpler to use and understand than the previous map that was created. This WUI map also holds a strong correlation between the Risk Reduction Zone map (Figure 9), which suggests that it is achieving its purpose of depicting where human development intermixes and interfaces with wildland fuels.

Wildfire Risk Assessment Process

The concept of wildfire risk[14] is described more technically as combining the **likelihood** of ignitions and the **intensity** of the fire (the components of wildfire **hazard**) with the **exposure** and **susceptibility** of the built environment (the components of **vulnerability**). Essentially, the higher the hazard and vulnerability, the greater the wildfire risk in a specific location (Figure 5).

The assessment of wildfire risk requires quantifying potential wildfire intensity and likelihood and then estimating the exposure and susceptibility of human development. This assessment is conducted in a geospatial context that considers the location of human development with respect to wildfire likelihood, intensity, and susceptibility. As all components of wildfire risk are inherently spatial, maps of all components are the primary inputs to the assessment process.

Wildfire Risk

Likelihood: *the annual probability of wildfire burning in a specific location.*

Intensity: *a measure of the energy expected from a wildfire.*

Exposure: *the spatial coincidence of wildfire likelihood and intensity with communities.*

Susceptibility: *the propensity of a home or community to be damaged if a wildfire occurs.*

[14] Understanding Risk. *Wildfire Risk to Communities*. Accessed February 2025. https://wildfirerisk.org/understand-risk/

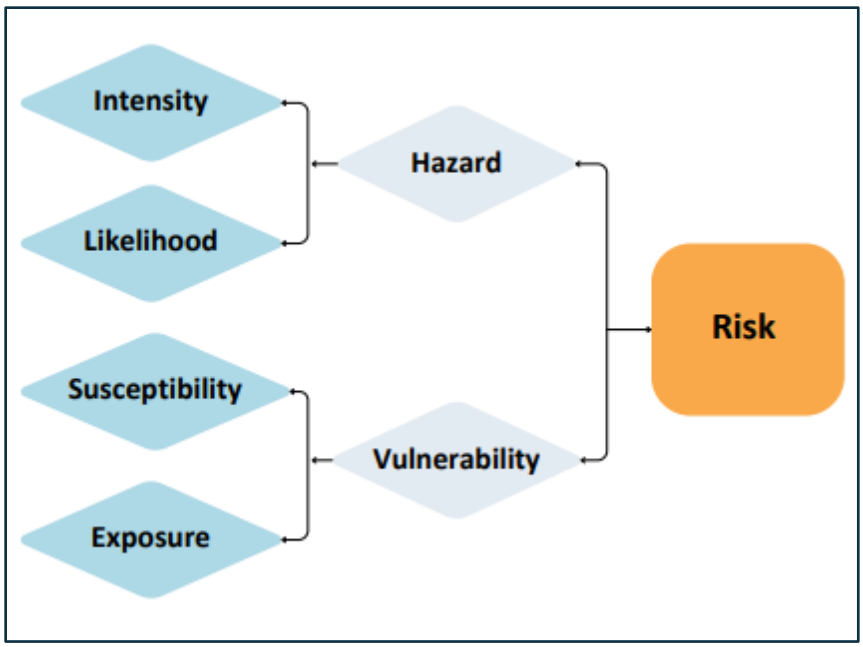


Figure 5: Components of Wildfire Risk

A combination of ArcGIS Pro mapping software and online wildfire assessment tools from the Interagency Fuel Treatment Decision Support System (IFTDSS) and wildfirerisk.org was used to develop a wildfire risk assessment. The assessment is a two-step process, where:

- Step 1- Involves mapping wildfire hazard and
- Step 2- Involves analyzing exposure.

Step 1: Wildfire Hazard Mapping

A wildfire hazard map, also called an integrated hazard map, represents a physical situation with potential for wildfire to cause impacts to human development. The map was calculated in IFTDSS using a Landscape Burn Probability model, which quantified the relative likelihood and intensity of a fire occurring under a fixed set of weather and fuel moisture conditions. Using a combination of landscape variables, weather, and ignition history, the simulation models 20,257 randomly located potential fire starts to determine successful ignition and spread (Figure 6), producing the following:

- A burn probability map that represents wildfire likelihood.
- A conditional flame length map that represents wildfire intensity.
- A final integrated hazard map that combines both likelihood and intensity (Figure 7/8).

The burn probability and conditional flame length maps are located in Appendix C- Wildfire hazard inputs and results.

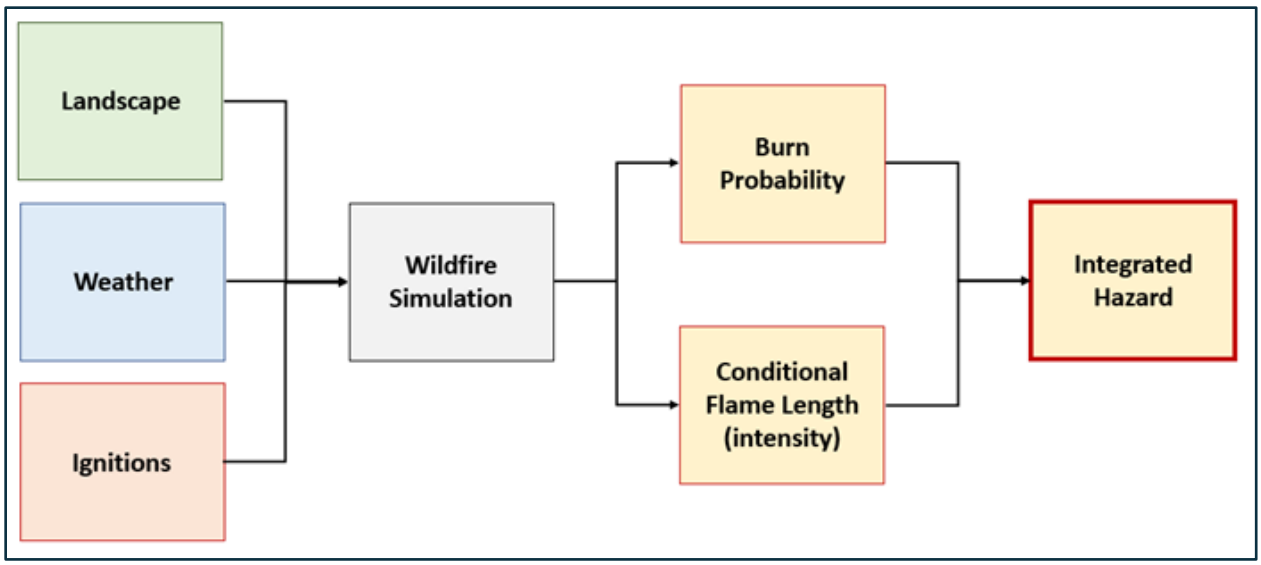


Figure 6: Integrated Hazard Steps (credit: IFTDSS.firenet.gov).

Two wind scenarios were used in the model runs to help illustrate how different conditions can affect fire behavior and conditional flame lengths. These scenarios and fuel moisture levels were recommended by a DNR Fire Behavior Analyst and represent typical end of summer weather under burn ban conditions (See Appendix C- Wildfire hazard inputs and results for a table of model inputs). The 2 scenarios included the following[15].

A. Fifteen mile per hour winds coming from the northeast. Drier winds coming from interior British Columbia (Figure 7).

B. Fifteen mile per hour winds coming from the southwest. Moister winds coming from the Pacific Ocean (Figure 8).

Results of the hazard mapping show the following:

1. Wildfire likelihood (or burn probability) is low throughout the county, ranging from a 0 to 4.8% chance of burning in any given year under the northeast wind scenario, and a 0 to 4.1% chance of burning in any given year under the southwest wind scenario.
2. Sixty-five percent of the land area in San Juan County falls into the lowest likelihood group, which has a 0 to 1.0% chance of burning in any given year (northeast wind scenario), while 62% of the land area falls into the lowest likelihood group under the southwest wind scenario, which has a 0 to 0.8% chance of burning in any given year.
3. The highest likelihood group in the whole county has a 3.8 to 4.8% chance of burning in any given year (northeast wind scenario), and the highest likelihood group under the southwest scenario has a 3.3 to 4.1% chance of burning. Under both scenarios, only 1% of the land area in the county falls into this highest likelihood group.

[15] 15 mph is used because the models use Rothermel's fire spread model which is not considered a reliable predictor above 15 mph because other forms of spread such as turbulence and spotting, with lofting of embers have a greater influence on fire spread. This is referred to as 'hitting the wind limit' in modeling.

4. Under both wind scenarios, the larger grassland/pasture areas of the county have the highest likelihood of a new fire starting and successfully burning.
5. Conditional flame lengths do not vary greatly between the two wind scenarios, and the proportion of land area within each flame length grouping remains very similar between the two scenarios.
6. The two integrated hazard maps have relatively similar results, with the highest hazards occurring where high likelihood and high intensity areas overlap. The hazard ratings are slightly different in some areas largely due to differences in burn probabilities between the two scenarios.

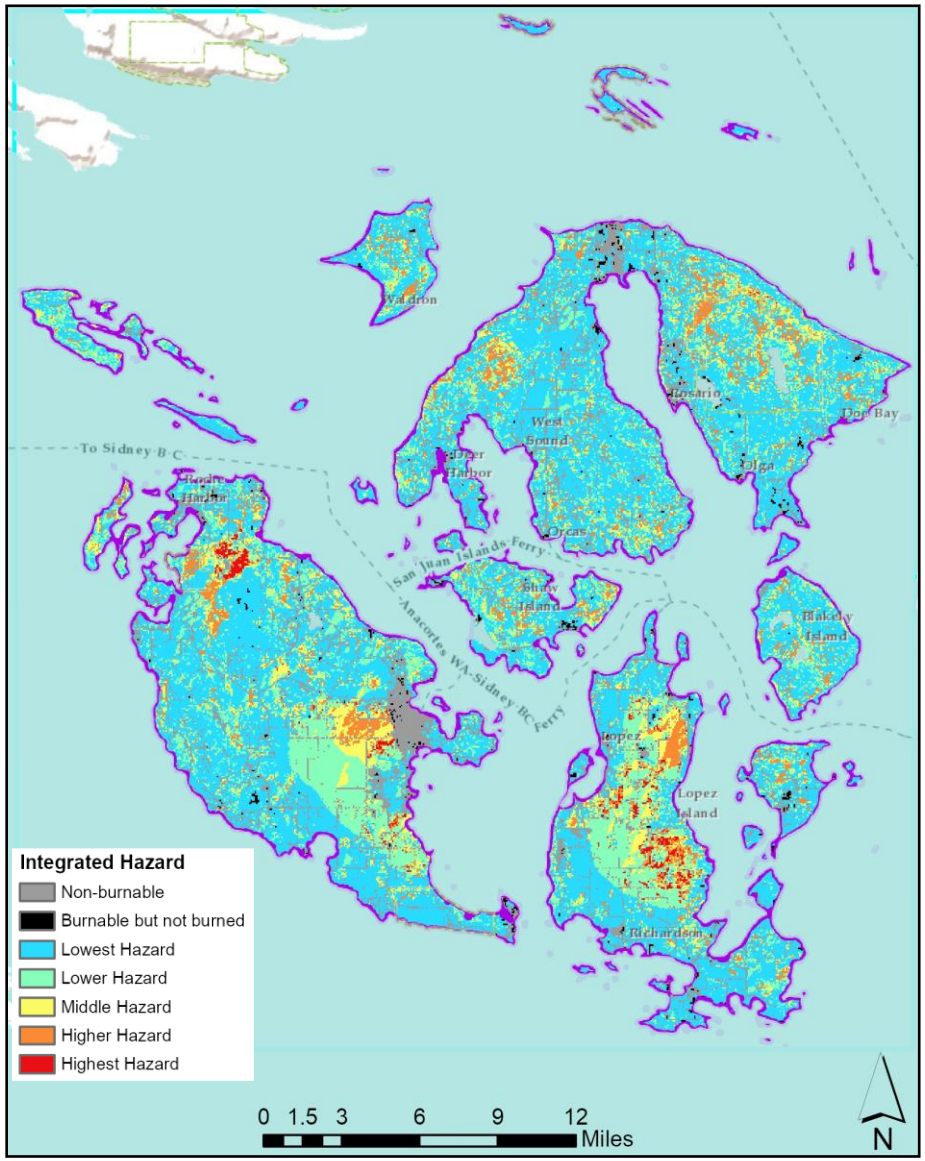


Figure 8: Integrated Hazard Map (15 mph, SW wind scenario)

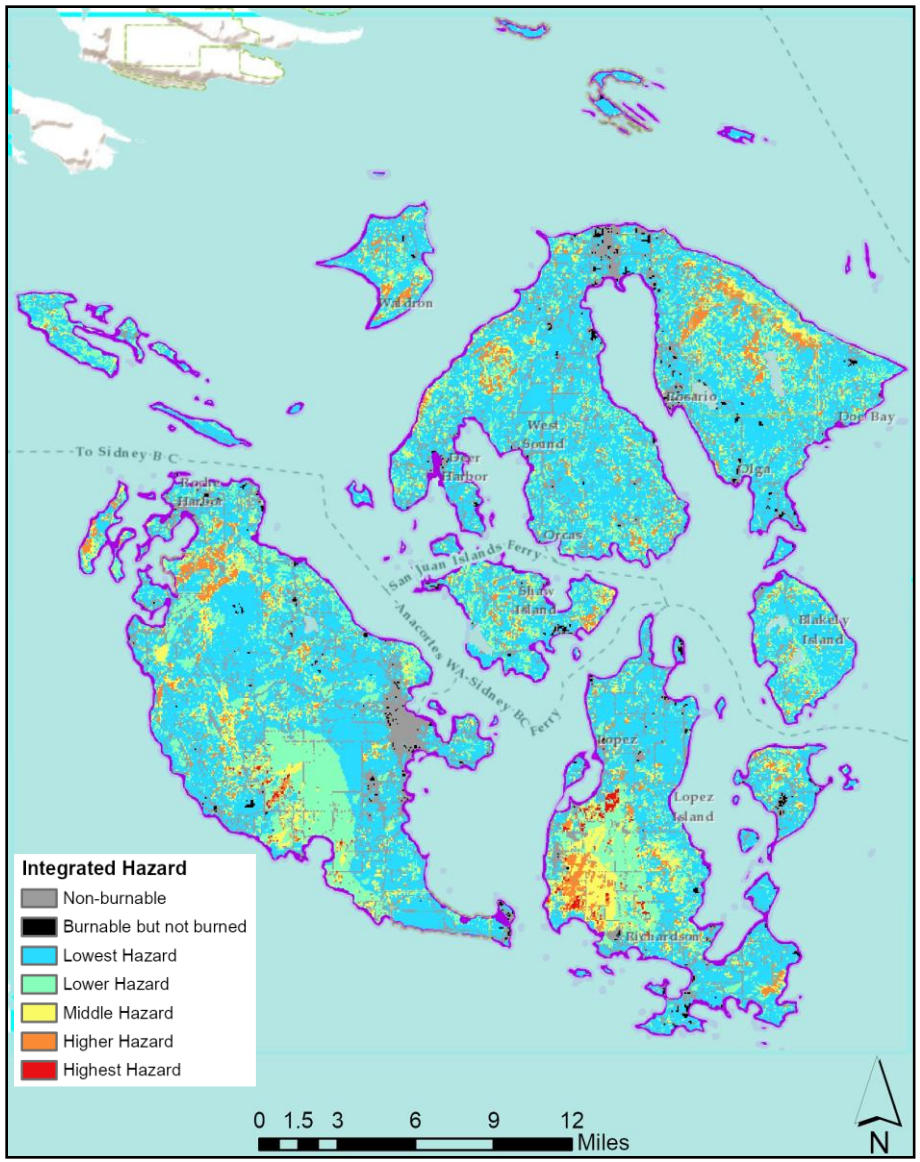


Figure 7: Integrated Hazard Map (15 mph, NE Wind Scenario)

Interpreting the Hazard Maps

It is important to note that while the integrated fire hazard map is a valuable tool, it is based on models and may not perfectly reflect actual fire behavior in every situation. Although it is intended to be used for modeling extreme conditions, different wind speeds, wind directions, fuel moistures, and other variables can produce different-looking hazard maps. Because of the variability in hazard mapping, we largely focus on analyzing exposure (Step 2), that is, assessing probable fire exposure to human values at risk.

Exposure Zones

Minimal exposure: *Homes are not likely to be subjected to wildfire.*

Indirect exposure: *Homes may be ignited by indirect sources such as embers and home-to-home ignition.*

Direct exposure: *Homes may be ignited by adjacent flammable vegetation, as well as indirect sources.*

Wildfire transmission: *Area near homes where flammable vegetation may expose homes to wildfire.*

Step 2: Analyzing Exposure

Exposure analysis is the next critical step in assessing wildfire risk. This analysis involves assessing wildfire hazard (the results of Step 1) in locations where human development exists. Mapping tools at wildfirerisk.org were used to determine the level of potential wildfire exposure to homes and other buildings in San Juan County. The input datasets used in this analysis included population, building sizes and locations, land cover, and wildfire likelihood.

Four levels of exposure zones are used by wildfirerisk.org, including minimal exposure, indirect exposure, direct exposure, and wildfire transmission. The exposure zone analysis results in a map that depicts areas where mitigation activities will be most effective at protecting human development from wildfire, otherwise known as Risk Reduction Zone map (Figure 9).

Results of the exposure analysis show the following:

- Homes and other buildings are predominantly in the Direct Exposure Zone. Seventy-eight percent of mapped buildings in the county (13,700 total) have direct exposure, so they could be ignited by adjacent vegetation, flying embers, or nearby structures.
- A smaller percentage of buildings (17%, or 2,980) are in the Indirect Exposure Zone. These homes may be ignited by embers or home-to-home ignition.
- Five percent of all buildings (928 total) are in the Minimal Exposure Zone. These homes are unlikely to be subjected to wildfire.
- The Risk Reduction Zone map closely resembles the WUI map (Figure 9). These maps resemble each other because structure location is the primary input to both maps.

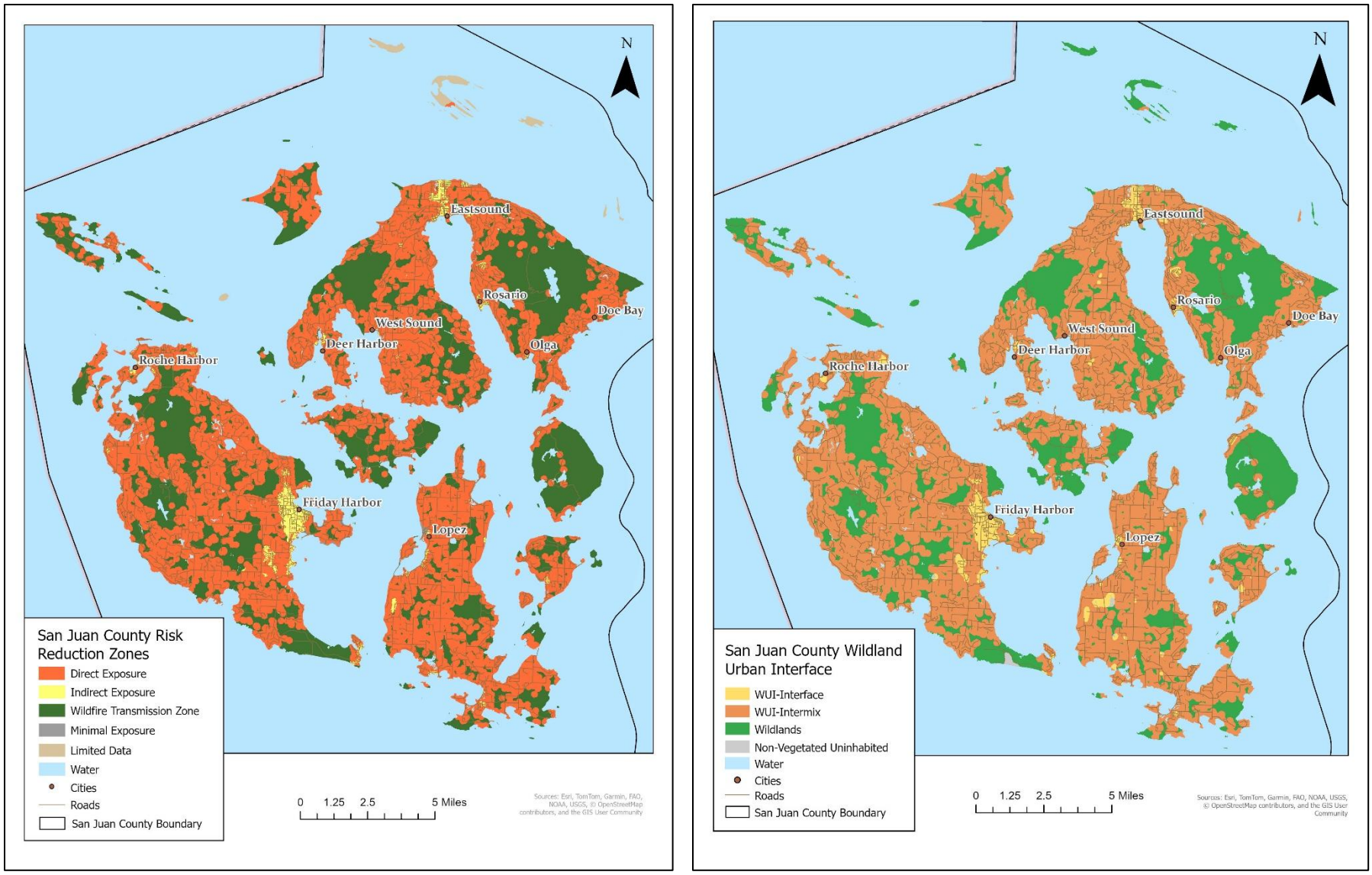


Figure 9: Risk Reduction Zones Compared to WUI Categories

Exposure Analysis

The categories that make up the WUI include Urban Areas, Wildland-Urban Interface, Wildland-Urban Intermix, Wildlands, and Long-Term Non-buildable Areas[16]. These WUI categories roughly translate to the Risk Reduction Zone categories of Minimal exposure, Indirect exposure, Direct exposure, and Wildfire transmission. The crosswalk between Risk Reduction Zone and WUI terminology is in Table 5 below.

Table 5: Risk Reduction Zones Compared to WUI Categories

Risk Reduction Zones and WUI Terminology Crosswalk	
Risk Reduction Zones (WildfireRisk.org)[17]	**Wildland-Urban Interface (WA DNR)[18]**
Minimal exposure: Homes are not likely to be subjected to wildfire.	**Non-Vegetated Inhabited/Urban:** Areas in Washington with both dense human development, as well as less than 50% vegetative (wildland) cover. These areas are defined by their high density of structures.
Indirect exposure: Homes may be ignited by indirect sources such as embers and home-to-home ignition.	**WUI-Interface:** Areas where human development MEETS areas that are covered with more than 50% wildlands. To be considered INTERFACE, development/structures must be bordered by wildlands on at least one side.
Direct exposure: Homes may be ignited by adjacent flammable vegetation, as well as indirect sources.	**WUI-Intermix:** Areas where structures intermingle with wildlands. To be considered intermix, a development *OR* structure must be surrounded on 2 or more sides by wildlands.
Wildfire transmission: Area near homes where flammable vegetation may expose homes to wildfire.	**Long Term Non-buildable:** Areas of our state where new structures have little to no likelihood of being built--spaces like National Parks, as well as designated wilderness areas.

[16] During the 2024 Legislative Session ESB 6120 was passed and signed by the governor. This legislation prevents the Washington State Building Code Council from adopting a Wildland-Urban Interface Code until new mapping is completed by the DNR. This WUI map is included to satisfy State Building Code requirements for local WUI map adoption.

[17] Risk Reduction Zones. *Wildfire Risk to Communities*. Accessed February 2025. *https://wildfirerisk.org/explore/risk-reduction-zones/53/53055/*

[18] The Wildland-Urban Interface. *Washington Department of Natural Resources*. Accessed February 2024.

Conclusions

There are several key conclusions that the steering committee has drawn from the results of this analysis. These include the following:

Wildfire Hazard

1. Wildfire likelihood is slightly lower when winds are coming from the southwest compared to the northeast, which is due to higher moisture levels in the air coming off the Pacific Ocean. Conversely, warm, dry winds coming from the mainland areas to the east and northeast tend to slightly increase wildfire likelihood, likely due to lower moisture levels. Although it is important to prevent ignitions any time of year, when dry easterly winds are forecasted, it is advisable to be extra diligent with activities that could cause a fire.
2. Regardless of wind scenario, the areas that have the highest likelihood of burning are generally located in the larger grassland/pasture areas of the county. Even with different wind directions, the models show fires starting and propagating more readily in the grassland areas than they do in areas with heavily timbered slopes. Conversely, forested areas have fewer readily available fine fuels[19], which are needed to carry or spread a fire in the initial stages after ignition. The heavier, larger diameter fuels in a forested area take more time to dry out and take longer to become available to burn and thus do not contribute to initial fire spread the way fine fuels such as grasses do.

   Should a fire occur in a grassland area, there are two conditions working in favor of successful initial attack fire suppression:

   - Grassland areas are generally easier to reach because the road network provides easy access, allowing for a more timely emergency response (See Suppression Difficulty Index Map in Appendix C).
   - Once a grass fire reaches a forested area, the rate of spread generally slows as the fire moves into areas with larger diameter fuels, which have higher moisture content under the shade of a forest canopy.

   Therefore, one focus for fuel mitigation projects could be to reduce ladder fuels, finer fuels, and fuel loading or volume in areas where grasslands meet forested areas.
3. Wildfire likelihood values are relatively low in San Juan County, with modeling results showing a maximum of 4.1% or 4.8% chance of burning in any given year depending on wind scenario. To put these values into perspective, Figure 10 shows that wildfire likelihood is low in San Juan County compared to other counties in Washington. However, it is important to remember that wildfire events do occur here. Human activities such as pile burning during both closed and legal open burning seasons, celebrations, fireworks, smoking, and equipment and vehicle use can increase the chance of ignitions, especially during high-danger periods, which occur frequently during the summer. Climate change

[19] Fine fuels are small diameter less than ¼" such as grasses, needles and twigs which dry out quickly. They are called '1 hour time lag fuels' and are the greatest component of initial ignition and fire spread.

trends like hotter summers and extended drought can also increase the likelihood of wildfires starting and/or increasing in intensity.

4. Several factors contribute to fire intensity. Sixty-one percent of the county is classified as "Tree" as the primary land cover type. The greatest potential flame lengths are associated with forested areas on steep slopes, leading to higher wildfire intensity and increased risk. Higher flame lengths are associated with tree covered areas with heavy fuel loading, and these areas can spread fire by spotting and aerial lofting of firebrands, while smaller fuels carry the fire on the ground. Ladder fuels may carry fire from the ground into the canopy, and invasive weeds can also act as ladder fuels, increasing fire intensity. Additionally, the region's propensity for high, sustained winds contributes to the potential for extreme fire behavior.

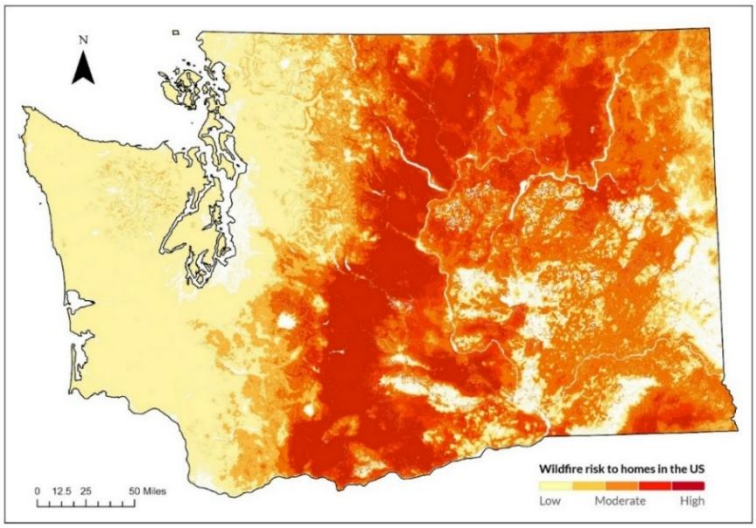


Figure 10: Wildfire Likelihood in Washington (credit: wildfirerisk.org).

Exposure Analysis

1. Critical infrastructure is present throughout the Risk Reduction Zones, meaning that airstrips, hospitals, fire stations, and important travel routes are vulnerable to a wildland fire event. Critical ingress and egress routes are located within the direct and indirect exposure zones, which can complicate response and evacuation during a wildfire.
2. The nature of the San Juan County landscape is such that much of the land area is intermixed with human development and wildland fuels. The Risk Reduction map shows this as a large amount of direct exposure areas. This means that a significant part of the county would benefit from some kind of fuels reduction treatment around critical infrastructure, housing, and other development to reduce the threat of damage from wildfire.

This risk assessment helps to identify areas and conditions most susceptible to wildfires in San Juan County. The results of this assessment, in combination with on-the-ground knowledge and experience, can be used to develop proactive measures to protect lives, mitigate potential damage, and inform land management decisions. The actions developed in response to this assessment are described in Chapter 6.

Chapter 5 – Island Summaries

The San Juan Islands are a unique and diverse landscape, shaped by glacial processes and featuring a mix of rugged shorelines, rolling terrain, and forested ecosystems. Each island has distinct vegetation and fire risk factors, influenced by rainfall patterns, topography, and historical land use. Forest cover consists of a mix of coniferous and deciduous trees, with Douglas-fir being the most common species. Also common are shore pine and western redcedar, along with Pacific madrone, bigleaf maple, grand fir, and to a lesser extent, Garry oak. Open grasslands and oak woodlands are also an integral part of the county's ecological diversity.

Due to decades of fire suppression and a legacy of logging, fuel accumulation has increased wildfire risk in many areas. Dry sites, particularly on south and west-facing slopes, are prone to fast-moving fires, while moister, densely forested sites can retain high fuels loads and are generally less prone to extreme fire. Wildfire mitigation efforts, including fuels reduction projects, defensible space initiatives, and community preparedness programs, are critical to protecting both natural resources and human infrastructure.

Fire response in the county involves multiple agencies, with the WA DNR providing initial attack on wildfires on all the islands in the county. Local fire districts and volunteer brigades also play a key role in wildfire suppression and emergency response (see Appendix B for full summary).

This chapter outlines the landscape characteristics, fire risks, and ongoing mitigation projects for each major island, including San Juan, Orcas, Lopez, Shaw, and other outer islands. It also highlights critical infrastructure, fire district resources, and needed improvements to enhance fire resilience and emergency response capabilities throughout the San Juan Islands.

San Juan Island

Island Landscape Overview

The forests on San Juan Island are mainly dominated by Douglas-fir, with shore pine, grand fir, and some madrone. Dense canopy areas have little understory growth, resulting in needle litter and woody debris as primary fuel, while open areas allow for shrubs and young trees to grow. The windstorms of 1989 and 1990 affected San Juan particularly hard and the legacy of down wood, exceptionally dense conifer regeneration, and tall woody shrubs can be found across much of the island. Fire suppression has led to a buildup of fuels, and some areas contain diseased or insect-infested trees.

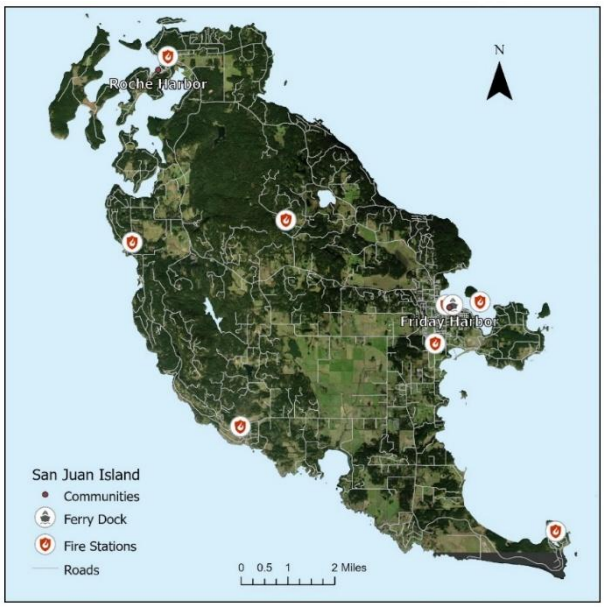


Figure 11: San Juan Island

The island also has large grassland areas where fires can spread quickly but burn at a higher intensity. Fast response is critical to prevent these fast-moving fires from reaching homes or forests, where they become harder to control.

Wildfire Mitigation

Fuels reduction projects are planned for at least 1,073 acres across 12 projects. These actions are led by the San Juan Preservation Trust, the Conservation Land Bank, and private groups and include actions that support roughly 962 structures. See Chapter 6 for a comprehensive list of fuels reduction projects.

Critical infrastructure

- 7 fire stations
- Friday Harbor Ferry Dock
- Friday Harbor Airport
- Roche Harbor Airport

San Juan County Fire District #3

- Islands: San Juan, Brown, Dinner, Henry, Pearl, Stuart, Johns, Spieden, and O'Neil, Islands. Also provides initial attack for unprotected "outer" islands.
- Staff: 11 paid, 35 volunteers
- Stations: San Juan Island - 7; Brown Island - 1; Stuart East - 1
- Caches: 1 fire cache on both Pearl Island and Johns Island.
- A station is also under design for Stuart West.

Needed Improvements

- Improved communication system between 911 center and first responders
- Recruiting and retention of firefighters
- Improved signage for emergency response
- Defensible space and homeowner education for homes in areas with increased fire risk

Orcas Island

Island Landscape Overview

Orcas Island has more dramatic topography than surrounding islands, with many steep slopes and narrow driveways leading to homes and neighborhoods. The fuel types as well as structure and complexity of fuels is highly variable. While mostly forested, it also has agricultural fields and natural grasslands. The east side receives more rainfall (about 28 inches annually) than the drier west side due to the rain shadow from Vancouver Island and the Olympic Mountains. Mount Constitution (2,409 feet), the tallest point in the county, also affects local weather patterns.

Dry sites are found on south and west-facing slopes. These areas feature Douglas-fir, madrone, shore pine, and grand fir, with an understory of oceanspray and regenerating conifers. Some sites have grass-dominated understories due to soil limitations or vegetation management. These forests are prone to fast-moving fires, especially in windy conditions. Oak woodlands and grasslands, such as those on Turtleback Mountain, historically experienced frequent low-intensity fires but now face increased fire severity due to conifer encroachment.

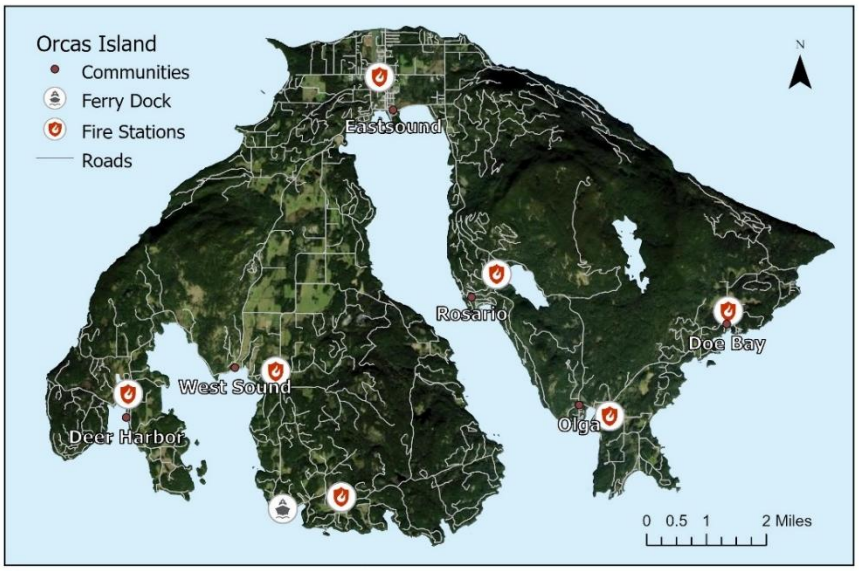


Figure 12: Orcas Island

Wet sites are located on the island's east end, these forests are dominated by Douglas-fir, with western red cedar, hemlock, shore pine, and grand fir and Sitka spruce are also present. On the upper slopes of Mt Constitution, nearly pure stands of Lodgepole pine are present alongside dense Douglas-fir and hemlock stands that historically weathered mixed severity fires and occasionally large-scale stand replacing events. The relatively uniform canopies and steep topography of these forests present unique challenges for fire suppression. Understory density varies with canopy closure—open areas support thick vegetation, including salal, sword fern, thick conifer regeneration, and red alder in wetter locations, while drier sites contain abundant ocean spray, rose, and tall grasses. Closed-canopy sites have little growth beneath the canopy. Also, many of the northeast facing slopes on Orcas exhibit signs of past high windthrow events such as the 1990 storm. Abundant down wood, patchy groves and dense young hemlock, and heavy growth of oceanspray characterize these areas.

Project sites

Fuels reduction projects are planned for at least 7,325 acres across 14 projects. These actions are led by private groups, the San Juan Preservation Trust, the Conservation Land Bank, and include actions supporting roughly 1,214 structures. See Chapter 6 for a comprehensive list of fuels reduction projects.

Critical infrastructure

- 7 Fire Stations
- Orcas Island Ferry Terminal
- Orcas Island Airport

- Clam Harbor Airport
- Communication Facility

Needed Improvements

- Radio and cell phone communication
- Access to water for firefighting
- Defensible space and homeowner education for homes in areas with increased fire risk
- Access routes and turnarounds for emergency vehicles

San Juan County Fire District #2

- Island: Orcas
- Staff: 13 paid, 52 volunteers
- Stations: 7

Lopez Island

Island Landscape Overview

The terrain on Lopez is generally more gradual than most of the other major islands with Chadwick Hill on the south end and Lopez Hill near the center offering the only significant topography. A large portion of the interior of the Island is dominated by scattered agricultural fields and grasslands.

Dry sites are found on south- and west-facing slopes, these areas receive less precipitation due to the Olympic Mountains' rain shadow. Douglas-fir dominates the overstory, in most areas, however, shore pine becomes increasingly abundant on rocky sites and along the shoreline. Sitka spruce is also common on the shoreline due to abundant fog. Most stands contain shore pine, grand fir, madrone, and scattered red cedar. The understory includes oceanspray, baldhip rose, and regenerating Douglas-fir, shore pine and grand fir, with some areas having grass due to limited soil or management practices. These forests contain ladder fuels and dry conditions, making them prone to fast-moving wildfires that could develop into crown fires, especially with wind.

Figure 13: Lopez Island

Wet sites are found primarily located in the northern part of the island and on north-facing slopes, along with many of the low-lying areas adjacent to farms and fields. These forests receive slightly greater precipitation but are also affected by the abundance of poorly drained soils. On the higher ground and norther sites, Douglas-fir is still dominant, but western red cedar and grand fir are also common. The low-lying areas have large components of shore pine mixed with Douglas-fir and willow and can be exceptionally dense. Understory vegetation varies by soil type along with canopy closure—where sunlight reaches, salal, oceanspray, Douglas maple, red alder, willow, Nootka rose, salmonberry, and stinging nettle thrive. In dense forests with full canopy closure, little understory grows, but large-diameter dead and downed material accumulates, increasing fuel loads.

Project sites

Fuels reduction projects are planned for at least 1,611 acres across 13 projects. These actions are led by private groups, the San Juan Preservation Trust, the Conservation Land Bank, BLM, USCG, and San Juan County Parks and include actions supporting roughly 399 structures. See Chapter 6 for a comprehensive list of fuels reduction projects.

Critical infrastructure

- 3 Fire Stations
- Lopez Ferry Landing
- Lopez Island Airport

Needed Improvements

- Access to water for firefighting
- Road accessibility and turnarounds for firefighting vehicles and evacuating residents
- Defensible space and homeowner education for homes in areas with increased fire risk
- Radio and cell phone communication

San Juan County Fire District #4

- Island: Lopez
- Staff: 7 paid, 45 volunteers
- Stations: 3

Shaw Island

Island Landscape Overview

Shaw Island has gently rolling terrain with some rocky outcroppings. Its shoreline consists of rugged basalt cliffs, small coves, and deep bays. The island is mostly covered by a second-growth dry forest, with patches of pasture and farmland.

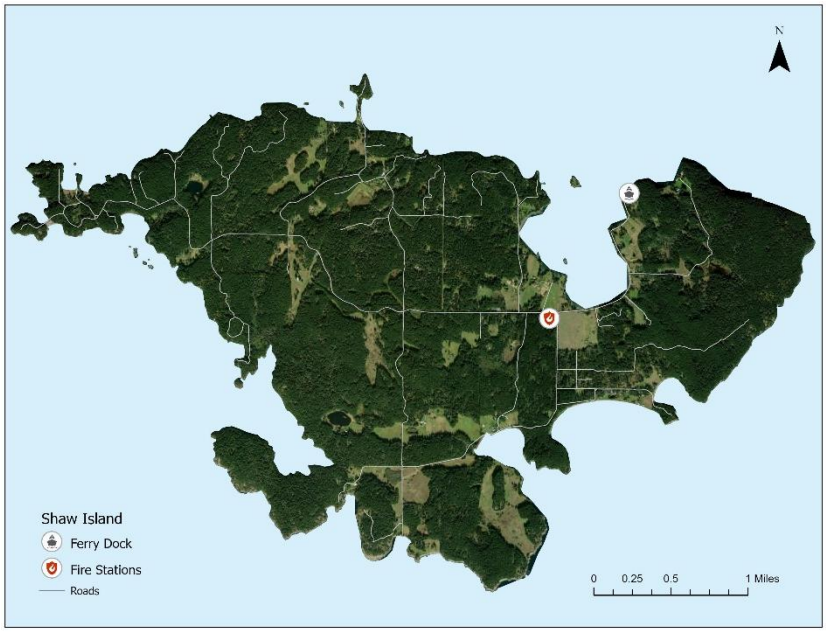


Figure 14: Shaw Island

The forest canopy includes Douglas-fir, grand fir, western red cedar, shore pine, and occasional Pacific madrone. Near the shore, salal and oceanspray grow in deeper soils, while grass and sedge thrive in rocky areas. On the drier shorelines, seaside juniper is quite common.

Inland, dense shrubs and salal dominate, with grass appearing mainly in disturbed areas. Dead wood, low shrubs, and forbs are common on the forest floor.

Project sites

Fuels reduction projects are planned for at least 542 acres across 8 projects. These actions are led by private groups, the San Juan Preservation Trust, San Juan County Parks, and OPALCO and include actions supporting roughly 158 structures. See Chapter 6 for a comprehensive list of fuels reduction projects.

Critical infrastructure

- 3 Fire Stations
- Shaw Island Terminal
- Wilding Farm Airport

Needed Improvements

- Access to water for firefighting
- Road accessibility and turnarounds for firefighting vehicles and evacuating residents
- Defensible space and homeowner education for homes in areas with increased fire risk

San Juan County Fire District #5

- Island: Shaw
- Staff: 4 paid, 15 volunteers
- Stations: 3

Outer Islands

Island Landscape Overview

The Outer Islands of San Juan County encompass all the small, non-ferry-served islands located among and between the larger islands of Orcas, Lopez, Shaw, and San Juan. Fire protection and initial attack for the outer islands falls largely under the Washington Department of Natural Resources. Some of the islands have fire brigades (Decatur, Waldron, etc.), but there are no established fire districts. Six of the outer islands, Brown, Henry, Pearl, Johns, Stuart, Speiden, and Dinner, are under the jurisdiction of San Juan Island Fire & Rescue. The more populated islands have fire brigades, with fire stations and response vehicles under development (as of 2024).

The inhabited islands have well-developed single lane gravel and dirt road systems through interior portions providing access to houses, private airfields and boat ramps. San Juan County Public Works maintains graded gravel roads on Stuart, Waldron, and Decatur Islands. The Outer Islands, like much of the San Juans, are rugged and mountainous, shaped by glacial erosion. Their shorelines feature deep, fjord-like harbors connected by U-shaped glacial channels, some over 1,000 feet deep. Below is a description of the highlighted islands, describing their key features and characteristics:

Waldron Island

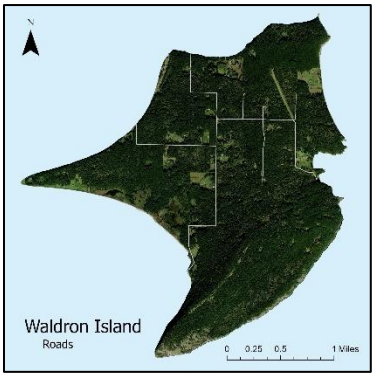


Figure 15: Waldron Island

Waldron Island, located east of Orcas Island, is mostly flat with a long north-south running ridgeline leading to its highest point on Disney Mountain. This ridgeline creates a noticeable difference in forest types with generally drier forests located on the east side. The island's forests feature a diverse overstory of Douglas-fir, grand fir, western red cedar, bigleaf maple, alder, shore pine, and scattered Pacific madrone and quaking aspen. A large and mostly intact Garry oak and Douglas-fir woodland defines the southern and eastern slopes of Mt. Disney. The understory consists primarily of salal, rose, elderberry, nettle and oceanspray in deeper soils beneath the canopy, while grass, oceanspray, snowberry, honeysuckle and sedge dominate elevated, shallow, rocky soils and steep south-facing slopes.

Although there are no true riparian areas, the island has numerous seasonal drainages, several large year-round wetlands, and numerous small hollows. Dead and downed woody material is abundant on the forest floor, along with thick vines and tall shrubs and forbs, creating ample wildfire fuel. The spread of invasive Scotch broom, combined with nearly 100 years of no deer browse, further increases fire risk by adding highly flammable ladder fuels. Forest health varies

across the island, with an increasing number of diseased and insect-infested trees scattered throughout the landscape.

Patos Island

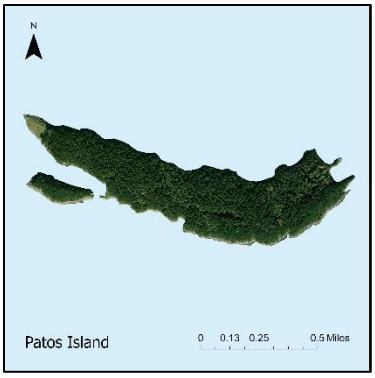


Figure 16: Patos Island

Patos Island features flat terrain with distinct forest types on the windward southwest shore and the more sheltered interior and leeward forests. The windward forest consists mainly of Douglas-fir, with smaller populations of lodgepole (shore) pine, Garry oak, western red cedar, and quaking aspen. Wind exposure has led to stunted and damaged trees, with a dense understory of salal, rose, kinnikinnick, salmonberry, and grasses. In contrast, the interior and leeward forests are protected from wind and salt spray and are therefore more productive and diverse, hosting Douglas-fir, western red cedar, grand fir, western hemlock, Sitka spruce, Pacific yew, maples, and red alder. This forest has a taller canopy and minimal ladder fuels. Dead and downed woody debris is scarce, likely due to campers collecting firewood. Alden Point, home to the lighthouse, is covered in grass with scattered tall shrubs, with little vegetation maintenance around the structure.

Patos Island faces significant fire risks, especially due to high visitor use during dry months. While campsites have fire pits with established fire rings and bare soil zones to help contain flames, there are no fuel breaks between the campsites, forested areas, or grasslands near the lighthouse. The lighthouse itself is particularly vulnerable, as there are no permanent residents on the island, only volunteers during the summer months that keep watch of the lighthouse. This leads to potential delays in fire detection and response, which would require boat dispatch.

Stuart Island

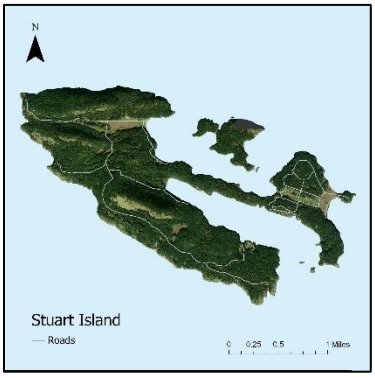


Figure 17: Stuart Island

Stuart Island, the northwesternmost landmass in San Juan County, features dense vegetation along roadways that pass through forested areas. The island's hilly to mountainous terrain on the west contrasts with the gentler terrain on the east. It is primarily covered by second-growth conifer forests, with exceptions in areas with thin soils on dry, rocky southern escarpments and land cleared for airstrips and farmland. The forest is dominated by Douglas fir, shore pine and Pacific madrone, with a varied understory of tall and short shrubs, salal, and grasses. In some areas, the understory contains moderately high amounts of downed and dead woody debris, which could contribute to the spread of fire if left unmanaged. However, the non-native mouflon sheep present are heavy browsers and prune much of the shrub layer off the ground.

The western tip of the island hosts the Turn Point Light Station and the USCG facility, both managed by the Bureau of Land Management. The facilities are connected by a well-maintained access road to a boat dock on the eastern side. The vegetation around the light station is regularly maintained, with a manicured lawn and thinned forest, reducing wildfire risk. However, the USCG

facility, located uphill and on a steep slope, has a propane tank, solar panels, a generator, and a substation building surrounded by wildland fuels. While the light station is adequately protected with defensible space, the USCG facility is at risk, as the proximity of forest fuels to propane tanks could exacerbate a wildfire.

Decatur Island

Decatur Island, the southeasternmost landmass in San Juan County, features dense vegetation along the roadways that travel through forested areas. The island's terrain is hilly to mountainous in the center and southwestern parts, with gentler slopes on the southeast side. It is predominantly covered by second-growth conifer forests, except for areas with thin, rocky soils and cleared land for farming and recreation. The forest is primarily a mix of Douglas fir, grand fir, shore pine, and Pacific madrone, with a dense understory of tall and short shrubs, salal, and grass. Downed and dead woody debris is abundant throughout much of the island's forested areas.

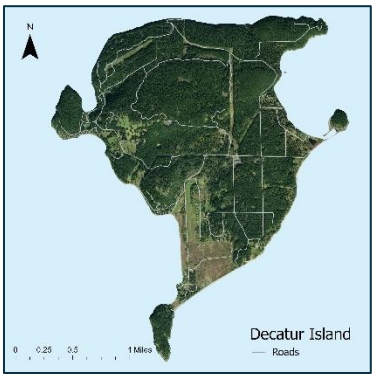


Figure 18: Decatur Island

In the center of Decatur Island there is an electrical substation. All the power that is delivered to the electrified islands runs from the mainland underwater to Decatur Island. From there, power is distributed to the other islands. At the same location is a community solar installation and a half-megawatt battery installation. The island has limited firefighting equipment, and access to individual homes can be challenging for large fire trucks due to narrow, steep driveways and dense roadside vegetation. Due to the steep terrain and dense forest cover, fires at lower elevations on Decatur Island have the potential to quickly spread uphill. This poses significant risks to residents, as escape routes could be blocked by heavy fuels encroaching on roads and driveways. The island's limited firefighting resources exacerbate the situation, as access would be difficult during a wildfire.

Blakely Island

Blakely is the fifth largest of the San Juan Islands. It is notable for its lack of development, including dense residential development outside the marina area on the northwest shore, scattered houses on large acreages on the southern shore, and limited development around Spencer Lake where a Field Campus for Seattle Pacific University is located. The island has nearly complete forest cover with only a few isolated balds and wetlands. There are two large, natural lakes that provide the water for the island. The terrain is varied and often quite steep. Forest stands on the island are typical of low-elevation sites in the San Juan Islands – overstocked mixed second and third growth dominated by conifers. The stands range from well-drained areas dominated by Douglas-fir and pine to deeper, wetter soils dominated by western redcedar, big-leaf maple and red alder. Infrastructure on Blakely includes narrow roads with dense roadside vegetation, an airstrip, a marina, and large transmission lines

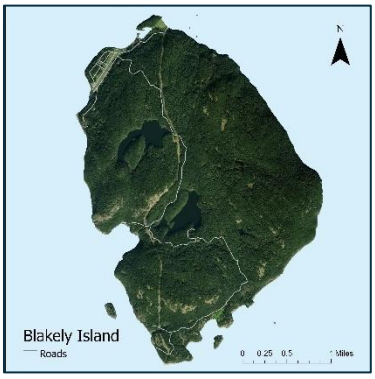


Figure 19: Blakely Island

that span the length of the island. Outside of the marina area there is only one well maintained road that connects the three areas of development and Thatcher Bay. All of these factors combine to make Blakely a very challenging landscape for wildfire mitigation and response. Right of ways and defensible spaces around structures should be the priority for fuel reduction treatments.

Obstruction, Blakely, Brown, Dinner, Henry, Pearl, Johns, Speiden and O'Neil Islands

Vegetation varies across these islands, with some areas densely forested and others nearly barren. Most forested areas consist of second-growth timber, logged in the early 1900s for lime kiln fuel. Openings in the canopy result from land clearing or thin, dry soils that support only grass and shrubs. The dominant tree species include Douglas-fir, grand fir, hemlock, western red cedar, and shore pine, with scattered Pacific madrone. Understory vegetation consists of salal and oceanspray in deeper soils, while grass and sedge grow on rocky or steep south-facing slopes. Near riparian areas, aspen, willow, birch, and sphagnum moss are common. Dead and downed woody material, along with low-lying shrubs and forbs, provide abundant wildfire fuel.

Project sites

Fuels reduction projects are planned for at least 4,872 acres across 9 projects. These actions are led by private groups, Camp Nor'wester, the Conservation Land Bank, and the BLM and include actions supporting roughly 329 structures. See Chapter 6 for a comprehensive list of fuels reduction projects.

Critical infrastructure

- Stuart Island Airpark
- Decatur Shores Airport
- Blakely Island Airport
- Turn Point Light Station and power generation facility (Stuart Island)
- Electrical substation, community solar installation and a half-megawatt battery installation (Decatur Island)

Needed Improvements

- Roadside fuels treatment
- Defensible space and homeowner education for homes in areas with increased fire risk
- Regular training for residents in firefighting tactics and equipment

Fire Resources

- The WA DNR has oversight over the Outer Islands
- San Juan County Fire District #3
- Waldron Island Fire Brigade
    - Community fire shelter
- Decatur Island Emergency Brigade
    - 120 volunteers

Chapter 6 – Mitigation Recommendations

Mitigation Activities

A key component of implementing this CWPP is the development and execution of action items aimed at reducing the number of human-caused fires and minimizing the impact of wildfires in San Juan County. This section outlines key mitigation actions prioritized for their urgency and critical importance in implementation. This section outlines key mitigation actions prioritized for their urgency and critical importance in implementation, organized into the following five categories:

Policy and Planning Efforts

- Strengthen county-level policies and regulations to ensure wildfire safety.
- Address gaps in existing policies to improve emergency planning.
- Develop action items to enhance consistency in wildfire mitigation.

Fire Prevention and Education Outreach

- Educate residents about wildfire risks and prevention strategies.
- Increase awareness through outreach to homeowners, youth, agencies, and local organizations.
- Foster community-wide participation in wildfire safety initiatives.

Infrastructure Enhancements

- Protect essential systems like communications, transportation, power lines, and water supply.
- Recognize infrastructure's role in safeguarding homes, the local economy, and ecosystems.
- Recommend infrastructure enhancements that will safeguard human life, built structures, environmental health and economic capacity countywide.

Resource and Capability Enhancements

- Strengthen local firefighting capacity by expanding fire districts.
- Improve emergency communication systems for faster response.
- Acquire new firefighting equipment to better serve county needs.

Fuels Reduction Projects

- Near-term project recommendations that include, where available, specific project location, scope and scale, treatment techniques, and responsible parties for implementation.

Policy and Planning Efforts

Effective wildfire mitigation requires strong county-level policies and regulations to ensure safety and consistency. To address gaps in existing policies and improve emergency planning, the steering committee has outlined the following action items.

Table 6: Action Items in Policy and Planning

Project ID	Action Item	Involved Organizations	Timeline
PP-1	**Identify and update building or land use codes, "current use" tax programs, road standards or other policies to improve wildfire mitigation efforts.**	**Lead:** SJC Department of Community Development **Support:** CWPP Committee	Ongoing
PP-2	**Maintain dialogue between public land agencies to coordinate fire protection services and to participate in committee meetings.**	**Lead:** CWPP Committee	Ongoing
PP-3	**Continue developing uniform standards for review of all building permits and development proposals.**	**Lead:** SJC Department of Community Development	Ongoing
PP-4	**Implement pre-project planning efforts to decrease habitat loss, invasive weed spread, and changes to understory conditions.**	**Lead:** Conservation District	Ongoing

Fire Prevention and Education Outreach Projects

This section focuses on educating San Juan County residents and raising wildfire awareness. These action items are designed to inform and support homeowners, youth, government agencies, and local organizations, fostering a community-wide commitment to wildfire safety.

Table 7: Action Items for Fire Prevention Education

Project ID	Action Item	Involved Organizations	Timeline
EO-1	**Continue to provide community wildfire educational programs, coordinated among partner agencies and leveraging resources and preexisting programs where they exist.**	**Lead:** Conservation District, Fire Districts, WA DNR **Support:** San Juan County, Firewise USA, BLM, and USFS	Ongoing
EO-2	**Continue to provide free wildfire risk assessments for residents/homes countywide. Assist homeowners in defensible space treatments.**	**Lead:** DNR, Fire Districts, Conservation District	Ongoing
EO-3	**Provide free address signs to homeowners.**	**Lead:** Fire Districts	Ongoing
EO-4	**Assist homeowners in defensible space treatments around their homes and neighborhoods through planning and funding assistance.**	**Lead:** Conservation District, WA DNR **Support:** Firewise USA	Ongoing
EO-5	**Prioritize implementation of community defensible zone treatments in rural subdivisions and housing clusters. Continue to encourage area homeowner's associations to foster a Firewise approach to fire protection and awareness.**	**Lead:** Conservation District, WA DNR **Support:** Firewise USA	Ongoing
EO-6	**Identify and leverage local wood hauling and processing infrastructure to assist landowners and neighborhoods with wood chipping and processing through centralized chipping events, subsidized hauling/drop off, or other ways of improving materials processing countywide.**	**Lead:** Conservation District, Fire Districts	Ongoing

EO-7	**Work with local, state, and federal agencies, organizations, county and public to identify and treat high wildfire risk areas in areas experiencing public use.**	**Lead:** CWPP Committee **Support**: Fire Districts, Federal & State Agencies	Ongoing
EO-8	**Continue pursuing grant funded fire prevention positions to support programs throughout San Juan County.**	**Lead:** Conservation District, Fire Districts, San Juan County	Ongoing
EO-9	**Provide materials to help educate residents in planning for emergencies including meeting locations, communication plans, supplies, evacuation routes and more.**	**Lead:** San Juan County DEM **Support:** CWPP Committee	Ongoing

Infrastructure Enhancements

Critical infrastructure includes communications, transportation (roads and ferry networks), power lines, and water supply—essential systems that serve both San Juan County and the broader western Washington region. These networks are a part of the wildland-urban interface, playing a key role in protecting people, structures, infrastructure, and unique ecosystems. Without reliable infrastructure, communities may safeguard their buildings but risk losing their economy and way of life. The following action items explore various components of infrastructure, considering management strategies, potential policy recommendations, and mitigation efforts to ensure resilience and sustainability.

Table 8: Action Items for Infrastructure Enhancement

Project ID	Action Item	Involved Organizations	Timeline
IE-1	**Coordinate with private landowners regarding the use of key boxes on gates to improve emergency response times.**	**Lead:** Fire Districts **Support:** Residents	Ongoing
IE-2	**Map, develop GIS database, and provide signage for onsite water sources such as hydrants, underground storage tanks, and drafting or dipping sites on all ownerships across the county.**	**Lead:** Fire Districts **Support:** County GIS	Ongoing

IE-3	**Develop wildfire protection-specific management plan, including a fuels reduction program, for all watersheds in the county and adjacent properties.**	**Lead:** CWPP Committee **Support:** Friday Harbor, WA DNR, WA State Parks	Ongoing
IE-4	**Support the development and implementation of an improved water system on Lopez that will meet industry standards as well as sustain wildland fire protection of the community and residences.**	**Lead:** CWPP Committee **Support:** Fire Districts	Ongoing
IE-5	**Create a more effective communication system and protocol for non-ferry/outer islands to assist with emergency response.**	**Lead:** San Juan County Information Services **Support:** DNR, Fire Districts, SJC Sheriff, SJC Fire Chiefs,	Ongoing
IE-6	**Support OPALCO's Right-of-Way (ROW) Maintenance for Fire Safety which plays a key role in reducing fire risks and ensuring reliable power service. This includes integrated mapping of potential fire breaks and working with landowners to improve/ expand ROW areas.**	**Lead:** OPALCO	Ongoing
IE-7	**Invest in infrastructure access and enhancements on all islands to improve cost and efficiency of collecting, hauling, and processing large amounts of woody debris for end-of-life uses including carbon sequestration, composting, efficient heat/electricity generation, habitat restoration, or general economic development.**	**Lead:** CWPP Committee	2030

Resource and Capability Enhancements

Rural and wildland firefighting districts in San Juan County have identified key resource and capability improvements to enhance emergency response. These priorities focus on strengthening local firefighting capacity through measures such as establishing additional fire districts, improving communication systems, and acquiring new equipment to better serve the county's needs. The following action items were provided by the steering committee to achieve these goals.

Table 9: Action Items for Resource and Capability Enhancements

Project ID	Action Item	Involved Organizations	Timeline
RC-1	**Develop additional water supply sites and acquire supporting equipment to supplement fire suppression efforts throughout San Juan County.**	**Lead:** County Chiefs' Association **Support:** Fire Districts and Outer Island Brigades	Ongoing
RC-2	**Improve departmental capability by establishing a program to increase the retention and recruitment of volunteer firefighters and encourage firefighters to have wildfire training.**	**Lead:** County Chiefs Association, Fire Districts **Support:** Conservation District	Ongoing
RC-3	**Update personal protective equipment and wildland fire training for all fire districts in San Juan County.**	**Lead:** Fire Districts **Support:** Conservation District	Ongoing
RC-4	**Create a permanent weather station site to collect fuel moisture observations more applicable to the islands.**	**Lead:** CWPP Committee **Support:** Fire Districts, County Chiefs Association, NPS	2030
RC-5	**Maintain apparatus necessary for marine responses including transporting firefighters and their equipment to outer islands for San Juan Island Fire Rescue.**	**Lead:** San Juan Island Fire & Rescue **Support:** County Chiefs Association	Ongoing

RC-6	**Acquire additional brush fire apparatus and increase water carrying capacity with a third water tender for Lopez Fire District.**	**Lead:** Lopez Island Fire & EMS **Support:** Fire Districts, County Chiefs Association	2030
RC-7	**Develop a semi-annual onsite fire training program for informal fire brigades on outer islands that are associated with a Fire District.**	**Lead:** County Chiefs Association **Support:** Waldron Fire Brigade, Obstruction Island Fire Brigade	Ongoing
RC-8	**Emergency response protocol development and maintenance: need for coordinated and effective emergency response for the outer islands. A system of communication, protocols, and collaborative training is essential. This should include regular training and updates.**	**Lead:** Fire Districts **Support:** DNR, SJC DEM, SJC Sheriff, SJC Fire Chiefs, outer island emergency volunteers	Ongoing

Fuels Reduction Projects

The CWPP steering committee, along with public input from meetings and comment processes, has identified key project areas for wildfire mitigation. These areas were selected based on multiple risk factors that could threaten residents, homes, infrastructure, and ecosystems.

Mitigation efforts are tailored to each site but may include creating defensible space around structures, reducing hazardous fuels, and improving access corridors. Depending on site conditions, additional fire mitigation techniques may be necessary. Defensible space projects may involve commercial or pre-commercial thinning, pruning, brush removal, chipping, prescribed burning, greenbelt installation, shaded fuel breaks, and overall forest and range health improvements.

San Juan Island Projects

Table 10 San Juan Island Proposed 5- Year Fuels Reduction Project Areas

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-SJ-1	**Friday Harbor Trout Lake Watershed**	891	21	Town of Friday Harbor, Conservation Land Bank, Private	-
FR-SJ-2	**Mt. Dallas**	613	114	Private	-
FR-SJ-3	**Roche Harbor Neighborhoods**	-	613	Private	2025 and ongoing
FR-SJ-4	**Hunter Preserve**	5	-	San Juan Preservation Trust	2025 and ongoing
FR-SJ-5	**Cady Mountain Preserve**	140	-	Conservation Land Bank	Ongoing
FR-SJ-6	**Westside Corridor Preserves**	30	-	Conservation Land Bank	2026
FR-SJ-7	**Hillview Terrace 2**	77	49	Private	2025
FR-SJ-8	**Kanaka Bay Park HOA**	-	25	Private	2025
FR-SJ-9	**Timber Lane**	8	18	Private	2025
FR-SJ-10	**Cattle Point Estates**	10	43	Private	2025
FR-SJ-11	**North 40**	190	100	Private	-
FR-SJ-12	**OPALCO Right of Way**	178	-	OPALCO	2025-2029

Orcas Island Projects

Table 11 Orcas Island Proposed 5- Year Fuels Reduction Project Areas

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-OR-1	**Mt Constitution Radio Site Fuels Treatment**	187	10	State Parks, Private	Ongoing
FR-OR-2	**Mt Constitution Little Summit**	-	-	State Parks	-
FR-OR-3	**Eastsound Watershed**	829	132	Private	-
FR-OR-4	**Rosario Highlands**	1,050	289	Private	-
FR-OR-5	**Turtleback Preserve**	1,639	7	SJCLB, SJPT	Ongoing
FR-OR-6	**Spring Point**	1,251	255	Private	-
FR-OR-7	**Doe Bay Area**	1,532	312	Private, Noxious Weed Program	-
FR-OR-8	**Eagle Lake**	512	55	Private	-
FR-OR-9	**Raccoon Point**	230	54	Private	-
FR-OR-10	**Buck Mountain**	-	100	Private	Ongoing
FR-OR-11	**JB Farm Preserve**	15	-	San Juan Preservation Trust	2025 and ongoing
FR-OR-12	**Crescent Beach Preserve**	60	-	Conservation Land Bank	2025-2026
FR-OR-13	**Entrance Mountain Preserve**	20	-	Conservation Land Bank	2027

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-OR-14	**Vusario Maintenance Association**	60	-	Private	Ongoing
FR-OR-15	**OPALCO Right of Way**	105	-	OPALCO	2025-2029

Lopez Island Projects

Table 12 Lopez Island Proposed 5- Year Fuels Reduction Project Areas

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-L-1	**Beecher Preserve**	35	-	San Juan Preservation Trust	2025 and ongoing
FR-L-2	**Odlin County Park**	50	-	San Juan County Parks and Fair	2026-2027
FR-L-3	**Shark Reef Sanctuary**	20	-	San Juan County Parks and Fair	2027-2028
FR-L-4	**Upright Head Preserve and Neighborhood**	26	77	Conservation Land Bank	Ongoing
FR-L-5	**Chadwick Hill**	437	2	Bureau of Land Management	Ongoing
FR-L-6	**Iceberg Point**	135	1	Bureau of Land Management, USCG	Ongoing
FR-L-7	**Lopez Hill Preserve**	40	-	Conservation Land Bank	Ongoing
FR-L-8	**Fisherman Bay Peninsula**	228	78	Private	-
FR-L-9	**Humphrey Head**	138	35	Private	-

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-L-10	**Pavey Blvd**	246	84	Private	Ongoing
FR-L-11	**Whiskey Hill**	41	56	Private	-
FR-L-12	**Channel Road**	215	66	Private	-
FR-L-13	**OPALCO Right of Way**	35	-	OPALCO	2025-2029

Shaw Island Projects

Table 13 Shaw Island Proposed 5- Year Fuels Reduction Project Areas

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-SH-1	**Cedar Rock Preserve**	220	-	Private	Ongoing
FR-SH-2	**Neck Point**	126	59	Private	Ongoing
FR-SH-3	**Ellis Preserve**	20	-	San Juan Preservation Trust	2026-2029
FR-SH-4	**Reef Net Point Park**	10	-	San Juan County Parks and Fair	2027
FR-SH-5	**Shaw County Park**	3	-	San Juan County Parks and Fair	2027
FR-SH-6	**Parks Bay Rd and Tibbs Landing Rd**	10	-	Private	Ongoing
FR-SH-7	**Ben Nevis Loop Rd**	153	40	Private	-

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-SH-8	**OPALCO Right of Way**	11	-	OPALCO	2025-2029

Outer Island Projects

Table 14 Outer Islands Proposed 5- Year Fuels Reduction Project Areas

Project ID	Project Name	# of Acres	# of Structures	Involved Organizations	Treatment Dates
FR-O-1	**Crane Island**	231	62	Private	Ongoing
FR-O-2	**Decatur Island**	2,025	-	Private, OPALCO	Ongoing
FR-O-3	**Henry Island**	-	-	-	-
FR-O-4	**Kellett Bluff**	356	1	Conservation Land Bank, BLM, Private	Ongoing
FR-O-5	**Johns Island**	280	47	Camp Nor'Wester	Ongoing
FR-O-6	**Jones Island**	-	-	State Parks	Ongoing
FR-O-7	**Stuart Island BLM**	5	3	Bureau of Land Management	Ongoing
FR-O-8	**Stuart Island**	-	-	-	-
FR-O-9	**Waldron Island**	2,000	216	Private	Ongoing
FR-O-10	**Blakely Island**	1	-	OPALCO	2025-2029

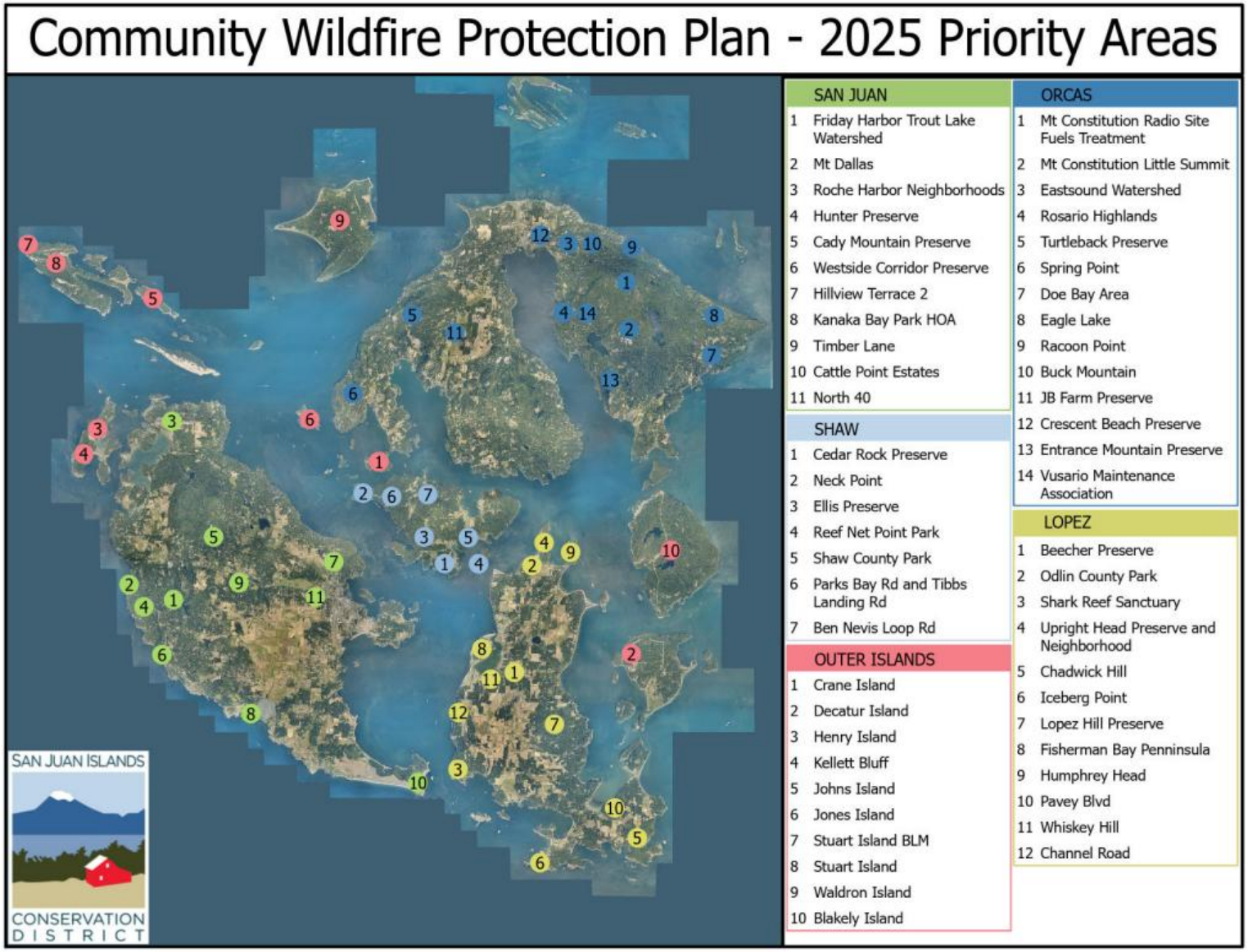


Figure 20: CWPP Priority Fuels Reduction Projects Map.

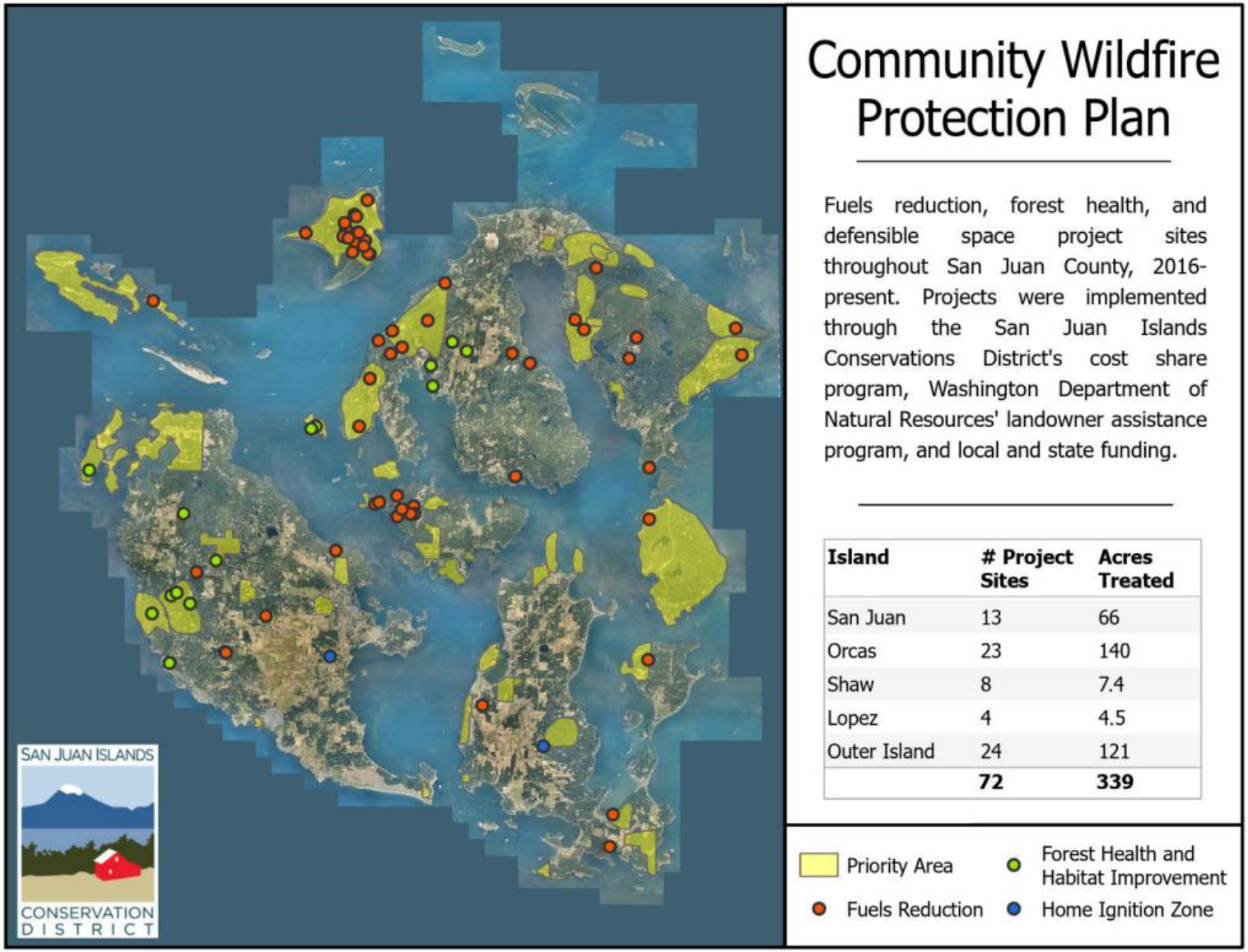


Figure 21: Fuels Reduction Project Sites completed or underway since 2016.

Community Initiatives

Many of the county's fire departments and agencies are actively engaging in public education and promoting homeowner responsibility by visiting neighborhoods and schools to inform citizens about fire hazards. They frequently distribute informative brochures and encourage homeowners to clearly mark their driveways with visible addresses, ensuring faster and more accurate emergency response. Additionally, the San Juan County Firewise Communities program plays a key role in enhancing communication between fire response organizations and the public, further strengthening fire safety awareness and preparedness.

Wildfire Ready Neighbors

Wildfire Ready Neighbors (WRN) is a collaboration between the WA DNR and local wildfire experts to help communities prepare for wildfires. This is done primarily through educational efforts. WRN is popular across the islands and continues to expand. The following groups are WRN partners in San Juan County:

- Decatur Island Emergency Brigade
- Lopez Island Fire & EMS
- OPALCO
- Orcas Island Fire & Rescue
- San Juan County Emergency Management
- San Juan Island Fire & Rescue
- San Juan Islands Conservation District
- Shaw Island Fire & Rescue
- Waldron Island Emergency Brigade
- Valley Vista

Firewise Communities

San Juan County has had an active and expanding Firewise Communities USA program including a Program Lead and local representatives on the four larger islands since 2004. As of August 1, 2024, there are 25 recognized Firewise Communities in good standing in San Juan County.

San Juan Island Firewise Communities

- Cape San Juan Homeowners Association
- Carefree Area
- Cattle Point Estates
- Eagle Crest
- Gull Cove
- Hannah Heights
- Hidden Meadows
- Hillview Terrace II
- Kanaka Bay
- Misty Isle
- Mitchell Point
- Mt. Dallas
- Roche Harbor (NA)

Decatur Island Firewise Communities

- Decatur NW

Lopez Island Firewise Communities

- Kings Point

Orcas Island Firewise Communities

- Orcas Highlands
- Spring Point Homeowners Association

Waldron Island Firewise Communities

- Waldron Island

Standard Fuel Reduction Treatments

Fuel Break/Shaded Fuel Break

A “fuel break” is a strip or block of land on which the vegetation, debris, and litter have been reduced and/or modified to control or diminish the spread of fire, often along roadsides or other infrastructure. A *shaded* fuel break maintains low flammability vegetation to encourage habitat and forest health and diversity. Fuel breaks are usually prescribed at a width of 100 to 300 feet depending on the site. Fuel breaks encourage the successful containment of wildfire. They provide better roadside clearance from flammable materials that support safer passage in evacuation situations and for emergency apparatuses approaching a fire. This prescription has been applied to many areas throughout the San Juan Islands but requires ongoing maintenance and application on a far wider scale.

> *"Prioritize work that would help control overall coverage of a fire (e.g. breaks and fuels along roads, etc.). Also, areas that have a single point of ingress/egress..."*
>
> - *San Juan County Resident*

Prescribed Fire

Proactively inducing fire on a landscape is one of the most effective and widely practiced wildfire management techniques available. Indeed, it is a lack of prescribed fire in the San Juan Islands since Euro-American settlement that has directly led to modern forests being overstocked with ladder fuels (which would otherwise be burned away on regular intervals) and ever-increasing levels of risk. Local agencies, tribes and landowners are working to reintroduce prescribed fire more and more in San Juan County, understanding the benefits to native plants, soil health, and overall forest health in addition to wildfire mitigation.

Figure 22: Firefighter uses a drip torch during a prescribed burn during a prescribed burn on Jones Island

Noxious Weed Removal

Several species of noxious weeds are highly flammable, fast spreading, and difficult to contain, contributing to a significant wildfire hazard throughout San Juan County. Common flammable noxious weeds include gorse and Scot's broom. Unlisted invasive grasses, such as cheatgrass (*Bromus tectorum*) and ripgut (*Bromus diandrus*), are known for their flammability and difficulty to control, and both are found in San Juan County. English holly (*Ilex aquifolium*) is another species of concern in our area and fairly common throughout our forests. When heated, its waxy leaves can readily ignite, and holly can potentially serve as a ladder fuel given its presence in the middle canopy and its tendency to form mats.[20]

There are multiple management techniques that can help control noxious weeds including mechanical removal (Figure 18), grazing, mowing, tilling, burning, chemical treatment, and biological control. After considering the degree of the infestation, the type of land infested, and the landowner's desired future condition, an effective control program will likely require integrating several of these methods. For sizeable gorse infestations, research suggests that the most effective control program combines mowing/mulching, herbicides, and establishing competitive non-invasive species over multiple growing seasons.[21] As with any noxious weed, preventing infestations or acting quickly to eliminate them once observed is critical. Many wildfire mitigation techniques such as forest thinning can easily *promote* new opportunities for noxious weed growth, requiring landowners to pay careful attention and implement strategies that promote native, non-flammable undergrowth instead.

Figure 23: Mechanical removal of gorse by the Youth Conservation Corps in the Doe Bay area.

The San Juan County Noxious Weed Department works in partnership with landowners and local conservation corps to restore areas that have been overtaken and mitigate the spread of noxious weeds. For more information visit https://www.sanjuancountywa.gov/1975/Noxious-Weeds.

[20] English Holly. *King County Noxious Weed Control Program*. March 2020. https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/English-holly-control.pdf

[21] Gorse National Best Practice Manual, Gouldthorpe et al., 2006.

The Washington Department of Natural Resources Service Forestry Program can provide financial assistance through their cost share program for small forest landowners. This is determined by on-site visits from a DNR Service Forester. One of the allowable treatments is vegetation control, which includes noxious weed control.

Defensible Space

Creating defensible space around homes is one of the most effective ways to reduce wildfire risk and protect properties from potential destruction. Defensible space acts as a buffer between a structure and the surrounding vegetation, slowing the spread of fire and providing firefighters with a safer area to defend homes. Properly maintained defensible space not only increases a home's chances of surviving a wildfire but also helps prevent fires from spreading to neighboring properties and the surrounding landscape.

> *"The condition of the typical forested areas seems to have a lot of tinder (dry easily flammable branches). Removal of this tinder seems to be a simple and effective way to start reducing the amount of fuel for wild fires. Specifically, dry dead branches below 30'-40' are very flammable. Systematic removal of this tinder could be a widespread practice."*
>
> - *San Juan County Resident*

Several organizations including the Washington Department of Natural Resources, San Juan Islands Conservation District, and Firewise USA offer resources, guidance, and even financial assistance to help landowners implement defensible space measures. These programs educate homeowners on best practices for fire-resistant landscaping, structure hardening, and emergency preparedness.

Some key methods for creating a defensible space include:

- **Removing combustible materials** such as dead vegetation, dry leaves, firewood stacks, and other flammable debris from around homes, decks, and structures.
- **Clearing vegetation** and thinning trees within a 100-foot perimeter to reduce fuel loads and limit fire intensity.
- **Creating zones of defensible space** with different levels of vegetation management, such as keeping plants well-spaced and using fire-resistant landscaping near homes.
- **Trimming tree branches** at least six feet off the ground to prevent ground fires from climbing into tree canopies.

Utility Line Right of Way Clearing

OPALCO right of way line clearing follows national standards, clearing lines on both sides of the pole line as follows: 10' for underground distribution lines, 25' for overhead distribution lines, and 50' for transmission lines. OPALCO follows expert guidance from various state and federal agencies such as the US Fish and Wildlife on best practices for timing and ROW maintenance methodologies. Specific clearance is determined based on easements in place, line voltage,

reliability, and species. The primary objective of the right-of-way trimming program is to keep the facilities clear of all tall-growing trees, brush, and other vegetation that could grow too close to conductors. This is accomplished by routine maintenance on each circuit including tree removal, pruning, and mowing. Each ROW has an established maintenance cycle depending on the work required.

Prairie and Garry Oak Savannah Restoration

Garry oaks and prairies are often found on the steep, south-facing slopes of San Juan County's "mountains" and coastal areas. Many of these areas are also high-risk for wildfire. If designed with both goals in mind, fuels reduction and thinning projects in some areas could both reduce wildfire risk and benefit some of the State's rarest habitats.

Various public agencies, private organizations, and private landowners have begun the process of restoring Garry oak and grassland habitats by removing encroaching conifers and other woody species. These projects are also being assisted and guided by the Samish Indian Nation's Department of Natural Resources to increase abundance of culturally important plants.[22]

There are many priority Garry oak sites and associated habitats undergoing restoration, including Jones Island State Park and Turtleback Preserve on Orcas Island, Kimball Preserve on Decatur Island, Mount Grant Preserve on San Juan Island. Restoration practices include thinning of young, dense Douglas-fir stands to help restore native wildflowers, grasses, and establish Garry oaks; burning using practices that produce biochar to improve soil conditions and new growth; and planting of native forbs, plants and trees.[23]

Avoiding Negative Impacts of Fuel Reduction Treatments

Fuel reduction treatments can lead to unanticipated negative outcomes if not properly planned, implemented and managed over time. Some of these can make wildfire risk worse than it was before project implementation. Landowners and land managers conducting fuel reduction treatments need to understand that no alteration to an ecosystem produces only the positive impacts intended, and professionals should be consulted before taking on projects with questionable outcomes. Impacts to be considered and mitigated include, but are not limited to:

- Increased spread of invasive species – Weeds will naturally take full advantage of freshly disturbed areas if left unattended. Some species, such as Scotch Broom and Gorse, are highly flammable and can colonize a site, becoming the dominant understory. Mitigation techniques to discourage invasive weeds include re-planting areas with less flammable native forbs, grasses, and shrubs, mulching areas with wood chips, and noxious weed

[22] Supporting Local Garry oak Restoration Efforts. San Juan County Conservation Land Bank. September 2022. https://sjclandbank.org/supporting-local-garry-oak-restoration-efforts/

[23] ICC in Focus: Improving Local Forest Resiliency. San Juan Islands Conservation District. September 2024. https://www.sanjuanislandscd.org/garryoak

control through manually eradication or herbicide. Sites should receive ongoing monitoring for changes in species composition.

- Habitat disruption and loss of wildlife – Birds begin nesting in forests and woodlands as early as March and conclude in early summer, residing at all levels of forest structure including ground nests, cavities in tree stems, and the canopy. In addition, forests serve as habitat for a wide range of animals that will all experience changes after disturbance. Techniques to minimize loss of habitat and wildlife can include scouting project areas closely for all forms of life, identifying the best season to do the work, avoiding work in certain areas, and rebuilding new habitat throughout the project area with biomass produced from the project. If you have questions on the potential impact of treatments, always consult a professional prior to implementation.
- Drier conditions on the forest floor – Removing fuels often results in areas of the forest being more open to sunlight, resulting in more drought conditions, drier fuels, less available moisture for trees, and changes in the understory species composition. Eurasian grasses and weeds can move in, exacerbating fire conditions. On the other hand, more light can support native wildflower species that are dormant in the soil. Maintaining a healthy understory of native plants will help ensure sunlight does not directly hit the forest floor, wildlife has available food and shelter, and invasive species are kept at a minimum.

Chapter 7 – Appendices

Appendix A- Supporting Information

The Steering Committee

Leading the planning effort from San Juan County was Paul Andersson with the San Juan Islands Conservation District. Additional partners included local communities, fire districts, federal and state agencies, and local organizations with an interest in the county's fire safety.

The planning philosophy employed in this project included the open and free sharing of information with interested parties. Information from federal, state, and local agencies was integrated into the database of knowledge used in this project.

The following people participated in steering committee meetings, volunteered time, or responded to elements of the San Juan County CWPP's preparation.

NAME	ORGANIZATION
Paul Andersson	San Juan Islands Conservation District
Kai Hoffman-Krull	San Juan Islands Conservation District
Cathi Winings	San Juan Islands Conservation District
Julie Curtis	San Juan Islands Conservation District
Vicki Heater	San Juan Islands Conservation District
Erin Halcomb	San Juan County - Conservation Land Bank
Angela Broderick	San Juan County - Environmental Stewardship
Chad Kimple	San Juan County - Fire Marshall
Jason Ontjes	San Juan County - Noxious Weed Control Program
Brendan Cowan	San Juan County – DEM
Dave Halloran	San Juan County - DEM
Noel Monin	San Juan Island Fire & Rescue District 3
Adam Bigby	Lopez Fire & EMS
Russel Barsh	Kwiaht
Russell Guerry	OPALCO
Emma Kortuem	Samish Indian Nation
Dean Dougherty	San Juan Preservation Trust
Jesse Douglas-Seitz	Town of Friday Harbor
Ty (Joseph) Crowe	United States Forest Service
Sara Dolan	National Park Service
Jason McMillen	WA Department of Natural Resources
Jesse Duvall	WA Department of Natural Resources
Kirk Troberg	WA Department of Natural Resources

- Aaron Davidson.....WA State Parks
- Sophia Fox.....WA Resource, Conservation & Development Council
- Quinn Merrick.....WSU Extension Forestry
- Whitney Machado.....Bureau of Land Management
- Kathleen Salinas.....Firewise
- Barnaby Zall.....Roche Harbor Neighborhood Association
- Mike Coryell.....Roche Harbor Neighborhood Association
- Adam Herrenbruck.....Northwest Management, Inc.
- Erica Wimme.....Northwest Management, Inc.
- Natalie Atkins.....Northwest Management, Inc.
- Vaiden Bloch.....Northwest Management, Inc.

Committee meetings were scheduled and held from June 2024 through May 2025. The steering committee met 15 times virtually and several times in person. These meetings served to facilitate the sharing of information and to lay the groundwork for the updated San Juan County CWPP. Northwest Management, Inc. as well as other planning committee leadership attended the meetings to provide the group with regular updates on the progress of the document and gather any additional information needed to complete the Plan.

Wildfire Ignitions

Table 14: DNR Reported Fire Ignitions in San Juan County 2012-2024

Fire Name	Date	Fire Cause	Acres
OBSTRUCTION PASS	7/20/2024	Undetermined	0.1
LARKSPUR	4/19/2024	Undetermined	0.2
DECATUR	3/17/2024	Debris Burn	1
TAYLOR FIRE	9/11/2023	Undetermined	0.1
DANCING DEER	9/6/2023	Natural	0.1
WALDRON ISLAND	9/4/2023	Undetermined	1
SHOAL BAY	8/22/2023	Celebration	0.2
BARNES ISLAND	8/18/2023	Undetermined	0.2
DEER HARBOR ROAD	7/3/2023	Undetermined	0.2
SAWMILL RD	6/5/2023	Undetermined	1
MOUNT DALLAS	7/27/2022	Equip/Vehicle	3.3
ORCAS ROAD	8/28/2021	Miscellaneous	4.5
FALSE BAY	8/11/2021	Undetermined	3
JONES ISLAND	7/31/2021	Celebration	0.1
PLEASANT VALLEY NW	7/29/2021	Miscellaneous	3.5
FROST ISLAND	5/29/2021	Celebration	0.25
MELBA LANE	5/26/2021	Debris Burn	2
BONNIE BRAE	9/15/2020	Smoking	0.1

Fire Name	Date	Fire Cause	Acres
SEAVIEW	9/10/2020	Undetermined	0.2
CLAY FARM RD	9/1/2020	Debris Burn	0.9
POINT LAWRENCE	8/24/2020	Undetermined	1
SHADOW	8/14/2020	Undetermined	0.5
EAGLE LAKE	9/8/2019	Natural	0.1
DEER HARBOR	9/6/2019	Miscellaneous	0.1
SATELLITE	8/17/2019	Celebration	0.1
JONES ISLAND	8/5/2019	Celebration	0.1
TRUMP ISLAND	7/24/2019	Undetermined	0.1
MYSTIC WAY	7/22/2019	Miscellaneous	0.5
MORAN STATE PARK	6/16/2019	Smoking	0.25
BLAZING TREE	3/18/2019	Debris Burn	0.3
BIG ROCK SJI	9/5/2018	Miscellaneous	2
HENRY ISLAD	8/24/2018	Miscellaneous	0.1
WHITE POINT	8/15/2018	Equip/Vehicle	0.1
BACON	7/17/2018	Debris Burn	0.3
DECATUR HEAD	7/3/2018	Celebration	0.1
MILLER ROAD	6/29/2018	Debris Burn	0.1
STUART ISLAND	6/26/2018	Celebration	1.47
JACKSON	9/8/2017	Celebration	0.1
LOPEZ HILL	8/3/2017	Smoking	0.1
MINNOW CREEK	7/25/2017	Miscellaneous	1
SAN JUAN VALLEY	7/23/2017	Equip/Vehicle	0.5
LIME QUARRY	7/14/2017	Celebration	0.6
JAMES ISLAND	7/12/2017	Miscellaneous	0.1
910	7/4/2017	Debris Burn	0.3
OAKES FIRE	6/12/2017	Debris Burn	0.1
LITTLE	1/16/2017	Debris Burn	0.25
HALVORSEN RD	1/6/2017	Debris Burn	2
DAKOTA	8/13/2016	Celebration	0.1
ELLIOT WAY	7/21/2016	Debris Burn	0.25
FOSTER POINT	6/10/2016	Debris Burn	0.25
DECATUR ISLAND	6/5/2016	Celebration	0.1
NO. TWO SCHOOL HOUSE	5/27/2016	Undetermined	0.5
VINEYARD	7/20/2015	Debris Burn	0.75
MORAN	7/3/2015	Celebration	0.2
EVERGREEN	6/22/2015	Celebration	0.25
SEAL ROCK	6/10/2015	Debris Burn	0.1
SUNRISE	10/5/2014	Celebration	0.1
WALDRON ISLAND	10/1/2014	Debris Burn	0.2
PATOS ISLAND	9/10/2014	Celebration	0.01
PATOS	9/10/2014	Celebration	0.01
WEST VALLEY	8/2/2014	Miscellaneous	0.75

Fire Name	Date	Fire Cause	Acres
LAWSON	6/21/2014	Celebration	0.5
BONNIE	7/23/2013	Fireworks	0.75
ROCHE	7/23/2013	Fireworks	1
TURN POINT	7/4/2013	Fireworks	0.1
WESTSIDE ROAD	9/18/2012	Smoking	1
TERRACE	9/6/2012	Debris Burn	0.25
STUART ISLAND	9/2/2012	Celebration	0.1
AMERICAN CAMP	9/2/2012	Celebration	0.1
SUNDSTROM	8/31/2012	Miscellaneous	0.25
GREAVES	7/13/2012	Natural	0.1
SOUTH BEACH	7/4/2012	Fireworks	0.75
ZIP LINE	5/13/2012	Debris Burn	0.1
DEER FERN	5/12/2012	Debris Burn	0.1

Historic Landscape Photos

Figure 24: Photos showing forest density in 2024 substantially increased from 1932 at Waldron Island.

Figure 25: Photos showing forest density in 2024 substantially increased from 1932 at Deer Harbor.

OPALCO Overhead Lines

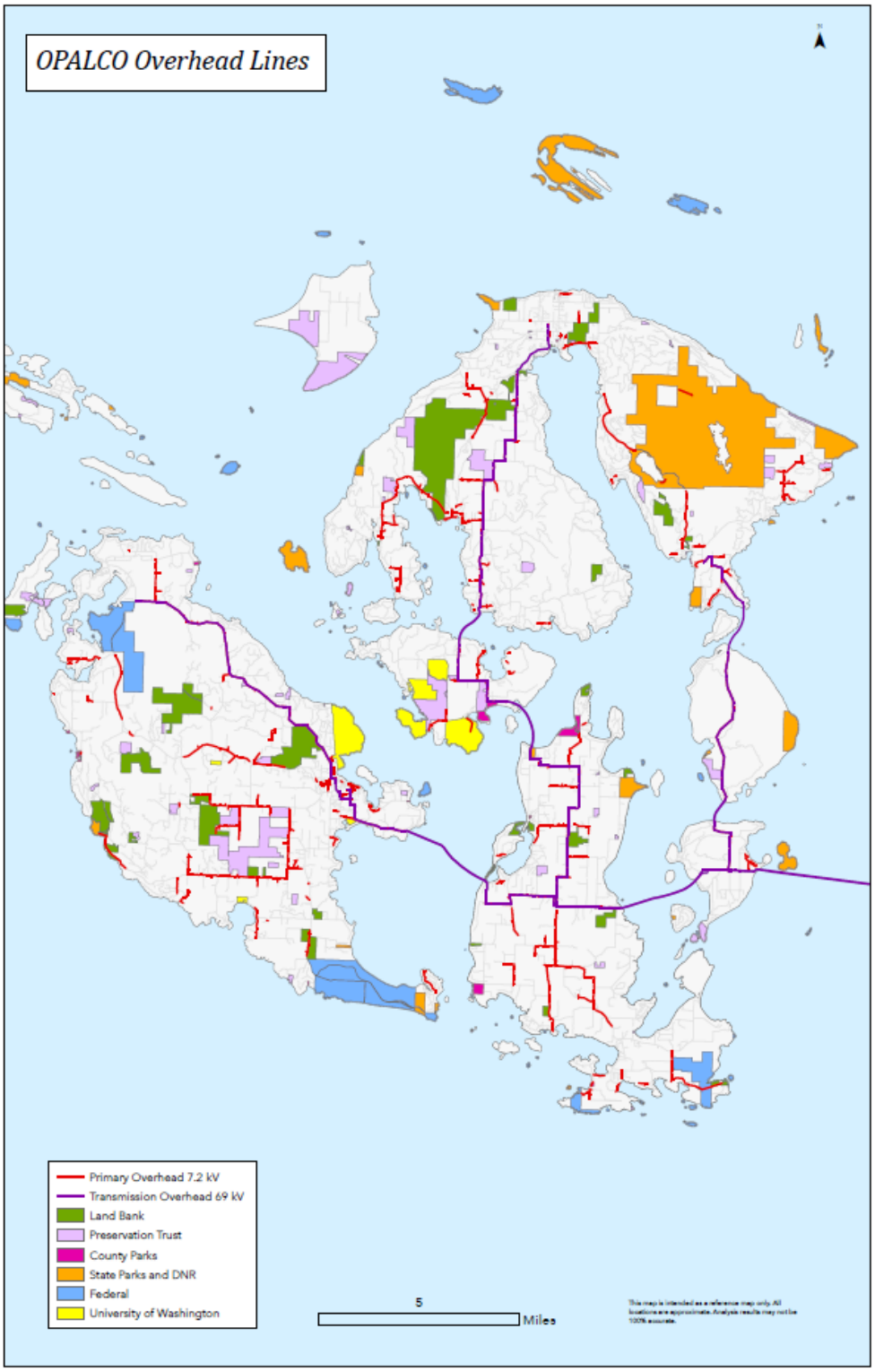


Figure 26: OPALCO Overhead Lines.

OPALCO 5 Year ROW trimming, clearance and maintenance list

Orcas

- Orcas Sub Terminal to Gibs Rd/Orcas Rd. Transmission Line
- Orcas Rd, Uff Da Hill to Pinneo Rd Transmission Line.
- Orcas Rd, Gravel Pit to Sunderland Rd. Transmission Line
- Indralaya to Fowlers Corner Transmission Line
- Orcas Rd Fowlers Corner to Main St. Transmission Line.
- Turtle Back to Chanel Rd. Distribution Line
- Ralph Gott Rd to Pole Pass Rd Distribution Line
- Olga Rd South End Moran St. Park Entrance to Mt. Entrance Distribution
- Deer Point to Sub Terminal
- Olga Sub Station to Obstruction Pass
- Deer Harbor Rd to West Sound Marina
- Crow Valley Rd Nordstrom Ln to Deer Harbor Rd.
- Crow Valley Rd to West Beach Rd.
- West Beach Rd to Red Cross Quarry Distribution Line

Lopez

- Ferry Rd, Odlin Park to Center Rd
- Center Rd to Hummel Lk Rd
- Center Rd, Lopez Sound Rd to Dill Rd
- Military Rd to Lopez Flat Point Sub terminal Transmission Line
- School Rd to Lopez Sound Rd Transmission Line
- Hummel Lk to Fisherman's Bay Distribution
- Dill Rd to Fisherman's Bay
- Chanel Rd to Lopez to SJ Sub Terminal
- Lopez Sound Rd to Cousins Rd Distribution Line
- Watmough Distribution Line
- Mud Bay Rd, Islandale Rd to Aerie Pl Distribution Line

San Juan

- Pear Point to Missing Mountain Transmission Line
- Roche Harbor Rd, Tucker to Rouleau Rd Transmission Line
- West Side Rd, Lime Kiln to Hannah Heights Distribution Line
- False Bay Rd. Distribution Line
- Cape Rd. Distribution Line
- Douglas Rd Distribution Line
- Bailer Hill to Wold Rd Distribution Line
- Yacht Haven Rd Dist Line
- San Juan Valley Rd to Wold Rd
- Little Rd Distribution Line
- Ridgedale Rd Transmission Line

Shaw

- Reef Net Bay Rd Transmission Line
- Blind Bay Transmission Line to sub terminal
- Smugglers Cove Dist Line
- Indian Cove to Reef Net Bay Rd
- Hoffman Cove to Hix Bay Rd. Dist. Line

Blakely

- Blakely Sub Terminal Transmission Spencer Rd to South End Cable Terminal

Decatur

- Decatur Head Transmission Line to Step Down Transmission Line
- Decatur Sub to Harmon Ranch Transmission Line and distribution
- Fir Ridge Rd to Thatcher Pass Rd Transmission Line

Annual Precipitation

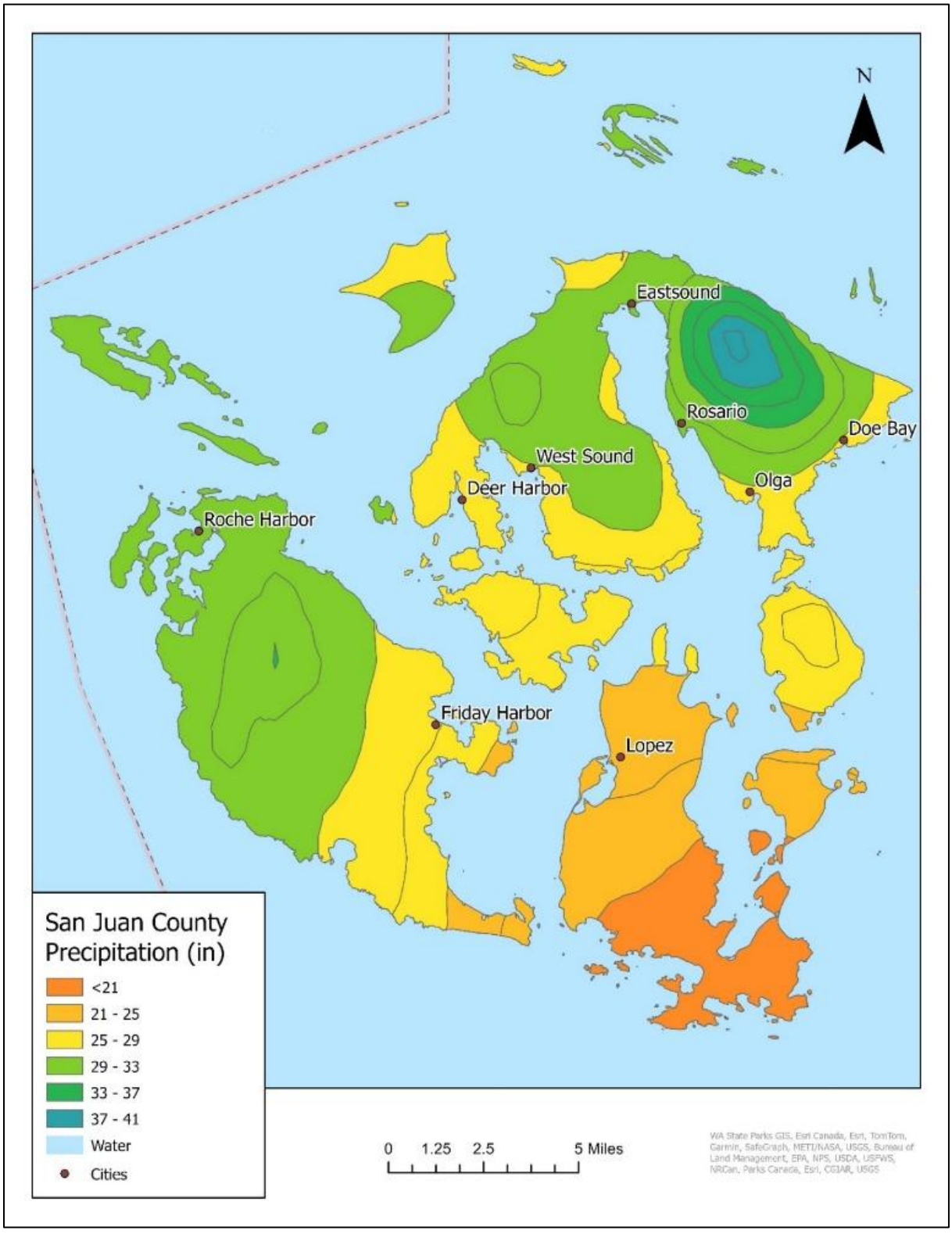


Figure 27: San Juan County Annual Precipitation (inches), 30 Year Average.

Noxious Weeds

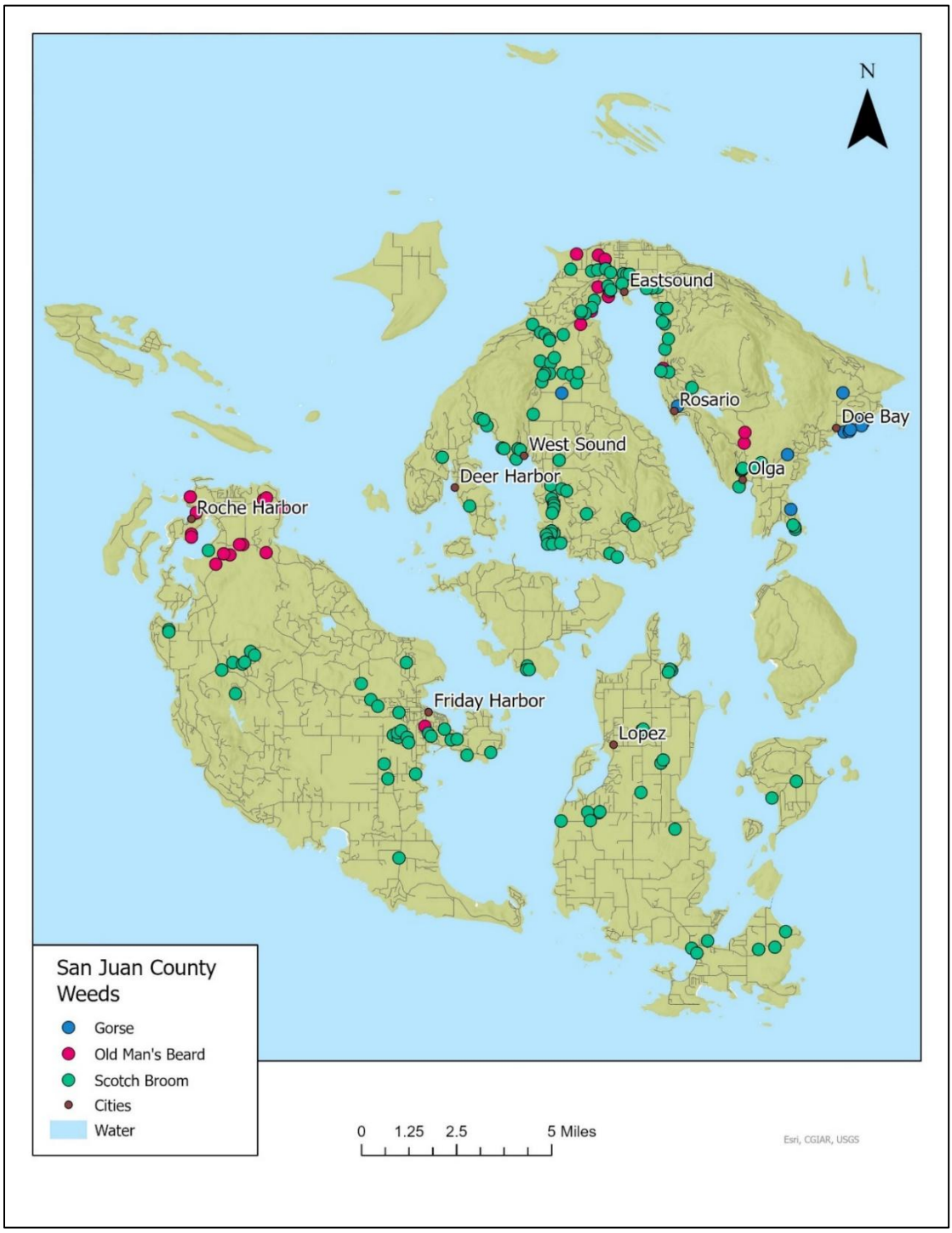


Figure 28: Three Common San Juan County Weeds and their Distribution[24]

[24] *SJC Noxious Weed Control Department*. Data collected from 2014-2025. These species were chosen to because they are particularly flammable or relevant to the threat of wildfire. Non-native grasses also pose a fire threat, but most are not included on the noxious weed list (WAC 16-750).

Building Density

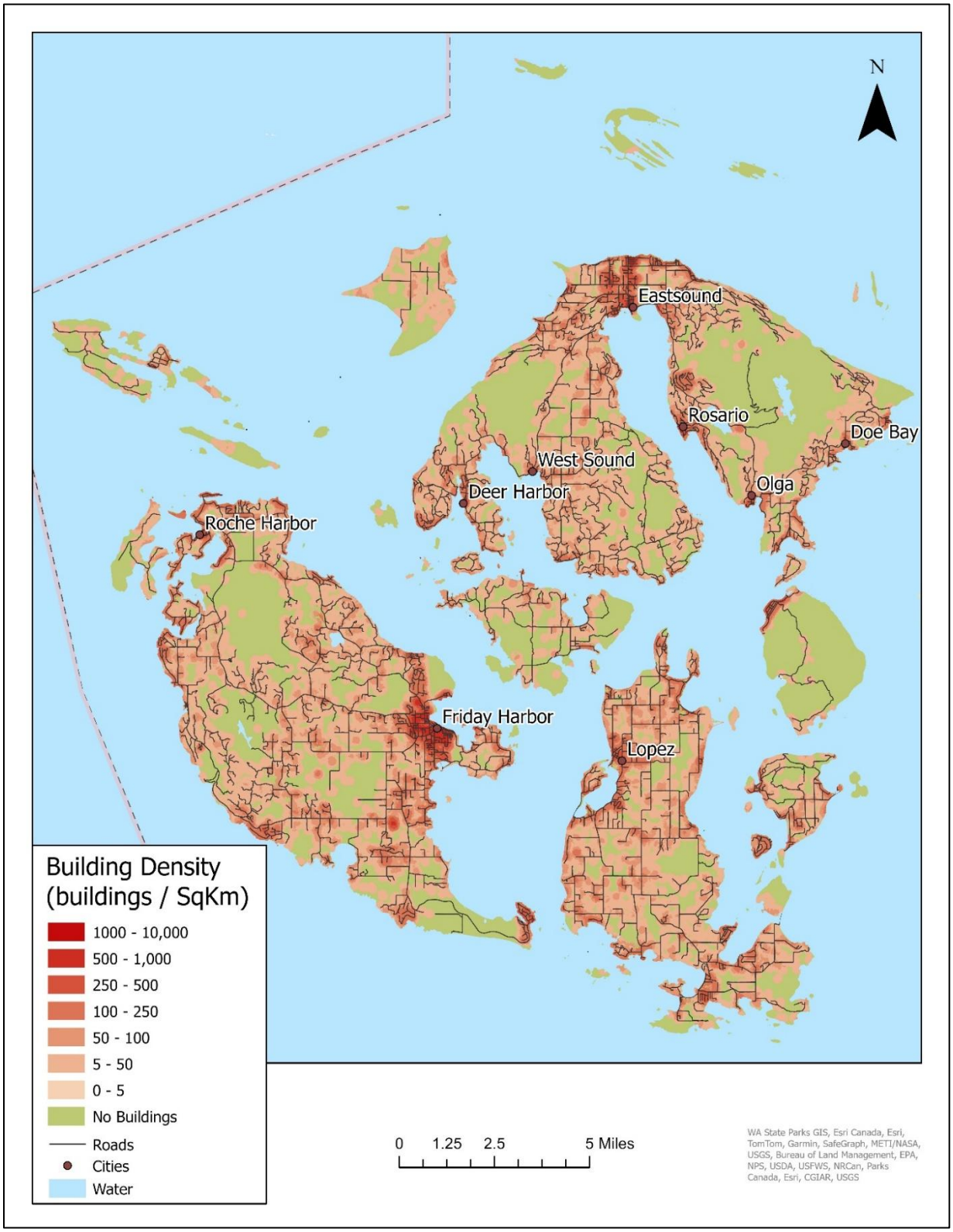


Figure 29: San Juan County Building Density

Appendix B- Local Fire Resources Summaries

The firefighting resources and capabilities information provided in this section is a summary of information provided by the fire chiefs or representatives of the wildland firefighting agencies listed. Each organization completed a survey with written responses. Their answers to a variety of questions are summarized here. These synopses indicate their perceptions and information summaries.

San Juan Island Fire & Rescue / San Juan County Fire District #3

District Summary: San Juan County Fire District #3 comprises San Juan, Brown, Dinner, Henry, Pearl, Stuart, Johns, Spieden, and O'Neil, Islands. Through a contract with the State's Department of Natural resources (DNR) the fire district also provides initial attack wildland fire protection to the County's unprotected "outer" islands.

The Fire District operates under the name of "San Juan Island Fire & Rescue" and is staffed predominantly by volunteer firefighters. There are seven fire stations located on San Juan Island, one on Brown Island, a fire cache on Johns Island, one station on Stuart Island East, and one fire station in the planning stage on Stuart Island West. The fire district operates a variety of land-based structural and wildland response vehicles and a quick-response fire boat.

There are typically approximately 350 calls for service per year within the fire district. While few of them are for wildland fires, the fuel model and intermix of wildland and structures, combined with challenging access, poses significant potential hazards during periodic high fire danger conditions.

Issues of Concern: Individual and small subdivision developments continue to increase the number of occupied and unoccupied structures in the wildland intermix area. These developments may pose an increased risk to the safety of the residents, visitors, and fire suppression forces during high or extreme fire conditions, placing incremental increase demand on already limited resources.

The topography and infrastructure of San Juan County create numerous areas where communications are challenging. There are areas where radio communication between the 9-1-1 Center and emergency responders is not provided or of poor quality. Commercial cell phone service is unavailable in many areas, making it difficult for those without access to a "landline" telephone to report a fire. In addition, there are no mass media outlets located within San Juan County, so the dissemination of emergency messages to the public (such as evacuation routes or "shelter in place" instructions) is further limited.

Open burning regulations are uniform throughout San Juan County. "Recreational" fires that are three feet in diameter or less are allowed year-round without the need to obtain a permit. "Residential" fires can be up to ten feet in diameter, and require a $20 permit that is available from any fire district as well as online from the County Fire Marshal's Website. "Commercial" permits are issued only after an onsite inspection. The current fee is $250. Residential permits

are issued each year beginning on October 1st, with all permits expiring the following June 30th. Commercial permits expire thirty days after they are issued.

As a volunteer-staffed fire service, the community's demographics impact the ability to recruit and retain firefighters. As the population ages, willing and able volunteers are an increasingly scarce resource.

As with all fire districts within San Juan County, when fire conditions require multiple resources to be deployed into forested areas to protect homes and people from fire, mutual aid resources are logistically difficult to obtain, with very long lead times between request and arrival.

Cooperative Agreements: San Juan Island Fire Rescue is DNR's contracted "first responder" for wildland fire suppression for all lands in San Juan County that are not within an organized fire protection district. The agency also participates in the Statewide Fire Mobilization Plan.

Area Covered	60 square miles *includes entire District
MOU's	WA DNR - assist the outer islands (Henry, Stuart, Pearl, Johns, Dinner) San Juan Island EMS National Park Service Washington State Patrol
Staff	11 Paid full and part-time employees
Volunteers	35 Volunteers
Fire Stations	7 stations on SJI (includes Marine Response Station) 1 station on Brown Island 1 Station on Stuart East 1 Station under design on Stuart West 1 cache on Pearl Island 1 cache on Johns Island
Equipment	7 pumper engines 2 water tenders 4 brush trucks 1 fire boat

Orcas Island Fire & Rescue / San Juan County Fire District #2

District Summary: San Juan County Fire Protection District #2 also known as Orcas Island Fire & Rescue provides emergency medical services, advanced life support (ALS), fire prevention and suppression, wildfire suppression, technical rescue, and public education services.

The district's response area is all of Orcas Island, which is approximately 57 square miles and categorized as rural. The topography of the island is the most diverse of the San Juan Islands; with elevations from sea level to 2,400 feet.

The District serves a permanent population of about 6,000 people with a summer population of 14,000. Because of its remoteness, the District has equipped and staffed itself to stand alone on emergency responses. There are seven stations across the "horseshoe" shaped island. The Eastsound Station, which is located in the center of the island, is staffed 24/7 by a Paramedic/Firefighter and an EMT/Firefighter with additional overnight accommodations for volunteers. Orcas Island Fire and Rescue is run predominantly by volunteers.

Open burning regulations are uniform throughout San Juan County. "Recreational" fires that are two feet in diameter or less are allowed year-round without the need to obtain a permit, unless the state or county bans burning. "Residential" fires can be up to ten feet in diameter and require a permit that is available only online from the County Fire Marshal's website. "Commercial" permits are issued only after an on-site inspection. These permits come with a fee that can be checked at the County Fire Marshal's website. Residential permits are issued each year beginning on October 1st, with all permits expiring the following May 30th. Commercial permits expire thirty days after they are issued.

Issues of Concern: Steep terrain is found throughout most areas of the island resulting in access and fire spread problems. The combination of topography and climate variances results in a wide variety of fuels across the island. Receiving outside assistance is limited to boat or aircraft, which increases response time for resources arriving by boat. Locating DNR Helitack resources at Big Lake near Mt. Vernon has dramatically reduced this response time. As population and construction increase, keeping current with public education, preparedness, and water supply throughout the island is an ever-growing concern.

Due to the topography and the communications infrastructure on Orcas Island, two-way radio and cell phone communications are limited. Areas of Orcas Island can rise from Sea Level (Puget Sound) to 2,400' (Mount Constitution) within two miles with many high ridges and deep valleys. Consequently, there are large areas of the island that are shadowed by the terrain where radio and cell phone communications do not function. The antenna tower is located at the high point of Mt. Constitution at 2400'. The communication facility on Mt. Constitution serves the U.S> Coast Guard, FAA, WA DNR and DOT, other government agencies and private radio and TV broadcast facilities. Orcas Island Fire & Rescue currently supplies all responders with portable radios capable of communications with their dispatch, other San Juan County Fire Districts and

the Department of Natural Resources. The district does encounter challenges with radio communications when topography interferes with "line of sight" or "tower to tower" connections.

Major response issues include lack of water hydrants and water, along with narrow, steep roads and driveways. Access is a challenge for both EMS and fire.

As with all fire districts within San Juan County, when fire conditions require multiple resources to be deployed into forested areas to protect homes and people from fire, mutual aid resources are logistically difficult to obtain, with very long lead times between request and arrival.

Area Covered	57 square miles
MOU's	San Juan County Mutual Aid Plan Statewide Fire Mobilization Plan WA DNR
Staff	13 Paid full and part-time employees
Volunteers	52 Volunteers
Fire Stations	7
Equipment	Type 1 Fire Engines 2 Tenders 2 Brush Engines 2-ALS Amb 2-BLS Amb 1 Rescue 1 Utility Truck

Lopez Island Fire & EMS / San Juan County Fire District #4

District Summary: Lopez Island Fire & EMS protects an area of 29 square miles, comprised of farmland, forest and a small residential/commercial hub, Lopez Island Village at the North end of Fisherman Bay.

The District is a rural area with significant WUI concerns. Lopez Island Fire & Rescue provides fire and emergency medical services to a year-round population of 3,000 that during the spring and summer increases to 7,000 individuals.

Much of the District apparatus is past its service life, although the District has an apparatus funds plan in place, it will take years to get the vehicle replacement schedule to current needs.

Current regulations are adequate and the burn permit process and outdoor burning season on Lopez Island is effective for controlling debris disposal and land clearing fires.

Issues of Concern: More residential units are built within the WUI every year; these homes are built in areas without hydrants and down long narrow driveways. The combination of lack of water and difficult access makes fires extremely difficult to manage.

As with all fire districts within San Juan County, when fire conditions require multiple resources to be deployed into forested areas to protect homes and people from fire, mutual aid resources are logistically difficult to obtain, with very long lead times between request and arrival.

The District continues to work on solving communication issues regarding VHF radio frequencies, and cellular frequencies on Lopez Island that are blocked by terrain. There are large areas on Lopez Island where communication between the public, emergency dispatch, and emergency responders is neither seamless nor timely.

The District faces a significant risk of WUI fires due to the substantial accumulation of fuels in the island's wooded areas. Many access roads are too narrow for fire district apparatus, and poorly marked private driveways make it challenging for firefighters to locate homes quickly. In the event of a wildfire, these access limitations could not only hinder emergency response efforts but also create bottlenecks for residents attempting to evacuate. Improving road accessibility and signage is critical to enhancing both firefighter response and community safety.

Area Covered	29 square miles
MOU's	San Juan County Mutual Aid Plan
Staff	3 full time Fire Captain/paramedics 2 full time Firefighter/EMT's 1 full time Fire Chief 1 full time administrative Coordinator
Volunteers	20 Volunteer Emergency Medical Technicians 25 Volunteer Firefighters
Fire Stations	3
Equipment	2 ambulances 3 paramedic cars 1 command vehicle 1 wildland apparatus with 250-gallon water tank and pump

	1 type 3 WUI engine with 500 gallons 4 class A pumpers 1 class A pumper/tender 1 tender 1 rescue with 400 gallon 1 Ultra High-Pressure pump

Shaw Island Fire & EMS / San Juan County Fire District #5

Fire Department Summary: San Juan County Fire District #5 protects Shaw Island. The fire district provides EMS response and structural and wildland fire protection to the island. The agency is comprised of volunteer firefighters and Emergency Medical Technicians (some cross trained for both functions).

There are three fire stations located on Shaw Island. The fire district operates a variety of fire vehicles and an ambulance.

There are approximately 25 calls for service per year within the fire district. While few of them are for wildland fires, the fuel model and intermix of wildland and structures represents a significant potential hazard during the dry season each year.

Issues of Concern: There are approximately 150 full-time residents on Shaw Island with the population increasing in the summertime to about 200. While the limited number of residents results in some relatively large areas of land throughout the fire district where structure protection concerns are minimal, there are legitimate wildland/urban interface and intermix areas. The small population also poses a continuing challenge to recruit and train sufficient fire suppression forces.

As with all fire districts within San Juan County, when fire conditions require multiple resources to be deployed into forested areas to protect homes and people from fire, mutual aid resources are logistically difficult to obtain, with very long lead times between request and arrival.

The topography and infrastructure of San Juan County create numerous areas where radio communication between the 9-1-1 Center and emergency responders is difficult or impossible. Commercial cell phone service is not available in many areas, making it difficult for those without access to a “land line” telephone to report a fire. In addition, there are no mass media outlets located within San Juan County, so the dissemination of emergency messages to the public (such as evacuation routes or “shelter in place” instructions) is very difficult.

Open burning regulations are uniform throughout San Juan County. “Recreational” fires that are two-feet in diameter or less are allowed year-round without the need to obtain a permit. “Residential” fires can be up to ten-feet in diameter and require a $20 permit that is available from any fire district as well as online from the County Fire Marshal’s Web site. “Commercial”

permits are issued only after an onsite inspection. The current fee is $250. Residential permits are issued each year beginning on October 1st, with all permits expiring the following June 30th. Commercial permits expire thirty days after they are issued.

As a volunteer-staffed fire service, the community's demographics impact the ability to recruit and retain firefighters. As the population ages, willing and able volunteers become an increasingly scarce resource.

Area Covered	7.5 square. miles
MOU's	San Juan County Mutual Aid Plan
Staff	4 part-time employees
Volunteers	15 Volunteers
Fire Stations	3
Equipment	Engine 51- 1987 Ford 8000 Darly Type 1 Engine Engine 52- 1986 Pierce Dash Type 1 Engine Wildland Engine 51- 2018 Dodge 550 Type 5 Engine Wildland Engine 52- 1996 International Type 4 Engine Tender 56- 1988 International Darly Tender Aide 51- 2018 Dodge Ambulance

Decatur Emergency Brigade

Brigade Summary: The Decatur Emergency Brigade (DEB) was formed in 2020 and has since trained more than 120 individuals in basic wildland fire response. DEB is organized as a 501(c)(3) non-profit and maintains organizational and volunteer insurance aligned with volunteer fire department standards. The equipment listed below is located at two centrally accessible locations on the island.

Decatur is primarily characterized by transient vacation homeowners, with a very small and aging full-time population. Winter residents number in the dozens, whereas peak summer weekends may see 1,000–2,000 people across approximately 350 properties. These demographics pose challenges for consistent response and underscore the importance of having a clear communication network and strong local initiative. Off-island assistance for fire or medical emergencies generally exceeds one hour under the best of conditions.

DEB utilizes the IamResponding (IaR) communication system to create situational awareness among volunteers, including anticipated on-island response. Due to inconsistencies in both policy

and practice related to county-level response through the San Juan County 911 Emergency Dispatch (housed within the SJC Sheriff's Department), DEB established a private call center for Decatur Island. This call center directly alerts DEB volunteers through the IaR app and also coordinates with the Washington Department of Natural Resources (WA DNR). In the absence of a coordinated emergency communications and response plan for SJC's outer islands (Decatur being one of ~134 islands without a fire district), this private system has proven effective in handling numerous incidents in the absence of SJC 911 coordination.

DEB works closely with the WA DNR on integrating into their emergency radio network, coordinating planning and training resources, and providing situational awareness and equipment resources for potential DNR responses. The organization has also supported Wildfire Ready Neighbors (WRN) initiatives on the island, especially among the primary homeowners' associations—and has received DNR grants for equipment and fuels reduction projects, and for education. In addition, DEB enthusiastically supports the SJC Interagency Wildland Fire Team and its efforts to serve the county.

Despite these efforts, DEB's greatest challenge—one shared by other mid-sized outer islands—is organizing and coordinating a local first response while effectively navigating and leveraging San Juan County's off-island resources, planning, and communication channels. The outer islands lack the advocacy, representation, and coordination typically provided by four of the five established fire districts, creating a systemic disadvantage for these communities.

Area Covered	3.5 square miles
MOU's	WA DNR
Staff	N/A
Volunteers	120 trained volunteers with basic wildland fire response
Fire Stations	N/A
Equipment	2 brush trucks with 500-gallon tanks 1 truck with 750 gallon tank 1 foam truck

Waldron Island Fire Brigade

District Summary: The residents of Waldron Island do not have a fire protection district on their island. Waldron falls under the Washington DNR, which has a cooperative agreement with San Juan Island Fire & Rescue and Orcas Island Fire & Rescue. The absence of a fire protection district has prompted the development of an informal island fire brigade. The

community has built a fire shelter to store firefighting equipment and acquired 3 water wagons or trailers, each with 200-gallon capacity, mounted high pressure pump and 100+ feet of fire hose. The Brigade sponsors annual firefighting training for the community as well as off-island certified wildland firefighting training for individuals. These efforts notwithstanding, islanders are under no illusion that this equipment is sufficient to defeat a significant fire. The goal is to safely control and delay the spread of any wildland fire and help coordinate response by DNR and local fire districts.

Area Covered	4.59 square miles
MOU's	WA DNR
Staff	No staff but the community has acquired fire fighting equipment that is free for anyone to use
Volunteers	Trained Volunteers
Fire Stations	Community Fire Shelter
Equipment	3 200-gallon water wagons/trailers with high pressure pumps and 100+ ft of fire hose

Washington Department of Natural Resources

Agency Summary: The Department of Natural Resources is Washington State's wildfire fighting force. Our approximately 600 permanent and temporary wildland firefighters fight fires on more than 13 million acres of private and state-owned forest lands. Our fire protection and safety equipment requirements help your local fire districts respond to wildfires. We also work with the National Weather Service to provide the fire weather forecasts and fire precaution levels for you, the firefighters, forest landowners, and the forest industry. We use hand crews, engines, dozers, water tenders, helicopters and planes to help contain and suppress wildfires. DNR hosts interagency wildland fire academies to provide quality wildland fire training at no cost to Washington's in-state interagency firefighting partners. Each academy uses local, state and federal firefighters' expertise to teach the courses. DNR issues and regulates burn permits for silvicultural, hazard abatement, and habitat restoration burning in San Juan County.

San Juan County is in DNR's Northwest Region and is one of five counties served by Northwest Region. The Region is split into two fire units, the Kulshan Unit and the Salish Unit. San Juan County is in the Salish Unit with part of Skagit, Island and Snohomish Counties. The resources in the table below are available for any wildland fire response in San Juan County. There are also several resources across the State including airtankers based in Moses Lake and Olympia available to San Juan County for wildland fire response if needed.

The Salish Unit has a fire engine crew and access to a 30' Munson Landing Craft Boat based in Anacortes. This boat and fire crew is available to respond to non-ferry served islands for fire response. The DNR also contracts with barge companies in Anacortes to transport our fire engines and equipment to non-ferry served islands if necessary. The DNR type 2 helicopter is based at Big Lake Fire Station 1 near Mount Vernon and can respond to any fire in San Juan County in under 30 minutes. There are also DNR helicopters available in Olympia with a 1-hour flight time to San Juan County if the Big Lake helicopter is not available or if the response requires more than one helicopter.

Cooperative Agreements in San Juan County: The DNR works cooperatively with the Fire Districts in San Juan County through Forest Land Response Agreements. Unless a fire was unmanageable for the local resources, the fire districts have historically been successful at suppressing most wildland fires in their district with little or no support from the DNR. The DNR is now responding to all wildland fires in San Juan County that we are notified about. Part of Northwest Region's Island response plan is to send the DNR type 2 helicopter to any new wildland fire start in San Juan County. DNR has jurisdiction on all non-federally owned forest land in San Juan County for wildland fire response. Although the DNR does not fight structure fires they will respond to a structure fire in San Juan County if it has the potential to spread into the wildland.

Area Covered	All non-federal forest land and any fire that is a threat to DNR jurisdiction
MOU's	Forest Land Response Agreements and Inter-Agency Response Agreements
Staff	2 Fire Management Officers 4 Assistant Fire Management Officers 4 Wildland Fire Technicians 12 Wildland Fire Hand Crew 38 Wildland Fire Engine Crew Total Staff available – 60
Volunteers	N/A
Fire Stations	Anacortes (2 Engines) Stanwood (Initial Attack Hand Crew & 2 Engines) Sedro-Woolley (1 Engine) Big Lake (1 Helicopter) Bellingham (4 Engines) Deming (Initial Attack Hand Crew)

	Marysville (1 Engine) Olympia (Helicopter) Mosses Lake (DNR Exclusive Use Retardant Planes and Scooper Planes)
Equipment	10 type 5 fire engines 2 ten-person initial attack hand crew modules 1 fire excavator 1 fire bulldozer 1 type 2 helicopter (Mount Vernon) and additional helicopters in Olympia Several airtankers in Moses Lake and Olympia that can be utilized 30' Munson Landing Craft Boat and crew (Anacortes)

National Park Service

District Summary: San Juan National Historic Park (SAJH) is supported by staff from the Olympic Interagency Zone and local wildland fire cooperators to conduct operations and related activities providing for human safety as the first priority. There are no dedicated NPS firefighting resources at SAJH. The NPS relies on wildfire suppression capabilities from neighboring cooperators. The NPS has established a Reciprocal Fire Protection Agreement with Island Fire and Rescue. In addition, the state Department of Natural Resources (WDNR) is a supporting cooperator, along with federal, municipal, and county fire suppression organizations on the mainland. During elevated fire danger conditions including fire severity or step-up, emergency funding could allow for limited staffing to conduct prevention and detection patrol activities, as well as to pre-position firefighters in or near SAJH. The fuels management program is designed to achieve resource management and fire protection objectives. All wildfires, regardless of ignition source, will be suppressed using strategy and tactics commensurate with values-to-be-protected, firefighter and public safety, and cost efficiency. The initial response will seek to minimize fire size and achieve fire control, protecting value at risk, and extinguish the fire. In addition, the response will consist of management actions including notification and communication.

Area Covered	San Juan National Historic Park (2,138 acres). Boundary incorporates two units, English Camp (915 ac) and American Camp (1,223 ac).
MOU's	Olympic Interagency Fire Zone, San Juan County Fire District No. 3, WA DNR, USFS, BLM, and FWS
Staff	*Same as San Juan County Fire District #3

Volunteers	N/A
Fire Stations	San Juan County Fire District #3 1 Type 6 Engine Port Angeles WA 1 Type 6 Engine Quilcene WA 1 Type 6 Engine Hoodsport WA
Equipment	3 Type 6's and 1 Type 2 Wildland Fire Module

Bureau of Land Management

Spokane District Mission Statement: The mission of the Spokane District is to share our unique capability and interest in sustaining the full diversity of natural and cultural landscapes across Washington State and invite their discovery and use. This includes protecting the natural resources, such as water for fish and wildlife; preserving environmental and cultural values on the lands they manage; providing for multiple uses, that include some commercial activities; and enhancing opportunities for safe and enjoyable outdoor recreation. The Spokane District also assesses energy and mineral resources and works to ensure that their development is in the best interest of the public. Another major responsibility is to ensure consideration of Tribal interests and administration of the Department of Interior's trust responsibilities for American Indian Reservation communities.

District Summary: Today the Spokane District BLM manages about 1000 acres in San Juan County for multiple uses, providing wildfire protection, suppression, support, and training for the BLM managed lands and other federal/state/county agencies. The Spokane District Fire Management Program manages the personnel listed below. A ten person Veterans Crew and one engine is stationed in Spokane at the District office and the other two engines in Wenatchee at the field office. There are approximately 16 other specialists (staff) from across the district that assist the Fire Management Program in wildland and/or prescribed fire efforts. With the District's scattered ownership pattern, the engines are usually on scene after initial attack forces have arrived. Our engines and personnel are available for off District and out of state fire assignments that aid in support, training, and experience.

BLM in San Juan County, San Juan Islands National Monument: Situated in the northern reaches of Washington State's Puget Sound, the San Juan Islands are a uniquely beautiful archipelago of over 450 islands, rocks, and pinnacles. The new San Juan Islands National Monument encompasses approximately 1,000 acres of land spread across many of these rocks and islands and managed by the Department of the Interior's Bureau of Land Management. Drawing visitors from around the world, this is a landscape of unmatched contrasts, where forests seem to spring from gray rock and distant, snow-capped peaks provide the backdrop for sandy beaches. The San

Juan Islands National Monument is a trove of scientific and historic treasures, a refuge for an array of wildlife, and a classroom for generations of Americans.

Area Covered	>900 acres
MOU's	San Juan County Fire District #4, DNR
Staff	15-25 which includes: Fire mitigation specialist Administrative and leadership staff Two full-time engine captains Four engine crew members One 10 person hand crew Fuels Technician Seasonal Dispatcher Assistant Fire Management Officer (AFMO) Fire Management Officer (FMO)
Volunteers	N/A
Fire Stations	Based out of Spokane and Wenatchee WA
Equipment	Three type 6 wildland fire engines with two full-time engine captains and four engine crew members Veterans Fire Suppression Module

Appendix C- Wildfire hazard inputs and results

The following landscape features are used as inputs in IFTDSS Landscape Burn Probability modeling. The inputs are derived from LANDFIRE[25] data for areas within the landscape boundary, which was defined as San Juan County. Some of these variables and the influence that they have on fire behavior are described in the following pages along with accompanying maps.

Elevation	Canopy Base Height
Slope	Canopy Bulk Density
Aspect	Existing Vegetation Type
Fuel Model	Existing Vegetation Cover
Canopy Cover	Existing Vegetation Height
Stand Height	Zone (LANDFIRE Map Zone)

[25] Landscape Fire and Resource Management Planning Tools, or LANDFIRE, is a shared program between the wildland fire management programs of the U.S. Department of Agriculture Forest Service and U.S. Department of the Interior, providing landscape scale geo-spatial products to support cross-boundary planning, management, and operations. For more information see: https://www.landfire.gov/about-landfire

San Juan County Slope Gradient

Steep slopes are a concern for first responders and emergency managers for many reasons. Slope is a factor that can increase fire behavior, especially when coupled with wind events. Thus, wildfires on steep slopes can see faster rates of spread. Ignitions that occur on steep slopes can have a greater chance of spreading into a more significant fire. Steep slopes also make firefighter access more difficult, present additional safety concerns for firefighters, and limit available suppression tactics.

The majority of San Juan County has gentle slopes, but this varies based on the island. Orcas Island has the most area with high slope percentages in the county, which is mostly around Mount Constitution and Turtleback Mountain. Parts of the county have some areas of moderate to high-percentage slopes, especially Blakely Island around the perimeter of the island and some areas on the west side of San Juan Island.

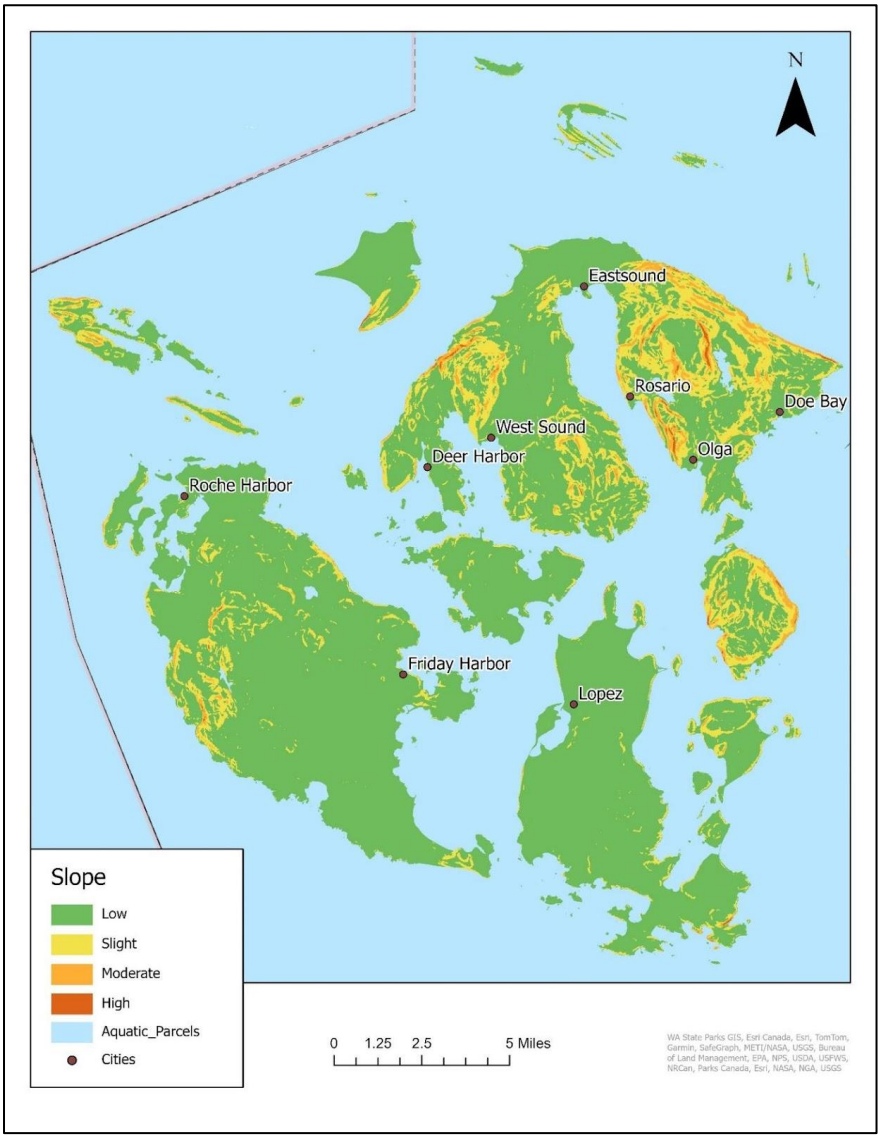


Figure 30: San Juan County Slope Gradient.

Aspect

Differing aspects, or the direction a slope faces, can have differing effects on vegetation and drying out of fuels. Northern slopes tend to be cooler, wetter, and more productive sites. This can lead to heavy fuel accumulations, with high fuel moisture, later curing of fuels, and lower rates of spread. In contrast, south and west slopes tend to receive more direct sun, and thus have the highest temperatures, lowest soil and fuel moisture, and lightest fuels. The combination of light fuels and dry sites leads to fires that typically display the highest rates of fire spread. The aspect in San Juan County varies and is distributed fairly evenly among all compass directions.

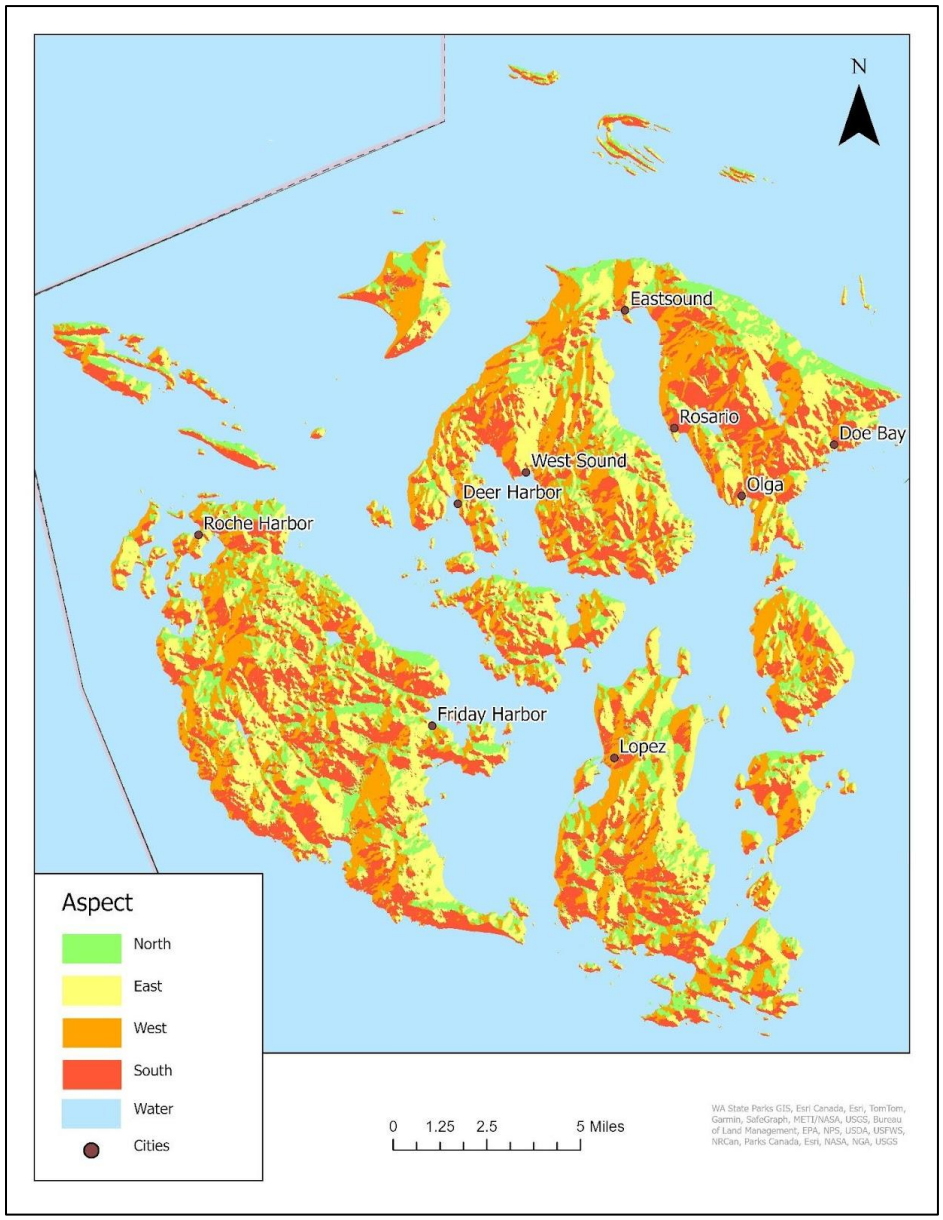


Figure 31: San Juan County Aspect.

Existing Vegetation Cover and Type

Vegetation significantly impacts wildfire behavior by acting as the primary fuel source for a fire. The type of vegetation, its moisture content, and the arrangement of plants play a crucial role in fire behavior. Generally, denser vegetation can lead to faster and more intense fire spread due to increased fuel availability and the close proximity of flammable material, while sparse vegetation can slow down fire progression. Because dead plants burn very easily, the presence of dead vegetation increases the likelihood of a more intense and faster spreading wildfire. Live, green, wet plant life does not burn easily and may slow a wildfire's progress. However, in a wildfire, all vegetation can eventually act as fuel. Vegetation cover in San Juan County consists mainly of trees (61%) and agricultural activities (18%). The rest of the county is composed of development (18%) and small components of shrubs, herbaceous cover, and riparian areas.

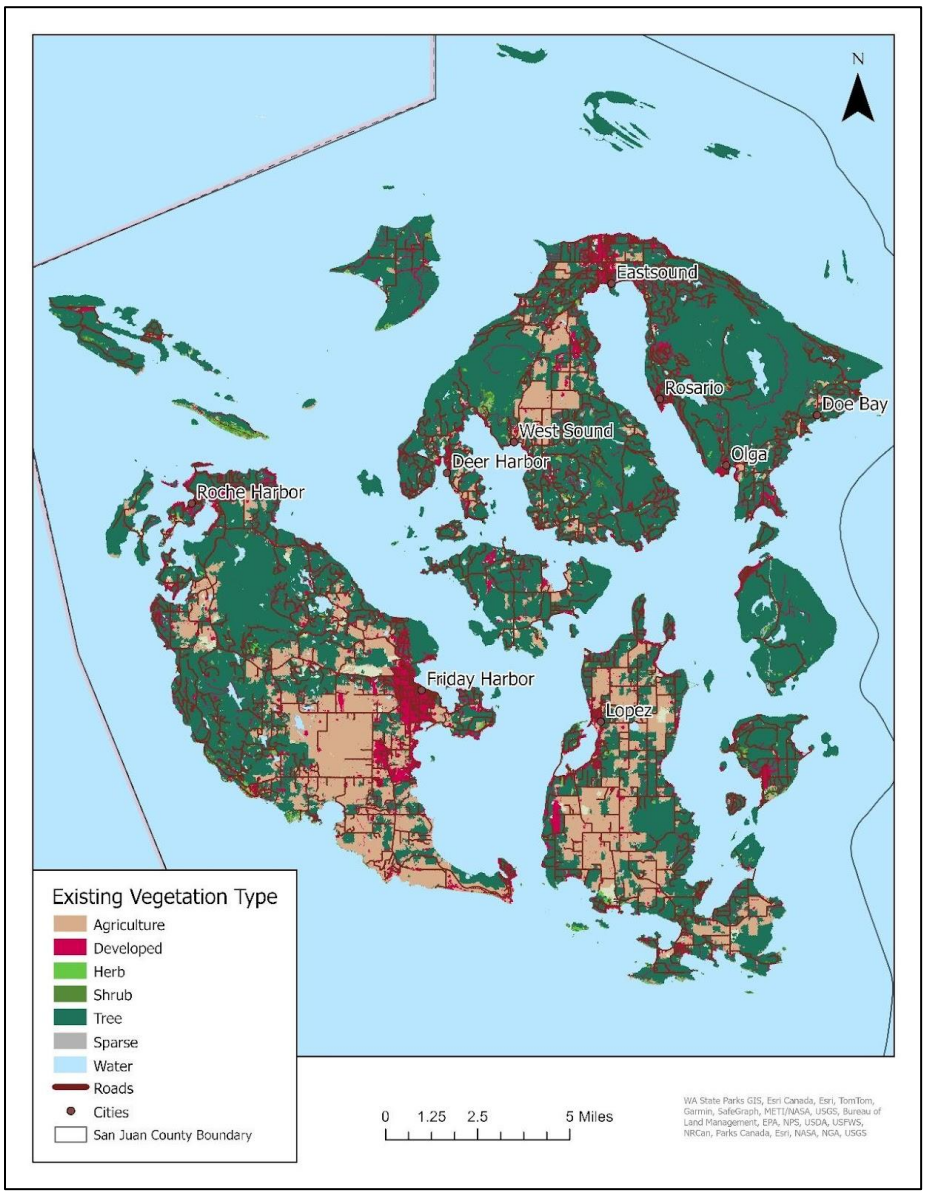


Figure 32: San Juan County Existing Vegetation Type.

Wildfire Likelihood (Burn Probability)

Burn probability refers to the statistical likelihood or average annual chance that a specific location will experience wildfire, essentially representing the probability of a given area burning in any given year, often expressed as a percentage. The wildfire likelihood in San Juan County is on average, 84% lower than counties in the rest of the United States and the county has a lower wildfire likelihood than 36 of the 39 counties in Washington. That said, wildfire ignitions can and do happen in San Juan County. USDA Forest Service studies suggest that ignitions and wildfire occurrences will likely increase in the future, even for wetter forests in the Pacific Northwest. Although it is important to keep relative probabilities in perspective when considering wildfire risk, fire and fuels planners should consider the impacts of climate change on vegetation and weather patterns and how these conditions could affect wildfire likelihood in the future.

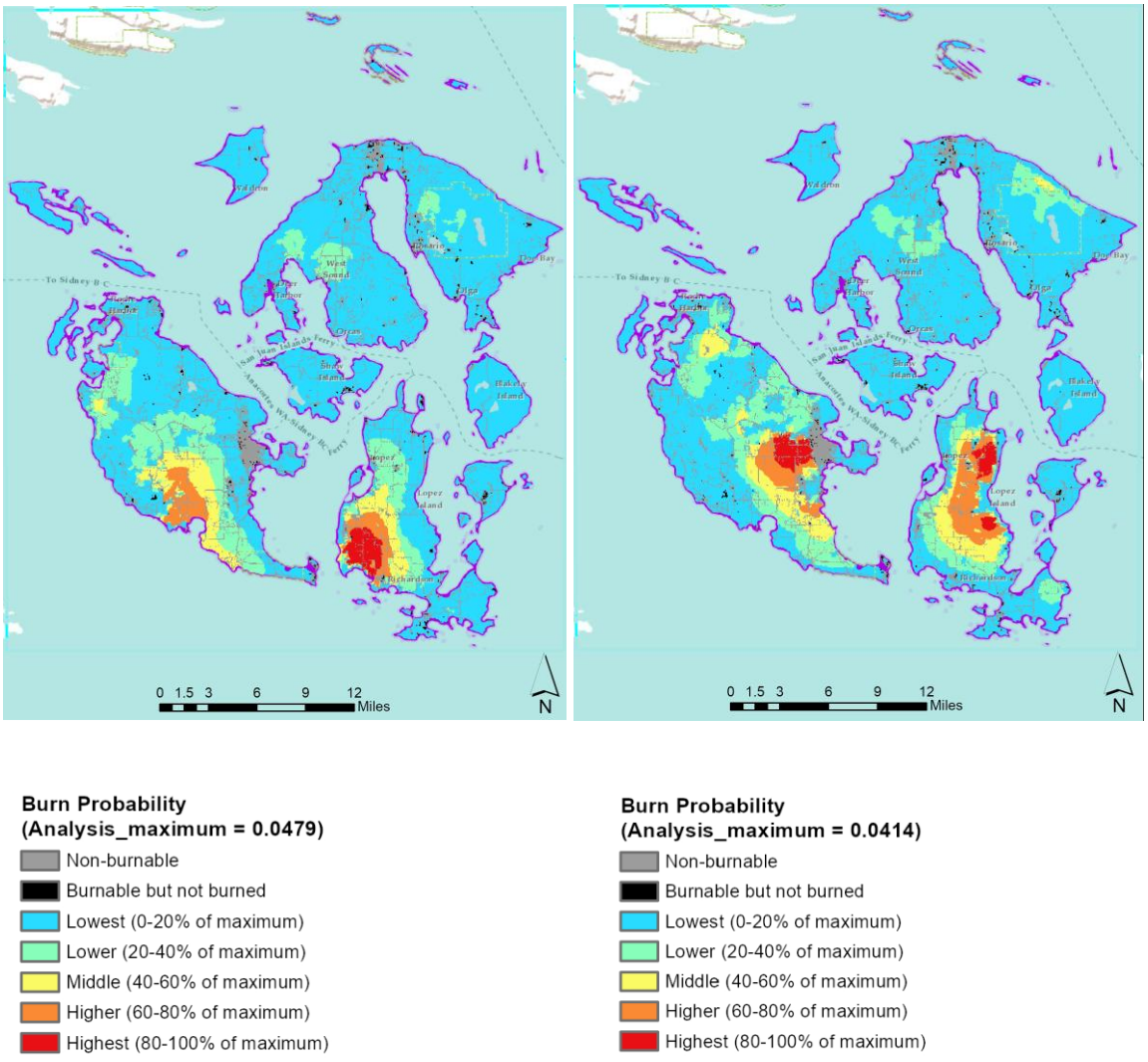


Figure 33: Burn Probability 15 mph NE Wind Scenario (left) and 15 mph SW Wind Scenario (right)

Wildfire Intensity (Conditional Flame Length)

The Conditional Flame Length model is the most likely flame length at a given location if a fire occurs, based on all simulated fires. This is used as an average measure of potential wildfire intensity. The presence of lighter fuels does not typically lead to extreme flame lengths; however, in general, the presence of heavy down-dead material and heavy live understory greatly increases flame length potential. It should be noted that some of the "heavy", large diameter fuels in the timber fuel group will also require a longer drying period to reach the conditions for burning. Therefore, a fire in a heavily forested area with large amounts of down woody debris will not necessarily always result in a catastrophic fire. The greatest potential flame lengths in San Juan County are located in forested areas with steep slopes. These areas could pose greater risk in the event of a significant wildfire.

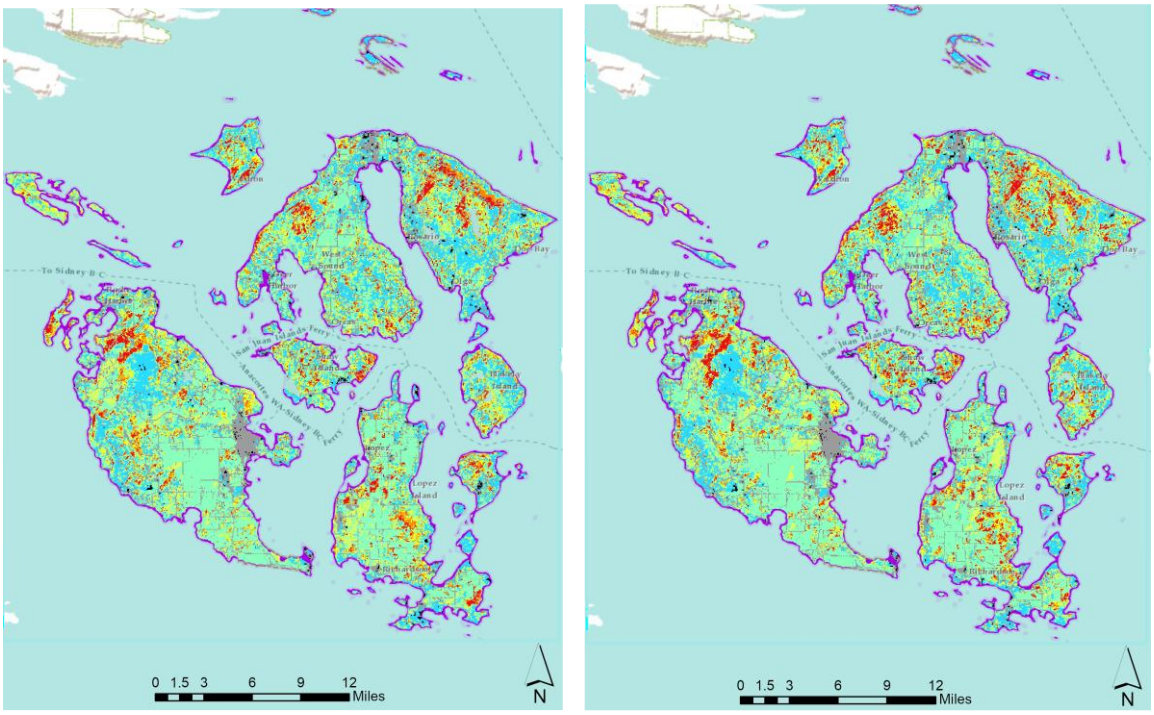
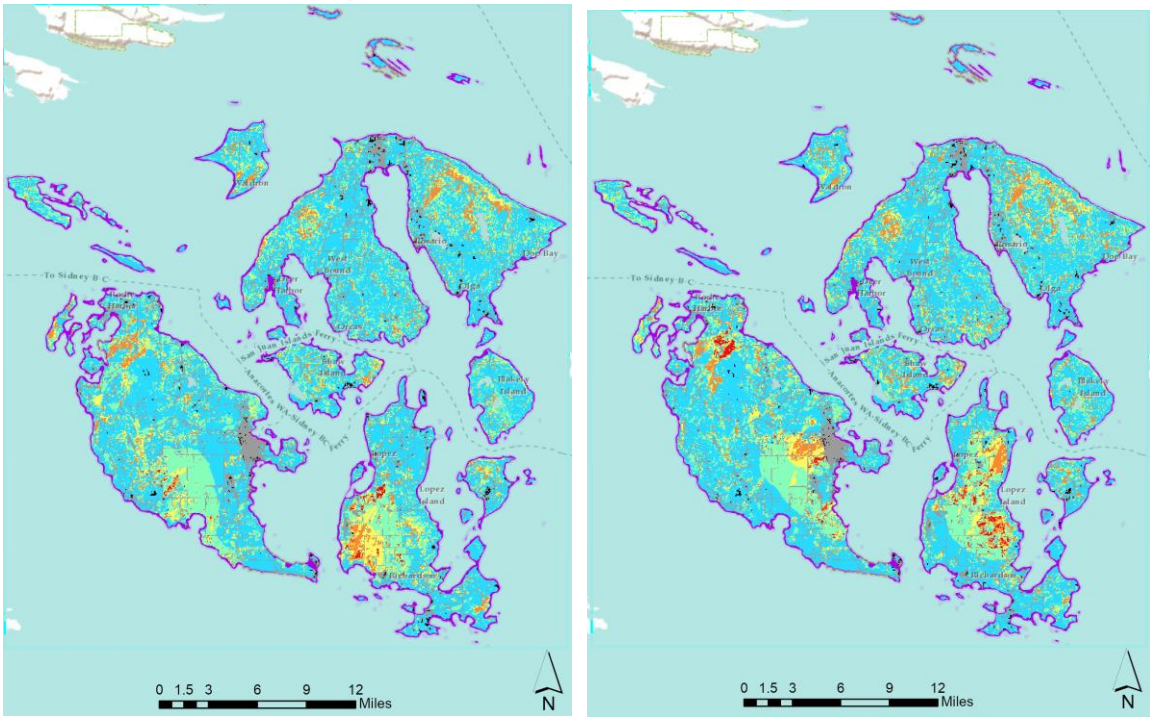


Figure 34: Conditional Flame Lengths 15 mph NE Scenario (left) and 15 mph SW Scenario (right).

Integrated Hazard

The integrated hazard map displays the combination of how likely a wildfire is to occur in a specific location (burn probability) and how much heat energy the fire releases (intensity/ conditional flame length) under a fixed set of weather and fuel moisture conditions. An Integrated Hazard value was assigned to each pixel in the map based on burn probability and conditional flame length values, where the higher the likelihood and intensity, the greater the hazard value.



Wildfire Simulation - Integrated Hazard Matrix

Cond. Flame Length Classes	Burn Probability Classes: Lowest 0-20% of max	Lower 20-40% of max	Middle 40-60% of max	Higher 60-80% of max	Highest 80-100% of max
> 12 ft					
> 8 - 12 ft					
> 6 - 8 ft					
> 4 - 6 ft					
> 2 - 4 ft					
> 0 - 2 ft					

Lowest Hazard	Lower Hazard	Middle Hazard	Higher Hazard	Highest Hazard

Figure 35: Integrated Hazard Matrix (credit: IFTDSS.firenet.gov).

IFTDSS Inputs

The following inputs were used to create the Burn Probability, Conditional Flame Lengths, and Integrated Hazard maps in IFTDSS.

Model Run Details	**SW 15 mph Event**	**NE 15 mph Event**
Model Run Name:	LBP_2025_15mph_225Deg_GR2	LBP_2025_15mph_45deg_GR2
Landscape Name:	2025_SJbound-60m	2025_SJbound-60m
Resolution (meters):	60	60 m
Model Type:	Landscape Burn Probability	Landscape Burn Probability
Wind		
Wind Type:	Gridded Winds	Gridded Winds
Wind Direction (degrees):	225	45
Wind Speed (mph):	15	15
Crown Fire Inputs (same for both runs)		
Crown Fire Method:	Scott/Reinhardt	
Foliar Moisture Content (%):	90	

Initial Fuel Moisture (same for both runs)					
Fuel Model	**1hr FM**	**10hr FM**	**100hr FM**	**Herb FM**	**Woody FM**
All	5%	7%	10%	90%	90%
GR2 (102)	5%	7%	10%	60%	90%

Fuel Moisture Conditioning (same for both runs)	
Conditioning:	On - Extreme - Marine Northwest Coast Forest
Conditioning Start:	1300, 6/29/2009

Conditioning End:	1500, 7/3/2009
Simulation Time (same for both runs)	
Burn Period Length (hours):	12
Spotting (same for both runs)	
Spotting Probability (%):	20
Ignitions (same for both runs)	
Ignitions:	Random,
Completed Fire Summary (same for both runs)	
Number of fires run:	20,257
Number of fires failed:	0

Suppression Difficulty Index Map

Wildfire Suppression Difficulty Index (SDI) 80th Percentile is a rating of relative difficulty in performing fire control work under regionally appropriate fuel moisture and 15 mph uphill winds (@ 20 ft). SDI factors in topography, fuels, expected fire behavior under prevailing conditions, fireline production rates in various fuel types with and without heavy equipment, and access via roads, trails, or cross-country travel. SDI does not account for standing snags or other overhead hazards to firefighters, so it is not a firefighter hazard map. It is only showing in relative terms where it is harder or easier to perform suppression work.[26]

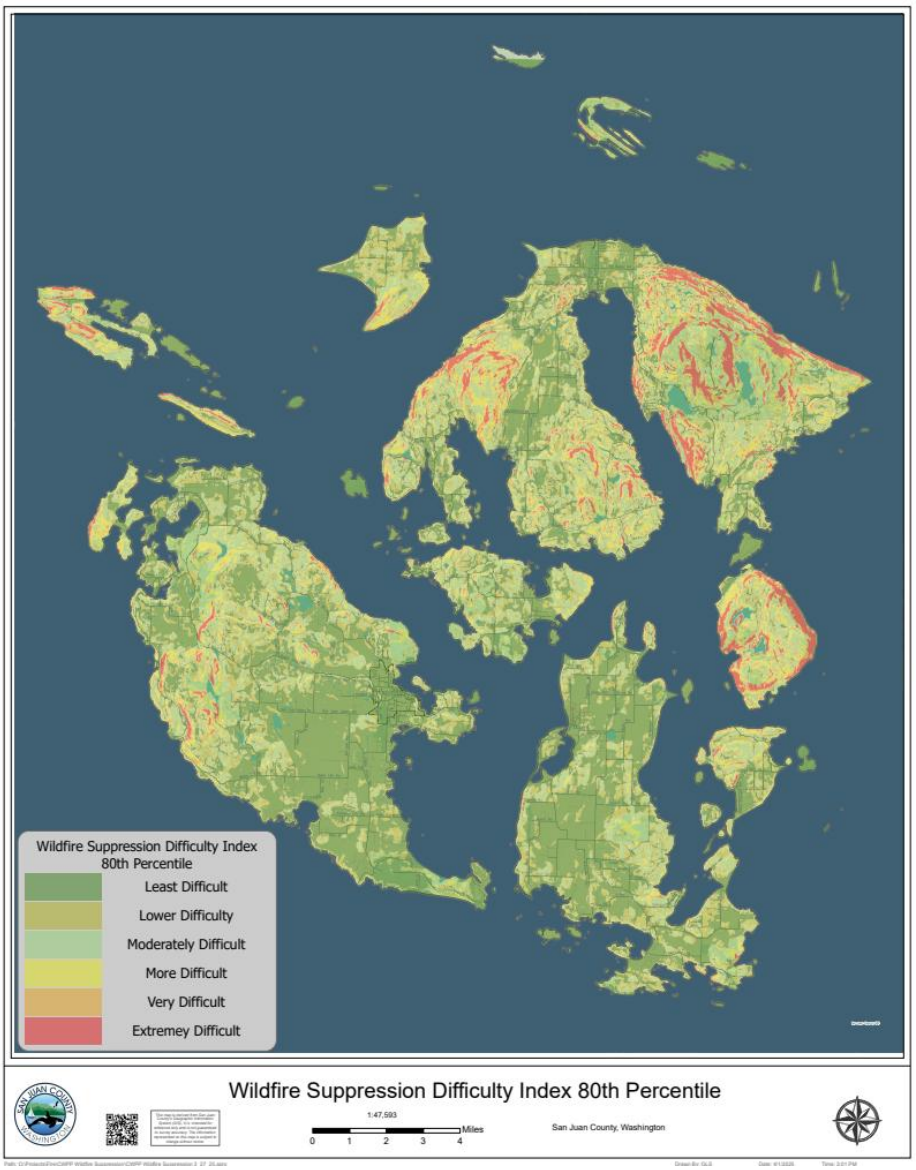


Figure 36: Suppression Difficulty Index Map.

[26] https://apps.fs.usda.gov/fsgisx01/rest/services/RDW_Wildfire/RMRS_Wildfire_Suppression_Difficulty_Index_80thPercentile/ImageServer

DNR Funded Forest Areas

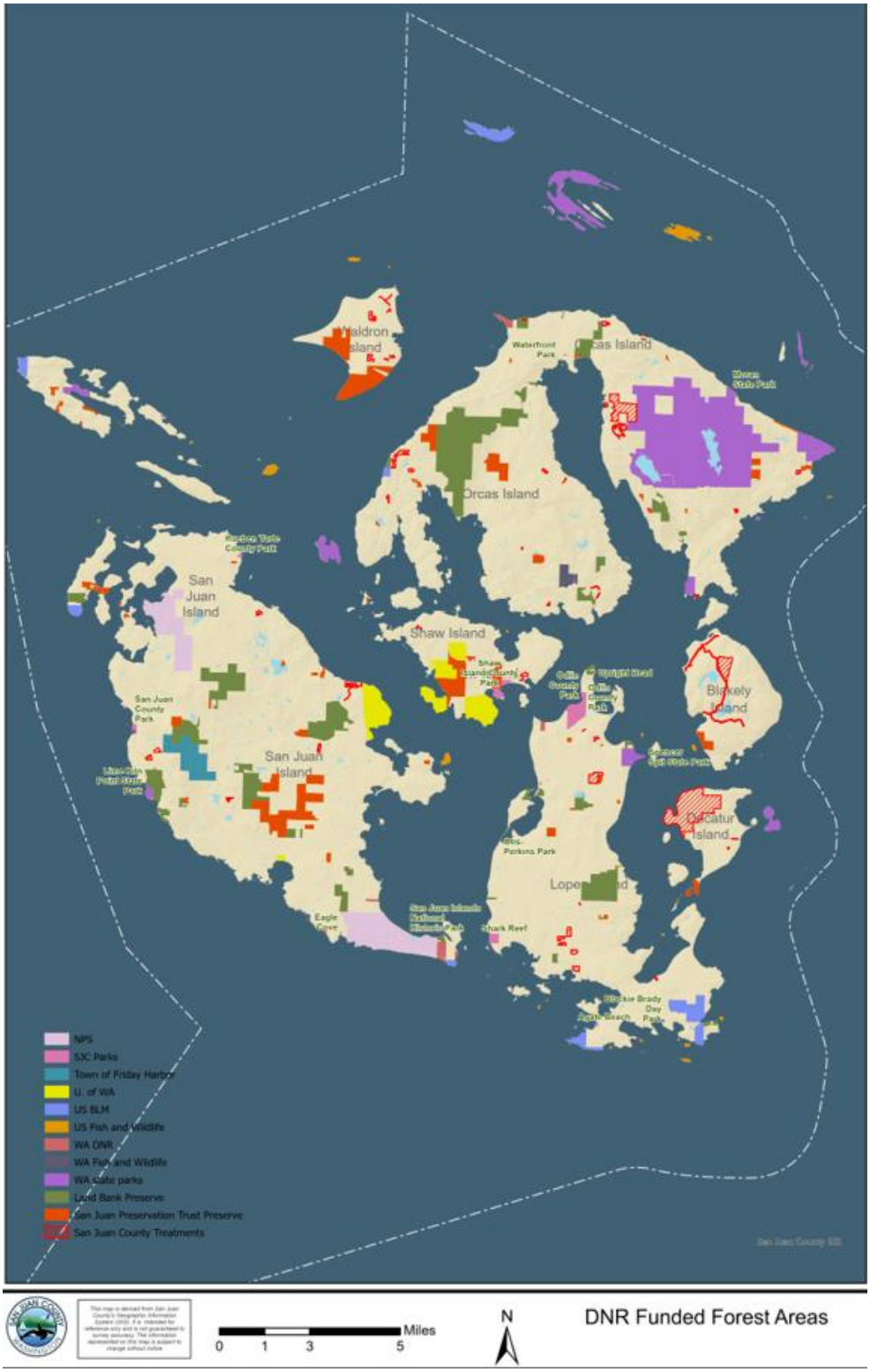


Figure 37: WA DNR Funded Forest Areas.

Appendix D- Risk Assessment Descriptions

Vegetation Condition Class

Vegetation Condition Class (VCC) represents a simple categorization of the associated Vegetation Departure (VDep) and is a derivative of the VDep layer. It indicates the general level to which current vegetation is different from the estimated modeled vegetation based on past reference conditions.[27]

The current Vegetation Condition Class model shows that most of the county is considered to be Vegetation Condition Class II A and Vegetation Condition Class II B. This means that the vegetation departure is moderate to low and moderate to high. In essence, 64% of the county's vegetation is 34-66% different from past reference conditions. When compared to the Vegetation Cover Type map, it is clear that forested areas are where the majority of changes have occurred.

Table 15: Vegetation Condition Class breakdown across San Juan County.

Vegetation Condition Class	Description	Acres	Percent of Total
Vegetation Condition Class I. A	Very Low Vegetation Departure 0-16%	10	<1%
Vegetation Condition Class I. B	Low Vegetation Departure 17-33%	96	<1%
Vegetation Condition Class II. A	Moderate to Low Vegetation Departure 34-50%	53,822	47%
Vegetation Condition Class II. B	Moderate to High Vegetation Departure 51-66%	19,967	17%
Vegetation Condition Class III. A	High Vegetation Departure 67-83%	158	<1%
Vegetation Condition Class III. B	Very High Vegetation Departure 84-100%	0	0
Water	Water	1,008	<1%
Developed	Developed	19,212	17%
Barren	Barren	662	<1%
Agriculture	Agriculture	18,899	16%
No Data	Not mapped	25	<1%
	Total	**113,831**	**100%**

Wildfire Intensity (Conditional Flame Length)

"Conditional Flame Length (CFL) is a 30-m raster representing the mean headfire flame length at a given location if a fire were to occur. It is a measure of average wildfire intensity. CFL was calculated using a process based on WildEST flame-length results. FlamMap was executed 216 times, producing flame-length rasters reflecting a range of weather types – combinations of wind speed, wind direction and moisture content scenario. These 216 flame-length rasters were

[27] https://www.landfire.gov/vegetation/vcc#:~:text=Vegetation%20Condition%20Class%20(VCC)%20represents,based%20on%20past%20reference%20conditions.

combined into a weighted mean as the sum-product of flame-length and weather-type probability across all weather types."[28]

"The FlamMap fire mapping and analysis system (Finney 2006) describes potential fire behavior for constant environmental conditions (weather and fuel moisture). Fire behavior is calculated for each pixel within the landscape file independently. Potential fire behavior calculations include surface fire spread, flame length, crown fire activity type, crown fire initiation, and crown fire spread. Dead fuel moisture and conditioning of dead fuels in each pixel based on slope, shading, elevation, aspect, and weather."[29]

Fire Behavior Fuel Models are mapped for San Juan County using the 13 typical surface fuel arrangements (Anderson 1982). These thirteen fuel types are classified in four groups, as grasses, brush, timber, and slash. Fuel models are tools to assist planners in realistically estimating fire behavior. This is done through the analysis of each fuel model, the fuel loading associated with each model, and the expected fire behavior for each model.[30]

Correlations can be drawn between the Conditional Flame Length maps and the Fire Behavior Fuel Model maps, especially in areas of high CFLs south of Roche Harbor and east of Eastsound (see the *Fire Behavior Fuel Models* section). In those areas, CFLs reach the 12-20' classification and the >20' classification. Much of the vegetation in those areas fall in fuel model 10 (timber), which is categorized by longer flame lengths, higher potential fire intensity, and a higher degree of potential suppression difficulty. On San Juan Island, there are cases of high CFL areas adjacent to very low CFL areas. In these cases there seems to be a correlation to fuel model 8 (closed timber litter), which is characterized by low intensity surface fires among light ground fuels underneath closed canopy timber. Even fuel model 9 (hardwood litter), which is normally associated with longer potential flame lengths, seems to correlate more with lower CFLs.

Fire Behavior Fuel Models

Of the 13 Fire Behavior Fuel Models (FBFM), San Juan County has 7, two in the grasses group, 1 in the Brush group, 2 in the Timber Litter group, and 1 in the Slash group. The following table illustrates how each fuel type found in San Juan County influences fire behavior. Fire behavior descriptions are provided by LANDFIRE.

[28] WildfireRiskToCommunities_V2_Methods_Landscape-wideRisk.pdf

[29] https://firelab.org/project/flammap

[30]Anderson, Hal E. 1982. Aids to determining fuel models for estimating fire behavior. USDA For. Serv. Gen. Tech. Rep. INT-122, 22p. Intermt. For. and Range Exp. Stn., Ogden, Utah 84401. https://www.fs.usda.gov/rm/pubs_int/int_gtr122.pdf

Table 16: The 7 of the 13 Fire Behavior Fuel Models found in San Juan County.

Fire Behavior Fuel Model	Description of Fire Behavior[31]
1. Short grass	Surface fires that burn fine herbaceous fuels, cured and curing fuels, little shrub or timber present, primarily grasslands and savanna
2. Timber (grass and understory)	Burns fine, herbaceous fuels, stand is curing or dead, may produce fire brands on oak or pine stands
5. Brush (2 feet)	Low intensity fires, young, green shrubs with little dead material, fuels consist of litter from understory
8. Closed timber litter	Slow, ground burning fires, closed canopy stands with short needle conifers or hardwoods, litter consist mainly of needles and leaves, with little undergrowth, occasional flares with concentrated fuels
9. Hardwood litter	Longer flames, quicker surface fires, closed canopy stands of long-needles or hardwoods, rolling leaves in fall can cause spotting, dead-down material can cause occasional crowning
10. Timber (litter and understory)	Surface and ground fire more intense, dead-down fuels more abundant, frequent crowning and spotting causing fire control to be more difficult
11. Light logging slash	Fairly active fire, fuels consist of slash and herbaceous materials, slash originates from light partial cuts or thinning projects, fire is limited by spacing of fuel load and shade from overstory

Grassy understory in partially timbered areas is a condition very widespread across San Juan and Lopez Islands, resulting in large areas falling in FBFM 2. To a lesser extent, parts of Orcas Island fall in this fuel model as well, namely the farms and homesteads intermixed with scattered timberlands between West Sound and Eastsound.

Otherwise, the bulk of the San Juan Islands contain FBFMs 8, 9, and 10, which are the 3 fuel models within the timber group. This group is characterized by ground fuels beneath timber as the main vehicle for carrying fire. FBFM 8, closed timber litter, will likely see lower flame lengths and slow-burning surface fires. Occasional fuel concentrations will sometimes cause flare ups, but ground fuels mainly consist of needles, leaves, and twigs under a closed canopy.

FBFM 9, hardwood litter, is present throughout the islands, often adjacent to the other timber fuel models. This fuel type does include some conifer stands, especially pine species, in addition to hardwoods. The dead fuel loading is higher than in 8 and fires have more potential for a faster rate of spread with longer flame heights.

[31] https://landfire.gov/fuel/fbfm13

Model 10, Timber (litter and understory), is characterized by a much greater fuel loading than 8 and 9 with more fuels of all sizes, especially more heavy fuels. Fires are expected to burn more intensely and faster on the surface. Dead and down fuels increase in both size and quantity, leading to large loads of dead material on the forest floor. This model has much more potential for crowning out, spotting, and torching individual trees. Fires in this model can be more difficult to suppress. Many of the mature and overmature Douglas-fir stands across the islands fall in model 10 but any forest type with a significant component of heavy down material might fall into this category.

Rate of spread estimates increase greatly between model 8 and model 9 and only slightly from model 9 to model 10. Flame length basically doubles between each model.

Brush (FBFM 5) can be found in pockets throughout San Juan, Orcas, and Lopez Islands. A significant portion of Spieden Island, the south side, is considered brush as well. Light fuel loads on the surface lead to lower-intensity fire potential for this model. This model is often composed of young, green stands with almost no dead wood. The foliage in this model is considered less flammable than model 6, however, these areas should be compared to the areas where highly-flammable invasives are prevalent.

There is a limited component of FBFM 11 (Light logging slash) among the islands. This model is associated with active fire behavior but lower fire potential than other models in the slash group.

Wildfire Likelihood

The following is an explanation of Wildfire Likelihood from the UDSA Forest Service.[32]

"Wildfire likelihood is the probability of a wildfire occurring based on fire behavior modeling across thousands of simulations of possible fire seasons. In each simulation, factors contributing to the probability of a fire occurring—including weather, topography, and ignitions—are varied based on patterns derived from observations in recent decades. Wildfire likelihood is not predictive and does not reflect any currently forecasted weather or fire danger conditions."

"For communities, tribal areas, and counties, Wildfire Likelihood is summarized and ranked for the risk calculation area. This includes a 2.4 km buffer around populated areas to incorporate the risk of embers."

The Wildfire Likelihood tool uses the Burn Probability dataset. Burn Probability is the annual probability of wildfire burning in a specific location. For the purposes of this CWPP update, and to better visualize the contrast between the probabilities across the landscape, the dataset was divided into four classes that range from 0.00015% to 0.0199%. Since these probabilities are small they are ranked from lowest to highest even though the highest probability is minimal.

[32] https://wildfirerisk.org/explore/overview/53/53055/

Table 17: Burn Probability parameters

Burn Probability	Value (percent annual chance)
Lowest	0.00015% - 0.005%
	0.0051% - 0.0099%
	0.01% - 0.0149%
Highest	0.015% - 0.0199%

Risk Reduction Zones

The following is an explanation of Risk Reduction Zones from the USDA Forest Service.[33]

"Risk Reduction Zones are the areas where mitigation activities will be most effective at protecting homes and other buildings from wildfires."

"Homes with minimal exposure are unlikely to be subjected to wildfire. Homes with indirect exposure may be ignited by embers or home-to-home ignition. Homes with direct exposure may be ignited by adjacent vegetation, flying embers, or nearby structures."

"Risk Reduction Zones are based on the interplay between wildfire likelihood, flammable vegetation, and populated areas. Wildfires can start in any zone and pose a risk to homes and communities. We calculate the number of buildings in each Risk Reduction Zone based on building footprints within the political boundary of the selected location."

Weeds

The following is an explanation of weeds from the San Juan County Noxious Weed Control Department[34]

Common weeds found in San Juan County that are of particular importance include gorse (*Ulex europeus*), old man's beard (*Clematis vitalba*), Scotch broom (*Cytisus scoparius*) and English Holly (*Ilex aquifolium*). The state classifies weeds into several categories: Class A, Class B and Class C. Eradication of Class A weeds is required while the weeds that are classified as B or C by the state or county must be controlled from spreading within or beyond a particular property.

In San Juan County gorse and Scotch Broom are Class B weeds. Control is required for both of these weeds. Both weeds are shrubby with yellow flowers. Gorse, however, is unmistakable due to its long thorns. Gorse is extremely flammable due to its volatile oils. It is only found on Orcas Island, mostly in the Olga and Doe Bay area. Scotch Broom can act as a ladder fuel in a fire and is fairly widespread on Orcas, San Juan and Lopez Island with some also found on Shaw and Decatur Island.

[33] https://wildfirerisk.org/explore/overview/53/53055/

[34] https://www.sanjuancountywa.gov/DocumentCenter/View/29395/2024-SJC-Noxious-Weed-List?bidId=

Old Man's Beard is a Class C weed that has a control required title for the county. This woody vine is a fast-growing vine that is overtaking some areas in the Eastsound area. Old Man's Beard is found on Orcas and San Juan Island. English Holly is also a Class C weed. Control is recommended for English Holly as it is suppressing native vegetation throughout western Washington. The exact distribution of English Holly is unknown, but it is a concern for the county.

Vegetation Cover

Table 18: Vegetation Cover Type breakdown for San Juan County.

Vegetation Cover	Acres	Percent of Total
Agriculture	18,967	17%
Barren/Sparse	656	<1%
Developed	20,128	18%
Herbaceous Cover	1,261	1%
Shrub Cover	928	<1%
Tree Cover	68,917	61%
Riparian	1868	2%
Total	113633	100%

Appendix E- Public Meetings and Notes

Public Involvement and Meeting Materials

Public involvement was made a priority from the beginning. Public feedback was sought through town hall meetings, online surveys, and a public comment period for the draft plan. News releases and other marketing materials communicated these opportunities with the public.

Press Releases

Through the San Juan Islands Conservation District and other Steering Committee partners, periodic press releases were submitted to the various print and online news outlets that serve the San Juan Islands. Informative flyers were also distributed around town and to local offices within the communities by the committee members.

Print Media	Online Media	Other Media
Journal of the San Juans (San Juan Island)	*Orcasonian*	Facebook pages of SJICD and partners
Island Sounder (Orcas Island)	*Island Sounder*	LopezRocks.com
Lopez Islander (Lopez Island)	*Journal of the San Juans*	The Hub for WACD
		Instagram pages of SJICD and partners

Public Meetings

Public meetings were held in October of 2024, in person and virtually on Orcas, Lopez, and San Juan islands to share information on the Plan, obtain input on the details of the content of the Plan, discuss concerns of wildfire risk and mitigation treatments. Attendees at the public meetings indicated a high level of concern related to wildfire risk, overstocked forests, and human-caused incidents, as well as expressing a high level of commitment to acting in ways to reduce risks and improve overall conditions.

The public meetings were held at the fire station on each of the islands and were attended by community members and steering committee members. public meeting announcement sent to the local newspapers, local citizen participation organizations, county departments, fire district representatives, and distributed by committee members.

Public Comment Period

A public comment period was conducted from May 31 to April 24, 2025 to allow members of the general public an opportunity to view the full draft plan and submit comments and any other input to the committee for consideration. A press release was submitted to the local media outlets announcing the comment period and instructions on how to submit comments. The draft plan was made available online at www.sanjuanislandscd.org/wildfire-preparedness with instructions for submitting comments.

Figure 38: CWPP Community Meeting Flyer

Community meetings on countywide wildfire mitigation plan updates

October 6, 2024 1:30 am

Contributed photo Islands Conservation Corps crew members burn brush piles into biochar to reduce wildfire fuel loads on Turtleback Mountain.

Submitted by San Juan County

A diverse group of local emergency responders, land managers, and forestry experts from over a dozen agencies and tribes have begun work updating the San Juan County Community Wildfire Protection Plan, originally adopted by county council in 2012. Now it's your turn to chime in on your ideas and concerns related to wildfire preparedness in San Juan County!

Public meetings are scheduled in October and will provide a forum for attendees to learn the basics of what a CWPP is and what it does, and to share their ideas, concerns, and questions. All members of the public are encouraged to attend and lend their voices to shape the new plan.

Meetings will be held from 5:30-7 p.m. on Lopez Island (Monday, Oct. 14 at the Lopez Fire Sation in Lopez Village); Orcas Island (Tuesday, Oct. 15 at Fire Station 21 in Eastsound); San Juan Island (Wednesday, Oct. 16 at Fire Station 31 in Friday Harbor).

The updated CWPP, expected to be complete in Spring of 2025, will assess wildfire risk and vulnerability while prioritizing mitigation strategies, site-specific projects, policies, programs and resources that will effectively reduce wildfire likelihood and impacts. The San Juan Islands Conservation District is spearheading the effort on behalf of local, state, federal and tribal partners, while working to ensure input from the public and private sector is received.

Conservation District Executive Director Paul Andersson is excited for progress on this plan, saying, "An update to this plan is overdue. There remains a heightened level of public interest and concern with how we understand and manage fire risk in the islands – this plan is going to be a great roadmap for identifying and implementing as many risk mitigation strategies as we can."

Northwest Management, Inc. has been retained as a consultant to provide risk assessments, hazard mapping, research, and to ensure the updated plan meets state and federal requirements.

Community input will play a key role throughout the planning process and will include these three public meetings, public reviews of the draft plan, and an open comment period. The current version of the San Juan County Community Wildfire Protection Plan can be viewed at https://www.sanjuancountywa.gov/DocumentCenter/View/21417/2012-SJC-CWPP.

For more information about the CWPP update, or to sign up for free wildfire readiness risk assessments and other forestry programs, please visit at https://www.sanjuanislandscd.org/wildfire-preparedness.

Figure 39: CWPP Community Meeting News Release.

Public Survey Results

San Juan Conservation District - Public Survey (Online Survey)

1. **On what island do you live or own property?**
    - Lopez Island – 3
    - Orcas Islands – 4
    - San Juan Island - 1
    - Other (Frost) – 1
2. **How concerned are you about the risk of wildfire in your area?**

    Lopez: Very Concerned, Very Concerned, Somewhat Concerned

    Orcas: Somewhat Concerned, Very Concerned, Very Concerned, Very Concerned

    San Juan: Very Concerned

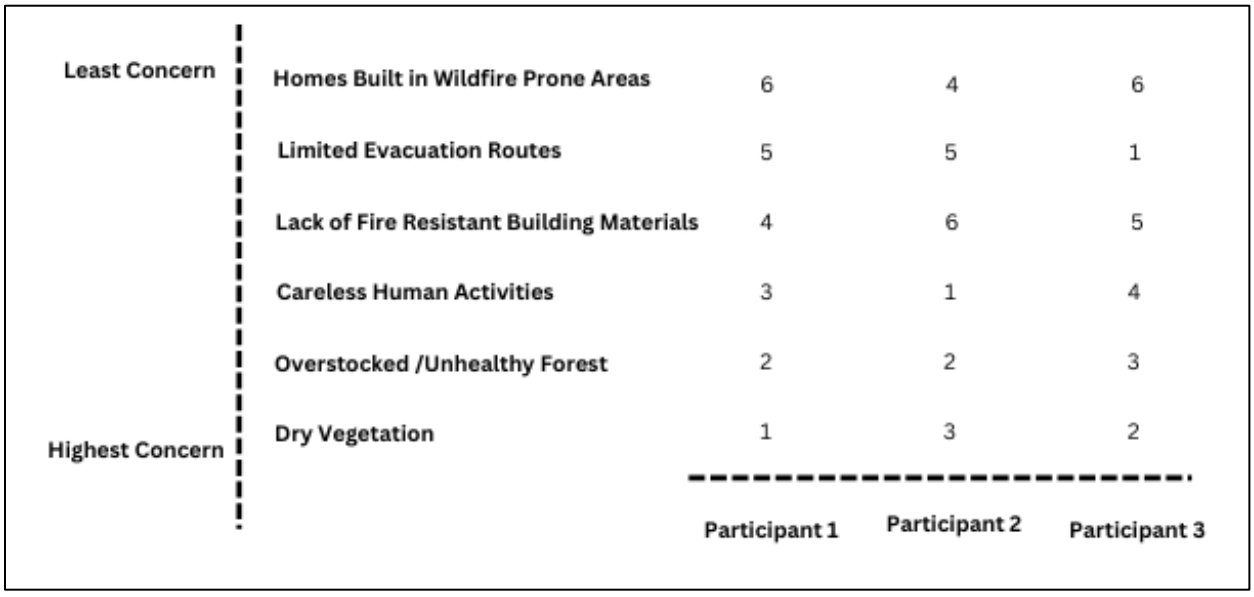
    Other: Extremely Concerned

Overall, out of the 9 participants 7 said that they are very concerned about wildfire

3. **In your opinion, what are the biggest wildfire risks facing our community? (Please rank the following from 1 to 6, with 1 being the most concerning.)**

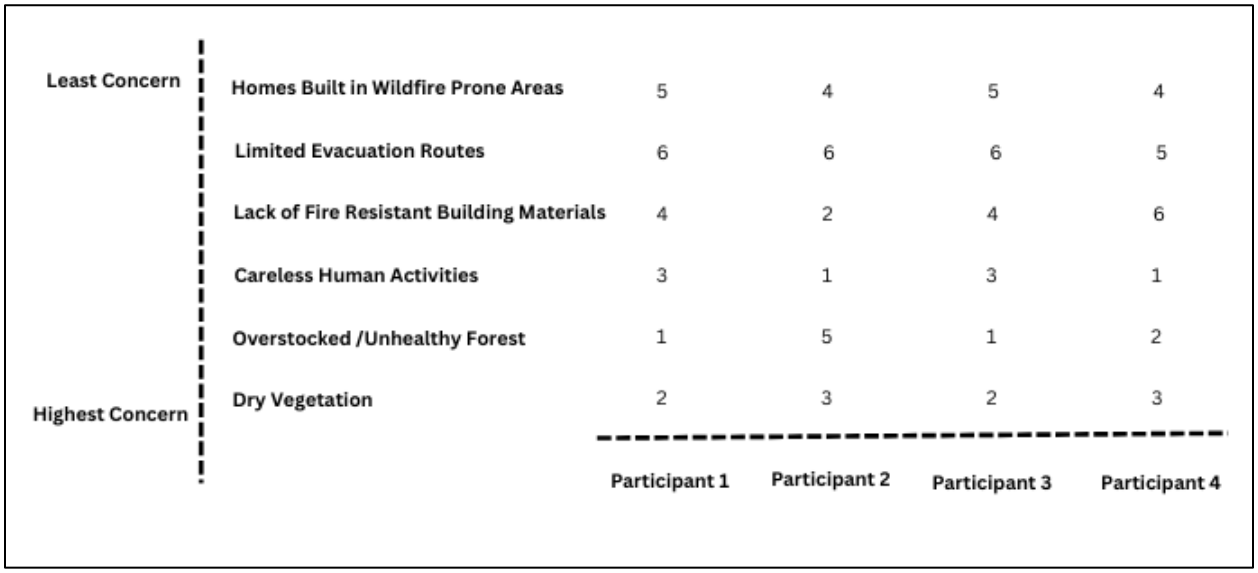
    Lopez Island:

    The 3 participants all agreed that dry vegetation and overstocked/unhealthy forests were of highest concern and placed them within their top 3. All but 1 participant agreed that the lack of homes built in wildfire prone areas were of the least concern.



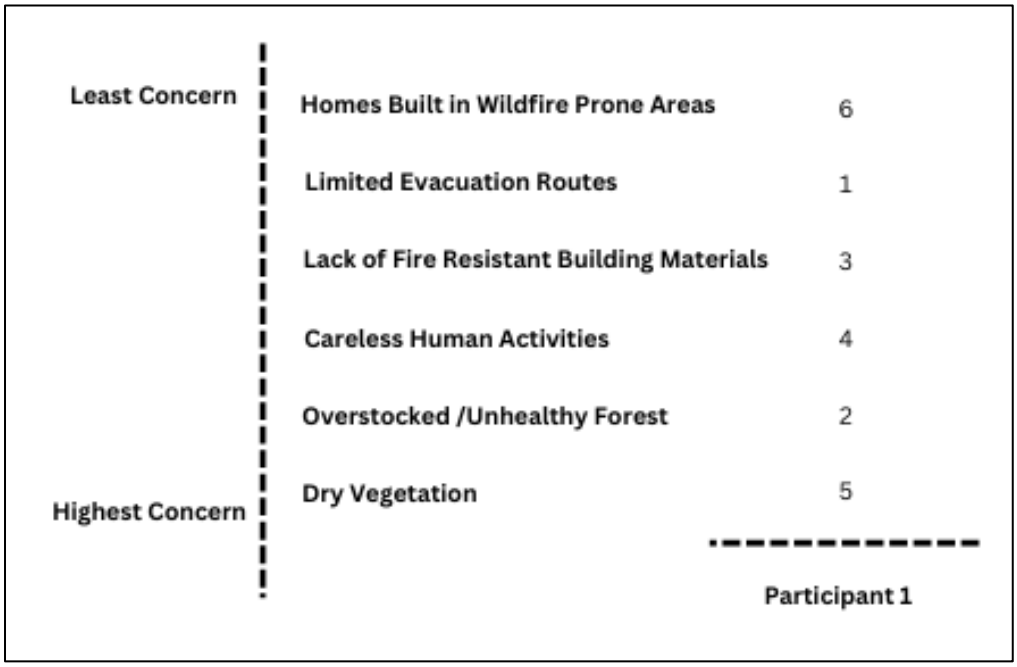
Orcas Island:

Out of the 4 participants the highest concern was split between dry vegetation and overstocked/unhealthy forests. Almost all agreed that limited evacuation routes were not a concern.



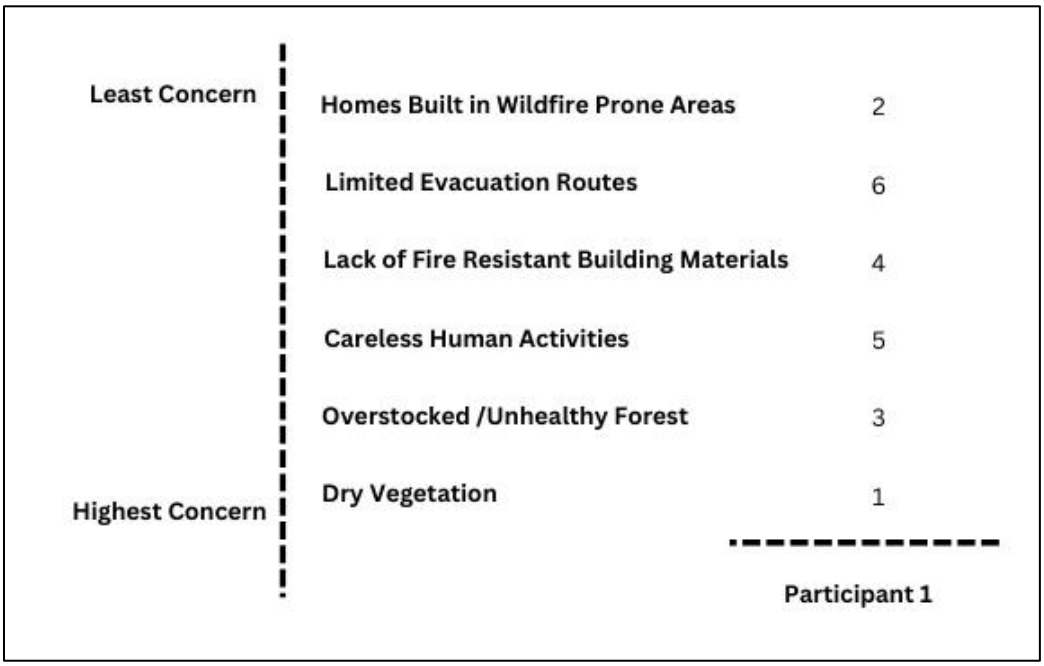
San Juan Island:

The only participant thought that limited evacuation routes were of the highest concern and homes built in wildfire prone areas were of the least concern. Like many others they had overstocked/unhealthy forests in their top 3 highest concerns.



Other:

The only participant agreed that dry vegetation is their highest concern and like the other participants thought that overstocked/unhealthy forests were in the top 3 highest concerns, like the Orcas Island participants, they also had limited evacuation routes as their least concern.



4. **Do you believe your community is adequately prepared for a wildfire event? Explain.**

Lopez Island:

- "No, I think there is concern but not much clear understanding of how to prevent and deal with wildfires ~ education such as this presentation (10.14.2024 at Lopez Fire Station) is very helpful! The condition of the typical forested areas seems to have a lot of tinder (dry easily flammable branches). Removal of this tinder seems to be a simple and effective way to start reducing the amount of fuel for wildfires. Specifically, dry dead branches below 30'-40' are very flammable. Systematic removal of this tinder could be a widespread practice. This suggestion came from a volunteer firefighter on Lopez."
- "No, because there are residences that are adjacent to forests or within forested areas. There are also fields used for hay, which has been a circumstance that has started fires on the island."
- "No. People aren't aware of issues with fire breaks, fuel loads, and evacuation planning."

Orcas Island:

- "Negative, however the app Watch Duty has been a true blessing to many around the state. We should get them to give our communities a presentation on how best to use it and have the Fire department partner with them!"
- "No. We get together to discuss our road and fiber. We've never discussed fire readiness in my 9 years on the island."
- "We have recently become a Firewise USA site, and the community is actively working to be fully prepared for a wildfire. We have established a Fire Safety Committee, and we have several projects planned in the next six months to reduce tinder and to promote forest health. However, we have a long way to go, given the size of [neighborhood] and the fact that it is so overgrown. We are also working diligently to establish effective and efficient notification and evacuation strategies."
- "NO, No one seems to think seriously about it."

San Juan Island:

- "Have work to do. Many of the homes are maintaining some of the zones but it's the privately owned undeveloped acreage with too much fuel. Also, we only have one dirt road in and out the neighborhood that is of big concern."

Other:

- No, few water resources to draw from and no pumps.

6. Have you taken any steps to reduce wildfire risk on your property (e.g., creating defensible space, removing flammable vegetation)? If yes, please describe the actions taken. If not, what are the reasons?

Lopez Island:

- Yes ~ One measure we have done is to create ponds specifically to contribute to fire protection. Funding to install standpipes that are compatible with the fire department hose coupling would increase infrastructure with minimal cost. So water from private ponds could be accessed to help put out an existing fire in a timely manner.
- We have had our fire chief out to our property to learn from his experience. We have cleared our access road, thinned some of our forest, re-sided an outbuilding with fire resistant metal, and replaced our mossy roof with a metal roof.
- Yes. More defensible space, limb removal along driveways, removal of some downed fuels, significant forest thinning.

Orcas Island:

- Yes, cutting back vegetation from the house.
- Removing noxious weeds. Wildfire Readiness evaluation.
- Yes. All ocean spray and windfall have been removed. Trees have been limbed up to help prevent ladder effect.

- Yes, fuel reduction and a DNR plan for shaded fuel break just arrived

San Juan Island:

- We joined Firewise. We annually cut back the brush and grass from the road. We had our first community work party to clear brush from around our water tank which is adjacent to the road. We have had 1 assessment done of the neighborhood . Cost of disposal is a factor and many of the neighbors are older so have to hire out the work. Not everyone is as concerned at the level of risk. More education?

Other:

- Yes, Limbing trees. Chipping brush, mowing grass. We need more help

7. Are you part of a Firewise USA community or other community group that works together to reduce wildfire risk? If yes, specify the group.

Lopez Island:

- No, but I am interested!
- No
- No

Orcas Island:

- I volunteer at OIFR
- Yes. Spring Point Homeowners Association

San Juan Island:

- Yes Firewise

Other:

- No

8. What resources do you think would be most helpful to improve your household's or community's wildfire preparedness?

Lopez Island:

- Educational Workshops, Community Wildfire Drills, Defensible Space Projects, Financial Assistance for Defense, Home Risk Assessments, Other
- Educational Workshops, Other
- Educational Workshops, Community Wildfire Drills, Defensible Space Projects, Financial Assistance for Defense, Home Risk Assessments

Orcas Island:

- Educational Workshops, Community Wildfire Drills, Other
- Educational Workshops, Defensible Space Projects, Home Risk Assessments

- Educational Workshops, Community Wildfire Drills, Defensible Space Projects, Financial Assistance for Defense, Home Risk Assessments
- Educational Workshops, Defensible Space Projects, Financial Assistance for Defense

San Juan Island:

- Educational Workshops, Financial Assistance for Defense, Other

Other:

- Educational Workshops, Community Wildfire Drills, Defensible Space Projects, Financial Assistance for Defense

9. What resources do you think would be most helpful to improve your household's or community's wildfire preparedness?

Lopez Island:

- Install standpipes at private ponds that could be used by the fire department.
- A community chipping program for forest thinning.

Orcas Island:

- Watch Duty App

San Juan Island:

- Enhance communication methods to quickly get info out

Public Review Comments

Comment 1

Comment: Separate the Vusario Community from Rosario-Highlands like it was in the 2012 CWPP. Highlighting this community will bring attention to the wildfire risk present.

Response: This change was implemented by adding the Vusario Maintenance Association to the Fuels Reduction Project list (Table 11) and the 2025 Priority Areas map (Figure 21).

Comment 2

Comment: Consider building permit fees as a revenue source for fuel reduction projects or code requirements that limit wildfire fuels.

Response: These concepts can be understood to be included under the Policy and Planning Efforts project PP-1 in Chapter 6.

Comment 3

Comment: A community chainsaw course proved to be highly beneficial for participants, equipping residents with the skills necessary to more effectively and safely carry out fuels treatments on their properties.

Response: This comment shows the impact of community outreach and how educational opportunities encourage citizens to perform fire mitigation treatments themselves.

Comment 4

Comment: A neighborhood association put out an informational document requesting feedback about the CWPP from its members. The document summarized what a CWPP is, the main findings of the CWPP, and a request for feedback.

Response: No additional feedback was submitted.