Regional District of Central Kootenay
Area K and the Village of Nakusp Community Wildfire Protection Plan

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Photo credit: Rory McLeod

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This Community Wildfire Protection Plan was prepared using the Strategic Wildfire Prevention Initiative 2017 Community Wildfire Protection Plan Template, January 23, 2018 version.

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Executive Summary

In 2017, the Nakusp and Area Community Forest (NACFOR) was retained by the Regional District of Central Kootenay (RDCK), with support of the Village of Nakusp, to create a Community Wildfire Protection Plan for Nakusp and Electoral Area K. This plan builds off the previous CWPP and Area Assessments completed in 2008, however the study area was expanded to include 13 unincorporated communities and other high value areas in Area K.

The Area of Interest (AOI) for this CWPP encompasses the Village of Nakusp and communities of Regional District Central Kootenay Electoral Area K, and extends north to include Halcyon Hot Springs. The AOI also includes a small area in the Regional District Columbia Shuswap to the north of Halcyon Hot Springs. Area K and its communities are situated along Upper and Lower Arrow Lakes. Historically resource based industries – forestry and mining – have been economic drivers in the region, and more recently tourism continues to expand communities and the economy.

The CWPP was developed with ongoing consultation from stakeholders, community members, forest licencees, and local government. A wildfire risk assessment was completed through the use of spatial analysis and field assessments; with input from local experts. In general, there is a moderate to high risk of wildfire facing communities, critical infrastructure, and values throughout the Arrow Lakes.

Forests in the AOI are a significant wildfire hazard due to high fuel loading of the typical “Kootenay mix” stands. Forest stands recently affected by Douglas-fir beetle, adjacent to the community, or within community watersheds are of particular concern. Much of the wildfire risk can be mitigated through the use of fuel treatments targeted to high risk areas, FireSmart initiatives, and by supporting local fire response agencies – as outlined in this CWPP. The recommendations made in this report intend to reduce the likelihood of a wildfire entering the community; reduce impacts and losses to property, critical infrastructure, and values; and reduce negative economic and social impacts to the community as a result of a wildfire.

Summary of CWPP Recommendations

Table 1: Summary of CWPP Recommendations

Section	Objective/Priority	Recommendations	Responsibility/Funding Source
Section 2: Existing Plans and Initiatives	To facilitate cooperative and efficient wildfire risk mitigation efforts.	Work with other agencies – the CSRD, BC Hydro, and the FWCP – to coordinate wildfire risk mitigation when appropriate. Consider joint implementation of fuel treatment and FireSmart activities around Summit Lake and Halcyon Hot Springs with RDCK Area H and CSRD Area B – Revelstoke Columbia.	RDCK, Village of Nakusp/Funding from UBCM CRIP, FESBC, CBT
	To ensure existing and future emergency plans consider wildfire risks in the community.	Ensure existing and future emergency plans - including the Water System Emergency Response Contact List – consider wildfire risks and contain current emergency contact information. Information should include BCWS and local fire department contact information.	RDCK, Village of Nakusp
	To facilitate cooperative and efficient wildfire risk mitigation efforts.	Coordinate trail development and maintenance with wildfire mitigation efforts in high risk areas. Information regarding new trail development should be shared with response agencies and incorporated into evacuation and emergency response plans.	RDCK, Village of Nakusp, community and recreation groups, BCWS, land managers, Rec Sites and Trails BC, BC Parks
Section 3: Values at Risk	To reduce the vulnerability of structures and values to wildfires. To protect human life and safety	Prioritize fuel management treatments that protect electrical power, communications, transportation and water critical infrastructure.	RDCK, Village of Nakusp/CRIP and FESBC funding, Columbia Basin Trust (CBT)
	To facilitate cooperative and efficient wildfire risk mitigation efforts.	Ongoing First Nations consultation during the fuel management prescription phase. Preliminary reconnaissance assessments of potentially impacted cultural values prior to fuel treatments.	RDCK, Village of Nakusp, consultants preparing prescriptions / CRIP and FESBC
Section 4: Wildfire Threat and Risk	To improve fuel typing for south eastern BC forest types and subsequent predictive fire behavior	Examine the viability of a research project designed to more accurately classify Kootenay mix fuel types	CRIP, BCWS, / FESBC, other potential research funding
Section 5: Risk Management and Mitigation Factors	To reduce forest fuel hazards in high risk areas.	Work with licencees (Interfor, BCTS, NACFOR, Woodlots) and other agencies (BC Hydro and FWCP) to implement fuel treatment as recommended in Table 15. Consider funding streams provided by the CRIP and FESBC.	RDCK, Village of Nakusp/CRIP, FESBC, CBT
	To reduce the vulnerability of structures and values to wildfires. To reduce the occurrence of human caused fires.	Maintain FireSmart programs in Nakusp and Area K. Continue to provide FireSmart home assessments and undertake education and outreach activities.	RDCK, Village of Nakusp, local fire departments/CRIP FireSmart Grant Program

Section 5: Risk Management and Mitigation Factors (cont.)	To reduce the vulnerability of structures, and values to wildfires. To reduce the occurrence of human caused fires, and to increase local fire response capacity.	As part of the FireSmart program, implement recommended activities from Table 16; including education and outreach, vegetation management, incorporating FireSmart into community planning and development, and increasing local capacity to defend against an interface fire.	RDCK, Village of Nakusp/CRIP FireSmart Grant Program, FireSmart Community Wildfire Preparedness Day Award
	To reduce the occurrence of human caused fires.	Maintain sufficient signage at high-use recreational areas. Signage may include fire danger ratings, information on fire prevention, emergency contact information, and evacuation procedures on certain trails. Explore opportunities to work with other agencies to maintain and increase fire prevention signage at trailheads, forestry roads, along the highway, and within communities.	RDCK, Village of Nakusp, community and recreation groups, BCWS, land managers, Rec Sites and Trails BC, BC Parks
Section 6: Wildfire Response	To increase resources available to defend against an interface fire.	Incorporate volunteer firefighter recruitment into FireSmart education and outreach initiatives. Consider formal recognition and viability of funding through taxation for Burton, Edgewood and Fauquier Fire Departments to be able to provide mutual aid agreements with nearby Fire Departments in order to address challenges associated with limited volunteer availability.	Nakusp, Burton, Edgewood and Fauquier Volunteer Fire Departments/ Potential UBCM FireSmart funding
	To increase resources available to defend against an interface fire.	Explore funding opportunities for community fire caddies and water trucks where there are gaps in fire response/equipment coverage. Consider providing S-100 training to members of the public at a reduced rate or free of charge.	RDCK, Village of Nakusp, Nakusp, Burton, Edgewood and Fauquier Volunteer Fire Departments
	To decrease fire response times.	Increase public awareness of first responder emergency contact information: Wildfires - BCWS (1-800-663-5555 or *5555 on cell) and Nakusp Fire Department (9-11). Within communities call Burton Volunteer Fire Department (250-265-4348), Edgewood Volunteer Fire Department (250-269-0023), Fauquier Volunteer Fire Brigade (250-269-7650) AND call BCWS Dispatch (1-800-663-5555 or *5555 on cell)	RDCK, Village of Nakusp, Nakusp, Burton, Edgewood and Fauquier Volunteer Fire Departments
	To ensure the safety of human life in the event of an interface fire.	Develop a detailed evacuation plan for Nakusp and communities of Area K. Explore opportunities to address emergency access and evacuation constraints throughout the AOI.	RDCK, Village of Nakusp, Nakusp Fire Department; UBCM Funding

Section 6: Wildfire Response (cont.)	To increase resources available to defend against an interface fire.	Continue cross-training between the BCWS and Nakusp Fire Department. Explore opportunities for additional training including: annual mock fire exercises, advanced wildfire suppression/fire operations in the WUI (S-215), structure and site preparation training (S-115), ICS, communications, and after action reviews of past interface fires. Explore opportunities to include Burton, Edgewood, and Fauquier fire departments into training events.	Nakusp Fire Department, BCWS, Burton, Edgewood, and Fauquier Volunteer Fire Departments
	To increase resources available to defend against an interface fire.	Maintain SPUs and explore opportunities to assist homeowners and community groups to develop sprinkler kits.	RDCK, Village of Nakusp and Nakusp Volunteer Fire Department, Burton, Edgewood and Fauquier Volunteer Fire Departments

Table of Contents

List of Figures

List of Tables

List of Appendices

Acronym Guide

AAC	Annual Allowable Cut
ALR	Agricultural Land Reserve
AOI	Area of Interest
BCTS	BC Timber Sales
BCWS	BC Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CBT	Columbia Basin Trust
CFFDRS	Canadian Forest Fire Danger Rating System
CRIP	Community Resiliency Investment Program
CSRD	Columbia Shuswap Regional District
CWPP	Community Wildfire Protection Plan
EOC	Emergency Operation Centre
ESB	Emergency Services Building
ESSF	Engelmann Spruce Subalpine Fir
FESBC	Forest Enhancement Society of BC
FLNRORD	Forests, Lands, and Natural Resource Operations, and Rural Development
FPPR	Forest Planning and Practices Regulation
FRPA	Forest and Range Practices Act
FSP	Forest Stewardship Plans
FUS	Fire Underwriters Survey
FWCP	Fish and Wildlife Compensation Program
GAR	Government Actions Regulations
HFI	Head Fire Intensity
IA	Initial Attack
ICH	Interior Cedar Hemlock
ICS	Incident Command System
ISI	Initial Spread Index
KBHLP	The Kootenay Boundary Higher Level Plan
NACFOR	Nakusp and Area Community Forest
NDT	Natural Disturbance Type
OCP	Official Community Plan
OFC	Office of the Fire Commissioner
OGMA	Old Growth Management Areas
PSTA	Provincial Strategic Threat Analysis
RDCK	Regional District of Central Kootenay
SIFCo	Slocan Integral Forestry Cooperative
SPP	Structural Protection Program
SPU	Structure Protection Unit
TFL	Tree Farm Licence
TSA	Timber Supply Area
UBCM	Union of BC Municipalities
WDPA	Wildfire Development Permit Area
WTA	Wildfire Threat Assessment

SECTION 1: Introduction

In 2003, British Columbia faced one of the most severe wildfire seasons on record – destroying over 334 houses and costing nearly $700 million (Filmon, 2004). Firestorm 2003 – an extensive review of BC's wildfire preparedness, response, and planning process – was conducted shortly after the devastating 2003 fire season. The Firestorm report highlighted the need for communities to undertake wildfire planning, prevention, and mitigation. Community Wildfire Protection Plans (CWPPs) emerged as an important tool in order to meet these recommendations. The purpose of a CWPP is to identify and evaluate high fire hazard areas, values at risk, and the possible consequences of a wildfire in and around the community. CWPPs also provide recommended actions to mitigate the fire hazard and reduce wildfire risk facing the community.

1.1 Purpose

In 2008, the Regional District of Central Kootenay (RDCK) retained B.A Blackwell and Associates to complete a CWPP for the Village of Nakusp, and Wildfire Risk Assessments for four communities within Electoral Area K (Arrow Park, Burton, Edgewood, and Fauquier). Since the release of the 2008 reports, there have been significant changes to the landscape, the methods in which wildfire risk is assessed, and the CWPP standards.

This 2017 CWPP was developed by the Nakusp and Area Community Forest (NACFOR) on behalf of the RDCK and the Village of Nakusp. Although this plan builds off the previous CWPP and Area Assessments completed in 2008, the study area has been expanded to include 13 unincorporated communities of Area K. The purpose of creating a joint CWPP for Nakusp and the communities of Area K is twofold:

1.) To reassess the threat of wildfire facing the communities; including life, property, critical infrastructure, and high value areas
2.) To identify, evaluate, and recommend measures to effectively mitigate the risk of wildfire facing the communities

A single CWPP for the area will facilitate a unified approach towards fire management and planning. The recommendations made in this CWPP intend to reduce the likelihood of a wildfire entering the community; reduce impacts and losses to property, critical infrastructure, and values; and

Purpose: To define the threat of wildfire to human life, property, critical infrastructure, and high value areas. To identify measures to mitigate those threats, and to outline a plan to implement measures.

Intended Outcome:
1. Reduced likelihood of a wildfire entering the community

2. Reduced impacts and losses to property, critical infrastructure, and values

3. Reduced negative economic and social impacts to the community

reduce negative economic and social impacts to the community as a result of a wildfire (SWPI, 2018).

1.2 CWPP Planning Process

This CWPP was developed in consultation with the RDCK and Village of Nakusp using the Strategic Wildfire Prevention Initiative (CRIP) 2017 CWPP Template, along with the following six-stage planning process:

1.) Information Sharing

In March 2017, information packages were sent to 10 stakeholders and 15 First Nation[1] groups including:

- Adams Lake Indian Band
- Akisqnuk First Nation
- BC Hydro
- BC Ministry of Environment and Climate Change/BC Parks
- BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
- BC Wildfire Service
- Columbia Shuswap Regional District
- First Nations' Emergency Services Society
- Interfor
- Ktunaxa Nation Council
- Lower Kootenay Band
- Lower Similkameen Indian Band
- Neskonlith Indian Band
- Okanagan Indian Band
- Okanagan Nation Alliance
- Penticton Indian Band
- Regional District of Central Kootenay
- Shuswap Indian Band
- Slocan Integral Forestry Cooperative
- Splatsin First Nation
- St. Mary's Indian Band
- Tobacco Plains Indian Band
- Upper Nicola Indian Band
- Village of Nakusp
- Westbank First Nation

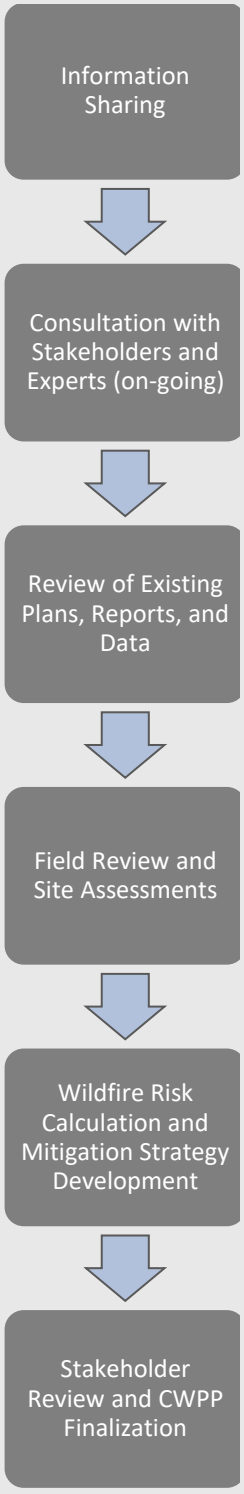
Recipients were provided with a description of the CWPP process, the purpose of the 2017 CWPP update, and a map of the proposed study area. Recipients were also invited to respond with questions, concerns, and feedback.

2.) Consultation with Stakeholders and Experts

Effective wildfire prevention, planning, and response involve coordination and collaboration from many stakeholders, agencies, and

[1] The AOI was assessed using the provincial Consultative Areas Database to determine First Nations with potential Aboriginal Interests in the area.

CWPP Planning Process:



experts. Consultation with the RDCK, Village of Nakusp, Nakusp Volunteer Fire Department, and the BC Wildfire Service (BCWS) was on-going throughout the CWPP development. Experts including fuel management specialist, Mike Morrow; Wildfire Mitigation Coordinator, Nora Hannon; Nakusp Fire Chief, Terry Warren; and Nakusp Operations Director, Warren Leigh; were among those who provided expert technical advice. In February 2018, a preliminary review was held with licencees (Interfor and BCTS) and a woodlot owner to discuss potential treatment options in licencee chart areas.

3.) Review of Existing Plans, Reports and Spatial Data

Extensive background research set the context for the CWPP and study area. Relevant plans, legislation, and reports were reviewed to ensure compatibility. Spatial data including the provincial fuel type data, and Provincial Strategic Threat Analysis (PSTA) data were thoroughly reviewed. Data pertaining to cultural, social, ecological, and economic values, as well as critical infrastructure data was also reviewed and updated as necessary.

4.) Field Review and Site Assessments

Field assessments were conducted in the summer of 2017. Wildfire Threat Assessment plots were conducted on high threat areas determined by the PSTA data and local expertise.

5.) Local Wildfire Risk Calculation and Mitigation Strategy Development

The local wildfire threat, proximity to values, fire spread patterns, and slope attributes were used to calculate the local wildfire risk. Spatial analysis, stakeholder and expert consultation, and local knowledge were used to prioritize and recommend actions to mitigate the wildfire risk.

6.) Stakeholder Review and CWPP Finalization

A draft CWPP was provided to the RDCK, Village of Nakusp, Nakusp Fire Department, and BCWS. Community meetings were held in Burton/Arrow Park, Edgewood, Fauquier, and Nakusp in May 2018 where stakeholders and members of the community were invited to review and comment on the CWPP. Comments and feedback were considered and the CWPP draft was updated prior to finalization.

This six-stage planning process allowed for the development of a CWPP specifically tailored to the unique profile of the Nakusp and Area K communities and landscape.

SECTION 2: Local Area Description

The Village of Nakusp is situated along the eastern shore of Upper Arrow Lake in the West Kootenays of British Columbia. The municipal boundary of Nakusp is entirely surrounded by the Regional District of Central Kootenay Electoral Area K. Together, the Village of Nakusp and the communities of Area K form the Area of Interest (AOI) for this CWPP (Figure 1 – CWPP Area of Interest).

Area K is bordered by the RDCK Electoral Area H to the east, and Area J to the south. Area K also borders the Regional District of North Okanagan to the west, and the Regional District of Columbia Shuswap to the north. The Upper and Lower Arrow Lakes – a widening of the Columbia River - runs through the center of Area K, with the Selkirk Mountain range along the east of the Arrow Lakes and the Monashee Range to the west.

2.1 CWPP Area of Interest

The Area of Interest for this CWPP builds off the previous 2008 AOI - expanded to include the smaller communities of Area K, new infrastructure development, and other high value areas. The AOI was derived from the 2km Wildland Urban Interface (WUI) around communities with a minimum density of 6 structures per square kilometer. The Brouse Creek and Halfway community watersheds were included in the AOI due to their significant importance to the Village of Nakusp as the community's primary source of drinking water. The AOI was expanded to include a 2km buffer along Highway 6 East - from the community of Brouse to the Area K/H boundary. This corridor encompasses an intermix of structures along the highway, emergency response and evacuation routes, and a portion of the WUI associated with the community of Summit Lake (located within Area H).

The AOI encompasses a total area of **42,816 hectares** and includes the Village of Nakusp and the unincorporated communities of Arrow Park, Bayview, Box Lake, Brouse, Burton, Crescent Bay, Edgewood, Fauquier, Glenbank, Halcyon, Inonoaklin Valley, Needles, and Whatshan Lake. The AOI includes municipal, regional, private, and Crown land; as well as land within the Agricultural Land Reserve (ALR) and provincial parks (Table 2).

Wildland Urban Interface (WUI): *"where combustible wildland fuels are found adjacent to homes, farm structures, and other outbuildings"* (Partners in Protection, 2003)

Included Communities:

1.) Arrow Park
2.) Box Lake,
3.) Brouse
4.) Burton
5.) Crescent Bay
6.) Edgewood
7.) Fauquier
8.) Glenbank
9.) Halcyon
10.) Inonoaklin Valley
11.) Nakusp
12.) Needles
13.) Whatshan Lake
14.) Bayview

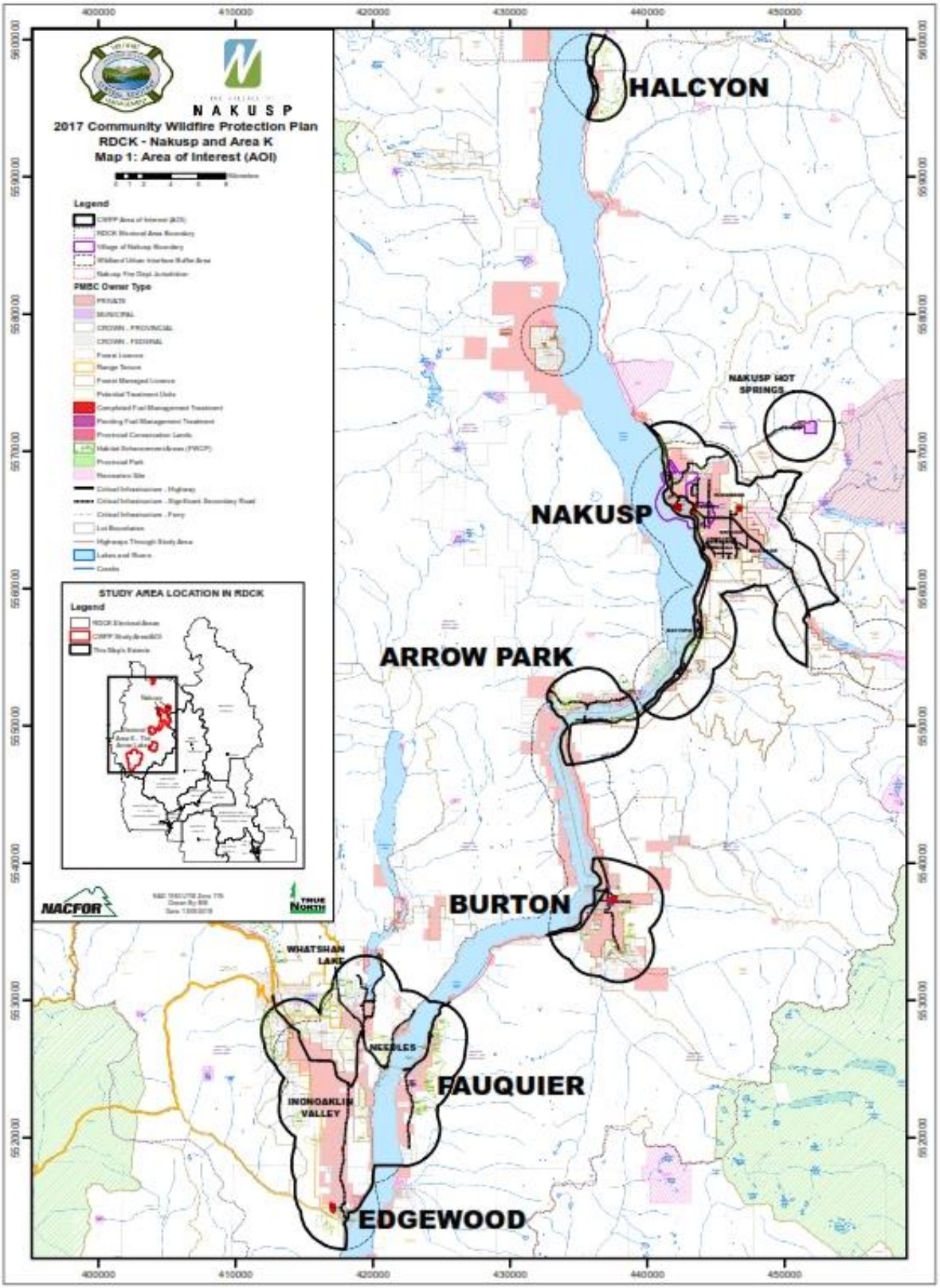


Figure 1: Map 1 - Area of Interest

Table 2: AOI Land Ownership/Status Summary[2]

Ownership/Status	Area (hectares)	Percent of total AOI
Crown (Federal)	1	<0.0
Crown (Provincial)	32,455	75.8
Municipal	312	0.7
Private	10,048	23.5
Agricultural Land Reserve*	*6,954*	*16.2*
Provincial Park*	*222*	*0.5*
Non-Fuel*	*46*	*0.1*

2.2 Community Description

First Nations use of the Arrow Lakes area has been traced back thousands of years (RDCK, 2009). European settlement of the area began in the 1890s as mining in the Slocan Valley and the fur trade attracted settlers to the region. Many of the communities in the Arrow Lakes however focused on agriculture and forestry. Incorporated in 1964, The Village of Nakusp is one of the nine member municipalities of the RDCK and the largest community in the AOI. Nakusp has a population of 1,605 people and is roughly 8.5km^2 in size (Stats Canada, 2016; BC Stats, 2016). Local services within the village include utilities, cemetery services, road and sidewalk services, waste and recycling, water and sewage services, and parks and recreational facilities. The Village of Nakusp also maintains a registered aerodrome north of town which includes a 914m paved landing strip.

The BC Ambulance Service, the RCMP, the Arrow Lakes Search and Rescue, and the Nakusp Volunteer Fire Department provide emergency services in the area. Burton, Edgewood, and Fauquier also maintain local volunteer fire departments for local fire response; however these groups are not recognized by the Fire Underwriter Survey for insurance purposes, dispatched through 9-11 Dispatch or funded through allocated taxation. The Arrow Lakes Hospital – a level one community hospital located in Nakusp – provides medical services to the region.

Nakusp is located at the intersection of Highway 6 and Highway 23. By road, Revelstoke is located 105km north along Highway 23; Castlegar is located 146km south, along Highway 6; and Vernon is 194km west, along Highway 6. Ferry services provide access across the Arrow Lakes at three locations:

1.) The Galena Bay Ferry: On Highway 23, between Shelter Bay (49km south of Revelstoke) and Galena (48km north of Nakusp).

[2] Data from Parcel Map BC. Crown Provincial includes: Crown Agency, Mixed Ownership, and Unknown;
* ALR, Provincial Parks, and Non Fuel areas are also included in other land ownership categories.

2.) The Arrow Park Cable Ferry: Runs across the junction of Upper and Lower Arrow Lakes at Arrow Park (22km south of Nakusp on Highway 6).
3.) The Needles Cable Ferry: On Highway 6, 59km south of Nakusp, between Fauquier (east side) and Needles (west side).

The municipal boundary of Nakusp is surrounded by Electoral Area K - one of the 11 electoral districts within the RDCK. Area K is 4,380km^2 in size with a population of 1,681 (BC Stats, 2016). As the local government for Area K, the RDCK provides a number of services throughout the central Kootenays – servicing a population of nearly 60,000 people (Stats Canada, 2016). Services provided by the RDCK can vary from a local to a regional level and are determined by the regional board with approval of the electors (RDCK, 2016). Services include emergency management, waste and recycling, and water services.

For over a century, the forest industry has been a major economic driver for Nakusp and neighbouring communities. The AOI is part of the Selkirk Natural Resource District, and located within parts of the Arrow Timber Supply Area (TSA) - which has an Annual Allowable Cut (AAC) of 500,000m^3 (Nicholls, 2017). There several area based forest tenures within the AOI including: four woodlot licenses; a community forest agreement held by the Nakusp and Area Community Forest - owned by the Village of Nakusp; and Tree Farm Licence (TFL) 23 held by International Forest Products (Interfor). The AOI also contains land not within the timber harvesting land base.

The natural beauty of the Selkirk and Monashee mountains coupled with the picturesque Arrow Lakes attract tourists and outdoor enthusiasts from all around. The Nakusp Hot Springs – owned and operated by the Village of Nakusp –, the Halcyon Hot Springs, and heli-skiing operations in the area play an important economic role in driving tourism throughout the region.

2.3 Past Wildfires, Evacuations and Impacts

There are records of several large wildfires in the early 1900s, particularly in the Inonoaklin Valley and southern portions of the study area - consistent with the natural disturbance regime of the area (NDT 3). Past wildfires of note within the Arrow Lakes area include[3]:

- 2003 Ingersoll Fire which affected roughly 6,700 ha. The fire resulted in several large debris flows and floods in 2004 and 2005 (Alcock, 2007).
- 2003 Burton (Marshall-Mountain) Fire burned roughly 530 ha near Burton.
- 2007 Arrow-Penstock Fire burned roughly 572 ha, prompting an evacuation alert for the town of Needles. The fire destroyed power infrastructure and cut-off electricity to Nakusp for about

[3] From Personal Communication, BCWS Wildfire Technician, Jonathan Fox and BCWS PSTA Historical Fire Data

1.5 days. Sprinkler units were utilized to defend homes and power infrastructure (Alcock, 2007).

- 2008 fire located with 2km south of Edgewood - burned roughly 335 ha.
- 2009 Galena Fire burned 2,087 ha prompting an evacuation alert near Halcyon (Jordan, 2009).
- 2017 Galena Bay fire burned roughly 445 ha and prompted an evacuation alert for residents at Galena Bay.

Recent wildfire seasons throughout BC have been particularly devastating. In 2017, an estimated 1.2 million hectares burned throughout the province, with roughly 65,000 people displaced[4]. 2017 and 2015 were busy seasons for the South East Fire Centre, with several interface fires prompting evacuations throughout the Kootenay region. Despite the recent severe fire seasons, there were no major interface fires of note within the AOI. According to historical fire data, fires within the AOI are generally contained at less than 4 hectares and primarily caused by lightning.

2.4 Current Community Engagement

There have been several initiatives aimed at mitigating the risk of wildfire in the region including previous CWPP development, fuel management activities, and FireSmart programs.

2008 CWPP and Area Assessments[5]

Nakusp's last CWPP was completed in 2008. This report provided thirty-six recommendations aimed at reducing the threat and consequence of wildfire in the village. Wildfire risk assessments for the communities of Arrow Park, Burton, Edgewood and Fauquier were also completed in 2008. Recommendations from these reports included reducing forest fuels in high hazard areas, adopting a FireSmart program, and working to improve emergency response procedures and policies.

Fuel Treatment Activities

Since the release of the 2008 CWPP and Area Assessments, roughly 70 hectares of forest have been treated within the AOI in order to reduce the wildfire hazard (Table 3). The RDCK has also organzied operational fuel treatments in Fauquier and Burton scheduled for completion in 2018. The local BC Wildfire Service crews conduct ongoing fuel management work as time permits. Recent work includes brushing and pile burning at the Nakusp Rod and Gun Club, archery and rifle range. The BC Fish and Wildlife Compensation Program (FWCP) has historically conducted habitat enhancement projects in the area – including prescribed burns. There is an opportunity to work with the FWCP to plan future projects in order to meet habitat enhancement and wildfire hazard reduction objectives.

[4] https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary
[5] http://www.rdck.ca/EN/main/services/emergency-management/community-wildfire-protection-plans.html

Table 3: Completed Fuel Treatments

Year	Location	Area (hectares)	Status
2008	Nakusp/Brouse	28	Completed
2009	Burton	16	Completed
2011	Edgewood	27	Completed
2018	Fauquier	4.7	Anticipated Completion - Spring 2018
2018	Burton	9.1	Anticipated Completion - Spring 2018

FireSmart

FireSmart is a community-led program intended to promote wildfire mitigation efforts in the wildland urban interface. Through the use of education and outreach, FireSmart provides homeowners and community members with the knowledge needed to reduce the fire hazard in their community. The 2008 CWPP and Area Assessments made a number of recommendations to establish a FireSmart program. Both the Village of Nakusp and the RDCK have adopted several of these recommendations by coordinating FireSmart activities throughout the region. Additional information regarding the Nakusp and RDCK FireSmart programs are described in Section 5.2.

2.5 Linkages to Other Plans and Polices

Wildfire response, prevention, and planning often spans several jurisdictions and involve multiple agencies. In order to ensure compatibility with current plans, policies, and practices, existing documents were reviewed as part of the CWPP process. Relevant plans and polices have been summarized for reference.

2.5.1 Local Authority Emergency Plan

The RDCK's 2016 Emergency Response and Recovery Plan outlines policies and procedures to be implemented in various emergency situations[6]. This plan has been adopted by the Village of Nakusp and Electoral Area K and contains several sections that are particularly relevant in the event of an interface fire, including:

- **Section 2:** Provides the structure for establishing an Emergency Operation Centre (EOC) to provide emergency support. The RDCK manages a two-tiered EOC system consisting of a Local

[6] RDCK. 2016. Emergency Response and Recovery Plan. Retrieved from http://www.rdck.ca/EN/main/services/emergency-management.html

Area Emergency Operations Centre (LAEOC), and a Regional Emergency Operations Centre. EOCs typically assist with coordinating multiple agencies, providing media releases, and managing evacuees.

- **Section 3.10:** Provides the following policies to be implemented in the event of an interface fire:
  - *Interface fires will be managed using unified command with the Ministry of Forests and local fire department(s) and other local fire departments, where applicable.*
  - *Interface fire areas that are not covered by a fire department, coordination of response will be handled directly by the RDCK Emergency EOC.*
  - *The need for evacuation will be determined with the Wildfire Service and/or the Office of the Fire Commissioner*
  - *The RDCK will support the evacuation of the public*
  - *The RDCK will support evacuation of livestock with the Ministry of Agriculture*
  - *The RDCK will prepare evacuation documents, including the Local State of Emergency*
- **Section 4:** The RDCK will consider population density, evacuation routes, terrain, and urgency when formulating an evacuation plan. The RDCK has predetermined Emergency Support Services Reception Centres that will be activated based on:
  - *Proximity to a localized emergency*
  - *Travel routes from a localized emergency*
  - *Safety of the area*
  - *Number of people evacuated*

The RDCK Emergency Response and Recovery Plan also includes sections regarding critical infrastructure failure, structural/industrial fires, severe weather, utility failure, and recovery planning - all of which may become relevant in the event of an interface fire.

Currently, all RDCK emergency plans are being updated - including the 2016 Emergency Response and Recovery Plan. The RDCK intends to secure funding in 2018 to update evacuation plans or zones and create wildfire preplans for all areas (Personal Communication, RDCK Wildfire Mitigation Coordinator Nora Hanon).

2.5.2 Affiliated CWPPs

The Slocan Integral Forestry Cooperative (SIFCo) is currently developing a CWPP for the RDCK Electoral Area H North including the communities of New Denver and Silverton. . This 2017 Area H CWPP will include the community of Summit Lake, located on the Area K/Area H border.

The WUI surrounding the community of Halcyon is partially located within the Columbia Shuswap Regional District (CSRD), Electoral Area B and is not covered by a current CWPP. In order to fully evaluate the wildfire risk facing the community of Halcyon, the entire WUI was assessed as part of this CWPP.

Recommendation 1: Work with other agencies – the CSRD, BC Hydro, and the FWCP – to coordinate wildfire risk mitigation when appropriate. Consider joint implementation of fuel treatment and FireSmart activities around Summit Lake and Halcyon Hot Springs with RDCK Area H and CSRD Area B – Revelstoke Columbia.

2.5.3 Local Government and First Nation Plans and Policies

Regional, municipal, and First Nation policies can be effective tools to mitigate wildfire risk in the community. The following relevant local government plans and polices were reviewed as part of the CWPP process.

Village of Nakusp Official Community Plan - Bylaw No. 612, 2007

The Village of Nakusp's Official Community Plan (OCP) emphasizes the importance of wildfire planning and prevention throughout the village. Section 2.5 states that it is a priority of council to promote and support FireSmart guidelines for all future and existing development. Section 3.2 of the OCP states that it is the policy of council that all new infrastructure development be FireSmart and that "Nakusp become a FireSmart Community." These policies are further emphasized in Section 4.3.4 and Section 4.10.4 which state that development within the Steep Slope and Floodplain Development Permit Area and the Nakusp Hot Springs must adhere to FireSmart guides. Transportation networks within the village should also comply with FireSmart objectives as identified in Section 3.4. Strategies identified in the OCP include the implementation of a FireSmart Community Plan and a Community Wildfire Protection Plan for the Village of Nakusp (Section 3.5).

The OCP also identifies areas of concern regarding fire infrastructure in the village (Section 1.5.10), including:

- water pressure at fire hydrants as a result of inadequate line size
- hydrant spacing in the downtown core
- required upgrades to the mains in outlying areas (Glenbank and Alexander Road)

Since 2007, many of these issues have been addressed and are no longer applicable. Fire hydrant upgrades have been an ongoing initiative throughout the village and upgrades to the water mains in Glenbank and Alexander Road are scheduled for 2018 (Personal Communication, Village of Nakusp Director of Operations, Warren Leigh).

Village of Nakusp Water System Source Protection Plan, and Water System and Emergency Response Plan, 2016

In 2016 an in-depth review by Austin Engineering Ltd. assessed the major risks facing Nakusp's surface water sources. The protection plan identifies wildfires as posing a "Very High Risk" to village's water source, with the potential for "Major Consequence" (Austin Engineering Ltd., 2016). The emergency response plan provides procedures to be implemented during an interface fire, which include: increasing reservoir levels to maintain maximum fill capacity for firefighting, working with the Fire Department to provide required pressures and flows, and implementing water restrictions as necessary. As part of the emergency response plan, the Village maintains an up-to-date Emergency Response Contact List.

Recommendation 2: Ensure existing and future emergency plans - including the Water System Emergency Response Contact List – consider wildfire risks and contain current emergency contact information. Information should include the BC Wildfire Service and local fire department contact information.

Arrow Lakes Community Plan – Bylaw 2022, 2009

The RDCK's Electoral Area K - The Arrow Lakes Official Community Plan was developed in 2009 to guide senior levels of government in community planning activities. Section 14 of the OCP identifies objectives and policies for hazardous lands within Area K (including areas susceptible to wildfires). Objectives include: "to prevent development in areas subject to known hazardous conditions, unless the hazard has been sufficiently addressed," and "to prevent injury and loss of life and to prevent or minimize property damage as a result from natural hazards." The watersheds upstream of Heart Creek, Inonoaklin Creek, Eagle Creek and Caribou Creek are identified in the community plan as particularly sensitive to disturbance. The flood hazard in these areas may be significantly influenced by forestry activities, wildfires, or other natural disturbances.

Section 14 of the community plan also provides policies for the regional board regarding fire management, including:

- the protection of access to water sources for fire suppression, including hydrants, standpipes, and natural water sources
- the collaboration between the RDCK and local volunteer fire departments for emergency preparedness

Additional Applicable Plans and Bylaws

- *Nakusp and Arrow Lakes Trails Master Plan, 2017:* Provides a framework and strategy for the management and development of trails in Nakusp and Area K. The plan does not include

specific sections regarding wildfire prevention, response, or evacuation on trails. During trail maintenance and development, consideration should be given to wildfire mitigation including the use of signage for fire prevention and reporting. Trails can also provide critical access for wildfire suppression crews, creating an opportunity to coordinate trail development into wildfire mitigation efforts. Trail locations should also be considered when planning fuel treatments to ensure activities are consistent with recreation objectives in the area.

Recommendation 3: Coordinate trail development and maintenance with wildfire mitigation efforts in high risk areas. Information regarding new trail development should be shared with response agencies and incorporated into evacuation and emergency response plans.

- *Village of Nakusp Good Neighbour By-law No 640, 2011:* Prohibits property owners or occupiers from permitting the accumulation of dead landscaping debris, brush, vegetation, weeds or other growths on the property. Requires property owners or occupiers to maintain vegetation and debris on boulevards adjacent to their property.

- *Village of Nakusp Water Rates and Regulations By-law No. 656, 2015:* Regulates water use and restricts the use of fire hydrants and stand pipes to employees of the Village or persons with a hydrant use permit.

- *Village of Nakusp Fire Regulations By-law No. 588, 2004:* Regulates outdoor burning and burn permit requirements.

- *Regional District of Central Kootenay Emergency Management Regulatory Bylaw No. 2210, 2011:* Enables the establishment and maintenance of an emergency management framework for the RDCK.

- *Regional District of Central Kootenay Emergency Program Management Plan:* Provides details regarding emergency program structure, jurisdiction, mitigation and response.

- *Regional District of Central Kootenay Water Bylaw No. 2470, 2015:* Regulates water use, ownership and access.

2.5.4 Higher Level Plans and Relevant Legislation

The Kootenay Boundary Higher Level Plan (KBHLP)

The Kootenay Boundary Higher Level Plan Order establishes resource management zones and objectives in the region. Nakusp and Area K are located within the Arrow Resource Management Zone.

Within the KBHLP there are objectives for biodiversity emphasis areas, old and mature forests, caribou, green-up, grizzly bear and connectivity corridors, consumptive use streams, fire maintained ecosystems, enhanced resource development zones, visuals, and social and economic stability.

Relevant Legislation and Regulations

The AOI encompasses a variety of land classifications including municipal, regional, private, and Crown land, as well as parks, Agricultural Land Reserve, and community watersheds. As communities plan to undertake potential operational treatments, there are several pieces of legislation that must be considered. The following list includes some of the main pieces of the legislation and regulations that may come into effect while planning to undertake fuel management and FireSmart activities:

- *Environmental Management Act and Open Burning Smoke Control Regulation:* Governs disposal of waste into the environment; sets regulations for open burning and smoke management.

- *Forest Act:* Governs forest harvesting on Crown land including the rights to harvest Crown timber.

- *Forest and Range Practices Act and Forest Planning and Practices Regulation:* Governs and regulates forest and range practices on provincial Crown land. Provides for the protection of 11 resources values including: biodiversity, cultural heritage, fish/riparian, forage and associated plant communities, recreation, resource features, soils, timber, visual quality, water quality, and wildlife.

- *Government Actions Regulations (GAR):* Provides for the establishment of land designations and features that require special management such as ungulate winter range, wildlife habitat areas, and critical habitat for fish. GAR orders within the AOI replace some of the objectives set by the KBHLP - particularly those objectives for caribou and visual quality objectives.

- *Land Act:* Provides for the establishment of orders regarding the use and management of Crown resources and land. Ex. old growth management areas (OGMA).

- *Local Government Act:* Enables local governments to designate areas for protection from hazardous conditions, including the establishment of wildfire development permit areas (WDPA). Within these areas, requirements for the use of fire resistant building materials, fuel hazards mitigation, fire hydrant locations, and emergency access and evacuation can be established (Forest Practices Board, 2015).

- *Park Act:* Governs the protection, management, and use of parks; including the regulation of lighting, fuelling or making use of fire within parks.

- *Wildfire Act and Wildfire Regulation:* Governs the prevention and suppression of wildfires in the province. Provides obligations and responsibilities regarding fire use, prevention, control and rehabilitation.

2.5.5 Ministry or Industry Plans

Ministry and industry plans in the area include Forest Stewardship Plans (FSP) and Woodlot plans which must be prepared by all forest agreement holders under the Forest Act. NACFOR's 2011 Management Plan includes commitments to fire prevention in the area, including harvesting of high-risk stands and contracting small-scale, low-impact snag falling and firewood salvage in high-risk areas (Nielsen, 2011).

There is no management plan available for McDonald Creek Provincial Park. The park does have a Purpose Statement and Zoning Plan with a primary role of maintaining tourism and outdoor recreation. Protecting lakeshore riparian habitat and spawning habitat for kokanee is also identified in the Purpose Statement. Known management issues in the park include "unauthorized road building, campsites and fires" on the west side of the park (BC Ministry of Environment, 2003).

The Selkirk Resource District has a Fire Management Plan in place and there are plans to update this document over the next several years.

SECTION 3: Values at Risk

Effective fire mitigation planning is dependent on having a good understanding of the values at risk within a community and the extent to which wildfire has the potential to impact those values. Values at risk (VAR) are human or natural resources potentially impacted by wildfire and include human life, property, critical infrastructure and high environmental and cultural values.

The following sections outline key AOI values at risk identified using recently updated VAR data. See Appendix 1, Map 2.

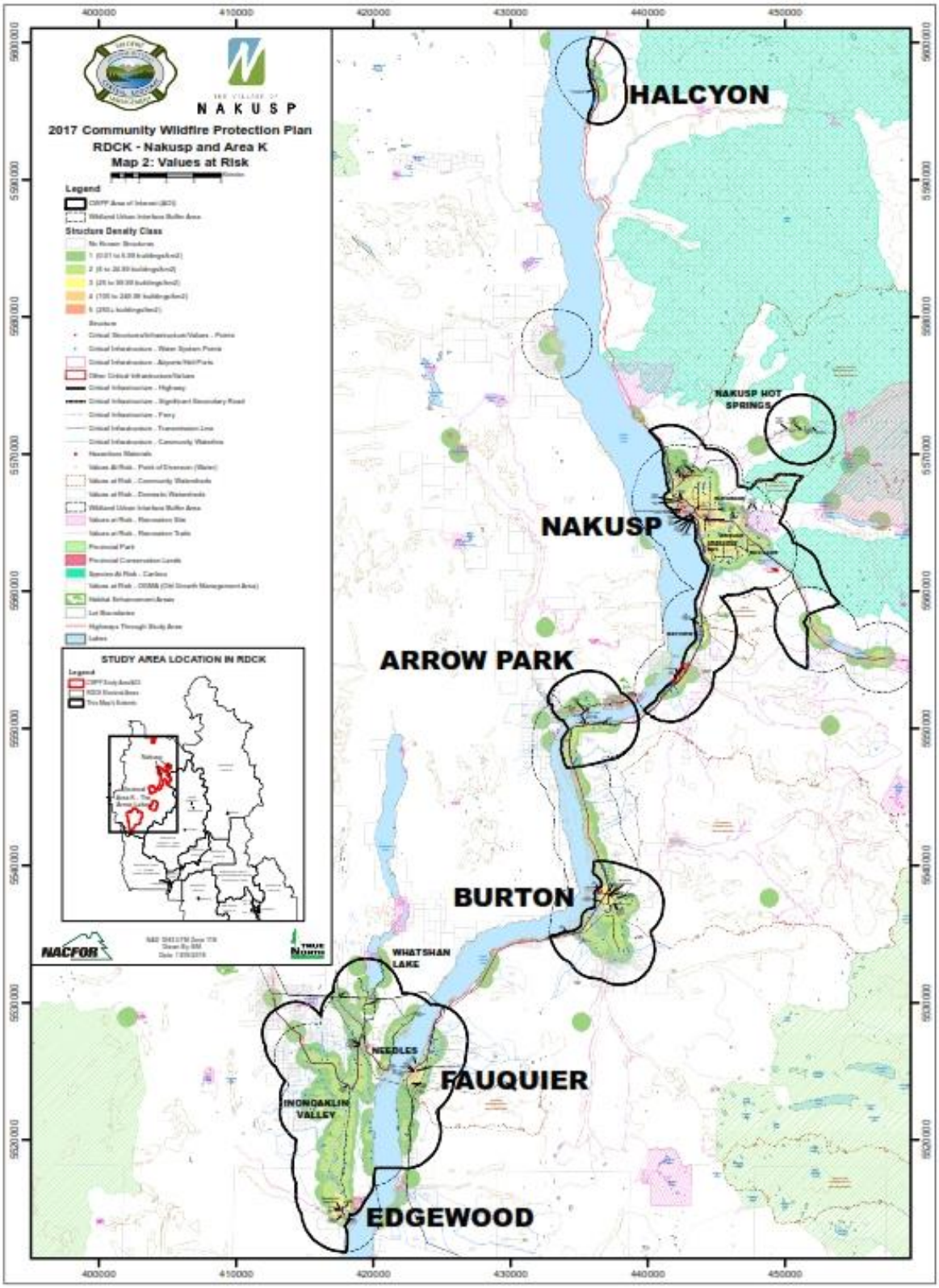


Figure 2: Map 2 - Values at Risk

3.1 Human Life and Safety

In the event of a wildfire approaching one of the communities in the AOI, the first priority is human life and safety, including the evacuation of at-risk areas. Wildfire can move quickly and unpredictably. It takes time for people to evacuate an area and safe egress can be blocked by the fire itself or human congestion and accidents.

The CWPP AOI is comprised of eight easily identifiable clusters. Six of these clusters center on areas featuring relatively high population densities. The largest, highest density population is focused on the Village of Nakusp. Smaller population centers are located in the communities of Burton, Fauquier and Edgewood. Bayview, along with East and West Arrow Park comprise other identifiable population clusters within the CWPP AOI. The final two clusters, Nakusp Hot Springs and Halcyon Hot Springs are high use commercial tourism facilities surrounded by wildland interface.

Other relatively high use areas during the fire season are found within various summer camping and recreation areas within the AOI. In addition to the hot springs noted above, campground and recreation areas are located within the towns of Nakusp, Burton, Fauquier and Edgewood as well as at Wensley Creek and Box Lake east of Nakusp and at MacDonald Creek Provincial Park south of Nakusp.

3.2 Critical Infrastructure

Emergency Management B.C. defines critical infrastructure (CI) as “any physical resources, service and information technology facilities, networks and assets which, if disrupted or destroyed, would have a serious impact on the operation of an organization, sector, region or government.” Map 2 – Values at Risk in Appendix 1 includes any identified structures that can be categorized into one or more of the following types:

- Electrical power
- Communications
- Transportation
- Emergency services
- Water and sewage
- Hazardous materials

The following subsections highlight significant CI structures within the CWPP AOI. See Appendix 1, Map 2 for a complete list of all CI within the AOI.

3.2.1 Electrical Power

All identified communities within the AOI are serviced by overhead electrical power lines and transformers. BC Hydro maintains approximately 103.5 km of transmission lines within the AOI. Metal

towers generally service the transmission lines while wooden power poles are used to service distribution lines. Hydro power facilities within the AOI include the Nakusp substation, the Barnes Creek substation and Whatshan dam near Edgewood and the generating station along Arrow Lake north of Needles.

The 2007 Arrow-Penstock Fire near Fauquier destroyed power infrastructure, cutting off electricity to Nakusp for approximately 1.5 days. The power outage disrupted water, fuel and grocery supply; back-up generators owned by local services, businesses and residences were the only power sources during the power outage.

3.2.2 Communications

Telus owns and maintains three communications towers within the AOI. The communications towers are located on Nakusp East Road in Nakusp, on Burton Creek Forest Service Road south of Burton and outside of Fauquier, just south of the community and west of Octopus Access Forest Service Road. These towers provide both cell and internet service to area residents. Disruption of service to one or more of these structures would cause severe communication impairment during an emergency. Cell phone service is currently unavailable at Nakusp Hot Springs or Halcyon Hot Springs. A proposal to bring wireless internet service to the Nakusp area is proceeding and will be operational by December 2018. When completed the service provider will have towers on Kuskanax Mountain and Saddle Mountain and will provide line-of-sight service to Summit Lake, Box Lake, Brouse, Nakusp, Nakusp Hot Springs, Bayview and East Arrow Park.

3.2.3 Transportation

Emergency planners require detailed knowledge of potential evacuation methods and egress routes in the event of an evacuation. See Section 6.1.3 Access and Evacuation for additional details and recommendations. Using Nakusp as a hub, the main highway exits out of the CWPP AOI are as follows:

- North on Highway 23 towards the Galena Bay Ferry and Revelstoke – Halcyon Hot Springs is located 35 km north of Nakusp on Highway 23;
- Highway 6 West towards the Needles Ferry and Vernon – passing Bayview, Arrow Park, Burton, Fauquier and Edgewood; and
- Highway 6 South towards Nelson – passing Glenbank, Brouse and Box Lake.

There is an alternate transportation route along Forest Service Roads (FSR's) and forest roads on the west side of Arrow Lake accessed by the Arrow Park ferry. The likelihood of this route being required as a wildfire evacuation route is very low but it could serve as an alternate transportation corridor in the event of highway closures caused by wildfire.

Evacuation from the Nakusp Hot Springs would be particularly challenging in the event that wildfire made the only transportation route along Nakusp Hot Springs Road impassable. Helicopter may be required to evacuate people from the hot springs or an alternate foot trail to Nakusp could be accessed across the Kuskanax Creek Footbridge and along the Hot Springs Trail.

Egress from the main community of Edgewood could also prove challenging in the event of wildfire blocking access along the Edgewood Highway back to Highway 6. If this was the case and evacuation was required, a Forest Service Road transportation route could be followed south towards Grand Forks.

There are two helicopter bases near Nakusp on Hot Springs Road – Highland Helicopters maintains a year-round base and Canadian Mountain Holidays has a heli-pad with fuel. Both Highland Helicopters and Canadian Mountain Holidays would have remote heli-pads throughout the AOI. Nakusp airport is used regularly by small planes but is unavailable to commercial aircraft due to runway restrictions.

Boat access along Arrow Lake provides a potential emergency escape option from most of the communities within the AOI, including Nakusp, Halcyon Hot Springs, Bayview, East and West Arrow Park, Burton, Fauquier and Edgewood. Marinas and public boat launch locations are on Appendix 1, Map 2 – Values at Risk.

3.2.4 Emergency Services

Nakusp acts as a service hub for the other identified communities within the AOI. The Nakusp Emergency Services building houses a number of emergency services including B.C. Ambulance, the Nakusp Volunteer Fire Department and the office of the RDCK Area K Emergency Program Coordinator. The BC Wildfire Service operates a base near Nakusp to respond to wildfires in the Arrow Lakes area. Arrow Lakes Hospital in Nakusp provides 24-hour emergency services to the surrounding area. The hospital, Nakusp RCMP detachment and the Village of Nakusp municipal building are considered critical infrastructure within village limits. Two public schools and the community complex could serve as potential evacuation centres in the event of an emergency.

Some emergency services are available in smaller communities in the AOI. Edgewood has an official first aid station. Burton, Fauquier and Edgewood all have volunteer fire services (currently not dispatched through 9-11 or funded through allocated taxation) as well as schools and community halls that could serve as evacuation centres.

3.2.5 Water and Sewage

Residences and businesses within the Village of Nakusp are serviced by municipal water and sewer. The main Village water sources are two community wells located within the Village center and the Brouse and Halfway community watersheds in Upper Brouse. The Kuskanax River Community

Watershed serves as a back-up source. A water treatment plant serving the Brouse and Halfway sources is located on Upper Brouse Loop Road.

The septic lagoon for the Village of Nakusp is located to the north a few kilometres from the town centre. Nakusp is the only community within the AOI serviced by a town sewer system.

The communities of Burton, Edgewood and Fauquier are all serviced by RDCK owned water systems. See Section 6.1.2 Water Availability for Wildfire Suppression for details regarding the current inadequacy of these and some other services for fire protection. Section 6.1.2 also describes present plans to improve some of these services as well as information on additional water storage capacity in other communities within the AOI.

Recommendation 4: Prioritize fuel management treatments that protect electrical power, communications, transportation and water critical infrastructure. Review, prioritize, and implement fuel management treatments in areas identified in Table 15.

3.3 High Environmental, Cultural and Other Values

Consumptive water, recognized fish and wildlife resources and cultural values have also been identified within the values at risk framework. These resources, particularly community watersheds, have a considerable impact on wildfire risk ratings within the AOI, and are shown on Appendix 1, Map 7 – Local Fire Risk.

From a fire mitigation perspective, the protection of environmental and cultural values must be viewed through two separate lenses. The first is the obvious objective to protect any identified values from potential damage and destruction caused by wildfire. The second is the equally important objective to ensure that fire mitigation efforts do not cause damage or destruction to some of the very elements that they seek to protect. The Kootenay Boundary Higher Level Planning Order (KBHLPO), the *Forest and Range Practices Act* (FRPA), *Government Action Regulation* (GAR) orders and the government approved Forest Stewardship Plans (FSP's) of forest licensees are the primary legal tools that govern the management of these resources on Crown land within the CWPP AOI.

3.3.1 Drinking Water Supply Area and Community Watersheds

Wildfire has the potential to cause significant damage to soils, high rates of sedimentation and / or landslides that can degrade water quality for many years. In worst case scenarios, the water supply may have to be abandoned (temporarily or permanently) or new water treatment infrastructure may need to be built.

Consumptive use streams and watersheds are present within all areas of the AOI. In total, there are seven community watersheds within the AOI. Table 4 lists the specific location and size of community

and domestic water supplies. Domestic watershed and POD locations are too numerous to list – see Appendix 1, Map 2 for domestic watersheds and POD locations.

Table 4: Community Watersheds

Watershed Name	Location	Area (hectares)	Area Within AOI (hectares)
Kuskanax Community Watershed	Kuskanax River	3,4905	3,339
Halfway Community Watershed	Upper Brouse	408	408
Brouse Community Watershed	Upper Brouse	311	311
Dog Community Watershed	Bayview	1,083	276
Baerg Community Watershed	Bayview	410	216
Caribou Community Watershed	Burton	23,735	1,002
Heart Community Watershed	Fauquier	2,628	374

3.3.2 Cultural Values

Indigenous cultural heritage resources include archaeological sites, traditional use sites, historic buildings and artifacts and heritage trails or any other objects or places of "historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people"(CRIP, 2016).

Based on the Consultative Areas Database there are 15 First Nations with aboriginal interests in the AOI. There are no treaty lands; however, the Ktunaxa Nation has an incremental treaty agreement for the Wensley Bench near Nakusp. A request for information on aboriginal interests was sent to First Nations at the outset of the CWPP planning process. No cultural heritage resources were identified through this information sharing request and there are no other known places of historical, cultural or archaeological significance to First Nations.

Ongoing First Nations consultation is recommended and should be carried out during the fuel management prescription phase guided by Section 10 of the Forest Planning and Practices Regulation, which states that "The objective set by government for cultural heritage resources is to conserve, or, if necessary, protect cultural heritage resources that are

(a) the focus of a traditional use by an aboriginal people that is of continuing importance to that people, and

(b) not regulated under the *Heritage Conservation Act*."

Preliminary reconnaissance assessments of potentially impacted cultural values should be completed prior to fuel management treatments.

Recommendation 5: Carry out ongoing First Nations consultation during the fuel management prescription phase. Conduct preliminary reconnaissance assessments of potentially impacted cultural values prior to fuel treatments.

3.3.3 High Environmental Values

Habitat enhancement areas and caribou habitat protected by a *Government Action Regulation* (GAR) order are shown on Map 2 in Appendix 1. Caribou habitat areas overlap with the AOI near Nakusp Hot Springs, Glenbank and Box Lake. There are several small habitat enhancement areas near Bayview and Arrow Park.

Old Growth Management Areas (OGMAs) established to protect old growth forests and landscape level biodiversity are located within the AOI at McDonald Creek, East Arrow Park, Caribou Creek (Burton), Fauquier and Edgewood.

No spatially located habitat areas have been designated within the AOI for the protection of any recognized species at risk other than wildland caribou, either via legislated Wildlife Habitat Area or *Government Action Regulation* order. However, per the BC Species and Ecosystems Explorer database, Table 5 identifies the 16 vertebrate and invertebrate Species at Risk (red or blue listed) potentially present within the AOI. In the event of a wildfire, if known to be present, these species should be recorded and appropriate management activities undertaken to ensure their protection.

Table 5: Species at Risk

Scientific Name	English Name	B.C Status
Ardea herodias herodias	Great Blue Heron	Blue
Contopus cooperi	Olive-sided Flycatcher	Blue
Corynorhinus townsendii	Townsend's Big-eared Bat	Blue
Epargyreus clarus	Silver-spotted Skipper	Blue
Gulo gulo luscus	Wolverine, *luscus* subspecies	Blue
Hemphilia camelus	Pale Jumping-slug	Blue
Hirundo rustica	Barn swallow	Blue
Megascops kennicottii macfarlanei	Western screech owl	Blue
Myotis thysanodes	Fringed Myotis	Blue
Oreamnos americanus	Mountain Goat	Blue
Ovis canadensis	Bighorn Sheep	Blue
Pekania pennanti	Fisher	Blue
Plestiodon skiltonianus	Western Skink	Blue
Rangifer tarandus pop. 1	Caribou (southern mountain)	Red
Taxidea taxus	American Badger	Red
Ursus arctos	Grizzly Bear	Blue

3.4 Other Resource Values

Visual quality is recognized in both the KBHLPO and FRPA as a resource objective. Both wildfire and wildfire mitigation strategies have the ability to severely impact Visual Quality Objectives (VQO's). Fuel

management in highly visible areas should consider treatments such as partial cutting or thinning from below to reduce impacts to visual quality.

3.5 Hazardous Values

The objectives of identifying hazardous values are to recognize materials or substances that may pose either a safety hazard to emergency responders or the potential to exacerbate wildfire volatility. Fuelling centers, dynamite caches (also known as powder mags), and landfill sites are identified on *Appendix 1, Map 2.*

SECTION 4: Wildfire Threat and Risk

Wildfire threat in the AOI was assessed using the 2017 Provincial Strategic Threat Analysis (PSTA) data, according to the CRIP 2017 CWPP Template standards. Factors influencing the threat of wildfire around communities include the natural fire regime and ecology; topography, forest fuels and associated fire behaviour; and historical fire occurrences. The wildfire risk assessment incorporates wildfire threat, fire spread patterns, topography, and values at risk in order to consider the likelihood and potential consequence of an interface fire.

4.1 Fire Regime, Fire Danger Days and Climate Change

Wildfire is a natural process that plays an important role in forest succession. It is important to consider the ecological context of wildfire in order to develop effective and responsible management plans that protect both the community and environment.

4.1.1 Local Ecology and Fire Regime

The Biogeoclimatic Ecosystem Classification System (BEC) is used throughout the province to categorize ecosystems based on vegetation, soil and climate. The BEC system helps resource professionals make informed land management decisions while considering local ecological characteristics. The majority of the AOI is classified under the Interior Cedar Hemlock (ICH) BEC zone, with higher elevation areas within the Engelmann Spruce Subalpine Fir zone (ESSF) (Table 6). The ICH is biologically diverse and the most productive zone in the interior of BC (Ketcheson, et al., 1991). Recurrent fires create a mosaic of climax and seral stands throughout the ICH (BC Ministry of Forests, 1992).

The ICH Moist Warm, Shuswap variant (ICHmw2) accounts for over 50% of the total AOI. Characteristics of this ecosystem include hot, moist summers; and very mild winters with light snowfall (BC Ministry of Forests, 1992). Mixed seral stands of western hemlock *(Tsuga heterophylla)*, western redcedar *(*Thuja plicata*)*, Douglas-fir *(Pseudotsuga menziesii)*, western larch *(Larix occidentalis)*, and hybrid white spruce *(Picea engelmannii x glauca)* are common (BC Ministry of Forests, 1992). Typical

wildlife found throughout the ICH includes grizzly and black bear, deer, moose, and elk (BC Ministry of Forests, 1992; Ketcheson, et.al, 1991).

Table 6: AOI BEC Zone and NDT Summary

BEC Zone	Description	NDT	Description	Area (hectares)	Percent
ESSF wc 4	Wet Cold, Selkirk variant	1	Rare stand-initiating events	368.42	0.86
ESSF wcw	Wet Cold Woodland	1	Rare stand-initiating events	54.37	0.13
ESSF wh 1	Wet Hot, Columbia variant	1	Rare stand-initiating events	802.03	1.87
ICH dw 1	Dry Warm, West Kootenay variant	3	Frequent stand-initiating events	15,719.53	36.71
ICH mw 2	Moist Warm, Shuswap variant	2	Infrequent stand-initiating events	22,711.99	53.05
ICH mw 5	Moist Warm, Granby variant	2	Infrequent stand-initiating events	2,566.10	5.99
ICH wk 1	Wet Cool, Wells Gray variant	1	Rare stand-initiating events	593.33	1.39
Total		-		42,815.78	100

Within the study area, infrequent stand-initiating events (NDT2) are the main natural disturbance type - accounting for 59% of the AOI (Table 6). Historically, NDT2 forest ecosystems consist of even-aged stands, however extended post-fire regeneration periods have created stands with uneven-aged tendencies (BC Ministry of Forests, 1995). Wildfires would typically range in size from 20 to 1,000 ha, with larger fires occurring after periods of extended drought. Wildfires would often leave pockets of unburnt fuel throughout the burn area as a result of terrain features or areas of high moisture content (BC Ministry of Forests, 1995). The average disturbance return interval is 200 years in the NDT2, ICH (BC Ministry of Forests, 1995).

Frequent stand-initiating events (NDT3) are the second most common natural disturbance type in the AOI (36.7%). Frequent stand-initiating events are associated with the ICH Dry Warm, West Kootenay variant located primarily in the southern portion of the AOI - around Edgewood. These ecosystems historically experienced frequent wildfires that ranged in size from small spot fires to large fires covering thousands of hectares. The mean disturbance return interval is 150 years in the NDT3, ICH (BC Ministry of Forests, 1995). See Figure 3 – Fire Regime, Ecology and Climate Change

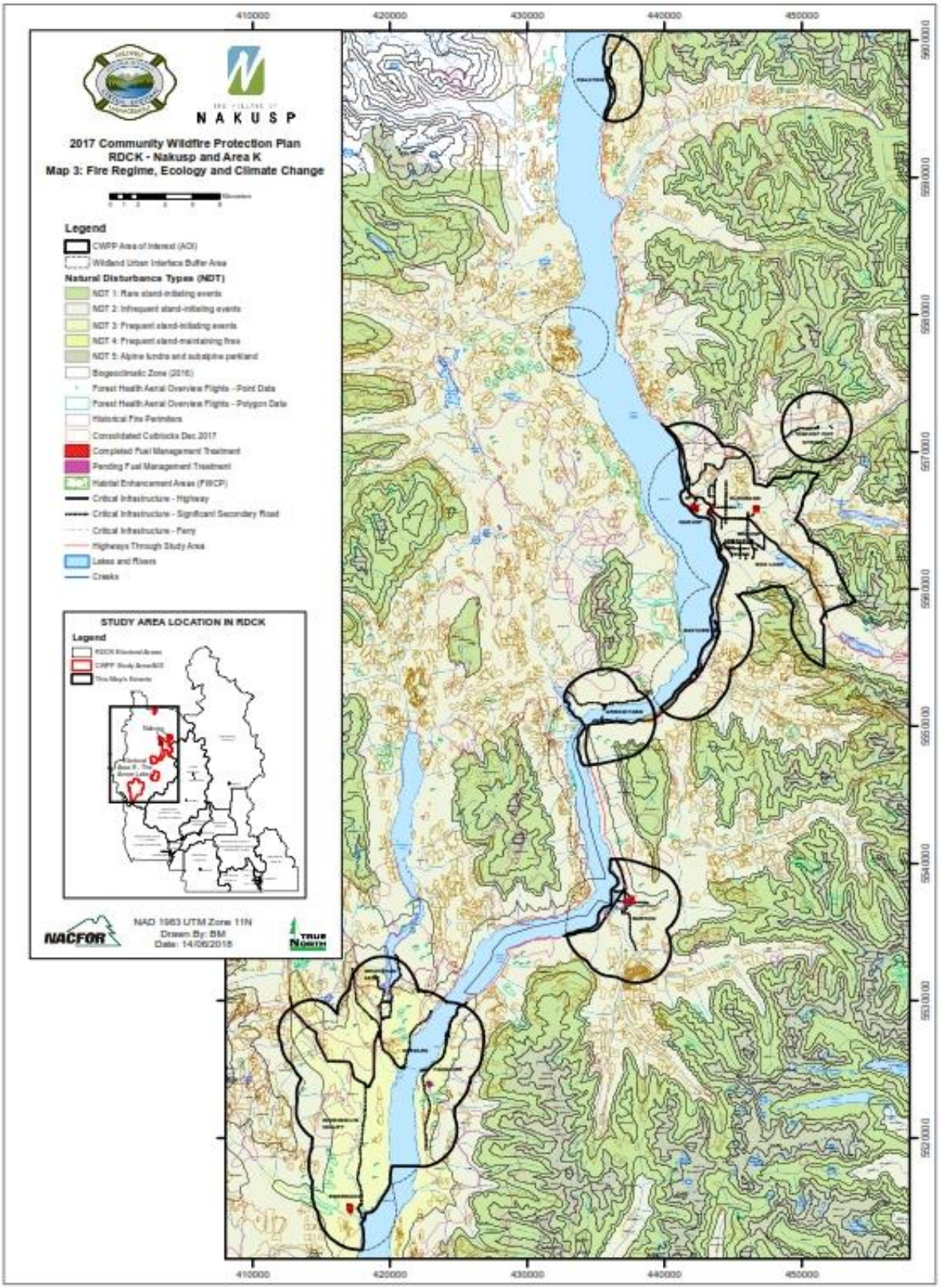


Figure 3: Map 3 - Fire Regime, Ecology and Climate Change

A minor component of the AOI is part of the ESSF and ICHwk1 (Wet Cool, Wells Gray variant) BEC zones. These ecosystems experience rare stand initiating disturbances (NDT 1) and wildfires are not a common occurrence. The ESSF is found in higher elevations throughout the AOI, while the ICHwk1 is associated with wet valley bottom ecosystems. NDT1 stands are typically uneven-aged or multi-storied even-aged (BC Ministry of Forests, 1995). Infrequent disturbances typically affect individual or small groups of trees, creating small gaps in the forest for regeneration (BC Ministry of Forests, 1995). The mean disturbance return interval is 250 years in the ICH, and 350 years in the ESSF NDT1 ecosystems (BC Ministry of Forests, 1995).

Forest health agents - including insects and disease - can have a significant effect on forest structure and associated fire behaviour. Bark beetles are a common forest health concern in the area. The Forest Health Strategy for the Arrow Timber Supply Area (2016/2017) identifies Douglas-fir beetle, spruce beetle, mountain pine beetle, western balsam bark beetle, and wildfire as having a "Very High" potential impact on forest management activities throughout the region (Christianson, 2017). Aerial overview surveys from 2017 indicate an estimated 5,516.31 ha of forests have been affected by bark beetles in the Arrow TSA. Douglas-fir beetle and western balsam bark beetle are of particular concern with infestations increasing significantly throughout the Arrow TSA (Christianson, 2017). Other notable forest health concerns in the area include Armillaria root disease, aspen leaf miner, Dothistroma needle blight, and larch needle blight (MacLauchlan & Buxton, 2016; Christianson, 2017). Dead and downed timber associated with these forest health concerns can cause fuel loading and result in an increased wildfire threat around the community.

4.1.2 Fire Weather Rating

The BC Wildfire Service operates roughly 260 weather stations throughout the province. These stations collect data regarding temperature, relative humidity, precipitation, wind speed, and wind direction in order to support the Canadian Forest Fire Danger Rating System (CFFDRS). The CFFDRS is a decision-aid that provides fire managers with information regarding potential for ignition, fire spread and intensity. The Fire Danger Rating is used to describe the risk of a wildfire occurring, and is updated daily during the fire season.

The following description of the Fire Danger Ratings has been provided by the BC Wildfire Service[7]:

- **Low**: Fires may start easily and spread quickly but there will be minimal involvement of deeper fuel layers or larger fuels.
- **Moderate:** Forest fuels are drying and there is an increased risk of surface fires starting. Carry out any forest activities with caution.

[7] Fire Danger Class Rating Description from the BCWS webpage: https://www2.gov.bc.ca/gov/content/safety/wildfire-status/fire-danger

- **High:** Forest fuels are very dry and the fire risk is serious. New fires may start easily, burn vigorously, and challenge fire suppression efforts. Extreme caution must be used in any forest activities. Open burning and industrial activities may be restricted.
- **Extreme:** Extremely dry forest fuels and the fire risk is very serious. New fires will start easily, spread rapidly, and challenge fire suppression efforts. General forest activities may be restricted, including open burning, industrial activities and campfires.

Data from the Falls Creek and Octopus Creek weather stations were reviewed in order to assess the average Fire Danger during a typical summer (Table 7). The Fire Danger is higher during the months of July and August throughout the AOI. The Falls Creek station reported a much higher frequency of "High-Extreme" danger class days per year than the Octopus Creek station. In 2017, 61 "Extreme" danger class days were recorded by the Falls Creek station, while 1 "Extreme" day was recorded at Octopus Creek. Anecdotally, there have been some local concerns regarding the accuracy of these weather stations – with Falls Creek potentially overestimating fire danger, and Octopus Creek underestimating fire danger.

Table 7: Average Number of High and Extreme Danger Class Rating Days per Year (2003 – 2017)[8]

Weather Station	Geographic Location	Elevation (meters)	Average Number of High Danger Class Days/Year	Average Number of Extreme Danger Class Days/Year
Falls Creek	16km north west of Nakusp	790	34.67	16.93
Octopus Creek	20km south of Fauquier	1,432	14.4	0.73

4.1.3 Climate Change

Climate change is predicted to have a significant effect on forest ecosystems and wildfire regimes throughout the province. 2050 climate change projections for the Kootenay Boundary Region include[8]:

- an increase in annual temperature by 1.2 °C to 2.8 °C
- a 6% decrease in summertime precipitation
- a 24 day increase in frost free days

The implications of these changes include a higher frequency and intensity of wildfires throughout the Kootenay Boundary Region, and an increase in annual area burned (Utzig, Boulanger , & Holt, 2011). Longer and more intense wildfire seasons, with an increased number of high and extreme fire danger days, are also predicted throughout BC.

[8] Projections from the Pacific Climate Impacts Consortium, http://www.plan2adapt.ca/tools/planners?pr=45&ts=8&toy=16. Projected changes from 1961-1990 baseline. Precipitation and frost free days displayed as "ensemble mean" projections.

Further effects of climate change include shifts in vegetation and BEC zones (Utzig, 2012) as well as the facilitation of forest health agents (Woods, et.al., 2010). Droughts, increased frequency of winter storms, severe weather events, and warmer temperatures asociated with climate change are predicted to increase bark beetle infestations - including Douglas-fir beetle and mountain pine beetle (Woods, et. al., 2010). Dead and downed timber from insect outbreaks, and increased blow-down can dramatically increase the availability of forest fuels.

The effects of climate change on wildfire frequecy and intensity, wildfire season length, vegetation shifts, and biotic and abioitc disturbances can all the influence wildfire threat around the community. Current climate change projections highlight the importance of onging wildfire planning and prevention within the WUI. In order to stay relevent in a changing climate, this CWPP should be reviewed and updated every 5 years.

4.2 Provincial Strategic Threat Analysis (PSTA)[9]

The Provincial Strategic Threat Analysis is a spatial representation of the wildfire threat throughout BC. The PSTA utilizes fuel type data, historical fire occurrence data, topography, and historic weather data to evaluate the three conditions necessary for a wildfire to threaten a community (SWPI, 2018):

1. an ignition occurs (Fire History)
2. the resulting fire generates sufficient intensity (Head Fire Intensity) and spreads rapidly, and
3. the fire spreads into and/or transports embers into the community (Spotting Impact)

These PSTA components (spotting impact, head fire intensity, and historic fire density) were weighted to determine the overall PSTA threat rating.

4.2.1 PSTA Final Wildfire Threat Rating

The overall PSTA threat rating classifies the province into 10 classes. Forest polygons ranked as 7 or higher are considered as having a “High to Extreme” wildfire threat. Within the AOI, 20.6% of the assessed area[10] is classified as “High to Extreme” (Table 8). Notable areas of “Extreme” threat are around Needles, Burton, Halcyon, and the north east corner of Nakusp (Appendix 1, Map 4a).

[9] BC Wildfire Service. 2015. Provincial Strategic Threat Analysis 2015 Wildfire Threat Analysis Component.
[10] Water, private managed forest land, and private lands were not assessed.

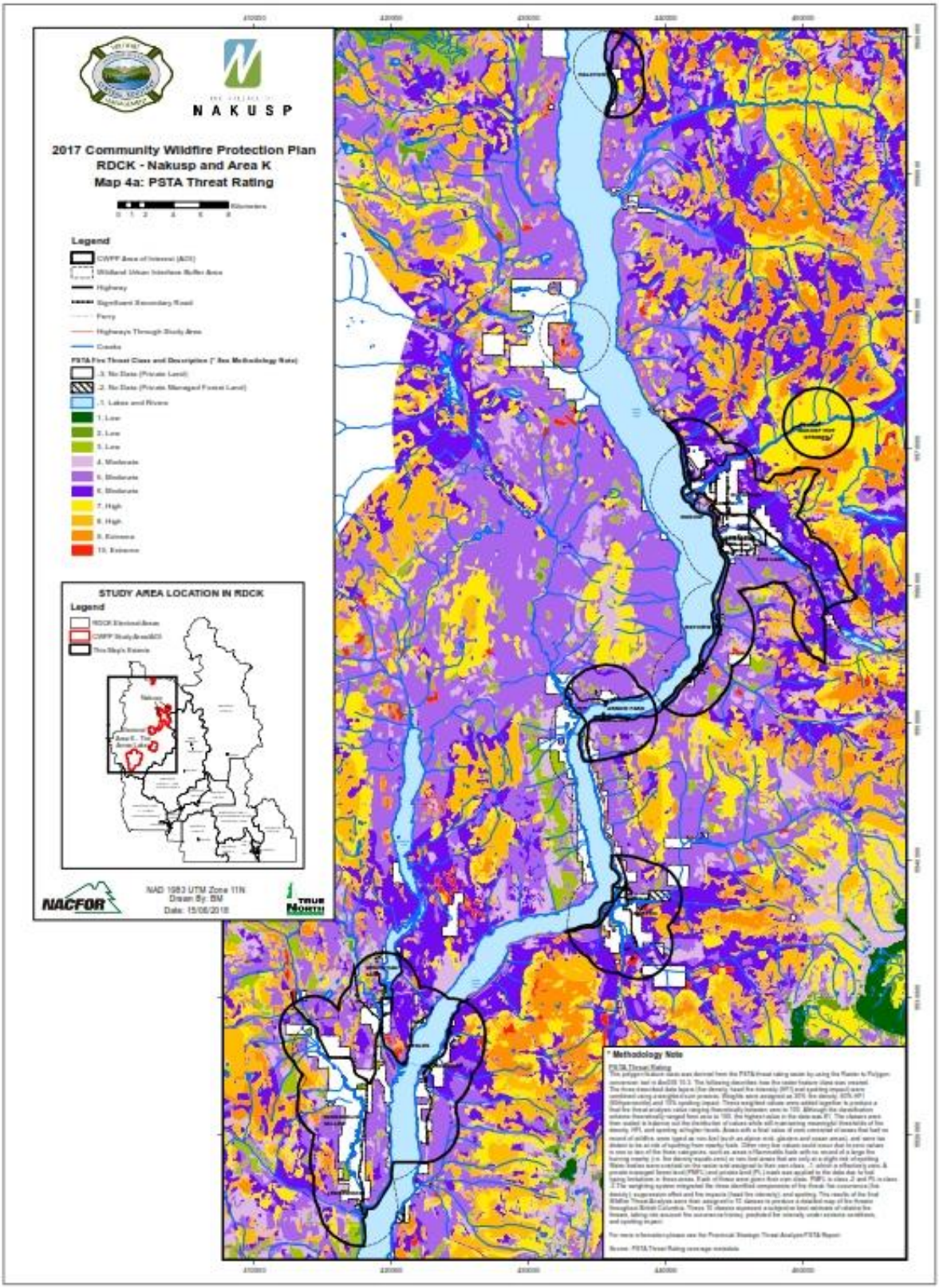


Figure 4: Map 4a - Fire Regime, Ecology and Climate Change

Table 8: Overall PSTA Threat Rating

PSTA Threat Rating	Area (hectares)	Percent of Area Assessed
1-5	14,888.5	51.3%
6	8,149	28.1%
7	2,939.7	10.1%
8	1,703.7	5.9%
9	1,104.3	3.8%
10	229.6	0.8%
Total 1-10	29,014.8	100.0%

The PSTA rating is a valuable tool that provides a high-level overview of potential wildfire threat. For the purpose of this CWPP development, the PSTA threat rating was used to guide field assessments - with high PSTA threat areas a priority for field verification. The Local Wildfire Risk (Section 4.3.6) also uses the PSTA threat rating to determine the risk of a wildfire facing communities. Limitations regarding the PSTA should be noted. Assumptions and inaccuracies associated with the underlying data used to determine the PSTA can significantly influence threat ratings. Concerns with the provincial fuel type data used to calculate the PSTA are discussed in section 4.3.1.

4.2.2 Spotting Impact

During a wildfire, "spotting" occurs when embers and firebrands ignite fuels outside of the main fire perimeter. Depending on weather and fuel conditions, spotting can occur up to several kilometers away from the head of a fire. Spotting poses a significant challenge to fire suppression effort as fuel breaks and containment lines can be compromised by spotting embers. Spotting is a characteristic of extreme fire behaviour and is a main cause of structure loss during an interface fire. The PSTA Spotting Impact layer estimates the threat of embers affecting a given point on the landscape based on surrounding fuel types. Spotting impact in the AOI is quite low with roughly 87.6% of the area assessed classified as low-moderate (Appendix 1, Map 4b). Areas of higher spotting impact are generally in the Edgewood area where C3 and C7 fuel types are more prevalent. Closed, mature fuel types; high fuel loading, and ladder fuels are more likely to support crown fires and result in a higher spotting potential. Wind also has a significant effect on spotting which was not considered in the PSTA spotting impact determination. Due to the variability of wind throughout the AOI, actual spotting that occurs during a wildfire may vary substantially on any given day (see section 4.3.3 for details).

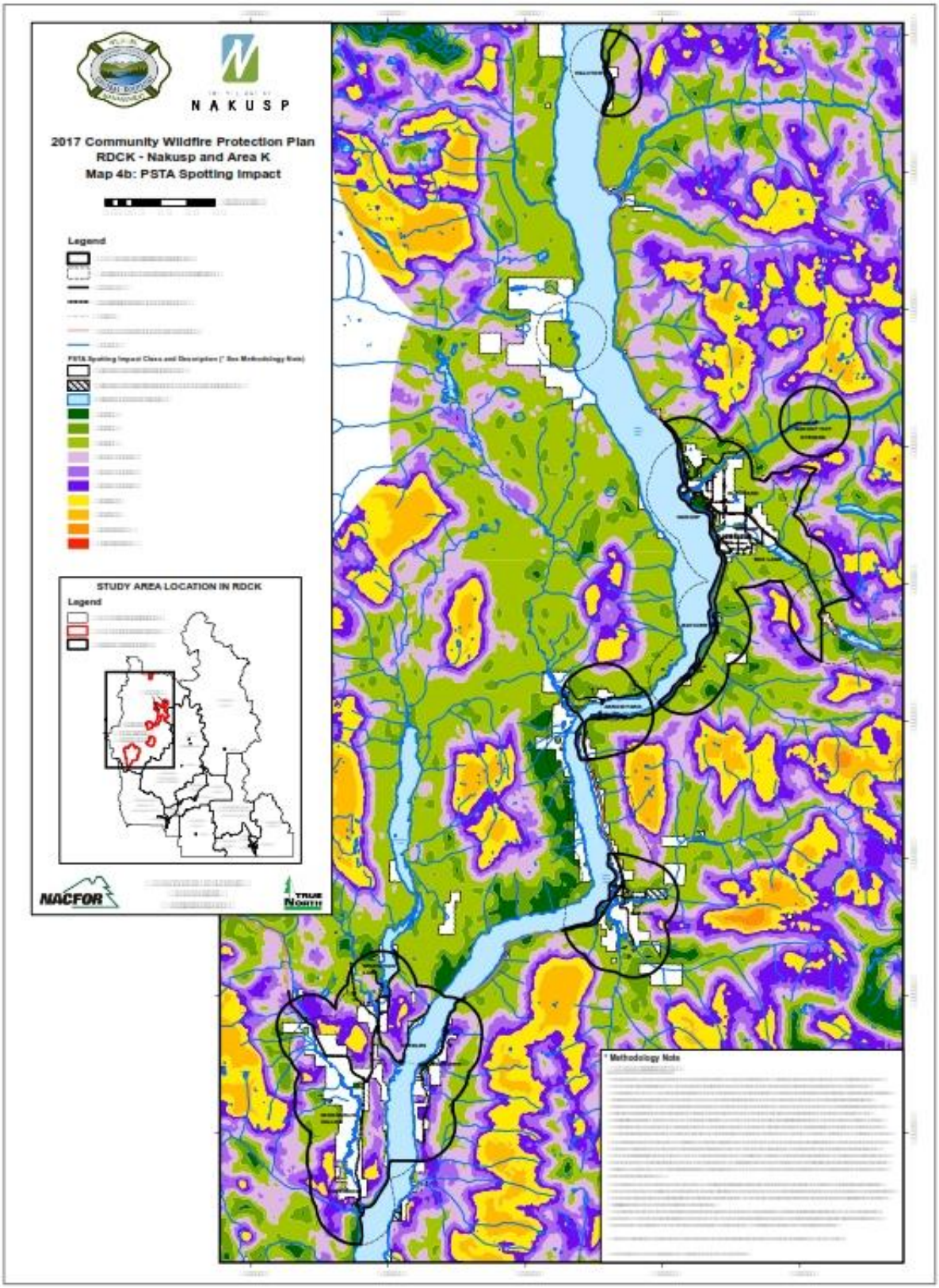


Figure 5: Map 4b - PSTA Spotting Impact

4.2.3 Head Fire Intensity

Head Fire Intensity (HFI) represents the energy output of a flaming wildfire front; measured in kilowatts per meter (kW/m). High HFI values are related to faster spread rates, greater fuel consumption, and suppression difficulties. Fire managers and crews often use fire intensity to predict suppression challenges and select appropriate control tactics. Fire behaviour advisories are issued to suppression crews when intensity values are predicted to be in excess of 4000 kW/m - at which point direct fire suppression will likely be challenged.

Table 9 describes the likely fire behaviour associated with various HFI values. The majority of the area assessed (68%) falls under the HFI Class 3 – with vigorous surface fire as a likely fire behaviour. Pockets of higher HFI class are located around Burton, Needles, and north east of Edgewood (east of Inonoaklin Valley Road) (Appendix 1, Map 4c).

Table 9: Head Fire Intensity Classes and Associated Fire Behavior (CRIP, 2018)

PSTA - HFI Class	Fire Intensity kW/m	Fire Intensity Class[11]	Flame Length (meters)[12]	Likely Fire Behaviour[13]
1	0.01 – 1,000	2	< 1.8	Smouldering surface fire
2	1,000.01 – 2,000	3	1.8 to 2.5	Moderate vigour surface fire
3	2,000.01 – 4.000	4	2.5-3.5	Vigorous surface fire
4	4,000.01 – 6,000	5	3.5 to 4.2	Vigorous surface fire with occasional torching
5	6,000.01 – 10,000	5	4.2 to 5.3	Vigorous surface fire with intermittent crowning
6	10,000.01 – 18,000	6	12.3 to 18.2	Highly vigorous surface fire with torching and/or continuous crown fire
7	18,000.01 – 30,000	6	18.2 to 25.6	Extremely vigorous surface fire and continuous crown fire
8	30,000.01 – 60,000	6	>25.6[14]	Extremely vigorous surface fire and continuous crown fire, and aggressive fire behaviour
9	60,000.01 – 100,000	6	>25.6	Blowup or conflagration, extreme and aggressive fire behavior
10	≥ 100,000	6	>25.6	Blowup or conflagration, extreme and aggressive fire behaviour

NB: The descriptions in this table will vary by fuel type and should only be used as guidance for expected fire behaviour.

[11] Head fire intensity should be classified by intensity class not fire rank. Fire rank is a visual description of conifer fires for air operations.
[12] For calculating Flame Length, Bryam (1959) was used for surface fire (<10 000 kW/m) and Thomas (1963) was used for crown fire situations (>10 000 kW/m).
[13] These characteristic will be different in open and closed forest fuel.
[14] With HFI over 30 000 kW/m the function of the equation are stretched beyond the expectation of the equation, fire is under the influence too many other factors.

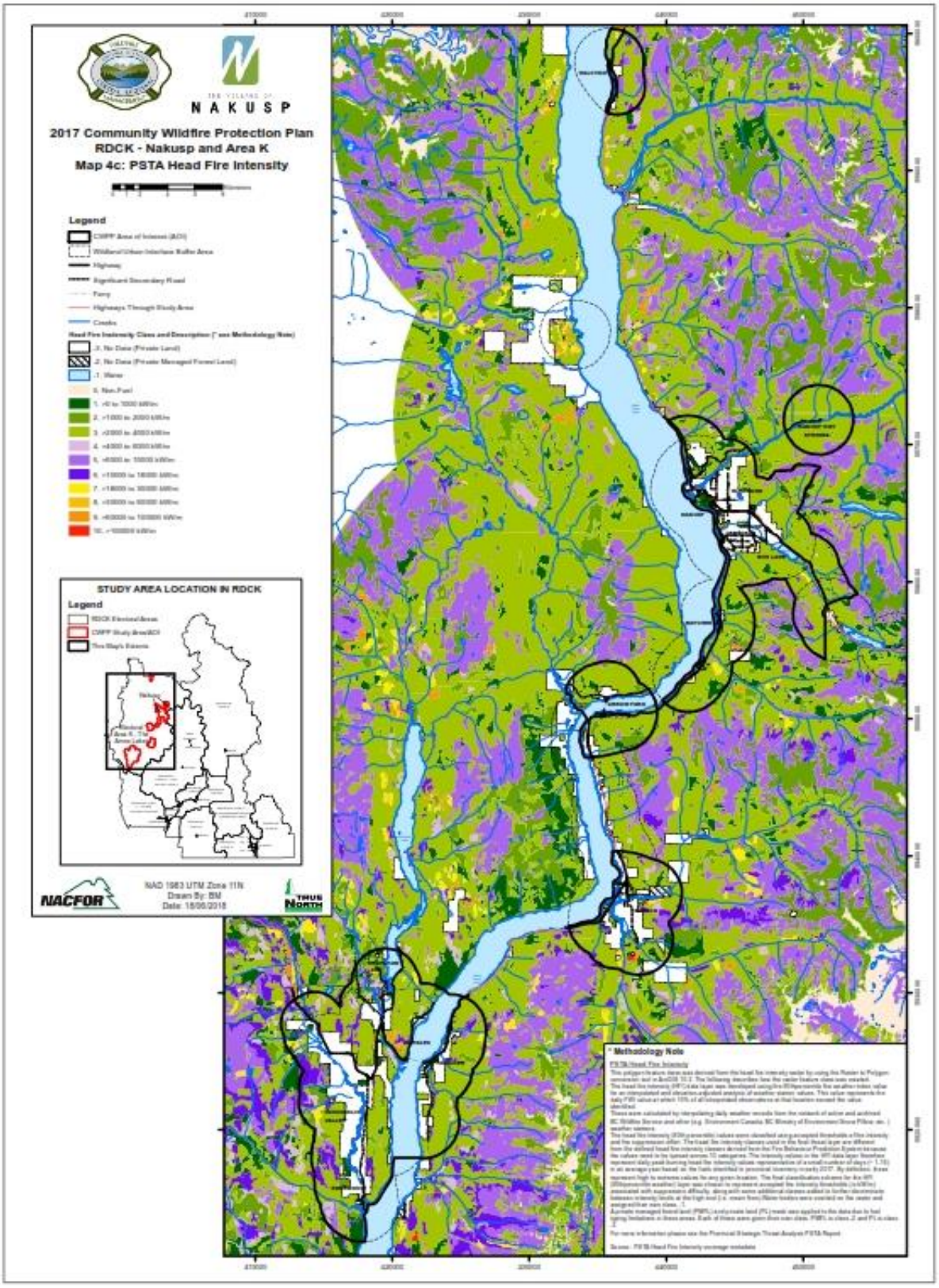


Figure 6: Map 4c - PSTA Head Fire Intensity

4.2.4 Fire History

There are records of several large wildfires throughout the AOI in the early 1900s - particularly in the Inonoaklin Valley. Fittingly, the Inonoaklin Valley is also referred to as the "Fire Valley" by some locals. The BCWS has maintained a historical record of fire starts, sizes and causes. These records can be used to detect patterns in ignition location, fire response, and fire spread throughout the province. The PSTA Fire Density layer provides a spatial overview of historical fire occurrences. The layer includes fires greater than 4 ha, which is the typical limit for fires to be considered initial attack targets. Map 5a (Appendix 1) shows the fire the density of lightning caused fires, while 5b shows the density of human caused fires. Map 4d (Appendix 1) shows the PSTA historical fire density of both human and natural fires.

Within the AOI, there is a higher occurrence of fire starts around Nakusp and the Nakusp Hot Springs; most of which are held under the 4 ha threshold. Roughly 30% of fires within the AOI were human caused. Human caused fires are more common in high-use recreational areas, and near town. As tourism increases in the area, the occurrence of human caused fires may also increase.

4.3 Local Wildfire Threat Assessment

The local wildfire threat was assessed with guidance from the 2017 CWPP Template process. WTA plots and site visits were completed throughout the AOI in order to assess the accuracy of the BCWS fuel type data and to validate the PSTA overall threat score. After reviewing the field data and consulting with the local fuel management specialist, no updates were made to the provincial fuel type layer or PSTA threat scores (see section 4.3.1 for details).

The Wildfire Risk Assessment (section 4.3.6) relates wildfire threat to high value areas and communities within the AOI. The risk assessment was completed using the Local Wildfire Threat (PSTA Threat), proximity of fuel to the community, local fire spread patterns, topographical considerations, and local factors. The Wildfire Risk (Map 7) provides a spatial overview of high risk forest polygons in the AOI which pose a threat to communities, high value areas, and critical infrastructure. The risk assessment was combined with local knowledge of the area and the WTA field data to determine suitable locations for proposed fuel treatment.

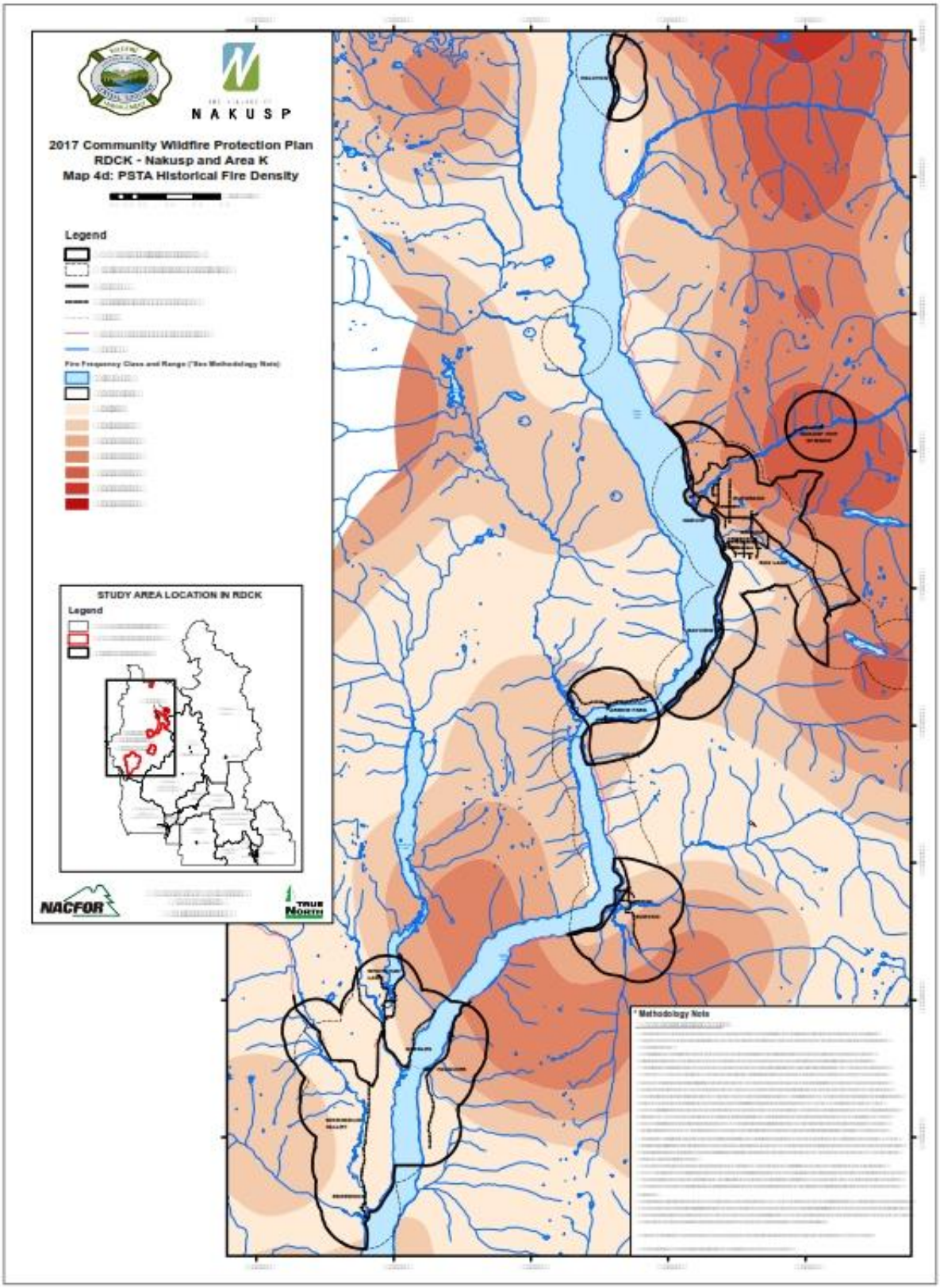


Figure 7: Map 4d - PSTA Head Fire Intensity

4.3.1 Fuel Type Verification

Field verification found that many of the mapped FBP fuel types within the AOI do not accurately represent the areas for which they are designated. However, the decision was made not to alter any of the FBP fuel typing. The rationale for this is based on our additional finding that no existing FBP fuel type accurately captures the stand characteristics of the Kootenay-mix, interior wet belt stands found within most of the AOI. This finding is supported by the following observation made in the 2015 BC Wildfire Fuel Typing and Fuel Type Layer Description manual:

"Some vegetation communities in B.C. are, at best, a poor match with any of the FBP fuel types. Uncertainty in fire behavior is probably associated with… mixed-conifer stands of the interior wet belt – species such as western white pine and western larch growing in multi-story canopies, usually associated with Douglas-fir, red cedar, lodgepole pine, or other species."

The potential to change existing fuel types was examined in areas where the mapped FBP fuel type was found to inadequately represent the stand composition. The vast majority of these stands were found in areas in the north and central portions of the AOI, including Halcyon Hot Springs, Nakusp Hot Springs, Nakusp, Bayview, Arrow Park and Burton. Most of these stands are mapped as a C-5 fuel type. Typically, we found that the crown base height and ladder fuel composition representative of the C-5 type underestimate the threat posed by these threat assessment variables in wet belt, Kootenay mix stands. However, as indicated earlier, we did not find any of the other available FBP types to be more suitable to these stands than the C-5. Consequently, it was deemed unproductive to alter any of the mapped FBP fuel types.

Recommendation 6: Examine the viability of a research project designed to more accurately classify Kootenay mix fuel types for the purpose of improving the predictive fire behavior of these stands.

Table 10: Fuel Type Categories and Crown Fire Spot Potential (CRIP, 2018)

Fuel Type Categories	Fuel Type - Crown Fire/ Spot Potential
1: C1, C2, C4, M3-M4 (>50% C/DF)	High
2: C3, C7, M3-M4 (<50% C/DF) M1-M2 >50% Conifer	Moderate
3: C5, C6, O1a/b, S1- S3[1] M1-M2 (26-49% Conifer)	Low
4: D1, D2, M1-M2 (<26% Conifer)	Very Low

4.3.2 Proximity of Fuel to the Community and Values

Typically, fuels closest to the community represent the highest hazard and should be a priority for treatment. In order to ensure continuity in fuel treatment, mitigation efforts should be implemented progressively from the community (or value) outwards. Leaving pockets of untreated fuels - between

treatment areas, values or structures - should be avoided as they provide an opportunity for an interface fire to build intensity within the WUI.

The AOI was stratified based on proximity of fuel to the community, high value areas (including community watersheds), and critical infrastructure according to Table 11. The local wildfire threat assessment process subdivides the WUI into 3 areas – the first 100 meters (WUI 100), 101 to 500 meters (the WUI 500), and 501 to 2000 meters (the WUI 2000). These zones provide guidance for classifying threat levels and subsequent priorities of treatments (CRIP 2017).

Table 11: Proximity to the Interface (CRIP, 2018)

Proximity to the Interface	Descriptor*	Explanation
WUI 100	(0-100 m)	This Zone is always located adjacent to the value at risk. Treatment would modify the wildfire behaviour near or adjacent to the value. Treatment effectiveness would be increased when the value is FireSmart.
WUI 500	(101-500m)	Treatment would affect wildfire behaviour approaching a value, as well as the wildfire's ability to impact the value with short- to medium- range spotting; should also provide suppression opportunities near a value.
WUI 2000	(501-2000 m)	Treatment would be effective in limiting long - range spotting but short- range spotting may fall short of the value and cause a new ignition that could affect a value.
	>2 000 m	This should form part of a landscape assessment and is generally not part of the zoning process. Treatment is relatively ineffective for threat mitigation to a value, unless used to form a part of a larger fuel break / treatment.

* Distances are based on spotting distances of high and moderate fuel type spotting potential and threshold to break crown fire potential (100m). These distances can be varied with appropriate rationale, to address areas with low or extreme fuel hazards.

Ensuring continuity in fuel treatment throughout the WUI can be difficult due to several factors including land ownership, availability of funding, site-specific operational constraints, a lack of public support, and the challenge of balancing multiple values on the landscape. A combination of mitigation efforts including FireSmart, operational fuel treatment, and public education can help overcome some of these challenges. These obstacles are particularly common within WUI Zone 1, where much of the area is private, municipal, or regional land. Within Zone 1, FireSmart activities should be a top priority as they focus on reducing hazard directly adjacent to structures and can target high risk private land.

Proposed fuel treatment units described in section 5.1 consider both the proximity of fuel to the community, as well as the need for treatment continuity throughout the WUI.

4.3.3 Fire Spread Patterns

Wind has a significant effect on fire rate of spread, trajectory, and behaviour. Wildfire intensity and spotting, as well as suppression success and firefighter safety are all influenced by wind. Wildfires that

occur upwind of a community pose a much more significant threat than fires that occur downwind. As part of the wildfire risk assessment, general wind patterns in the area were assessed based on the BCWS weather data (ISI roses), and local expertise.

The BCWS ISI Roses provide an indication of predominant fire spread patterns during the peak burning period. The ISI (Initial Spread Index) is a numeric rating of expected fire spread rates. The ISI combines the effects of wind with fine fuel moisture to predict spread rate. "Each rose shows the frequency of counts by wind direction with the frequency of the ISI values during that time period" (MFLNRO, 2017). The Falls Creek and Octopus Creek weather stations show that there is substantial variability in the winds throughout the day. Easterly, downslope winds towards the lake are a common evening occurrence and have been represented in the Falls Creek wind rose (Figure 8). According to the Falls Creek station, during times when the ISI and fire activity is highest (between 12:00-18:00), the wind is typically out of the north west. This wind pattern was observed at both the 2009 and 2017 fires near Galena bay - north of the Falls Creek weather station[15]. The Octopus Creek Rose shows a north easterly wind pattern in the morning and evening, and south westerly winds in the afternoon.

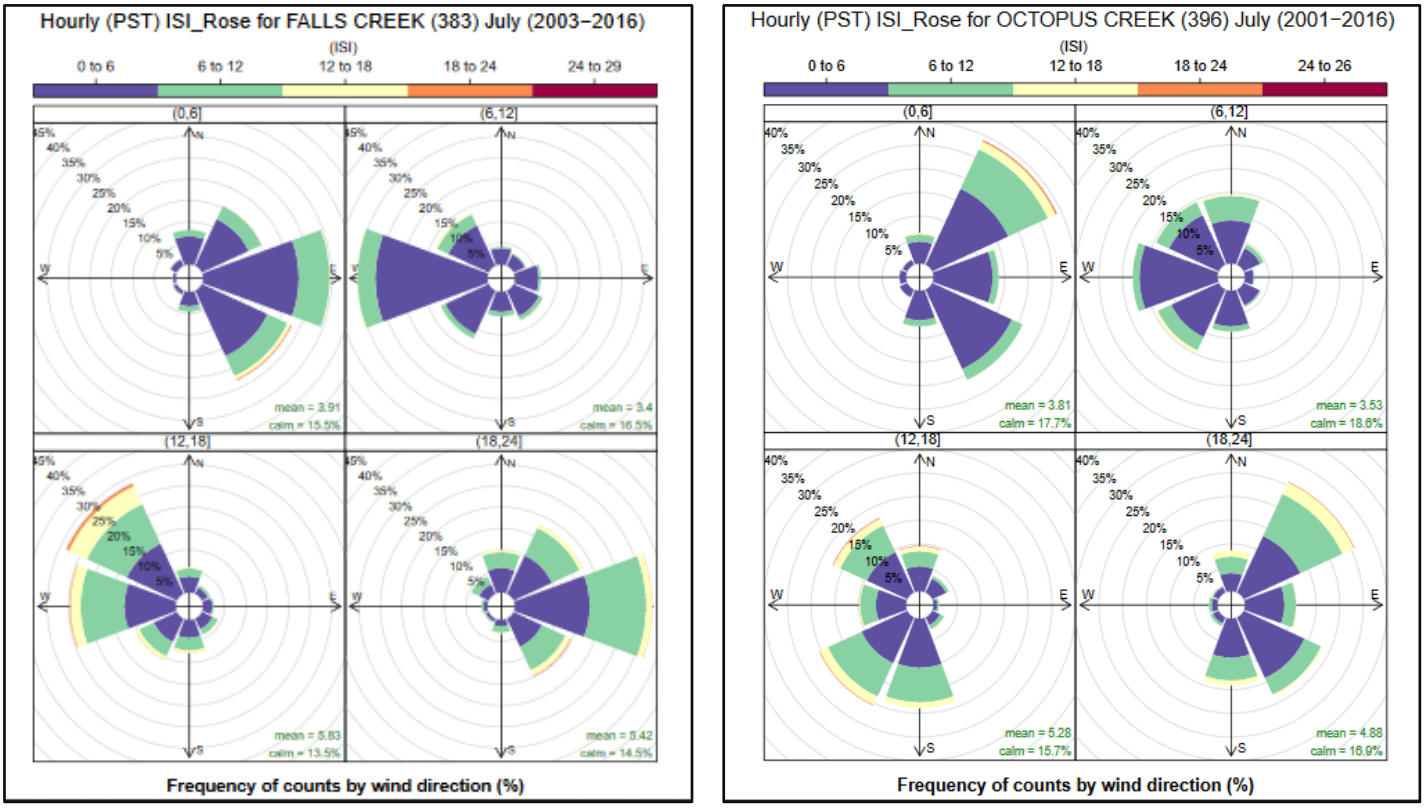


Figure 8: ISI Roses for Falls Creek and Octopus Creek

[15] Personal communication with True North Forestry Consulting Ltd, Hugh Watt

Local knowledge of the area suggests that the predominant wind pattern in the Arrow Lakes runs on a north-south plane through the main valley; however there is substantial variation in wind direction throughout day[16]. Local topography plays a large role in wind patterns throughout the AOI, making wind direction extremely unpredictable. Steep slopes, the Arrow Lakes, and the various drainages located on both sides of the lake create crosswinds throughout the valley. Larger drainages in the region (Dog Creek, Faith Creek and Renata Creek) also have a significant influence on wind. Caribou Creek, Snow Creek, Woden Creek and Burton Creek (flowing east to west) all converge near Burton. These drainages funnel winds across the Arrow Lakes, making wind extremely variable throughout the day. The Kuskanax Creek drainage, on the north side of Nakusp, is also known to channel a fairly strong, evening wind down the valley towards Glenbank through the summer months.

Considering the ISI roses and advice from local experts, a northerly wind pattern - and associated fire spread - was generalized for the AOI. Due to the substantial variability and unpredictability of wind in the area, the fire spread factor only accounted for 10% of the final local wildfire risk calculation (section 4.3.6). The AOI was stratified according to the following wind classes as part of the wildfire risk assessment process:

- PSTA polygons north of a community received a high relative weight (3).
- PSTA polygons south of a community received a low relative weight (1).
- PSTA polygons east or west of a community received a moderate weight (2).
- The Nakusp Hot Springs received a moderate weight (2) since local winds in the area are not consistent with a north-south pattern.
- Non-fuel polygons received a 0.

The unpredictability of wind in the area is particularly important for wildfire response. Shifting winds can compromise containment efforts and firefighter safety. Firefighters and emergency response personnel should remain vigilant and expect shifting winds throughout the Arrow Lakes region. As always, the time of day, local topography, and their effects on localized winds should be considered when developing suppression strategies and evacuation plans. The following generalizations should be considered during wildfire response and fuel management planning:

- General northerly – but variable- prevailing winds through the main valley
- Upslope daytime winds
- Downslope evening winds
- Effects of topographical features on local winds, potential funnelling of wind through drainages

[16] Personal communication with Tugboat Captain Interfor Marine Division, Didace Wilcott,; Jesper Nielsen

4.3.4 Topography

The steep topography throughout Nakusp and Area K can have a significant effect on fire behaviour and spread patterns. Slope is an important factor in fire trajectory and rate of spread - with fires typically spreading faster up slope due to increased radiation and preheating of fuels. On steep slopes, flames can bathe the fuel in front of the fire, leading to very rapid and unpredictable spread. The relationship between weather and topography is particularly evident in steep slopes. Local topography can have a substantial effect on weather and winds; as described in section 4.3.3. One common summertime occurrence is upslope daytime winds which can further amplify spread rates up hill.

Operational constraints associated with steep slopes can significantly limit fuel treatment and suppression efforts. Challenging access, equipment limitations, and slower firefighter productivity due to difficult terrain are common limitations on steep slopes. These limitations, combined with rolling debris igniting fuels downslope of the main fire, and increased upslope spread rates make wildfire response on steep slopes exceptionally difficult. Although the risk assessment process is not intended to assess post-wildfire hazards, it should also be noted that wildfires in steep terrain can increase the likelihood of flooding, debris flows, and landslides long after a wildfire has been extinguished.

Slope class and slope position of the value were considered in the wildfire risk assessment and during the selection of proposed treatment units.

Slope Class

The AOI was stratified based on slope class; with steeper slopes posing a greater risk. General fire behaviour implications of slope classes are summarized in the following table:

Table 12: Slope Percentage and Fire Behaviour Implications (CRIP, 2018)

Slope Percent Class	Fire Behaviour Implications
<21%	Very little flame and fuel interaction caused by slope, normal rate of spread.
21-30%	Flame tilt begins to preheat fuel, increase rate of spread.
31-45%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of spread.
46-60%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

Slope Position of the Value

Slope position of a value relates to the ability of a wildfire to gain momentum during an uphill run. The AOI was stratified based on the relative position of values to the slope. A value at the bottom of a slope would not be impacted by slope for the purpose of this analysis. A structure or value on the upper 1/3 of a slope would be impacted by high preheating and faster rates of spread. The majority of communities and structures within the AOI are located at the bottom of a slope, adjacent to the Arrow Lakes. Community watersheds and some recreational areas however are located in steep terrain, which put these values at an increased risk. General fire behaviour implications of slope position to the value are summarized in Table 13.

Table 13: Slope Position of Value and Fire Behaviour Implications (CRIP, 2018)

Slope Position of Value	Fire Behaviour Implications
Bottom of Slope/ Valley Bottom	Impacted by normal rates of spread.
Mid Slope - Bench	Impacted by increase rates of spread. Position on a bench may reduce the preheating near the value. (Value is offset from the slope).
Mid slope – continuous	Impacted by fast rates of spread. No break in terrain features affected by preheating and flames bathing into the fuel ahead of the fire.
Upper 1/3 of slope	Impacted by extreme rates of spread. At risk to large continuous fire run, preheating and flames bathing into the fuel.

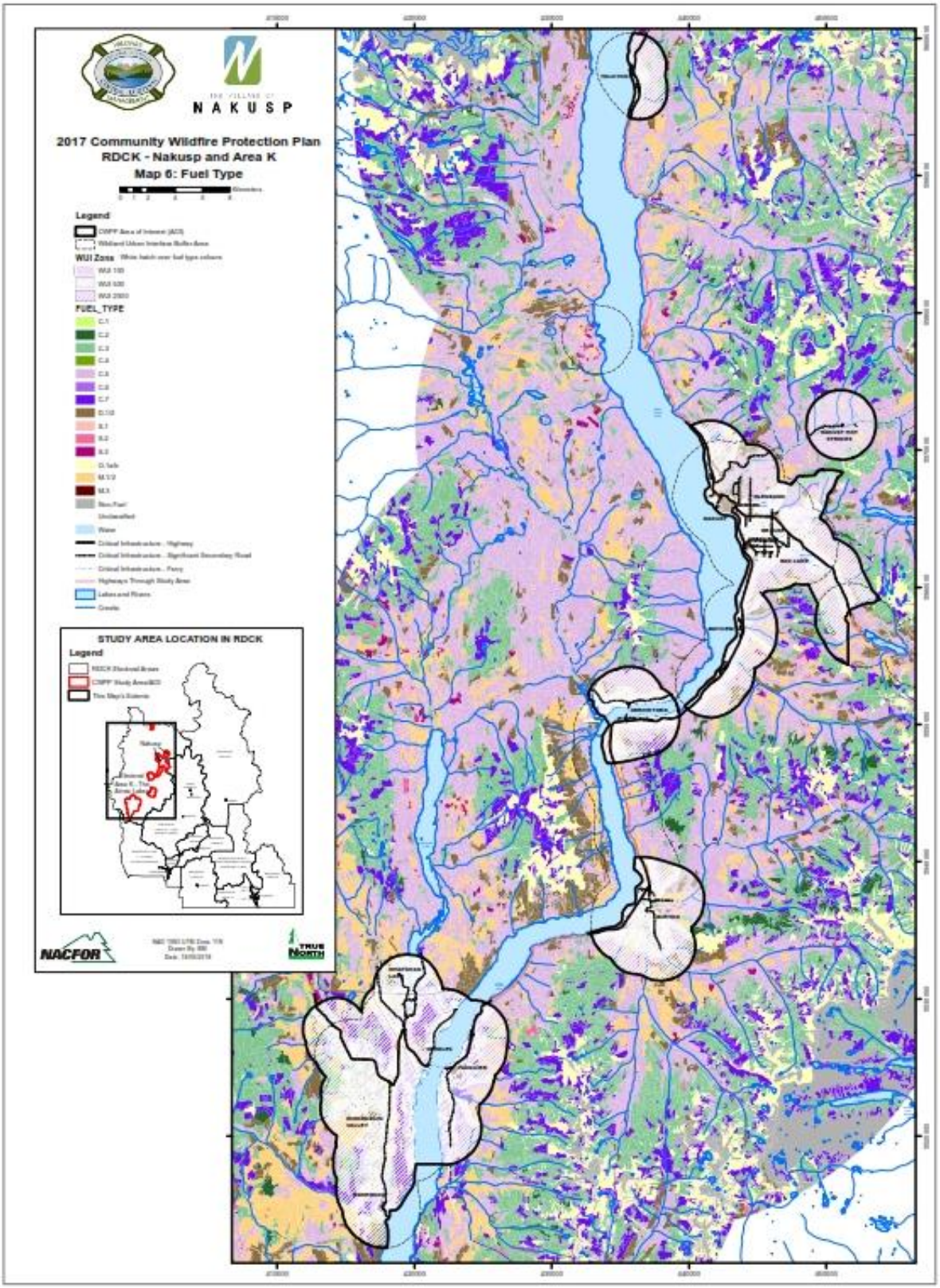


Figure 9: Map 6 - Fuel Type

4.3.5 Local Wildfire Threat Classification

The 2017 local wildfire threat classification process is based on updating the provincial fuel type data in order to calculate a threat value that is reflective of the actual forest conditions. In areas where there is no recommended fuel type change, the PSTA threat score remains the same. For the purpose of this CWPP, fuel type data was not updated (as described in section 4.3.1); therefore the Local Wildfire Threat Classification remains the same as the PSTA overall threat rating (Section 4.2.1; Appendix 1, Map 6).

4.3.6 Local Wildfire Risk Classification

The local wildfire risk assessment provides a spatial overview of high risk forest polygons which may pose an increased threat to communities, high value areas, and critical infrastructure (Appendix 1, Map 7). Figure 10 shows the components and associated weights used to determine the local wildfire risk. Due to the variability of wind and associated fire spread patterns in the area, less weight was assigned to "Fire Spread" and more weight was assigned to "Proximity" than the proposed CRIP 2017 CWPP Template weighting scheme.

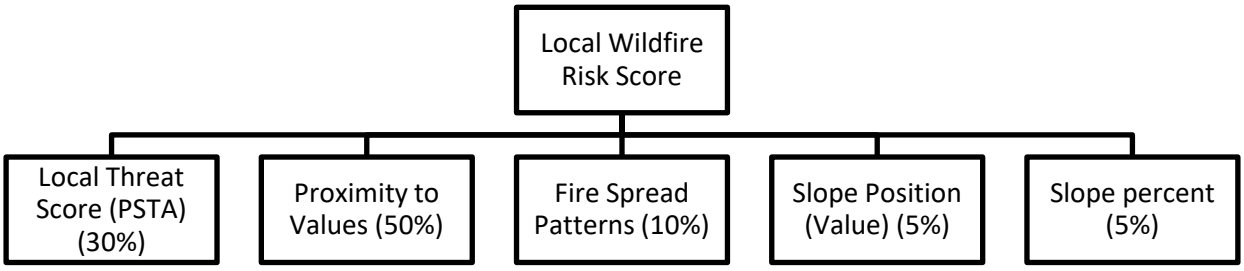


Figure 10: Local Wildfire Threat Calculation and Weights

The majority of the area assessed is classified with a "Moderate" wildfire risk score (66.9 %), with 25.8% of the assessed area considered "High" to "Extreme" in terms of wildfire risk (Table 14). Private land was not included in the risk assessment due to concerns regarding the accuracy of fuel type and PSTA data. In order to more accurately predict and mitigate the wildfire risk in the community, private land adjacent to "High" and "Extreme" areas should be a priority for FireSmart initiatives and assessments.

Table 14: Local Wildfire Risk Weighting

Relative Risk	Weighting	Area (hectares)	Percent of Area Assessed
Low	0 – 3.9	2,119	7.2
Moderate	4 – 6.9	19,821	67.3
High	7 – 8.9	7,062	24.0
Extreme	9+	465	1.5
Total		**29,009**	**100**

NB: The scoring system is based on a maximum score of 10.

"High" and "Extreme" risk areas within the AOI are generally located adjacent to the community and within community watersheds (which were considered a value for this assessment). A fire within a community watershed may not necessarily threaten structures; however it could have significant implications on drinking water, hydrology, and slope stability adjacent to the community. Notable "High" and "Extreme" fire risk areas within the AOI include:

- The Nakusp Hot Springs: High recreation values and located within the Kuskanax Community Watershed
- North east of Nakusp: Within the Brouse, Halfway, and Kuskanax Community Watersheds
- East of Burton: Within the Caribou Community Watershed
- South east of Fauquier: Within the Heart Community Watershed
- East of Bayview: Within the Dog and Baerg Community Watersheds
- West of Edgewood: Continuous forest adjacent to the community
- East of Inonoaklin Valley Road: Continuous forest between Arrow Lake and structures along the road.

The risk assessment provides a general overview of potential high risk areas and should be used as a guidance tool when planning mitigation efforts. Limitations and assumptions associated with the risk assessment process should be considered, including the fact that risk scores were determined using spatial data with various levels of accuracy.

4.3.7 Summary of Fire Risk Classes[17]

Low (Green): The combination of the local fuel hazard, weather influences, topography, proximity to the community and values, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it a lower potential for threatening a community or values. These stands will

[17] From the 2017 CWPP Template, CRIP.

support surface fires, single tree or small groups of conifer trees could torch/ candle in extreme fire weather conditions. Fuel type spot potential is very low, low risk to any values at risk.

Moderate (Yellow): The combination of the local fuel hazard, weather influences, topography, proximity to the community and values, fuel position in relation to fire spread patterns and known local wildfire threat factors make it possible that a wildfire in this area would threaten the community or values. Areas of matted grass, slash, conifer plantations, mature conifer stands with very high crown base height, and deciduous stands with 26 to 49% conifers. These stands will support surface fires, single tree or small groups of conifer trees could torch/ candle. Rates of spread would average between 2-5 meters/ minute. Forest stands would have potential to impact values in extreme weather conditions. Fuel type spot potential is unlikely to impact values at a long distance (<400m).

High (Orange): The combination of the local fuel hazard, weather influences, topography, proximity to the community and values, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it likely that a wildfire in this area would threaten the community or values. This includes stands with continuous surface/ crown fuel that will support regular torching/ candling, intermittent crown and/or continuous crown fires. Rates of spread would average 6 -10 meters/ minute. Fuel type spot potential is likely to impact values at a long distance (400 -1 000m).

Extreme (Red): The combination of the local fuel hazard, weather influences, topography, proximity to the community and values, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it very likely that a wildfire in this area would threaten the community or values. Stands with continuous surface/ crown fuel and fuel characteristics that tend to support the development of intermittent or continuous crown fires. Rates of spread would average >10 meters/ minute. Fuel type spot potential is probable to impact values at a long distance (400 -1 000m or greater).These forest stands have the greater potential to produce extreme fire behaviour (long range spotting, fire whirls and other fire behaviour phenomena.

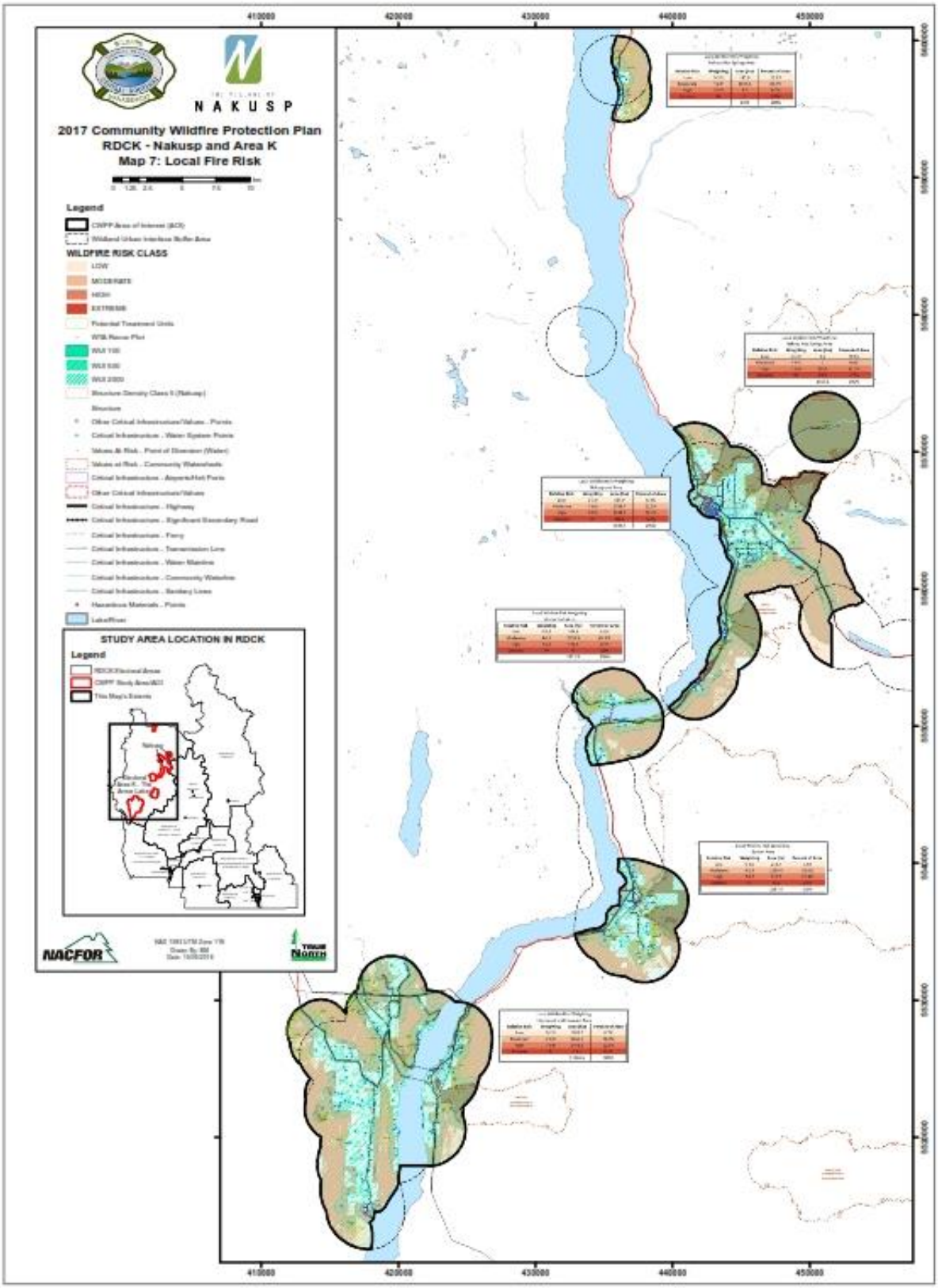


Figure 11: Map 7 Local Fire Risk

SECTION 5: Risk Management and Mitigation Factors

There are several options available to mitigate the wildfire risk facing Nakusp and communities of Area K - including operational fuel management and FireSmart initiatives. Proposed activities aim to reduce the amount of high threat fuels near the community, reduce the susceptibility of values to wildfires, and reduce the occurrence of human caused fires through education and outreach.

5.1 Fuel Management

The AOI was broken into nine broad treatment areas and potential fuel management treatment units were identified in each area based primarily on the local wildfire risk rating and operational opportunity (Appendix 1, Map 8). Table 15 summarizes proposed treatment areas along with the proposed fuel management treatments, rationale and constraints. The estimated year of treatment captures treatment priority as well as operational opportunity.

An overview of each treatment area is provided below. Full treatment area summaries with detailed descriptions of treatment units and fuel assessment ratings can be found in Appendix 3.

Treatment Area Summary - Bayview

The application of multiple fuel treatments could significantly reduce the wildfire threat from the south to the Bayview Estates residential area. Targeting of Units 18 and 19 would flank Bayview to the east and south with operational fuel treatments. Treatment potential of the north end of the area surrounding Bayview (Units 16 and 17) has not been ground-truthed but should be explored. Treatment within the Dog and Baerg Creek watersheds will be difficult due to hindered access caused by a combination of steep and sensitive terrain. Upper Arrow Lake borders Bayview to the west.

Treatment Area Summary - Burton

The objective of any future operational fuel treatments for the community of Burton should be to provide a buffer between the community's approximate external boundaries and the nearly continuous band of timber that surrounds its terrestrial edges. Operational treatments applied in 2009 and 2018 will succeed in addressing almost all of the publicly owned parcels within the community itself. While these treatments have been helpful both in terms of reducing the wildfire threat to the community and improving public education on the subject of interface fire, the treatments proposed below will do much more to address the wildfire threat from a large-scale, strategic perspective.

Treatment Area Summary – East Arrow Park

There is a good opportunity to provide increased, long-term protection for the entire area within the AOI immediately east of the community of East Arrow Park. However, continuous treatment would be limited to this eastern flank of East Arrow Park. Unsuitability of continuous treatment within most of the remainder of the East Arrow Park AOI is due to a combination of already existing fuel breaks (i.e.; Highway 6 and the transmission corridor to the south and Upper Arrow Lake to the north), logistically

unviable treatment areas (i.e.; within the continuously timbered area south of the highway and transmission line) and private land (i.e.; the majority of the East Arrow Park community).

Benefits of treating Unit 21 (see below) will be limited to the reduced hazard within the small proposed treatment area. It will be difficult to link the proposed treatment to a larger scale treatment plan.

Treatment Area Summary – Edgewood

The reduction of Edgewood's wildland interface threat presents a number of significant challenges. The primary challenge faced by managers is the sheer scope of the interface perimeter. Edgewood's small population is spread out over a large area, making it difficult to focus fuel reduction efforts on key locations. A second challenge is that the interface surrounds Edgewood on all sides. Unlike virtually all other communities within the NACFOR administered CWPP AOI, substantial tracts of forest land lie between Arrow Lake and the greater part of the community. Edgewood's relatively dry ecosystem presents a third challenge, making the threat of damaging wildfires higher than for many other parts of the AOI. Forest health concerns emanating partially from the increasingly hot, dry climate create a fourth challenge. The twin threats posed by the Douglas-fir bark beetle and mountain pine beetle make the Douglas-fir and lodgepole pine dominated stands that characterize much of the Edgewood interface priority timber types to be addressed in fuel mitigation efforts.

Individual treatment polygons are focused mainly within forest company tenured areas as many of the remaining publicly owned parcels within the community itself have already been treated. Only a single treatment is proposed within this plan that is not within forestry tenured Crown land. The vast majority of treatment efforts within the Edgewood Area of Interest will focus on larger scale treatments that have the potential to meaningfully reduce the threat of wildfire ignition and spread. The treatment areas described below include a combination of already harvested areas potentially suitable for thinning and blocks currently planned for harvest by BC Timber Sales.

Where mature timber is proposed for fuel mitigation treatment, commercial timber harvesting provides the most realistic economic and logistical means to address the large scale wildfire threat within the identified AOI. Currently proposed BCTS harvest areas are in the early planning stages; additional field reconnaissance, forest engineering and silviculture systems analysis will be required prior to the finalization of these areas; fuel mitigation also will now play a significant role in any proposed treatments within those areas. Consultation with and between the various timber tenure holders and the community will also play a role in treatment plan finalization. It is also worth noting that treatment priority is raised by the reality of warmer, dryer summers and by the increasing threat of bark beetle attack.

Treatment Area Summary – Fauquier

Fauquier's interface lies southeast of the community, with Arrow Lakes bordering it to the north and east. The dry, Douglas-fir dominated stands that characterize much of the interface present an

increasing wildfire threat that will be challenging to address. Douglas-fir bark beetle caused mortality is already evident on much of the landscape and can be expected to increase within the numerous highly susceptible stands. The continuous interface area comprises part of Tree Farm License 23 (TFL 23), on which Interfor Forest Products holds exclusive timber cutting and forest management rights.

Given the scope of the threat and the nature of forest tenure rights within the interface area, timber harvesting is the most logical and wide-sweeping means to address the wildfire threat. However, harvest plans will be complicated by a number of factors. Timber volumes and values are inconsistent across the landscape. Slopes are often steep and in some cases, timber is difficult to access. Perhaps most significantly, the entire area is encompassed by a series of community and domestic watersheds.

Individual treatment polygons are less specific than those identified within the Area of Interest for Nakusp, Bayview, Arrow Park or Burton. Detailed timber and engineering reconnaissance work will be required to determine viable road and block locations. Significant consultation with and between Interfor and the various watershed groups will also be necessary prior to the finalization of any harvest plans. However, this process should be started as soon as possible as the economic value of beetle damaged Douglas-fir will begin to drop not long after attack.

There are very few publicly owned parcels within the community itself. Primarily for this reason, only three internal treatments are proposed; however, two of these treatment areas are relatively large. The majority of treatment efforts for the Fauquier area will focus on reducing the threat of wildfire spread from the continuously timbered areas within TFL 23 to the south and east.

Treatment Area Summary – Halcyon Hot Springs

The Halcyon Hot Springs treatment area features the commercial enterprise of the same name and approximately a dozen additional residences slightly further to the north.

Approximately half of the crown land within the Halcyon CWPP Area of Interest has already been logged. Much of this harvesting took place between 2012 and 2014 making any additional harvesting in this area unlikely in the near future.

Potential treatments should focus on evaluating the viability of harvested stands for spacing and pruning treatments. Such treatments would focus on reducing horizontal and vertical fuel build-ups that pose an increased wildfire threat. Included in these assessments should be an examination of the viability of various mechanical mulching heads and equipment.

The areas below comprise continuous harvest polygons within the Halcyon Area of Interest. In the majority of cases, these polygons contain multiple blocks harvested in different passes, in some cases as much as 50 years apart.

Treatment Area Summary – Nakusp Hot Springs

Nakusp Hot Springs is an isolated entity completely surrounded by wildland interface. The threat to both the commercial complex and the property is considerable. The area also features only a single motorized escape route in the event of a wildfire. These factors should be considered in planning to reduce the wildfire threat to this location.

The Village of Nakusp owns a 100 hectare parcel of property surrounding the complex and campground. Public ownership will streamline the administrative process required to acquire funding to treat at least a portion of the property. Viable treatment is possible on most of the Village owned land on the north side of the Kuskanax River, the same side that the Hot Springs complex is located on. Access and terrain is much more difficult on the south side and planning treatments have not been included for this area.

Overstocked, largely immature forest is present immediately adjacent to the upper side of the Nakusp Hot Springs complex. Most other stands beyond this are old growth stands dominated by western hemlock. Two separate treatment strategies are outlined below for the two stand types.

Treatment Area Summary – Nakusp

Although it would require numerous treatments over a number of years and involve multiple owners and licensees, it is possible to provide a continuous fuel treatment around the terrestrial area surrounding Nakusp. Potential treatments can be roughly grouped as follows:

North Nakusp – harvesting based fuel treatments to be applied by the Crown (ownership west of Highway 23) and Interfor (forest tenure holder east of Highway 23). The Coates farm property provides an existing fuel break that would comprise part of the continuous fire break area.

Glenbank – harvesting based treatments to be applied on Woodlot 403 and possibly on private property owned by Nakusp Greenscapes. Spacing and pruning treatment potential should also be assessed as regenerated stands in previously harvested blocks begin to become overgrown.

Upper Brouse – primarily shaded fuel break operational treatments to be applied across the entirety of NACFOR's Wensley Creek chart area and within remaining untreated Village of Nakusp owned property. Shaded fuel break treatments within the NACFOR area can be converted to harvest operations over time. Existing NACFOR cutblocks should be considered for spacing and pruning treatments at 15 to 20 years.

Box Lake – the zone bordering Nakusp area residences between Box Lake and Upper Crescent Bay is considered the lowest priority for treatment within the planned continuous fuel treatment area. The number of potentially affected residences in this area is relatively low and north facing slopes reduce the fire hazard to some degree. The area also features steep ground that could only realistically be treated via harvest operations but where partial cut harvesting opportunities are limited for a combination of economic and silvicultural reasons. Interfor and NACFOR both have a significant tenure presence in this area while many of the lower lying areas are either part of a dedicated government recreation area or unallocated Crown land.

Crescent Bay – similar to Box Lake, forested area surrounding Crescent Bay is north facing and thus considered a lower priority for treatment. However, there are good opportunities to apply a combination of hand and mechanical treatments along the gentler, more accessible terrain immediately bordering residential areas. Interfor controls the forest tenure that would be in play for potential operational treatments in this area. At least one piece of unallocated government land also has potential for treatment.

Treatment Area Summary – West Arrow Park

Proposed operational fuel treatments within West Arrow Park focus on crown lots immediately east and west of area residences. Allocated crown timber rights are held by Interfor to the north of the residences but this timber is located within highly inoperable terrain. Fuel management operations within the proposed areas can likely be financed with revenues from the treatments.

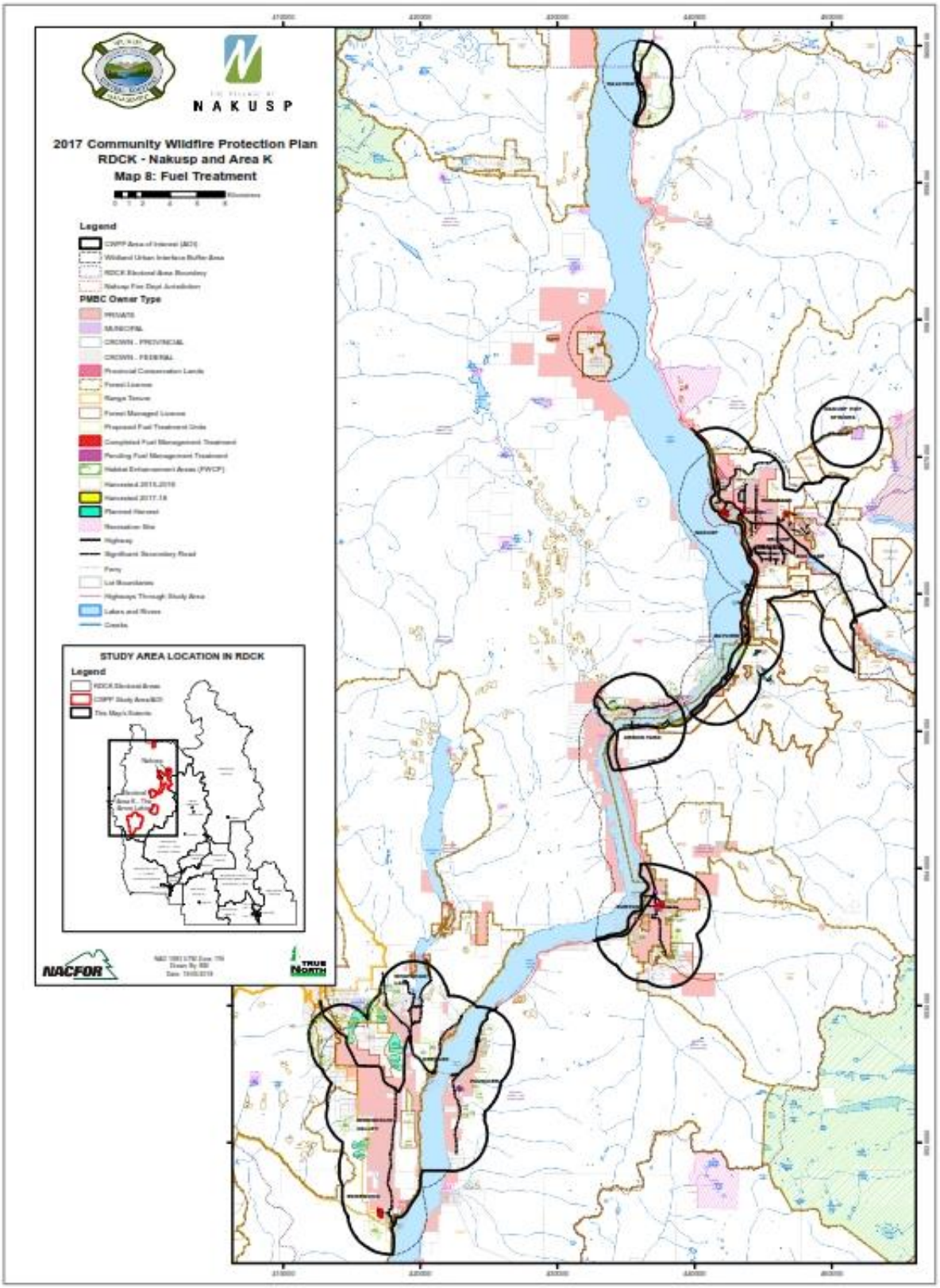


Figure 12: Map 8 - Fuel Treatment Areas

Table 15: Fuel Treatment Summary

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
1	North Nakusp	41.7	Crown Provincial	None	Hand / Mechanical combination; possible commercial harvest	Contributes to planned treatment buffer around community; reduce threat of ignition and spread by density and overall fuel reduction	Coordination with/ approval from agency; minor operability issues; unofficial walking trail	2020
2	North Nakusp	55.3	Crown Provincial	TFL 23 Interfor	Commercial harvest	Contributes to planned treatment buffer around community	Low value leading species (Hw); domestic watershed; Partial Retention VQO	2022
3	North Nakusp	69.5	Crown Provincial	None	Hand thinning treatments	Contributes to planned treatment buffer around community; reduce threat of ignition and spread near population centre and adjacent to dump	Wildlife Tree Retention Areas; funding reliant; coordination with / approval from agency	2021
4	Glenbank / Upper Brouse	136.0	Crown Provincial	Woodlot 406 (D. Kirk)	Thinning treatments and small scale harvest	Contributes to planned treatment buffer around community	Partial Retention VQO; community watershed; no revenue from thinning	Ongoing
5	Upper Brouse / Wensley Creek	185.7	Crown Provincial	Community Forest NACFOR	Ground and ladder fuel	Contributes to planned treatment buffer around community; reduce significant ladder fuels within high use recreational area	Cross country ski trail recreation area; Partial Retention VQO; Community & domestic watershed; Funding reliant except harvesting	2019-2025
6	Box Lake / Lower Brouse	157.5	Crown Provincial	NACFOR (upper); Recreation area (NE); None (NW)	Hand treatment (lower); Commercial harvest (upper)	Contributes to planned treatment buffer around community; reduce significant ladder fuels in close proximity to residences	Partially within park area; Partial Retention VQO; domestic watershed; partial cut limitations on steep slopes featuring low value leading species (Hw); coordination with / approval from agency	2020 -Rec area plus Crown lot 2025 - NACFOR
7	Crescent Bay	77.8	Crown Provincial	TFL 23 - Interfor; Crown lot in SE corner of unit	Shaded fuel break (crown lot); Commercial harvest (TFL)	Contributes to planned treatment buffer around community	Partial Retention VQO; Domestic watershed; historically fragile water supply; public opposition to mechanized treatment; coordination with / approval from agency	2023 (Interfor) 2021 (Crown lot)

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
8	North Nakusp	8.2	Crown Provincial	None	Shaded fuel break (hand and / or mechanical)	Reduce threat of ignition and spread near population centre	Windthrow risk following crown separation; domestic watershed; funding reliant unless harvesting merch	2019
9	North Nakusp	2.6	Municipal - Village of Nakusp	None	Shaded fuel break (hand and / or mechanical)	Reduce threat of ignition and spread near population centre	Community watershed (should be no impact from operations, however windthrow risk following crown separation)	2019
10	Nakusp	5.2	Crown Provincial	None	Ladder fuel reduction	Reduce threat of ignition and improve access within central community. Location currently facing restricted emergency response access.	Steepness beyond railway grade limits operability. Railway trail used for public recreation. Funding reliant	2019
11	Village Lagoon	1.7	Municipal - Village of Nakusp	None	Shaded fuel break	Reduce threat of ignition and spread with-in industrial center	Funding reliant unless harvesting merch	2019
12	Nakusp Elementary School	2.5	Crown - Ministry of Education	None	Ladder fuel reduction	Reduce threat of ignition and spread in proximity to school and community center	Funding reliant unless harvesting merch. Operations coordinated w/ school activities	2019
13	Nakusp Creek	1.8	Crown Provincial	None	Shaded fuel break (hand and/or mechanical)	Reduce threat of ignition and spread near population centre	Borders (but does not encroach on) domestic watershed. Approval from/ coordination with MOTH	2019
14A	Halcyon Hot Springs	40.0	Crown Provincial	TFL 23 - Interfor	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Funding reliant unless thinned fibre sold as commercial pulp. Slopes 30 -50 %; potential operability issues. Borders Potentially Unstable mapped poly	2022-2028
14B	Halcyon Hot Springs	64.0	Crown Provincial	TFL 23 - Interfor	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Funding reliant unless thinned fibre sold as commercial pulp. Slopes 30 -50 %; potential operability issues. Borders Potentially Unstable mapped poly	2022-2028

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
14C	Halcyon Hot Springs	162.1	Crown Provincial	TFL 23 - Interfor	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Funding reliant unless thinned fibre sold as commercial pulp. Slopes 30 -50 %; potential operability issues. North end within domestic watershed. Potentially Unstable mapped poly within	2022-2028
14D	Halcyon Hot Springs	65.9	Crown Provincial	TFL 23 - Interfor	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Funding reliant unless thinned fibre sold as commercial pulp. Slopes 30 -40 %. potential operability issues. Domestic watershed	2022-2028
14E	Halcyon Hot Springs	22.0	Crown Provincial	TFL 23 - Interfor	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Funding reliant unless thinned fibre sold as commercial pulp. Domestic watershed. Borders Potentially Unstable mapped poly	2022-2028
14F	Halcyon Hot Springs	4.5	Crown Provincial	TFL 23 - Interfor	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Funding reliant unless thinned fibre sold as commercial pulp. Domestic watershed	2022-2028
15A	Nakusp Hot Springs	1.4	Municipal - Village of Nakusp	None	Thinning. Ground and ladder fuel reduction.	Reduce threat of ignition within high use but isolated, commercial use area	Commercial hot springs operation adjacent. Funding reliant	2019
15B	Nakusp Hot Springs	5.2	Municipal - Village of Nakusp	None	Thinning. Ground and ladder fuel reduction.	Reduce threat of ignition and spreading crown fire by reducing density of immature stand near high commercial use area	Partially within Terrain Class 4 and 5 polys. Funding reliant unless thinned fibre sold as commercial pulp	2020
15C	Nakusp Hot Springs	12.2	Municipal - Village of Nakusp	None	Commercial pulp harvest	Reduce threat of spreading crown fire by reducing fuel loading in high volume, old growth stand	Partially within Terrain Class 4 and 5 polys. Limited value of pulpwood.	2020

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
16	Bayview	8.9	Crown Provincial	Community Forest - NACFOR	Regeneration of resistant species. Thinning treatment if and when appropriate	Contributes to planned treatment buffer around community	Borders Community Watershed	2019 (plant) 2020 (thinning)
17	Bayview	17.5	Crown Provincial	Community Forest - NACFOR	Hand treatment	Contributes to planned treatment buffer around community. Addresses area at high risk of Fd bark beetle attack	Within/between Community Watershed boundaries. Requires crossing to treat. Partial Retention VQO Within Mule Deer Ungulate Winter Range	2022
18	Bayview	34.0	Crown Provincial	Community Forest - NACFOR, TFL 23 - Interfor	Commercial cable harvest	Contributes to planned treatment buffer around community. Addresses area at high risk of Fd bark beetle attack	Partial Retention VQO. Domestic watershed. Safety: logging steep slopes above hwy. Terrain stability issues. High amount of recent area logging activity. Within Mule Deer Ungulate Winter Range	2022
19	Bayview	30.2	Crown Provincial	Provincial Park	Hand treatment	Contributes to planned treatment buffer around community. Ground and ladder fuel reduction in high use rec area with no prior treatment	Within MacDonald Creek Provincial Park; limited to non-commercial hand treatment	2021
20	East Arrow Park	47.4	Crown Provincial	Community Forest - NACFOR	Hand and/or mechanical. Regeneration of resistant species in recent blocks. Thinning treatment if and when appropriate.	Addresses fuel threat posed from community's vulnerable east flank	Visuals though not within identified VQO Recent logging will limit near-term removal. Within Mule Deer Ungulate Winter Range. Domestic watershed	2019 (plant) 2025 (additional treatment)
21	East Arrow Park	7.2	Crown Provincial	None	Hand and/or mechanical	Reduces wildfire threat to residents posed by dense patch of untreated timber enter- the stem exclusion stage. Fuel mitigation example for homeowners	Safety: proximity to residences. Commercial harvest unlikely because of restricted access. Coordination with/ approval from agency	2020

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
22A	West Arrow Park	60.0	Crown Provincial	None	Mechanical	Reduces wildfire threat to residents within isolated area surrounded by dense forest	Within Mule Deer Ungulate Winter Range. Coordination with/ approval from agency	2020
22B	West Arrow Park	91.4	Crown Provincial	None	Mechanical	Reduces wildfire threat to residents within isolated area surrounded by dense forest	Within Mule Deer Ungulate Winter Range. Limited value of small diameter timber may make treatment funding reliant. Coordination with/ approval from agency	2020
23	West Arrow Park	60.2	Crown Provincial	None	Mechanical	Reduces wildfire threat to residents within isolated area surrounded by dense forest	Within Mule Deer Ungulate Winter Range. Domestic watershed. Coordination with/ approval from agency	2020
24	Ruby Road (Burton)	23.5	Crown Provincial/ Municipal lot	Arrow TSA - Stella Jones/ None	Commercial harvest	Contributes to planned treatment buffer around community. Partially addresses concerns associated with existing/ future bark beetle attack	Coordination between forest licensees and RDCK re harvesting of RDCK owned portion. Within Mule Deer Ungulate Winter Range. Safety: steep, rocky slopes above residences. Terrain stability issues: Ruby Rd and in block. Partial Retention VQO. Domestic Watershed	2023
25	Ruby Road (Burton)	10.3	Crown Provincial	Arrow TSA - Stella Jones	Commercial harvest	Contributes to planned treatment buffer around community. Partially addresses concerns associated with existing / future bark beetle attack	Within Mule Deer Ungulate Winter Range. Safety: steep, rocky slopes above residences. Terrain stability issues: Ruby Rd and in block. Partial Retention VQO. Community Watershed	2023
26	South Caribou	23.5	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Contributes to planned treatment buffer around community. Reduce threat of ignition and spreading crown fire by reducing density of immature stand	Reliant on funding or licensee investment. Possibly high root disease may curtail thinning	2027
27	Watson Road	16.1	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Contributes to planned treatment buffer around	Partial Retention VQO. Community and Domestic	2020

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
						community	Watershed	
28	Burton South Face	46.4	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Contributes to planned treatment buffer around community. Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Some slopes 30-60 % may curtail thinning. Possibly high root disease may curtail thinning. Reliant on funding or licensee investment	2026
29	Burton South Face	11.0	Crown Provincial	Woodlot 405 (H. Watt)	Stand thinning	Contributes to planned treatment buffer around community. Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Possibly high root disease may curtail thinning. Vehicle access currently limited. Reliant on funding or licensee investment	2021
30	McCormick Road	12.4	Crown Provincial	Woodlot 405 (H. Watt)	Stand thinning	Contributes to planned treatment buffer around community. Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand	Possibly high root disease may curtail thinning. Reliant on funding or licensee investment	2025
31	McCormick Road	9.4	Crown Provincial	Woodlot 405 (H. Watt)	Commercial harvest	Contributes to planned treatment buffer around community	Partial Retention VQO. Domestic Watershed. Riparian management on fish streams. Ungulate Winter Range	Ongoing
32	Woden & Snow Ck	92.5	Crown Provincial	Woodlot 405 (H. Watt)	Commercial harvest	Contributes to planned treatment buffer around community	Partial Retention VQO. Domestic Watershed. Riparian management on fish streams. Ungulate Winter Range	Ongoing
33	Silver Queen Road	6.8	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Contributes to planned treatment buffer around community	Domestic Watershed. Riparian management on fish streams. Ungulate Winter Range	2024

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
34	Burton Ck Road	31.1	Crown Provincial	None	Shaded fuel break	Contributes to planned treatment buffer around community	Coordination with/approval from agency. Domestic Watershed	2020
35	Mosheimer Brook (Fauquier)	19	Crown Provincial	TFL 23 - Interfor	Commercial harvest.	Currently planned Interfor block.	Domestic Watershed (partial)	2019 (harvest)
35	Mosheimer Brook (Fauquier)	19	Crown Provincial	TFL 23 - Interfor	Thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand and prioritizing retained species partially on basis of fire resistance.	Ungulate Winter Range. ECA's. Partial Retention VQO. Thinning reliant on funding or licensee investment	2020 (plant)
35	Mosheimer Brook (Fauquier)	19	Crown Provincial	TFL 23 - Interfor	Thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand and prioritizing retained species partially on basis of fire resistance.	Ungulate Winter Range. ECA's. Partial Retention VQO. Thinning reliant on funding or licensee investment	2028 (thin)
36	Mosheimer Brook (Fauquier)	12.0	Crown Provincial	TFL 23 - Interfor	Stand thinning	Contributes to planned treatment buffer around community. Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand and prioritizing retained species partially on basis of fire resistance.	Domestic Watershed. Ungulate Winter Range. ECA's. Partial Retention VQO. Thinning reliant on funding or licensee investment	2020
37	Mosheimer Brook (Fauquier)	17.0	Crown Provincial	TFL 23 - Interfor	Stand thinning	Contributes to planned treatment buffer around community. Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand and prioritizing retained species partially on basis of fire resistance.	Domestic Watershed. Ungulate Winter Range. ECA's. Partial Retention VQO. Thinning reliant on funding or licensee investment	2020

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
38	Mosheimer Brook (Fauquier)	5.6	Crown Provincial	TFL 23 - Interfor	Stand thinning	Contributes to planned treatment buffer around community. Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand and prioritizing retained species partially on basis of fire resistance.	Domestic Watershed. Ungulate Winter Range. ECA's. Partial Retention VQO. Thinning reliant on funding or licensee investment	2020
39	Heart Creek (Fauquier)	30.3	Crown Provincial	TFL 23 - Interfor	Commercial harvest	Contributes to planned treatment buffer around community. Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Partial Retention VQO. ECA's	2022
39	Heart Creek (Fauquier)	30.3	Crown Provincial	TFL 23 - Interfor	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stand and prioritizing retained species partially on basis of fire resistance.	Reliant on funding or licensee investment	2021
40	Heart Creek/Fauquier Creek	25.3	Crown Provincial	TFL 23 - Interfor	Commercial harvest	Contributes to planned treatment buffer from areas posing highest threat of wildfire spread to the community. Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Terrain stability issues within dev't areas. Partial Retention VQO. ECA's. Expensive harvesting and road construction	2022
41	Fauquier Creek/Delta Creek	115.7	Crown Provincial	TFL 23 - Interfor	Commercial harvest	Contributes to planned treatment buffer from areas posing highest threat of wildfire spread to the community. Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Terrain stability issues within dev't areas. Partial Retention VQO. ECA's. Expensive harvesting and road construction	2022

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
42	Payne Creek (Fauquier)	51.1	Crown Provincial	TFL 23 - Interfor	Commercial harvest	Contributes to planned treatment buffer from areas posing highest threat of wildfire spread to the community. Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Terrain stability issues within dev't areas. Partial Retention VQO. ECA's. Expensive harvesting and road construction	2022
43	Lower Lovesy (Fauquier)	30.0	Crown Provincial	None	Shaded fuel break (hand or mechanical)	Reduce threat of ignition and spread in area in close proximity to residences	Coordination with/approval from agency. Domestic Watershed. Funding reliant if no commercial harvest	2021
44	Lower Brydges Face (Fauquier)	20.6	Crown Provincial	None	Shaded fuel break (hand or mechanical)	Reduce threat of ignition and spread in area in close proximity to residences	Coordination with/approval from agency. Domestic Watershed. Funding reliant if no commercial harvest	2021
45	Starlight Road (Fauquier)	2.6	Crown Provincial	None	Shaded fuel break (hand or mechanical)	Reduce threat of ignition and spread in residential area. Fuel mitigation example for homeowners	Coordination with/approval from agency. Domestic Watershed. Funding reliant if no commercial harvest	2021
46	Needles (Edgewood)	159.0	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed (small portion). Ungulate Winter Range	2020
46	Needles (Edgewood)	159.0	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Retention and Partial Retention VQO's	2023
47	Needles (Edgewood)	66.9	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed (partially). Ungulate Winter Range. Retention and Partial Retention VQO's. Expensive harvesting and road construction	2020
47	Needles (Edgewood)	66.9	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and spread	Reliant on funding or licensee investment	

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
48	Whatshan South Face (Edgewood)	66.9	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Partial Retention VQO	2020
49	Whatshan North Face (Edgewood)	103.3	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Partial Retention VQO	2020
50	Barnes Creek (Edgewood)	29.4	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2028
51	Barnes Creek (Edgewood)	10.4	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2028
52	Barnes Creek (Edgewood)	11.8	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2027
53	Barnes Creek (Edgewood)	14.8	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2023
54	Snowshoe Lake (Edgewood)	59.9	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2020
55	Snowshoe Lake (Edgewood)	47.4	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range	2023
56	Snowshoe Lake (Edgewood)	73.9	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range	2020
57	Snowshoe Lake (Edgewood)	121.4	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Partial Retention	2020
58	Inonoaklin Creek (Edgewood)	22.3	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density	Reliant on funding or licensee investment	2028

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
						of immature stands		
59	Inonoaklin Creek (Edgewood)	16.3	Crown Provincial	WL 2110 (RJ Schunter)	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2028
60	Valley Creek (Edgewood)	11.0	Crown Provincial	Arrow TSA - Tolko, WL 2110 (RJ Schunter)	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2020
61	Yellow Creek (Edgewood)	51.1	Crown Provincial	Arrow TSA - Tolko	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2020
62	Yellow Creek (Edgewood)	16.6	Crown Provincial	WL 2110 (RJ Schunter)	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2028
63	Bergsa Creek (Edgewood)	42.3	Crown Provincial	Arrow TSA - Tolko, WL 2110 (RJ Schunter)	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2025
64	Robinson Creek	55.5	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2025
65	McLean Creek (Edgewood)	62.3	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Partial Retention	2025
66	McLean Creek (Edgewood)	35.7	Crown Provincial	Arrow TSA - BCTS	Commercial harvest	Partially addresses concerns associated with existing / future bark beetle attack	Domestic Watershed. Ungulate Winter Range. Partial Retention	2021
67	Eagle Creek (Edgewood)	50.8	Crown Provincial	Arrow TSA - BCTS	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2021

Planning Unit	Geographic Area	Size (ha)	Ownership	Forest Tenure	Proposed Treatment	Treatment Rationale	Overlapping Values / Treatment Constraints	Estimated Year of Treatment
68	Whatshan Face (Edgewood)	19.6	Crown Provincial	WL 401 (L Posnikoff)	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2023
69	Whatshan Face (Edgewood)	74.6	Crown Provincial	WL 401 (L Posnikoff)	Stand thinning	Reduce threat of ignition and future threat of spreading crown fire by reducing density of immature stands	Reliant on funding or licensee investment	2023
70	Hwy 6 / Whatshan Settlement (Edgewood)	2.9	Crown Provincial	None	Shaded fuel break (hand or mechanical)	Reduce threat of ignition and spread in residential area. Fuel mitigation example for homeowners	Coordination with/approval from agency. Domestic Watershed. Partial Retention. Ungulate Winter Range. Funding reliant if no commercial harvest	2021

Recommendation 7: Work with licencees (Interfor, BCTS, NACFOR, Woodlots) and other agencies (BC Hydro and FWCP) to implement fuel treatment as recommended in Table 15. Consider funding streams provided by the CRIP and Forest Enhancement Society of BC (FESBC).

5.2 FireSmart Planning & Activities

FireSmart is a national initiative with the goal of encouraging communities and private landowners to live responsibly in wildfire prone areas. The program aims to empower community members with the knowledge and support needed to reduce the wildfire hazard on their property. With a significant portion of the AOI considered private lands (23.5%), FireSmart is a proven, effective way to reduce the risk of wildfire throughout the community. Currently available funding does not support operational fuel treatment on private land. The CRIP FireSmart Grant program is a viable alternative that provides funding to help communities undertake FireSmart activities.

Current FireSmart Activities within the AOI

In 2017 both the Village of Nakusp and the RDCK supported FireSmart programs. The RDCK conducts FireSmart activities throughout the regional district – including Area K. Several communities throughout the RDCK have received recognition as "FireSmart Communities" through the FireSmart Canada Community Recognition Program. In 2017, the RDCK provided free FireSmart assessments to residents on a voluntary basis. RDCK FireSmart Ambassadors conducted a total of 4 property assessments throughout Area K. The RDCK FireSmart webpage provides information on how community members can register for free home assessments, provides links to FireSmart educational information, and contains contact information for the RDCK's Local FireSmart Representative.

The Nakusp FireSmart program was established in 2017 as a joint effort between the Village of Nakusp, NACFOR, and the Nakusp Fire Department - with funding provided by the CRIP's FireSmart Planning Grant program. Nakusp's FireSmart program was led by a FireSmart Committee consisting of community members, stakeholders, and government representatives. The committee held regular meetings to establish program goals and objectives. A FireSmart Coordinator was hired from May-December 2017 to conduct free FireSmart home assessments, implement education and outreach activities, and to develop a FireSmart Community Plan and Communications Strategy for Nakusp. A total of 17 FireSmart home assessments were completed by Nakusp's FireSmart coordinator in 2017. Other highlights of Nakusp's 2017 FireSmart program include:

- Hosting FireSmart education and outreach activities including workshops/information sessions
- Organizing and hosting a FireSmart day to promote FireSmart principles
- Developing a FireSmart Facebook Page and webpage on the NACFOR website
- Developing a FireSmart Community Plan and Communications Strategy

Both the RDCK and the Village of Nakusp intend to continue the support of a FireSmart program. Moving into 2018, the RDCK will work closely with the Village of Nakusp to coordinate a joint FireSmart program at a regional level (Personal Communication, RDCK Wildfire Mitigation Coordinator, Nora Hannon).

Recommendation 8: Maintain FireSmart programs in Nakusp and Area K. Continue to provide FireSmart home assessments and undertake education and outreach activities.

5.2.1 FireSmart Goals & Objectives

The 2016 Horse River wildfire in Fort McMurray, Alberta was the largest ever insured loss in Canada – destroying over 2,400 structures (Westhaver, 2016). A recent study has shown that properties which adopted FireSmart principles in Fort McMurray were more likely to survive the catastrophic wildfire (Westhaver, 2016). FireSmart focuses on reducing wildfire hazard within the Wildland Urban Interface, where wildland fuels are found adjacent to home and structures. A community that has adopted FireSmart principles has a number of advantages in the event of an interface fire, including:

1. Reduced likelihood of structure ignition and loss through radiant heat, direct flame contact, and ember transport
2. Reduced fire behaviour in the community
3. Improved first responder safety and suppression effectiveness through the creation of defendable spaces

Wildfires can damage structures in three ways: by direct flame, through radiant heat, and by sparks and embers landing on structures. All three of these can cause structures to ignite and burn. In order to mitigate this risk, property owners are encouraged to work from their property outwards using the following FireSmart zoning approach (Figure 13):

- **Zone 1:** Focus on reducing the susceptibility of the structure and a 10m buffer. Actions include removing all materials that can easily ignite, using flame resistant building materials, cleaning out gutters, and using tempered double pane windows.
- **Zone 2:** Focus on reducing fuels 10-30m from structures. Actions include reducing ladder fuels and tree density, planting fire resistant species, and removing flammable materials.
- **Zone 3:** Focus on creating FireSmart landscapes and communities (30-100m from structures and values). Actions include creating firebreaks, reducing ladder fuels and tree density, and encouraging neighbours to adopt FireSmart principles.

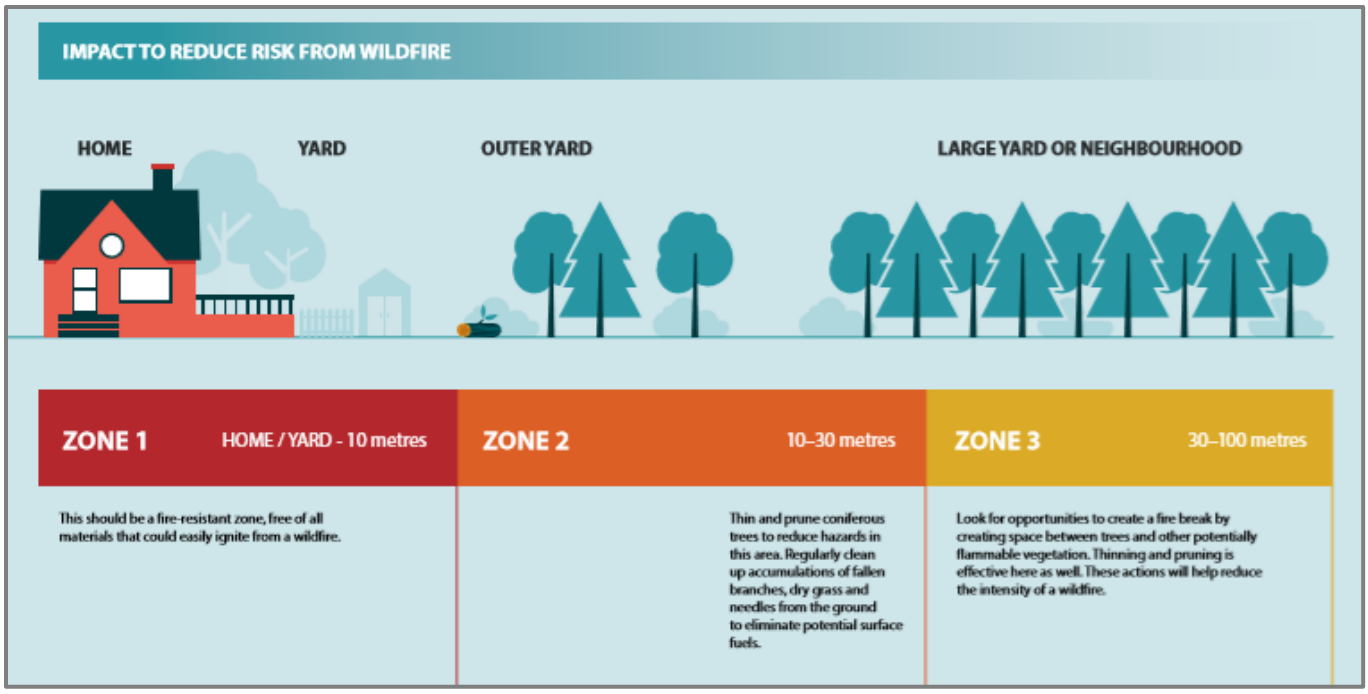


Figure 13: FireSmart Zoning Approach[18]

5.2.2 Key Aspects of FireSmart for Local Governments

Property owners, community members, businesses, and local governments all play a role in FireSmarting the community. Table 16 provides a summary of FireSmart activities that should be explored in order to mitigate wildfire risk throughout Nakusp and Area K. Activities include education and outreach, vegetation management, incorporating FireSmart into community planning and development, and increasing local capacity to defend against an interface fire.

[18] Figure 2 from the BCWS FireSmart Home Owner Manual - https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/wildfire-management/prevention/prevention-home-community/bcws_homeowner_firesmart_manual.pdf

Table 16: Recommended FireSmart Practices and Activities

Topic	Recommended FireSmart Practices and Activities	Priority
Communication, Education & Partnerships	· Work with the fire departments and BCWS to host events that promote FireSmart principles, emergency preparedness, pre-fire-season readiness, and post-wildfire hazards.	High
	· Continue (and increase) the use of local government newsletters, social media, webpages, and radio to promote FireSmart principles. This includes providing local landscape companies and hardware stores with FireSmart landscaping and building guides; and outreach to Real Estate agents for new home owners.	High
	· Work with local stakeholders and interest groups to undertake FireSmart activities. Coordinate with the Nakusp and Area Bike Society to discuss fuel management in developed trail areas. Work with the Nakusp Trail Society, Rotary Club, and other groups to coordinate FireSmart activities and events. Share FireSmart initiatives with forest licensees that have tenures in the WUI such as woodlot owners, BC Timber Sales and Interfor.	High
	· Continue to hold FireSmart information sessions at local schools and community events. Work with the BCWS and fire departments to host information sessions.	High
	· Continue Nakusp's FireSmart committee; consider including members from neighbouring Area K communities.	High
	· Continue to encourage homeowners to undertake FireSmart site assessments and area assessments.	High
	· Ensure adequate signage at high-use recreation areas. Signs could include information on fire danger and prevention.	High
	· Consider implementing a FireSmart sticker or lawn-sign program to recognize FireSmart properties, or create incentives for FireSmart activities on private property.	Moderate
	· Encourage FireSmart Local Representative or Community Champion training for interested community members.	Moderate
	· Apply for FireSmart Community Recognition.	Moderate
Vegetation management	· Develop policies and practices for FireSmart maintenance of public spaces - such as parks and open spaces.	High
	· Use landscaping requirements in zoning and development permits to require fire resistive landscaping.	High
	· Provide access to a chipper or dumpster for debris drop-off from pruning or thinning on private property. Consider integrating with existing events such as the "Community Pride Week Yard & Garden Waste Pick Up" in Nakusp.	High
	· Extend FireSmart assessments to include public spaces.	High
Planning & Development	· Develop policies and practices for FireSmart construction and maintenance of public buildings.	High
	· Continue to maintain, update, and implement Nakusp's Community FireSmart Plan and Communication Strategy. Consider including the communities of Area K into these planning documents.	High
	· Consider wildfire prevention and suppression in the design of subdivisions (e.g. road widths, turning radius for emergency vehicles, and access and egress points). Consider joining dead-end roads in current areas with limited access and egress.	High
	· Coordinate the review of new developments across multiple departments, including the fire department.	High
	· Consider mutual aid fire control agreements with neighbouring fire departments.	High
	· Consider the establishment of Development Permit Areas for Wildfire Hazard. These areas could require FireSmart exterior finishing and building materials.	High
Increasing local capacity	· Continue cross-training between the Nakusp Fire Department and BCWS. Explore opportunities to include local Area K fire departments in training events.	High
	· Develop and maintain Structural Protection Units (SPU), as well as community fire caddies and water trucks where there are gaps in fire department coverage.	Moderate
	· Explore providing sprinkler kits to property owners (at cost or at a reduced rate), or provide resources for homeowners to develop their own "home sprinkler kits."	Moderate
	· Explore opportunities to provide S-100 training to members of the public – at a reduced rate or free of charge.	Moderate

Recommendation 9: As part of an ongoing FireSmart program, implement recommended activities from Table 16. Activities include education and outreach, vegetation management, incorporating FireSmart into community planning and development, and increasing local capacity to defend against interface fires.

5.2.3 Identify Priority Areas within the Area of Interest for FireSmart

Although there have been successful FireSmart activities throughout the Arrow Lakes, FireSmart is still a relatively new initiative throughout the AOI. All communities within the study area would benefit from continued FireSmart activities. Priority areas for FireSmart have been identified and described in Table 17; however FireSmart initiatives should not be limited to these locations or recommended activities. Priority areas were selected based on adjacent wildfire risk and provide a starting point for FireSmart initiatives within the AOI.

Table 17: Summary of FireSmart Priority Areas

Geographic	Area ID	Adjacent Wildfire Risk Rating	FireSmart	FireSmart Canada Recognition Received	Recommended FireSmart Activities
Nakusp	Glenbank/Alexander Road	Moderate to High	Some assessments completed in 2017	No	FireSmart assessments and distribution of FireSmart educational materials. Coordinate yard clean-up event.
Nakusp	Brouse, Particularly Upper Brouse Road and houses on the North side of Highway 6.	Moderate to High	Some assessments completed in 2017	No	FireSmart assessments and distribution of FireSmart educational materials. Coordinate yard clean-up event.
Nakusp	Nakusp Hot Springs and Area	High	No	No	Work with stakeholders and agencies to ensure adequate signage and to promote responsible recreational use.
Arrow Park	Rock Island Road	Moderate to High	No	No	FireSmart assessments and distribution of FireSmart educational materials.
Burton	Caribou Creek Road	High	No	No	FireSmart assessments and distribution of FireSmart educational materials.
Edgewood	West side of Edgewood, particularly along Eagle Crescent and Monashee Ave	Moderate to High	No	No	FireSmart assessments -- including an assessment of Edgewood Elementary School. Distribution of FireSmart educational materials.
Edgewood	Inonoaklin Valley Road, particularly houses on the east side of the road	Moderate to High	No	No	FireSmart assessments and distribution of FireSmart educational materials.
Fauquier	Willow Loop	High	No	No	FireSmart assessments and distribution of FireSmart educational materials. Coordinate yard clean-up event.
Fauquier	North East of town, along Highway 6 (Starlight Road, Brydges Road)	Moderate to High	No	No	FireSmart assessments and distribution of FireSmart educational materials. Potential for fuel treatment showcase area along Starlight Road (Planning Unit 45).
Needles	Needles Road North	High	No	No	FireSmart assessments and distribution of FireSmart educational materials.
Whatshan	Whatshan Settlement Road	High	No	No	FireSmart assessments and distribution of FireSmart educational materials.

5.3 Community Communication and Education

Effective wildfire risk mitigation – including the implementation of this CWPP – depends on the communities of Nakusp and Area K for support. Educated and informed communities are more likely to support wildfire mitigation efforts. Community education and outreach activities related specifically to this CWPP include:

- Community open house events in Burton/Arrow Park, Edgewood, Fauquier, and Nakusp. Events were held in May 2018, where stakeholders and the public were invited to review and comment on the CWPP prior to finalization
- The posting of this CWPP on the RDCK[19] and NACFOR websites[20]
- A summary poster of this CWPP and wildfire risk map made available to community members and integrated into FireSmart education and outreach initiatives

Other community communication and education activities of note within the AOI include:

- The RDCK and NACFOR webpages: promote FireSmart principles and education materials
- The RDCK's Emergency Alert Notification System: sends emergency notifications through text or voice call to registered individuals
- FireSmart brochures and educational materials: currently available to the public both online and at the Emergency Services Building
- FireSmart events and information sessions at the Nakusp Farmer's Market and Nakusp Public Library

Proposed community engagement and education activities from Section 5.2.2, Table 16 should be reviewed and implemented as an ongoing initiative. The following resources can assist with the implementation of community education and outreach activities (Table 18).

[19] http://www.rdck.ca/EN/main/services/emergency-management/community-wildfire-protection-plans.html
[20] http://nakuspcommunityforest.com/projects/firesmart-program/

Table 18: Education and Outreach Resources

Resource	Description	Link
FireSmart Homeowners Manual	A guide for home owners to FireSmart their property.	https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/wildfire-management/prevention/prevention-home-community/bcws_homeowner_firesmart_manual.pdf https://www.firesmartcanada.ca/images/uploads/resources/Laura_Stewart_-_FS_HomeownersManual_Booklet-Jul2017.pdf
FireSmart Homeowners Checklist	A risk assessment for homeowners to evaluate their property's wildfire risk.	https://www.firesmartcanada.ca/images/uploads/resources/FS_HomeownersAssessment_Booklet-Jul2017.pdf
FireSmart Guide to Landscaping	Recommends fire resistant trees and plants for landscaping purposes. This resource could be made available at local garden and hardware stores.	https://www.firesmartcanada.ca/images/uploads/resources/FireSmart-Guide-to-Lanscaping.pdf
FireSmart Home Development Guide	A FireSmart guide for new structure development or renovations. Includes information on fire resistant building materials.	https://www.firesmartcanada.ca/images/uploads/resources/FSCanada_HomeDevBooklet_5.5x8.5-V6-Mar20.pdf
FireSmart: Protecting your Community from Wildfire	An in-depth guide on how to mitigate wildfire risk throughout the community.	https://www.firesmartcanada.ca/images/uploads/resources/FireSmart-Protecting-Your-Community.pdf
Becoming a FireSmart Community Brochure	Provides information on the FireSmart Canada Community Recognition Program.	https://www.firesmartcanada.ca/images/uploads/resources/64120_FireSmart_Brch_Proof_3_hi_res.pdf
FireSmart Last Minute Checklist	A last–minute checklist for homeowners in the event of a wildfire.	https://www.firesmartcanada.ca/images/uploads/resources/FireSmartCanada_Wildfire_Evac_Checklist.pdf
FireSmart Canada	Information and resources regarding the FireSmart program.	https://www.firesmartcanada.ca/
FireSmart Lesser Slave Region, Education Resources	Contains FireSmart educational material as well as pre-made programs for teachers	https://www.livefiresmart.ca/education/
BCWS Prevention Webpage	Information and resources regarding FireSmart specific to BC.	https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/for-your-home-community
RDCK FireSmart Webpage	Contains information on the RDCK FireSmart program including home evaluations.	http://www.rdck.ca/EN/main/services/emergency-management/firesmart.html
Nakusp FireSmart Webpage	Contains FireSmart information specific to the Village of Nakusp.	http://nakuspcommunityforest.com/projects/firesmart-program/
Community Wildfire Preparedness Day	A financial award to help organize neighbours, friends or community groups to reduce wildfire risk.	https://www.firesmartcanada.ca/firesmart-communities/get-your-application-ready-canada-wildfire-community-preparedness-day-2018/
RDCK Post-Emergency Hazard Reports	Includes post-wildfire hazard reports and information for residents regarding debris flows and landslides after a wildfire.	http://www.rdck.ca/EN/main/services/emergency-management/geotechnical-hazards.html

5.4 Other Prevention Measures

Nakusp and Area K is a popular destination for outdoor enthusiasts. Hiking, camping, and mountain biking are all popular activities in the summer months. Ensuring trails and high-use recreation areas contain appropriate signage can help mitigate the risk of human caused fires. Signs posting the Fire Danger Rating as well as information on prevention and what to do in the event of a wildfire should be maintained throughout the region - particularly at trail heads, forestry roads and along the highway. Stakeholder groups, the BCWS, BC Parks, and local government can all work together to promote responsible outdoor recreation throughout the WUI.

Recommendation 10: Maintain sufficient signage at high-use recreational areas. Signage may include fire danger ratings, information on fire prevention, emergency contact information, and evacuation procedures on certain trails. Explore opportunities to work with other agencies to maintain and increase fire prevention signage at trailheads, forestry roads, along the highway, and within communities.

5.5 Summary of Recommendations

Table 19: Summary of Risk Management and Mitigation Recommendations (Section 5)

Recommendation	Responsibility/Funding Source	Next Steps
Work with licencees (Interfor, BCTS, NACFOR, Woodlots) and other agencies (BC Hydro and FWCP) to implement fuel treatment as recommended in Table 15. Consider funding streams provided by the CRIP and Forest Enhancement Society.	RDCK, Village of Nakusp/ CRIP and FESBC funding, Columbia Basin Trust (CBT)	Review, select, and implement fuel treatment in areas identified in Table 15. Apply for funding to write prescriptions
Maintain FireSmart programs in Nakusp and Area K. Continue to provide FireSmart home assessments and undertake education and outreach activities.	RDCK, Village of Nakusp, local fire departments/CRIP FireSmart Grant Program	Apply for FireSmart program funding *(pending approval)*
As part of the FireSmart program, implement recommended activities from Table 16; including education and outreach, vegetation management, incorporating FireSmart into community planning and development, and increasing local capacity to defend against an interface fire.	RDCK, Village of Nakusp/CRIP FireSmart Grant Program, FireSmart Community Wildfire Preparedness Day Award	Review, select, and implement recommendations from Table 16 as part of an on-going FireSmart program
Maintain sufficient signage at high-use recreational areas. Signage may include fire danger ratings, information on fire prevention, emergency contact information, and evacuation procedures on certain trails. Explore opportunities to work with other agencies to maintain and increase fire prevention signage at trailheads, forestry roads, along the highway, and within communities.	RDCK, Village of Nakusp, community and recreation groups, BCWS, land managers, Rec Sites and Trails BC, BC Parks	Identify high-use areas with poor signage. Work with appropriate agencies, land manager/interest groups to improve signage

SECTION 6: Wildfire Response Resources

Interface fires are complex, dynamic incidents. Often times, multiple agencies must work together in order to effectively respond to an interface fire. The following section describes the resources that are typically available to respond to an interface fire in the region. It is important to recognize that the availability firefighting resources can fluctuate significantly throughout the wildfire season depending on the demand for crews throughout the province.

6.1 Local Government Firefighting Resources

The BC Wildfire Service is responsible for responding to wildfires on Crown land and on private property outside of a municipal or regional fire protection area. Nakusp and Area K are located in the South East Fire Centre, Arrow Fire Zone. The BCWS maintains a seasonal fire base near the Nakusp Airport which is staffed as needed with crews from the Shoreacres Fire Base. The Shoreacres Fire Base – located near the junction of Highway 6 and Highway 3A- is home to seven, 3-person Initial Attack crews; and two, 20 person Unit Crews (Personal Communication, BCWS Wildfire Technician, Jonathan Fox). The BCWS coordinates the staffing levels of fire crews throughout the province based on wildfire danger and fire activity. In B.C. these resources are deployed according to BC Provincial Co-ordination Plan for Wildfire[21] .

The Nakusp and District Volunteer Fire Department services the Village of Nakusp and Area K specified fire protection service areas including the communities of Shoreholme, Box Lake and Bayview(Appendix 1, Map 1,). In 2011, the Nakusp fire hall was replaced with a new emergency services building (ESB). This building is home to the Nakusp and District Volunteer Fire Department and the BC Ambulance Service. The facility also serves as a search and rescue centre and regional training centre. The Burton, Edgewood and Fauquier volunteer fire departments each have an operational fire hall. Edgewood is currently in the process of constructing a new fire hall with an anticipated completion of spring of 2018 (Personal Communications, RDK Area K Director, Paul Peterson).

6.1.1 Fire Departments and Equipment[22]

The Nakusp and District Volunteer Fire Department is led by a career Fire Chief and staffed by well trained volunteers. Firefighters conduct weekly practices and receive wildland fire training including the S-100[23] (Basic Fire Suppression and Safety) and Incident Command System (ICS) training. Some members have advanced wildfire training and experience (S-215). The Nakusp Fire Department manages several resources including: 1 tender (1700 gal.), 2 porta-tanks, 1 quick attack truck, 2

[21] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf

[22] Information provided by Terry Warren, Nakusp VFD; Bill Dummett, Edgewood VFD; Brian Harrop, Burton VFD; Ed McGinnis, Fauquier VFD; Paul Peterson, RDCK Area K Director; Nora Hannon, RDCK Wildfire Mitigation Coordinator; Bill Mitchell; Bob Toews

[23] SPP-WFF 1 (Wildland Firefighter Level 1), course will replace the S-100 Basic Fire Suppression and Safety and S-185 Fire Entrapment Avoidance for structural firefighters https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/fire-safety/wildfire/spp-wff1-info.pdf

engines, and one Type 3 SPU trailer. The number of volunteer firefighters available to respond to an incident can range significantly (from 3-19 personnel). A lack of available volunteers in times of need has been identified as the main limitation facing Nakusp's wildfire response. Although solutions to this issue are limited, encouraging community members to volunteer can be incorporated into FireSmart education and outreach initiatives.

The fire departments in Burton, Edgewood, and Fauquier each consist of 8-12 active volunteers. Training typically includes weekly practice sessions, with some members attending the spring training camp organized by the Volunteer Firefighter's Association of BC. The Burton and Fauquier fire departments have a mutual aid agreement in place and there is occasional cross-training conducted between the three departments. The Burton Fire Department maintains a 300 gallon pumper and a 1500 gallon tanker. Fauquier has an 800 gallon pumper and a 900 gallon rural pumper - which they hope to replace in the near future. Edgewood recently acquired their first pumper (825 gal), and intends to purchase a tender soon. They also have 2 trailers with water tanks (500 gal and 250 gal) – the smaller of the two is located at the Highway 6 intersection. Additional fire equipment in the AOI includes fire caddies with pumps and hand tools, specifically:

- One 500 gallon fire caddy in Bayview (with foam)
- One 500 gallon collapsible water tank in Bayview with pump and hose
- One fire caddy in Halcyon (approximately 300 gallons)
- Two 150 gallon fire caddies in Arrow Park - situated on either sides of the lake

The Area K volunteer fire departments are not recognized for insurance purposes and are not funded through parcel assessments. These fire departments provide important coverage outside of the Nakusp Fire Department response area; however limited resources and training available to these volunteer groups - combined with large response areas - pose a challenge. Additional challenges include poor cell-phone coverage in the region and a lack of public familiarity regarding fire reporting procedures and contact information. Since these local fire departments are not dispatched through 9-11, proper contact information for each group should be publicised through the use of signage, fridge magnets (currently implemented in Burton), or other mechanisms.

The RDCK maintains a mobile command unit, 3 Structure Protection Units (SPU) and 18 Fire Departments throughout the regional district, however the RDCK fire departments do not operate within Area K.

Recommendation 11: Incorporate volunteer firefighter recruitment into FireSmart education and outreach initiatives. Consider formal recognition and viability of funding through taxation for Burton, Edgewood and Fauquier Fire Departments to be able to provide mutual aid agreements with nearby Fire Departments in order to address challenges associated with limited volunteer availability.

Recommendation 12: Explore funding opportunities for community fire caddies and water trucks where there are gaps in fire response coverage. Consider providing S-100 training to members of the public at a reduced rate or free of charge.

Recommendation 13: Increase public awareness of first responder emergency contact information: Wildfires - BCWS (1-800-663-5555 or *5555 on cell) and Nakusp Fire Department (9-11). Within communities call Burton Volunteer Fire Department (250-265-4348), Edgewood Volunteer Fire Department (250-269-0023), Fauquier Volunteer Fire Brigade (250-269-7650) AND call BCWS Dispatch (1-800-663-5555 or *5555 on cell)

6.1.2 Water Availability for Wildfire Suppression

The Nakusp Fire Department has 2,850 gallons of water on apparatus and has compressed air foam systems on two trucks. The Village of Nakusp's water system is supplied by both surface and ground water. The village maintains 2 reservoirs including a 1,000,000 gallon reservoir and a 200,000 gallon reservoir. In 2015, a backup generator was installed at the 200,000 gallon reservoir to be utilized in the event of a power failure (Village of Nakusp, 2015). Annual maintenance of the village's water system includes flushing, inspecting, and repairing fire hydrants. The village also maintains an annual fire hydrant installation program in which 1-2 hydrants are replaced every year. As of 2016, all obsolete hydrants in the village have been upgraded (Village of Nakusp, 2016). Upgrades to the water mains in Glenbank and Alexander Road are scheduled for 2018. These upgrades should address previous concerns regarding water main size identified in the 2007 OCP (Personal Communication, Village of Nakusp Director of Operations, Warren Leigh).

The RDCK owns and operates 19 water systems, 3 of which are located within Area K. These water systems include:

- Burton: 102,000 litre insulated bolted steel storage tank
- Edgewood: 82,000 litre insulated bolted steel storage tank
- Fauquier: 1,135,000 litre concrete reservoir, and a 50,000 litre steel tank

Due to the limited storage capacity in both Burton in Edgewood, these water systems do not provide adequate capacity for fire protection services (RDCK, 2018). In 2000, the Fire Underwriters Survey deemed the Fauquier water system as sufficient to support fire protection services - with both adequate storage and hydrant spacing in the area (RDCK, 2018).

Additional water storage throughout the AOI includes 4 buried water tanks (roughly 1,000 gal each) in Arrow Park, strategically located in areas with limited water access (1 in West Arrow Park, and 3 in East Arrow Park). There are plans to install 4 additional water tanks in Arrow Park in 2018. Bayview's Dog Creek water system has a new tank with a fire bypass valve - 20,000 gallons of water is stored in the

Dog Creek system. Some residents throughout the AOI also have buried water tanks on their properties.

Most of the communities in the AOI are adjacent to the Arrow Lakes as well as numerous streams and natural water sources which can be used the event of a wildfire. The Nakusp Fire Department has two identified fill-up locations on the Brouse Loop and is capable of drawing water from the Arrow Lakes, pools, and ponds.

6.1.3 Access and Evacuation

Access and egress routes throughout the AOI are a concern, with many communities limited to Highway 6, or 23 for evacuation purposes. The 2008 CWPP and Area Assessments identified areas with limited access for first responders and evacuation. Areas with only one road access create a challenge for emergency response and evacuation, made worse by smoke and poor visibility. Depending on the location of a fire, access and egress may be limited to one direction along major highways and roads.

Access constraints and potential bottlenecks in the AOI include:

- Ferry crossings: between Arrow Park (east and west), Needles and Fauquier, and north of the AOI between Shelter Bay and Galena Bay.
- Nakusp Hot Springs: Hot Springs Road provides the only road access in and out of the high-use recreation area. In May 2017 a road washout forced the evacuation of the hot springs. Although the evacuation was successful, a wildfire along Hot Springs road may cut-off access between the hot springs and Highway 23.
- Limited access and dead end roads throughout the Nakusp area and sub divisions (Glenbank, Alexander Road, and Crescent Bay).
- Inonoaklin Valley Road, connecting Edgewood to Highway 6. A wildfire north of Edgewood could cut-off Inonoaklin Valley Road and limit egress to Forest Service roads.

The RDCK plans to develop a detailed evacuation plan for the communities of Area K and Nakusp in 2018. An interface fire is a stressful, chaotic, and dynamic situation in which quick decisions can have dire consequences. Having a predetermined - yet adaptable - evacuation plan can help ensure that evacuations are effective and efficient. As the RDCK works to develop an evacuation plan, consideration should be given to the following:

- Maps of possible evacuation routes, safety zones, marshaling points, and Emergency Support Services Reception Centers
- Agreements and contact information with local transportation (busses and ferries)
- A communications plan to be implemented in the event of an evacuation
- The location of current and proposed trail systems and high-use recreational areas (Nakusp and Arrow Lakes Trails Master Plan)

The access constraints mentioned in this CWPP should also be considered and possible solutions explored including:

- Connecting dead-end roads and ensuring new developments consider emergency access and evacuation routes
- Communicating access constraints to homeowners and the implications on emergency response
- Designating and communicating pre-determined primary and secondary evacuation routes
- Exploring opportunities to coordinate with BC Hydro, Ministry of Transportation and Infrastructure to create/maintain fuel breaks adjacent to roads, highways, and ferry terminals

Recommendation 14: Develop a detailed evacuation plan for Nakusp and communities of Area K *(currently underway).* Explore opportunities to address emergency access and evacuation constraints throughout the AOI.

6.1.4. Training

The RDCK Emergency Response and Recovery Plan outlines a policy for coordination between the BC Wildfire Service, the local fire department and the RDCK Emergency Operations Centre (EOC) in the event of an interface fire. During an interface fire, a unified command structure (under the ICS) is adopted in which representatives from multiple agencies share the lead role as the "Incident Commander" – typically this includes the local fire department and the BC Wildfire Service. The Nakusp Fire Department maintains a close working relationship with the BCWS and RDCK through Zone 4 (Kootenays) Fire Chief and Central Kootenay Fire Chief Association meetings. Crews also conduct cross-training with each other when possible and both the Nakusp Fire Department and the BCWS crews receive ICS training.

When working under a unified command structure, clear lines of communication are essential to facilitate efficient coordination of resources and ensure first responder safety. During the 2016 Horse River Fire in Fort McMurray, Ministry fire crews and municipal fire departments were operating on different radio frequencies. "At critical times when municipal and wildland firefighters were not physically working together on the ground, they could not directly communicate by radio to identify priorities or support each other" (MNP, 2017). Although both the structural and wildland fire crews were trained to use the ICS, a unified command structure was not established in a quick or efficient manner (MNP, 2017). In order to prevent a similar situation, the Nakusp Fire Department and the BCWS should continue to maintain their close working relationship. Annual cross-training should include recurrency of the ICS system, communication protocols and maintenance of shared radio frequencies between the two agencies. Incorporating the non-recognized volunteer fire departments

into training sessions –when possible- would also help increase the local capacity of the Area K communities to respond to an interface fire.

Past wildfires, including local interface fires and recent catastrophic wildfires throughout the province, provide learning opportunities for both municipal and wildland crews. The 2016 Review of the Horse River Fire and the upcoming provincial review of the 2017 wildfire season in BC are valuable resources that evaluate fire response efforts and identify areas for improvement. These documents should be reviewed and discussed in order identify training opportunities and prevent similar outcomes.

Recommendation 15: Continue cross-training between the BCWS and Nakusp Fire Department. Explore opportunities for additional training including: annual mock fire exercises, advanced wildfire suppression/fire operations in the WUI (S-215), S-115 (structure and site preparation training), ICS, communications, and after action reviews of past interface fires. Explore opportunities to include Burton, Edgewood, and Fauquier fire departments into training events.

6.2 Structure Protection

Structure Protection Units (SPUs) are an important resource during an interface fire. SPUs contain equipment (sprinklers and pumps) to increase humidity, wet roofs and areas surrounding structures in order to reduce potential damage from sparks, embers and approaching wildfires. There are several SPUs available to the communities of Nakusp and Area K in the event of an interface fire. The Nakusp Volunteer Fire Department has one Type 3 SPU capable of defending roughly 12 structures. Currently the RDCK maintains three regional SPUs which can be staffed by RDCK firefighters and a Structure Protection Specialist. The RDCK has three Type 2 unit (each capable of defending 20-30 structures). The UBCM along with the BCWS and the Office of the Fire Commissioner (OFC) operate a Structural Protection Program (SPP) and can dispatch SPUs throughout the province within 12 hours.

Throughout the AOI, homeowners and community groups may be interested in purchasing or assembling their own personal sprinkler kits if provided with guidance or incentives. This initiative could be incorporated into a FireSmart program and may help increase local capacity to defend against an interface fire.

Recommendation 16: Maintain SPUs and explore opportunities to assist homeowners and community groups to develop their own sprinkler kits.

6.3 Summary of Recommendations

Table 20: Summary of Wildfire Response and Resources Recommendations (Section 6)

Recommendation	Responsibility/Funding Source	Next Steps
Incorporate volunteer firefighter recruitment into FireSmart education and outreach initiatives. Consider mutual aid agreements with nearby Fire Departments in order to address challenges associated with limited volunteer availability.	Nakusp, Burton, Edgewood and Fauquier Volunteer Fire Departments; Potential UBCM FireSmart funding	Develop a recruitment information hand-out for distribution with FireSmart initiatives
Explore funding opportunities for community fire caddies and water trucks where there are gaps in fire response coverage. Consider providing S-100 training to members of the public at a reduced rate or free of charge.	RDCK, Village of Nakusp, Nakusp, Burton, Edgewood and Fauquier Volunteer Fire Departments	Explore funding opportunities and partner organizations to deliver training
Increase public awareness of first responder emergency contact information: BCWS (1-800-663-5555 or *5555 on cell), Nakusp Fire Department (9-11), Burton Volunteer Fire Department (250-265-4348), Edgewood Volunteer Fire Department (250-269-0023), Fauquier Volunteer Fire Brigade (250-269-7650).	RDCK, Village of Nakusp, Nakusp, Burton, Edgewood and Fauquier Volunteer Fire Departments	Explore options including a fridge magnet (Burton), signage, incorporating contact info into FireSmart program
Develop a detailed evacuation plan for Nakusp and communities of Area K. Explore opportunities to address emergency access and evacuation constraints throughout the AOI.	RDCK, Village of Nakusp, Nakusp Fire Department; UBCM Funding	Currently underway
Continue cross-training between the BCWS and Nakusp Fire Department. Explore opportunities for additional training including: annual mock fire exercises, advanced wildfire suppression/fire operations in the WUI (S-215), structure and site preparation training (S-115), ICS, communications, and after action reviews of past interface fires. Explore opportunities to include Burton, Edgewood, and Fauquier fire departments into training events.	Nakusp Fire Department, BCWS, and Burton, Edgewood, and Fauquier Volunteer Fire Departments	Local fire departments to discuss
Maintain SPUs and explore opportunities to assist homeowners and community groups to develop sprinkler kits.	RDCK, Village of Nakusp, Nakusp, Burton, Edgewood and Fauquier Volunteer Fire Departments	Explore incorporating into existing FireSmart program

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Appendix 1 – Maps

The following large format maps are attached separately:
Map 1 – Area of Interest
Map 2 – Values at Risk
Map 3 – Fire Regime, Ecology and Climate change
Map 4a – PSTA Threat Rating
Map 4b – PSTA Spotting Impact
Map 4c – PSTA Head Fire Intensity
Map 4d – Historical Fire Density
Map 5a – Fire History Lightening Caused
Map 5b – Fire History Human Caused
Map 6 – Fuel Type
Map 7 – Local Fire Risk
Map 8 – Fuel Treatment

Appendix 2 – Treatment Area Summaries

Table of Contents

BAYVIEW

Overview

The application of multiple fuel treatments could significantly reduce the wildfire threat from the south to the Bayview Estates residential area. Targeting of Units 18 and 19 would flank Bayview to the east and south with operational fuel treatments.

Treatment potential of the north end of the area surrounding Bayview (Units 16 and 17) has not been ground truthed but should be explored.

Treatment within the Dog and Baerg Creek watersheds will be difficult due to hindered access caused by a combination of steep and sensitive terrain.

Upper Arrow Lake borders Bayview to the west.

Unit 16

Field verification not conducted on this area
Area. 8.9 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: No funding related treatments required for at least 10 years.
- Usefulness of Treatment: Moderate

Priority for Treatment: Low

Description of Proposed Treatment

This NACFOR tenured block west of Bayview Estates and Highway 6 was recently harvested. Focus should be on the incorporation of appropriate fire resistant species into the regeneration plan and subsequent monitoring to determine if and when thinning treatments would be appropriate.

Unit 17

Field verification not conducted on this area
Area. 17.5 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Low
- Economic Viability: Low
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

Located between Dog and Baerg Creeks and **partially within the boundaries of both community watersheds**, this NACFOR tenured area will be extremely **difficult to treat**.

Commercial harvesting would require road access across either Dog or Baerg Creek. Manual treatment may be more viable but would still require at least temporary four-wheeler access across one of the two streams. **Partial Retention VQO's** will also need to be addressed. A dense, overgrown stand structure in the early stages of stem exclusion is anticipated within the potential treatment area. Proper treatment of this area will create a buffer between Bayview Estates and the continuously timbered area above the highway.

Unit 18

Represented by Plot 18.
Area. 34.0 ha
Field Fuel Assessment Rating: 61 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Potentially profitable
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

This NACFOR and Interfor tenured area west of Bayview Estates and Highway 6 is targeted mainly because of the high amount of **dead and susceptible Douglas-fir** within the unit. The area has seen repeated attacks by Douglas-fir **bark beetle** in recent years and with the beetle's impact expected to increase significantly in coming years, high amounts of future mortality can be anticipated.

Commercial harvesting is the only realistic treatment on this large, continuously steep area. Nearly the entire area can be accessed for harvest with the construction of a single **in-block spur road** to augment existing **Baerg Road**. The harvest system would be dominated by **uphill cable logging**.

Harvesting plans likely will be highly scrutinized by Bayview residents. Some form of **partial cutting** will be required in order to meet **Partial Retention Visual Quality Objectives**. Potentially profitable harvesting is still possible even in a relatively expensive partial cut scenario, particularly if Douglas-fir is targeted for harvest prior to losing its value to bark beetle attack.

Safety concerns will also be paramount as steep slopes from the targeted harvest area continue almost right to Highway 6.

Unit 19

Represented by Plots 13, 14, 15.
Area. 30.2 ha
Field Fuel Assessment Rating: 61-67 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: High
- Economic Viability: None. Reliant on funding.

- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

This area bordering the south edge of Bayview Estates is all within **MacDonald Creek Provincial Park. Douglas-fir bark beetle** attack is not nearly as evident as on the hillside to the east (see Unit 18) but Fd in the stand will be highly susceptible to **future attack**. The hazard is further increased by pockets of **recent blowdown** within the area.

Being located within a provincial park will almost certainly limit any operational fuel management to **manual treatments** focused solely on **ground and ladder fuel removal**.

BURTON

Overview

The objective of any future operational fuel treatments for the community of Burton should be to provide a buffer between the community's approximate external boundaries and the nearly continuous band of timber that surrounds its terrestrial edges. Operational treatments applied in 2009 and 2018 will succeed in addressing almost all of the publicly owned parcels within the community itself. While these treatments have been helpful both in terms of reducing the wildfire threat to the community and improving public education on the subject of interface fire, the treatments proposed below will do much more to address the wildfire threat from a large-scale, strategic perspective.

Potential treatments within the roughly proposed continuous treatment area surrounding the community are planned within the following general areas:

- **Ruby Road** (north of Burton town site). The dry, south-facing slopes on this hillside leave Burton highly vulnerable to any large crown fire originating north or east of the community. The area is extremely steep and rocky in sections, making any form of operational treatment challenging. However, it is believed that properly planned commercial harvesting treatments on both municipally owned and crown tenured forests within this area can be economically self-sustaining while also significantly mitigating the interface fire threat. Fully continuous treatment is unlikely to be viable because of the combination of private land and very steep, rocky, commercially unproductive ground that will be prohibitively expensive to treat.
- **Caribou Creek South Face**. This area borders threatened interface properties southeast of the town site near the east edge of the Burton interface. The proposed treatment units stretch from just south of Caribou Creek to the junction of McCormick Road and Woden Road. Multiple harvest activities on BC Timber Sales and Woodlot 405 crown tenures between 1999 and 2012 have already defined a semi-continuous treatment band within this area. Therefore, the majority of proposed treatments would focus on spacing and pruning treatments within these existing units. Treatments would be designed to lower both horizontal and vertical fuel continuity and to optimize species selection for the most fire resistant species.
- **Burton Creek and Woden Creek areas**. The timbered interface within this zone features multiple ownership and timber harvesting tenure. Crown owned forest tenure is held by Woodlot 405 and BC Timber Sales. Similar to the strategy outlined above for Caribou Creek South Face, many of the proposed treatments will focus on

spacing and pruning treatments within openings created by prior harvesting, in this case dating back as far as 1987. However, there are also significant areas of continuous timber within Woodlot 405 and on another Provincial Crown piece. Treatments within this area will likely feature a combination of manual and mechanical treatments.

Planning Unit 24 (Ruby Road)
Represented by Plot 26 (outside proposed treatment area).
Area: 23.5 ha
Field Fuel Assessment Rating: 57 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: Low to Moderate
- Operational Viability: Moderate
- Economic Viability: Break-even or better
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate

Description of Proposed Treatment
This entire south facing, Douglas-fir dominated slope is highly **susceptible to Douglas-fir bark beetle attack**; barring harvesting, significant **future mortality** is anticipated. The proposed treatment area is split between **municipal ownership** of the northern half and **Stella Jones** harvesting rights on the crown owned southern half. Planning will require **substantial and meaningful communication** with and between the Burton community and Stella Jones.

Commercial harvesting is likely the only viable treatment on this area. **Partial Retention VQO's and downslope safety concerns** will restrict the types of potential harvest and silviculture systems that can be employed. Construction of an **in-block, adverse spur** off Ruby Road will likely facilitate conventional harvesting within much of the unit. However, cable harvesting will be necessary if the entire polygon is to be treated. Ideally, treatment would extend as far as the eastern edge of the BC Hydro transmission corridor.

Adequate regeneration of the Stella Jones portion of the unit will be necessary. However, sufficient retention will leave the stand **partially stocked** and likely allow the licensee to rely on **natural regeneration**. Stem retention will likely focus on fire resistant species such as **western larch** and **ponderosa pine**.

Planning Unit 25 (Ruby Road)
Represented by Plot 26 (outside proposed treatment area).
Area: 10.3 ha
Field Fuel Assessment Rating: 57 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: Low to Moderate
- Operational Viability: Moderate
- Economic Viability: Potentially profitable
- Usefulness of Treatment: Moderate-High

- Priority for Treatment: Moderate-High

Description of Proposed Treatment

Similar to Unit 24, this south facing, Douglas-fir dominated slope is highly **susceptible to Douglas-fir beetle attack**; barring harvesting, significant **future mortality** is anticipated. Timber harvesting rights on this crown owned piece are held by Stella Jones. There will be significant community interest in any planned activities in this area and **public buy-in** will be essential prior to finalization of any treatment plans.

Commercial harvesting is likely the most viable treatment on this area. **Partial Retention VQO's and downslope safety concerns** will restrict the types of potential harvest and silviculture systems that can be employed. Construction of an **in-block, adverse spur** off Ruby Road will likely facilitate conventional harvesting of much, if not all, of the unit. Portions that do not prove viable from a harvesting perspective should be examined for the potential of non-commercial, manual treatment.

Sufficient retention during harvesting will leave the stand **partially stocked** and likely allow the licensee to rely on **natural regeneration**. Stem retention will likely focus on fire resistant species such as **western larch** and **ponderosa pine**.

<u>Planning Unit 26 (South Caribou)</u>

Field verification not conducted on this area

Area: 23.5 ha

Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Low-Moderate
- Priority for Treatment: Low

Description of Proposed Treatment

BCTS holds forest management rights on this 2012 harvested piece. The **current wildfire threat** within the recently harvested block is **low**. However, this threat will increase as the stand begins to fill in both vertically and horizontally. It is anticipated that the **threat of both ignition and spread within the unit will increase** significantly by the time it is **15 to 20 years old**. The viability of potential **spacing and pruning** treatments around that time period should be explored. Prioritized retention of **western larch** will be favoured from the perspective of minimizing the threat of interface fire. Western larch's resistance to Armillaria is also expected to increase at this point in its rotation, making it a good target species for retention from a silvicultural perspective as well.

<u>Planning Unit 27 (Watson Road)</u>

Represented by Plot 31

Area: 16.1 ha

Field Fuel Assessment Rating: 59 Pts = Moderate

Suitability for Operational Treatment

- Planning Viability: Moderate-High
- Operational Viability: High
- Economic Viability: Profitable
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

BCTS holds the cutting rights on this crown owned unit, located off the end of Watts Road and adjacent to McCormick Farm.

Access to and **harvesting** on the piece would be relatively **easy** from an operational perspective. Manual treatment could also be an option.

The **Caribou Creek domestic and community watershed** boundaries are split through the middle of this piece. The area does not feature any notable watercourses but **domestic waterlines** leading to one or more residences may transect the property.

As is the case with the entire Caribou Creek South Face, the piece is located within a Partial Retention VQO.

Planning Unit 28 (Burton South Face)

Field verification not conducted on this area
Area: 46.4 ha (includes internal Wildlife Tree Patches)
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: Low - Moderate
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Low-Moderate
- Priority for Treatment: Low

Description of Proposed Treatment

BCTS holds forest management rights on this piece harvested in 2010. The **current wildfire threat** within this recently harvested block is **low**. However, this threat will increase as the stand begins to fill in both vertically and horizontally. It is anticipated that the **threat of both ignition and spread within the unit will increase** significantly by the time it is **15 to 20 years old**. The viability of potential **spacing and pruning** treatments around that time period should be explored. Prioritized retention of **western larch** will be favoured from the perspective of minimizing the threat of interface fire. Western larch's resistance to Armillaria is also expected to increase at this point in its rotation, making it a good target species for retention from a silvicultural perspective as well.

Planning Unit 29 (Burton South Face)

Field verification not conducted on this area
Area: 11.0 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate - High
- Priority for Treatment: Moderate

Description of Proposed Treatment
Forest management rights are held by WL 405 on this 1999 harvested block. Now 18 years old, the **wildfire threat** posed by the regeneration in this block is increasing. The viability of potential **spacing and pruning** treatments should be assessed.

Planning Unit 30 (Woodlot 405 McCormick Road)
Field verification not conducted on this area
Area: 12.4 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment
- Planning Viability**:** High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Near-Term Treatment **(Contribution to Wildfire Threat Reduction)**: Low
- Priority for Treatment: Low

Description of Proposed Treatment
Harvesting and forest management rights and responsibilities are held by **Woodlot 405** on this block harvested in 2007. The south edge of the proposed treatment area abuts the edge of the 2017 CWPP Area of Interest.

Now 10 years old, the **wildfire threat** posed by the regeneration in this block will soon increase to a point where **spacing and pruning** treatments should be considered.

Planning Unit 31 (Woodlot 405 Woden Creek)
Represented by Plot 27 (outside of the proposed planning unit)
Area: 9.4 ha
Field Fuel Assessment Rating: 67 = Moderate

Suitability for Operational Treatment
- Planning Viability: Moderate - High
- Operational Viability: High
- Economic Viability: Profitable
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment
This unit within Woodlot 405 is bordered by McCormick Road to the east, private land to the north, **Woden Creek** to the west and a second significant stream to the south. Both streams are **fish bearing** and are located within a **domestic watershed** area. Substantial **riparian**

buffers will be required for any planned harvesting treatments. **No prior harvesting** appears to have taken place. **Douglas-fir** is a logical species to target for **removal**, given the expected increase in **Douglas-fir bark beetle** attack.

Planning Unit 32 (Woodlot 405 Woden & Snow Creeks)

Represented by Plot 27 (immediately east of the proposed planning unit)

Area: 92.5 ha

Field Fuel Assessment Rating: 67 = Moderate

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Profitable
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate-High

Description of Proposed Treatment

This unit is within crown-owned Woodlot 405.

Approximately **25 % percent** of the area included within the unit was **harvested between 1987 and 2009**. The **fuel threat** within the older logged areas is expected to be quite high and where appropriate, **spacing and pruning treatments** should be considered. The significant threat of mortality to Armillaria should be considered before any such treatments are finalized.

Sandwiched between **Woden and Snow Creeks, domestic watershed and riparian issues** will dominate any planned harvesting treatments within this unit. Both streams are **fish bearing** and a significant riparian buffer has been assumed in mapping the potential unit.

Despite being located between two significant streams, the proximity of this continuously wooded area should not be underestimated either in terms of the **threat of ignition** or the **potential for spread** from any wildfire originating south of the mapped area of interest. One strategy may be to target removal of Douglas-fir within these mixed stands in order to pre-empt high levels of Douglas-fir bark beetle caused mortality.

Planning Unit 33 (Silver Queen Road)

Field verification not conducted on this area

Area: 6.8 ha

Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: Moderate - High
- Operational Viability: High
- Economic Viability: Profitable
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate-High

Description of Proposed Treatment

Harvested by BCTS in 2011, this crown piece will be suitable for thinning assessment in approximately 5 to 10 years when stand density is expected to be quite high. Unlike any

other potential treatment units identified within the Burton WUI in this document, the block is located on the edge of a residential road.

Planning Unit 34 (Burton Crk Road)
Represented by Plots 29 and 30
Area: 31.1ha
Field Fuel Assessment Rating: Plot 29 = 72 pts = High; Plot 30 = 51 pts = Mod

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Funding reliant unless commercial harvest included
- Usefulness of Near-Term Treatment: Mod-High
- Priority for Treatment: Mod-High

The proposed fuel treatment area is located on Crown Provincial land. It is bisected by Burton Creek Road and borders private land to the west, north and east. The Interfor and BCTS controlled areas to the south feature continuous forest fuels.

The logical treatment strategy to employ on this area will be creation of a **shaded fuel break**. This will involve **ground and ladder fuel reduction**, combined with **snag removal**. Moderate **crown separation** may also be appropriate, particularly given high Douglas-fir volumes and the increasing threat of **Douglas-fir bark beetle attack**. The prescription could specify **mechanical or manual treatments or a combination of both**.

EAST ARROW PARK

Overview

There is a good opportunity to provide increased, long-term protection for the entire area within the AOI immediately east of the community of East Arrow Park. However, continuous treatment would be limited to this eastern flank of East Arrow Park. Unsuitability of continuous treatment within most of the remainder of the East Arrow Park AOI is due to a combination of already existing fuel breaks (i.e.; Highway 6 and the transmission corridor to the south and Upper Arrow Lake to the north), logistically unviable treatment areas (i.e.; within the continuously timbered area south of the highway and transmission line) and private land (i.e.; the majority of the East Arrow Park community).

Benefits of treating Unit 21 (see below) will be limited to the reduced hazard within the small proposed treatment area. It will be difficult to link the proposed treatment to a larger scale treatment plan.

Unit 20
Represented by Plot 16.
Area. 47.4 ha
Field Fuel Assessment Rating: 61 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Funding reliant unless commercial harvest included
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate

Description of Proposed Treatment

NACFOR tenured area north of the Highway 6 and east of East Arrow Park community and within the identified CWPP AOI would all be included in the potential treatment area.

Stocking plans for **recently harvested NACFOR blocks** should be revisited prior to planting with an eye to maximizing regeneration of appropriate fire resistant species. Beyond that, these blocks will not require additional treatment until regenerated stands are 15 – 20 years old and high stand density and crown closure have created a continuous fuel layer. The blocks should be assessed for **juvenile spacing and pruning** treatment viability at the appropriate time. High site productivity will likely justify investment from a silvicultural perspective. A 2009 spacing and pruning treatment on a NACFOR block in this area can be used as a guide to help estimate the success of future, similar treatments.

Leave strips should be **individually assessed** for viability of operational treatment. Areas similar to the one represented by Plot 16 are good candidates for **hand, mechanical or a combination type treatment**.

<u>Unit 21</u>

Represented by Plot 17.
Area. 7.2 ha
Field Fuel Assessment Rating: **76 Points = High**

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Usefulness of Treatment: Moderate
- Priority for Treatment: High

Description of Proposed Treatment

This small Crown Provincial lot is located on the edge of the town site on the lower side of the highway. All of the following factors make it a good candidate area for operational treatment:

a) relative ease of treatment using either hand or mechanical methods;
b) proximity to residences; and
c) structural status as a high density stand well advanced into the stem exclusion stage with most western larch already dead and some western hemlock blowdown already present.

EDGEWOOD

Overview

The reduction of Edgewood's wildland interface threat presents a number of significant challenges. The primary challenge faced by managers is the sheer scope of the interface perimeter. Edgewood's small population is spread out over a large area, making it difficult to focus fuel reduction efforts on key locations. A second challenge is that the interface surrounds Edgewood on all sides. Unlike virtually all other communities within the NACFOR administered CWPP AOI, substantial tracts of forest land lie between Arrow Lake and the greater part of the community. Edgewood's relatively dry ecosystem presents a third challenge, making the threat of damaging wildfires higher than for many other parts of the AOI. Forest health concerns emanating partially from the increasingly hot, dry climate create a fourth challenge. The twin threats posed by the Douglas-fir bark beetle and mountain pine beetle make the Douglas-fir and lodgepole pine dominated stands that characterize much of the Edgewood interface priority timber types to be addressed in fuel mitigation efforts.

Individual treatment polygons are focused mainly within forest company tenured areas as many of the remaining publicly owned parcels within the community itself have already been treated. Only a single treatment is proposed within this plan that is not within forestry tenured Crown land. The vast majority of treatment efforts within the Edgewood Area of Interest will focus on larger scale treatments that have the potential to meaningfully reduce the threat of wildfire ignition and spread. The treatment areas described below include a combination of already harvested areas potentially suitable for thinning and blocks currently planned for harvest by BC Timber Sales.

Where mature timber is proposed for fuel mitigation treatment, commercial timber harvesting provides the most realistic economic and logistical means to address the large scale wildfire threat within the identified AOI. Currently proposed BCTS harvest areas are in the early planning stages; additional field reconnaissance, forest engineering and silviculture systems analysis will be required prior to the finalization of these areas; fuel mitigation also will now play a significant role in any proposed treatments within those areas. Consultation with and between the various timber tenure holders and the community will also play a role in treatment plan finalization. It is also worth noting that treatment priority is raised by the reality of warmer, dryer summers and by the increasing threat of bark beetle attack.

Planning Unit 46 (Needles). 159.0 ha.

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: New harvesting self-sustaining. Thinning dependent on funding or licensee investment.
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate-High

64.2 ha of this unit have already been harvested or set aside as wildlife reserve by BC Timber Sales. Patch cuts were harvested in 2008, making them good candidates to now be assessed for potential thinning treatments.

Remaining area within the identified perimeter is currently being reviewed by BCTS for potential harvesting. The original patch cuts were targeted largely on the basis of Douglas-fir bark beetle salvage; susceptibility of remaining timber to attack is high. Plans with respect

to potential silviculture systems, including leave tree prescriptions and regeneration strategies, should consider fuel mitigation as one of their objectives.

Planning Unit 47 (Needles). 66.9 ha.

Suitability for Operational Treatment

- Planning Viability: Moderate - High
- Operational Viability: Moderate - High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate - High

Lying immediately east of Unit 46, Unit 47 is also currently being assessed for harvest by BC Timber Sales. The older Douglas-fir leading types that dominate this unit are prime candidates for bark beetle attack with some current mortality already present. Unit costs for access will probably be higher than average because of the high rock content but the overall length of new road to be constructed will be quite low. As with Unit 46, plans with respect to potential silviculture systems should consider fuel mitigation as one of their objectives.

Planning Unit 48 (Whatshan South Face). 66.9 ha.

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: Moderate - High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate - High
- Priority for Treatment: Moderate - High

Located on either side of a dry, rocky ridge, BC Timber Sales is currently assessing this area for harvest. Current Douglas-fir bark beetle attack is expected to be present in the primarily Douglas-fir leading types that dominate this unit. Conventional harvesting will keep costs relatively low. Plans with respect to potential silviculture systems should consider fuel mitigation as one of their objectives. Maximum block size restrictions will likely result in partial cut harvesting or a reduced block perimeter.

Planning Unit 49 (Whatshan North Face). 103.3 ha.
Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate - High
- Priority for Treatment: Moderate - High

Located immediately north of Unit 48, BC Timber Sales is also currently assessing this area for harvest. Current Douglas-fir bark beetle attack is expected to be present in the primarily Douglas-fir leading types that dominate this unit. Conventional harvesting and relatively straightforward access will keep costs relatively low. Plans with respect to potential silviculture systems should consider fuel mitigation as one of their objectives. Maximum

block size restrictions will most likely result in partial cut harvesting or a reduced block perimeter.

Planning Units 50 (29.4 ha), 51 (10.4 ha) and 52 (11.8 ha) (Barnes Creek Substation)
Represented by Plots 23 and 25 (Plots located within mature timber adjacent to the identified units)
Field Fuel Assessment Rating: Plot 23, 42 Points = Low; Plot 25, 63 Points = Moderate

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Low - Moderate
- Priority for Treatment: Low

Three harvested BCTS blocks are targeted within this area for potential spacing and thinning treatment. Unit 51 was harvested in 2009 and is nearing the point where an assessment would be appropriate. Units 50 and 52, both harvested in 2014, will not be ready for a spacing assessment for approximately another decade.

An important piece of critical infrastructure, the Barnes Creek Hydro Substation, is located adjacent to Unit 51.

Planning Unit 53 (Snowshoe Lake) 14.8 ha.

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Identified as a single unit, Planning Unit 53 features a majority of its area being harvested in 2009, with the remainder harvested in 1993. Blocks harvested in 1993 are already extremely dense and should be assessed for viability of spacing treatment in order to reduce fuel threat. The more recently harvested area is not nearly as dense but is nearing a point where it could be assessed for treatment as well.

Planning Unit 54 (Snowshoe Lake). 59.9 ha.

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Similar to Planning Unit 53, this unit features a variety of blocks harvested at different junctures: in 1991, 1993 and 2000. The entire area features high density regeneration that increases the threat of wildfire ignition and the risk of rapid spread in the event of wildfire occurrence. Thinning treatments could help to alleviate this risk.

Planning Unit 55 (Snowshoe Lake) 47.4 ha.
Represented by Plot 24
Field Fuel Assessment Rating: 61 Points = Moderate

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Snowshoe Lake is some distance from this BCTS identified planning unit but much of the unit requires the same access used to reach the lake and hence, has been referenced using the same geographic location name.

Fire risk is deemed to be lower in this planned block than the already discussed Planning Units 48 and 49. Many of the stands possess a considerable combined component of western larch and broadleaf species. Slopes are also east facing and not nearly as dry as the rockier ridgetop, south-facing and west-facing units.

Planning Unit 56 (Snowshoe Lake) 73.9 ha.

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate - High
- Priority for Treatment: Moderate - High

This unit features a combination of east and west facing slopes. It is part of a block targeted for possible harvest by BCTS. The stand is Douglas-fir leading though it features a younger timber type and is at slightly lower risk of Douglas-fir bark beetle attack than some of the others planned for near term harvesting in the area. Relatively economical harvesting and road construction should allow for considerable flexibility in choosing a silviculture system that will help mitigate both the present and future threat of wildfire.

Planning Unit 57 (Snowshoe Lake) 121.4 ha.

- Planning Viability: High
- Operational Viability: Moderate
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate - High
- Priority for Treatment: Moderate - High

Parts of this 119 ha unit identified by BCTS for potential harvest appear to be inoperable or presently unsuitable for harvest. Therefore, the size of the unit is likely to shrink significantly prior to being finalized for harvest. Cable harvesting and expensive road construction may combine to limit silviculture systems options to some extent. Lodgepole pine leading types have likely already suffered significant mortality and pose the highest present fuel threat, although Douglas-fir leading stands will be susceptible to bark beetle attack as well.

Planning Unit 58 (North Inonoaklin). 22.3 ha

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Low-Moderate
- Priority for Treatment: Low

This recently logged BCTS block was recently regenerated and will likely not be ready for assessment for potential thinning treatment for approximately 10 years.

Planning Unit 59 (North Inonoaklin). 16.3 ha

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Low - Moderate
- Priority for Treatment: Low

These three recently harvested Tolko blocks parallel Highway 6 at the north end of the Edgewood Area of Interest. They have already been regenerated and will likely not be ready for assessment for potential thinning treatment for approximately 10 years.

Planning Unit 60 (Valley Creek). 11.0 ha.

- Planning Viability: Moderate-High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Low - Moderate
- Priority for Treatment: Moderate

Harvested by Tolko in 1997, the block has since been administratively split, with a part of the unit now located within Woodlot 2110, held by RJ Schunter. With the regeneration now being 20 years old, this lodgepole pine leading block should be assessed for potential thinning viability.

Planning Unit 61 (Yellow Creek). 52.1 ha.

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

This unit was logged by Tolko as part of three different blocks to address the mountain pine beetle epidemic between 1997 and 1999. Regeneration is likely very dense at this point and should be assessed for potential thinning viability.

Planning Unit 62 (Yellow Creek) 16.6 ha

- Planning Viability: Moderate

- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Part of Woodlot 2110, this recently logged block will likely not require assessment for potential spacing viability for approximately 10 years.

Planning Unit 63 (Bergsa Creek) 42.3 ha.

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Similar to Unit 60, this block harvested in 2011 has since been administratively split, with parts of the unit held by both Tolko and Woodlot 2110. The block will likely not require assessment for potential thinning treatments for approximately another 5 years.

Planning Unit 64 (Robinson Creek). 55.5 ha.

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Low-Moderate
- Priority for Treatment: Low

This unit was harvested by BCTS in 2012 and will be suitable for a thinning assessment in approximately 5 years.

Planning Unit 65 (McLean Creek) 63.2 ha.

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

This unit is targeted for potential harvest by BCTS. Typed primarily as larch leading, it does not pose as high a fuel threat as some of the other units identified for harvest in the northern half of the Edgewood AOI. However, the block is in close proximity to more residences than the identified blocks at the north end. Western larch will likely present an attractive option both as a leave tree and a regeneration species. Conventional harvesting and inexpensive road construction will increase licensee flexibility in the choice of silviculture systems. Maximum block size restrictions will most likely result in partial cut harvesting or a reduced block perimeter.

Planning Unit 66 (McLean Creek) 35.7 ha.

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate - High
- Priority for Treatment: Moderate - High

Located immediately south of Unit 65, this unit is also planned for potential harvest by BCTS. As with Unit 65, conventional harvesting and inexpensive road construction will increase licensee flexibility in the choice of silviculture systems. However, unlike Unit 65, it is primarily typed as lodgepole pine and Douglas-fir leading, creating the potential for two types of bark beetle attack and subsequent mortality.

Planning Unit 67(Eagle Creek) 50.8 ha.

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Identified as a single unit, Planning Unit 67 features approximately half of its area being harvested in 1983, with the remainder harvested in 2010. The area harvested in 1983 is already extremely dense and should be assessed as soon as possible for viability of spacing treatment in order to reduce fuel threat. The more recently harvested area is not nearly as dense but is nearing a point where it could be assessed for treatment as well.

Planning Unit 68 (Whatshan Face) 19.6 ha

- Planning Viability: Moderate
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Part of Woodlot 401, the unit was logged in 2004 and should be assessed for thinning viability.

Planning Unit 69 (Whatshan Face) 74.6 ha

- Planning Viability: Moderate
- Operational Viability: High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Also part of Woodlot 401, the north and south sections of this unit were logged in 1997, while the middle section was logged 10 years earlier in 1987. The entire area features dense regeneration and should be considered for spacing treatments to reduce the fuel threat.

Planning Unit 70 (Whatshan Settlement/Hwy 6) 2.9 ha

Represented by Plot 20
Field Fuel Assessment Rating: 63 Points = Moderate

- Planning Viability: Moderate - High
- Operational Viability: High
- Economic Viability: Unprofitable (funding reliant)
- Usefulness of Treatment: Moderate - High
- Priority for Treatment: Moderate - High

This series of small, adjacent Crown Provincial lots located adjacent to Highway 6 immediately south of Whatshan Settlement Road and across from the M.O.T.H. gravel pit combine to make a good candidate for a manual, shaded fuel break treatment. Although not particularly close to residences, its location along the highway corridor would provide a good showcase for this type of treatment. The treatment area is mostly flat and easily accessible.

FAUQUIER

Overview

Fauquier's interface lies southeast of the community, with Arrow Lakes bordering it to the north and east. The dry, Douglas-fir dominated stands that characterize much of the interface present an increasing wildfire threat that will be challenging to address. Douglas-fir bark beetle caused mortality is already evident on much of the landscape and can be expected to increase within the numerous highly susceptible stands. The continuous interface area comprises part of Tree Farm License 23 (TFL 23), on which Interfor Forest Products holds exclusive timber cutting and forest management rights.

Given the scope of the threat and the nature of forest tenure rights within the interface area, timber harvesting is the most logical and wide-sweeping means to address the wildfire threat. However, harvest plans will be complicated by a number of factors. Timber volumes and values are inconsistent across the landscape. Slopes are often steep and in some cases, timber is difficult to access. Perhaps most significantly, the entire area is encompassed by a series of community and domestic watersheds.

Individual treatment polygons are less specific than those identified within the Area of Interest for Nakusp, Bayview, Arrow Park or Burton. Detailed timber and engineering reconnaissance work will be required to determine viable road and block locations. Significant consultation with and between Interfor and the various watershed groups will also be necessary prior to the finalization of any harvest plans. However, this process should be started as soon as possible as the economic value of beetle damaged Douglas-fir will begin to drop not long after attack.

There are very few publicly owned parcels within the community itself. Primarily for this reason, only three internal treatments are proposed; however, two of these treatment areas are relatively large. The majority of treatment efforts for the Fauquier area will focus on

reducing the threat of wildfire spread from the continuously timbered areas within TFL 23 to the south and east.

Planning Units 36 (12.0 ha), 37 (17.0 ha) and 38 (5.6 ha) (Mosheimer Brook).

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: Moderate - High
- Economic Viability: Unprofitable (reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Logged in 1998, increasing stem density in these three blocks within the Interfor chart area pose an increasing fuel threat. Each block should be assessed for viability of a thinning / spacing treatment to address both fuel mitigation and silvicultural concerns. Armillaria root rot may pose too high a threat to one or more of the blocks to allow thinning treatments to be viable.

Planning Unit 39 (30.3 ha) (Heart Creek)

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: New harvest self-sustaining. Thinning treatments dependent on funding or licensee investment.
- Usefulness of Treatment: Low-Moderate
- Priority for Treatment: Low

Prior harvesting was completed within this unit in the Heart Creek watershed in 2004, following years of consultation with the watershed users. Access is largely in place but would need to be expanded. A brief reconnaissance of this area revealed significant timber mortality, mainly caused by mountain pine beetle on mature lodgepole pine stems. The dead pine stems would garner no more than pulp value. Douglas-fir bark beetle red attack was also noteworthy. The beetle's already significant presence can logically be expected to increase, particularly if immediate efforts are not made to address it.

Patch cuts harvested in 2004 should be assessed for viability of spacing and pruning treatments intended to reduce stand density.

Planning Unit 40 (Heart Creek / Fauquier Creek). 25.3 ha.

Suitability for Operational Treatment

- Planning Viability: Moderate - High
- Operational Viability: High
- Economic Viability: Self sustaining
- Usefulness of Treatment: High
- Priority for Treatment: High

This domestic watershed area lies between the Heart Creek Community Watershed and Fauquier Creek Domestic Watershed. The Douglas-fir leading stand has already been exposed to some Douglas-fir bark beetle attack and is considered highly susceptible to additional future attack. Commercial harvesting of this stand is suggested in order to capture anticipated mortality and reduce the corresponding fire threat associated with such mortality. Access to this unit will be relatively easy using existing access to the adjacent Unit 39. Harvesting costs are expected to be above average but not prohibitive.

Planning Unit 41 (Fauquier Creek / Delta Creek) 115.7 ha

Suitability for Operational Treatment

- Planning Viability: Moderate-High
- Operational Viability: Moderate
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate-High

No prior harvesting has been undertaken in this area. The targeted treatment area focuses primarily on Douglas-fir leading types considered highly susceptible to bark beetle attack. Some form of partial cut would be necessary in order for the entire area to be approved for commercial harvest.

Road access into this area will be expensive and will encroach on both the Fauquier Creek and Delta Creek domestic watershed boundaries. Slopes within the identified area range from 40 to 80 %, making cable logging the most likely harvest system to be used.

Planning Unit 42 (Payne Creek Watershed) 51.1 ha

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate-High

Similar to all the other units on this face, mature Douglas-fir is the leading timber type within this domestic watershed area. The area is mostly easily accessed from the end of Brydges Road to the south (see Planning Unit 43 below). As with Unit 41, the unit size would either need to be partial cut or reduced in size in order to meet legal requirements for commercial harvest.

Planning Unit 43 (Lower Lovesy) 30.0 ha

Suitability for Operational Treatment

- Planning Viability: Moderate - High
- Operational Viability: High
- Economic Viability: Dependent on aggressiveness of treatment
- Usefulness of Treatment: High
- Priority for Treatment: High

A series of adjacent, timbered crown lots and located north of the town site are good candidates for a shaded fuel break treatment. Most of the area is mapped as mature and Douglas-fir leading. These lots can possibly also be used to access timber within TFL 23 further upslope. Brydges Road is mapped as an approved right-of-way past its current construction point and as far as the start of the final, most northerly of the three Crown lots.

Planning Unit 44 (Lower Bridges Face). 20.6 ha

Suitability for Operational Treatment

- Planning Viability: Moderate - High
- Operational Viability: High
- Economic Viability: Dependent on aggressiveness of treatment
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate - High

There are two Crown Provincial pieces within this unit. Mature Douglas-fir is only a leading type within approximately one quarter of the unit. However, immature types in the lower half of the unit will likely also benefit from some form of treatment.
Road access into this lot is already evident from the both the south and the north. Access from the north is likely used to access a waterline leading to a property adjacent to the unit.

Planning Unit 45 (Starlight Road)

Represented by Plot 28
Area: 2.6 ha
Field Fuel Assessment Rating: Plot 1, 59 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Dependent on aggressiveness of treatment
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

This small crown lot would benefit from a shaded fuel break treatment. Its location could provide a good showcase area for treatment.

HALCYON HOT SPRINGS

Overview

The Halcyon Hot Springs treatment area features the commercial enterprise of the same name and approximately a dozen additional residences slightly further to the north.

Approximately half of the crown land within the Halcyon CWPP Area of Interest has already been logged. Much of this harvesting took place between 2012 and 2014 making any additional harvesting in this area unlikely in the near future.

Potential treatments should focus on evaluating the viability of harvested stands for spacing and pruning treatments. Such treatments would focus on reducing horizontal and vertical

fuel build-ups that pose an increased wildfire threat. Included in these assessments should be an examination of the viability of various mechanical mulching heads and equipment.

The areas below comprise continuous harvest polygons within the Halcyon Area of Interest. In the majority of cases, these polygons contain multiple blocks harvested in different passes, in some cases as much as 50 years apart.

Unit 14A

Represented by Plot 35
Area. 40.0 ha
Field Fuel Assessment Rating: 68 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Low (Reliant on funding or licensee investment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

Logged in 1979, this 38 year old stand already features a **relatively high fuel assessment rating**, nearly accumulating enough points to for the threat to be classified as high. Left untreated, this threat will continue to increase for a number of years.

The stand possesses sufficient height and density to make any **manual spacing** treatment extremely **slow and costly**. Also, without mulching, a **temporary increase in the fuel threat would result until cut stems were sufficiently decayed** to present little opportunity for ignition. The area could present a good opportunity for a **mechanical mulching trial**. The slopes near the top of the block approach 50 % but are closer to 30 to 35 % in the majority of it. The block could be **stratified** for treatment based partially on allowable slopes. Release of stems should be monitored.

Unit 14B

Field verification not conducted
Area. 64.0 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Low (Reliant on funding or licensee investment)
- Usefulness of Treatment: Low
- Priority for Treatment: Low

Description of Proposed Treatment

Approximately one third of the identified unit was logged in 2014 and 2015. The remainder was logged in 1979. Although not field verified, the older logged areas will present similar growth and stocking patterns and therefore also similarly high fuel threat ratings to those

described for Unit 14A. The unit is located on flatter terrain than Unit 14A, making it an even better candidate for a mechanical mulching trial.

The more recently harvested blocks will present low fuel assessment ratings for approximately ten more years but should be monitored for potential treatment around that time.

Unit 14C

Field verification not conducted
Area. 162.1 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Low (Reliant on funding or licensee investment)
- Usefulness of Treatment: Low
- Priority for Treatment: Low

Description of Proposed Treatment

A small portion of this unit was logged in 2012. The remainder was logged between 1965 and 1992. Older logged areas should be assessed for their viability for spacing and pruning treatments, with the same criteria as described for Units 14A and 14B.

The more recently harvested blocks will present low fuel assessment ratings for approximately ten more years but should be monitored for potential treatment around that time.

Unit 14D

Field verification not conducted
Area. 65.9 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Low (Reliant on funding or licensee investment)
- Usefulness of Treatment: Low
- Priority for Treatment: Low

Description of Proposed Treatment

Approximately one third of this unit was logged in 2014. The remainder was logged in 1992. These older logged areas should be assessed for spacing and pruning treatment viability, with the same criteria as described above for other potential treatment units within the Halcyon Area of Interest. Slopes average approximately 35 %, making mechanical treatment a possibility.

The more recently harvested blocks will present low fuel assessment ratings for approximately ten more years but should be monitored for potential treatment around that time.

Units 14E an 14F
Field verification not conducted
Area. 22.0 ha and 4.5 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Low (Reliant on funding or licensee investment)
- Usefulness of Treatment: Low
- Priority for Treatment: Low

Description of Proposed Treatment
Logged in 1984, these 33 year old stands lie directly north of a number of Halcyon residences on the same side of the highway. A fire spreading from the north would almost certainly need to overrun these stands prior to engulfing the Halcyon residences. Reduction of horizontal and vertical fuel continuity via spacing and pruning treatments in these stands could help to slow the fire's spread. The stands are noted as birch leading, which if true, will help to impede the spread. However, it is likely that the deciduous component is becoming suppressed in these 33 year old stands. Assessment would verify whether or not this is the case.

Terrain is relatively flat in both units, leaving open the possibility of mechanical mulching treatments.

NAKUSP HOT SPRINGS

Overview

Nakusp Hot Springs is an isolated entity completely surrounded by wildland interface. The threat to both the commercial complex and the property is considerable. The area also features only a single motorized escape route in the event of a wildfire. These factors should be considered in planning to reduce the wildfire threat to this location.

The Village of Nakusp owns a 100 hectare parcel of property surrounding the complex and campground. Public ownership will streamline the administrative process required to acquire funding to treat at least a portion of the property. Viable treatment is possible on most of the Village owned land on the north side of the Kuskanax River, the same side that the Hot Springs complex is located on. Access and terrain is much more difficult on the south side and planning treatments have not been included for this area.

Overstocked, largely immature forest is present immediately adjacent to the upper side of the Nakusp Hot Springs complex. Most other stands beyond this are old growth stands dominated by western hemlock. Two separate treatment strategies are outlined below for the two stand types.

Unit 15A
Represented by Plot 33

Area. 1.4 ha
Field Fuel Assessment Rating: 63 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Low (Reliant on external funding or investment from adjacent treatment)
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate

Description of Proposed Treatment

Hand treatment is appropriate for this small area surrounding the Hot Springs complex. The primary treatment objective is to **reduce the density of a small stand of immature timber above the complex**. **Other areas** within the proposed treatment area are **thinly stocked** and will be easy to treat; however, any **ground or ladder fuels** should be removed as campfires are routinely lit during the summer season.

<u>Unit 15B</u>

Field verification not conducted
Area. 5.2 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: Moderate
- Economic Viability: Low (Reliant on external funding or investment from adjacent treatment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

The proposed treatment is located at the far north end of the Village owned Hot Springs property. It is part of a clearcut harvested in 1972. **Dense overstocking** is expected to dominate the **45 year old stand** making a **thinning and pruning** treatment appropriate to reduce the threat of wildfire ignition and spread. The silvicultural benefits of applying the treatment are unknown and would be worth monitoring as very little research is available on release following treatments of stands this age in the BC Interior. As the stand is no longer part of a managed forest, funding for silvicultural treatment would not be available and would need to be accessed via other sources.

<u>Unit 15C</u>

Field verification not conducted
Area. 12.2 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High

- Operational Viability: Moderate – high
- Economic Viability: Low (Reliant on external funding or investment from adjacent treatment)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Commercial harvesting is the only potentially effective treatment in this western hemlock dominated old growth stand. **Existing roads** can be **upgraded** to access the block and facilitate harvesting although a short spur road will likely need to be constructed in order to reduce skid distances to more manageable levels.

The hemlock old growth will produce almost exclusively **pulp volume**. Therefore, depending on market conditions, the revenues from this may only be sufficient to **cover logging costs**.

The appropriate amount of stem removal should be carefully assessed. In order to achieve fuel treatment objectives, stand density would only need to be reduced to a level that provided a **sufficient** amount of **crown separation**. However, the risk of hemlock **blowdown following harvesting** is a real possibility that should be considered prior to the finalization of harvest plans.

The harvest area will largely be obscured from view from the Hot Springs pool and high traffic areas. However, the cut should be carefully planned to ensure that its **visual effects are minimal**.

There has been past discussion amongst Village of Nakusp officials regarding the potential **expansion of Hot Springs facilities onto the proposed harvest area**. This idea should be revisited with Village Council to determine if the possibility should be accounted for in harvest planning. Planning in terms of road access, landing locations and amount of stem removal could all potentially be affected.

NAKUSP

Part 1: Continuous External Fuel Treatment

Overview

Although it would require numerous treatments over a number of years and involve multiple owners and licensees, it is possible to provide a continuous fuel treatment around the terrestrial area surrounding Nakusp.

Potential treatments can be roughly grouped as follows:

- **North Nakusp**. Harvesting based fuel treatments to be applied by the Crown (ownership west of Highway 23) and Interfor (forest tenure holder east of Highway 23). The Coates farm property provides an existing fuel break that would comprise part of the continuous fire break area.
- **Glenbank**. Harvesting based treatments to be applied on Woodlot 403 and possibly on private property owned by Nakusp Greenscapes. Spacing and pruning treatment potential should also be assessed as regenerated stands in previously harvested blocks begin to become overgrown.

- **Upper Brouse**. Primarily shaded fuel break operational treatments to be applied across the entirety of NACFOR's Wensley Creek chart area and within remaining untreated Village of Nakusp owned property. Shaded fuel break treatments within the NACFOR area can be converted to harvest operations over time. Existing NACFOR cutblocks should be considered for spacing and pruning treatments at 15 to 20 years.
- **Box Lake**. The zone bordering Nakusp area residences between Box Lake and Upper Crescent Bay is considered the lowest priority for treatment within the planned continuous fuel treatment area. The number of potentially affected residences in this area is relatively low and north facing slopes reduce the fire hazard to some degree. The area also features steep ground that could only realistically be treated via harvest operations but where partial cut harvesting opportunities are limited for a combination of economic and silvicultural reasons. Interfor and NACFOR both have a significant tenure presence in this area while many of the lower lying areas are either part of a dedicated government recreation area or unallocated Crown land.
- **Crescent Bay**. Similar to Box Lake, forested area surrounding Crescent Bay is north facing and thus considered a lower priority for treatment. However, there are good opportunities to apply a combination of hand and mechanical treatments along the gentler, more accessible terrain immediately bordering residential areas. Interfor controls the forest tenure that would be in play for potential operational treatments in this area. At least one piece of unallocated government land also has potential for treatment.

Planning Unit 1 (North Nakusp)
Represented by Plots 1 and 2.
Area: 41.7 ha
Field Fuel Assessment Rating: Plot 1, 61 Points = Moderate & Plot 2, 75 Points = High

Suitability for Operational Treatment
- Planning Viability: High
- Operational Viability: High
- Economic Viability: Break-even or better
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate

Description of Proposed Treatment
No forest tenure is allocated on this piece of Crown Provincial owned land located mainly within Kootenay District Lot 863. The south end of the potential treatment area is an unofficial recreation area, locally known as the "Car Wash."

Previously harvested areas within this unit are mainly associated with the original location of Highway 23. As such, regeneration in **logged areas** was never managed, allowing it to become extremely **dense and overgrown** over the last fifty years. These areas pose the greatest wildfire threat but the fire threat to the community would be further diminished with an operational treatment to the entire unit.

A partially maintained **walking trail** through the southern half of the unit is evidence of some recreational use.

A **combination of hand and mechanical treatment** is likely to be most appropriate for this area. Most of the area is **highly operable for mechanized equipment** although some steeper portions and sections featuring significant amounts of large blast rock will require **stratification for hand treatment**. The dense pockets of 50 year old natural regeneration referred to above could provide excellent candidate areas for a **mulching trial**. Some degree of **crown separation** would be appropriate within the older immature Kootenay mix that dominates most of the area.

Planning Unit 2 (North Nakusp)

Represented by Plot 3.
Area: 55.3 ha
Field Fuel Assessment Rating: 65 Points = Moderate

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: Moderate to High
- Economic Viability: Self sustaining
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

The purpose of including this unit is to provide additional buffer against any large fire moving from the north towards Nakusp. The cleared Coates farm property to the south provides an existing but incomplete fuel break which would be augmented by treatments in Unit 2.

Interfor holds the forest tenure rights on this Crown owned piece. Treatments would be focused on **harvesting and subsequent regeneration of relatively fire resistant species**. **Western hemlock** is the leading species throughout most of the stand, explaining much of the reason why no prior harvesting has been carried out within the unit. The area also features several significant draws that would prove challenging but not impassable in terms of road location. Existing old road location flagging indicates that the area has been considered for harvest in the past.

Continuous **consultation** should be sought with Interfor to determine the most effective fuel treatments for the area in question. This would include improving **long term access** for fire suppression. In addition to fuel management concerns, economic, visual, hydrological and geotechnical issues would require consideration as well.

Although not included as Part of Unit 2 on the map, the 30 year old clearcut just north of Unit 2 should be considered for some sort of fuel reduction treatment in the near future. Stand density will be extremely high, with the potential for fire to move rapidly through the crowns of this immature stand.

Planning Unit 3 (North Nakusp)

Represented by Plot 4.
Area: 69.5 ha
Field Fuel Assessment Rating: Low. Note that additional plots located in different stand types would generate a higher rating.

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate to High
- Economic Viability: Funding reliant
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment

No forest tenure is allocated on this piece of Crown owned land. The lands fall under a CPR crown grant and were largely logged in 2003.

The wildfire threat at the **north end** of this unit has not been field assessed. Areas that were not logged in 2003 are either mapped as being within a **Wildlife Tree Retention Area or Other Silvicultural Reserve**. In either case, harvesting of merchantable timber is unlikely to be an option. However, the timber types feature mature age classes making it reasonable to assume that a significant fuel threat does exist within the area. Possible treatments could include hand treatments focused on the reduction of ground and ladder fuels.

The south end of the unit is dominated by younger age classes, including a Pl leading type where the WTA plot was located. The PSTA threat rating in the plot location was 8 but this is likely attributable to it being a Pl leading type; the field assessment plot did not corroborate this high rating. The fuel threat is higher in some of the more densely stocked stands between WTA Plot 4 and the landfill site to the north. These should be assessed for viability of possible thinning treatments. Proximity to the landfill area and to the community itself creates a high consequence associated with any ignition.

<u>Planning Unit 4 (Glenbank / Upper Brouse)</u>

Represented by Plots 7 and 39

Area: 136.0 ha

Field Fuel Assessment Rating: Plot 7: 62 Pts = Moderate. Plot 39: 71 Pts = High

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Harvesting self-sustaining. Thinning funding reliant.
- Usefulness of Treatment: High
- Priority for Treatment: Moderate to High

Description of Proposed Treatment

This unit is within crown-owned Woodlot 403 licensed to Donald Kirk.

Approximately **twenty percent** of the area included within the unit is has been **harvested since 2005**. The **fuel threat** within these logged areas is still deemed to be low but the stands **should be monitored** as they continue to grow in. When appropriate, funding may be available to undertake **spacing and pruning treatments** that should not only reduce the fuel threat but also increase future stand yields. Species fire resistance should be considered when regenerating stands planned for future harvest.

Domestic and community watershed issues will dominate planning and treatments within the southern half of this unit, accessed from Upper Brouse. **Visuals** are a concern throughout the unit.

Note that the 200-plus hectare privately owned parcel lying between Woodlot 403 and the Kuskanax River should ideally also be **included** in planned operational fuel treatments. The owners may possibly be amenable to conducting some harvest operations to help address the threat of wildfire encroaching on the community. However, a significant portion of the Greenscapes property is dominated by 35 year old clearcuts that were subsequently regenerated and have since become overgrown. As there would be no revenue generated from treatments to these privately owned, immature stands, it will be challenging to secure investment money for the work.

Planning Unit 5 (Upper Brouse /Wensley Creek)

Represented by Plots 5 and 6

Area: 185.7 ha

Field Fuel Assessment Rating: Plot 5: 70 Pts = Moderate. Plot 6: 74 Pts = High

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Will depend on ability to harvest merchantable timber
- Usefulness of Treatment: High
- Priority for Treatment: High

Description of Proposed Treatments

This unit comprises the entirety of NACFOR's Wensley Creek chart area. It is considered a priority for treatment because of its viability from both a planning and operational perspective and because of the wildfire threat posed by the existing stand structure to a significant number of nearby residences.

Similar to Unit 4, approximately **twenty percent** of the area included within the unit is has been **recently harvested**. The current fuel threat within these logged areas is low but the **stands should be monitored** as they continue to fill in. When appropriate, funding may be available to undertake **spacing and pruning treatments** that should not only reduce the fuel threat but also increase future stand yields.

The area is located within a government designated recreation polygon. The presence of high use cross country ski, bike and snowshoe trails, in addition to domestic watershed concerns, will likely preclude additional high percentage stem removal at least until existing cutblocks have greened up. However, the possibility of **light crown separation should be explored**. Douglas-fir is the dominant species throughout much of the area; it will face relatively high susceptibility to future **Douglas-fir bark beetle attack**. Mortality caused by past attack is already evident in some of the drier areas within the unit. Inclusion of crown separation as part of any proposed treatment would be preferable as it would not only minimize wildfire threat but also **capture imminent mortality** and **provide a revenue source** to help fund the fuel treatments.

Whether or not crown separation turns out to be viable, **ground and ladder fuel reduction** within this unit should be a priority. Much of the area was high graded a number of years ago, resulting in significant understory ingress, particularly of **western red cedar**. This Cw regeneration acts as a **highly flammable ladder fuel** throughout most of the unit.

Planning Unit 6 (Box Lake / Lower Brouse)
Represented by Plots 8, 9 and 10
Area: 157.5 ha
Field Fuel Assessment Rating: Plots 8 & 9: 58 Pts = Mod. Plot 10: 63 Pts = Mod.

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Potentially profitable (funding dependent)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatments
Ownership and management of this unit is controlled by several different entities. The lower section bordering the lake in the northeast corner is part of the **Box Lake Recreation Area**. The northwestern corner is Crown Provincial land without any allocated forest tenure. The southern portion of the unit is Crown land with forest management and cutting rights tenured to **NACFOR**.

No harvesting has taken place in this unit for over forty years; any logging done prior to this was single tree removal. Therefore, the included area in addition to the area further upslope to the south forms a large, **continuous swath of mature timber**. Despite this, the **wildfire risk** within this unit is believed to be **lower** than many of the other units within the potential fuel treatment band proposed around Nakusp and area. The area is primarily **north facing**, making it less susceptible to drying caused by increasingly extreme summer temperatures and drought. There are also **relatively few residences** adjacent to the treatment area, with a number of those residences already well protected by large, open tracts of farmland between the forest and their home. **Residences on the upper part of Kangaroo Trail** bordering the west edge of Planning Unit 6 **would benefit most** from fuel treatments in this area.

The **northeastern portion** of the unit, located within the Box Lake Recreation Area, should be designated for **hand treatment**. In addition to being located within the rec area, there are a number of streams in close proximity to each other, one of them featuring a licensed **point of diversion**. Ladder fuels are abundant in this area, due largely to past high-grading. Hand treatments would focus on the removal of these and the reduction of ground fuels.

At present, although treatment of the western edge of Unit 6 would provide the highest reduction in fuel threat to area residences, potential fuel treatments will be limited by government amenability to allowing harvesting within this area. **Hand treatments will be expensive** as the ground is relatively steep. Such treatments would also be **largely ineffective** because the primary wildfire risk is posed by the continuous wall of mature, overstore timber and the consequent threat of crown fire. **Addition of this area to the NACFOR chart area** would allow NACFOR to address the fuel threat with appropriate

harvesting treatments and to feasibly access the fuel threat posed higher up by additional timber within its existing chart area.

Potential profitability of harvesting would be curtailed by a number of factors. **Western hemlock** is the leading species within the area, **limiting potential revenues**. Partial cutting could be profitable in areas where conventional harvest is possible but would face **severe economic limitations** in areas **where cable harvest was necessary**. Clearcutting likely would not be an option given VQO constraints and the sensitivity of many area residents to harvesting.

Planning Unit 7 (Crescent Bay)
Represented by Plots 11 and 12
Area: 77.8 ha
Field Fuel Assessment Rating: Plot 11: 55 Pts = Mod. Plot 12: 76 Pts = High.

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Will depend on ability to log merchantable timber
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatments
Forest management and **cutting rights within this unit are held by Interfor. A crown** lot in the southwest corner of the unit is also identified for potential treatment.

Most of the unit is northwest facing with the westernmost portion facing due west. Field assessments indicate that the **wildfire threat** becomes **increasingly severe** as one moves onto the **west facing flank**. Treatments should be prioritized accordingly. Treatment within older hemlock-cedar types (i.e.; Plot 11) may only benefit negligibly from hand treatment as neither ground nor ladder fuels are abundant.

Harvesting treatments in this area are operationally feasible but would be subject to **intense public scrutiny** and skepticism by area residents. **Water supplies** in the Crescent Bay area are historically fragile, with many residents drawing their water from streams within the proposed treatment unit. For this reason, **hand treatments** are believed to pose the **most viable option**. **Consultation** with both Interfor and area residents will assist in answering these questions.

PART 2: INTERNAL TREATMENT UNITS
Overview
A number of treatment areas within Nakusp's municipal boundaries were identified and later approved for treatment in 2010. The areas were never treated for a number of reasons, mainly related to lack of funding availability. All of the areas, plus several additional locations, are logical inclusions to treatment areas identified under Nakusp's newly proposed CWPP. These areas can be treated relatively easily and quickly and can provide good opportunities to experiment with innovative treatment strategies that could be applied on a larger scale later on in the more strategically important units discussed in Part 1 and in other parts of the mapped Area of Interest.

Planning Unit 8 (North Nakusp ILMB)
Represented by Plot 43 (area also formerly identified as Site 1 in 2010 prescriptions)
Area: 8.2 ha (area in 2011 prescription included an additional, dense but largely deciduous pocket of immature timber to east.
Field Fuel Assessment Rating: 71 points = Moderate

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Will depend on aggressiveness of treatment
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: High

The fuel management area is a Crown Provincial piece. It lies south and west of the Nakusp airstrip.

Treatment strategies to be employed included the reduction of surface fuels, an increase in the average height to live crown ratio and lowering of stand density. Reassessment of the 2010 prescription may result in a more aggressive treatment plan being proposed within this unit.

Planning Unit 9 (North Nakusp Village)
Represented by Plot 44 (area also formerly identified as Site 2 in 2010 prescriptions)
Area: 2.6 ha (2.9 ha on original prescription; digitizing discrepancy on small area)
Field Fuel Assessment Rating: 40 points = Low. Note that any plots located in the upper, western half of the unit would generate significantly higher ratings.

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Will depend on aggressiveness of treatment
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate-High

The fuel management area is owned by the Village of Nakusp municipality and lies south of the Nakusp airstrip in North Nakusp. The land is bisected by the Nakusp Hot Springs Road, creating two distinct mapped units on either side of the road.

Treatment strategies to be employed include the reduction of surface fuels, an increase in the average height to live crown ration and lowering of stand density.

Planning Unit 10 (Old Railway Grade)
Area formerly identified as Site 3 in 2010 prescription.
Field verification not conducted in preparation of 2018 CWPP.
Area: 5.2 ha (4.9 ha on original prescription; digitizing discrepancy on long, thin area)

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: Moderate

- Economic Viability: Low (funding dependent)
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

The fuel management area begins near the railway grade intersection with Hwy 6 East and continues approximately as far as the Nakusp Golf Course. The main purposes of the project are to a) reduce the threat of wildfire caused by recreational users of the old railway grade and b) to improve access for fire suppression equipment to other adjacent, interface forest areas.

Planning Unit 11 (Village Lagoon)

Represented by Plot 45 (area also identified as Site 4 in 2011 prescriptions)
Area: 1.7 ha
Field Fuel Assessment Rating: 57 points = Moderate

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Will depend on aggressiveness of treatment
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

The fuel management area lies within municipally owned land in the North Nakusp industrial area adjacent to the Village of Nakusp sewer lagoon.

Treatment strategies to be employed include the reduction of surface fuels, an increase in the average height to live crown ration and lowering of stand density.

Planning Unit 12 (Nakusp Elementary School)

Represented by Plot 36 (area also identified as Site 5 in 2011 prescriptions)
Area: 2.5 ha
Field Fuel Assessment Rating: Low

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: Low (funding dependent)
- Usefulness of Treatment: Low-Moderate
- Priority for Treatment: Low-Moderate

The fuel management area lies adjacent to Highway 23 North, near the center of the Village of Nakusp boundary.

The area was partially logged in 2005 to address mountain pine beetle infestation. As indicated by recent wildfire threat assessment fieldwork, only a very light ladder fuel reduction treatment is required to augment threat reduction completed by previous treatment.

Planning Unit 13 (Nakusp Creek)

Represented by Plot 46
Area: 1.8 ha
Field Fuel Assessment Rating: 65 pts = moderate

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate-High
- Economic Viability: Will depend on aggressiveness of treatment
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate-High

This crown owned area is controlled by the Ministry of Transportation and Highways. It lies between Hwy 6 South and Arrow Lake, towards the south edge of the municipal boundary.

The area was assessed as part of the 2011 Nakusp fuel management package but did not yet have official MOTH approval at time of submission and was therefore not included in the final package.

The area features a patchwork of different age classes and species mixes. Previously harvested areas feature dense regeneration and would benefit from fuel management treatment.

WEST ARROW PARK

Part 1: Continuous Fuel Treatment

Overview

Proposed operational fuel treatments within West Arrow Park focus on crown lots immediately east and west of area residences. Allocated crown timber rights are held by Interfor to the north of the residences but this timber is located within highly inoperable terrain.

As detailed below, fuel management operations within the proposed areas can likely be financed with revenues from the treatments.

<u>Unit 22A</u>
Not field verified
Area. 60.0 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: High
- Economic Viability: High
- Usefulness of Treatment: Moderate-High
- Priority for Treatment: Moderate

Description of Proposed Treatment

Terrain is flat and highly operable within the Crown Provincial lots in this unit. Areas targeted for treatment lie immediately west of West Arrow Park residences and include stands believed to possess sufficient merchantable timber to finance a crown separation fuel treatment. Mechanical treatment is recommended. Stands of age class 5 or better have been included. In addition to reducing the fuel threat within the area, the treatment will likely also enhance property values.

Unit 22B
Not field verified
Area. 91.4 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: Moderate
- Operational Viability: Moderate
- Economic Viability: Low
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment
The viability of this proposed Crown Provincial unit for treatment likely depends on the economic feasibility of Unit 22A. Stands within Unit 22B are all typed as either Age Class 3 or 4, making it unlikely that a fuel management project on the unit could be financed with timber revenues from the treatment. The possibility of selling thinned fibre as commercial pulp should be explored. It is also possible that profits from the sale of timber harvested from Unit 22A would be sufficient to pay for at least part of the treatment in Unit 22B.

Proper treatment of all of Unit 22 would provide a partial buffer against fires approaching from the west.

Unit 23
Not field verified
Area. 60.2 ha
Field Fuel Assessment Rating: N/A

Suitability for Operational Treatment

- Planning Viability: High
- Operational Viability: Moderate-High
- Economic Viability: High
- Usefulness of Treatment: Moderate
- Priority for Treatment: Moderate

Description of Proposed Treatment
The lots in this unit are also Crown Provincial. Similar to Unit 22, terrain is flat and highly operable. Areas targeted for treatment in this unit lie immediately east of the majority of West Arrow Park residences and include stands believed to possess sufficient merchantable timber to finance a crown separation fuel treatment and possibly to help finance part of the treatment of Unit 22B. All included stands are age class 5 or better The proposed treatment

area has been cut off where slopes are deemed excessively steep for viable treatment and/or at the edge of the domestic watershed boundary to the east. As with Unit 22, it is believed that fuel threat reduction via crown separation will also enhance property values.

Proper treatment of Unit 23 would provide a partial buffer against fires approaching from the east.