

Community Wildfire Resiliency Plan



City of Revelstoke

January 20, 2025

Submitted by:

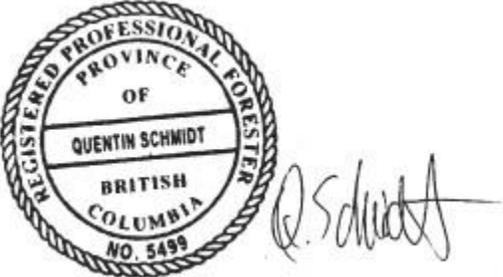
B.A. Blackwell & Associates Ltd.
270 – 18 Gostick Place
North Vancouver, BC, V7M 3G3
Ph: 604-986-8346
Email: bablackwell@bablackwell.com

Submitted to:

Lauren Marfleet
FireSmart Coordinator
Revelstoke Fire-Rescue Services
Box 170, Revelstoke BC, V0E 2S0
Ph: 250-837-2884
Email: lmarfleet@revelstoke.ca



REGISTERED PROFESSIONAL SIGN AND SEAL

RPF PRINTED NAME	
Quentin Schmidt	RPF #5499
DATE SIGNED	
January 20, 2025	
I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.	
Registered Professional Forester Signature and Seal	
 <p>The seal is circular with a rope-like border. The text inside the seal reads: 'REGISTERED PROFESSIONAL FORESTER OF BRITISH COLUMBIA NO. 5499'. The name 'QUENTIN SCHMIDT' is printed across the center. To the right of the seal is a handwritten signature that appears to read 'Q. Schmidt'.</p>	

Cover Photo Credit: B.A. Blackwell, June 24, 2024 – Nels Nelsen Historic Ski Jump, looking southwest over Revelstoke.

ACKNOWLEDGEMENTS

The authors would like to thank Lauren Marfleet (FireSmart Coordinator, Revelstoke Fire-Rescue Services) for her direct involvement with planning, reviewing, and contributing to this Community Wildfire Resiliency Plan. Lauren invested substantial time in meetings, answering questions, and reviewing and commenting on the contents of this document. The authors would also like to thank the following individuals for the helpful information and guidance that they provided throughout the CWRP's development process:

- Steven DeRousie; Fire Chief, Revelstoke Fire-Rescue Services
- David Mohn; Emergency Program Coordinator, City of Revelstoke
- Amanda Ripepi; GIS Technician, City of Revelstoke
- Paul Simon; Director of Development Services, City of Revelstoke
- Kenny Gipps; Manager of Development Services & Bylaw, City of Revelstoke
- Emily Lindsay; Engineer III, City of Revelstoke
- Troy Biggs; Building Maintenance Supervisor, City of Revelstoke
- Amber Cooke; Land and Resource Specialist, Ministry of Forests
- Bill Hunter; Director, Mountain Resorts Branch
- Stefan Hood; Wildfire Technician, BC Wildfire Service
- Spencer Verdiel; Fire Management Officer, Parks Canada
- Marieke Maas; Geomatics Technician, Parks Canada

This CWRP was funded through the Union of British Columbia Municipalities (UBCM) Community Resiliency Investment (CRI) program. Per funding requirements, this CWRP is completed according to the 2023 CWRP template.

EXECUTIVE SUMMARY

The Community Wildfire Resiliency Plan (CWRP) process (evolving from the Community Wildfire Protection Plan – CWPP) was created in British Columbia as a response to the devastating 2003 wildfire in Kelowna. CWRPs aim to develop strategic recommendations to assist communities in improving safety and reducing the risk of damage to property and critical infrastructure from wildfires. Recommendations contained within a CWRP are based on the seven FireSmart™ disciplines (Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning, and Vegetation Management).¹ This CWRP provides the City of Revelstoke with an action plan that can be used to guide FireSmart initiatives within the City and with adjacent jurisdictions, improve emergency response capabilities and FireSmart communication and education programs, develop law or policy related to fire risk, and manage hazardous vegetation in the wildland urban interface (WUI).

This is the first CWRP created for the City of Revelstoke, which builds off ideas presented in the City's 2006, 2011 and 2015 CWPPs. The area of interest (AOI) for Revelstoke's CWRP is its municipal boundary, which is the area in which Revelstoke is eligible to pursue provincial FireSmart funding through the provincial FireSmart Community Funding & Supports (FCFS) program.

The WUI is defined by FireSmart Canada as the zone where human development meets or intermingles with the natural environment. For the purpose of the FCFS program, the 'eligible WUI' is considered as the area one kilometer from a structure density class greater than six structures per square kilometer. Due to the structure density of the unincorporated communities outside Revelstoke's municipal boundary, the WUI extends in various directions away from the AOI. The focus area for Revelstoke's CWRP is created by clipping the eligible WUI to a maximum distance of one kilometre from the AOI. This focuses the CWRP, and Revelstoke's attention, on the community and WUI surrounding it that has the most effect on the City itself.

Field-based wildfire threat assessments and the verification and updating of fuel types were combined with an office-based analysis to update the local wildfire threat for the focus area. Private land covers approximately 29% of the project area for this CWRP and cannot be assessed under the CWRP program, therefore the wildfire threat analysis was performed on the remaining 71%. The result of the analysis shows that a small proportion of assessable area within the WUI has a 'High' or 'Extreme' threat rating (5% and 1% respectively), while 36% has a 'Moderate' threat. The remainder of the WUI either has a 'Low' threat rating or contains water – though these areas often contain infrastructure-based values at risk. Qualitative FireSmart observations of private land and developed areas indicated that these areas often posed a higher fire hazard than the surrounding vegetation. This is often due to accumulations of combustible materials (e.g., firewood, debris), highly flammable landscaping, and/or a structure that is vulnerable to fire (e.g., wood/vinyl siding, exposed wooden decks, etc.). This leads to one of the key findings of the plan – the key to increasing community wildfire resiliency is to reduce structure ignitability.

In addition to fuel-related hazard, the steep topography of the Columbia mountains surrounding Revelstoke provide conditions for rapid wildfire spread while simultaneously challenging both ground-

¹ FireSmart and other associated Marks are trademarks of the Canadian Interagency Forest Fire Center (CIFFC).

based and aerial fire suppression. The topography also complicates and/or prohibits wildfire risk reduction measures in many instances. While much of Revelstoke's residential development and municipal infrastructure is located on relatively flat areas near the valley bottom, some neighbourhoods and structural values are positioned amongst steeper and more complex topography. On top of this, recent developments in Revelstoke (e.g., Revelstoke Mountain Resort) have been expanding further upslope into the forest interface. Elevation in the CWRP area ranges from 440 to 1040 meters, resulting in a large amount of ecosystem variability throughout the WUI. Grass fuels in the drawdown zone support the potential for a rapidly spreading grass fire, while mature cedar-hemlock forests often contain large fuel accumulations that can pose dangers / complications to fire suppression crews.

Wildfire poses a threat to Revelstoke from a lightning or human ignition in the adjacent forest, and also from unintentional means like a structure fire, vehicle fire, or a spark from industrial activity that then spreads into surrounding vegetation, landscaping, or through combustible materials. With a considerable amount of industrial activity in Revelstoke and the WUI, and the popularity of the Columbia valley for recreation and seasonal tourism, the chance of a human ignition is heightened. Although fire frequency is moderated by Revelstoke's transitional climate, large fires can and do occur in the valleys surrounding the community. Steep slopes and high fuel loads can lead to intense fire behavior when hot and dry weather conditions occur.

Given the factors that limit landscape-level wildfire risk reduction in and around Revelstoke, FireSmart activities on and surrounding homes, critical infrastructure, and community assets is a top recommendation in this plan. Mitigation should be centered on construction practices and regulations, vegetation management around structures, and resident education. Community outreach on the range of available activities and the prioritization of activities should help residents to feel empowered to complete simple risk reduction activities on their property. Other high-priority recommendations in this CWRP focus on improving the capacity of Revelstoke Fire-Rescue Services and collaborating with residents and adjacent land managers to implement fuel management programs.

A total of 37 recommendations and action items are presented in Table 1 within this Executive Summary and are more thoroughly discussed in their appropriate sections within the plan. Because much of the WUI surrounding the City of Revelstoke is managed by a separate entity (e.g., Parks Canada, Revelstoke Mountain Resort, CSRD, Ministry of Forests, etc.), Revelstoke's role may be limited to an advocate or influencer in many instances. Ultimately, the recommendations and action items within this plan should be considered as a toolbox of options to help reduce the wildfire risk and consequence to Revelstoke and increase the resilience of the city to the impacts of wildfire. The City of Revelstoke will have to further prioritize implementation based on resources, strengths, constraints, and availability of funding, and regularly update the prioritization and course of actions as variables change through time.

Table 1: The City of Revelstoke’s CWRP Action Plan

Item	Priority	Recommendation	Rationale	Lead	Timeframe	Metric for Success	Funding Source
				(Involved)	(FireSmart Roadmap Phase)		
Education - Section 5.1							
<i>Objective: To provide information to Revelstoke residents and visitors empowering them to adopt and conduct FireSmart practices to mitigate the negative impacts of wildfire to their homes, businesses, and communities.</i>							
#1 Host FireSmart Workshops	High	Host annual FireSmart workshops and preparedness days throughout the community. Advocate for Revelstoke Fire-Rescue Services (RFRS) and the BCWS to join and provide insight from first responder point of views.	FireSmart awareness in the community for local residents can use improvement. Workshops can cover basic FireSmart education and will reinforce the need to annually assess individual and community preparedness. Hosting community-wide events (and/or multiple events in different neighbourhoods) should increase the uptake of FireSmart activities. Revelstoke has hosted community preparedness days in 2023 and 2024.	Revelstoke FireSmart Coordinator (RFRS, BCWS)	Annually (Engagement / Initiative)	Annual hosting of at least one community FireSmart day focused on education and preparedness, and/or individual neighbourhood community events.	CRI funding is available: Wildfire Community Preparedness Day, cost maximums for physical materials (tents, T-shirts, decals, FireSmart Magnetic Board, etc.)
#2 Distribute FireSmart Materials	High	Distribute FireSmart homeowner materials (e.g., Homeowners Manual, “Tips to FireSmart Your Home” poster, FireSmart Landscaping Guide, FireSmart Begins at Home mobile app, FireSmart 101 & Wildfire Risk Reduction online course) throughout the community.	FireSmart BC homeowner materials provide helpful and easy-to-digest infographics on how a resident can reduce the hazard on their property. Digital resources are posted on https://revelstoke.ca/2022/FireSmart , but physical materials can be provided at community events, posted online, and/or delivered individually.	Revelstoke FireSmart Coordinator	Distributed once (2025), subsequently available at annual events. (Engagement)	Delivery of the Homeowners Manual & Tips poster to all homeowners in the direct interface. Making these materials available at City Hall, the Fire Hall, and future events and online. Link to online courses posted on the Revelstoke FireSmart website.	Physical resources available at no cost (to a maximum amount) at https://firesmartbc.ca/resource-ordering-form Additional resources available for cost. CRI: Staff hours for administration
#3 Incorporate FireSmart in Schools	Med	Advocate for the use of FireSmart Education Materials at Columbia Park, Mountain View, Begbie View, and Arrow Heights Elementary Schools as well as Revelstoke Secondary School.	1) Having FireSmart awareness instilled in youth may provide a catalyst for their parents to perform mitigation activities around their home. 2) Instilling FireSmart principles in today’s youth provides the foundation for a FireSmart community in the future.	Revelstoke FireSmart Coordinator School District 19	Contact SD19 / individual principles in 2025 (Integration)	1) Communicate with SD19 / Principles 2) Have FireSmart materials worked into lesson plans	CRI: Staff hours for administration
#4 Communicate FireSmart & Fire Hazard Internally	High	Increase the use of social media, physical signage, and/or the City of Revelstoke website to communicate FireSmart initiatives, fire hazard postings, and/or the planning / implementation of fuel management activities (including any prescribed / cultural fire).	1) FireSmart / fire hazard information could be more easily accessible and readily displayed on the City of Revelstoke website, and/or through various social media channels. This can target residents and tourists – offering FireSmart / fire prevention information at the Visitor Information Center and website (where information on active wildfires is already posted) and approved accommodations. 2) Prescribed fire can be an important potential risk reduction / ecosystem restoration tool that can be utilized in managed forests surrounding Revelstoke, and is being used in Mount Revelstoke National Park. Increasing resident awareness and acceptance of these tools will be key for establishing and implementing a successful burning program.	Revelstoke FireSmart Coordinator (Communications Dept)	Work with the communications department in 2025, roll out information ASAP and/or in conjunction with FireSmart initiatives. (All Phases)	1) Use of social media channels to distribute information 2) Blatantly accessible fire hazard information online 3) FireSmart / prevention info. to tourism departments 4) Fuel management / burning information transmitted	CRI: Staff hours for administration, targeted education for fuel management, FireSmart education
#5 Communicate Fire Hazard Externally	Med	Work with the Ministry of Forests, BC Wildfire Service, local recreation groups, MOTI, Parks Canada, RMR, and local news outlets (e.g., Revelstoke Review) to expand the number of fire hazard postings in the interface, during periods of high and extreme fire danger.	Lightning-caused wildfires outnumber human-caused fires in the Revelstoke area and have been the cause for the majority of the area burned, but there are consistently fires in the immediate interface that are human-caused. These ignition sources (e.g., from open burning, downed power lines, train travel, vehicle incidents) are a concern for multiple response agencies. As the population in the area surges in the summer months due to tourism, this often coincides with extended periods of high and extreme fire danger. Having strategic communication methods to notify tourists and residents alike of fire danger ratings and prevention methods can increase people’s situational awareness to wildfire and decrease the likelihood of human-caused fires.	Revelstoke FireSmart Coordinator / Communications Dept (MOF, BCWS, MOTI, Revelstoke Review, Radio)	Engage departments in 2025 – can be a regional approach. Roll out information ASAP and continue annually. (Engagement)	Use of various methods targeted at residents and tourists to communicate fire hazard or wildfire information.	Internal.
#6 Share the CWRP Publicly	Med-Low	Make this CWRP report and associated maps publicly available through the Revelstoke website. Create an interactive web mapping tool to allow residents to locate their property and associated wildfire risk. Share this information with the BCWS, Columbia-Shuswap Regional District, local industry partners, and fire departments who may be interested in collaborating on FireSmart / wildfire risk reduction activities.	Notification to the community will allow Revelstoke residents to see the latest steps that the community is taking to become FireSmart. Working with local / regional partners and emergency response groups on achieving risk reduction goals can expedite the process.	Revelstoke FireSmart Coordinator	Shared in 2025 (Engagement)	1) CWRP and maps available for download or viewing on the City of Revelstoke website 2) Wildfire risk mapping, wildfire risk reduction activities, and FireSmart initiatives integrated into a web mapping tool	Internal.
Legislation and Planning - Section 5.2							
<i>Objective: To provide the means for the City of Revelstoke to implement wildfire risk reduction through laws and legislation by outlining government responsibilities regarding wildfire.</i>							
#7 Enact a FireSmart Landscaping Bylaw	High	Enact a FireSmart landscaping bylaw that prohibits the planting of highly flammable vegetation and prohibits the planting of vegetation in the FireSmart Immediate Zone (i.e., within 1.5 m of a building) wherever a Development Permit is required. ²	Highly flammable vegetation (arborvitae, juniper, conifer species) is commonly found throughout the City of Revelstoke and was observed adjacent to homes in new residential developments. Landscaping choices (both retained natural trees and planted vegetation) have a large impact on the fire risk on and between properties.	Revelstoke Municipal Staff	Discuss in 2025, implement ASAP. (Integration)	Revelstoke has a legislative method to prevent the planting of highly flammable vegetation.	CRI: Development considerations –bylaw amendments / revisions.

² Reference the FireSmart BC Landscaping Guide: <https://firesmartbc.ca/resource/landscaping-guide/>

#8 Communicate Bylaw Controls of Fire Risk	Med	Educate community members on portions of the Fire Prevention, Protection and Control Services Bylaw that relates to fire risk on properties (<i>Section 10 – Issuance of Order</i>), and provide clear messaging on how fire hazards impact the ability of first responders to safely and successfully respond to a fire.	This portion of the Fire Prevention, Protection, and Control Services Bylaw authorizes the Fire Chief to notify a landowner of a fire hazard and order the landowner to remedy the condition. High hazard vegetation and structural conditions were frequently observed in Revelstoke, especially on large forested properties. Increasing communication around this bylaw (potentially combined with FireSmart communication) and making language clearer on what hazards this bylaw targets can make things clearer for residents and improve voluntary compliance.	Revelstoke Municipal Staff / Revelstoke Fire Chief (Revelstoke FireSmart Coordinator)	Begin in 2025, ongoing. (Engagement)	Education through public postings, Revelstoke Review, and social media. Assess the amount of voluntary compliance to the bylaw, particularly as it relates to accumulations of combustible materials and/or vegetation. Measure and analyze the number of tickets issued, and look to achieve an annual decrease.	Internal.
#9 Alter Restrictions on Tree Removal	Med	Provide an allowance or streamlined approach for tree removal / modification on sloped parcels of private land, when part of a FireSmart vegetation management strategy that would have a low impact on slope stability (e.g., removal of dead trees, removal of small understory trees, pruning of trees, abatement of surface fuel, etc.).	Multiple private parcels throughout Revelstoke contain steep slopes with densely forested conifer trees and accumulations of deadfall (i.e., high fire hazard), though the removal of trees on sloped areas is currently constrained or prohibited (i.e., requires a development permit which requires a geotechnical report, many areas protected under conservation covenants, etc.).	Revelstoke Municipal Staff	Discuss in 2025, have process sorted out by 2026.	Tree removal, modification, and/or debris removal on private property (for FireSmart reasons) is permitted.	CRI: Development considerations –bylaw amendments / revisions.
#10 Manage Public Park Spaces Proactively	Med	Work with Town departments (e.g., Revelstoke Parks & Recreation) to ensure that FireSmart principles are embedded into the management of all pre-existing or acquired park spaces (Community Parks, Neighbourhood Parks, Natural Parks, etc.), and that these spaces are maintained in a low-hazard state.	Park spaces are found throughout Revelstoke and are highly trafficked areas during the peak of fire season. Park spaces and trails (both designated and undesignated) often connect interface neighbourhoods, or are positioned between neighbourhoods and the adjacent forest. Revelstoke has a Parks and Recreation Master Plan (was in draft at the time of writing) which addresses the management of parks and provides various recommendations for the future, though this Plan does not incorporate FireSmart practices into the future management of these areas.	Revelstoke Municipal Staff (Revelstoke FireSmart Coordinator)	Begin in 2025, ongoing. (Engagement)	FireSmart considerations applied to the future management of park spaces and trails throughout Revelstoke.	Internal.
#11 Update the CWRP	Low	Complete or schedule periodic updates of this CWRP. The frequency of updates is highly dependent upon major changes which would impact local wildfire risk or the rate at which wildfire risk reduction efforts are implemented. An evaluation of major changes (including funding program changes to may lead to new opportunities) and the potential need for a CWRP update should be initiated every 5 years.	An up-to-date (i.e., no more than five years old) CWRP is a current requirement for further funding under the CRI program.	Revelstoke FireSmart Coordinator	5 years from adopting this CWRP document. (Foundational Element)	Revelstoke always has an up-to-date CWRP and action plan.	CRI: Full document or updates.

Development Considerations – Section 5.3

Objective: To embed FireSmart practices and considerations into all development within the City of Revelstoke.

#12 Enforce FireSmart Development	High	Embed FireSmart construction and landscaping principles into future development. This can be accomplished via the creation of a Development Permit Area (DPA) for wildfire hazards or through bylaws. A DPA or bylaws should strongly consider addressing: a) Fire-resistant roofing b) Fire-resistant siding c) A 1.5 m non-combustible Immediate Zone	Embedding FireSmart principles and the knowledge of qualified wildfire professionals into all aspects of community development and planning in interface areas is crucial to proactively building fire resilience. Individual homes in newer developments in Revelstoke often comply with FireSmart principles in many ways (e.g., fibre-cement / composite siding, fire-rated roofing) but this is not currently enforced in many areas – nor is subdivision or home development in the interface subject to a wildfire hazard assessment by a qualified professional. FireSmart development has been regulated on Monashee Court through a Section 219 Wildfire Interface Covenant, while managing wildfire risk through development in Revelstoke Mountain Resort’s neighbourhood areas and Resort core areas (Comprehensive Development Zone 8) is regulated through Section 11A of the City’s Zoning Bylaw No. 2299.	Revelstoke Municipal Staff (Consultant)	Ongoing. (Integration)	Wildland-Urban Interface DPA created and adopted – or bylaw creation / changes to ensure new community infrastructure and developments are FireSmart.	CRI: Development considerations
-----------------------------------	------	--	---	---	------------------------	---	---------------------------------

Interagency Cooperation - Section 5.4

Objective: To broaden from a single-jurisdiction approach to a risk driven, multi-agency, multi-scalable approach to a wildfire emergency.

#13 Collaborate Externally	Med	Continue to discuss fire risk concerns and collaborate on FireSmart initiatives (including an integrated fuel management and/or prescribed fire planning table) with like-minded agencies.	Creates opportunities for synergies and information sharing of wildfire risk reduction activities across jurisdictions. Having a functional Community FireSmart Resiliency Committee (CFRC), either internal or with like-minded external agencies, will be a requirement for accessing CRI funding in 2024 and beyond. The City of Revelstoke is hoping to engage in a local CFRC with adjacent jurisdictions and land managers in 2024.	Revelstoke FireSmart Coordinator (and participating partners, e.g., Parks Canada, CSRD, RMR, forest licensees)	Engage with the regional CFRC; meet bi-annually at least. (Engagement)	CFRC meetings held and collaborative initiatives implemented.	Internal and CRI funding: CFRC meetings & integrated fuel management tables
#14 Collaborate Internally	Med	Continue to discuss fire risk concerns and FireSmart initiatives across municipal departments.	Fire risk concerns are often not shared and understood across different internal groups (i.e., land use planning, development services, emergency program, parks and recreation) which can lead to conflicting decisions. Mitigating fire risk proactively spans the knowledge of multiple departments and requires decision-making to be collaborative.	Revelstoke FireSmart Coordinator (and municipal departments)	Start a roundtable in 2025, meet bi-annually. (Engagement)	Meetings held and collaborative initiatives implemented.	Internal
#15 Push FireSmart Landscaping	Med	Engage local plant nurseries (e.g., Revelstoke Garden Center, Bloomworks Gardening, Magpie & Larch Garden Center) and contact local development / landscaping contractors to adopt the FireSmart BC Plant Program.	Highly flammable (i.e., non-FireSmart) landscaping is dominant throughout pre-existing residential areas in all parts of Revelstoke, and continues to be planted within new residential developments. In the absence of any legislation to restrict this, the FireSmart BC Plant Program can allow homeowners and developers to better understand how landscaping choices interact with fire hazard.	Revelstoke FireSmart Coordinator (Local nursery management, local landscape designers)	Engage nurseries in 2025, establish program by spring 2025 and continue annually. (Integration)	1) Nurseries / landscapers engaged 2) Program in place at least 1 local nursery	CRI

Cross Training & Fire Department Resources - Section 5.5

Objective: To expand the preparedness and qualifications of Revelstoke Fire-Rescue Services and municipal emergency staff.

Training							
#16 Staffing FireSmart Positions	High	Continue to fund the FireSmart Coordinator position, and hire incremental FireSmart positions based on internal capacity and community need. Example positions include: -FireSmart Crew Member -Wildland Forest Professional (WFP) -Wildfire Mitigation Specialist (WMS)	The FireSmart Coordinator position in Revelstoke has allowed for a dedicated approach to be taken toward local FireSmart initiatives. This position is <i>required</i> for future CRI funding as of 2024. Specific needs for additional positions are as follows: -Crew Member: Perform mitigation work and assist in community events. -WFP: Oversee fuel management programs, collaborate, provide wildfire risk reduction advice. -WMS: Facilitation of the Wildfire Mitigation Program – perform detailed WMS assessments and support the implementation of the FireSmart Rebate Program. A limited number of individuals in RFRS (1) or the community have this training.	Revelstoke FireSmart Coordinator (Consultant)	Continue to fund a FireSmart Coordinator and hire other labour positions through 2025, expand annually as required. (Initiative)	1) Continue to fund the FireSmart Coordinator position. 2) Hire additional dedicated FireSmart staff based on community need and funding approach.	CRI funding available for FireSmart positions and for FireSmart training; LFR training is free (with funding available for staff time to attend the training)
#17 Expanding FireSmart Training	Med-High	Pursue expanded FireSmart training for Revelstoke Fire-Rescue Services staff / municipal staff: -Wildfire Mitigation Specialist (WMS) -Local FireSmart Representative (LFR)	A limited number of individuals in RFRS (1) or the community have this training. -WMS: Oversee HIZ / CI Assessments and mitigation work. More in-depth knowledge and assessment than an LFR, can establish the Wildfire Mitigation Program. -LFR: Perform FireSmart Assessments, establish the Neighbourhood Recognition Program.	Revelstoke FireSmart Coordinator / Revelstoke Fire-Rescue Services	Expand training in 2025 and beyond if necessary. (Initiative)	Expand and track the number of trained LFRs and/or WMS' in the community.	CRI: LFR training is free and virtual. WMS training is eligible for funding through a Wildfire Mitigation Program workshop.
#18 Expanding Wildfire Training	Med-High	Continue to train Revelstoke Fire-Rescue staff in interface wildfire response. Courses include: Wildfire Risk Reduction Basics, WSPP-WFF1, S-231, WSPP-115, etc.	Individuals within RFRS are annually trained in WFF1 (S-100 & S-185), and trained in WSPP-115 every three years. Continuing this trend will increase their experience and response capacity.	Revelstoke Fire-Rescue Services	Formulate a training plan in 2025, continue annually. (Engagement)	1) Increase the number of trained individuals 2) Have an individual as a “train the trainer” for WSPP-WFF1	CRI: Training for fire department members, cost varies by course
#19 Expanding ICS Training	Med	Provide Incident Command System / Emergency Management training to municipal personnel most directly involved with managing or coordinating emergency response (e.g., ICS-100, ICS-200 for Section Chiefs, EOC Essentials / Introduction to EOCs).	Expanding internal ICS capacity will allow municipal officials to be more involved with and prepared for emergency response. This has been identified as a priority in Revelstoke’s draft Emergency Management Plan.	Revelstoke Emergency Program	Ongoing. (Initiative)	Increase the number of Town staff trained in ICS-100 and/or Introduction to Emergency Management in Canada.	CRI funding available for ICS-100 training. UBCM Community Emergency Preparedness Fund available for EOC training.
#20 Demonstrating Structure Protection	Med	Host an annual structure protection demonstration in the community with RFRS, the BCWS, and/or trained community members. This can involve the clearing of combustible materials and setup of a sprinkler system. Could be combined with a Community Wildfire Preparedness Day.	This activity can demonstrate to residents how they can make conditions easier for first responders to set up structure protection equipment.	Revelstoke Fire-Rescue Services, BCWS	Host in 2025 during fire season – repeat annually. (Initiative)	Host an annual structure protection demonstration within Revelstoke.	CRI: Cross-jurisdictional meetings and/or tabletop exercises
#21 Hosting Scenario-Based Training	High	Continue to host annual wildfire suppression drills between RFRS, BCWS crews, and/or mutual aid fire departments. Crews should familiarize and practice with each other’s equipment and address any incompatibilities. Focus on communications capabilities and equipment compatibilities between response groups.	Revelstoke Fire-Rescue Services have hosted live-fire drills and/or responded to interface fires in the past with the BCWS, Parks Canada and various mutual aid departments, though have noted that interagency training could be practiced more frequently. Practicing these scenarios ahead of time will allow for a more seamless deployment of crews and equipment in an emergency scenario.	Revelstoke Fire-Rescue, BCWS, Parks Canada (CSRD / RDCK Departments)	Host in 2025, practice annually. (Initiative)	Aim to hold one drill annually.	Internal / CRI: Cross-jurisdictional meetings and/or tabletop exercises
Water							
#22 Increase Water Shuttling	Med	Increase the capacity for shuttling water to non-hydranted areas of Revelstoke Fire-Rescue’s Fire Protection Area, including the transport of water to off-highway areas.	RFRS has noted a deficiency in the amount of water they are able to shuttle to non-hydranted areas – and the difficulty of accessing many natural water sources and areas due to topography. RFRS’ current setup of one large tender is not desirable, and would be better suited with having additional smaller tenders.	Revelstoke Fire-Rescue	Ongoing Process (Expansion)	Increase from present – can be measured through an equipment inventory and/or grant money spent over five years.	Internal.
Equipment							
#23 Increase RFRS staffing	Med	Increase the number of full-time staff within Revelstoke Fire-Rescue Services.	RFRS has noted that they are currently operating with 60 - 75% of necessary personnel, and the City’s growth projections will require an increase in response capacity – especially as a considerable amount of recent and planned development is intermixed with forests or at the wildland urban interface.	Revelstoke Fire-Rescue	Ongoing Process (Expansion)	Increase from present – can be measured through staffing numbers.	Internal.
#24 Increase Wildfire Gear / Vehicle Allotment	Med	Increase the amount of dedicated wildland firefighting gear and wildland firefighting vehicles for Revelstoke Fire-Rescue Services, including the procurement of a structure protection unit (SPU).	RFRS has noted that they have sufficient equipment needed to fight a wildfire, though there is room for improvement considering the continued development into the wildland urban interface and the frequency of wildfire callouts. The topography and difficult access to many places within RFRS’ Fire Protection Area facilitates the need of specialized vehicles for interface fire suppression.	Revelstoke Fire-Rescue	Ongoing Process (Expansion)	Increase from present – can be measured through an equipment inventory and/or grant money spent over five years.	Community Emergency Preparedness Fund: Volunteer and Composite Fire Departments Equipment and Training. Internal funding. Structure protection equipment available through CRI.
Emergency Planning - Section 5.6							
Objective: To provide for a quick and effective wildfire response from Revelstoke Fire-Rescue Services and emergency management personnel through pre-incident planning and community preparedness.							
#25 Distribute Evacuation Checklists	Med	Distribute FireSmart evacuation checklists to individual properties in the community. Incentivize homeowners (e.g., with a door prize) if they create and/or annually review their home’s evacuation plan and prepare a “ready-to-go” kit. Focus area can be for properties in the immediate interface (e.g., Clearview / Johnson / Arrow Heights).	Proactively improving homeowners’ evacuation preparedness is paramount to an efficient and effective evacuation – leaving the community with more time to focus on last minute hazard reduction and providing more peace-of-mind that their property is better protected and that their safety is provided for. Information in these checklists can also be used to guide proactive FireSmart measures at the residential scale.	Revelstoke Emergency Management / Revelstoke FireSmart Coordinator	Distribute checklists in the spring of 2025. (Engagement)	1) Distributing checklists to all homes in the immediate interface. 2) Increased participation in homes that develop/review an evacuation plan, and have “ready-to-go” kits prepared – tracked through competition entrants or similar.	Checklist available from FireSmart BC . Can use and promote through a Community Preparedness Day or in schools.

#26 Increase <i>Alertable</i> Usage	Med	Expand awareness in the community for using the <i>Alertable</i> app in order to receive real-time updates on emergency situations (including wildfires).	Though the City utilizes multiple methods of communication during an emergency event (e.g., social media, radio, local media, door-to-door, etc.), <i>Alertable</i> provides a free, simple, and anonymous service to notify individuals with trusted and accurate information in the event of an emergency / evacuation. Revelstoke currently uses and promotes <i>Alertable</i> , with 2,786 people signed up in the area in 2024 with 22,497 messages being sent out for wildfires.	Revelstoke FireSmart Coordinator / Revelstoke Fire-Rescue Services	Ongoing (Engagement)	Number of individuals utilizing <i>Alertable</i> in the City of Revelstoke and surrounding areas increases.	Internal
#27 Address Wildfire Smoke	Med-High	Communicate with residents that many municipal buildings provide clean-air spaces during smoke events. Additionally (or in the interim), have a supply of N95 masks that can be distributed to community members during smoke events, or research and communicate potential home-made solutions for affordable clean air filters.	There is a concern for the impacts of smoke on community health, especially considering the prevalence of inversions in the Columbia valley. All public buildings in Revelstoke currently have high efficiency particulate air (HEPA) filters installed, with adjustable air intakes to limit the amount of outside air entering these buildings. This provides spaces free from smoke particulate matter (PM _{2.5}). Notifying residents or tourists of this during smoke events can reduce the overall smoke exposure in the community.	Revelstoke Municipal Staff	Discuss in 2025 – implement ASAP. (Integration)	1) Communicate with residents where clean air spaces air, when required. 2) Have a supply of N95 masks to distribute to “high-risk” community members. 3) Communicate a program for “home-made” clean air filters.	Internal
#28 Procure Backup Generators	Med	Invest in backup generators for any City critical infrastructure that does not have one. Prioritize structures noted as emergency operations centers, emergency shelters, evacuation reception centers, etc., and any infrastructure associated with emergency water delivery or communications. Encourage businesses that provide critical services such as gas stations and food stores to follow suit.	Backup generators for community buildings will facilitate both emergency response during a fire event, and community recovery (emergency social services) following a fire.	Revelstoke Emergency Program	Ongoing (Expansion)	Major community buildings and critical infrastructure have a backup generator and fuel supply.	Cost varies.

Vegetation Management - Section 5.7

Objective: To reduce the potential wildfire intensity and ember exposure to people, structures, infrastructure, and other values through manipulation of both the natural and cultivated vegetation that is within the community.

Fuel Management Treatments

#29 Plan & Implement Fuel Management Treatments	Med-High	Begin consultation and undertake planning for fuel management treatments within Revelstoke’s WUI. This can involve the development of fuel management prescriptions and/or site plans for forest licensees. Proposed fuel treatment units are listed and detailed in Section 5.7 and Table 19, and shown on Map 9.	Land ownership and/or land management complexities within the interface of Revelstoke require a collaborative approach to forest management. In addition, topographical conditions (i.e., steep slopes, broken topography) and a lack of continuous fire hazard may make fuel treatments in various areas undesirable. Landscape level fuel breaks had been identified through Revelstoke’s previous CWPP – but none have been implemented due to a number of factors (e.g., land ownership or operability concerns, internal capacity limitations, lack of meaningful effect on fire behaviour / fire suppression). Fuel management treatment in the immediate WUI (i.e., a values-out approach) is a more strategic approach to proactive risk reduction.	Revelstoke FireSmart Coordinator, Ministry of Forests, Parks Canada, Mountain Resorts Branch, Woodlots BC, BCWS, Crown Agency (CPKC / BC Hydro)	Consult with the land managers in 2025 and have a fuel management prescriptions or harvest plans completed, to be followed by treatment implementation. (Expansion)	1) Ongoing consultation with land managers regarding proposed FTUs. 2) Fuel management prescriptions or harvest plans completed for proposed areas 3) Fuel management treatments completed in areas	MoF: Crown Land Wildfire Risk Reduction program BC Woodlots: BCWS funding for wildfire risk reduction treatments CRI: FireSmart for green spaces Parks Canada: Federal vegetation management funding.
#30 FireSmart for Green Spaces	Med-High	Investigate the use of <i>FireSmart for Green Spaces</i> funding to perform “clean-up” fuel management work in municipally owned green spaces (e.g., Columbia Park, adjacent to schools, steep vegetated slopes, Illecillewaet greenway, etc.).	Many small and isolated forest areas adjacent to homes / infrastructure contain accumulations of deadfall, thickets of conifer trees, and/or low-drooping overstory conifers. Reducing the fire hazard in these areas may not warrant the production of a fuel management prescription, and can likely be accomplished by arborist, landscaping, or BC Wildfire Service crews. Sample areas have been identified as FTUs in this CWRP – but there are likely multiple additional municipal rights-of-way and parcels in Revelstoke that would benefit from this treatment.	Revelstoke FireSmart Coordinator	Assess municipal parcels in 2025, progressively treat areas annually.	<i>FireSmart for Green Spaces</i> (or equivalent) funding utilized to reduce risk on municipal parcels.	CRI: FireSmart for Green Spaces / Fuel Management Prescriptions / Operational Fuel Treatment Program.
#31 Grass Management	Med-High	Explore options for fuel reduction in the grasslands in the drawdown zone (e.g., targeted grazing, prescribed burning,).	As water levels drop during the fire season and the grasses in the “flats” become tall and cured, there is a considerable risk for fast-spreading grass fires. Much of this grassland area is continuous with vegetated / forested slopes that lead directly to residential or industrial properties. Much of the drawdown zone is Crown Agency, therefore BC Hydro will need to be consulted with, and they can / should be involved with implementation.	Revelstoke FireSmart Coordinator / BC Hydro	Discuss fuel reduction options in 2025, progressively treat interface areas annually.	1) Discuss fuel reduction / grass management with BC Hydro and develop a plan. 2) Implement fuel reduction / grass management on an annual basis.	CRI: Fuel Management Prescriptions / Operational Fuel Treatment Program.

Residential FireSmart

#32 Conduct HIZ / WMP Assessments	Med-High	Continue to conduct HIZ Assessments or Wildfire Mitigation Program (WMP) Assessments for individual residential properties throughout the community. Advertise the CSRD’s FireSmart program to individuals that live outside of Revelstoke’s municipal boundaries. ³	HIZ Assessments educate and inform residents as to their home’s unique wildfire risks and hazards, and offer tailored recommendations on how those can be reduced. These assessments and the resulting mitigation work can be demonstrated on municipally-owned properties. Formal HIZ or WMP Assessments also provide the basis for a local rebate program. Six HIZ assessments were completed in 2023, and 24 have been completed in 2024 as of August 1 st .	Revelstoke FireSmart Coordinator	Continue in 2025, annually expand program. (Engagement)	1) Establish an online portal for homeowners to sign up for HIZ / WMP assessments 2) Track the number of assessments completed annually, seeking an annual increase	CRI: Conduct HIZ or WMP Assessments
-----------------------------------	----------	---	--	----------------------------------	---	--	-------------------------------------

³ CSRD FireSmart Program, including a FireSmart Assessment Request form: <https://www.csr.bc.ca/261/FireSmart-in-the-CSRD>

#33 Establish FireSmart Neighbourhood Recognition	Med	Establish the FireSmart Canada Neighbourhood Recognition Program, beginning with performing Neighbourhood Assessments and creating Neighbourhood Plans for various communities. Prioritize neighbourhoods that are adjacent to higher-hazard wildland areas (Arrow Heights, Clearview Heights, Johnson Heights) and ensure that a Community Champion is identified for each neighbourhood.	Neighbourhood assessments and plans allow for coordinated neighbourhood-level mitigation activities to occur. Fire hazards within the Home Ignition Zone are often shared / overlapping between property owners which can limit a home-by-home approach.	Revelstoke FireSmart Coordinator	Engage communities and perform assessments / plans in 2025, expand annually. (Initiative)	Identify Community Champions and perform Neighbourhood Assessments and Plans	CRI: Neighbourhood Wildfire Hazard Assessments; FireSmart Neighbourhood Plans
#34 Provide FireSmart Rebates	Med	Establish the FireSmart Rebate Program – providing rebates (for up to 50% of the total cost of eligible activities) to residents that complete mitigation activities that have been recommended through a Home Ignition Zone / Wildfire Mitigation Program assessment.	Individual homeowners or strata owners may be more inclined to perform mitigation activities if they can have a portion of their time / materials compensated. Additionally, this ensures that the activities performed are in-line with recommendations that were provided by trained personnel. Five rebates have been issued in the community to-date, with interest in this program growing in the community.	Revelstoke FireSmart Coordinator	Establish the Rebate Program in 2025, expand the uptake annually. (Initiative)	Establish the Rebate Program, track the number of issued rebates and the type of activities that they correspond to.	CRI: Rebates limited to 50% of the total cost of eligible activities
#35 Assist with Debris Disposal	Med-High	Work with the CSRD Landfill to create a municipal event or incentive program to make the disposal of yard waste easier for residents. Possible examples include: -Providing a chipper to neighbourhoods bi-annually to help dispose of woody material that is brought roadside; -Providing debris-bins to neighbourhoods that can be filled with yard and garden waste; -Running an unlimited yard and wood waste program bi-annually, where individuals are not charged tipping fees for wood waste and there is no size limit on yard waste loads.	Highly flammable and/or overly mature landscaping is common throughout Revelstoke neighbourhoods. For vegetation hazards on properties, the logistics (e.g., physical work required, cost) of removing shrubs and trees that are cut on a property often make it prohibitive to the homeowner as these materials need to be transported to the CSRD Landfill, where there are tipping fees associated with wood waste or large loads of yard waste. The City held a free chipping event alongside the community preparedness day in 2023, and there has been continued interest in this event in 2024.	Revelstoke Public Works / Revelstoke FireSmart Coordinator (CSRD Landfill)	Ongoing – expand program as uptake increases. (Expansion)	1) Establish programs that make debris disposal easier for residents; 2) Track the annual uptake of various programs and expand annually	Internal or through CRI: Off-site vegetative debris disposal
Critical Infrastructure & Community Assets							
#36 Conduct Critical Infrastructure Assessments	Med	Conduct Critical Infrastructure (CI) Assessments and follow-up mitigation work for municipally owned Critical Infrastructure or Community Assets (see Table 6 – Section 3.2.5) that have blatant structural vulnerabilities or are adjacent to unmaintained vegetation.	CI and Community Assets provide important services for emergency response, day-to-day community activities and employment services. Assessments allow for mitigation efforts to be effectively tailored to the individual buildings, making community infrastructure more resilient. Assessments provide the basis for CRI funding for follow-up FireSmart mitigation treatments or material changes.	Revelstoke FireSmart Coordinator (Contractor)	Perform in 2025, ensure that all CI / community assets with vulnerabilities or next to vegetation are assessed by 2026. (Expansion)	Have all vulnerable community infrastructure assessed.	CRI: Assessments of both Critical Infrastructure and Community Assets.
#37 Mitigate Critical Infrastructure Hazards	Med	Perform recommended mitigation activities on Critical Infrastructure (CI) and Community Assets that have already had CI Assessments completed. Prioritize work by the hazard type, while also weighing objectively based on the importance of the asset.			Perform recommended mitigation activities ASAP after assessments are completed. (Expansion)	Have material upgrades or vegetation treatments completed on all vulnerable assets by 2026.	CRI: Costs can include building materials and labour.

TABLE OF CONTENTS

Registered Professional Sign and Seal	i
Acknowledgements.....	ii
Executive Summary.....	iii
Table of Contents.....	i
List of Figures	iii
List of Tables	iv
List of Maps.....	v
Frequently Used Acronyms.....	vi
SECTION 1 Introduction	1
1.1 Overview.....	1
1.2 Plan Goals.....	1
1.3 Plan Development Summary	2
SECTION 2 Relationship to Other Plans and Legislation	3
2.1 Local Authority Emergency Plan.....	3
2.2 Linkages to Other CWRPs/CWRPs	4
2.3 Connection To Local Plans.....	6
SECTION 3 Community Description	11
3.1 Area of Interest and Wildland Urban Interface.....	11
3.2 Community Information.....	14
3.3 Values At Risk	16
3.3.1 Emergency Response, Public Services, and Communications	16
3.3.2 Electrical Power & Heating.....	16
3.3.3 Water and Sewage	18
3.3.4 Hazardous Values.....	19
3.3.5 Cultural Values	23
3.3.6 Environmental Values	23
3.3.7 Other Resource Values.....	27
SECTION 4 Wildfire Risk Assessment	28
4.1 Local Wildfire Environment	29
4.1.1 Topography	29
4.1.2 Fuel.....	33
4.1.3 Weather	37
4.2 Wildfire History.....	39
4.2.1 Historic Fire Regime	39
4.2.2 Historic Wildfire Occurrences.....	39
4.3 Risk Framework and Risk Class Maps	42
4.4 Local Wildfire Risk Assessment.....	44
SECTION 5 FireSmart Disciplines.....	48
5.1 Education.....	51
5.2 Legislation and Planning.....	54

5.3	Development Considerations	58
5.4	Interagency Cooperation	61
5.5	Cross-Training and Fire Department Resources	65
5.6	Emergency Planning	68
5.7	Vegetation and Fuels Management	72
SECTION 6	FireSmart Roadmap and CWRP Action Plan.....	90
6.1	FireSmart Roadmap	90
6.2	CWRP Action Plan	91
6.3	Tracking, Reporting, And Updates	93
Appendices.....		94
Appendix A: Review of 2015 Revelstoke CWPP		94
Recommendations		94
Appendix B: Review of 2023 CSRD Electoral Area B CWRP		97
Recommendations		97
Appendix C: Home Ignition Zone		100
Appendix D: Local Wildfire Risk Assessment Process		102
Fuel Typing Methodology and Limitations		102
Wildfire Fire Threat Spatial Analysis Methodology		103
WUI Risk Spatial Analysis Methodology		105
Fire Spread Patterns.....		106
Appendix E: WTA Plots.....		107
Appendix F: Required Maps For CWRPs		107

LIST OF FIGURES

Figure 1: Examples of infrastructure with adjacent fire hazards. Left: lift station with conifer hedges and mature conifer trees adjacent. Right: dense conifer forests and unmaintained grass along the distribution line right-of-way to the Greeley Creek water treatment plant.	18
Figure 2: Graphic display of the fire behaviour triangle, and a subset of characteristics within each component.	29
Figure 3: Average number of danger class days for the Revelstoke BCWS fire weather station.	37
Figure 4: Fire ignitions (1950 - present) within or intersecting with Revelstoke’s WUI, as illustrated on Map 5.	40
Figure 5: FireSmart Home Ignition Zone	49
Figure 6: Intermixed view of the Arrow Heights neighbourhood, showing how individual homes are located amongst the surrounding forest.	50
Figure 7: Examples of fuel accumulations on Crown Agency parcels in the interface (upper) and low-volume and dispersed slash in recently harvested interface cutblocks (lower).	63
Figure 8: Generalized description of the four phases of emergency response as they relate to a wildfire emergency in the Revelstoke area.	68
Figure 9: Structurally FireSmart new builds surrounded by pre-existing and planted conifer trees.	73
Figure 10: Example of forested areas in Mount Revelstoke National Park that have been fuel treated by Parks Canada & local BCWS crews.	80
Figure 11: The ‘FireSmart Roadmap’ is a new focus of community wildfire planning in BC.	92
Figure 12: Initial Spread Index (ISI) rose depicting average daily wind speed and direction for each month during the fire season (April – October). Data taken from the Revelstoke weather station (1996-2015).	106

LIST OF TABLES

Table 1: The City of Revelstoke’s CWRP Action Plan	v
Table 2. Overview of Local Community Wildfire Plans	5
Table 3. Summary of objectives and policies from the City of Revelstoke’s Official Community Plan (Bylaw 2332 – 2022) that are related to community wildfire resiliency planning.	6
Table 4. Summary of other local plans which are directly relevant to the CWRP	8
Table 5. Land Ownership breakdown within the eligible Wildland Urban Interface.	12
Table 6. City of Revelstoke socio-economic statistics.....	14
Table 7. Inventory of critical infrastructure and community assets within (and servicing) the City of Revelstoke. Note: this table does not include banks, grocery stores, bridges, communications towers, or various external assets.....	20
Table 8: Publicly available occurrences of red and blue-listed species recorded in the WUI.	24
Table 9. Slope percentage and fire behaviour implications throughout the eWUI.....	30
Table 10. Slope position of value and fire behaviour implications.....	30
Table 11: Updated fuel types (by area and percent) within the eWUI. Remainder of the eWUI not shown is private land – covering 1968 hectares.	35
Table 12: Fire threat summary for the WUI.....	46
Table 13: WUI risk class ratings	46
Table 14: FireSmart vulnerability and resilience factors within the City of Revelstoke.	50
Table 15. Summary of local bylaws related to emergency planning and wildfire risk reduction.....	55
Table 16: Potential membership in a Community FireSmart Resiliency Committee (CFRC) for Revelstoke.	62
Table 17: Example of a Wildfire Response Preparedness Condition Guide	70
Table 18: Review of the 11 landscape level fuel-breaks identified in the 2015 CWPP – adapted from a BCWS review.	77
Table 19: Fuel treatment areas proposed in the City of Revelstoke eWUI.	83
Table 20: Paraphrased recommendations from the 2015 CWPP and their current status (bolded recommendations were highest priority). Yellow indicates recommendations that are incomplete / in progress and are recommended for 2024; green indicates completed; grey is unachievable or no longer applicable.....	94
Table 21. Proximity to the interface	101
Table 22. Fire Threat Class scoring components	104
Table 23. WUI Risk Classes and their associated summed scores	105
Table 24: Revelstoke WTA Plot Summary.....	107

LIST OF MAPS

Map 1: Project area for the City of Revelstoke CWRP, showing various land management designations surrounding the city (e.g., National Park, Revelstoke Mountain Resort, Woodlots, and Community Watersheds). Note – there are inconsistencies with the dataset and Federal land ownership designations in Mt. Revelstoke.	13
Map 2: Location of structures, hazardous infrastructure, and critical infrastructure throughout Revelstoke’s eligible WUI (note – Greeley Creek infrastructure was assessed for the CWRP but is not displayed on this map).	22
Map 3. Environmental values at risk within the Revelstoke wildland-urban interface. Information on Biogeoclimatic Zones and Natural Disturbance Types will be reviewed in Sections 4.1.2 and 4.2.1 respectively.	26
Map 4: Slope map of Revelstoke’s eligible Wildland Urban Interface.	32
Map 5: Overview of fuel types throughout the Revelstoke WUI. Note – there is a discrepancy in total hectares of private land on this map versus Table 6 and Table 12 due to issues with ParcelFabric datasets.	36
Map 6: Natural disturbance regimes and historical fire ignitions and occurrences within the Revelstoke area (fire ignitions from 1950-2023, fire perimeters for fires larger than 1-hectare from 1919-2023).	41
Map 7. PSTA Fire Threat Rating and WUI Risk Class Rating for the Revelstoke area.	43
Map 8: Local fire threat and local wildfire risk assessment for the Revelstoke WUI.	47
Map 9: Overview of proposed fuel treatment units (FTUs) in this CWRP. The labelled number corresponds to the FTU # in Table 19. Note that a number of FTUs have multiple separate polygons.	89

FREQUENTLY USED ACRONYMS

AOI	Area of Interest
BC	British Columbia
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CFDRS	Canadian Forest Fire Danger Rating System
CFRC	Community FireSmart Resiliency Committee
CI	Critical Infrastructure
CLWRR	Crown Land Wildfire Risk Reduction
CRA	Controlled Recreation Area
CRI	Community Resiliency Investment
CSRD	Columbia Shuswap Regional District
CWFPC	Community Wildland Fire Protection Committee
CWPP	Community Wildfire Protection Plan
CWRP	Community Wildfire Resiliency Plan
DPA	Development Permit Area
eWUI	Eligible Wildland Urban Interface
EMP	Emergency Management Plan
FBP	Fire Behaviour Prediction System
FCFS	FireSmart Community Funding and Supports
FESBC	Forest Enhancement Society of British Columbia
FOR	Ministry of Forests
FSCNRP	FireSmart Canada Neighbourhood Recognition Program
HIZ	Home Ignition Zone
LFR	Local FireSmart Representative
RAEMP	Revelstoke and Area Emergency Management Program
RFRS	Revelstoke Fire-Rescue Services
RMR	Revelstoke Mountain Resort
UBCM	Union of BC Municipalities
WMP	Wildfire Mitigation Program
WMS	Wildfire Mitigation Specialist
WUI	Wildland Urban Interface

SECTION 1 INTRODUCTION

1.1 OVERVIEW

In March 2024, B.A. Blackwell and Associates Ltd. (Blackwell) was retained to assist the City of Revelstoke ('Revelstoke', 'the City') in preparing a Community Wildfire Resiliency Plan (CWRP). This CWRP revisits portions of the area assessed in Revelstoke's 2011 and 2015 Community Wildfire Protection Plans (CWPP), while utilizing updated BC Wildfire Service (BCWS) fuel type mapping, an improved wildfire threat analysis methodology, and a focus on the seven FireSmart disciplines.⁴ This CWRP accounts for Revelstoke's progress along the FireSmart Roadmap⁵ that has occurred since previous CWPPs were published, and takes advantage of the newest community wildfire planning framework in BC.

The CWRP is the latest evolution in community wildfire planning in British Columbia. A CWRP has its roots in the CWPP framework, which was originally established in BC in response to the series of devastating wildfires in 2003. Since then, many communities in BC and throughout the Pacific Northwest have continued to face an ever-increasing threat of wildfire, as the 2017, 2018, 2021, and 2023 fire seasons proved to be four of the most historically damaging seasons on record. CWRPs are currently being developed at many jurisdictional and geographic scales across the Province, and are individually tailored to address the needs of different communities in response to their size, capacity, and the unique threats that they face. This CWRP will look to incorporate the latest understandings in wildfire risk and resiliency, and provide Revelstoke with a concrete action plan towards enhanced wildfire resiliency.

1.2 PLAN GOALS

The goals of this CWRP are to identify the level of wildfire risk to the City of Revelstoke, to describe the potential consequences of wildfire to the community, and to examine options and strategies to reduce wildfire risks within Revelstoke's municipal boundaries and in the surrounding area. This CWRP gives Revelstoke a current and accurate understanding of wildfire threats to human life, property, critical infrastructure, and ecosystems. This CWRP can be used as an action plan to:

- 1) Increase the efficacy of fire suppression and emergency response;
- 2) Reduce potential impacts and losses to property and critical infrastructure from wildfire; and
- 3) Reduce potential wildfire behaviour within and adjacent to the community.

⁴ Education, Legislation & Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning and Vegetation Management

⁵ FireSmart BC Roadmap: <https://firesmartbc.ca/resource/the-firesmart-roadmap/>

To help guide and accomplish the above goals, this CWRP will provide Revelstoke's emergency planners, first responders, and land managers with:

- 1) An updated assessment of wildfire risk to the community;
- 2) An assessment of values at risk and potential consequences from wildfire;
- 3) An updated map of fuel types and recommended areas for vegetation management;
- 4) An updated assessment of emergency response capacity and community FireSmart status; and
- 5) Options and strategies to reduce wildfire risk through the seven FireSmart disciplines: Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning, and Vegetation Management.

1.3 PLAN DEVELOPMENT SUMMARY

The City of Revelstoke's CWRP development process consisted of five general phases:

- 1) Consultation with the Community FireSmart Resiliency Committee (CFRC) and project stakeholders;
- 2) Review of relevant plans and legislation regarding wildfire risk, emergency response, community planning, and land use (Section 2);
- 3) Identification of the values at risk (Section 3);
- 4) Assessment of the local wildfire threat, informed by field work (Section 4), and;
- 5) Development of an action plan with a focus on the seven FireSmart disciplines (Section 5).

SECTION 2 RELATIONSHIP TO OTHER PLANS AND LEGISLATION

Wildfire resiliency is influenced by all aspects of community planning, from land use decisions to utilities servicing, development policies, parks and trails planning, bylaw enforcement, and more. As a result, there are many municipal and provincial plans that relate to a CWRP. The intent of this section is to review all relevant local and higher-level plans and legislation to identify any linkages and content that is relevant to community wildfire planning for Revelstoke.

2.1 LOCAL AUTHORITY EMERGENCY PLAN

Emergency planning in Revelstoke, as well as the neighbouring areas of CSRD Electoral Area B, is administered by the Revelstoke and Area Emergency Program (RAEMP). Services provided include emergency planning, preparedness, and response. The Revelstoke & Area B Emergency Management Committee works to identify risks, mitigation priorities, and actionable plans for the City and surrounding area. At the time of writing this CWRP, the City of Revelstoke and Columbia-Shuswap Regional District (CSRD) were in the process of finalizing an Emergency Management Plan (EMP) for Revelstoke and the surrounding area. Emergency coordination between the City and the CSRD is paramount for wildfire preparedness and response, as interface fires may either begin within the City (e.g., grass fires in the drawdown zone, structure fires adjacent to the forest) or outside, and progress towards Revelstoke. The EMP outlines the structure and organization required to effectively respond to and recover from emergencies – pre-identifying logistic considerations for emergency response such as communications procedures, potential resource requirements, and the restoration of essential services. The EMP also outlines a training and exercise program for municipal and regional staff that will be assigned to an emergency. Sections 5.5 and 5.6 further discuss the City’s emergency planning from a wildfire-specific point of view, and Recommendations 19 and 20 provide suggestions to bolster capacity.

Hazard, Risk and Vulnerability Analysis

Potential risks and hazards faced by the City of Revelstoke are summarized in the EMP through a Hazard, Risk and Vulnerability Analysis (HRVA). The purpose of an HRVA is to help a community make risk-based choices to address vulnerabilities, mitigate hazards, and prepare for response and recovery from hazard events. Revelstoke’s HRVA takes an all-hazards approach, evaluating a variety of hazards based on their likelihood and potential consequence. Potential consequence was defined based on:

- Potential Fatalities
- Displacement
- Support System Impact
- Critical Infrastructure
- Economic
- Psychological
- Injuries
- Property Damage
- Cultural Impact
- Environmental
- Reputational

In the HRVA, wildfire was assigned a medium likelihood of occurrence and a medium potential consequence. Multiple hazards that can result in an interface fire were assigned a higher risk score (e.g., structure fires, motor vehicle incidents, extreme heat, drought, and rail incidents). The HRVA emphasizes

the importance of maintaining and enhancing current wildfire prevention and response measures. The analysis also highlights several critical assets and infrastructure essential to the community's functioning and resilience, which will be reviewed in Section 3.3.

To address vulnerabilities and enhance community resilience to various hazards, the HRVA outlined both current and future risk reduction measures. Current measures include creating community emergency planning guides, integrated contingency plans, hazard-specific response plans, and public education initiatives. Future measures recommended in the HRVA include updating evacuation plans, increasing trained staff for the EOC, and improving access and egress routes for isolated areas. Improvements in emergency preparedness and response will improve the wildfire resilience of Revelstoke, which is further discussed in Section 5.6.

Wildland Fire Interface Tactical Plan

The Revelstoke and Area Emergency Management Program (RAEMP) have developed a Wildland Fire Urban Interface Tactical Plan as an integral component to the City's EMP. This document outlines emergency response procedures for City personnel in a wildfire-specific setting, identifies high hazard wildfire areas, and references prevention and public education measures that can mitigate wildfire hazards throughout and adjacent to Revelstoke. The content within the Wildland Fire Interface Tactical Plan can be used to assist emergency responders in tactical response and operational planning in the event of a large scale interface wildfire, and can be used in concert with the wildfire risk assessment (see Section 4.4) and action plan from this CWRP. First responders with Revelstoke Fire-Rescue Services (RFRS) should be aware of the content within the tactical plan, and the specific information for each area of the community should be referenced during any emergency response exercises that are performed.

2.2 LINKAGES TO OTHER CWRPS/CWRPS

Multiple CWPPs or CWRPs have been previously completed by the City of Revelstoke as well as adjacent jurisdictions. In some cases, the boundaries of these community wildfire plans are overlapping. The recommendations from this CWRP will look to align with and build off Revelstoke's pre-existing CWPPs where appropriate, while addressing potential collaborative efforts with the Columbia-Shuswap Regional District (CSRD – Electoral Area B). Appendix A details recommendations from the 2015 Revelstoke CWPP and summarizes their status. Appendix B details recommendations from the 2023 CSRD Area B CWRP and summarizes potential synergies with Revelstoke's CWRP. See Table 2 below for a summary of each plan.

Table 2. Overview of Local Community Wildfire Plans

Community	Wildfire Plan	Summary of CWPP / CWRP Scope & Recommendations
City of Revelstoke	CWPP – 2011 (Updated in 2015)	<p>Assessed the City of Revelstoke’s Fire Protection Area and a two kilometer “spotting distance” around this. Included the developed portions of Revelstoke Mountain Resort’s (RMR) Controlled Recreation Area (CRA) and the Greeley Creek watershed. This CWPP included the following activities:</p> <ul style="list-style-type: none"> • Identified landscape-level fuel break locations; • Completed a Wildfire Risk Management System assessment; • Provided priority recommendations focused on: <ul style="list-style-type: none"> ○ Infrastructure protection; ○ Education and awareness; ○ Fire preparedness; ○ Fuel management; ○ Emergency response and evacuation; ○ Fire suppression; ○ Post-fire response – rehabilitation planning.
CSRD Electoral Area B	CWRP – 2023	<p>Assessed the “eligible WUI” (see Section 3.1) surrounding the many rural and remote communities of Electoral Area B of the CSRD outside of Revelstoke municipal boundaries (including South Revelstoke, Begbie Bench, and Trans-Canada West and East). The CSRD CWRP produced a local wildfire threat assessment for the areas adjacent to Revelstoke and provided recommendations to the CSRD based on the seven FireSmart disciplines. Recommendations most relevant to Revelstoke include:</p> <ul style="list-style-type: none"> • Introducing FireSmart education in local schools; • Improving amount of wildfire prevention signage at recreation sites and trailheads; • Enacting a FireSmart landscaping bylaw; • Collaborating on and communicating FireSmart initiatives and concerns; • Planning fuel treatment units on Crown land with the Ministry of Forests; • Facilitating residential debris disposal for FireSmart activities.

A number of the observations and recommendations made in Revelstoke’s 2015 CWPP remain relevant and are discussed in Appendix A of this CWRP. Recommendations that were not fulfilled were reviewed, and some were adapted into recommendations made throughout this plan. Since 2015, aspects of the Revelstoke community context have changed, and new understandings of FireSmart principles have emerged. Funding structures have changed, and new standards for CWRP writing and reporting have also been developed. As a result, multiple recommendations from the previous report are no longer relevant. However, recommendations on the following topics remain pertinent and have been revisited in this plan:

- Establishing a Wildfire Hazard DPA to regulate development in high-risk areas, ensuring that buildings and landscaping practices reduce fire hazards and enhance community safety (see Section 5.3);
- Expanding various FireSmart education initiatives;
- Continuing to host emergency management drills and perform evacuation planning for wildfire-specific emergencies, and;
- Partnership and collaboration with internal and external groups for fuel management programs, FireSmart communication, and emergency planning purposes.

All said, the City of Revelstoke has completed nine of the recommendations from their CWPP, with another 17 deemed to be in progress or recommended again through this CWRP. Fifteen of the previous CWPP recommendations have not been implemented but were deemed to be unachievable or not applicable to be achieved by the City (multiple of which may be addressed through the CSRD Area B CWRP).

2.3 CONNECTION TO LOCAL PLANS

Official Community Plan

Revelstoke’s Official Community Plan (OCP) is an expression of the objectives and policies of the City, providing a long-range framework to guide, monitor, and evaluate future land use and development. Revelstoke’s OCP was updated in 2022 and highlights the City’s recognition of the growing threats posed by climate change including increased droughts, flooding, and wildfires. The OCP underscores the importance of climate action, community involvement in greenhouse gas reduction, and responsible development to mitigate and manage climate change effects. Specific wildfire mitigation measures mentioned in the OCP include the development of a CWRP and the establishment of a Wildfire Development Permit Area (DPA). Table 3 below summarizes the objectives and policies within Revelstoke’s OCP that are relevant to wildfire resilience. Recognition of wildfire hazard reflects Revelstoke’s progress along the FireSmart Roadmap towards ‘Integration’ of FireSmart concepts into municipal plans and policies (see Section 6.1).

Table 3. Summary of objectives and policies from the City of Revelstoke’s Official Community Plan (Bylaw 2332 – 2022) that are related to community wildfire resiliency planning.

OCP Section	Section Description & Relationship to CWRP
3.4 – Community Infrastructure (General Infrastructure)	<p>This section ensures that future infrastructure construction considers impacts posed by climate change. It emphasizes the need to consider climate change impacts and strategies to increase climate resilience in all long-term decision-making, such as when undertaking long-range planning and reviewing land use development patterns, infrastructure standards, and flood management policies.</p> <ul style="list-style-type: none"> • <i>Promotes resilient infrastructure that can withstand and mitigate the impacts of wildfires. This connects with CWRP recommendations for FireSmart development (Section 5.2 and 5.3) and critical infrastructure protection (Section 5.7).</i>
3.4 – Community Infrastructure (Transportation)	<p>A Transportation Action Item that recommends reviewing the feasibility of additional crossings across the Illecillewaet River, including an alternative emergency access route out of the south part of the city in the event of floods, wildfires, or other natural disasters.</p> <ul style="list-style-type: none"> • <i>Reviewing and potentially developing additional river crossings will enhance emergency evacuation routes and access for emergency services during a potential wildfire event. Emergency preparedness and response is managed by the RAEMP and is reviewed in Section 2.1 and Section 5.6.</i>
4.1 – General Land Use Action #6	<p>A General Land Use Action Item that calls for the development of a CWRP that aims to reduce fire hazards and examines the feasibility of establishing a Wildfire DPA.</p> <ul style="list-style-type: none"> • <i>Developing a CWRP is a crucial step in identifying and mitigating wildfire risks.</i> • <i>Establishing a Wildfire DPA will help regulate development in high-risk areas, ensuring that buildings and landscaping practices reduce fire hazards and enhance community safety. As of 2024, work has not commenced on assessing the feasibility of a Wildfire DPA.</i>

OCP Section	Section Description & <i>Relationship to CWRP</i>
4.1 – General Land Use Action #7	<p>A General Land Use Action Item that calls for developing an Emergency Management Plan in collaboration with relevant agencies to ensure that the city remains well-positioned to deal with emergency events.</p> <ul style="list-style-type: none"> <i>Developing an Emergency Management Plan is essential for ensuring Revelstoke’s preparedness for wildfire emergencies through effective response and coordination during wildfire events, and proactive planning and education. Revelstoke’s EMP and Wildland Fire Interface Tactical Plan comprehensively cover these topics, and additional emergency planning recommendations have been made in Section 5.6.</i>
5.3 – Environmentally Hazardous Development Permit Area	<p>The Environmentally Hazardous Development Permit Area applies to all lands within City boundaries where slopes exceed 30% or where lands are subject to slippage or other hazardous conditions. All construction, subdivision, and land alteration here requires a development permit and is subjected to multiple guidelines:</p> <ul style="list-style-type: none"> <i>Tree removal or alteration is defined as development, which would require a geotechnical assessment. This can complicate / prohibit vegetation management for wildfire risk reduction on steep forested slopes.</i>
5.9 – Industrial Development Permit Area	<p>The Industrial Development Permit Area designation applies to all lands within the city where industrial development is permitted by the Zoning Bylaw, other than the Revelstoke Mountain Resort Development Permit Area. This section emphasizes environmental considerations, including the use of fire-resistant materials in construction.</p> <ul style="list-style-type: none"> <i>Promotes FireSmart-compliant construction materials throughout industrial development</i>
5.8 – Transportation, Circulation, and Parking	<p>This section is from the Revelstoke Mountain Resort Development Guidelines. It outlines the importance of maintaining emergency response corridors, integrating pedestrian paths, and promoting public transit. Key measures include ensuring that all new developments provide adequate emergency access and evacuation routes, designing roads that can accommodate fire-fighting equipment, and creating multiple access points for emergency vehicles to ensure efficient evacuation and response during wildfire events.</p> <ul style="list-style-type: none"> <i>Ensures that the transportation infrastructure supports effective emergency response, enhancing community preparedness for potential evacuation scenarios. Access for emergency response is regulated through Revelstoke’s Subdivision and Development Services bylaw (see Section 5.2). Additional proactive risk-reduction measures can be legislated through a Wildfire DPA and/or pre-development wildfire risk assessments.</i>

Revelstoke is currently undertaking the Zoning Bylaw Comprehensive Re-Write project to support the implementation of the recently completed OCP and Housing Action Plan. Both plans contain action items that include specific updates to be considered for the Zoning Bylaw. The rewrite will involve reviewing all zones and uses within them, adding new uses, and drafting new zoning regulations. This re-zoning project presents an opportunity to establish a Wildfire Hazard DPA as recommended within the OCP.

A Wildfire Hazard DPA will serve to minimize wildfire risks by regulating land use and development in high-risk areas. It may include guidelines for using fire-resistant building materials, creating defensible space around structures, implementing vegetation management practices to reduce fuel loads, and promoting the use of native plant species. Establishing a Wildfire Hazard DPA will provide several benefits, including enhancing community safety, protecting properties, and ensuring that new developments are built with fire safety in mind. Given the pace of development in Revelstoke, this proactive approach will significantly contribute to reducing wildfire risks and improving overall community resilience. Wildfire DPA development strategies are discussed more thoroughly in Section 5.3.

Other Local Plans

Table 4 contains other local plans and policies, higher-level plans, and legislation which are directly relevant to the CWRP. Local bylaws related to wildfire risk reduction are reviewed and discussed in Section 5.2.

Table 4. Summary of other local plans which are directly relevant to the CWRP

Plan	Plan Description & Relationship to CWRP
<p>Wildfire Risk Management System (2011), Wildfire Risk Management System (2015)</p>	<p>Map-based reports that enhance the 2011 and 2015 CWPPs by providing probability and consequence-based mapping of wildfire risks for the Revelstoke area. The reports include maps for Probability of Ignitions (addressing both lightning-caused and human-caused fires) and maps for Potential Fire Behaviour (noting fire intensity, rate of spread, and crown fraction burned). The reports assess Suppression Capability – highlighting constraints to detection and access to water sources. Consequence-based mapping details risks to the urban interface, visual quality, air quality, water quality, and ecosystem integrity.</p> <ul style="list-style-type: none"> Identifies areas of high risk and potential impact, guiding prioritization and resource allocation for wildfire prevention, preparedness, response, and recovery efforts. Can be used to help inform operational decisions during wildfire response scenarios.
<p>Wildfire Risk Mapping Enhancement to the Revelstoke & Area CWPP (2011)</p>	<p>The report, commissioned by Revelstoke's Community Wildland Fire Protection Committee, enhances wildfire risk mapping to address the specific challenges posed by the region's complex terrain, diverse forest types, and jurisdictional intricacies. By integrating fire weather data, forest fuel type observations, and community input, the report outlines the wildfire risks in the Revelstoke area. It evaluates wildfire probabilities and consequences based on infrastructure, environmental, and community values, leading to recommendations aimed at mitigating wildfire risks through infrastructure protection, education, fuel management, and emergency preparedness.</p> <ul style="list-style-type: none"> Serves as a resource for aligning CWRP actions with community-specific risks, priorities, and opportunities for wildfire risk reduction.

Plan	Plan Description & Relationship to CWRP
<p>Community Fuel Break Research Report (2015)</p>	<p>This report, prepared for the Revelstoke Community Fuel Break Design Project, investigates the optimal crown closure for creating shaded fuel breaks within Interior Cedar Hemlock (ICH) forests. It examines understory vegetation response to overstory changes and assesses the effectiveness of community-scale fuel breaks. The report identifies challenges of managing understory regeneration and the importance of reducing crown closure to less than 40% for slowing active crown fires. It includes recommendations for transitioning forest composition from conifer-dominated to a mix of deciduous and conifer species to enhance wildfire resilience.</p> <ul style="list-style-type: none"> • <i>Highlights the need for community-specific strategies in fuel management within wet ICH ecosystems.</i> • <i>Provides evidence supporting the shift towards mixed forest compositions for long-term wildfire resiliency.</i> • <i>Aligns with current Best Management Practices for fuel management in interior wet fire-weather zones which suggest that managing surface fuels and ladder fuels is likely adequate for reducing potential fire behaviour, and that reducing canopy closure may cause surface fuels to dry out more readily.⁶</i>
<p>Revelstoke 2018-2022 Strategic Plan (2019)</p>	<p>The strategic plan outlines the priorities and vision for the City's development. Key areas of focus include livability, infrastructure, sustainability, emergency planning, and organizational resilience. The plan emphasizes the importance of adapting to and mitigating the impacts of climate change, ensuring emergency preparedness, and fostering sustainable development to meet current and future needs.</p> <ul style="list-style-type: none"> • <i>Emphasizes sustainability and climate adaptation</i> • <i>Prioritizes emergency planning and supports preparedness strategies</i>
<p>Corporate Energy & Greenhouse Gas Emission Inventory & Reduction Strategy (2011)</p>	<p>This strategy provides an analysis of greenhouse gas emissions across various sectors of municipal operations in Revelstoke. It includes a list of recommended actions aimed at enhancing energy efficiency, reducing energy consumption, and lowering greenhouse gas emissions.</p> <ul style="list-style-type: none"> • <i>Includes actions aimed at reducing the vulnerability of municipal infrastructure to climate-related risks</i>
<p>Mount Revelstoke and Glacier Nation Parks of Canada Management Plan (2022)</p>	<p>A management plan developed by Parks Canada that outlines strategic directions for managing fire to maintain ecological integrity. This includes the use of prescribed burns and managing natural ignitions to restore historical fire regimes. It emphasizes collaborative efforts with local stakeholders to enhance wildfire risk reduction and emergency preparedness.</p> <ul style="list-style-type: none"> • <i>Promotes fire management and fuel reduction practices to reduce wildfire risk within Mount Revelstoke National Park, which represents a large land base adjacent to Revelstoke</i>

⁶ Best Management Practice Guide for Fuel Treatment, Interior-Wet Fire Weather Zone. BC Wildfire Service. Accessed from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/fuels-management/interior-wet_fire_weather_zone_for_review.pdf

Plan	Plan Description & Relationship to CWRP
<p>BC Provincial Open Burning Smoke Control Regulation (2019)</p>	<p>The Open Burning Smoke Control Regulation governs open burning for land clearing, forestry operations and silviculture, wildlife habitat enhancement, and community wildfire risk reduction.</p> <ul style="list-style-type: none"> • <i>Revelstoke is located in a High Smoke Sensitivity Zone – resulting in the strictest rules and regulations for open burning.</i> • <i>OBSCR includes provisions for eased setbacks and requirements for open burning that is strictly related to an approved plan for community wildfire risk reduction (Division 2), or when utilizing an air-curtain incinerator (Division 5)</i> • <i>All open burning within Revelstoke must comply with OBSCR as well as the Fire Prevention, Protection and Control Services Bylaw</i>
<p>Revelstoke and Area Land Use Planning Recommendations - Higher Level Plan Order and Subsequent Amendments Plan (2011)</p>	<p>This higher-level planning document provides strategic direction for land use categories within the region, establishes Resource Management Zones (RMZs) and outlines objectives for managing biodiversity, old growth forests, and wildlife habitats. While the plan emphasizes maintaining ecological integrity and managing forests sustainably, it does not explicitly mention wildfire risk reduction strategies.</p> <ul style="list-style-type: none"> • <i>The maintenance of mature and old forests can indirectly contribute to reducing wildfire hazards by preserving resilient forest structures</i>

SECTION 3 COMMUNITY DESCRIPTION

This section defines the planning area and provides general demographic information about Revelstoke, plus additional context regarding the surrounding area. An understanding of population trends, land use patterns, and values at risk can help best direct FireSmart outreach and risk mitigation activities.

3.1 AREA OF INTEREST AND WILDLAND URBAN INTERFACE

The area of interest (AOI) for Revelstoke's CWRP is its municipal boundary, which is the area in which Revelstoke is eligible to pursue provincial FireSmart funding through the FireSmart Community Funding and Supports (FCFS) program.

The wildland urban interface (WUI) can be defined as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. The BC Wildfire Service generates WUI Risk Class maps and associated spatial data to assist with initiatives related to wildfire risk reduction, including the Union of BC Municipalities' (UBCM) FireSmart Community Funding and Supports (FCFS) program. The FCFS program further classifies the 'eligible WUI' (eWUI) as the area that is one kilometer from a structure density greater than six per square kilometer. Future funding activities through the FCFS program are generally restricted to this eWUI. Due to the structure density of unincorporated communities outside Revelstoke's municipal boundary, the WUI extends in various directions away from the AOI.

The focus area for this CWRP is the eWUI within and surrounding the City of Revelstoke, up to a maximum of one kilometer beyond the municipal boundaries. It is important to note that Revelstoke's eWUI includes portions of the Columbia Shuswap Regional District (CSRD) Electoral Area B (i.e., South Revelstoke and Begbie Bench). The eWUI is a total of 6,809 hectares, and Table 5 provides an approximate breakdown of this area by ownership type.⁷

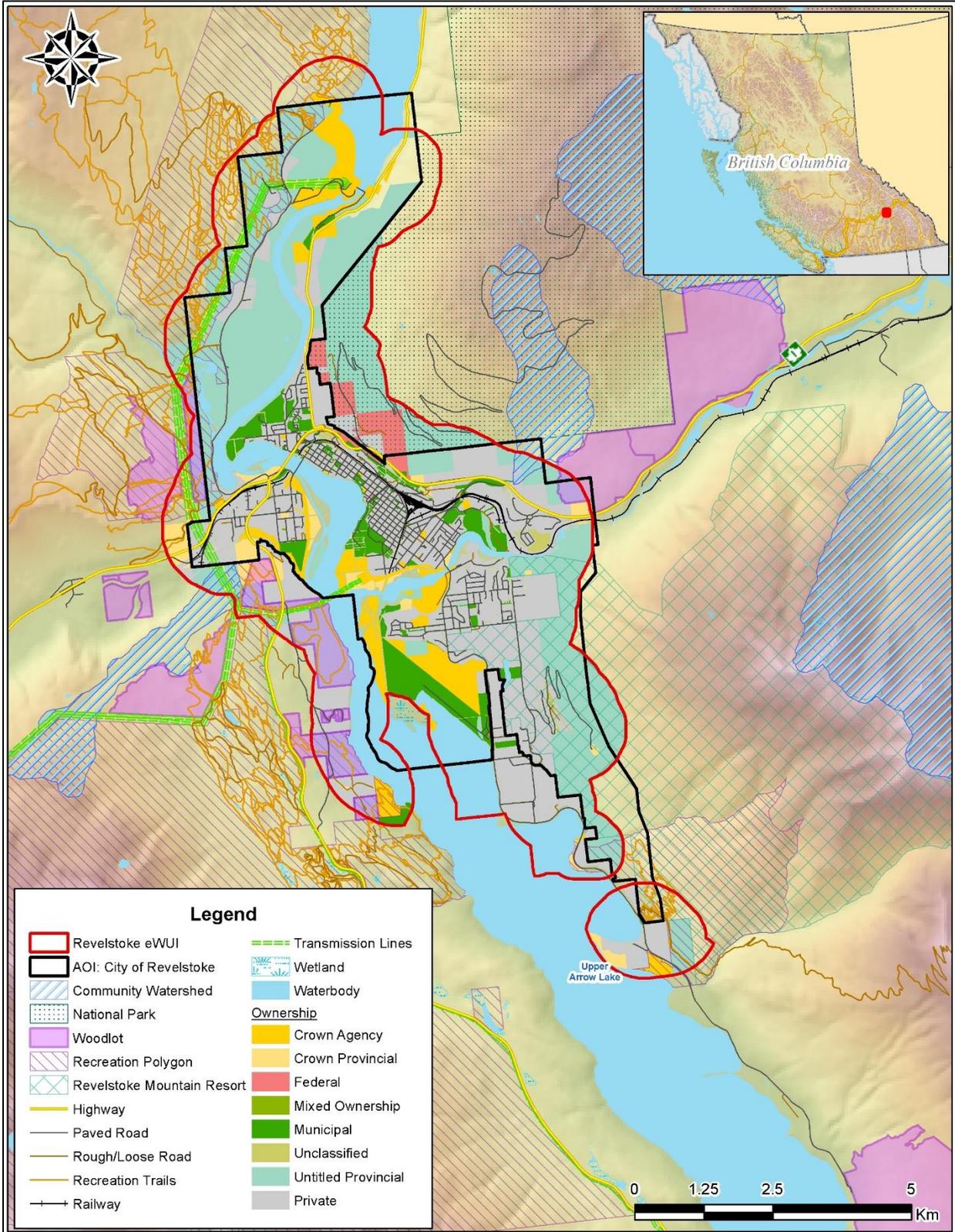
A considerable portion (29%) of the eWUI is privately owned and contains most of the structural values at risk. Fire hazard conditions on private property were frequently observed to be more hazardous than the surrounding forest due to a lack of vegetation management, landscaping decisions (i.e., highly flammable plants), and/or structural qualities (e.g., non-FireSmart materials, vulnerable outbuildings, exposed wooden decks, etc.). These two conditions combine to emphasize the importance of risk-reduction on private property to achieve wildfire resilience. Map 1 on the following page displays the land ownership types within the eWUI for this CWRP along with various land management designations. Map 1 displays how a considerable amount of the forested land within and surrounding Revelstoke is held and/or managed by outside agencies (i.e., Parks Canada, woodlot licensees, or Revelstoke Mountain Resort), and also within CSRD Electoral Area B, which emphasizes the need for collaboration when discussing, planning, and implementing wildfire risk reduction initiatives. Interagency cooperation as it relates to wildfire resilience is further discussed in Section 5.4.

⁷ The provincial ParcelFabric dataset was utilized to produce these numbers, as the eWUI extends outside Revelstoke's municipal boundary in multiple areas and land ownership data provided by the City of Revelstoke does not cover these areas. Additionally, multiple errors (e.g., duplicate parcels, mis-classification in Mt. Revelstoke National Park) were found within the Parcel Fabric dataset, which were corrected as best as was possible.

Table 5. Land Ownership breakdown within the eligible Wildland Urban Interface.⁸

Land Ownership	Area (Ha)	Percent of eWUI (%)
Crown Agency	663	10%
Crown Provincial & Untitled	3278	48%
Federal	500	7%
Municipal	401	6%
Private	1968	29%

⁸ This data came from a mixture of Parcel Fabric and a land ownership class that was provided by the City of Revelstoke. Multiple issues were found in this dataset (e.g., parcels being assigned multiple “types” of ownership, parcels within Mount Revelstoke National Park being incorrectly assigned), therefore the total area numbers reported in Table 6 likely have inaccuracies. Any site level plans stemming from this CWRP should accurately assess the land ownership at the site level.



Map 1: Project area for the City of Revelstoke CWRP, showing various land management designations surrounding the city (e.g., National Park, Revelstoke Mountain Resort, Woodlots, and Community Watersheds). Note – there are inconsistencies with the dataset and Federal land ownership designations in Mt. Revelstoke.

3.2 COMMUNITY INFORMATION

Revelstoke is located within the traditional territories of the Sinixt, the Secwepemc, the Syilx, and the Ktunaxa First Nations. Situated within the Columbia Mountains in the interior of British Columbia, Revelstoke is located along the Columbia River between the Selkirk and Monashee Mountain Ranges. Revelstoke is aligned along the main east-west transportation corridor through BC, which includes the Trans-Canada Highway (TCH) and the No. 1 mainline of the Canadian-Pacific Railway (currently owned / operated by CPKC). Highway 23 bisects Revelstoke and provides access to Mica Creek to the north and the Kootenay Region to the south. Both Lake Revelstoke and Upper Arrow Lake are navigable waterways. Revelstoke’s geographic location and surrounding topography makes it relatively isolated compared to other communities in southern BC. The surrounding area includes Rogers Pass and Glacier National Park to the east, Mica Creek and Kinbasket Lake to the north, Three Valley Gap to the west, and Upper Arrow Lake and the Beaton-Trout Lake area to the south.

Since the publication of Revelstoke’s 2015 CWPP, the City’s municipal boundaries have remained the same but the community has continued to grow and develop, with an estimated population of approximately 8,300 at the last census – nearly a 10% increase.⁹ The population density and extent of development have increased, with new businesses and residential areas expanding to accommodate the growing community. Considering the seasonality of many Revelstoke residents (i.e., shadow populations) and tourism and visitor-related populations, the number of individuals within Revelstoke during the peak of fire season can reasonably be assumed to be higher than numbers reported by official statistics. Table 6 provides various socio-economic statistics as of 2021 and pairs them with wildfire resilience implications.

Table 6. City of Revelstoke socio-economic statistics.⁹

Metric	Value	Implication	
Total Population	8,275	Fast growing population, demonstrating the need for FireSmart growth and development. FireSmart and fire risk education also needs to reach individuals who may have moved from less fire-prone areas. A relatively high population density calls for collaboration (e.g., neighbourhood-level) in FireSmart initiatives.	
Population Density (people/km ²)	200.5		
Population percentage change (2016 – 2021)	+ 9.4%		
Proportion of population, age:	0 – 14	16%	Importance of FireSmart education in schools.
	15 – 64	71%	Able bodied population to perform FireSmart activities.
	65+	14%	Potential need for assistance programs to complete FireSmart activities.
Housing Units (number of private dwellings)	3,739	Having 10% of homes unoccupied makes it harder to reach homeowners and perform FireSmart activities. The high proportion of renters (33%) requires FireSmart communication to landlords and/or property upkeep by renters.	
Private dwellings occupied by usual residents	3,354		
Proportion owner occupied	67%		
Single-detached housing units (proportion of housing stock)	68%	Demonstrates the need to ensure that FireSmart development is enforced on all property types, specifically single-detached homes.	

⁹ Data from Statistics Canada, 2021 Census of Population.

The outdoor recreation and tourism sector is a major component of Revelstoke’s economy. Outdoor adventurers take advantage of the forested and mountainous terrain through activities such as hiking, mountain biking, skiing, snowmobiling, and kayaking. The preservation and protection of forested areas that provide venues for these activities is emphasized in Revelstoke’s Official Community Plan, and much of the forest surrounding the city is managed as a Recreation Polygon through the Ministry of Forests, a Controlled Recreation Area through the Mountain Resorts Branch, or a National Park through Mount Revelstoke National Park. Preserving and protecting these areas from natural hazards (i.e., wildfire) may require active management in some instances, which is further discussed in Section 5.7. Formal recreational facilities in the community include a full-service community center, aquatic center, seniors’ activity center, an 18-hole golf course, bowling lanes, fitness centers, tennis courts, a skating arena, and a curling rink – all of which are important pieces of infrastructure for community members.

Key services provided by the City of Revelstoke include fire protection, emergency operations center coordination, emergency management program administration, waste management services, building and development permits, and bylaw enforcement. The Royal Canadian Mounted Police (RCMP) and Revelstoke Fire-Rescue Services (RFRS) provide policing services and emergency response throughout Revelstoke and in adjacent CSRD communities (i.e. South Revelstoke, Begbie Bench). Further details regarding the capacity, training, and equipment allotment of RFRS are discussed in Section 5.5.

Revelstoke and surrounding areas fall within the Columbia Fire Zone of the Southeast Fire Center. Within the Revelstoke Fire Protection Area, BC Wildfire Service (BCWS) crews will respond to any wildfires that exceed RFRS response capacity. There are two BC Wildfire Service (BCWS) Unit Crews stationed at the Revelstoke airport – crew types which are generally reserved for responding to large, expanded wildfire events. While these crews can be highly effective in an expanding interface fire scenario, the availability of these crews for immediate response cannot be guaranteed as availability is dictated by the current wildfire activity throughout the province. This challenge was a reality in recent years (2018, 2019, 2021, 2023), as the provincial wildfire situation overwhelmed available ground resources. The Columbia Fire Zone also stations multiple smaller Initial Attack crews at the airport. Within Mount Revelstoke & Glacier National Parks, Parks Canada staffs two Type 1 fire crews throughout the wildfire season (eight total personnel).

3.3 VALUES AT RISK

Multiple types of values can be directly or indirectly impacted by a wildfire event. Publicly or municipally owned critical infrastructure (identified through the City of Revelstoke’s Emergency Management Plan) is infrastructure that is essential to the health, safety, security or economic wellbeing of the community or for the effective functioning of government (e.g., fire halls, emergency operations centers, radio repeaters, cell towers, etc.). For this CWRP, *values at risk* were defined to include critical infrastructure, community assets, residential structures, commercial / industrial structures, and areas with high environmental or cultural value. Critical infrastructure and values at risk for the City of Revelstoke are shown on Map 2, while Table 7 details the inventory of critical infrastructure and community assets within the eWUI. This list may not be comprehensive, and will change as the city continues to grow, therefore pieces of infrastructure additional to those in Table 7 may be considered for FireSmart assessments or mitigation over time.

The distinguishing factor between critical infrastructure and community assets is their function during and after a wildfire event. Protection of critical infrastructure through proactive risk mitigation and during a wildfire event is an important consideration for emergency response effectiveness, to ensure that coordinated evacuation can occur if necessary and that essential services can be maintained or restored quickly. Protection of community assets can also help increase community resilience to a fire event – preserving important municipal assets that provide for regular functioning of the City.¹⁰

3.3.1 EMERGENCY RESPONSE, PUBLIC SERVICES, AND COMMUNICATIONS

In the event of an evacuation alert or order, the City of Revelstoke is responsible for offering emergency support services including reception centers, emergency operation centers (EOCs), and evacuation coordination (as detailed in the EMP – see Section 2.1). This applies to an evacuation alert or order that is within City boundaries, or in adjacent jurisdictions. The City of Revelstoke’s primary EOC is located at the airport at 2931 Airport Way, with a back-up EOC at the Revelstoke Fire-Rescue Services Training Center at 1640 Powerhouse Road. The City operates a primary evacuation center at the Community Center (at 600 Campbell Avenue), and has offered camping at Centennial Park for evacuees and tourists who were impacted by wildfire events in the region.

Most day-to-day public services for community members are offered from multiple locations throughout the City (many of which are identified as critical infrastructure / community assets in Table 7). There is reliable cellular and internet coverage at all of these locations and throughout the majority of the valley.

3.3.2 ELECTRICAL POWER & HEATING

Wildfires have the potential to impact electrical service by causing disruption in network distribution through direct or indirect processes. For example, heat from flames or fallen trees associated with a fire event may cause power outages. Electricity in Revelstoke is provided by BC Hydro, sourced from both the Walter Hardman Hydroelectric Dam and the Pingston Creek Hydro Plant. These two sources are located in the CSRD approximately 50 and 25 kilometers south of Revelstoke respectively, with power delivered

¹⁰ Activities that proactively assess and mitigate fire hazards around critical infrastructure and community assets are currently eligible for funding under the 2024 CRI Program Guide, which are addressed through recommendations #35 and #36.

to the Illecillewaet substation via transmission lines that run along Upper Arrow Lake and Highway 23. Each of these facilities contain above and below ground infrastructure and are in the direct interface with forest – Walter Hardman surrounded by Crown land and Pingston Creek surrounded by private land. In addition to electrical infrastructure for Revelstoke, a major transmission line corridor runs from the Revelstoke Dam along the west side of the valley to the Begbie Bench, before exiting the area to the southwest. The hydroelectric power generated at the Revelstoke Dam supplies electricity throughout BC.¹¹ Despite occasional power outages, the overall reliability of the electrical service is high. The majority of neighborhoods in Revelstoke are served by distribution networks characterized by small, street-side wooden poles that connect to homes. These networks are more vulnerable to fire in the interface where poles are not planted with concrete or gravel footings and vegetation encroaches around the base of the pole. The remaining neighborhoods are served by underground distribution lines, which eliminates this hazard and are an important feature of wildfire resiliency.

Secondary power sources are also important to reduce critical infrastructure vulnerability in the event of an emergency which cuts power for extended periods of time. The City should ensure that back-up power sources are present and operational for critical infrastructure, including Emergency Operations Centre locations, first responder facilities, and water and wastewater systems. Vulnerabilities for secondary power sources which should also be considered include mechanical failure, insufficient power supply (should a wide-scale outage occur), and fuel shortage in the event of long outages.

The primary heating fuel in Revelstoke is propane, delivered by Fortis BC through a piped propane system. Although there are no plans to introduce natural gas to Revelstoke, the propane system can be expanded as needed. Small amounts of propane and heating oil are also delivered to the community, stored by distributors, and provided to users by local dealers. The Revelstoke Community Energy Corporation (RCEC) provides a secondary source of heating through the distribution of district energy. The RCEC (located at the Downie Mill) utilizes locally sourced biomass along with some propane for peak demands and backup. Significant amounts of biomass are available from Downie Timber from low-grade logs and biomass waste from forests and the local landfill. The energy system supplies steam for the sawmill's dry kilns and hot water for heating city buildings, including the Aquatic Centre, as well as several private buildings downtown. Revelstoke has invested in retrofits to connect its facilities to the district energy system. Additionally, firewood, as a form of local biomass, remains a key source of home heating in Revelstoke.

Telus BC provides cable services and maintains communication towers throughout the area (e.g., east of Mt. Begbie Road, north of the Trans Canada Highway (TCH) along the Jordan Forest Service Road (FSR), west of Moses Falls). Main communications infrastructure is generally at a lower risk of impact from wildfire (i.e., metal), but associated infrastructure and exposed electrical components can be impacted by a wildfire which can complicate emergency communications. Communications sites are often isolated and in the forest interface. Simple vegetation management within these sites can considerably reduce the risk of wildfire to infrastructure, while some sites may benefit from more expanded fuel management programs in the surrounding areas. For example, portions of the Jordan FSR have been recommended for

¹¹Enerficiency, thinkBright Climate Solutions. 2011. City of Revelstoke Community and Energy Plan. Retrieved from: <http://www.cityofrevelstoke.com/DocumentCenter/View/2625/Community-Energy-and-Emission-Plan-CEEP?bidId=>

fuel management as part of this CWRP, while the area surrounding the Jordan communications tower has been recommended for fuel management through the CSRD's Area B CWRP (see 5.7 for additional information).

3.3.3 WATER AND SEWAGE

The functionality of critical water and sewage infrastructure in Revelstoke could be impacted by an interface wildfire event due to emergency power cuts or physical damage. Infrastructure located in forested or interface areas is particularly vulnerable. The majority of potable water and fire suppression water within the City is provided by infrastructure at Greeley Creek, and distributed / stored throughout the City via an intricate network of distribution pipes, pump stations, and reservoirs (see Table 7), as well as a drinking water treatment plant. The water supply infrastructure in Revelstoke is designed to ensure a reliable water supply for both daily use and structural/interface firefighting purposes. Revelstoke will enact water usage restrictions to manage water demand during summer months and under more severe drought conditions (notably in 2023). Fire hydrants are strategically placed throughout the City to maximize coverage. In the event of a wildfire, these hydrants are crucial for firefighting efforts, and their locations are carefully mapped to facilitate quick access.

Revelstoke operates a wastewater treatment plant that utilizes two aerated lagoons with mechanical pre-screening. Wastewater is moved throughout the city and to the treatment plant via a network of sewer lines and lift stations. Above-ground sewer infrastructure was observed to have few structural vulnerabilities to fire as it is largely metal, though the fire hazard adjacent to this infrastructure was often unnecessarily high due to natural or landscaped vegetation. Currently, infrastructure planning is underway to update and review the Liquid Waste Management Plan. This plan will guide future capacity requirements and treatment upgrades to ensure system resilience during emergency events such as wildfires.¹²



Figure 1: Examples of infrastructure with adjacent fire hazards. Left: lift station with conifer hedges and mature conifer trees adjacent. Right: dense conifer forests and unmaintained grass along the distribution line right-of-way to the Greeley Creek water treatment plant.

¹² City of Revelstoke. Sewer. Retrieved from: <http://cityofrevelstoke.com/514/Sewer>

3.3.4 HAZARDOUS VALUES

Hazardous values are defined as elements that pose a considerable safety hazard to emergency responders in the event of a fire. Protecting these hazardous values from fires is crucial to preventing the exacerbation of interface fire disasters. Locations where combustible materials, explosive chemicals, gas, or oil are stored are considered hazardous values. In Revelstoke, Fortis BC operates a propane plant with underground pipelines running throughout the city. These pipelines transport propane to the community, delivered by tanker-truck and railcar, and stored at an above-ground site.¹³ In the event of a wildfire, Fortis BC will coordinate with local and provincial emergency responders and may shut down operations if necessary. While the infrastructure on this property has few vulnerabilities to fire and the property is generally cleared of vegetation, there is unmaintained grass / shrubland on private property to the east and municipal / Crown-owned deciduous and mixedwood forest to the south / southwest.

BC Hydro maintains a substation and a hydroelectric plant in Revelstoke, both of which are considered hazardous infrastructure. These facilities pose significant fire hazards due to the high-voltage equipment and flammable materials involved in power generation and distribution. The Illecillewaet substation has few structural vulnerabilities to fire, but grass fuels are irregularly maintained throughout the entirety of the property. The hydroelectric plant to the west of Revelstoke Dam has few structural vulnerabilities, and low hazard fuels throughout the property. The mill and log-yard for Downie Timber as well as the log-yard for the Revelstoke Community Forest Corporation (RCFC) in Revelstoke are also hazardous values, as they store large amounts of biomass which can serve as a substantial fuel source for fires. To the west of Downie's log yard along portions of the Greenbelt Trail, unmaintained and cured grass fuels were observed, while the continuous conifer forest to the east of RCFC's yard presents an inherent risk. The mill's operations and both storage facilities must be carefully managed to minimize fire risks.

Additionally, the railway running east-west through Revelstoke poses an ignition source which has been a concern raised by Revelstoke Fire-Rescue Services and the BC Wildfire Service, as sparks from passing trains can potentially start fires. Much of the rights-of-way adjacent to the active rail lines are privately owned by the rail company and often contain unmaintained grass / shrub fuels. Ongoing consultation with Canadian-Pacific Kansas City (CPKC) or other operator-owners of these rights-of-way should ensure that they are regularly maintained in a low-hazard state throughout the fire season.¹⁴ Additionally, CPKC's emergency response capabilities to a fire along their rights-of-way should be discussed with Revelstoke Fire-Rescue Services.

Lastly, the Revelstoke Landfill accepts a variety of hazardous materials, including old fuel, grease, fuel additives, used oil, oil containers and, flammable liquids.¹⁵ Proper management and containment of these materials are critical to prevent hazardous incidents during a wildfire. This outdoor facility is surrounded by forested Crown land, with moderate threat mixedwood and coniferous stands found in all directions.

¹³ Enerficiency, thinkBright Climate Solutions. 2011. City of Revelstoke Community and Energy Plan. Retrieved from: <http://www.cityofrevelstoke.com/DocumentCenter/View/2625/Community-Energy-and-Emission-Plan-CEEP?bidId=>

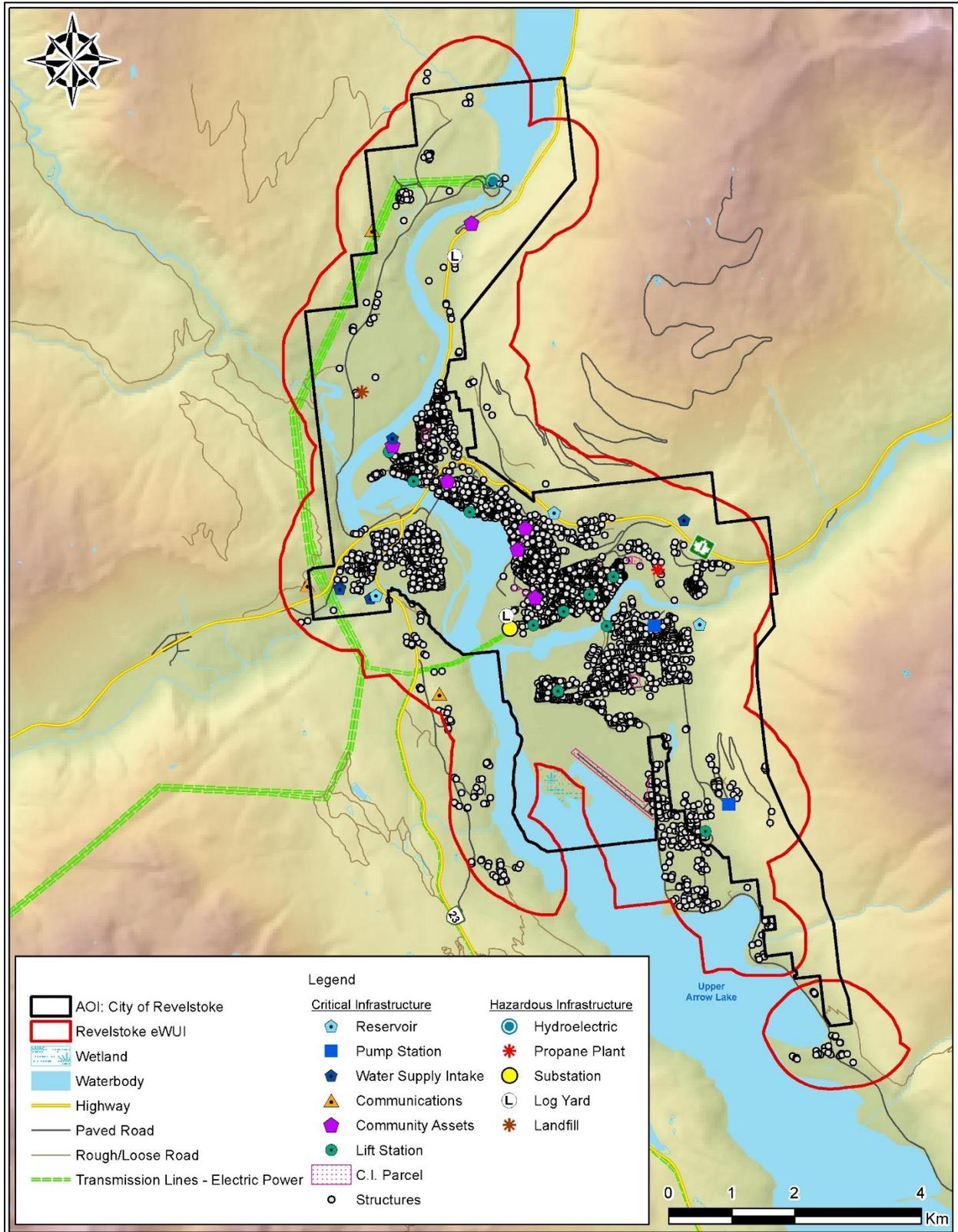
¹⁴ See CPKC's Integrated Vegetation Management Plan: <https://www.cpkc.com/content/dam/cpkc/documents/english/pdfs/community/CP-IVMP-2020-2025.docx.pdf>

¹⁵ Columbia Shuswap Regional District. Hazardous Waste Collection Depots. Retrieved from: <https://www.csr.d.bc.ca/174/Hazardous-Waste-Collection-Depots>

Table 7. Inventory of critical infrastructure and community assets within (and servicing) the City of Revelstoke. Note: this table does not include banks, grocery stores, bridges, communications towers, or various external assets.

Infrastructure Type	Infrastructure Name	Notes / Overview of Risk Factors
Water Infrastructure		
Water Treatment & Intake	Greeley Creek Water Treatment Plant & Associated Infrastructure	Infrastructure is generally FireSmart but the forest surrounding the plant, access road, and intake is high hazard. Isolated location and gated access road also provide challenges for fire suppression efforts. Fuel treatment unit proposed surrounding this area.
	Greeley Creek Water Intake	
	Golf Course Intake (Well)	Low-hazard riparian vegetation surrounding, on the banks of the Columbia. Can perform regular vegetation maintenance.
	Bridge Creek Intake	Moderate hazard conifer stands surrounding, though private land extends 100-700-meters from intake. Within the Bridge Community Watershed.
	Dolan Creek Intake	Moderate hazard conifer stands surrounding. Crown land extends for 100-250-meters, transitioning to private land. Fuel treatment unit identified in surrounding area.
Water Reservoir	Trans-Canada Highway (TCH) Reservoir	Moderate-high hazard mixedwood stands surrounding. Municipal land extends ~25 meters then into MRNP. Area surrounding identified as a fuel treatment unit.
	Arrow Heights Reservoir	Moderate-high hazard mixedwood and conifer stands surrounding – Crown land within the RMR CRA. Isolated location and access road challenge fire suppression.
	Big Eddy Reservoirs	Moderate hazard conifer stands surrounding. Crown land extends for 130-200-meters, transitioning to private land. Fuel treatment unit identified in surrounding area.
Pump Station	Arrow Heights Pump Station	Surrounded by private forested land, moderate-high hazard. Multiple FireSmart concerns on adjacent properties. Sloped area to the north, downslope of access road identified for fuel treatment.
	Monashee (RMR) Boost Station	Mixedwood forests surrounding, high hazard due to slope and aspect, much of which is privately owned. Non-private forest areas adjacent (in the CRA) identified for fuel treatment.
Intake & Pump Station	Big Eddy Well #1	Conifer and riparian areas surrounding, all privately owned.
	Big Eddy Well #2	
Emergency Response Infrastructure		
Airport	Airport (Primary EOC)	Primarily water surrounding, though there is grassland and marshland in the drawdown zone adjacent. Buildings generally FireSmart and offset from vegetation.
Fire Hall	Fire Hall	Very few vulnerabilities, well maintained property.
Police	RCMP Station	
BCEHS	BC Ambulance Service	Low-moderate mixedwood forest on municipal land to the east / northeast. Few structural vulnerabilities.

Infrastructure Type	Infrastructure Name	Notes / Overview of Risk Factors
Schools		
Elementary Schools	Arrow Heights Elementary School	Unmaintained, moderate hazard conifer stands on municipal slopes surrounding – fuel treatment identified. Private forested land to the north and south (RMR).
	Begbie View Elementary School	Low hazard mixedwood forests on slopes to the west, increased hazard due to slope. Few structural vulnerabilities.
	Columbia Park Elementary School	Moderate hazard conifer stands on slopes to the east, pockets of higher hazard east across road – identified as a fuel treatment unit. Few structural vulnerabilities.
High School	Revelstoke Secondary School	Little vegetation surrounding, few structural vulnerabilities.
Sewage Infrastructure		
Wastewater Treatment	Sewer Treatment Plants (& Aerated Lagoons)	Majority of forest surrounding is municipal land – contains low hazard deciduous / mixedwood stands.
Lift Stations	10 Lift Stations – Various Locations	Infrastructure is generally not vulnerable – metal and majority below ground.
Community Assets		
Recreation	Community and Aquatic Center	Low hazard deciduous forest to the west, few structural vulnerabilities.
	Forum and Curling Club	Little vegetation surrounding, few structural vulnerabilities.
	Golf Course Clubhouse	Well maintained and irrigated property, few structural vulnerabilities.
Arts & Museums	Forestry Museum	Moderate hazard mixedwood and conifer forests surrounding, much of which is Crown Agency. Museum parcel is municipally owned, regular vegetation maintenance could be completed.
	Museum & Archives	Little vegetation surrounding, few structural vulnerabilities.
	Visual Arts Center	Deciduous vegetation along the railway right-of-way, but this is privately owned. Little vegetation threat or structural vulnerabilities on the municipal property.



Map 2: Location of structures, hazardous infrastructure, and critical infrastructure throughout Revelstoke's eligible WUI (note – Greeley Creek infrastructure was assessed for the CWRP but is not displayed on this map).

3.3.5 CULTURAL VALUES

Cultural values in Revelstoke have the potential to be impacted by wildfire through physical damage or alteration. Wildfire suppression techniques can disturb unidentified archaeological sites. If cultural values are inventoried and identified as sensitive sites, the possibility of protection and accommodation of these features in a wildfire incident is increased.

Given the overlap with the traditional territories of the Sinixt, the Secwepemc, the Syilx, and the Ktunaxa First Nations and the importance of the Columbia River valley as a historic transportation network, there is potential for both archaeological and culturally important sites within the WUI. Known archaeological sites are recorded by the Archaeology Branch and protected under the Heritage Conservation Act, which applies on both public and private lands. To date, 27 archaeological sites have been identified by the Archaeology Branch within the CWRP area. Fuel management treatments proposed in this CWRP may overlap with areas of high archaeological potential and known or unknown archaeological or cultural sites.

Revelstoke should continue to consult with applicable First Nations well before development and implementation of any proposed fuel management activities in the area to allow for meaningful review and input. Archaeological or cultural resource assessments may be required to ensure that known or unknown cultural resources are not inadvertently damaged or destroyed, and that First Nations strategies for land management in their traditional territory are complied with.

3.3.6 ENVIRONMENTAL VALUES

Revelstoke contains several important environmental values that have the potential to be impacted by wildfire events, fire suppression, or by fuel management treatments. A subset of these environmental values include:

- Provincially designated species at risk
- Critical habitat for Federally listed species at risk
- Community watersheds

The BC Conservation Data Centre inventories species and ecosystems that occur in BC, assesses conservation status ranks for species and ecosystems, and where required assigns a red- or blue-list designation according to their vulnerability. Multiple occurrences of red- or blue-listed vascular plants and vertebrate and invertebrate animals overlap the project area for this CWRP and extend well beyond this boundary. These are listed in Table 8 and shown on Map 3.

Table 8: Publicly available occurrences of red and blue-listed species recorded in the WUI.

English Name	Scientific Name	Category	BC List
Coeur d'Alene Salamander	<i>Plethodon idahoensis</i>	Vertebrate Animal	Blue
Great Blue Heron (Herodias subspecies)	<i>Ardea herodias herodias</i>	Vertebrate Animal	Blue
Northern Myotis	<i>Myotis septentrionalis</i>	Vertebrate Animal	Blue
American Avocet	<i>Recurvirostra americana</i>	Vertebrate Animal	Blue
White Sturgeon (Upper Columbia River Population)	<i>Acipenser transmontanus pop. 2</i>	Vertebrate Animal	Red
Woodland Caribou (Southern Mountain Population)	<i>Rangifer tarandus pop. 1</i>	Vertebrate Animal	Red
Gypsy Cuckoo Bumble Bee	<i>Bombus bohemicus</i>	Invertebrate Animal	Red
Lance-leaved Figwort	<i>Scrophularia lanceolata</i>	Vascular Plant	Blue
Painted Turtle (Intermountain - Rocky Mountain Population)	<i>Chrysemys picta pop. 2</i>	Vertebrate Animal	Blue
Michigan Moonwort	<i>Botrychium michiganense</i>	Vascular Plant	Blue

Critical habitat is the habitat needed for the survival or recovery of a threatened or endangered species listed on Schedule 1 of the federal Species at Risk Act, and it is formally identified in the final recovery strategy that is made for every endangered species. Critical habitat for the following federally listed species at risk are found within the eWUI:

- Woodland Caribou; Southern Mountain population – (*Rangifer tarandus*)
- Whitebark Pine (*Pinus albicaulis*) – Proposed critical habitat

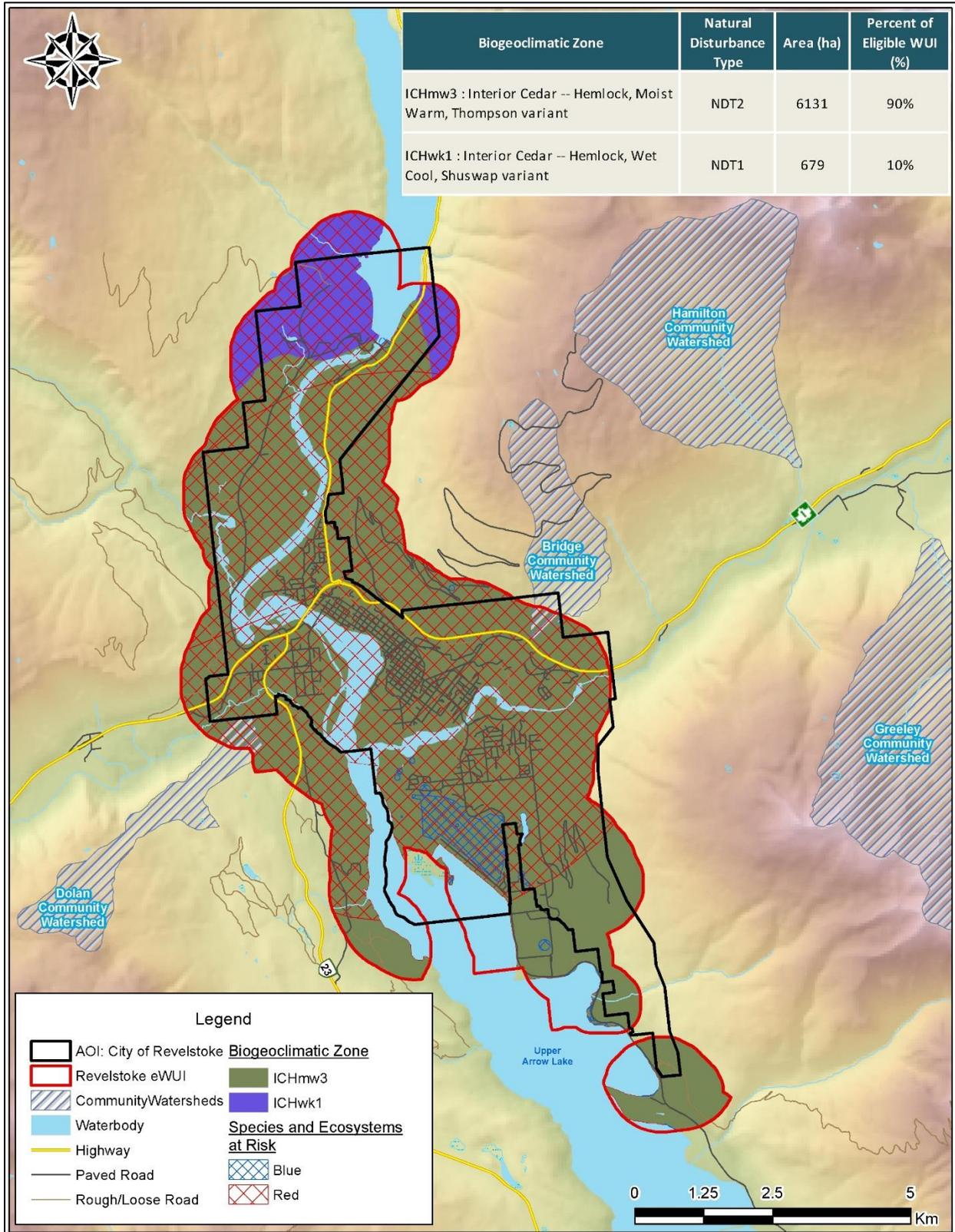
Any site-level fuel management plans must identify and mitigate potential impacts to ecosystems or species at risk, and may require rationales or mitigation measures for forest management in overlapping areas.

The eWUI for this CWRP contains portions of the Bridge Community Watershed and Dolan Community Watershed, while the Greeley Creek Community Watershed lies outside the eWUI. All three watersheds play a crucial role in the local water supply (with Greeley Creek providing the vast majority of municipal water throughout the city). A major wildfire could significantly impact these watersheds, as was corroborated in the City's Water Risk Assessment (McElhanney, 2018). Potential watershed impacts from a wildfire include:

- Loss of forest cover resulting in increased sedimentation and altered flow regimes, which can degrade water quality and disrupt the balance of aquatic ecosystems.
- Wildfires resulting in acidic soils which can change water source quality.
- Potential contamination of water source from suppression chemicals.
- Changes to pathogenic organisms present in the watershed.

To protect these watersheds from the potential adverse impacts of fire, it is important to consider wildfire risk and potential risk management strategies. This may include establishing fuel management treatments that reduce the potential severity of wildfires within or adjacent to the watersheds. Maintaining healthy forest ecosystems and reducing the likelihood of stand-replacing wildfires within these watersheds can help prevent erosion and maintain the natural filtration processes that are crucial for clean water.

Monitoring and managing the health of community watersheds in Revelstoke is a collaborative effort involving local authorities, environmental agencies, and stakeholders. Prioritizing watershed protection ensures the long-term sustainability of water resources and the overall health of the natural environment. Understanding the interconnectedness of forest health and water quality highlights the importance of comprehensive wildfire management plans that consider all aspects of the ecosystem. Effective management and proactive measures can help maintain watershed integrity, providing clean and reliable water for the community and surrounding areas.



Map 3. Environmental values at risk within the Revelstoke wildland-urban interface. Information on Biogeoclimatic Zones and Natural Disturbance Types will be reviewed in Sections 4.1.2 and 4.2.1 respectively.

3.3.7 OTHER RESOURCE VALUES

The value of natural ecosystems and the importance of conservation and protection of environmental values to Revelstoke residents and the local economy is frequently cited in Revelstoke’s Official Community Plan, Parks & Recreation Master Plan, and Parks Canada’s Management Plan for Mount Revelstoke National Park. The outdoor and recreational opportunities within the City of Revelstoke and in the mountains surrounding have been a core reason for population growth in recent years, and an important lifestyle factor for individuals that call Revelstoke home. Ecotourism and recreation-based tourism are major economic draws to the Revelstoke area throughout the fire season – primarily activities which rely on safe and healthy forested areas (e.g., hiking, mountain biking, camping, etc.). While there is considerable Crown land surrounding Revelstoke with excellent recreation networks, Revelstoke Mountain Resort and Parks Canada invest heavily in commercial recreation infrastructure. High severity wildfires can significantly disrupt the economic opportunity of tourism and the safety of day-to-day recreationalists, as was experienced in Waterton National Park in 2017 (Kenow wildfire) and Jasper National Park in 2024. The Kenow wildfire demonstrated the effects of wildfire on a tourism-driven town, as over 80% of the hiking trail network along with campgrounds, the visitor center, staff housing, and key water and electrical infrastructure were destroyed by the fire.¹⁶

The forest industry also plays an important economic role for the City of Revelstoke. The Revelstoke Community Forest Corporation, Downie Timber, Stella-Jones, Woodlot licensees, and the Ministry of Forests (including BC Timber Sales) are major employers within the area. The long-term health and sustainability of the forest industry in the Revelstoke area is dependent on healthy forest ecosystems. As much of the Columbia valley and associated drainages have been subject to historic forest harvesting and are currently managed as long-term assets, the proactive management of these areas to reduce in-stand and landscape-level fire risk is critical. This also applies to forested areas that are protected and not actively managed (e.g., National / Provincial parks, Old Growth Management Areas, Recreation Polygons, Wildlife Habitat Areas, etc.), as reducing the likelihood of stand-replacing fires may prevent catastrophic fires at the landscape scale.

¹⁶ Parks Canada, Kenow Wildfire: <https://parks.canada.ca/pn-np/ab/waterton/nature/environment/feu-fire/feu-fire-kenow>

SECTION 4 WILDFIRE RISK ASSESSMENT

This section summarizes the factors that contribute to local wildfire risk in the Revelstoke wildland urban interface. Section 4.1 discusses the wildfire environment: topography, fuel, and weather, and includes climate change projections for the area. Section 4.2 discusses wildfire history in the area and wildfire response data from local fire crews. Section 4.3 discusses wildfire risk in the Revelstoke area from a provincial standpoint, while Section 4.4 provides a more detailed look at local wildfire risk. The local wildfire risk assessment completed as part of this CWRP provides a decision support tool to determine the most effective wildfire risk reduction actions and opportunities to increase community resilience.

The relationship between wildfire risk and wildfire threat can be summarized as follows:

$$\textit{Wildfire Risk} = \textit{Consequence} \times \textit{Probability}$$

Where:

Wildfire risk is the potential losses incurred to human life, property, and critical infrastructure within a community in the event of a wildfire.

Consequence are the potential repercussions associated with fire occurrence in an area (higher consequences are associated with densely populated areas, critical infrastructure, areas of high biodiversity, etc.).

Probability is the likelihood of fire occurring in an area and that area's ability to ignite, spread, and consume organic material in the forest – its *wildfire threat*. Wildfire threat is driven by three major components of the wildfire environment:

- 1) Topography - Slope and terrain features can influence a fire's rate of spread; aspect can affect fuel moisture conditions
- 2) Fuel – Loading, size and shape, vertical and horizontal arrangement, type, and dryness
- 3) Weather - Temperature, relative humidity, wind speed and direction, precipitation

These components are generally referred to as the 'fire behaviour triangle' (Figure 2); the ways in which they individually influence the wildfire environment of the eWUI will be detailed below.

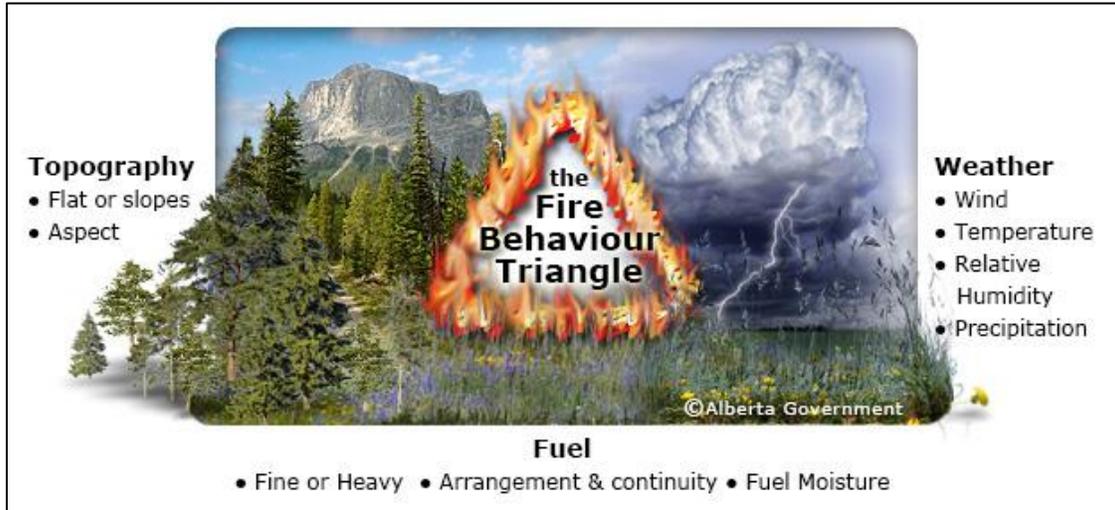


Figure 2: Graphic display of the fire behaviour triangle, and a subset of characteristics within each component.¹⁷

4.1 LOCAL WILDFIRE ENVIRONMENT

The ecological context of wildfire and the role of fire in the local ecosystem under both current and historical conditions is an important basis for understanding the current and future wildfire threat to a community.

4.1.1 TOPOGRAPHY

Local BC Wildfire Service (BCWS) experts have expressed that topography is the main driver for spread rates and direction throughout the Columbia Fire Zone. The mountainous conditions and complex topography surrounding Revelstoke make topography a considerable wildfire risk factor, and one that can greatly complicate fire suppression efforts. According to BCWS, multiple nearby wildfire events in recent years have challenged any type of suppression by BCWS due to steep topography and a lack of access for ground crews and/or heavy equipment. Topography influences wildfire threat in multiple ways, as slope steepness affects the trajectory and rate of spread of a fire, while slope position affects the fire's ability to gain momentum uphill. Other topographical factors that influence fire behaviour include aspect, elevation, and the configuration of features on the landscape that can restrict the movement of a wildfire (such as water bodies and rock outcrops) or drive the movement of a wildfire (such as valleys and exposed ridges). Regarding aspect, south and southwest-facing slopes are the most concerning for potential fire behaviour due to increased heating and solar radiation. Aspect also influences vegetation type and continuity, which is discussed in Section 4.1.2.

¹⁷ Province of Alberta.

Elevation in the EWUI ranges from 440 meters on floodplain areas of the Columbia to 1040 meters along the base of Mount MacKenzie, but continuously forested slopes extend to over 2000 meters on multiple surrounding mountains. Slopes are generally steep and are either continuous or broken depending on the part of the valley, rising in all directions from the built-out portions of the city. Map 4 and Table 9 show the distribution of slope classes in Revelstoke’s eWUI, with corresponding fire behavior implications. 27% of the eWUI is on a steep slope (>30%) and would experience accelerated rates of spread. The areas are generally found on the fringe of the developed portions of the eWUI. Multiple short and steep slope breaks are found throughout Arrow Heights, Columbia Park, and Clearview Heights. Recent developments in Revelstoke Mountain Resort are positioned on steep slopes, and there are consistently steep slopes beyond the eWUI in all directions. The remaining 73% of the eWUI is situated on flat to gently sloping areas, which contains the majority of city infrastructure.

Table 9. Slope percentage and fire behaviour implications throughout the eWUI.

Slope	Percent of eWUI	Fire Behaviour Implications
<20%	62%	Very little flame and fuel interaction caused by slope, normal rate of spread.
21-30%	12%	Flame tilt begins to preheat fuel, increase rate of spread.
31-45%	10%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of spread.
46-60%	12%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	5%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

Table 10 displays the fire behaviour implications of slope position of a value. The majority of infrastructure in Revelstoke is positioned at valley bottom on slopes < 20%, which reduces the slope implications on wildfire risk. Values that are located mid-slope or on the upper third of a slope are threatened by faster rates of fire spread due to pre-heating of fuels and longer flame lengths.

Table 10. Slope position of value and fire behaviour implications.

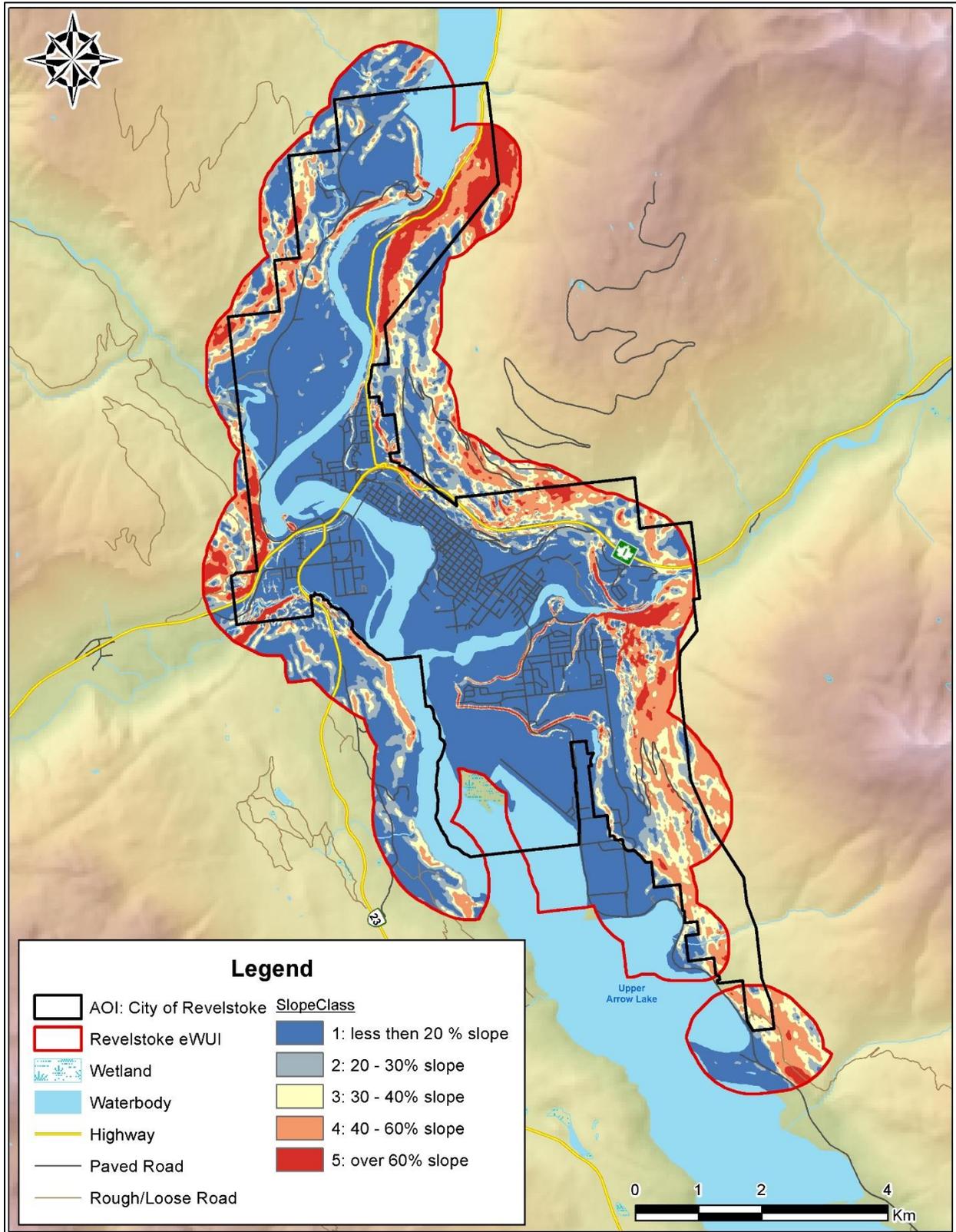
Slope Position of Value	Fire Behaviour Implications
Bottom of Slope/ Valley Bottom	Impacted by normal rates of spread.
Mid Slope - Bench	Impacted by increase rates of spread. Position on a bench may reduce the preheating near the value. (Value is offset from the slope).
Mid Slope – Continuous	Impacted 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.

The following list demonstrates several observations linking topography to wildfire risk that were made throughout the City of Revelstoke:

- Multiple steep forested slopes within residential areas, providing areas for rapid fire spread between properties that are located on benches (e.g., Arrow Heights).
- Steep forested / vegetated slopes along the banks of the Columbia and Illecillewaet, providing increased fire spread conditions between the drawdown zone and residential areas (e.g., Nichol Road).
- Critical infrastructure located amongst steep slopes (e.g., Arrow Heights drinking water reservoir and pump station, Jordan FSR communications tower).

Sloped areas exceeding 30% (whether natural or manufactured) within the City of Revelstoke are identified through municipal databases and are subject to development restrictions through the Environmentally Hazardous Development Permit Area (DPA). This DPA is in place to ensure that development in steep areas is safe from hazardous conditions and does not adversely affect the natural environment or surrounding properties, which can prohibit the removal of trees or the proactive management of vegetation in many instances.

Regardless of their topographic position, all communities within the City are subject to spotting risk from wildfires burning on adjacent slopes. Though wildfires in the Revelstoke area were noted to be predominantly topography driven, topography also has an impact on local diurnal weather patterns, (i.e., wind direction – predominantly upslope during daytime and downslope at nighttime) which affects fire spread patterns.



Map 4: Slope map of Revelstoke's eligible Wildland Urban Interface.

4.1.2 FUEL

A primary factor in a community's wildfire threat is its proximity to the forest or grassland, which is the 'fuel' in a wildfire scenario. The closer values-at-risk are to vegetated areas, the greater the probability of impact from a forest fire, either due to direct flame contact or ember spotting. Fuel is also the only component of the fire behaviour triangle that can be realistically managed through human intervention.

The Biogeoclimatic Ecosystem Classification (BEC) system classifies the province into zones by vegetation, soils, and climate. Regional subzones are then derived from relative precipitation and temperature. 90% of Revelstoke's eWUI is classified as the Interior Cedar-Hemlock Moist Warm (ICHmw3) BEC Zone, which transitions into the Interior Cedar-Hemlock Wet Cool (ICHwk1) BEC Zone at higher elevations. This area contains the most productive interior forests in the province, with a diversity of tree species, including western hemlock (*Tsuga heterophylla*), western red cedar (*Thuja plicata*), and hybrid spruce (*Picea glauca x engelmannii*) in moist areas, and Douglas-fir (*Pseudotsuga menziesii*) and lodgepole pine (*Pinus contorta*) occurring on drier sites and as seral communities. Deciduous trees and lower-density mixedwood forests are commonly found in floodplain areas of the Columbia and Illecillewaet, in historically disturbed areas, and along many south-facing slopes at lower elevations.

Fuel arrangements in the forests surrounding Revelstoke currently range from low to moderate hazard in general, with pockets of higher hazard found in young and dense conifer stands. Hazard can change considerably as forests progress through succession in the absence of any stand-maintaining disturbances. Local wildfire experts have pointed out that fuel types around the community are likely to experience a significant change in their fire regime as many decadent stands have built up a large amount of fuel over time that is now available to burn at potentially high intensities, which will likely challenge fire suppression.

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines sixteen fuel types based on characteristic fire behaviour under defined conditions.¹⁸ Limitations to the accuracy of the FBP system in the interior of British Columbia have been recently discussed in literature, though this CWRP will make use of the FBP system as the best available data for baseline fuel typing and resulting fire threat analyses.¹⁹ Fuel types (confirmed or updated by field work verification and/or orthophotography analysis) within the eWUI are detailed in Table 11 and are shown on Map 5 below. Fuel typing was not performed on private land, therefore it is important to note that the natural or landscaped conditions and/or structural conditions on private land can result in a fire hazard that is higher than the surrounding area. Assessing the fuel hazard on private land is extremely important and relevant in Revelstoke, as there are many large forested private land holdings throughout the City and in neighbouring CSRD parcels. In addition, there are multiple locations in Revelstoke (e.g., Arrow Heights) where there are steep undeveloped slopes that are privately owned that contain high hazard forest types.

¹⁸ Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.

¹⁹ Baron, J.N., Hessburg, P.F., Parisien, MA. *et al.* Fuel types misrepresent forest structure and composition in interior British Columbia: a way forward. *Fire Ecology* 20, 15 (2024). <https://doi.org/10.1186/s42408-024-00249-z>

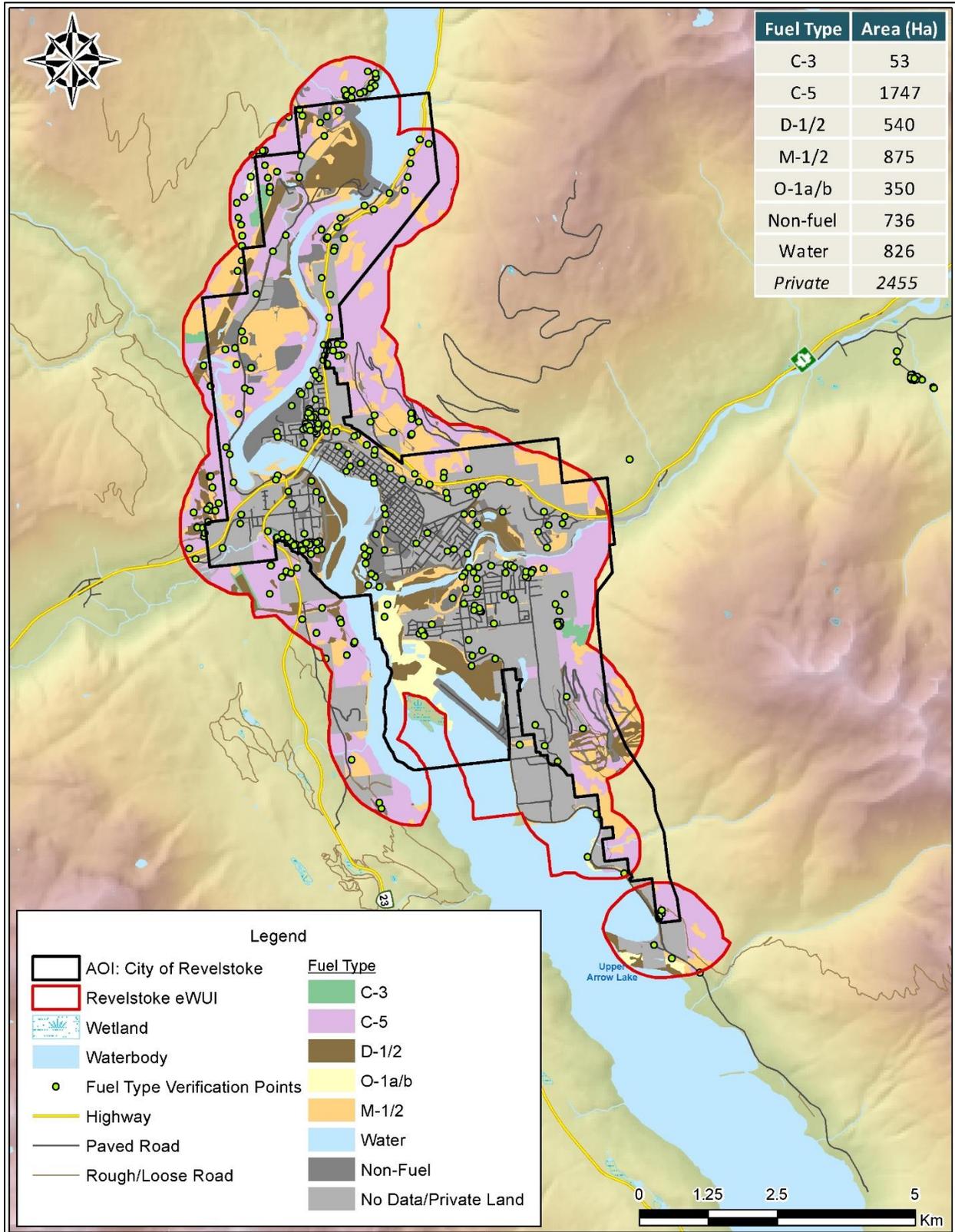
Approximately 30% of the assessable portion of the eWUI (i.e., non-private land) is represented as either “non-fuel” which was applied to areas with no available forest, grass or shrub fuels, or water. “Non-fuel” areas should not be misconstrued as not susceptible to fire as these areas still often contain combustible materials, flammable landscaping or vegetation, and / or valuable infrastructure. As well, if any grass fields are not routinely irrigated and are allowed to grow to a height greater than 10 cm and dry out, they may support a rapidly spreading grass or surface fire capable of damage or destruction of property (i.e., O-1a/b fuel type).

The main forested fuel types present in the eWUI are C-5, M-1/2, and D-1/2. C-5 fuel types are generally considered as low to moderate hazard, fluctuating in response to the surface fuel load (amount of deadfall), continuity of ladder fuels (number of understory conifer trees), and overall stand density and crown closure. In mixedwood (M-1/2) fuel types it is difficult to accurately define the hazard as it fluctuates based on the amount of deadfall and the horizontal and vertical continuity of conifer trees, all while fluctuating throughout the fire season in response to the moisture content of the deciduous trees. D-1/2 fuel types are generally low hazard, but can contain hazardous surface fuel loads if there is a high proportion of deadfall or decadent shrub material. Fuel types were assigned spatially to larger areas with consistent structure, though it is extremely common for any lower hazard forests to contain pockets (e.g., individual areas up to 0.1 hectares in size) that have higher-risk qualities.

Detailed fuel type descriptions and their associated wildfire risk assumptions can be found in Appendix F: Fuel Typing Methodology and Limitations. Table 11 below summarizes the number of hectares and the percent of the non-private land in the eWUI that is best represented by each FBP fuel type as well as the non-fuel area.

Table 11: Updated fuel types (by area and percent) within the eWUI. Remainder of the eWUI not shown is private land – covering 1968 hectares.

Fuel Type	Fuel Type Description Within eWUI	Hectares of eWUI	Percent of Non-Private Land
C-5	Mature cedar-hemlock stands with variable canopy closure and therefore variable herb / shrub growth, but generally low density with large stems and high crown base heights. Also applied to low hazard conifer plantations (e.g., 35-year-old Douglas-fir stands).	1747 ha	34%
C-3	High hazard and dense (e.g., > 1200 stems per hectare) conifer stands, often younger (e.g., 40 – 50 year old). Closed canopy conditions with a considerable amount of dead standing and deadfall.	53 ha	1%
M-1/2	Mixedwood areas – both deciduous forests with regenerating / overstory conifer components, or low-density coniferous stands with deciduous shrub components. Assigned various threat levels based on the % composition of conifer.	875 ha	17%
O-1a/b	Grassland fuel type, assigned to areas (predominantly in the drawdown zone) with unmaintained grass fuels with the potential to cure during fire season.	350 ha	7%
D-1/2	Deciduous stands and/or deciduous shrub communities, often associated with riparian areas, shrub-dominated transmission line corridors and clearings, recently harvested cutblocks with well managed woody debris and decomposing slash, seasonal wetlands, and ski runs.	540 ha	11%
Non-Fuel	Areas with no available forest, grass or shrub fuels (e.g., roadways, gravel clearings, irrigated fields / parks, developed areas, beaches, dirt-bike tracks, shooting ranges, golf course, etc.) – often contain slivers of forest / vegetated areas along road rights-of-way.	736 ha	14%
Water	Spatially delineated waterways – rivers, lakes, wetlands.	826 ha	16%



Map 5: Overview of fuel types throughout the Revelstoke WUI. Note – there is a discrepancy in total hectares of private land on this map versus Table 6 and Table 12 due to issues with ParcelFabric datasets.

4.1.3 WEATHER

Considering fire danger varies from year to year, historical weather data can provide information on the number and distribution of days when the Revelstoke area is typically subject to high fire danger conditions. ‘High fire danger’ can be considered with a Canadian Forest Fire Danger Rating System (CFFDRS) Danger Class rating of 4 (High) or 5 (Extreme). Fire weather data is a product of four primary weather inputs (temperature, relative humidity, wind, and precipitation) which can be variable on a small scale based on the specific location of the weather station – though local BCWS staff have noted that the *Revelstoke* weather station provides representative data for the area.²⁰ Average danger class days as reported by the BC Wildfire Service’s *Revelstoke* weather station are summarized below to demonstrate average fire weather conditions for the area. Figure 3 demonstrates the average number of days in each fire danger class by month.

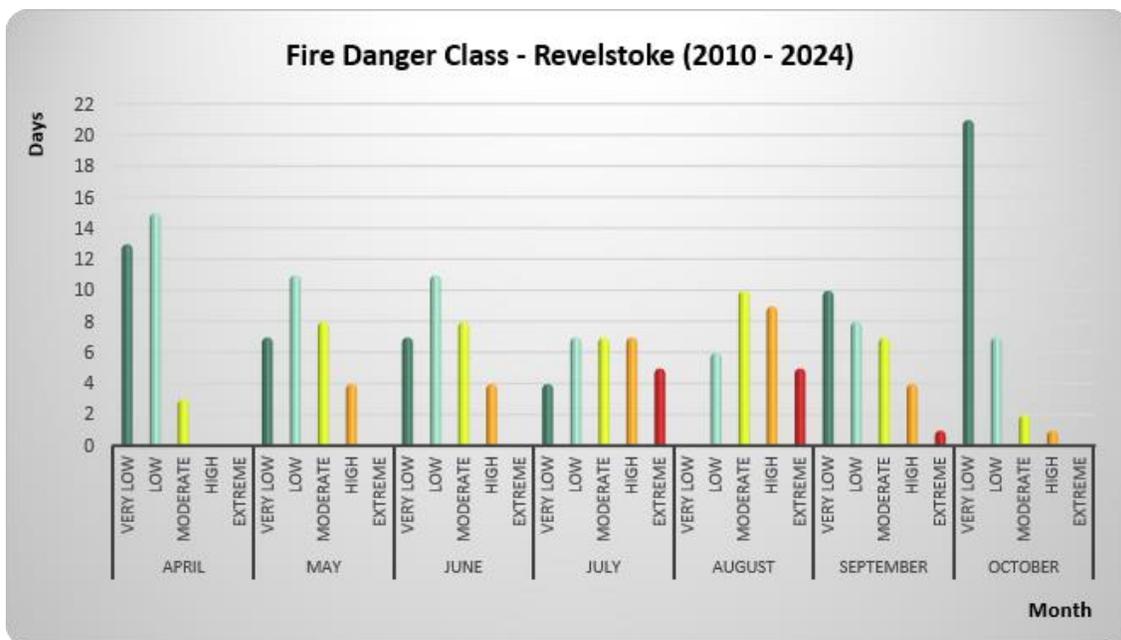


Figure 3: Average number of danger class days for the Revelstoke BCWS fire weather station.

This data shows that fire weather is highest in July and August where an average of 8 days per month are ‘high’ danger class days and 5 days per month are ‘extreme’ danger class. From May through September, approximately 26% of days are rated as high or extreme fire danger. Data from this weather station demonstrates that periods of high fire danger regularly occur in shoulder season months (i.e., May through October), though the majority of larger fire events in the Columbia Fire Zone in recent decades have occurred during peak fire season.

Wind speed and direction are also critical components of fire behavior. A wildfire that occurs upwind of a value poses a more significant threat to that value than one which occurs downwind. The Initial Spread Index (ISI) is a numeric rating of the expected rate of fire spread that combines the effects of wind speed and fine fuel moisture. Higher ISI values correspond with higher potential spread rates. Summarized in an

²⁰ The BCWS’ Revelstoke weather station is located at 690 meters elevation to the south of the Sledhalla FSR, north of Glacier House Resort.

Initial Spread Index (ISI) Rose from the *Revelstoke* weather station, data shows that during the fire season (April – October) predominant winds originate from the south / southeast, driving fires in a north, northwest direction (see Fire Spread Patterns). This predominant wind direction is largely paired with low ISI values (between one and ten), which often do not produce very hazardous fire weather conditions. Wind direction on higher ISI days (greater than 10) is much more variable with additional records from all cardinal directions, which results in the effect of wind on fire spread being highly variable and unpredictable. In addition, local experts noted that the Revelstoke Dam (constructed in 1984) is a driver of diurnal wind patterns in the valley, as cold air spills over the dam in the evening and influences wind direction.

Climate Change

Climate change is a serious and complex aspect to consider in wildfire management planning. Although there are uncertainties regarding the extent of these impacts on wildfire, the frequency, intensity, severity, duration, and timing of wildfire and other natural disturbances are expected to be altered significantly with the changing climate. Despite the uncertainties, trends within the data are visible.

The warming global climate is expected to lead to wildfires that are increasingly larger, more intense, and difficult to control. The daily fire severity rating is projected to reach higher peak levels, and head fire intensity is anticipated to increase significantly in western Canada. Additionally, the length of fire seasons is expected to grow, with the most pronounced changes occurring in the northern hemisphere.²¹

According to information provided on the City's website, climate change impacts are already evident in Revelstoke and are expected to become more pronounced in the near future.²² The community is experiencing hotter, drier summers, warmer, wetter winters, and more extreme weather events. These trends are projected to continue. Projections for the period from 2021-2050 include:

- An increase in average annual daily mean temperatures by 2.2°C.
- More days with maximum temperatures exceeding 25°C and a decline in summer rainfall.
- Increased winter precipitation and warmer winter temperatures, potentially leading to wetter rather than snowy winters.²²

Understanding these projections and their potential impacts is helpful for developing long-term wildfire management strategies and ensuring community resilience to climate change. Revelstoke's 2018-2022 Strategic Plan prioritizes sustainability and focuses on implementing initiatives to adapt to and mitigate the impacts of climate change. Additionally, the Corporate Energy & Greenhouse Gas Emission Inventory & Reduction Strategy provides a framework for enhancing energy efficiency, reducing energy consumption, and lowering greenhouse gas emissions, which further supports the city's efforts to reduce climate-related risks to municipal infrastructure.

²¹ Flannigan, M.D., A.S. Cantin, W.J. de Groot, M. Wotton, A. Newbery, L.M. Gowman. 2013. Global wildland fire season severity in the 21st century. *Forest Ecology and Management* (2013) 294: 54 - 61.

²² City of Revelstoke. Climate Change in Revelstoke. Retrieved from: <https://revelstoke.ca/270/Climate-Change-in-Revelstoke>

4.2 WILDFIRE HISTORY

4.2.1 HISTORIC FIRE REGIME

Biogeoclimatic (BEC) zones have been used to classify BC into five Natural Disturbance Types (NDTs) based on the frequency and severity of pre-European disturbance events (including, but not limited to, wildfires), which roughly indicate historic fire regimes.²³ Associated NDTs outline the disturbance type, intensity, size, and frequency, providing a general description of the average fire regime of an ecosystem, despite the inherent complexity and variability of fire histories.²⁴ This system characterizes 90% of the eWUI as NDT2 (those areas in the ICHmw3), which indicates ecosystems with infrequent stand-initiating events. The 10% of area at higher elevations (ICHwk1) is classified as NDT1, which indicates ecosystems with rare stand-initiating events.

According to the BC Biodiversity Guidebook, the NDT2 area is characterized by infrequent disturbances, with historical stand-replacing events occurring approximately every 200 years.²³ Ecosystems in this area typically experience mixed-severity fire regimes, involving a patchwork of low, moderate, and high-severity fires. Low-severity fires may kill many small saplings but only a few large trees; moderate-severity fires can cause patchy mortality, while high-severity fires can result in the mortality of many large trees. Consequently, these forests may historically have had a mix of even-aged and uneven-aged stands. The NDT1 zone experiences rare stand-initiating events, with slightly longer intervals of 250 years between disturbances. Wildfires in these ecosystems are moderate in size (20 to 1000 hectares) but can be larger during extended drought periods. This results in older, more continuous forest stands with fewer opportunities for stand-replacing events. NDT classification is useful for describing the historical disturbance pattern typical for an area; however, fire history is complex and highly variable across space and time for many ecosystems.²⁵

4.2.2 HISTORIC WILDFIRE OCCURENCES

Wildfires in the area surrounding Revelstoke infrequently escape initial containment efforts, although under appropriate fire weather conditions they do have the potential to be large. Historical fire ignition and perimeter data for the 5-kilometer area surrounding Revelstoke is depicted in Map 6 using publicly available data from BC Wildfire Service.²⁶ Fire ignition data is available from 1951-2020 and fire perimeter data is available from 1919-2020. Although these datasets are useful for analyzing spatial patterns of ignitions in the eWUI, a limitation of ignition point data is that BCWS-tracked incidents are inclusive of smoke chases and nuisance fires, but exclusive of any wildfires that structural fire departments alone responded to.

²³ Province of British Columbia, 1995. Biodiversity Guidebook.

²⁴ Hall, E. 201. Maintaining Fire in British Columbia's Ecosystems: An Ecological Perspective. Retrieved from: [file:///C:/Users/b_farrell/Downloads/Maintaining_Fire_in_BC_Ecosystems%20\(2\).pdf](file:///C:/Users/b_farrell/Downloads/Maintaining_Fire_in_BC_Ecosystems%20(2).pdf)

²⁵ Hall, E. (2010). *Maintaining Fire in British Columbia's Ecosystems: An Ecological Perspective*. Report submitted to the Wildfire Management Branch, Ministry of Forests and Range.

²⁶ <https://catalogue.data.gov.bc.ca/dataset/bc-wildfire-fire-perimeters-historical> and <https://catalogue.data.gov.bc.ca/dataset/bc-wildfire-fire-incident-locations-historical>

The largest recorded fire within Revelstoke’s WUI occurred in 1938, a human-caused fire that burned 2,731 hectares. In the 1930s, over 3500 hectares burned in the 5-kilometer area surrounding Revelstoke, with only 700 hectares burning since the 1930s. 70% of mappable fires in the area (i.e., those larger than 1 hectare) have been human-caused, with the remainder attributed to lightning or unknown causes. Considering all fire ignitions (since 1950), approximately 32% of fires in the Revelstoke area have been human-caused, 50% lightning-caused, and the remaining 18% unknown. Multiple large-scale wildfire incidents have occurred outside Revelstoke’s WUI in recent years, including:

- Hiren Creek (2023). Occurred approximately 20-km from Revelstoke, grew to over 1,100 hectares;
- Three Valley Lake (2021). Resulted in an evacuation order and grew to over 300 hectares, demonstrating the significant impact these fires can have on the surrounding communities;
- Dry Creek and Pool Creek (2024). 490 and 870 hectares respectively. Both exhibited challenging control conditions, Dry Creek resulting in evacuation alerts and area restrictions.

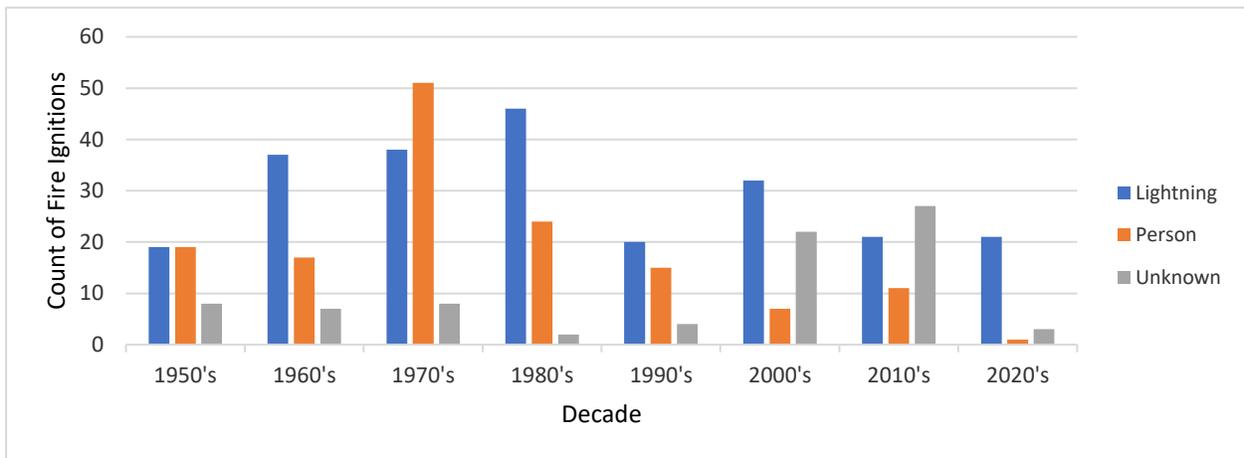
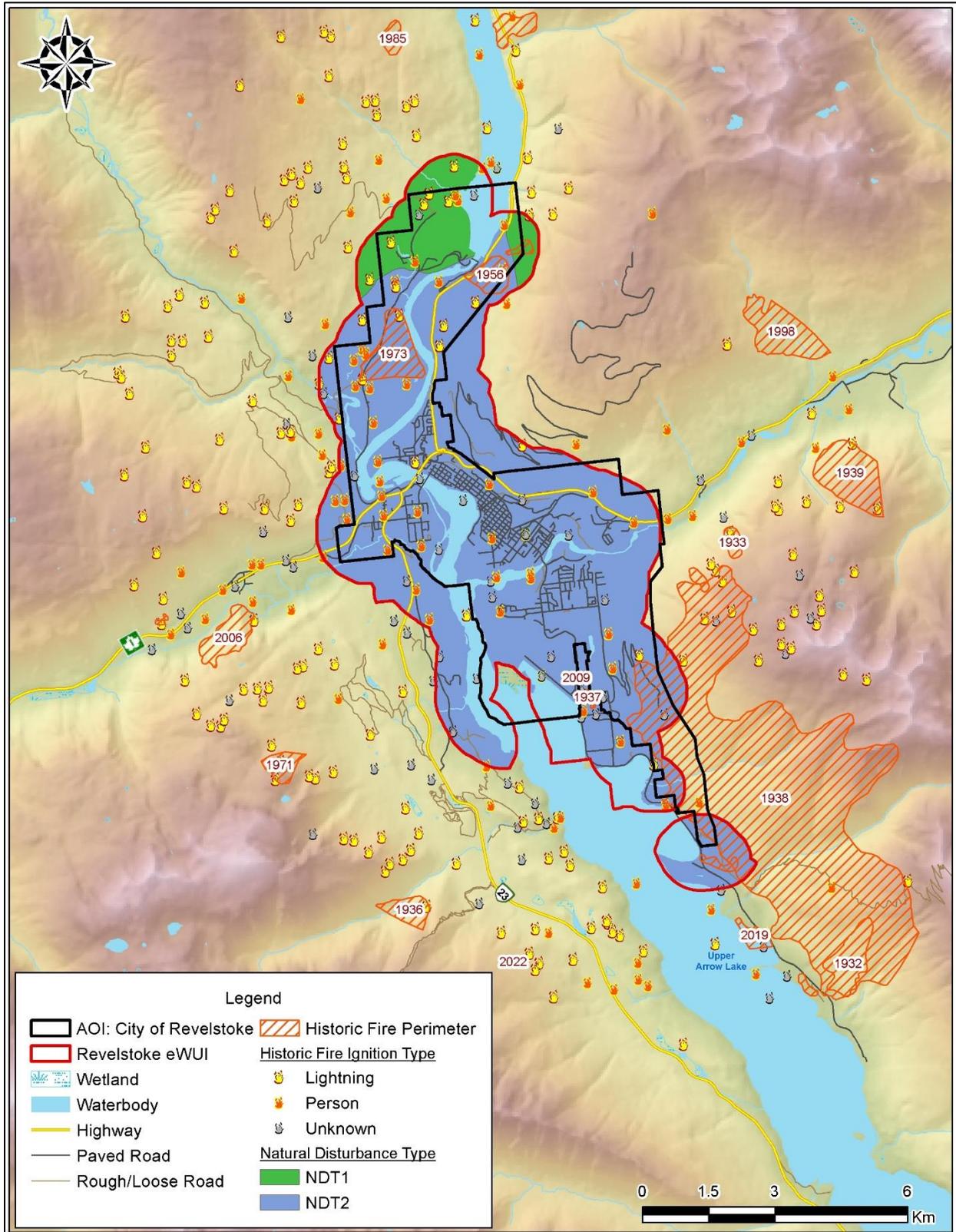


Figure 4. Fire ignitions (1950 - present) within or intersecting with Revelstoke’s WUI, as illustrated on Map 5.

While the frequency of human-caused ignitions has decreased over recent decades, the potential for large and challenging wildfires remains, necessitating continuous efforts in wildfire preparedness and mitigation. Human-caused fires remain a significant threat to the community as any fire with the potential to threaten the community will likely be human-started. The City of Revelstoke, Revelstoke Fire-Rescue Services, and the BC Wildfire Service are particularly concerned about potential accidental ignitions from vehicle collisions and trains.



Map 6: Natural disturbance regimes and historical fire ignitions and occurrences within the Revelstoke area (fire ignitions from 1950-2023, fire perimeters for fires larger than 1-hectare from 1919-2023).

4.3 RISK FRAMEWORK AND RISK CLASS MAPS

Differing risk levels require tailored risk management to minimize negative impacts from wildfires to communities and high value critical infrastructure. The intent of identifying wildfire risk is to enable cost effective wildfire risk reduction strategies that will mitigate wildfire threat to communities and values at risk, at local and provincial scales. Through the identification of risk level, priorities for mitigation and opportunities for increasing community resiliency are both enhanced. BC Wildfire Service generates WUI Risk Class maps and associated spatial data to assist with initiatives related to wildfire risk reduction, including the FCFS program.²⁷

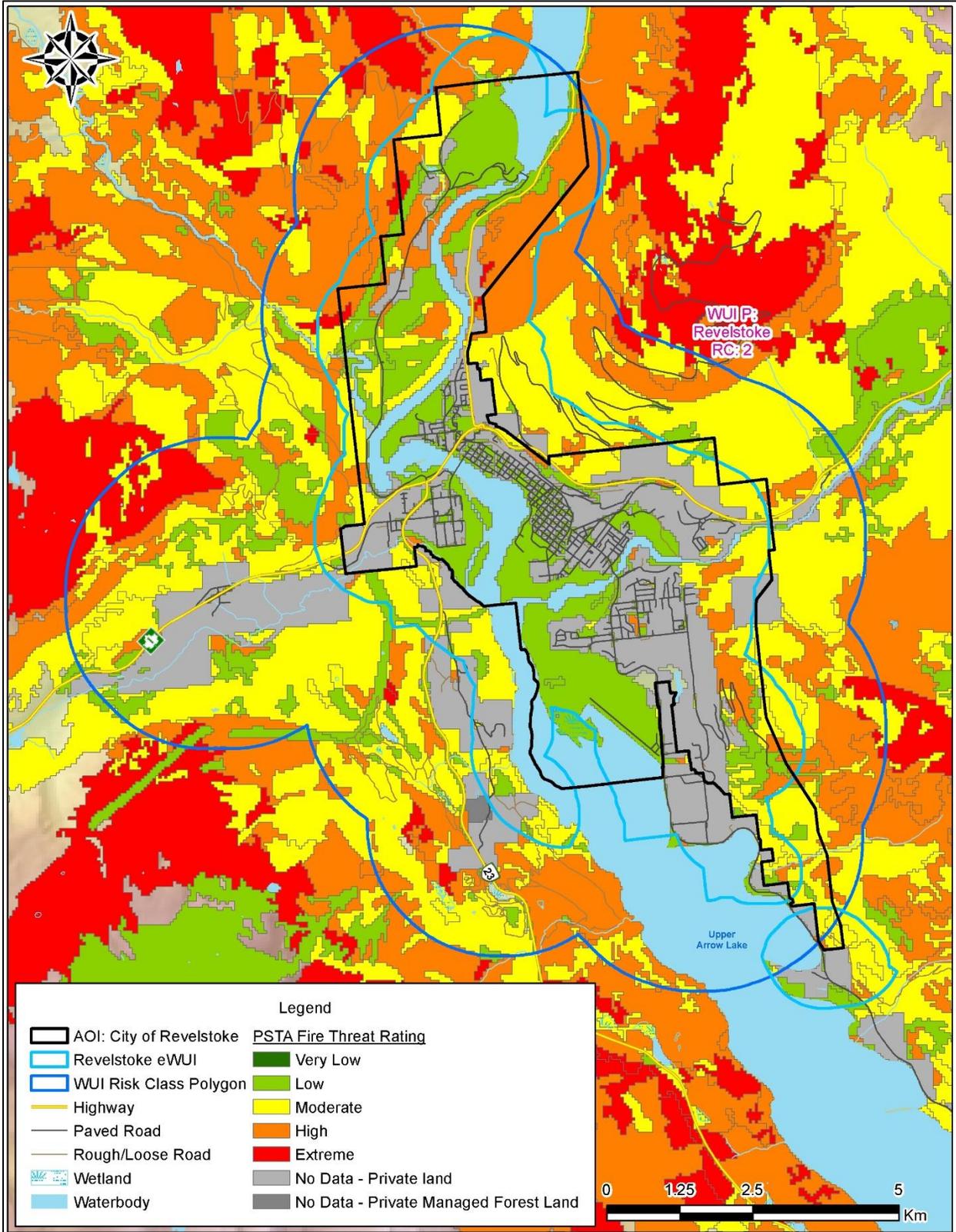
Provincial Strategic Threat Analysis

The Provincial Strategic Threat Analysis (PSTA) is a series of publicly-available spatial layers that are designed to consistently assess and map different aspects of wildfire threat and risk around the province.²⁸ The PSTA is a starting place from which more detailed local threat assessments can be performed (Section 4.4), and to support the development of FireSmart funding applications under the UBCM FireSmart Community Funding and Supports program. The PSTA also forms the basis for the identification of the wildland urban interface (WUI) in BC. Structure densities are used to define areas of human development. In areas where a certain structure density threshold is met, a 2-kilometer buffer is applied to represent a reasonable maximum distance that embers can travel from a wildfire to ignite a structure. This represents the historic approach to defining the WUI for BC. This process doesn't account for non-structural values that may be considered values at risk for a community, highlighting the importance of local community wildfire planning.

Once the WUI is defined, it is combined with the PSTA Fire Threat Rating to delineate discrete *WUI Risk Class* polygons throughout BC. The PSTA Fire Threat rating integrates coarse scale, provincially determined wildfire threat components such as fire likelihood (historical fire occurrence), potential severity (weather conditions and fuel type), and wildfire propagation potential (spotting). Notably, this threat analysis does not extend onto private land. There are five risk class ratings provided in the resulting provincial WUI Risk Class Map, with 1 being the highest relative risk across the province and 5 being the lowest. The WUI Risk Class for Revelstoke is 2. The PSTA Fire Threat Rating and WUI Risk Class Rating of Revelstoke is shown in Map 7 below.

²⁷ Wildland Urban Interface Risk Class Maps - Province of British Columbia (gov.bc.ca)

²⁸ Province of British Columbia. 2023. 2021 Update: Provincial Strategic Threat Analysis (PSTA). Retrieved from: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/fire-fuel-management/psta>



Map 7. PSTA Fire Threat Rating and WUI Risk Class Rating for the Revelstoke area.

4.4 LOCAL WILDFIRE RISK ASSESSMENT

A local wildfire risk assessment was completed as part of this CWRP to provide a more detailed, specific, and usable fire threat and fire risk rating to the City of Revelstoke. There are two main components of this local risk assessment: the wildfire behaviour threat class (fuels, weather, and topography sub-components) and the WUI risk class (structural sub-component). The local wildfire threat assessment process includes several key steps as outlined in Appendix D: Local Wildfire Risk Assessment Process, and summarized as follows:

- *Fuel type attribute assessment* – ground truthing/verification and updating as required to develop a local fuel type map (Section 4.1.2)
- *Consideration of the proximity of fuel to the community* – recognizing that fuel closest to the community usually represents the highest hazard (Section 3.3, Map 2)
- *Consideration of topography in relation to values* (Table 9 and Table 10) – slope percentage and slope position of the value are considered, where slope percentage influences the fire’s trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill.
- *Stratification of the WUI* – according to relative wildfire threat based on the above considerations, other local factors, and field assessment of priority wildfire risk areas.

Wildfire Threat Assessment (WTA) plots were completed over multiple field days in May 2024 in conjunction with fuel type verification (see Appendix E: WTA Plots). WTA plots were completed in the interface (i.e., abrupt change from forest to residential development), intermix (i.e., where forest and structures are intermingled), and/or landscape areas of the WUI to support development of priority fuel treatment areas. A total of 13 WTA plots were completed and over 580 other field points (e.g., qualitative notes, fuel type verification, and/or photograph documentation) were made across the WUI.

It is important to note that the Local Wildfire Risk Assessment does not apply to areas outside of the eligible WUI due to program restrictions (displayed in Map 1). As well, the threat assessment quantifies threat as it relates to forest fuels and does not include the ignition potential of residential landscaping, structures or other infrastructure. Structure fires and structure-to-structure spread in a wildfire scenario are largely attributable to hazardous conditions in the Home Ignition Zone of a structure (i.e., the area within 30 meters of the principal building and/or its attachments). However, the analyses do provide relevant information regarding wildfire threat that should be considered for FireSmart and emergency management planning and preparedness.

Wildfire Threat Class Analysis

Classes of the wildfire threat class analysis are as follows:

- Very Low: Waterbodies with no forest or grassland fuels, posing no wildfire threat;
- Low: Developed and undeveloped land that will not likely support significant wildfire spread, generally associated with deciduous / shrub or irrigated areas;
- Moderate: Developed and undeveloped land that will support surface fires and intermittent crowning, that are likely unthreatening to homes and structures but can have fire spread under wind-driven conditions;
- High: Landscapes or stands with continuous forested fuels that will support candling, intermittent crown fires, or continuous crown fires. These landscapes are often on steeper slopes, rough or broken terrain and/or south or west aspects.
- Extreme: Continuous forested land that will support intermittent or continuous crown fires.

The results of the local wildfire risk assessment are shown on Map 8 and in Table 12 below. The local threat analysis shows that 8% of the assessable land in the WUI is classified as having a high or extreme fire threat. 48% is classified as moderate threat, with the remainder either low or no threat. While threat is influenced by fuel type, the majority of forested areas surrounding Revelstoke scored a low or moderate threat by WTA plot methodology (38% or 46% respectively). Forests with a lower threat rating typically exhibit lower amounts of surface and ladder fuels. This inherently limits any further degree of risk reduction that can be achieved through fuel management. Wildfire threat was consistently influenced by topography (slope and aspect), which associated many steep and/or south / southwest sloped areas with higher threat. Reducing wildfire threat in areas with steep and/or broken topography is considerably more difficult and often prohibited, compared to gentler-sloped, more moderate-threat areas. Fuel management treatments in the Revelstoke area have historically been limited largely due to challenging topographic factors which limits access, operability, and debris removal strategies (see Section 5.7 for additional information). This and other constraining factors emphasize the importance of on-the-ground assessment and professional judgement to prioritize areas for fuel treatment. Additionally, due to the prevalence of private land in proximity to community structures, increasing wildfire resilience in Revelstoke often can only be efficiently achieved in conjunction with residential-scale FireSmart treatment around structures.

Table 12: Fire threat summary for the WUI

Wildfire Threat			
Threat Class	Hectares	Percentage (%) of eWUI	% of Assessable Public Land
Extreme	47	1%	1%
High	362	5%	7%
Moderate	2474	36%	48%
Low	1417	21%	28%
Very Low/No Threat (Water)	826	12%	16%
No Data (Private Land) ²⁹	1684	25%	-

WUI Risk Class Analysis

Risk classes are quantified for the eWUI where the wildfire threat is assessed as high or extreme, causing potentially unacceptable wildfire risk when near communities and developments. WUI risk classes are described below:

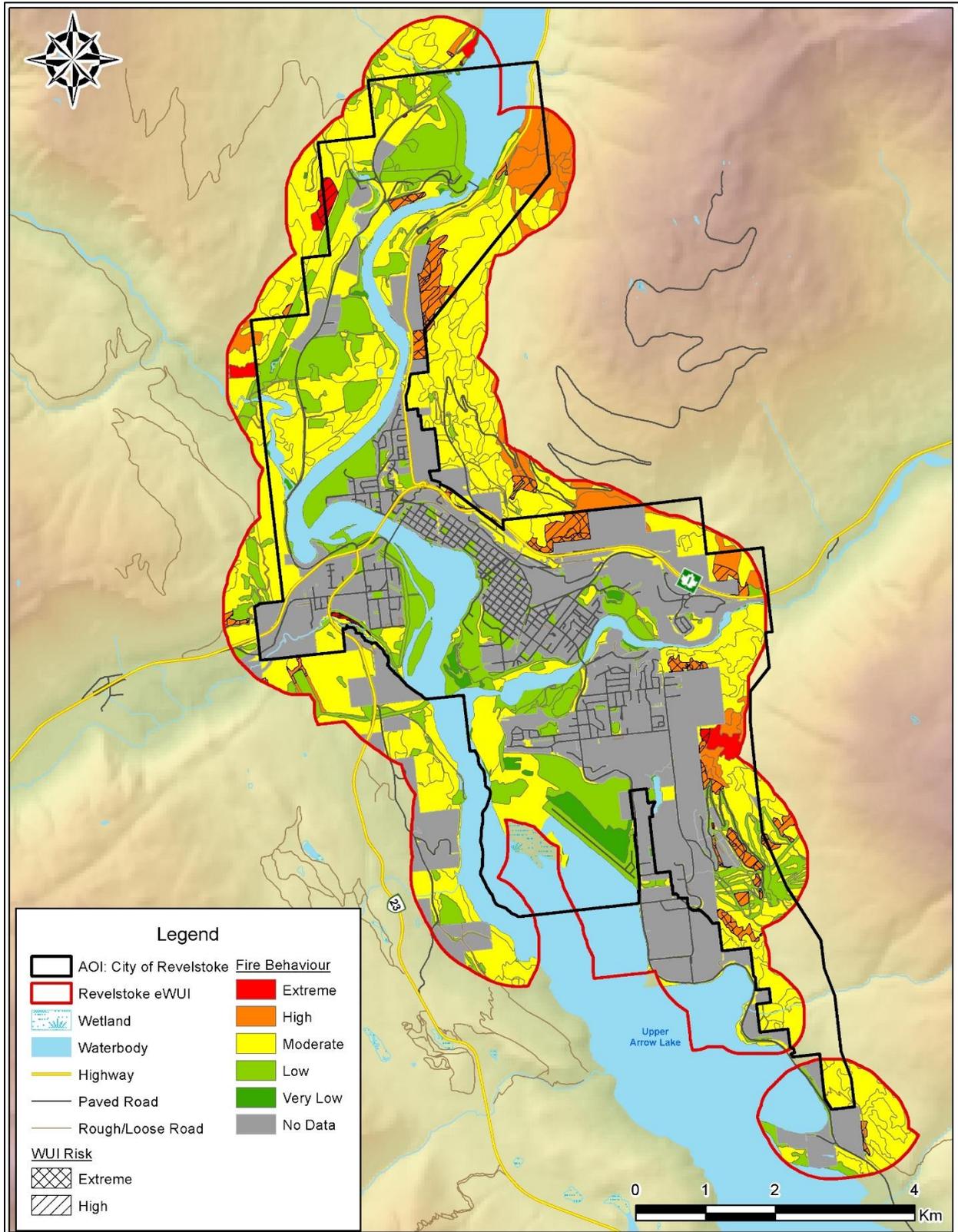
- **Low:** The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located over 2 km from structures;
- **Moderate:** The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located 500m to 2 km distance from structures;
- **High:** The high or extreme threat has potential to directly impact a community or development and is located 200m to 500m from structures; and
- **Extreme:** The high or extreme threat has potential to directly impact a community or development and is located within 200m from structures.

Table 13 summarizes the WUI risk class ratings for the eWUI, which are also displayed on Map 8. 1%, or 42 hectares have an extreme risk; 2%, or 123 hectares have a high-risk class rating. This excludes private land, which is a significant limitation to this analysis. These numbers should not be used to rationalize a lack of risk in the eWUI.

Table 13: WUI risk class ratings

WUI Risk			
Risk Class	Hectares	% of Entire WUI	% of Assessable Public Land
Extreme	42	1%	1%
High	123	2%	2%
N/A (Moderate, Low, Very Low Wildfire Threat Class)	4717	69%	97%
No Data (Private Land)	1684	25%	-

²⁹ There are discrepancies with the total amount of private land reported here and in Table 11, versus Tables 6 and 12 due to inconsistencies with the ParcelFabric dataset.



Map 8: Local fire threat and local wildfire risk assessment for the Revelstoke WUI.

SECTION 5 FIRESMART DISCIPLINES

FireSmart™ is the leading program in the country aimed at empowering the public and increasing neighbourhood resilience through wildfire mitigation measures. FireSmart has been implemented at the provincial / territorial level across Canada, including British Columbia in 2000. Basic FireSmart training for individuals is freely available through FireSmart Canada (FireSmart 101) and/or FireSmart BC (Local FireSmart Representative), along with a plethora of resources for homeowners, educators, and land managers.³⁰ The available training and resources provide the tools for individuals to be ambassadors for wildfire preparedness in their communities. The FireSmart program covers a wide breadth of preventative measures that are founded in the seven FireSmart disciplines: Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning, and Vegetation Management. These seven disciplines and the guiding principles behind FireSmart can be applied at several spatial scales, and are not restricted to any type of land ownership, forest type, or property type. Section 5.1 through 5.7 in this CWRP will discuss each of these FireSmart disciplines in depth.

It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers (firebrands). Firebrands can be transported long distances ahead of a wildfire, across fire guards and fuel breaks, and can accumulate within the home ignition zone (HIZ, see Figure 5 on the following page) in densities that can exceed 600 embers per square meter. Combustible materials found within the HIZ can combine to provide fire pathways which can allow spot surface fires ignited by embers to spread and carry flames into contact with structures. Because ignitability within the HIZ is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For example, FireSmart homes with a low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.³¹

The overarching goal of FireSmart is to encourage communities and residents to adopt practices to mitigate the negative impacts of wildfire to assets on public and private property. While responsibility for effectively mitigating hazards must be shared between many entities (e.g., residents, industry, businesses, and governments) the ultimate root of the WUI problem is the vulnerability of structures and homes to ignition during wildfire events, in particular vulnerability to embers. As a result, risk mitigation actions on private properties are emphasized.

³⁰ <https://firesmartbc.ca/>

³¹ Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/>.



Figure 5: FireSmart Home Ignition Zone

Many of the recommendations proposed in this plan are eligible for funding through the Union of BC Municipalities (UBCM) CRI FireSmart Community Funding and Supports (FCFS) program, which is an annually evolving program. To continue submitting funding applications through the FCFS program, it is currently required that the City of Revelstoke have *all* the following FireSmart components developed/active in their community:³²

- A person hired/contracted acting in a FireSmart position as a FireSmart coordinator;
 - The City of Revelstoke currently staffs a FireSmart Coordinator position.
- An active Community FireSmart & Resiliency Committee (CFRC);
 - Revelstoke’s FireSmart Coordinator currently engages internally and externally for wildfire resilience initiatives – see Section 5.4
- A current CWRP that is acceptable to the local BCWS Wildfire Prevention Officer/Prevention Specialist.

Wildfire resilience initiatives that cannot be solely tackled by the City of Revelstoke may be funded through the Ministry of Forests’ Crown Land Wildfire Risk Reduction (CLWRR) program or through various wildfire risk reduction programs (e.g., Forest Enhancement Society of BC, Woodlots BC, etc.).³³

³² UBCM. 2025 FireSmart Community Funding and Supports Program and Application Guide. Available from: <https://www.ubcm.ca/cri/firesmart-community-funding-supports>

³³ First Nations Emergency Services Society – Indigenous Services Canada FireSmart program provides a funding mechanism for FireSmart planning and implementation throughout Osoyoos Indian Band #1.

Community Overview

During CWRP development, FireSmart vulnerability and resilience factors for homes and neighbourhoods within Revelstoke were noted. These observations are qualitative notes on FireSmart structural characteristics and natural as well as landscaped vegetation, in neighbourhoods in the WUI.



Figure 6: Intermixed view of the Arrow Heights neighbourhood, showing how individual homes are located amongst the surrounding forest.

Table 14: FireSmart vulnerability and resilience factors within the City of Revelstoke.

Vulnerabilities
<ul style="list-style-type: none"> • Neighbourhoods with homes on large lots, intermixed into forested areas (e.g., Arrow Heights, CSRD areas). • Undeveloped (and often steep) areas in the City that are forested and unmanaged. • Large tracts of forested land within Revelstoke municipal boundaries but managed by other agencies (e.g., private landowners, Mountain Resorts Branch). • Large tracts of private land where fuels cannot be assessed and hazard cannot be quantified under the CWRP framework. • Neighbourhoods with narrow public roads with restricted turnaround areas, and one-way access and egress routes out of forested areas (e.g., CP Hill, KOA campground, Airport Way, Mt. Begbie Road). Also properties with long, narrow driveways of unknown length, width, or grade, creating possible access restrictions for Revelstoke Fire-Rescue Services. • Expansion of wildland urban interface as homes and neighborhoods are constructed further into wildland areas. • Mountainous topography challenges fuel management and fire suppression. Main water infrastructure (intake and treatment) is isolated in the forest, far from the city.
Resilience
<ul style="list-style-type: none"> • Forested areas adjacent to the City are often managed by the landowner (Parks Canada) or a licensee (e.g., Woodlots), which can facilitate fuel management. • Fire suppression capacity from BCWS crews stationed at the airport (though these are a provincially dedicated resource). • Majority of community infrastructure is located in low-hazard areas. • Homes in new neighborhoods have many structural FireSmart attributes: Class A roofing, cement board siding. • Excellent fire hydrant coverage throughout the city.

5.1 EDUCATION

Description

Public education and outreach play a critical role in helping a community prepare for and prevent a wildfire. FireSmart education creates a heightened awareness of wildfire risk and potential mitigative measures that property owners and residents can pursue, while participating in wildfire risk reduction activities can promote a sense of empowerment and shared responsibility in the community. A successful public education campaign can support the implementation of many other FireSmart disciplines by building support and understanding among both residents and visitors. FireSmart education activities largely constitute the ‘Engagement’ phase of the FireSmart Roadmap and form the foundation for wildfire resiliency (see Section 6.1 – FireSmart Roadmap).

Analysis

FireSmart education and public outreach initiatives in Revelstoke are supervised by the FireSmart Coordinator, a position created in 2023 to enhance the capacity for delivering a consistent public engagement program. Since the development of Revelstoke’s CWPP in 2015, the city has undertaken several FireSmart initiatives. A municipal park in the city has undergone FireSmart treatments with the assistance of BCWS, serving as a demonstration project since 2018. Although maintenance scheduled for 2022 was delayed due to an early wildfire season, the park is due for additional treatments. FireSmart Home Ignition Zone Assessments have been completed at an increasing rate since 2022, and a new rebate program initiated in 2024 aims to encourage further uptake of these assessments.

Municipal staff have reported that despite a general sense among Revelstoke residents that they are well-informed about wildfire risks and preparedness strategies, there is a degree of complacency. Many residents feel familiar and self-sufficient regarding wildfire preparedness, which can result in a lack of active pursuit of new information or adoption of updated FireSmart recommendations. The FireSmart Coordinator is working to equip residents with the latest information and best practices based on new findings and strategies, although it remains challenging to motivate residents to take action based on assessments.

Over the past years, Revelstoke’s FireSmart programming has included the following activities:

- A dedicated FireSmart webpage on the Revelstoke website;
- Revelstoke Fire-Rescue Services (RFRS) holds sessions to educate the community on wildfire preparedness, such as the FireSmart information session for Wildfire Community Preparedness Day and the FireSmart Family Fun Day;
- FireSmart representatives attend local events, such as the Revelstoke Farmers Market, to distribute information and engage with residents;
- Fire Danger Rating signs posted in the area, with updates on fire prohibitions and danger ratings shared on the website and social media.³⁴

³⁴ City of Revelstoke. FireSmart. Retrieved from: [FireSmart | Revelstoke, BC - Official Website](#)

Revelstoke Fire-Rescue Services also encourages residents to become FireSmart “Neighbourhood Champions.” These champions help rally their neighbours and act as a point of communication with the Local FireSmart Representative. They work together to remove non-FireSmart landscaping and enhance the community's resilience to wildfires.

As the FireSmart program in Revelstoke is new and expanding, the FireSmart Coordinator, Revelstoke Fire-Rescue Services, and other municipal staff will need to assess which methods of public engagement are most successful and which methods are not suitable for the city. FireSmart education is not a one-size-fits-all approach, therefore it will be valuable for Revelstoke to continue to explore various education initiatives. Recent wildfires that have been visible from Revelstoke reportedly has residents more accustomed to smoke and wildfire, but there is room for improvement when it comes to the delivery and uptake of FireSmart education within the City.

Action Planning

It is recommended that Revelstoke continue to evolve their FireSmart program – maintaining resource allocation to FireSmart education initiatives, while testing and adjusting them based on uptake to build community engagement over time. Sharing information through established organizations, to new audiences, and adding a FireSmart dimension to initiatives already popular with community members, are suggested options for enhancing the public education programming. When targeting a specific neighbourhood or region of Revelstoke, educational material should consider the unique conditions in that neighbourhood and ensure that the educational messaging is tailored to that group / area. For example, a neighbourhood with few structural vulnerabilities but extreme landscaping / vegetation hazard should be communicated with differently than an older neighbourhood with vulnerable structures and outbuildings, while a neighbourhood in the interface of Mount MacKenzie / Mount Revelstoke can be communicated with differently than a neighbourhood in the middle of the city.

Revelstoke should continue to consider new ways to reach residents. Free FireSmart resources (e.g., Homeowners Manual, “Tips to FireSmart Your Home”, the FireSmart Landscaping Guide, and the FireSmart Begins at Home mobile app) are digestible for residents, while including FireSmart into local school curriculums can increase awareness and engagement in youth and result in FireSmart and fire preparedness conversations at home. As fire is a natural ecological process in the Columbia Mountains, teaching youth how to understand, co-exist with, and manage fire can be an important step in achieving community resilience. Sharing FireSmart information through known community leaders and established organizations (e.g., stratas, neighbourhood associations, recreation groups) may be an efficient way to target at-risk areas and grow initiatives such as the FireSmart Neighbourhood Recognition Program (FSCNRP). Adding a FireSmart dimension to initiatives already popular with community members such as farmers markets, the RCU Family Fun Run, Revy Re-Fest, Forestry Museum Summer Kick-off Party, etc., is another suggested option for enhancing FireSmart public education in the City of Revelstoke.

A summary of recommendations related to FireSmart Education is detailed in the Executive Summary in Table 1: The City of Revelstoke’s CWRP Action Plan. These recommendations are summarized as follows:

#1: Host FireSmart Workshops	#2: Distribute FireSmart Materials
#3: Incorporate FireSmart in Schools	#4: Communicate FireSmart & Fire Hazard Internally
#5: Communicate Fire Hazard Externally	#6: Share the CWRP Publicly

5.2 LEGISLATION AND PLANNING

Description

Legislation and planning play a significant role in building and maintaining FireSmart neighbourhoods, even more so in smaller communities versus large municipalities or regional districts due to ease of communication and enforcement.³⁵ Given the realized and projected growth within Revelstoke and the recent prevalence of wildfire in the area, land use planning tools can be used to reduce wildfire risk by growing and developing with wildfire in mind. Though legislation, planning, and development often go hand-in-hand, development-specific considerations will be reviewed in Section 5.3. Reviewing bylaws and various community plans³⁶ through a wildfire lens to assess where they inadvertently promote conditions that may contribute to fire intensity or fire spread, and determining where bylaws or plans can be updated or strengthened to reduce wildfire risk within the city can help Revelstoke grow to be a more wildfire resilient community. Potential generalized examples of this in Revelstoke include:

- Regulations to enforce FireSmart building materials on new builds and renovations;
- Regulations to ensure new buildings are adequately offset from natural areas;
- Regulations to ensure that fire hazards are mitigated in natural areas next to new developments;
- Bylaws to prevent highly-flammable vegetation being planted in new developments (specifically close to homes), and;
- Regulations to ensure that municipally owned natural spaces are maintained in a low fire-hazard state.

Analysis

Local plans relevant to wildfire risk and emergency planning were reviewed during the CWRP development process, with key points summarized in Sections 2.2 and 2.3. The information presented throughout Section 2 details Revelstoke's experience with wildfire and emergency response planning and demonstrates how wildfire resilience has begun to be incorporated in official community planning. Despite these wildfire planning efforts, there are still regulatory gaps that are preventing FireSmart development within much of Revelstoke and/or complicating proactive risk reduction measures. Table 15 below lists Revelstoke's municipal bylaws that are relevant to wildfire resilience, and identifies any gaps relating to wildfire management and emergency planning.

³⁵ FireSmart Canada. 2023. The Seven FireSmart Disciplines: Legislation and Planning. Available from: <https://firesmartcanada.ca/about-firesmart/the-seven-firesmart-disciplines/>

³⁶ Various municipal plans that relate to wildfire resilience were reviewed in Section 2.

Table 15. Summary of local bylaws related to emergency planning and wildfire risk reduction

Bylaw	Bylaw Description & Relationship to CWRP
<p>Fire Prevention, Protection and Control Services Bylaw (1772 - 1985)</p>	<p>Regulates fire protection, prevention, and control services. Includes provisions for open air burning, FireSmart program-related projects, and hydrant maintenance. Ensures proper training, equipment, and procedures for fire suppression and prevention. Authorizes the Fire Chief to identify fire hazards on a property and issue an order for their remedy / removal.</p> <ul style="list-style-type: none"> • <i>Outlines fire protection measures, including vegetation management and fire safety practices.</i> • <i>Reduces the likelihood of human-caused ignitions from fireworks and open burning.</i>
<p>Municipal Tree Bylaw (1792 - 2009)</p>	<p>Regulates tree management on city property. Prohibits unauthorized removal or damage to city trees, requires permits for certain activities, and allows the city to remove hazardous trees.</p> <ul style="list-style-type: none"> • <i>Allows the city to remove trees that constitute a hazard to life or property, which can facilitate FireSmart vegetation management.</i> • <i>Does not include guidelines for regular vegetation management to reduce fuel loads (see Recommendation #10 in the CWRP –Managing Public Park Spaces Proactively).</i>
<p>Subdivision, Development & Servicing Bylaw (1846 - 2014)</p>	<p>Regulates subdivision and development standards to ensure that new subdivisions and developments are designed with fire safety in mind. Regulates the installation of fire hydrants and access for emergency vehicles.</p> <ul style="list-style-type: none"> • <i>Does not recommend the incorporation of FireSmart building materials, FireSmart landscaping requirements nor wildfire risk assessments for subdivisions in high-risk areas. See Section 5.3 for information and recommendations related to FireSmart development.</i>
<p>Development Approval Procedures Bylaw (2356 - 2014)</p>	<p>Regulates development application procedures. Requires consideration of fire safety and wildfire hazard assessments in the development approval process, including tree assessments and plans that reduce wildfire risk.</p> <ul style="list-style-type: none"> • <i>Ensures that new developments undergo thorough fire safety evaluations.</i> • <i>Does not refer to a specific Wildfire Hazard DPA, or the requirement to have a professional report written for fire hazard mitigation in new developments.</i>
<p>Municipal Parks Regulation Bylaw (2185 - 2019)</p>	<p>Governs conduct in parks and open spaces. Prohibits damage to vegetation and soil, requires permits for fires, and regulates park usage to protect natural resources.</p> <ul style="list-style-type: none"> • <i>Manages vegetation and fire use in parks, reducing the likelihood of human ignitions.</i>
<p>Mobile Home Park Bylaw (1080 - 1980)</p>	<p>Regulates development and maintenance of mobile home parks. Specifies fire protection measures, including the provision of hydrants and fire extinguishers. Requires the maintenance of clear access routes for emergency vehicles to ensure that mobile home parks are equipped with necessary fire protection infrastructure.</p> <ul style="list-style-type: none"> • <i>Does not recommend the incorporation of FireSmart building materials, FireSmart landscaping requirements, design principles nor wildfire risk assessments for mobile home parks in high-risk areas. See Section 5.3 for information and recommendations related to FireSmart development.</i>
<p>Building Bylaw (2294 - 2014)</p>	<p>Regulates construction standards. Requires fire suppression systems in certain buildings and adherence to fire safety regulations during construction.</p> <ul style="list-style-type: none"> • <i>Ensures that buildings are constructed with fire safety measures in place.</i> • <i>Does not recommend the use of fire-resistant building materials, defensible space creation, and fire safety landscaping around buildings. See Section 5.3 for information and recommendations related to FireSmart development.</i>

Bylaw	Bylaw Description & <i>Relationship to CWRP</i>
<p>Zoning Bylaw (2299 - 2022)</p>	<p>Regulates land use and zoning. Specifies zoning requirements that include provisions for fire safety, such as ensuring access for emergency vehicles, minimizing the risk of wildfire spreading from the forest to the building and from building to building, considering landscaping conditions and property maintenance that reduces wildfire hazard, adhering to FireSmart construction guidelines. This all integrates fire safety considerations into land use planning and zoning.</p> <ul style="list-style-type: none"> • <u>Proactively managing development for reduced fire risk is enforced for Comprehensive Development Zone 8 (Revelstoke Resort Neighbourhood Areas & Resort Core Areas) as part of the development permit guidelines.</u> • <u>Does not include additional specific wildfire hazard risk areas with stricter building and landscaping requirements.</u>
<p>Wood Burning Appliance Smoke Control Bylaw (2017 - 2014)</p>	<p>Regulates installation and operation of wood-burning appliances. Specifies that only certified appliances may be installed, limits fuel types to seasoned cordwood or manufactured products, and prohibits burning certain materials. Officers may inspect premises for compliance.</p> <ul style="list-style-type: none"> • <u>Regulates wood-burning practices for heating purposes, reducing the risk of structure fires caused by improper use / installation of wood-burning appliances and reducing the amount of fine particulate matter (PM_{2.5}) released into the air.</u> • <u>Maintenance requirements are not in place as part of this bylaw.</u>

Action Planning

By pursuing changes to various pieces of legislation or increasing the enforcement / communication of pre-existing bylaws, the City of Revelstoke can work to become a more wildfire resilient community as it continues to grow. Wildfire risk and preventative measures are referenced in Revelstoke’s updated Official Community Plan, but few local bylaws enforce the adoption of FireSmart construction or landscaping principles, which has resulted in considerable fire risks throughout and adjacent to multiple neighbourhoods. Within the Revelstoke Mountain Resort Neighbourhood Areas and Resort Core areas (Comprehensive Development Zone 8 – CD08), the development permit guidelines recommend the following:

- Having sufficient emergency vehicle access and water supply for fire suppression;
- Minimizing the risk of wildfire spreading to/from the forest, or from building to building;
- Including requirements for the location and type of landscaping;
- Including requirements for the removal of fuel accumulations and the maintenance of adjacent forest areas;
- Incorporating FireSmart construction materials (roofing, fire resistant siding, etc.).

In CD08, at the development permit stage the City reviews and ensures compliance with the Zoning Bylaw guidelines and at the building permit stage the City requires a wildfire risk assessment to be completed. FireSmart requirements in CD08 and any additional programs that are implemented as a result of bylaw changes can have multiple positive outcomes as well; for example, regulating FireSmart landscaping to reduce future wildfire risk can also ensure that drought tolerant plants are selected for to provide resilience to future water use restrictions in Revelstoke.

The bylaws described and/or recommended for updating should not be considered the complete list of local policy that should be reviewed and updated, but rather a guide to how FireSmart principles can be viewed and actioned through municipal legislation and land use planning. If updating / creating bylaws regarding building forms, regulation, landscaping, and zoning are not a direction that Revelstoke decides to pursue, the same goals can likely be reached via a wildfire hazard Development Permit Area which is discussed in Section 5.3. Recommendations and action items that relate to legislation and planning that the City of Revelstoke can implement are detailed in the Executive Summary in Table 1: The City of Revelstoke’s CWRP Action Plan. These recommendations are summarized as follows:

#7: Enact a FireSmart Landscaping Bylaw	#8: Communicate Bylaw Controls of Fire Risk
#9: Alter Restrictions on Tree Removal	#10: Manage Public Park Spaces Proactively
#11: Update the CWRP	

5.3 DEVELOPMENT CONSIDERATIONS

Description

Building materials and design, coupled with residential landscaping, are the most significant factors influencing home survivability during a wildfire. Development standards influence the potential impact a wildfire may ultimately have on a community. Damage potential is exacerbated when flammable building materials are used throughout the developed area of a municipality. As such, strategic decisions regarding FireSmart building materials and design are important to reduce structures' ignitability and protect neighbourhoods from wildfire. Wildfire risk factors that can be planned for and regulated through the development process include:

- Location of development in relation to vegetation, slopes, and terrain features that either reduce or increase wildfire threat;
- Type of construction materials on structures and attachments (privately and publicly owned);
- Landscaping requirements throughout the FireSmart Home Ignition Zone;
- Structure density;
- Access and traffic circulation patterns;
- Availability and adequacy of water supply.

Analysis

Many of the newer homes and current developments within Revelstoke have been built using FireSmart materials and design principles (e.g., fibre-cement siding, mass timber / log-homes, asphalt shingle roofs) – though this has only been regulated through the Zoning Bylaw for areas in Revelstoke Mountain Resort. Additionally, a Section 219 Wildfire Interface Covenant was enacted for 22 residential properties on Monashee Court, which sets FireSmart requirements for the buildings themselves, within 10 meters of any building, and additional vegetation management within 100 meters of any buildings. Though development on Monashee Court was still ongoing during the field work phase for this CWRP, the 10 meter “fire buffer” area identified in the Covenant did not appear to meet requirements on many lots as buildings were not offset from surrounding conifer trees. In addition, the area that is greater than 30 meters from homes on Monashee Court often extends into undeveloped private parcels and/or Crown land which contains high hazard forest types – leaving extensive areas that require vegetation management but are outside the scope / jurisdiction of the private landowner. Currently, Revelstoke’s development department issues a FireSmart informational pamphlet with all building permits in the City.

Conversely, older homes and buildings throughout the community often have low FireSmart compliance. FireSmart compliance combines both structural and landscaping attributes – both of which can be controlled for at the development phase. The most noted non-compliance issues of older homes includes wooden or vinyl siding, decorative wood shakes, wooden deck(s) with vegetation and debris underneath, and combustible debris or materials stored directly adjacent to the building (e.g., firewood, construction materials, etc.). Close to both old and new buildings, the presence of highly flammable vegetation is common, either as the result of landscaping decisions (e.g., cedar hedges) or a lack of maintenance (e.g., dead / decadent shrubs). Highly flammable or unmaintained vegetation can provide a continuous pathway between buildings for either a structural fire or a wildfire to spread through.

A key policy tool that can be used to regulate development and facilitate the adoption of FireSmart best practices are Development Permit Areas (DPAs). DPAs are geographic areas defined in a community's OCP, where special conditions must be met, or construction or building design practices must be adhered to, to obtain a development permit. Pursuant to Section 5 of the 2015 BC Building Act, municipalities may not establish technical regulations related to buildings in their Building Bylaw. As a result, DPAs are commonly used to enact FireSmart requirements for new buildings (and specific renovations of existing buildings) and subdivision development. As discussed in Section 2.3, an initiative of the recently developed Revelstoke OCP is to examine the feasibility of establishing a Wildfire DPA, highlighting the city's recognition of the growing threats posed by climate change, including increased droughts and wildfires.

Currently, all proposed developments, land alterations, redevelopments, and subdivisions in Revelstoke are subject to zoning regulations that include provisions for fire safety, such as maintaining defensible space around properties and ensuring access for emergency vehicles. However, these regulations do not include specific wildfire hazard risk areas with stricter building and landscaping requirements. The Zoning Bylaw (2299 - 2022) is being updated to align with the 2022 OCP and is expected to be completed by November 2024, presenting an opportunity to include a Wildfire DPA.

Action Planning

Incorporating a specific Wildfire DPA will guide the design of subdivision developments and the construction of individual properties to minimize wildfire hazards and contribute to the fire safety of the community. The following aspects should be considered in the creation of the Wildfire DPA:

- Establish DPA objectives to provide direction and measurable targets. Examples of DPA policy objectives could include minimizing risk to property and people from wildfires, minimizing risk to forested areas surrounding the municipality, and conserving the visual and ecological assets of the forests surrounding communities.
- Mandate FireSmart construction materials within the established wildfire hazard development permit area, such as fire-resistant roofing and siding.
- Require the inclusion of a 1.5-meter non-combustible zone and FireSmart landscaping on the property.
- Ensure that subdivision lands that are returned to the city as municipal parkland have a wildfire hazard assessment and any recommended fuel management treatments completed before the land is transferred.
- Engage the development community and the public in the DPA development process through workshops, informational sessions, or open houses to educate, inform, and allow for input.

Two important next steps to initiate a Wildfire DPA process include: a) retaining a qualified forest professional with wildfire management in their scope of practice to interpret local threat data presented in this report and gather additional information as required; and b) creating a working group of municipal staff from appropriate departments (e.g., Planning Department, Revelstoke Fire-Rescue), to collaborate on acceptable policy language and structure.

A detailed summary of the recommendation for Revelstoke to embed FireSmart practices and considerations into development is detailed in the Executive Summary in Table 1: The City of Revelstoke's CWRP Action Plan.

5.4 INTERAGENCY COOPERATION

Description

Engagement and strong partnerships foster effective FireSmart programs. Interagency cooperation aims to broaden from a single department- or agency-based siloed approach to a landscape-level, multi-agency approach to wildfire resilience. Bringing organizations together to address wildfire issues that overlap physical, jurisdictional, or organizational boundaries is a good way to help develop interagency mechanisms to reduce wildfire risk. For example, the Revelstoke area overlaps with the operating area of the Columbia Basin Trust (CBT), which funds its own wildfire resiliency grant programs, and is an important stakeholder in the area. For a municipality like Revelstoke, which is surrounded by large tracts of forest land managed by various jurisdictions (e.g., Parks Canada, Revelstoke Mountain Resorts / Mountain Resorts Branch, Ministry of Forests, Recreation Sites and Trails BC, BC Hydro, CPKC, woodlot licensees) and large parcels of privately owned land, this is particularly important. Working together with adjacent land managers and the CSRD can help increase awareness of different agencies' priorities and concerns.

Analysis & Action Planning

At the time of writing this CWRP the Revelstoke FireSmart Coordinator has consulted with various land managers and emergency response agencies, though there is no formal roundtable within Revelstoke for discussing FireSmart initiatives and fire risk concerns. The City of Revelstoke had appointed a Community Wildland Fire Protection Committee (CWFP) in 2012, which met 1 – 3 times per year, but this committee has not formally met since 2016.³⁷ While attendance varied, the CWFP included individuals from Revelstoke City Council, Revelstoke Fire-Rescue, BC Wildfire Service, Parks Canada, the Ministry of Forests, BC Hydro, CSRD, Revelstoke Mountain Resorts, the community, and local forestry consultancies. Many of these groups have continued to discuss and collaborate informally since 2016.

In addition to an external working group, collaborating internally on wildfire risk is imperative to addressing community resilience. Addressing the action plan in this CWRP and enacting legitimate change in the community far exceeds the capacity of a single FireSmart Coordinator, or Revelstoke Fire-Rescue Services alone. For example, addressing legislation, land use planning, and development concerns through municipal departments, and addressing emergency planning concerns through the Revelstoke and Area Emergency Management Program. Internal collaboration on FireSmart initiatives has been limited to-date in Revelstoke.

Revelstoke's 2012-2016 CWFP is an example of a Community FireSmart Resiliency Committee (CFRC). A CFRC should reflect the key planners and responders most involved in local FireSmart, wildfire resiliency planning, and wildfire and emergency response. Committees such as this foster collaborative problem-solving and planning. Reestablishing a CFRC is recommended as part of the CWRP development process.³⁸ Table 16 shows various potential participants in a CFRC with the City of Revelstoke, many of which were consulted with as part of developing this CWRP. Membership of the CFRC may change or expand over time, depending on the scope of projects that are identified.

³⁷ Based on Meeting Minutes available from: <https://revelstoke.ca/383/Community-Wildfire-Protection>

³⁸ Starting in 2024, UBCM CRI funding for the FireSmart Community Funding & Supports program will be contingent on having an active CFRC.

Table 16: Potential membership in a Community FireSmart Resiliency Committee (CFRC) for Revelstoke.

Agency	Title / Department
Revelstoke Fire-Rescue Services	Fire Chief
	FireSmart Coordinator
City of Revelstoke	Director of Development Services
	GIS Technician
BC Wildfire Service	Wildfire Technician
	Wildfire Prevention Officer
Parks Canada	Fire Management Officer
Ministry of Forests	Wildfire Risk Reduction Coordinator
	Mountain Resorts Branch
Columbia-Shuswap Regional District	FireSmart Coordinator
BC Hydro	Vegetation Management Coordinator
Canadian Pacific – Kansas City	

Having a regular schedule of CFRC meetings would help develop the relationship between RFRS and various other response agencies and land managers and encourage collaboration on strategies for wildfire resiliency in the region. Increasing communications and collaborations with the CSRD is also recommended, as many individuals and property owners outside the City rely on the services provided by Revelstoke, especially during any evacuation orders. Increasing a schedule of formal meetings and collaboration (for example, through the CFRC), will increase the likelihood that community wildfire resiliency initiatives will align across the region.

It is recommended that the CFRC focus on the following important risk reduction and planning measures during its initial meetings:

- Implementation of CWRP recommendations and monitoring progress.
- Focus of UBCM Community Resiliency Investment (CRI) Program FireSmart Community Funding & Supports (FCFS) funding requests, as well as other grants, as applicable.
- Progress of other emergency management planning.
- Discussion of ongoing projects, priorities, and concerns for other agencies involved in emergency response or land management.

Local Stakeholders and Land Managers

Forestry and other land management activities can either increase wildfire risk (through fuels accumulations, poor slash abatement, or unsafe work practices, etc.) or decrease wildfire risk (through the removal of combustible fuels within managed areas, emphasizing forest health, reforestation techniques / planting, access management, etc.). Given the productive forest ecosystems throughout the Columbia valley and adjacent drainages, traditional forest harvesting has a considerable impact on fire threat within the WUI. BC Timber Sales, Stella-Jones Canada Inc., Downie Street Sawmills Ltd., and multiple woodlot licensees all have operating areas that overlap Revelstoke’s WUI. Clearcut harvesting (with reserves) was observed to be the most common silvicultural regime in the forests surrounding Revelstoke, and in areas that were qualitatively assessed during field work there was no concern with

slash abatement practices. Two years post-harvest, multiple interface cutblocks were observed to now be in a low-hazard state with a healthy herb and deciduous shrub component among planted conifer trees, with scattered and low-volume fine woody debris loads in advanced stages of decay. As mentioned in Section 4.1.2, fuel hazard will shift over time as an inherent part of forest succession.

Industrial groups and/or Crown corporations also hold a considerable amount of forested land within and surrounding Revelstoke. These “Crown Agency” parcels are generally found at valley bottom and contain a variety of forest types. A lack of management of some of these areas can result in undesirable deadfall accumulations, while there are several higher hazard forest types present on some of these parcels today. Right-of-way management techniques can also result in some of these areas having high volumes of slashed material. Where Crown Agency parcels do contain hazardous conditions and are found in the interface with residential or commercial infrastructure, the land manager should be engaged regarding hazard abatement. See Table 19 for forested Crown Agency parcels that have been preliminarily identified for fuel management. Meanwhile, Recommendation 32 discusses the importance of grass management in the drawdown zone (which is largely under Crown Agency ownership).



Figure 7: Examples of fuel accumulations on Crown Agency parcels in the interface (upper) and low-volume and dispersed slash in recently harvested interface cutblocks (lower).

Detailed recommendations and action items that Revelstoke can implement to increase interagency cooperation are listed in the Executive Summary in Table 1: The City of Revelstoke’s CWRP Action Plan. These recommendations are summarized as follows:

#13: Collaborate Externally

#14: Collaborate Internally

#15: Push FireSmart Landscaping

5.5 CROSS-TRAINING AND FIRE DEPARTMENT RESOURCES

Description

Wildfire resiliency planning draws upon various professional disciplines who do not typically work in the wildfire environment. As a result, cross-training of local government staff, structural firefighters, and staff in other key positions will support effective risk reduction activities and emergency response. All City of Revelstoke staff who are expected to participate in the development and implementation of this plan or participate in wildfire response and recovery should be appropriately trained. Cross-training ensures that municipal staff are aware of wildfire specifics and wildfire response, that structural firefighters are experienced and trained with wildfire behaviour and suppression, and that wildfire fighters are experienced and trained with structure protection. Emergency Operations Center roles within the Revelstoke and Area Emergency Program are set, but expanding the emergency response training of Revelstoke staff will allow for additional involvement in emergency events and transparency with the community.

Analysis

During plan development, expanding Revelstoke Fire-Rescue Services (RFRS) personnel numbers, FireSmart capacity, and wildfire-specific equipment were identified as opportunities to increase community resilience. Staffing-wise, RFRS is an experienced composite fire department with seven full-time firefighters, five full-time administrative positions, and 28 volunteer paid-on-call firefighters. However, RFRS has expressed concern that their current staffing levels are at 60-75% of necessary personnel, especially considering Revelstoke's expected population growth. RFRS members undertake wildland-specific training (SPP-WFF1) on an annual basis, and members undertake structural protection training (WSPP-115) every three years. Multiple BC Wildfire Service crew members volunteer with RFRS which allows for additional knowledge transfer. FireSmart-specific training is lacking within RFRS and among Revelstoke municipal staff, as only one individual currently has Local FireSmart Representative or Wildfire Mitigation Specialist training.

RFRS is equipped with wildland-specific equipment that is sufficient for responding to a small-scale wildfire only (one wildland truck with a pump and 250 gallon tank, one pickup truck, one side-by-side off road vehicle). RFRS has noted overall deficiencies in their supply of wildfire equipment, including a desire for a second support All-Terrain Vehicle and improved water shuttling capacity.

Within municipal boundaries there is little concern with emergency water supply via fire hydrants, but the RFRS reported that various areas in CSRD Electoral Area B within Revelstoke's Fire Protection Area have a lack of water supply (e.g., Kelly Flats, Mount Revelstoke, Westside Road). This is relevant for community resiliency both because of Revelstoke's delivery of fire rescue services in these communities, and because of geographic proximity. When it comes to additional water for fire suppression, the challenging topography surrounding Revelstoke complicates the use of natural water sources for drafting.

RFRS only averages three wildland fire callouts per year (dating back to 2013), which make up 25% of their total call volume. Cross-training exercises with the BCWS have not occurred in multiple years, though RFRS has jointly responded to past wildfires with Parks Canada, and BCWS.

Action Planning

As Revelstoke continues to grow in population, the City should work with RFRS to identify and address staffing, training, and equipment deficiencies on a regular basis. RFRS should continue to build out their wildland fire response capacity through training and equipment purchases, and increase the number of training sessions that are held with the BC Wildfire Service, mutual aid partners, and Parks Canada. However, with the understanding that BCWS crews already have specialized capacity, RFRS should critically assess the extent of their potential involvement in wildfires within their Fire Protection Area. Wildfire response in the Revelstoke area can be extremely challenging due to topography (i.e., a lack of access, requirements for hover-exit helicopter access) and fuel types (i.e., mature cedar-hemlock forests with large diameter stems requiring experienced fallers). These factors naturally limit the number of wildfires that RFRS can directly respond to without BCWS aid. A focus on indirect attack and structure protection may best suit RFRS' skillset.

FireSmart-specific training of RFRS members is an excellent way to enhance the capacity of the City to deliver FireSmart education and outreach programs. RFRS members already have a presence at many community events, and are generally well known in the community. The following types of FireSmart training are offered through FireSmart BC:

- Local FireSmart Representative (LFR) Training:
 - Purpose is to assist neighbourhood leaders and fire professionals to deliver basic Home Ignition Zone assessments and implement the FireSmart Canada Neighbourhood Recognition Program.
- Wildfire Mitigation Specialist (WMS) Training:
 - Purpose is to train individuals to deliver more detailed assessments than basic Home Ignition Zone assessments. WMS' are responsible for the facilitation of the Wildfire Mitigation Program and other related programs.
- FireSmart Neighbourhood Champion Training:
 - Conducted by LFRs, its purpose is to prepare community champions (neighbourhood leaders) to take initiative and begin the formal process of attaining FireSmart Community recognition status.

In addition to increased training for RFRS, response training opportunities for municipal staff (especially those involved with emergency response) that are funded under the UBCM Community Resiliency Investment (CRI) Program - FireSmart Community Funding & Supports (FCFS) include:

- Incident Command System - Level 100
- Basic Fire Suppression and Safety - S100

The UBCM CRI FCFS program has annual funding available for local governments that can be applied toward governments hiring a FireSmart Coordinator (which Revelstoke currently utilizes), FireSmart Crew Members (something that Revelstoke could consider for assisting their FireSmart program), or a Wildland Forest Professional. Recommendations and action items that the City of Revelstoke can implement to grow cross-training opportunities and fire department resources are detailed in Table 1: The City of Revelstoke's CWRP Action Plan, and summarized as follows:

Training

#16: Staffing FireSmart Positions	#17: Expanding FireSmart Training
#18: Expanding Wildfire Training	#19: Expanding ICS Training
#20: Demonstrating Structure Protection	#21: Hosting Scenario-Based Training

Water

#22: Increase Water Shuttling

Equipment

#23: Increase RFRS Staffing	#24: Increase Wildfire Gear / Vehicle Allotment
------------------------------------	--

5.6 EMERGENCY PLANNING

Description

When several wildfire emergencies are taking place throughout the province, BCWS resource availability may become scarce as the deployment of provincial resources occurs based on the Provincial Coordination Plan for Wildland-Urban Interface Fires.³⁹ Therefore, local government wildfire preparedness and resource availability are critical components of community wildfire resilience – individuals and agencies need to be ready to act. Wildfires that threaten human life, structures, and critical infrastructure are extremely complex and dynamic incidents to respond to, which can involve multiple concurrent emergency response events. All four phases of emergency management (mitigation, preparation, response, and recovery) should have significant pre-planning in place, or a WUI incident is likely to overwhelm resources and render them ineffective. Figure 8 below demonstrates important considerations for each of these four phases.

Mitigation

- A shared responsibility between various land managers and private property owners - mitigating wildfire risk prior to a fire event (includes FireSmarting homes and properties, performing vegetation management in public spaces, etc.)

Preparation

- Includes pre-incident planning (see *Analysis & Action Planning* below) by Emergency Management personnel and fire response resources.
- Includes the preparedness of homeowners and business owners prior to an evacuation (e.g., use of the FireSmart Evacuation Checklist, and preparation of "ready-to-go" kits).

Response

- Includes the capable response by municipal and/or regional Emergency Operations Center staff.
- Includes the capable response by Revelstoke Fire and Rescue Services and/or mutual-aid partners, and available BCWS resources.
- Includes the dissemination of emergency information with the public.
- Includes the provisions made to protect Public Health in the event of a wildfire (i.e., mitigating smoke impacts especially to vulnerable populations).

Recovery

- Outlines the ability of the community to respond quickly to values that are affected by an interface wildfire.
- Required recovery efforts will likely decrease with pre-incident improvements in mitigation, preparation, and response.

Figure 8: Generalized description of the four phases of emergency response as they relate to a wildfire emergency in the Revelstoke area.

³⁹ Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. Retrieved from: 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

Analysis & Action Planning

The Revelstoke and Area Emergency Management Program (introduced in Section 2.1) prepares Revelstoke to work closely with Emergency Management BC (EMBC) to respond to emergencies within the municipality and within CSRD Electoral Area B. A well-functioning joint emergency program like the RAEMP is crucial for effective response to local fire emergencies, especially as local BCWS officials have noted that any interface wildfire in the Revelstoke area would likely be burning mostly in CSRD jurisdiction. If necessary, the RAEMP will activate an EOC to coordinate response efforts for impacted areas. The EOC liaises with external agencies to gather and disseminate accurate and relevant data, including evacuation updates and Emergency Support Services (ESS). The City keeps residents informed about available ESS and best practices through regular updates on their website.⁴⁰

Emergency planning and response information is available on the Revelstoke municipal website, with additional contact details provided during local emergencies. The website is regularly updated with current emergency alerts, and residents are encouraged to sign up for the *Alertable* mass-emergency alert system which is used by both Revelstoke and the CSRD. A comprehensive preparedness webpage offers links to resources from PreparedBC and the Government of Canada's Get Prepared program. The website also includes specific wildfire resources such as FireSmart BC links, the wildfire preparedness guide, and BCWS links. An interactive emergency map displays emergency evacuation orders, alerts, and advisories within Revelstoke, as well as an emergency map for the entire province. In addition, Revelstoke Fire Rescue Services frequently updates social media with emergency alerts and information, and Tourism Revelstoke provides wildfire / emergency information on their website home page when there are active wildfires or smoke concerns in the area.

The RAEMP's Wildland Fire Urban Interface Tactical Plan was also introduced in Section 2.1. While wildfire incidents can be extremely complex, unpredictable, area-specific and condition-specific, this tactical plan provides an excellent starting point for wildfire-specific emergency planning. The plan provides essential fire management information that can save valuable time during fire suppression operations. Revelstoke Fire-Rescue members should be aware of the content within this plan, and the specific information for each geographic division should be referenced during any emergency response exercises that are performed. This pre-incident plan should also be reviewed and updated regularly as conditions in geographic areas change (e.g., uptake of FireSmart initiatives, changes to the surrounding forest, neighbourhood growth).

When finalizing and/or updating the Emergency Management Plan, the RAEMP could consider the following preparedness level table when developing local daily action guidelines based on expected wildfire conditions.

⁴⁰ City of Revelstoke. Emergency Management. Retrieved from: [Emergency Management | Revelstoke, BC - Official Website](#)

Table 17: Example of a Wildfire Response Preparedness Condition Guide

FIRE DANGER RATING	ACTION GUIDELINES
LOW	<ul style="list-style-type: none"> All Revelstoke staff on normal shifts. Direct community members to BCWS (or Revelstoke’s FireSmart page) for fire danger rating info.
MODERATE	<ul style="list-style-type: none"> All Revelstoke staff on normal shifts. Information gathering and dissemination through Revelstoke’s internal or external CFRC. Regional fire situation evaluated. Direct community members to BCWS (or Revelstoke’s FireSmart page) for fire danger rating info, update fire danger signs in the community.
HIGH	<ul style="list-style-type: none"> All Revelstoke staff on normal shifts. Regional fire situation evaluated. Revelstoke EOC staff notified of Fire Danger Rating. Daily fire behaviour advisory issued. Establish weekly communications with the internal or external CFRC. Update fire danger rating signs in the community and/or post updates on social media and Revelstoke’s FireSmart page.
EXTREME	<ul style="list-style-type: none"> Same conditions as ‘High’ Danger Rating. Revelstoke’s EOC staff considered for level 1 activation standby. Wildfire Incident Command Team members considered for stand-by / extended shifts.
FIRE(S) ONGOING	<ul style="list-style-type: none"> All conditions apply as for Extreme (regardless of actual fire danger rating). Mobilize EOC support if evacuation is possible, or if fire event requires additional support. Implement Evacuation Alerts and Orders based on fire behaviour prediction and under the direction of the EOC or BCWS.

In addition to emergency planning, Revelstoke can play a role in helping the community prepare for potential air quality impacts from nearby wildfires. Many wildfires in the Columbia Mountains are managed as “Modified Response” events when they are burning in an area that has no immediate threat to values. Modified Response is a BCWS tactic that aims to minimize damage while maximizing ecological benefits from the fire.⁴¹ Smoke from wildfires that are difficult to suppress or left to burn can be impact air quality in the City. Smoke can often be trapped at valley bottom due to atmospheric inversions.

The impact that wildfire smoke can have on public health is an emerging topic of scholarly research, but it is generally well understood that fine particulate matter from wildfire smoke (i.e., PM_{2.5}) has a wide range of negative health effects. Seniors or individuals with pre-existing illnesses or chronic health conditions are generally at the highest risk of smoke-related health effects, which stresses the importance of reducing exposure levels to wildfire smoke as 14% of Revelstoke’s population is over the age of 65 (Table 6 in Section 3.2). There are strategies to reduce a exposure to wildfire smoke, which can be achieved by individuals and/or facilitated through municipal programs.⁴² Recommendations and action

⁴¹ BCWS, Wildfire Response and Attack Methods: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-response/management-strategies/response-types-attack-methods>

⁴² The Government of Canada has published guidelines on wildfire smoke and its relationship with public health, including ways to prepare for smoke events and protect your physical and mental health: <https://www.canada.ca/en/services/health/healthy-living/environment/air-quality/wildfire-smoke.html>

items related to emergency management are detailed in the Executive Summary in Table 1: The City of Revelstoke’s CWRP Action Plan, and summarized as follows:

#25: Distribute Evacuation Checklists	#26: Increase <i>Alertable</i> Usage
#27: Address Wildfire Smoke	#28: Procure Backup Generators

Recovery Planning

Planning for recovery from an emergency is a critical part of emergency planning. RAEMP’s draft Emergency Management Plan details recovery procedures, including reliance on the Catastrophic Emergency Response and Recovery Centre (CERRC) for recovery leadership and assistance. Revelstoke recognizes that emergency recovery will require the accurate dissemination of information, engagement, financial management and compensation, the continued provision of key services, support for business recovery, critical infrastructure recovery, and continued solid waste services for debris management. Many of these activities can be proactively managed from a fire-risk standpoint, for example:

- Pre-establishing wildfire-specific planning committees to facilitate communication (see Section 5.4 – Interagency Cooperation);
- Improving public information sharing by expanding the use of *Alertable* (Recommendation 26);
- Assessing and reducing wildfire risk proactively to critical infrastructure (Recommendations 37 & 38);
- Assessing and reducing wildfire risk proactively to key services.

While wildfire can be ecologically beneficial under certain circumstances, there is also the ability for wildfire to have detrimental impacts on lands and ecosystems. This can potentially result in increased risk to public safety from geohazard events (e.g., debris flows, landslides, floods), ecological damage, impacts to recreational networks or visual quality values, or several other impacts. Planning for land-based recovery from an interface wildfire can be extremely complex and difficult to prepare for, but some avenues for assistance are available. For example, BCWS provides assistance to local governments through the Wildfire Land-Based Recovery program. This program addresses the need for suppression rehabilitation, post-wildfire natural hazard risk analysis, and/or ecological wildfire recovery.⁴³

⁴³BCWS, Wildfire Land-Based Recovery: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/recovery/wildfire-land-based-recovery>

5.7 VEGETATION AND FUELS MANAGEMENT

Description

As discussed in Section 4.1.2, fuel is the only aspect of the fire behaviour triangle that can be proactively modified to reduce wildfire threat. Fuel or vegetation management reduces potential wildfire intensity and potential ember exposure to people, infrastructure, structures, and other values through manipulation of both the natural and cultivated vegetation within or adjacent to structures and the community. A well-planned vegetation management strategy can greatly increase fire suppression effectiveness and reduce damage to property and to values. Vegetation management can largely be accomplished through two different activities:

1. *Residential-scale FireSmart*: The removal, reduction, or conversion of flammable plants to create more fire-resistant areas in the FireSmart Immediate Zone, Intermediate Zone, and Extended Zone (see Figure 5). Efforts should start closest to the value (i.e., structure) and move outwards.
2. *Fuel management treatments*: The manipulation or reduction of living or dead forest, shrub and grassland fuels to reduce the rate of spread and head fire intensity and enhance likelihood of successful suppression. These treatments are often located outside the Home Ignition Zone to strategically decrease fire behaviour at the landscape scale.

Residential-Scale FireSmart

The goal of residential-scale FireSmart and landscaping is to design and maintain properties using FireSmart principles to make them more resilient to wildfire. Strategic landscape planning and regular yard work routines can reduce wildfire risk and increase the defensible space for firefighters on a property.⁴⁴ The Immediate Zone, Intermediate Zone, and Extended Zone are collectively referred to as the Home Ignition Zone (HIZ; see Figure 5). The names of these Zones changed in 2023 and had previously been referred to as the Non-Combustible Zone, Priority Zone 1, and Priority Zone 2, respectively. During plan development, low compliance with regards to FireSmart vegetation management in the HIZ was observed throughout Revelstoke and in adjacent rural-residential areas. The most common FireSmart vulnerabilities that were noted for residential structures and community infrastructure were:

- Highly flammable landscaping (e.g., cedar / juniper hedges, dead hedges / shrubs) in the Immediate and Intermediate Zones;
- Overgrown / unmaintained grass and shrubs in the Immediate and Intermediate Zones;
- Low drooping conifer trees, often in contact with the home / building;
- Dry and dead vegetation and/or combustible materials stored underneath exposed wooden decks;
- Combustible materials (e.g., firewood piles) stored adjacent to the home;
- Wooden sheds / outbuildings within the Intermediate Zone of the main house, which are often much less FireSmart than the house itself.

⁴⁴ Cal Fire description / demonstration of defensible space: <https://readyforwildfire.org/prepare-for-wildfire/defensible-space/>

There is an opportunity for the City to substantially increase community wildfire resiliency by expanding vegetation management programs and debris disposal options within the municipality, prioritizing areas of importance (see Section 3.3 – Values at Risk) and/or fire threat (see Section 4.4 – Local Wildfire Risk Assessment). Tactically, as fire hazards (i.e., vegetation) are often similar at the neighbourhood scale and there are logistic efficiencies with performing continuous work in one geographic area, Revelstoke should consider designing fuel management programs at the neighbourhood scale. Hazards between individual HIZs often overlap and span multiple parcels, therefore neighbourhood-level resilience will often require coordination by municipal staff and buy-in from several individual property owners. The City of Revelstoke’s FireSmart program held a free chipping event for Wildfire Community Preparedness Day in 2024, which was a success and will likely be continued and expanded in following years. Assisting elderly individuals with residential vegetation management has already been identified as an area of improvement for this program.

Additionally, multiple slopes throughout Revelstoke were noted to have dense / unmaintained conifer forests or unmaintained grass and shrub loads – many of which are on private property (e.g., south of Illecillewaet Road, throughout Clearview Heights, along Basford / Pearkes Drive). This vegetation hazard should be communicated to property owners, which may also allow the City to better understand barriers faced to reducing this hazard.



Figure 9: Structurally FireSmart new builds surrounded by pre-existing and planted conifer trees.

“Residential-Scale” FireSmart programs should also be applied to municipal infrastructure, especially structures identified as critical infrastructure. Both the construction materials of these buildings and the vegetation/landscaping surrounding are equally important to consider – the structure itself may not be overly susceptible to fire but the vegetation surrounding it could be, creating a barrier to access if ignited and also a vector for fire to spread to nearby structures.

Though the end goal of any vegetation management is a reduced fire risk, there are additional considerations to ensure that ecosystem health and other values is not being compromised through treatment (e.g., wildlife habitat, water quantity and quality, biodiversity, invasive species management, slope stability, etc.). Some of these additional considerations are regulated for through Revelstoke’s Environmentally Sensitive DPA and/or Environmentally Hazardous DPA.

Fuel Management Treatments

Fuel management treatments change the structure and/or reduce the quantity of forest or grassland fuels in an area. Fuel management treatments are generally located outside of the Home Ignition Zone and serve to further reduce wildfire risk to communities as well as to reduce the potential for fire transmission into adjacent forested lands. Fuel management treatments aim to reduce potential fire behaviour to a level that allows for the best chance of successful fire suppression. While basic FireSmart landscaping can be guided by the recommendations of a Local FireSmart Representative, it is recommended that vegetation management outside of the Home Ignition Zone be directed by a forest professional with wildfire risk reduction in their scope of practice, to ensure that additional forest values are not being negatively affected.

Decreasing the rate of spread and head fire intensity of a wildfire means that ground crews are more likely to be able to access the area safely and successfully implement fire control tactics with the use of hand tools, water delivery systems, and/or heavy equipment. In contrast, where hazardous forest fuels promote more intense fire behaviour, fire control options become more limited, and ground crew access may not be possible or may be staged further away. The application of appropriate suppression tactics in a timely manner with sufficient resources is essential for fuel treatments to be effective. To increase the efficacy of fuel treatments, FireSmart standards should be applied to structures and their associated vegetation and other fuels to reduce the risk of structures igniting. Fuel treatment units also require periodic maintenance to retain their effectiveness.

Previous efforts to identify, maintain, and/or establish landscape-level fuel breaks in the Revelstoke area will be summarized below, followed by a discussion of new fuel treatment units (FTUs) that can be further considered and implemented using a values-out approach.

2015 CWPP Fuel Break Improvement Implementation Strategy

Eleven strategic landscape-level fuel break locations had been identified through Revelstoke's 2015 CWPP, and the potential implementation of these fuel breaks was critically assessed by local BC Wildfire Service experts in 2019. The intent of the BCWS' review was to:

1. Determine that fuel break improvements meet their original intent in the CWPP, and that implementing them is a valuable use of BCWS' resources;
2. Determine the primary landowners overlapping each fuel break and engage stakeholders;
3. Complete fuel break improvement work and update the CWPP, and concurrently amend incorrect information regarding fuel breaks in the CWPP.

While the BCWS' review and the authors of this CWRP agree that any action completed in service of suggested fuel break improvements would improve the strength of the fuel breaks surrounding Revelstoke, improving and/or identifying fuel breaks at the landscape scale in the Revelstoke area has proven to be a difficult endeavor. As noted in BCWS' review, this is often the product of challenging topography, land ownership complexities, pre-existing "fuel-breaks" that will not adequately stop fire progress (e.g., old burned areas), access issues, and/or frequent required maintenance. In addition, most of these fuel breaks are positioned far from any values-at-risk, and there is frequently unmitigated forest

on either private or public land between these fuel breaks and the nearest value. Unpredictable and/or aggressive wildfire behaviour can challenge and overwhelm linear fuel-breaks, and wildfires can (and frequently do) spot distances that are much wider than the fuel-break itself. Finally, most of these fuel breaks are located outside the City of Revelstoke’s municipal boundaries and would therefore require planning and implementation to be completed by the appropriate land manager. The fuel breaks that were identified in 2015 and the *CWPP Fuel Break Improvement Implementation Strategy* can be used as a reference for incident management teams and/or wildfire suppression personnel in the event of an interface fire (i.e., this information could be adapted into the RAEMP’s Wildland Fire Interface Tactical Plan).

The eleven landscape-level fuel breaks originally proposed in the 2015 CWPP are summarized in Table 18 below. With the exception of routine vegetation management along BC Hydro’s transmission line rights-of-way (see Fuel Break #1, #4, and #5), vegetation management along Revelstoke Mountain Resort ski-runs (see Fuel Break #7 and #8), and extensive work by Parks Canada (in collaboration with BCWS) for Fuel Break #11, no further implementation has occurred in any of these eleven areas as of the time of writing.

Table 18: Review of the 11 landscape level fuel-breaks identified in the 2015 CWPP – adapted from a BCWS review.

Fuel Break Name	Location and General Description	Operational Status, Constraints & Weaknesses (Based on BCWS Review and Professional Opinion)
#1: Dam to Begbie Bench	BC Hydro transmission line from Glacier House Resort south to Beaver Lake. <i>(Majority within CWRP eWUI, approximately 50% within municipal boundaries)</i>	<ul style="list-style-type: none"> • Right-of-way vegetation needs to be regularly maintained by BC Hydro • Riparian areas (constrained to treatment due to topography or ecological sensitivity) are continuously forested which breaks the continuity of the fuel break • Utility arborists are required for tree falling within Limits of Approach of transmission lines • ~850-meter stretch of fuel break on either side of the TCH is on private land • Steep continuously forested slopes north and south of the TCH, and in most locations upslope and downslope of the transmission line (the majority of which is in Woodlot 0461 or 1834) • Majority of fuel break is currently low hazard and far from values at risk – critical infrastructure vegetation management can be performed around communications tower north of TCH.
#2: TCH West (North)	Unable to determine exact location.	<ul style="list-style-type: none"> • Issues with overlapping private land • Steep ground with difficult access, few pre-existing access features – limits any kind of treatment • Continuous fuel above the cliff-band that the proposed break ties into – would not function as an effective break
#3: TCH West (South)	From the CP Rail line south through Stella-Jones’ log-yard, across Tonkawatla Creek, along 2006 wildfire and upslope to Dolan Creek. <i>(Outside CWRP eWUI, not within municipal boundaries)</i>	<ul style="list-style-type: none"> • Continuous ground fuel within the 2006 burn and continuous fuel adjacent – would not function as an effective break • Steep ground that would be difficult to access and work on for ground crews • Would require access along the CP line, and there is no access south of Tonkawatla Creek • No anchor point or fuel-break from the southern tip of the fuel break, with ~700-meters of continuous forest between here and the transmission line. 2022 cutblocks in W1834 and BCTS’ Wetask Lake operating area have broken up the continuity of conifer stands to the east of this area • Far from values at risk
#4: Substation Transmission Line	From the main transmission line corridor east to the Illecillewaet Substation (south of the Hwy 23 / Mt. Begbie Road intersection) <i>(Within CWRP eWUI, not within municipal boundaries)</i>	<ul style="list-style-type: none"> • Right-of-way vegetation needs to be regularly maintained by BC Hydro • Road access to the west end is limited • Continuous conifer forest on either side of the fuel break (both in W1834 and BCTS’ Wetask Lake operating area) – forest harvesting with good surface fuel cleanup occurred in 2020 adjacent to east end of fuel break

Fuel Break Name	Location and General Description	Operational Status, Constraints & Weaknesses (Based on BCWS Review and Professional Opinion)
#5: Highway 23 South Corridor	Highway right-of-way from #4 Fuel Break south to Begbie Creek <i>(Majority outside CWRP eWUI, not within municipal boundaries)</i>	<ul style="list-style-type: none"> Includes the Highway right-of-way and the adjacent powerline corridor. Vegetation needs to be regularly maintained by BC Hydro, though any adjacent timber falling requires utility arborists Continuous conifer stands adjacent to right-of-way – BCTS, Stella-Jones, and W1834 operating areas Multiple large forested private properties adjacent to right-of-way – few structures immediately adjacent.
#6: Begbie Creek	Follows Begbie Creek east of Highway 23 <i>(Outside the CWRP eWUI, not within municipal boundaries)</i>	<ul style="list-style-type: none"> Non-legal old growth management area, no significant fuel break currently present Poor access north of the river (for machinery), roads to the south of the river could be connected via machinery and anchored to the Columbia with ground crews – though harvested areas already present a reasonably continuous fuel break Far from values at risk
#7: Mt. MacKenzie Devils Club	Devils Club run in the Revelstoke Mountain Resort, west to Camozzi Road at the base of Snow Rodeo. <i>(Majority is outside the CWRP eWUI and municipal boundaries)</i>	<ul style="list-style-type: none"> Fuel break is not anchored to the Columbia River, with no realistic opportunity for a fuel-break to protect properties to the south of the break. A manually established fuel-break would need to run through private property, and would have continuous conifer forest to the north and south. Forested private land parcel at the base of Snow Rodeo. Majority of break is far from any values at risk, though Devils Club and associated cat-ski runs have been used effectively for fire suppression.
#8: Mt. MacKenzie North Bowl	Chopper trail to the base of the Ripper Chair, then down cliff-bands to the CP Rail line. <i>(Entirety is outside the CWRP eWUI and municipal boundaries)</i>	<ul style="list-style-type: none"> Proposed fuel-break ties into a broken cliff-band – topography in this area is inaccessible and fuel complex would not effectively prevent fire spread Proposed fuel-break does not tie to the 2003 burn, and regardless the 2003 burn has extensive ground fuel Access to the base of the fuel break / 2003 burn is via the CP Rail line Far from values at risk
#9: Greeley	Follows Greeley Creek south from Greeley Road. <i>(Entirety is outside the CWRP eWUI and municipal boundaries)</i>	<ul style="list-style-type: none"> Continuous fuel on both sides of Greeley Creek with little-to-no break provided by the creek No pre-existing access south of the water treatment plant intake (west of the creek) – i.e., continuous conifer forest from here to the alpine Greeley Creek community watershed is the main water source for all of Revelstoke <i>Recommendations for fuel management in Greeley Creek are proposed in the CWRP due to the presence of critical infrastructure</i>
#10: TCH to Park	Cliff-bands north of TCH & KOA <i>(Majority is within the CWRP eWUI and municipal boundaries)</i>	<ul style="list-style-type: none"> No pre-existing fuel break established, and rocky topography makes any work difficult. Proposed fuel-break does not anchor into anything nor does it tie to Parks Canada’s fuel break Large continuously forested private parcels to the west, fuel break is far from values at risk Continuous conifer forest within W1834 to the east Traverses the Bridge Community Watershed

Fuel Break Name	Location and General Description	Operational Status, Constraints & Weaknesses (Based on BCWS Review and Professional Opinion)
#11: Base of Mt. Revelstoke National Park	MRNP boundary along the southern end and western edge; along lower parkway from Inspiration Woods trailhead to switchback east of Rev. lookout (<i>Within eWUI, outside municipality</i>)	<ul style="list-style-type: none"> • Parks Canada & BCWS has completed fuel management in these areas and along the Inspiration Woods trail • Both ends of fuel breaks do not tie into other fuel breaks – continuous fuel exists on either side • Break itself is far from any values at risk, but does provide a safe access point and anchor point along the lower parkway

Given these considerations and constraints, taking a values-out approach to fuel management is recommended through this CWRP, while advocating with local stakeholders and land managers to ensure that industrial activities at the landscape-scale are resulting in low-hazard conditions (see Section 5.4).



Figure 10: Example of forested areas in Mount Revelstoke National Park that have been fuel treated by Parks Canada & local BCWS crews.

Fuel Treatment Units

Twenty-three fuel treatment units (FTUs) have been identified as part of this CWRP – listed in Table 19 and shown on Map 9. The majority of these fuel treatment units have been identified as areas for wildfire risk reduction in the immediate interface with residential infrastructure, community infrastructure, or City of Revelstoke critical infrastructure. In addition, continuously forested areas in the WUI that are managed by a woodlot licensee were identified, which may facilitate planning by the licensee to undertake fuel management to reduce the continuity of conifer stands at the landscape scale. Table 19 includes information on who may the land manager is, where potential funding may come from, and additional site-specific considerations. It is expected that on non-municipally owned parcels of land, the City’s role will be limited to advocacy with the appropriate land manager.

In general, the wildfire threat of these fuel treatment units is moderate, as demonstrated by Wildfire Threat Assessments (see Appendix E: WTA Plots) and/or the local wildfire risk assessment (see Section 4.4). A moderate threat rating still leaves potential for the fire hazard to be reduced through fuel treatment, but does set an inherent limit on the potential efficacy of treatment. Regardless, fuel management treatments in these areas should focus on the abatement of surface fuels (i.e., deadfall) and ladder fuels (i.e., regenerating conifer trees, dead / suppressed trees, elevated deadfall, low-drooping conifer crowns), while retaining healthy and mature forest components. In actively managed forest tenures (e.g., woodlots), fuel management activities may involve the harvest of crown fuels to be more economically viable or to facilitate a long-term silvicultural regime. Where harvesting occurs there should be a strict focus on post-harvest surface fuel abatement, and silvicultural activities should be designed with moderating long-term fire hazard as a primary goal.

The fuel treatment units identified in Table 19 have been categorized by their intended primary goal:

- **Interface:** Hazard reduction in the WUI immediately adjacent to homes, businesses, and/or infrastructure. Access would often be required through or adjacent to private property.
- **Fuel Break:** Hazard reduction in strategic locations that would build off pre-existing fuel breaks / anchor points (e.g., roadways, low-hazard forest types).
- **Defensible Space:** Hazard reduction in the WUI immediately adjacent to homes, likely to follow FireSmart guidelines for the Home Ignition Zone.
- **Green Space:** Municipally owned parcels of forest that are generally low-moderate hazard, but which could be “cleaned up” via the *FireSmart for Green Spaces* program.
- **Forest Management:** Larger forested areas managed by a forest licensee (i.e., woodlot). Harvesting can break up the continuity of conifer fuels and post-harvest silviculture can ensure that stands are managed in a low-hazard state.

Fuel treatment is often not a standalone activity that achieves a singular goal. Based on the ecosystem type and/or location of a treatment, the proactive reduction of fire hazard may also achieve the following objectives:

- Increased quality of wildlife habitat (e.g., increased mobility, sightlines, improved forage);
- Improved long-term resilience of the stand (e.g., removing components that could contribute to a stand-replacing disturbance);
- Increased biodiversity (e.g., reduced crown closure can increase herb and shrub growth);
- Increased safety to residents and recreationalists (e.g., removal of danger trees);
- Increased recreational opportunities (e.g., glading, improved sightlines, improved access);
- Decreased trail maintenance (i.e., reduced deadfall).

Recommendations and action items related to vegetation management are detailed in the Executive Summary in Table 1: The City of Revelstoke’s CWRP Action Plan, and summarized as follows:

Fuel Management Treatments	
#29: Plan and Implement Fuel Management Treatments	#30: FireSmart for Municipally Owned Green Spaces
#31: Grass Management in the Drawdown Zone	
Residential FireSmart	
#32: Conduct Home Ignition Zone / Wildfire Mitigation Program Assessments	#33: Establish the FireSmart Neighbourhood Recognition Program
#34: Provide FireSmart Rebates	#35: Assist with Debris Disposal
Critical Infrastructure & Community Assets	
#36: Conduct Critical Infrastructure FireSmart Assessments	#37: Mitigate Critical Infrastructure Hazards

Table 19: Fuel treatment areas proposed in the City of Revelstoke eWUI.

FTU #, Name & Category	Total Area (ha)	Priority	Wildfire Behavior Threat (ha)				Treatment Objective / Rationale	Overlapping Values / Treatment Constraints ⁴⁵
			Extreme	High	Mod.	Low / No Data		
#1 Greeley Fuel Break - CI	23.6	High	This area was outside the eWUI for this CWRP, and therefore was not included in the local wildfire risk assessment. Fuel hazard is high in second growth stands (C3 fuel type) and moderate in older / riparian stands (C5 fuel type). Consequence is extreme given the importance of this infrastructure.				Targets high-hazard (dense) second growth conifer stands (harvested in 1974 & 1986) adjacent to the water treatment plant and intake infrastructure. This is the primary source of water for Revelstoke. Encompasses areas along the access road and powerline right-of-way (RoW) to provide a safe anchor point in the event of a wildfire. Does not provide a fuel-break at the landscape scale.	<ul style="list-style-type: none"> • Minor overlap with the Greeley Creek Community Watershed. • Riparian protection measures required adjacent to Greeley Creek. • Crown land – can engage the Ministry of Forests (FOR) regarding fuel management prescriptions and implementation, or perform FireSmart mitigation activities as this is critical infrastructure for Revelstoke.
#2 Log Yard Interface – Industrial	38.5	Low	-	35.2	3.0	0.3	Would result in consistent low-hazard conditions on lower slopes adjacent to Highway 23 and the Revelstoke Community Forest log yard – connecting with the MRNP West FTU to the south. Targets continuous conifer stands on steep slopes. No access features are located in the FTU, therefore this provides a safe anchor point along Highway 23. A portion of the FTU ties to fuel-break work that has been completed along the boundary of Mt. Revelstoke National Park. Does not provide a fuel break at the landscape scale.	<ul style="list-style-type: none"> • C-5 stands with a moderate fire hazard from fuel, which limits mitigation opportunity. • PID 011-761-580 (log yard) is privately owned and required for access. • Steep (majority of lower slope is > 60%, almost exclusively > 40%) – likely limited to manual treatment. • Within a conditional harvest ungulate winter range (UWR) for mule deer (U-4-001). • Crown land – can engage the FOR regarding prescriptions and implementation.
#3 MRNP West Interface – Fuel Break	17.0	Moderate	-	-	17.0	-	Would result in consistent low-hazard conditions on lower slopes adjacent to Highway 23 and private properties. Connecting with previous fuel management efforts along the Inspiration Woods trail. Contains the 23 Connector trail which provides access up to the MRNP Parkway. Provides safe lower-slope anchor points and would reduce crown fire potential upslope of Columbia Park.	<ul style="list-style-type: none"> • C-5 stands with a moderate fire hazard from fuel, which limits mitigation opportunity. Highest density (highest hazard) stands are located downslope of 23 Connector which contain steep slopes which complicates treatment. • Sliver of the treatment area (adjacent to Highway 23) is not within MRNP – un-surveyed Crown land RoW. • Within a conditional harvest UWR for mule deer (U-4-001).
#4 MRNP South Fuel Break	88.6	High	-	1.2	52.5	5.6 / 29.3 ⁴⁶	Would result in consistent low-hazard conditions on lower slopes adjacent to Highway 1 and above industrial parcels in Columbia Park. Ties into the MRNP West and Reservoir – Hwy FTUs, and previously treated areas along the southeastern border of MRNP. FTU area contains low-moderate threat mature C-5 conifer stands and mixedwood stands, with 20-40% slopes found along the western edge and eastern half.	<ul style="list-style-type: none"> • >95% is within MRNP – planning and treatment would need to be coordinated with and performed by Parks Canada. • Includes small slivers of municipal land adjacent to Highway 1. • Roadways (Meadows in the Sky Parkway & Nels Nielsen access road) have not been cut out from the original FTU shape. • Rocky and broken topography may limit machine usage in multiple areas.

⁴⁵ These highlight various general overlaps and constraints for each treatment unit. This is an incomplete list of all the overlapping values and/or constraints that would need to be managed for through a fuel management prescription.

⁴⁶ “No data” area is shown as private land through Revelstoke and Parcel Fabric datasets, though Parks Canada staff have mentioned that these parcels are federally owned and within MRNP. They have been cut out of the FTU for this CWRP to fulfill submission requirements, though should be included in future fuel management programs.

FTU #, Name & Category	Total Area (ha)	Priority	Wildfire Behavior Threat (ha)				Treatment Objective / Rationale	Overlapping Values / Treatment Constraints ⁴⁵
			Extreme	High	Mod.	Low / No Data		
#5 Reservoir – Hwy Interface – Fuel Break	26.2	Moderate	-	8.3	17.9	-	Would provide consistent low-hazard conditions on lower slopes between Highway 1 and previous fuel management treatments in the border of MRNP. Surrounds the Highway Reservoir and private properties on Alpine Lane / Alpine Lane West. Steep and south facing slopes increase threat.	<ul style="list-style-type: none"> Moderate threat forests (M-1/2 and C-5), which limits mitigation opportunity. Steep slopes adjacent to Highway and private land complicate treatment. Unabated forest on adjacent private lands. Within a conditional harvest UWR for mule deer (U-4-001). Western portion is Federally owned (but not within MRNP), eastern portion is Crown land, reservoir and Highway 1 RoW is municipal.
#6 W1834 Mgmt - Woodlot	163.9	Moderate	The majority of this area (143.3 ha) is outside the eWUI for this CWRP, and therefore was not included in the local wildfire risk assessment. Of the area inside the eWUI, 11.2 is rated “High” and 9.4 ha is “Mod”.				Within Woodlot License 1834 – can discuss forest development / management opportunities to break up the continuity of conifer forest and/or create consistent low-hazard conditions in this area. South facing and continuously forested area adjacent to Highway 1 and east of the City – containing age class 6 and 7 conifer stands.	<ul style="list-style-type: none"> Managed through W1834 (McPherson Woodlot Company Ltd.) – would need to discuss planning, implementation and funding.⁴⁷ Access is currently limited other than an old access road at the eastern end. Topography (especially adjacent to Highway 1) has steep and rocky sections which will likely not allow for treatment in all areas. Top 2/3 is within a conditional harvest UWR for mule deer (U-4-001). Minor overlap with Bridge Creek Community Watershed at the FTUs highest elevations.
#7 Columbia Defensible / Green Space	3.7	Moderate	-	-	3.6	0.1	Basic vegetation management / FireSmart cleanup where residential properties intermix with conifer forests. Area contains frequently used hiking trails. Eastern portion of this area has been lightly treated in the past by BCWS. Low-moderate hazard C-5 and M-1/2 forests, surface and ladder fuels can be reduced.	<ul style="list-style-type: none"> Private properties have vegetation and structures sprawling outside property edges. Majority of treatment area would need to be completed in conjunction with private property FireSmart work. Municipal / local government land, could pursue through the <i>FireSmart for Green Spaces</i> program. Steep slopes above roadways and lower-slope properties.
#8 Johnson Hts. Defensible	11.0	Moderate	-	-	10.9	0.1	Basic vegetation management / FireSmart cleanup where residential properties interface with low-moderate hazard mixedwood forests. Area contains footpaths, is used recreationally, and is upslope of the railway which all present ignition sources. Can be a good example of neighbourhood-level defensible space – focusing on hazard reduction within 30m, 100m, then further out. Pre-existing hazard and required cleanup likely does not warrant a full Fuel Management Prescription.	<ul style="list-style-type: none"> Common property ownership. Treatment area should be completed in conjunction with private property FireSmart work. Large forested private properties to the west and north. Steep slopes above railway to the south and west. Western 2/3 are within a conditional harvest UWR for mule deer (u-4-001).

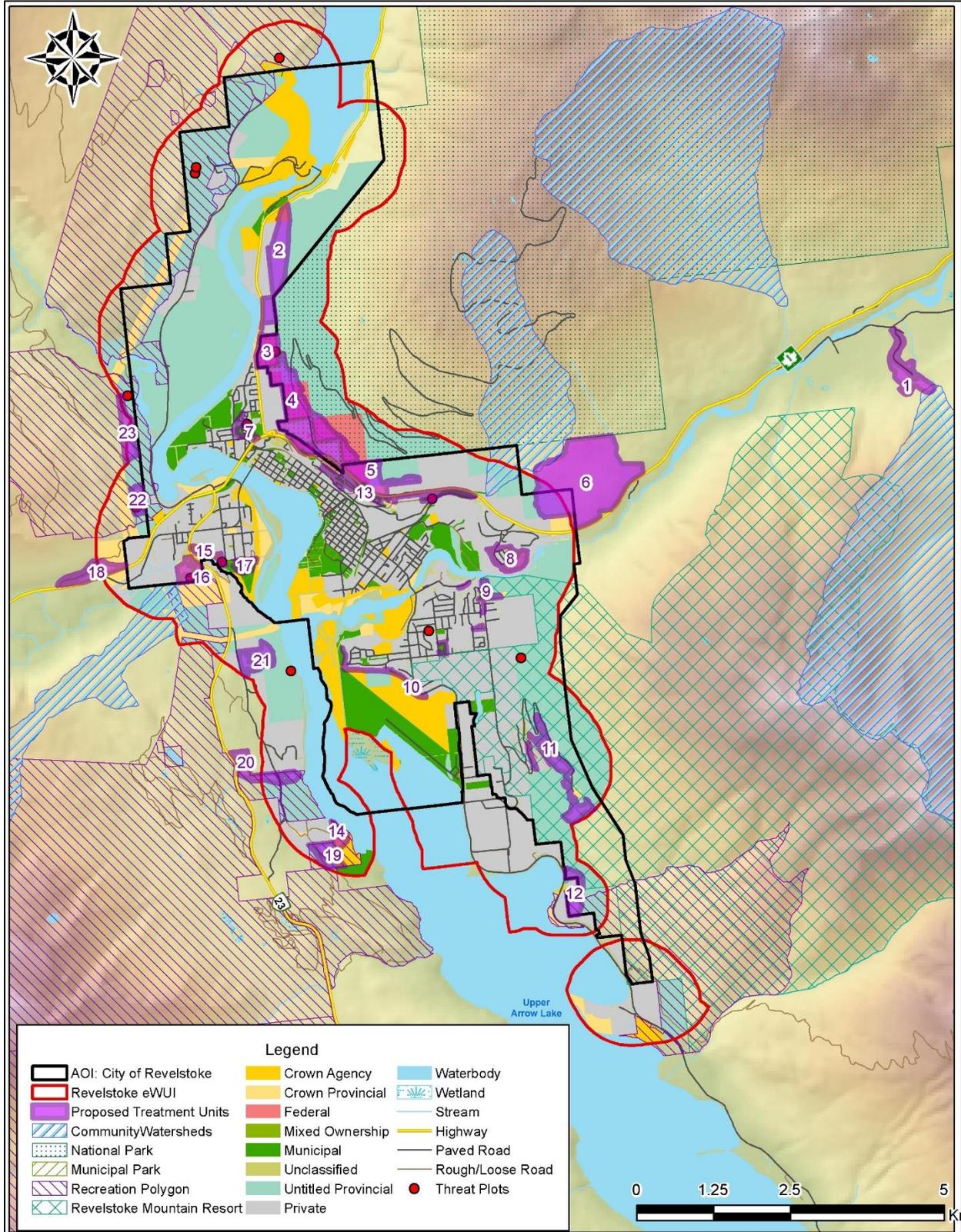
⁴⁷ Provincial and regional representatives from Woodlots BC were consulted with while developing this CWRP – sharing spatial information and descriptions of these fuel treatment areas. Woodlots BC expressed that funding is available through the BC Wildfire Service to have fuel management treatments planned and performed within woodlot licenses.

FTU #, Name & Category	Total Area (ha)	Priority	Wildfire Behavior Threat (ha)				Treatment Objective / Rationale	Overlapping Values / Treatment Constraints ⁴⁵
			Extreme	High	Mod.	Low / No Data		
#9 Arrow North Interface	4.1	Moderate	-	0.9	3.2	-	Interface treatment targeting moderate hazard C-5 and mixedwood stands. Private residential properties adjacent to the south and west, and FTU is adjacent to intermixed forest areas throughout Arrow Heights.	<ul style="list-style-type: none"> 95% of the FTU is on Crown Land within the RMR Controlled Recreation Area. Would need to consult Mountain Resorts Branch / CLWRR group at the Ministry of Forests. Remaining ~5% is on Municipal land. Fully within a conditional harvest UWR for mule deer (u-4-001). Steep slopes (40-60%) at the north and east end.
#10 Arrow Defensible / Green Spaces	6.0	Moderate	-	-	5.7	0.3	Basic vegetation management / FireSmart cleanup where residential properties intermix with conifer or mixedwood forests. Five individual FTU polygons identified: 1) "Rim" above the Columbia River 2) Between Aspen Crescent and Basin Lane 3) Between Illecillewaet Road & pumphouse access road 4) Surrounding Arrow Heights Elementary 5) West of Camozzi Road & Uplands Road	<ul style="list-style-type: none"> Mixed municipal and Crown ownership. Southern polygon along the edge of the Columbia contains Crown Agency. Would require collaboration with the Ministry of Forests and BC Hydro. Adjacent to private land, and forest continues onto private in many instances – work would need to be completed in conjunction with homeowners, especially for access and debris removal. Steep ground in #1, #4, and #5.
#11 RMR-1 Interface	27.8	High	-	13.9	13.9	-	Treatment of conifer and mixedwood forests in the immediate interface with private properties and RMR infrastructure. Moderate and high threat areas, majority of forest types are C-5 but on steep slopes (40-60%). Six individual treatment polygons identified.	<ul style="list-style-type: none"> Located within the RMR Controlled Recreation Area, majority is Crown land but with thin strips of Common Property in the interface. Would require coordination with Mountain Resorts Branch / Ministry of Forests. Access to/from private property likely required. Steep and broken topography throughout likely limits mechanized treatment. Fully within a conditional harvest UWR for mule deer (u-4-001).
#12 RMR-2 Interface	13.6	Low	-	-	13.1	0.5	Treatment of conifer and mixedwood forests in the interface with rural-residential properties upslope of Airport Way. Moderate threat areas, majority of forest types are C-5. FTU is located within the City of Revelstoke but the adjacent properties are in the CSRD.	<ul style="list-style-type: none"> Adjacent to private property and requires access through private property. Southern ~70% is gently sloped (< 20%) and along a private access road, and the northern ~30% has 40-60% slopes and limited access. Northern 30% is within RMR's Controlled Recreation Area and the entire FTU is on Crown land – would require collaboration with Mountain Resorts Branch and the Ministry of Forests. Stream / drainage running east-west through the middle of the FTU. Fully within a conditional harvest UWR for mule deer (u-4-001).

FTU #, Name & Category	Total Area (ha)	Priority	Wildfire Behavior Threat (ha)				Treatment Objective / Rationale	Overlapping Values / Treatment Constraints ⁴⁵
			Extreme	High	Mod.	Low / No Data		
#13 Clearview Defensible / Green Spaces	18.3	High	-	-	17.3	0.9 / 0.1	Basic vegetation management / FireSmart cleanup where residential properties intermix with mixedwood forests in the Clearview Heights area. Hiking trails and Highway 1 increase ignition likelihood. Low-moderate hazard M-1/2 forests, surface and ladder fuels can be reduced.	<ul style="list-style-type: none"> • Adjacent to private property – access to areas and treatment would be difficult. • Consistently sloped ground – majority of area between 20 and 60%. • Traffic control potentially required on Highway 1 – but this is easier given the dual lanes adjacent. • Treatment in this FTU would require mitigation on private land to be meaningful. • Majority of the FTU is municipally owned – could pursue treatment through the <i>FireSmart for Green Spaces</i> program.
#14 Crown Agency South Management	9.7	Low	-	-	9.7	-	Treatment of conifer forests between the W1834 South FTU and the Columbia River, fully located on Crown Agency land. FTU is in the CSRD, and adjacent to rural-residential properties in the CSRD off Northview Drive. Mature C-5 stands with potential for surface and ladder fuel abatement, and/or partial harvest. 20-30% slopes throughout much of the FTU, and adjacent to 40-60% areas.	<ul style="list-style-type: none"> • Crown Agency land – would require collaboration with BC Hydro. • Access off Northview Drive required, or through W1834 if working collaboratively while work in W1834 South is completed. • Steep sections adjacent would potentially limit / complicate machine use. • Riparian considerations required along the Columbia River. • Conifer stands in W1834 and large forested private parcels adjacent require there to be mitigation in these adjacent areas for any treatment to be meaningful.
#15 Crown Agency Eddy Interface	4.3	High	2.1	-	1.7	0.5	Interface area between Tonkawatla Creek and the Big Eddy Greenway, as well as an additional forested parcel east of the Greenway – contains high-hazard pockets of C-3 forest mixed in with C-5 and deciduous stands. Would reduce hazard and increase defensible space for the Big Eddy neighbourhood. Area is flat and has good access via the greenway and hiking trails.	<ul style="list-style-type: none"> • Crown Agency land, would require collaboration with BC Hydro. • Large forested parcels north of the greenway that are privately owned could also use mitigation in order to more meaningfully reduce hazard west of the Big Eddy. • Riparian area along Tonkawatla Creek. • Within a conditional harvest UWR for moose (u-4-001).
#16 Eddy Reservoir Fuel Break (CI)	11.8	Moderate	-	-	11.6	0.2	Targeting conifer forests adjacent to the Big Eddy water reservoir (Critical Infrastructure) and Highway 23 – on either side of Dolan Creek and upslope of Tonkawatla Creek. FireSmart mitigation can be performed within 30m of the reservoir and fuel management treatments can expand throughout the FTU. Contains low-moderate hazard mature C-5 stands on Crown land within the City of Revelstoke. Good access to the FTU via a newly constructed road.	<ul style="list-style-type: none"> • Crown land, will require collaboration with the Ministry of Forests (CLWRR group). • Unsure of potential development on private property to the west. Forested private property to the east does not allow much of this FTU to anchor into Highway 23. • Contains the Dolan Creek drainage (downstream of the Dolan Community Watershed). • Moderate slopes throughout, mechanized treatment is likely possible. • Within a conditional harvest UWR for moose (u-4-001).

FTU #, Name & Category	Total Area (ha)	Priority	Wildfire Behavior Threat (ha)				Treatment Objective / Rationale	Overlapping Values / Treatment Constraints ⁴⁵
			Extreme	High	Mod.	Low / No Data		
#17 Eddy Green Space	6.6	Moderate	-	-	6.2	0.4	Basic vegetation management / FireSmart cleanup to the south of the Big Eddy neighbourhood, in an interface area that is popular for recreation (hiking and biking). Hazard is extremely variable, with a mix of low-moderate hazard C-5 and mixedwood forests with small and young conifer thickets. Municipal land, can likely be completed through the FireSmart for Green Spaces program.	<ul style="list-style-type: none"> Low hazard areas that would not require mitigation are sporadic and not able to be spatially delineated. Few constraints exist – area would be “easy” to treat.
#18 Jordan West Fuel Break	16.0		The majority of this area (10.5 ha) is outside the eWUI for this CWRP, and therefore was not included in the local wildfire risk assessment. Of the area inside the eWUI, 5.5 ha is rated “Mod”.				Opportunity to create a low-hazard area west of the City and across Highway 1 from Boulder Mountain Resort. This FTU is located on Crown land within the CSRD. The area contains mature C-5 conifer stands on moderate slopes. There is an FTU identified by the CSRD surrounding the communications tower to the northeast of the Jordan West FTU.	<ul style="list-style-type: none"> Collaboration required with the CSRD and/or Ministry of Forests. Though there are two westbound travel lanes in areas, material would likely need to be burned in place or pulled out via the Jordan FSR. Overhead powerline located along the Jordan FSR. Steeper and continuously forested slopes to the north and east limit any ability to create a landscape-level fuel break. Within a conditional harvest UWR for moose (u-4-001).
#19 W1834 South Management	10.2	Low	-	-	10.2	-	Interface area within Woodlot License 1834 – can discuss forest development / management opportunities to break up the continuity of conifer forest and/or create consistent low-hazard conditions in this area. On either side of Mt. Begbie Road adjacent to rural-residential properties, this is a continuously forested area within the CSRD – containing age class 5 and 8 conifer stands. Low-moderate threat stands given C-5 structure and low slopes.	<ul style="list-style-type: none"> Managed through W1834 (McPherson Woodlot Company Ltd.) – would need to discuss planning, implementation and funding. Within a conditional harvest UWR for mule deer (eastern half) and moose (western half, u-4-001). Adjacent to the Crown Agency South FTU.
#20 W1834 Mid Management	17.8	Low	The majority of this area (10.7 ha) is outside the eWUI for this CWRP, and therefore was not included in the local wildfire risk assessment. Of the area inside the eWUI, 7.0 ha is rated “Mod” and 0.1 ha is “Low”				Equivalent rationale to W1834 South. Adjacent to rural-residential properties on either side of Mt. Begbie Road in the CSRD. Low-moderate threat stands given C-5 structure and low-moderate slopes.	<ul style="list-style-type: none"> Managed through W1834 (McPherson Woodlot Company Ltd.) – would need to discuss planning, implementation and funding. Within a conditional harvest UWR for mule deer (eastern half) and moose (western half, u-4-001).
#21 W1834 North Management	18.0		-	-	18.0	-	Equivalent rationale to W1834 South and Mid. Adjacent to rural-residential parcels along Mt. Begbie Road, and adjacent to harvested areas from 2013, 2018, and 2020. HILLTOP INFRAS? Low-moderate threat stands given C-5 structure.	<ul style="list-style-type: none"> Managed through W1834 (McPherson Woodlot Company Ltd.) – would need to discuss planning, implementation and funding. Steep slopes (30 – 60%) in the west and central portion of the FTU. Within a conditional harvest UWR for mule deer (eastern half) and mule deer (western half, u-4-001).

FTU #, Name & Category	Total Area (ha)	Priority	Wildfire Behavior Threat (ha)				Treatment Objective / Rationale	Overlapping Values / Treatment Constraints ⁴⁵
			Extreme	High	Mod.	Low / No Data		
#22 W0461 Cash Advance Management	7.4	Low	-	-	7.4	-	<p>Within Woodlot License 0461 and a popular hiking / mountain biking trail network. Can discuss opportunities to break up the continuity of hazard and conifer stands at the landscape level. FTU is within the CSRD. Contains moderate threat mature C-5 stands (age class 4 and 7), on low-moderate slopes.</p>	<ul style="list-style-type: none"> Managed through W0461 (Philip Desmazes) – would need to discuss planning, implementation and funding. FTU contains the “Cash Advance” trail and is adjacent to the Jordan FSR. Avoids steep slopes to the east that drop off to the Big Eddy. Within a conditional harvest UWR for mule deer (northern 2/3) and mule deer (southern 1/3, u-4-001).
#23 W0461 Man Quads Management	15.7	Low	<p>The majority of this area (8.0 ha) is outside the eWUI for this CWRP, and therefore was not included in the local wildfire risk assessment. Of the area inside the eWUI, 7.7 ha is rated “Mod”.</p>				<p>Equivalent rationale to W0461 Cash Advance. Contains moderate threat mature C-5 stands (age class 5 and 7), on low-moderate slopes. Mortality in mature Douglas-fir trees has been prevalent throughout this FTU and surrounding areas. Area could be expanded to the south but this is outside W0461 and on Crown land.</p>	<ul style="list-style-type: none"> Managed through W0461 (Philip Desmazes) – would need to discuss planning, implementation and funding. FTU contains the “Man Quads” trail and is adjacent to the Hydro transmission line. Avoids steep slopes to the east that drop off to the confluence of the Jordan and Columbia Rivers. Southern portion contains a conditional harvest UWR for mule deer (u-4-001).



Map 9: Overview of proposed fuel treatment units (FTUs) in this CWRP. The labelled number corresponds to the FTU # in Table 19. Note that a number of FTUs have multiple separate polygons.

SECTION 6 FIRESMART ROADMAP AND CWRP ACTION PLAN

6.1 FIRESMART ROADMAP

The FireSmart Roadmap (Figure 11) is a concept that visually demonstrates how no two communities will follow the same path towards increased community wildfire resiliency, but that actions progress along four sequential phases:

1. Engagement – building awareness and growing a local FireSmart program, including staff training and public education campaigns
2. Initiative – taking action and implementing local FireSmart activities, such as FireSmart Assessments, a local rebate program, and building a Structural Protection Unit
3. Integration – long term changes to support resiliency, focusing on development and collaboration
4. Expansion – advanced community activities, such as fuel prescriptions and treatments and the Farm and Ranch Wildfire Preparedness program

Prior to the first phase, FireSmart BC recommends that three foundational elements are in place:

- A FireSmart Coordinator
- A Community Wildfire Resiliency Plan
- A Community FireSmart Resiliency Committee

Revelstoke has the first two elements in place and desires to establish a CFRC upon the completion of this CWRP, then progressing through the engagement, initiative, and integration phases of the Roadmap. As a municipality that has been discussing FireSmart initiatives for decades and incorporating FireSmart ideas into the Official Community Plan, Revelstoke has already engaged in the Integration phase despite having a relatively new FireSmart program. Examples of activities completed and ongoing under each phase, with next steps, include:

- Engagement – Fire Coordinator trained as a Wildfire Mitigation Specialist and Local FireSmart Representative; Revelstoke Fire-Rescue training in wildland fire response; Revelstoke FireSmart is actively delivering FireSmart education programming through print resources and in-person events
 - Mixed response but generally residents are on board
 - Next step: continue effort and focus on intermix neighborhoods, leveraging existing community groups if possible
- Initiative – FireSmart Home Assessments and rebate program begun and expanding
 - Next step: removal of barriers for FireSmart landscaping through additional chipper or bin programs, or community clean up days
- Integration – New Official Community Plan includes recognition of wildfire risk
 - Next step: consider a Wildfire Hazard DPA and the review of barriers to vegetation management
 - Next step: move FireSmart further into the community through the FireSmart BC Plant Program and Library program

- Expansion – progressive roll-out of prescriptions and treatment of identified fuel treatment units
 - Next step: consult with local land managers for prescription development and treatment in Crown land / National Park areas
 - Obtain funding to prescribe and treat recommended fuel treatment areas in municipal parks, or treat through the FireSmart for Green Spaces program

6.2 CWRP ACTION PLAN

Table 1 in the Executive Summary details the Action Plan for Revelstoke. Each Action Item is a prioritized recommendation supported with a rationale, suggested lead agency, expected timeframe, resources required (funding, staff capacity), and metric for success. The corresponding Roadmap phase is also noted.

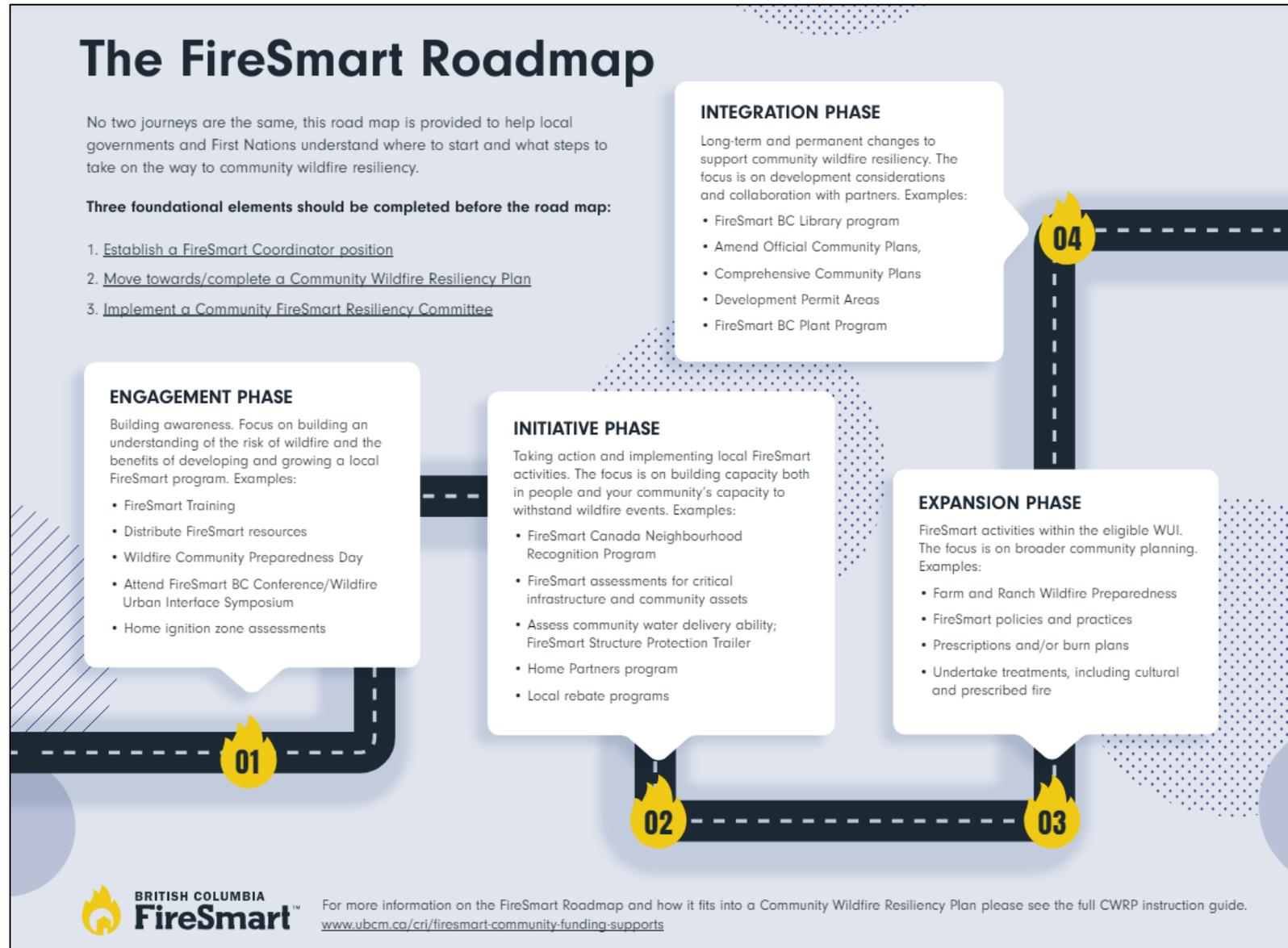


Figure 11. The 'FireSmart Roadmap' is a new focus of community wildfire planning in BC.

6.3 TRACKING, REPORTING, AND UPDATES

Appendix A: Review of 2015 Revelstoke CWPP summarizes recommendations from the 2015 CWPP and their current status. This review was used to inform the 2024 Action Plan.

As the City of Revelstoke works towards implementation of this CWRP, the FireSmart Coordinator should consider scheduling an annual review of progress made towards each action item/recommendation. Tracking and reporting will create accountability and also help with future funding applications. A brief annual report can be shared with the public to highlight accomplishments and successes of the FireSmart program (e.g., number of members trained, number of assessments completed, fuel treatments planned / implemented), which will serve to further FireSmart engagement.

The City of Revelstoke should prepare for a five-year comprehensive review/update of the entire plan. A current CWRP (typically 5 years or less) is presently a requirement of the FCFS program. An update should review the entire plan and consider how risk has changed based on any recent wildfires, vegetation management works completed, significant changes to the built environment due to growth and development, economic changes, or other factors that would influence the overall success of the plan. This would also include a detailed analysis of all completed fuel management treatments within the planning area with an updated status and/or a maintenance plan.

The City of Revelstoke has been provided with this 2024 CWRP Action Plan as an Excel spreadsheet. This will allow for easy updating and tracking, with new columns and rows added as necessary. This spreadsheet can form the basis for the next CWRP update and assist Revelstoke in reporting on progress to elected officials and the public, as well as for grant applications.

APPENDICES

APPENDIX A: REVIEW OF 2015 REVELSTOKE CWPP

The scope of Revelstoke’s 2015 Community Wildfire Protection Plan (CWPP – prepared by Mountain Labyrinths [Cindy Pearce], B.A. Blackwell & Associates Ltd., and Archie McConnachie) was a 2-kilometer buffer from the boundaries of Revelstoke Fire-Rescue’s Fire Protection Area, the developed portion of RMR’s Controlled Recreation Area, specific WUI areas as identified by the BCWS, and the Greeley Creek watershed. Risk was identified in the 2015 CWPP through a Wildfire Risk Management System (WRMS) that combined the probability of ignition, potential fire behaviour (based on field-verified fuel types), and suppression capabilities / constraints, using multiple values at risk to define potential fire consequence. This WRMS was originally used in 2011 for Revelstoke’s first CWPP and expanded in 2015 as the area of interest for the CWPP expanded. Recommendations from the 2015 CWPP will be summarized below, and comments are provided on the status of these recommendations.

RECOMMENDATIONS

Table 20: Paraphrased recommendations from the 2015 CWPP and their current status (bolded recommendations were highest priority). Yellow indicates recommendations that are incomplete / in progress and are recommended for 2024; green indicates completed; grey is unachievable or no longer applicable.

Category	Recommendation	Status & Comments
Infrastructure Protection	Confirm the location and ownership of communications infrastructure and encourage owners to implement wildfire protection practices.	Comms. infrastructure noted as a VAR in this CWRP and the 2023 CSRD CWRP. Hazard assessment and mitigation activities are eligible for grant funding and are recommended in this CWRP.
	Research and establish a natural hazard DPA incorporating FireSmart practices.	Has not been completed. Recommended in this CWRP.
	Develop new approaches to encourage property owners to adopt FireSmart practices.	FireSmart Coordinator began a program of HIZ assessments and rebates in 2023. Further recommended in this CWRP.
	Have subdivision application referrals reviewed by RFRS for wildfire protection.	Subdivision development does not require a wildfire hazard assessment. Bylaw 1846 requires that adequate access and water for suppression equipment be in-place for new subdivisions.
	Communicate wildfire risks to the CPR and MOTI – encourage them to protect their infrastructure from wildfire.	Wildfire risk is indirectly communicated locally and provincially. Industrial groups are independently assessing and managing fire hazard.
	Address wildfire risks to essential infrastructure for RMR.	Wildfire risk is still prevalent to RMR infrastructure. FireSmart for infrastructure and fuel management treatments have been identified within RMR areas.
	Manage wildfire risks to monitoring equipment east of the dam.	Had not been identified as CI in this CWRP, but FireSmart assessments and mitigation for CI recommended in this CWRP.
Education & Awareness	Implement an annual education plan (e.g., home sprinklers, FireSmart information, community wildfire protection pages online, public displays, media stories).	FireSmart page available , with links to FireSmart materials, FireSmart events, Fire Prevention initiatives, and Community Wildfire Protection. Public FireSmart displays and Community Preparedness Days have occurred. Grants and FireSmart initiatives have been presented in the Revelstoke Review.
	Maintain fuel management demonstration areas.	Nichol Road fuel management area has educational signage and is still low-hazard (albeit it does not meet provincial FireSmart guidelines for adjacent properties). No signage in Columbia Park.
	Enforce forest closures.	Area closures only observed in connection with active wildfire events. Enforcement exceeds the scope of the City.

Category	Recommendation	Status & Comments
	Educate forest users about the hazards of being too close to transmission lines during smoky conditions.	Public would not likely be near transmission lines if this risk was realistically present. First responders in interface events near transmission lines would work with BC Hydro to ensure safety.
	Seek out neighbourhood champions to facilitate FireSmart awareness and education events.	To be completed in conjunction with neighbourhood assessments.
	Create a FireSmart model-size show home.	Incomplete in Revelstoke, but various other education options are being employed by the FireSmart Coordinator.
	Explore ways to recognize owners who implement FireSmart practices.	
	Continue school education programs.	Use of FireSmart Education Materials recommended in this CWRP.
	Continue to post the fire danger rating and fire restrictions at the Visitors Center.	Posted, and resources for wildfire information posted on the See Revelstoke website.
	Continue to place wildfire prevention signage at all recreation sites and trailheads.	FireSmart education campaign and signage organized by MoF Recreation Officers and BC Parks. Difficult given the number of recreation sites and trails surrounding Revelstoke.
	Work with the tourism sector and local recreation groups to develop education/awareness materials describing safe fire use in the backcountry.	Resources for wildfire information posted on the See Revelstoke website.
	Educate businesses about wildfire preparedness.	FireSmart page available , with links to FireSmart materials and initiatives.
Fire Preparedness	Continue wildfire training within RFRS, cross-training with the BCWS.	Training exercises have historically been limited between RFRS and the BCWS (and Parks Canada). Recommended to prioritize this.
	Continue annual pre-org. reviews and wildfire status communications.	Internal calls held within Revelstoke & CSRD's Emergency Management Program. External communications have been limited. Establishing a CFRC for external collaboration has been recommended (and is required for future grand funding).
	Businesses with agreements and contracts for operations on Crown land must meet the wildfire preparedness requirements of the Wildfire Act.	Already a legislated requirement.
	Explore a bylaw to prohibit "unscreened" outdoor storage of materials (e.g. pallets) in commercial and industrial areas.	No bylaw established, but this issue is beyond the capacity of fire prevention staff and the intent is likely unrealistic to achieve.
	Learn from recent interface wildfires elsewhere.	RFRS and BCWS staff have learned from nearby interface fires and from provincial deployments.
Fuel Management	Minimize debris to reduce wildfire fuels, near infrastructure and developed areas.	Vague recommendation. Little vegetation management for wildfire hazard has occurred. Recommended through Section 5.7.
	Reduce wildfire fuels in forest types with continuous ladder fuels, near infrastructure and development.	
	Establish effective landscape-level fuel breaks to protect areas where uncontrolled wildfires would have high consequences.	Recommended fuel breaks reviewed in Section 5.7. Have not been implemented for a number of reasons. Value-based fuel treatments recommended in this CWRP.
	Continue active debris management to reduce wildfire risks.	Vague recommendation. Little vegetation management for wildfire hazard has occurred. Recommended through Section 5.7.
	Parks Canada to complete assessments and define actions to create effective fuel breaks at the bottom of Mt. Revelstoke.	Considerable fuel break work planned and completed by Parks Canada.

Category	Recommendation	Status & Comments
	Review fuel break effectiveness in 2025.	<i>Fuel Break Improvement Implementation Strategy (2019)</i> reviewed in Section 5.7. Effectiveness could be monitored again in 2029 but is lower priority than implementing value-based fuel treatments. Challenges with “improving” these breaks remains.
	Work with private landowners to identify funding supports and insurance incentives to expand FireSmart implementation.	Rebate program established in 2023. Insurance incentives are outside the scope of the City.
	Continue to explore options for fuel reduction in the grasslands in the drawdown zone.	Has not been completed, continues to be an ongoing / difficult issue.
	Continue to maintain fuel reduction on forested City-owned properties.	Nichol Road fuel management area has educational signage and is still low-hazard. Additional “green spaces” recommended for fuel management in this CWRP.
	Review the need for fuel management on forested City properties in 2020.	
Emergency Response & Evacuation	A wildfire emergency exercise should be hosted by the Emergency Management Program.	Emergency exercises are a part of Revelstoke’s EMP, and recommended through this CWRP.
	The EMP should contemplate alternative Command Posts in case smoke from wildfires eliminates lower elevation locations.	EOC’s should be pre-identified and stocked with necessary resources, which Revelstoke has done. Wildfire events and smoke conditions are unpredictable in location and nature which makes this unrealistic.
	Electricity supply during a wildfire should be reviewed.	BC Hydro will be worked with directly on wildfire events that impact electrical infrastructure.
Fire Suppression	BCWS to prepare action plans for suppression within the identified fuel breaks.	Suppression considerations incorporated into the <i>Fuel Break Improvement Implementation Strategy (2019)</i> .
	Inform CSRD property owners of driveway width requirements for City fire pumper trucks and consider bylaw revisions to require adequate widths.	Identified as an ongoing concern in the CSRD CWRP and by RFRS personnel, though not currently enforced through a CSRD subdivision and development services bylaw.
	Build new trails to standards that permit access by wildfire suppression crews.	Trails classified in the City’s Parks and Recreation Master Plan. <i>Nature Trails</i> offer access and fuel breaks for ground crews, <i>Neighbourhood</i> and <i>Multi-Use Trails</i> offer access and fuel breaks for ground crews and small vehicles / machinery.
	Agencies should ensure they are prepared for ground-based wildfire suppression in areas where water is limited.	BCWS, Parks Canada, and RFRS resources all have wildfire training which covers a variety of suppression scenarios.
	Continue agency cooperation.	Can be improved and formalized – recommended throughout Section 5.4.
	The City and BCWS should arrange local firefighting resources, such as logging crew readiness and community wildfire suppression training.	RFRS members are annually trained in WFF1. Forestry contractors are trained in S-100. Having forestry resources on standby is outside the scope of the City.
Post-Fire Response – Rehabilitation Planning	Agencies should prepare a rehabilitation plan in case there is a wildfire in the community watersheds.	Recovery to a wildfire event can be coordinated through Revelstoke’s EMP. Proactively preparing a rehabilitation plan is difficult given the complexity and variable potential impacts of a wildfire.

APPENDIX B: REVIEW OF 2023 CSRD ELECTORAL AREA B CWRP

The scope of the CSRD’s 2023 Community Wildfire Protection Plan (CWRP) for Electoral Area B was the entire eWUI – though the CSRD does provide FireSmart services to residents in remote locations outside the eWUI. The local wildfire risk assessment for this CWRP involved a review of fuel types throughout the project area, while incorporating the proximity of fuel to the community, topography, and historic weather and ignition patterns. Recommendations from this 2023 CWPP are paraphrased and shown below, with potential synergies with the City of Revelstoke listed alongside.

RECOMMENDATIONS

Section: Executive Summary
Recommendation #1: Continue to expand current FireSmart public engagement programming.
Synergy: Public engagement programming is taking place and expected to continue in Revelstoke. Revelstoke’s FireSmart Coordinator / RFRS can work collaboratively with the CSRD where appropriate.
Recommendation #2: Continue funding FireSmart Coordinator and Wildfire Mitigation Specialist positions for the CSRD.
Synergy: Equivalent has been recommended for the City of Revelstoke.
Recommendation #3: Work with local school districts to promote the use of FireSmart BC Education Program materials.
Synergy: Recommended through this CWRP. Families throughout the northern portions of EA B all filter into Revelstoke for elementary and high school.
Recommendation #4: Work with MOF and/or BCWS to place wildfire prevention signage at high-traffic recreation sites and trailheads.
Synergy: Revelstoke’s FireSmart Coordinator is developing a comprehensive education program, doing this collaboratively (e.g., with MoF, BCWS, recreation groups, MOTI, Parks, RMR, media) has been recommended in this CWRP.
Recommendation #5: Promote the installation of visible and reflective address signs.
Synergy: Will assist response by RFRS throughout their Fire Protection Area.
Recommendation #6: Specifically tailor a FireSmart education campaign towards rural acreage property owners to promote FireSmart vegetation management techniques.
Synergy: Will reduce interface fire risk throughout RFRS’ Fire Protection Area. Success / challenges of the education campaign (and equivalent programs in Revelstoke) can be discussed collaboratively.
Recommendation #7: Promote the FireSmart Canada Neighborhood Recognition Program in priority neighborhoods.
Synergy: Also recommended in Revelstoke. Success / challenges of the FSCNRP can be discussed collaboratively.
Recommendation #8: Make the completed CWRP publicly available on the CSRD website.
Synergy: Also recommended in Revelstoke. Showcases to locals that FireSmart efforts are being made at the regional level.
Recommendation #9: Create a plan to promote the use of residential rooftop sprinklers, and continue to educate residents on their use.
Synergy: The use of sprinklers may be used by the Revelstoke FireSmart Coordinator as part of community education, but these need to be employed in conjunction with / after vegetation or structural FireSmart practices.
Recommendation #10: Continue partnership between CSRD and tourism agencies to expand the delivery of FireSmart education to visitors and commercial tourism operators.
Synergy: See Revelstoke publishes FireSmart education and wildfire information, and FireSmart information is presented at the Revelstoke Visitor’s Center and Parks Canada information booths.
Recommendation #12: Promote the Farm and Ranch Wildfire Preparedness Program to agricultural operations.
Synergy: Will reduce interface fire risk throughout RFRS’ Fire Protection Area.
Recommendation #13: Educate homeowners about the importance of ensuring sufficient insurance coverage, especially in vulnerable interface neighbourhoods.
Synergy: Has not been recommended at part of the Revelstoke CWRP – deemed to be outside the scope of this phase of FireSmart implementation in the community.
Recommendation #14: Continue offering rebates for home upgrades.

<p>Synergy: Program began in 2023 in Revelstoke, planned to continue.</p>
<p>Recommendation #15: Consider adopting a Wildfire Landscaping Bylaw to restrict flammable landscaping.</p>
<p>Synergy: Recommended as part of Revelstoke’s CWRP.</p>
<p>Recommendation #16: Continue to promote the assessment of wildfire risk on private forested land by developers, and encourage mitigation.</p>
<p>Synergy: Will be pushed through Revelstoke’s FireSmart education campaigns. Consultation with local woodlot licensees may spur the desire and subsequent mitigation activities on Schedule A lands.</p>
<p>Recommendation #17: Complete or schedule periodic updates of the CWRP.</p>
<p>Synergy: Recommended as part of Revelstoke’s CWRP, in order to keep up-to-date with changing wildfire conditions and ensure that Revelstoke is still eligible for funding. Updates can incorporate lessons learned from both Revelstoke and the CSRD.</p>
<p>Recommendation #18: Consider requiring resort or remote commercial recreation properties to prepare a wildfire preparedness plan and/or emergency response plan. This could be achieved by implementing a provision in the Official Community Plan, similar to Electoral Area E. Alternatively, engage with operators to promote the use of PreparedBC resources.</p>
<p>Synergy: FireSmart education campaigns in Revelstoke designed by the FireSmart Coordinator can also target commercial recreation properties – though few of these exist in the direct interface within the municipality.</p>
<p>Recommendation #19: Proactively engage with the City of Revelstoke, to participate in their CWRP development process if/when this occurs.</p>
<p>Synergy: Engagement with the CSRD did not occur as part of CWRP development. Collaboration has been recommended as various FireSmart initiatives are carried out.</p>
<p>Recommendation #20: Encourage the Ministry of Forests Wildfire Risk Reduction staff to lead an annual fuel management roundtable.</p>
<p>Synergy: Have recommended for consultation with the Ministry of Forests regarding Fuel Treatment Units that are located on Crown land.</p>
<p>Recommendation #21: Maintain or expand current engagement with Revelstoke Fire-Rescue, encouraging the department to maintain or expand cross-training activities, including obtaining certifications, inventorying equipment, and conducting in-house training activities, both with and without BCWS.</p>
<p>Synergy: All of these activities have been recommended as part of this CWRP.</p>
<p>Recommendation #22: Continue regularly hosting Community FireSmart and Resiliency Committee meetings.</p>
<p>Synergy: Recommended for Revelstoke to communicate directly with the CSRD regarding FireSmart initiatives, whether independent or through a CFRC.</p>
<p>Recommendation #23: Engage with forest licensees (e.g., TFLs and woodlots) annually, to discuss conditions in area-based tenures.</p>
<p>Synergy: Fuel Treatment Units in Woodlots surrounding Revelstoke have been recommended. Consultation can also include improved wildfire risk reduction measures throughout their tenure.</p>
<p>Recommendation #24: Engage with the Ministry of Transportation and request information about emergency and evacuation pre-planning completed for the Shelter Bay-Galena ferry route.</p>
<p>Synergy: Would be considered by the Revelstoke and CSRD Emergency Management Program.</p>
<p>Recommendation #25: Engage with BC Hydro to share information regarding wildfire and emergency preparedness planning.</p>
<p>Synergy: Would be considered by the Revelstoke and CSRD Emergency Management Program.</p>
<p>Recommendation #26: CSRD Emergency and FireSmart staff should participate in exercises pertaining to the Revelstoke and Area Emergency Program.</p>
<p>Synergy: Recommended as part of this CWRP.</p>
<p>Recommendation #27: Continue to send local FireSmart, Emergency Program, and/or fire department members to attend the Wildfire Resiliency and Training Summit.</p>
<p>Synergy: Revelstoke staff attended the WRTS in 2024, funding is available to attend in 2025 and beyond.</p>
<p>Recommendation #28: Identify third parties with resources and equipment for firefighting (e.g., forest licensees, BC Hydro, and Fortis) and for evacuations (e.g., mountain resorts, school districts, etc.). Consider including these agencies to participate in emergency preparedness exercises or meetings.</p>
<p>Synergy: Managed the Emergency Management Program. Wildfire-specific exercises and meetings have been recommended as part of this CWRP.</p>
<p>Recommendation #29: Develop a FireSmart demonstration project on critical infrastructure or a community asset that displays FireSmart practices and principles to the public.</p>

<p>Synergy: Demonstration areas for vegetation management are displayed along Nichol Road – expanding educational signage throughout the City has been recommended through this CWRP. Revelstoke residents also recreate throughout the CSRD and will notice CSRD efforts.</p>
<p>Recommendation #30: Complete FireSmart assessments of critical infrastructure.</p>
<p>Synergy: Recommended as part of this CWRP – though no CI was identified in the CSRD CWRP that services Revelstoke.</p>
<p>Recommendation #31: Complete upgrades to critical infrastructure and/or landscaping around critical infrastructure sites based on the recommendations from FireSmart assessments.</p>
<p>Synergy: Recommended as part of this CWRP – though no CI was identified in the CSRD CWRP that services Revelstoke.</p>
<p>Recommendation #32: Develop and implement fuel management prescriptions for CSRD park land identified in this plan.</p>
<p>Synergy: Various proposed treatment units (PTU – equivalent with FTU) were proposed adjacent to Revelstoke. Two are located within the eWUI for Revelstoke’s CWRP (<i>Cell</i> and <i>North</i>) and two are located outside (<i>Pher</i> and <i>Jord</i>).</p> <ul style="list-style-type: none"> • Cell: Surrounds the communications tower off of the Jordan FSR (west of Big Eddy). Recommends FireSmart landscaping / CI mitigation. Crown land. • North: Provides a 10-m buffer around the River Run singletrack trail on the Begbie Bench. In W1834. Equivalent treatment has not been recommended through the Revelstoke CWRP due to the distance from values at risk, though the north end overlaps the <i>W1834 Mid</i> FTU. • Pher: Provides a 50-m buffer on either side of an access road (portion of the Main Loop trail) in the Macpherson area. • Jord: Provides a 100-m buffer on either side of the Jordan FSR (west of the transmission line). Portions of this are in W0461.
<p>Recommendation #33: Engage with the Ministry of Forests (MOF) regarding proposed interface and landscape level fuel breaks in the WUI.</p>
<p>Synergy: See above recommendation and synergy comment. Engaging with the MoF has been recommended through the FTUs in this CWRP, where they are solely on Crown land.</p>
<p>Recommendation #34: Continue to work on removing barriers for resident disposal of vegetation.</p>
<p>Synergy: Recommended in the Revelstoke CWRP – working with the CSRD landfill to create municipal or incentive programs (e.g., chipper programs, providing debris bins, unlimited yard and wood waste programs).</p>
<p>Recommendation #35: Establish a program where residents that face barriers to completing FireSmart work can have this done free of charge.</p>
<p>Synergy: Has not been directly recommended in the Revelstoke CWRP but is eligible for FCFS funding, and can become a part of the future FireSmart program in Revelstoke</p>

APPENDIX C: HOME IGNITION ZONE

Multiple studies have shown that the principal factors that contribute to structure loss by wildfire are the structure's characteristics and immediate surroundings. The area that determines the ignition potential of a structure is referred to (for residences) as the Home Ignition Zone or (for critical infrastructure) the Critical Infrastructure Ignition Zone.^{48,49} Both the Home Ignition Zone and Critical Infrastructure Ignition Zone include the structure itself and four concentric, progressively wider zones out to 30 m from the structure (Figure 5). More details on can be found in the FireSmart Manual.⁵⁰

During extreme wildfire events, most home destruction results from low-intensity surface fires, usually ignited by embers. Embers can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate within the Home Ignition Zone or Critical Infrastructure Ignition Zone in densities that can exceed 600 embers per square meter. Combustible materials found within the Home Ignition Zones or Critical Infrastructure Ignition Zones to create fire 'pathways', allowing surface fires ignited by embers to spread and carry flames into contact with structures.

Because ignitability of the Home Ignition Zone or Critical Infrastructure Ignition Zone is the main factor driving structure loss, the intensity and rate of spread of wildfires beyond the community does not always correspond to a high potential of loss or damage. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.⁴⁹ Extreme wildfire conditions do not necessarily result in WUI fire disasters.⁵¹ It is for this reason that the key to reducing WUI fire structure loss is to reduce structure ignitability. Mitigation responsibility must be centered on structure owners. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property.

Community Zone

The Community Zone encompasses all non-Provincial Crown public land within the municipal boundary, that is beyond 30 meters from private structures.⁵² Vegetation management planning and implementation on most Community Zone lands should be directed through a formal fuel management prescription developed by a forest professional with wildfire vegetation management within their scope of practice⁵². Depending on the results of FireSmart Structure Ignition Zone assessments on individual structures, vegetation management may be required beyond 30 meters and up to 100 meters (FireSmart Priority Zone 3) on larger private parcels. Municipal parks, trails, and outdoor event spaces are all part of

⁴⁸ Reinhardt, E., R. Keane, D. Calkin, J. Cohen. (2008). *Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States*. Forest Ecology and Management 256:1997 - 2006.

⁴⁹ Cohen, J. *Preventing Disaster Home Ignitability in the Wildland-urban Interface*. Journal of Forestry. p 15 - 21.

⁵⁰ <https://firesmartcanada.ca/> and <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart>

⁵¹ Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/>.

⁵² Community Resiliency Investment. (2021). *FireSmart Community Resiliency Funding and Supports Supplemental Instruction Guide*. Retrieved from: <https://www.ubcm.ca/funding-programs/local-government-program-services/community-resiliency-investment/firesmart-0>

the Community Zone. Often Community Zone lands see high use by the public, which increases accidental ignition potential and risk to properties surrounding them.

Landscape Zone

The Landscape Zone encompasses provincial Crown lands that are located outside the municipal boundary. Vegetation (fuel) management planning and implementation is primarily the responsibility of the provincial government, working collaboratively to align landscape objectives with the CWRP objectives⁵². Vegetation management planning and implementation in the Landscape Zone and on all forested provincial Crown lands must be directed through a formal fuel management prescription developed by a forest professional with wildfire vegetation management within their scope of practice.⁵²

Fire hazard in the WUI is partly dictated by the proximity of fuel to developed areas. Fuels closest to the community pose a higher hazard, compared to fuels that are further from values at risk. It is recommended that fuels closest to structures or developed areas are prioritized for treatment first, in order to reduce the risk closest to the community. Continuity of fuel treatment is an important consideration, which can be ensured by reducing fuels from the edge of the community outward.

Table 21 describes the classes associated with proximity of fuels to the interface.

Table 21. Proximity to the interface

Proximity to the Interface	Descriptor*	Explanation
WUI 100 <i>Home Ignition Zone, Critical Infrastructure Ignition Zone, and Community Zones</i>	(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 <i>Community and Landscape Zones</i>	(100-500m)	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 1000 <i>Landscape Zone</i>	(500-1000 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.
<i>Landscape Zone</i>	>1000 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.

APPENDIX D: LOCAL WILDFIRE RISK ASSESSMENT PROCESS

Field Data Collection

The primary goals of field data collection are to confirm or correct the provincial fuel type, complete WUI Threat Assessment Plots, and assess other features of interest to the development of the CWRP. This is accomplished by traversing as much of the eWUI as possible (within time, budget, and access constraints). Fire threat for the ecosystems and fuel structures surrounding Revelstoke was assessed and corroborated with local experts (BC Wildfire Service, Parks Canada). For clarity, the final threat ratings for the eWUI were determined through the completion of the following methodological steps:

1. Update fuel-typing using field verification and using publicly available orthophotography.
2. Update structural data using address point information provided by the client, field visits to confirm structure additions or deletions, and orthophotography.
3. Complete field work to ground-truth fuel typing and assess site-level threat ratings.
4. Threat analysis using collected field data.

FUEL TYPING METHODOLOGY AND LIMITATIONS

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines five major fuel groups and sixteen fuel types based on characteristic fire behaviour under defined conditions.⁵³ Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.³⁵ It should be noted that there are significant limitations with the fuel typing system which should be recognized. Fuel typing is recognized as a blend of art and science. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.

Significant limitations include a fuel typing system designed to describe fuels that sometimes do not occur within the WUI, fuel types which cannot accurately capture the natural variability within a polygon, and limitations in the data used to create initial fuel types.⁵⁴ There are several implications of the aforementioned limitations, which include: fuel typing further from the developed areas of the study has lower confidence, generally; and fuel typing should be used as a starting point for more detailed assessments and as an indicator of overall wildfire risk, not as an operational, or site-level, assessment.

Natural ecosystems are dynamic and change over time: fuels accumulate, areas fill in with conifer regeneration, and forest health outbreaks occur. Regular monitoring of fuel types and wildfire risk assessment should occur every 5 – 10 years to determine the need for threat assessment updates and the timing for their implementation.

During field visits, recurring patterns of fuel type errors were found in the provincial dataset. They were:

⁵³ Forestry Canada Fire Danger Group. (1992). Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.

⁵⁴ Perrakis, D.B., Eade G., and Hicks, D. 2018. Natural Resources Canada. Canadian Forest Service. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description 2018 Version.

- Non-fuel being assigned a fuel type.
- Areas of O-1a/b being typed as water (in the drawdown zone).
- C-6 being applied to low-hazard conifer plantations.
- S-1 being applied to recently harvested areas with low slash loads and a dominant herb/shrub composition.
- Areas of C-5 being typed as M-1/2 (deciduous component has often died out)

The resulting updated fuel types were shown previously on Map 5.

WILDFIRE FIRE THREAT SPATIAL ANALYSIS METHODOLOGY

Source Data

As part of the CWRP process, spatial data submissions are required to meet the defined standards in the Program and Application Guide. Proponents completing a CWRP can obtain open-source BC Wildfire datasets, including Provincial Strategic Threat Analysis (PSTA) datasets from the British Columbia Data Catalogue. Wildfire spatial datasets obtained through the BC Open Data Catalogue used in the development of the CWRP include, but are not limited to:

- PSTA Spotting Impact
- PSTA Fire Density
- PSTA Fire Threat Rating
- PSTA Lighting Fire Density
- PSTA Human Fire Density
- Head Fire Intensity
- BC Wildfire WUI Human Interface Buffer
- BC Wildfire Wildland Urban Interface Risk Class
- Current Fire Polygons
- Current Fire Locations
- Historical Fire Perimeters
- Historical Fire Incident Locations
- Historical Fire Burn Severity
- BC Wildfire Fuel Types

As part of the program, proponents completing a CWRP are provided with a supplementary Structure point dataset from BC Wildfire Service. The required components for the spatial data submission are detailed in the Program and Application Guide Spatial Appendix – these include:

- AOI and Values at Risk
- Local Fire Risk
- Proposed Fuel Treatment Units

The provided PSTA data does not transfer directly into the geodatabase for submission, and several PSTA feature classes require extensive updating or correction. In addition, the Fire Threat determined in the PSTA is fundamentally different than the localized Fire Threat feature class that is included in the Local Fire Risk map required for project submission. The Fire Threat in the PSTA is based on provincial scale inputs - fire density, spotting impact; and head fire intensity; while the spatial submission Fire Threat is based on the components of the Wildland Urban Interface Threat Assessment Worksheet.

Spatial Analysis

The field data is used to correct the fuel type polygon attributes provided in the PSTA. This corrected fuel type layer is then used as part of the spatial analysis process. The other components are developed using spatial data (BEC zone, fire history zone) or spatial analysis (aspect, slope). A scoring system was developed to categorize resultant polygons as having relatively low, moderate, high or extreme Fire Threat, or Low, Moderate, High or Extreme WUI Threat. Table 17 below summarizes the components and scores to determine the Fire Behaviour Threat.

Table 22. Fire Threat Class scoring components

Attribute	Indicator	Score
Fuel Type	C-1	35
	C-2	
	C-3	
	C-4	
	M-3/4, >50% dead fir	25
	C-6	
	M-1/2, >75% conifer	20
	C-7	
	M-3/4, <50% dead fir	
	M-1/2, 50-75% conifer	15
	M-1/2, 25-50% conifer	
	C-5	10
	O-1a/b	
	S-1	
	S-2	
	S-3	
	M-1/2, <25% conifer	5
	D-1/2	0
	W	0
N	0	
Weather - BEC Zone	AT, irrigated	1
	CWH, CDF, MH	3
	ICH, SBS, ESSF	7
	IDF, MS, SBPS, CWHsds1 & ds2, BWBS, SWB	10
	PP, BG	15
Historical Fire Occurrence Zone	G5, R1, R2, G6, V5, R9, V9, V3, R5, R8, V7	1
	G3, G8, R3, R4, V6, G1, G9, V8	5
	G7, C5, G4, C4, V1, C1, N6	8
	K1, K5, K3, C2, C3, N5, K6, N4, K7, N2	10
	N7, K4	15
Slope	<16	1
	16-29 (max N slopes)	5
	30-44	10

Attribute	Indicator	Score
	45-54	12
	>55	15
Aspect (>15% slope)	North	0
	East	5
	<16% slope, all aspect	10
	West	12
	South	15

WUI RISK SPATIAL ANALYSIS METHODOLOGY

To determine the WUI Risk score, only the distance to structures is used. Buffer distance classes are determined (<200m, 200m-500m and >500m) but only for polygons that had a 'high' or 'extreme' Fire Threat score from the previous, assessment. To determine WUI Risk, polygons within 200 m of structures are rated as 'extreme', within 500 m are rated as 'high', and within 2 km are 'moderate'. Distances over that are rated 'low.' WUI Risk Classes and associated assumed scores are summer below in Table 32.

Table 23. WUI Risk Classes and their associated summed scores

WUI Risk Class	Score
Very Low	0
Low	0-35
Moderate	35-55
High ⁵⁵	55-65
Extreme	>65

Limitations

There are obvious limitations in this method, most notably that not all components of the threat assessment worksheet are scalable to a GIS model, generalizing the Fire Behaviour Threat score. The Wildfire Threat Score is greatly simplified, as determining the position of structures on a slope, the type of development and the relative position are difficult in an automated GIS process. Structures are considered, but there is no consideration for structure type (also not included on threat assessment worksheet). This method uses the best available information to produce accurate and useable threat assessment across the study area in a format which is required by the UBCM CRI program.

⁵⁵ WUI risk is only assessed for polygons with wildfire threat ratings of high or extreme.

FIRE SPREAD PATTERNS

Figure 12 below displays the daily average ISI values for the Revelstoke weather station, which roughly represents wind speed and predominant direction for the Revelstoke area. The majority of ISI measurements are from the south / southeast, though the direction of the highest ISI values are inconsistent and likely associated with erratic cold fronts or storm events. Local BC Wildfire Service staff have noted that the major driving of wildfire spread throughout the Columbia Fire Zone is topography, resulting in spread patterns which are complex and unpredictable.

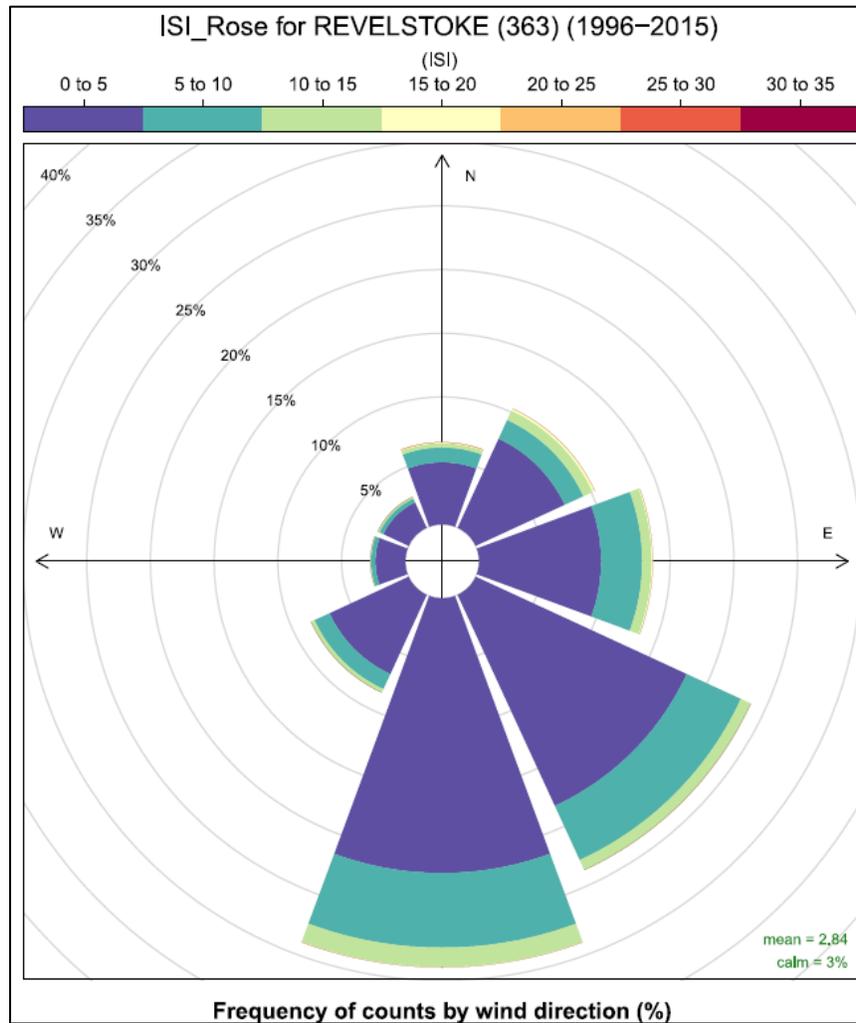


Figure 12: Initial Spread Index (ISI) rose depicting average daily wind speed and direction for each month during the fire season (April – October). Data taken from the Revelstoke weather station (1996-2015).

APPENDIX E: WTA PLOTS

Table 24 displays a summary of all Wildfire Threat Assessment (WTA) plots completed during CWRP field work. The original threat plot forms and photos are attached as a separate PDF package. The following ratings are applied to applicable point ranges for the Southern Interior Mountains Ecoprovince:

Low (0-47); Moderate (48 – 65); High (66 – 79); Extreme (≥ 80)

Table 24: Revelstoke WTA Plot Summary

WTA Plot ID	Geographic Location	Wildfire Behaviour Threat Class
BOULD-1	Boulder bike trails (upslope of Jordan River)	Low (44)
BOULD-2	Boulder FSR (W0461)	Low (36)
FRIS-1	Frisby FSR, conifer plantations	Low (36)
FRIS-2	Frisby, C3 stand.	Mod (65)
FRIS-3	Frisby, mature C5 stand.	Mod (51)
COLUMB-1	Columbia Park	Low (41)
EDDY-1	Big Eddy, Crown Agency to West	High (73)
MACP-1	W1834, upslope of Columbia River	Mod (53)
MACP-2	Tantrum trail area (north of this), adjacent to new access road.	Mod (49)
CLEAR-1	Clearview Heights, upslope of Townley Street.	Low (38)
ARROW-1	Arrow Heights, intermix area.	Mod (54)
RMR-1	Crown land in RMR territory, 500m east of Camozzi Road.	High (66)
REV-1	Mt Revelstoke National Park, near Inspiration Woods area	Mod (49)

APPENDIX F: REQUIRED MAPS FOR CWRPS

The three maps listed below, with specific spatial data, labels, and tables, as described in the 2023 FCFS Program & Application Guide, Appendix 8, are provided separately as a PDF package.

- Map 1: Area of Interest (AOI) and VAR
- Map 2: Local Fire Risk
- Map 3: Proposed Fuel Treatment Units