

# **DRAFT Enhanced Wildfire Risk Mapping and Community Wildfire Protection Recommendations for the Revelstoke Fire Protection Area**

**May, 2011**

## **Background**

The Revelstoke and Area Emergency Management Program recognizes wildfire as one of the greatest risks to the community and surrounding area. The City's Community Wildland Fire Protection (CWFP) Committee has guided the City's interface wildfire activities since 2006. This Committee advised the City that enhanced wildfire risk mapping was needed to identify and plan actions to reduce wildfire risks.

This draft report examines the wildfire risks to the Revelstoke Fire Protection Area based on the probability of wildfires occurring, and the consequences of wildfires. Recommendations are provided to reduce these risks.

## **Project area**

This project includes the City of Revelstoke Fire Protection Area, a two kilometer 'spotting' distance' around the Protection Area to account for flying embers , and a portion of the Controlled Recreation Area (CRA) for Revelstoke Mountain Resort (see map on last page). Private lands, federal National Park lands and provincial Crown forest lands – some with uses such as gravel extraction, recreation and forestry - are within this area, creating an unusually complex set of wildfire jurisdictions and responsibilities.

## **Risk rating process and findings**

Fire weather data, forest fuel type data collected in the field and available map data were used in the wildfire risk assessment to rate risks across the landscape during high and extreme wildfire conditions. Analysis of fire weather data from the local weather station revealed that high and extreme fire danger rating occurs on 20 days every year, on average. In extreme years such as 2003, these ratings continue for almost two months.

For wildfire probability, maps were created for 12 subcomponents of ignition, fire behavior and suppression capability. A modeling framework that was developed and used in other communities calculated the wildfire probability ratings. The large areas of mid-aged forests with continuous fuels from the forest floor to the tree branches create moderate to extreme wildfire probability ratings in most of the project area.

Wildfire consequences were based on infrastructure (including recreation resources), visuals, air quality, community watersheds and environmental integrity. Consequence modeling was based on community values assigned by the CWFP Committee. Resulting consequences ranged from low to high, with the highest ratings around developed areas and infrastructure such as the water system and transmission lines, as well as areas with environmental values such as habitats for endangered species and community watersheds.

These ratings signal the need for stronger community wildfire protection actions to reduce the probability of uncontrollable wildfires during extreme conditions, and to reduce the risks to community values.

## DRAFT Recommendations

The recommendations below are directed to the CWFP Committee, which includes representatives of provincial agencies, National Parks, community groups and a citizen. Many recommendations emphasize the need for the City, residents and businesses to adopt *FireSmart* Community practices. To learn more about *FireSmart* practices pick up a pamphlet at the Fire Station or go to: <http://bcwildfire.ca/Prevention/firesmart.htm>.

Highest priority recommendations for the next two years are in bold

<p><b>Infrastructure protection</b></p>	<p><i>Objective:</i> Reduce risk of interruption in services from essential community, provincial and national infrastructure.</p>
	<p><b><i>City infrastructure</i></b></p> <ul style="list-style-type: none"> <li>• <b>Address wildfire risks to the City’s water supply system and community watersheds.</b></li> </ul> <p><b><i>Communications infrastructure</i></b></p> <ul style="list-style-type: none"> <li>• <b>Confirm the location and ownership of communications networks and encourage owners to reduce adjacent wildfire fuels.</b></li> </ul> <p><b><i>Transportation infrastructure</i></b></p> <ul style="list-style-type: none"> <li>• <b>Communicate wildfire risks to the CPR and the Ministry of Transportation and Infrastructure and encourage them to ensure their infrastructure is adequately protected from wildfire.</b></li> </ul> <p><b><i>BC Hydro infrastructure</i></b></p> <ul style="list-style-type: none"> <li>• Manage wildfire risks to monitoring equipment east of the dam.</li> </ul> <p><b><i>Homes and commercial buildings</i></b></p> <ul style="list-style-type: none"> <li>• <b>Hold annual FireSmart workshops for building and property owners.</b></li> <li>• <b>Review of subdivision plans by Revelstoke Fire Rescue Services or CSRD Fire Services.</b></li> <li>• <b>Research and implement feasible wildfire development permit areas, building setback bylaws, fireproof roofing and road locations which create fuel breaks in new developments in interface locations.</b></li> <li>• <b>Identify hydrant or fire suppression water supplies in all neighbourhoods.</b></li> <li>• Encourage property owners in interface areas to purchase sprinklers.</li> <li>• Explore incentives for property owners to adopt <i>FireSmart</i> practices.</li> </ul>
<p><b>Education &amp; awareness</b></p>	<p><i>Objectives:</i></p> <ul style="list-style-type: none"> <li>• Expand resident and visitor knowledge and awareness of wildfire risks.</li> <li>• Encourage implementation of FireSmart practices to reduce wildfire risks.</li> </ul>
	<p><b><i>General</i></b></p> <ul style="list-style-type: none"> <li>• <b>Agree to and implement an education and awareness plan to guide and coordinate the efforts of the CWFP Committee members.</b></li> <li>• <b>Expand FireSmart information distribution.</b></li> <li>• <b>Expand the wildfire risk and FireSmart resources on the City and CSRD websites.</b></li> <li>• <b>Erect wildfire prevention signage at all City exits.</b></li> </ul>

<p><b>Education &amp; awareness</b> (continued)</p>	<p><b>General</b> (continued)</p> <ul style="list-style-type: none"> <li>• <b>Continue media stories during high and extreme fire danger.</b></li> <li>• <b>Continue to maintain fuel management demonstration areas.</b></li> <li>• Enforce forest closures.</li> <li>• Educate forest users about the hazards of being too close to transmission lines during smoky conditions.</li> </ul> <p><b>Residents</b></p> <ul style="list-style-type: none"> <li>• <b>Continue and expand school education programs.</b></li> </ul> <p><b>Building owners</b></p> <ul style="list-style-type: none"> <li>• Explore ways to recognize building owners who implement FireSmart practices.</li> <li>• Create a FireSmart show home.</li> </ul> <p><b>Businesses</b></p> <ul style="list-style-type: none"> <li>• Educate businesses about wildfire preparedness.</li> </ul> <p><b>Visitors</b></p> <ul style="list-style-type: none"> <li>• <b>Continue to post the fire danger rating and fire restrictions at the Visitors Centre</b></li> </ul> <p><b>Recreation users</b></p> <ul style="list-style-type: none"> <li>• <b>Place wildfire prevention signage at all recreation sites and trail heads.</b></li> <li>• Work with local recreation groups to develop education/awareness materials such as a brochure describing safe fire use in the backcountry</li> </ul>
<p><b>Fire preparedness</b></p>	<p><i>Objectives:</i> Agencies, businesses and private land owners are prepared to respond swiftly to suppress wildfires.</p> <ul style="list-style-type: none"> <li>• <b>Clarify jurisdictions and communications protocols amongst agencies.</b></li> <li>• <b>Continue and expand wildfire training for Fire Rescue Services staff, and cross-training with wildfire suppression crews.</b></li> <li>• <b>Continue the annual pre-organization reviews and wildfire status communications.</b></li> <li>• <b>Business with agreements and contracts for operations on Crown land must meet the wildfire preparedness requirements of the BC Wildfire Act.</b></li> <li>• <b>Aircraft fuel caches should be mapped and communicated to all wildfire suppression agencies.</b></li> <li>• Learn from recent interface wildfire elsewhere.</li> </ul>
<p><b>Fuel management</b></p>	<p><i>Objectives</i></p> <ul style="list-style-type: none"> <li>• Treat debris to reduce wildfire fuels, particularly near infrastructure and developed areas.</li> <li>• Reduce wildfire fuels in forest types with significant continuous ladder fuels near infrastructure and development to achieve low or moderate wildfire probability ratings.</li> <li>• Establish effective landscape level fuel modification breaks to protect areas where uncontrolled wildfires would have high consequences.</li> </ul> <p><b>High priority fuel types and fuel modification breaks</b></p> <ul style="list-style-type: none"> <li>• <b>Continue active debris management to reduce wildfire risks.</b></li> <li>• <b>Apply for provincial funding to complete treatment prescriptions for high priority fuel types (forests with continuous fuels from the forest floor to the tree crowns located within 500 metres of infrastructure) to reduce wildfire risks.</b></li> </ul>

<p style="text-align: center;"><b>Fuel management</b> (continued)</p>	<p><b>High priority fuel types and fuel modification breaks</b> (continued)</p> <ul style="list-style-type: none"> <li>• <b>Apply for provincial funding for planning and treating landscape scale strategic fuel modification breaks around the community to reduce wildfire risks.</b></li> </ul> <p><b>Private property</b> Work with private land owners to identify funding supports and insurance incentives to expand FireSmart practices.</p> <p><b>BC Hydro</b></p> <ul style="list-style-type: none"> <li>• <b>Transmission lines should act as fuel breaks, particularly near infrastructure. Fuel reduction treatments and alternative vegetation management may be needed.</b></li> <li>• Fuel reduction may be needed in the grasslands in the drawdown zone.</li> </ul> <p><b>Forested City properties</b></p> <ul style="list-style-type: none"> <li>• <b>Continue to implement and maintain fuel reduction where needed based on wildfire threat assessments.</b></li> </ul>
<p style="text-align: center;"><b>Emergency response and evacuation</b></p>	<p><b>Objectives:</b> Ensure community and household capacity and preparedness is adequate to respond to a wildfire emergency, including community evacuation.</p> <ul style="list-style-type: none"> <li>• <b>Improve communication between the CWFPP Committee and the Revelstoke and Area Emergency Management Program, particularly with regards to evacuations.</b></li> <li>• <b>A wildfire emergency exercise should be hosted by the Emergency Management Program.</b></li> <li>• The Emergency Management Plan should contemplate alternative Command Posts in case smoke from wildfires eliminates lower elevation locations.</li> <li>• Electricity supply during a wildfire should be reviewed.</li> </ul>
<p style="text-align: center;"><b>Fire suppression</b></p>	<p><b>Objectives:</b> Remove limitations to swift, effective initial attack.</p> <p><b>Access</b></p> <ul style="list-style-type: none"> <li>• Inform CSRD property owners of driveway width requirements for City fire pumper trucks and consider bylaw revisions to require adequate widths.</li> <li>• Build new trails to standards that permit access by wildfire suppression crews.</li> </ul> <p><b>Initial attack capacity</b></p> <ul style="list-style-type: none"> <li>• <b>Continue agency cooperation.</b></li> <li>• <b>The City and BC Wildfire Management Branch should consider arranging for local firefighting resources during provincial scale extreme wildfire conditions.</b></li> </ul>
<p style="text-align: center;"><b>Post-fire response – Rehabilitation planning</b></p>	<p><b>Objectives:</b> Be prepared to swiftly implement rehabilitation treatments in ecologically sensitive areas if needed after a wildfire.</p> <ul style="list-style-type: none"> <li>• Agencies should prepare a rehabilitation plan in case there is a wildfire in the community watersheds.</li> </ul>

### Revelstoke Mountain Resort Findings and Recommendations

This project has included funding from the BC Resort Development Branch to complete wildfire risk mapping and provide recommendations for Revelstoke Mountain Resort’s Controlled Recreation Area (CRA).

The wildfire risk rating identifies the base area and areas around infrastructure on the mountain are as high – moderate wildfire probability and moderate consequence. The remaining area is

rated as low consequence, with high wildfire probability in the mid elevations on the west face of Mt. Mackenzie and a mix of high and moderate probability in the higher elevations of Mt. Mackenzie and the northeast arm of the CRA.

These risk ratings signal the need for wildfire risk reduction to protect existing infrastructure, and the need for wildfire protection to be top-of-mind in planning new infrastructure and summer activities.

Many of the recommendations to reduce wildfire risks on the CRA are the same as listed above for the Protection Area. Highest priority recommendations include:

- *Development protection* - Continuing to place covenants or other planning requirements for FireSmart practices on private lands and future Crown land sales; road network design and hydrant locations that facilitate wildfire suppression and evacuation.
- *Education and awareness* – FireSmart information distribution to the private property owners on lands without FireSmart covenants; wildfire prevention signage at all resort access points; wildfire information on the RMR website.
- *Fire preparedness* – Clarify agency jurisdictions, responsibilities and communications; continue construction crew training and compliance with the BC Wildfire Act and mountain operations wildfire pre-organization plan.
- *Fuel management* – Debris management, especially at construction projects and along the gondola line before a summer season is initiated; completing prescriptions and treating high priority fuel types which dominant the mid-and lower elevations of the CRA; establishing landscape scale fuel modification breaks by building on the outer ski runs and the cross-slope sections of access roads.

In addition, RMR should evaluate the wildfire preparedness of their base construction operations, consider their readiness to suppress wildfires on their forested private lands and build a strong link with the Revelstoke and Area Emergency Management Program.

Before a summer season is implemented RMR will need to plan for expanded wildfire awareness education and preparedness, including smoking and campfire restrictions, gondola access points, and mountain evacuation.

## **Review and Comment**

You are invited to provide comments on the draft wildfire risk mapping and recommendations. The draft report will be available on the City website on May 30 or copies can be borrowed from the Fire Station.

To discuss the report with the Fire Chief, the project team and Committee members attend the open house and presentation on Tuesday, June 14 beginning at 6:30 pm at the Fire Station, with a brief presentation at 7:30 pm. Or attend one of the neighbourhood meetings below where the risk rating and recommendations for each neighbourhood will be reviewed:

Clearview and Johnson Heights – June 20, 7 pm at the Coast Hillcrest Hotel

Arrow Heights and Airport Bench – June 27, 7 pm at the Arrow Heights School

Begbie Bench – June 28, 7 pm at the Nordic Ski Lodge

The draft report is available for public review and comment until July 8th, 2011.

# Enhanced Wildfire Risk Mapping Project Area for the Revelstoke Fire Protection Area

