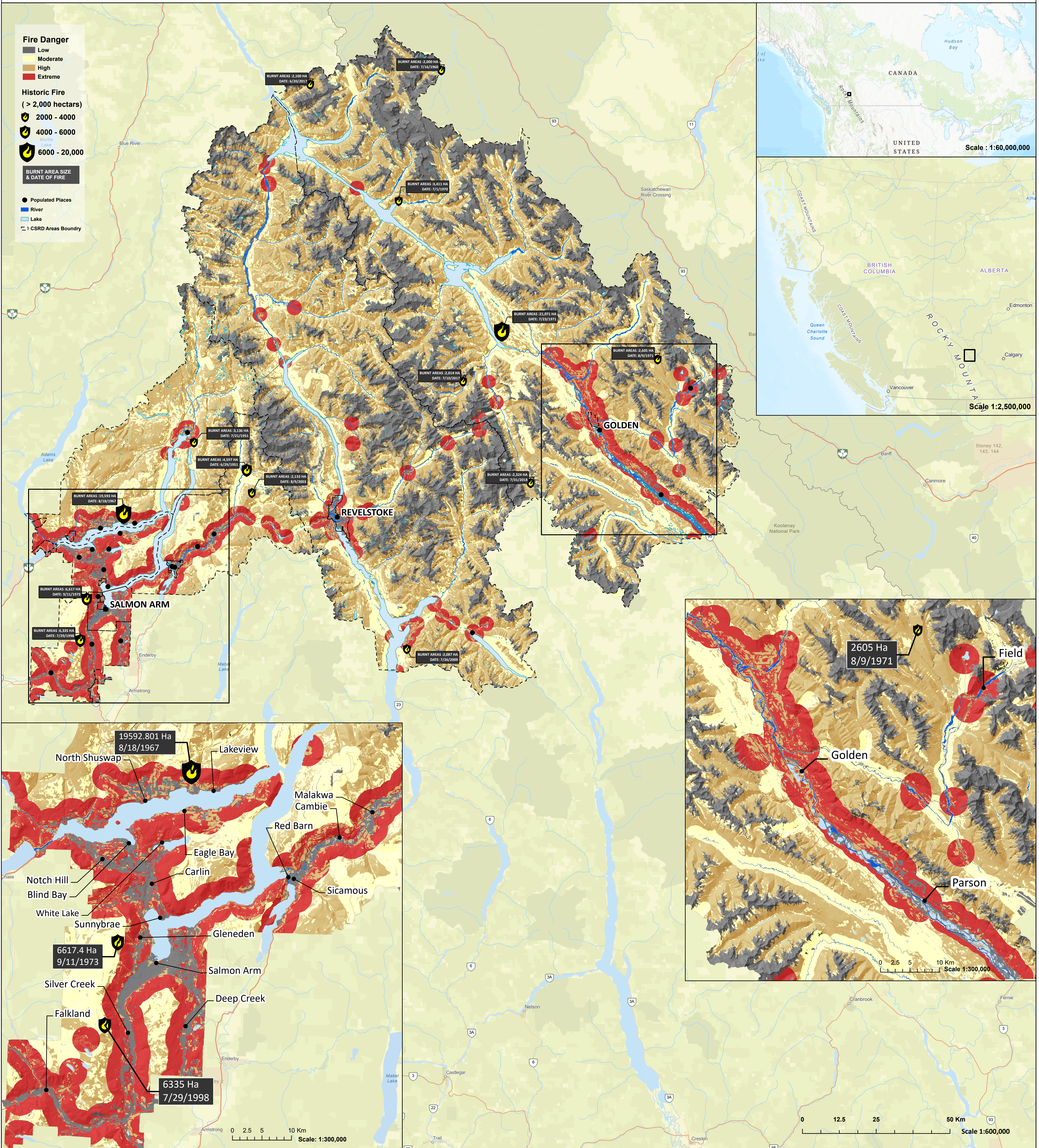


# WILDFIRE HAZARD ASSESSMENT

## Columbia Shuswap Regional District (CSRD)



### Introduction:

Forest fire are common occurrence in British Columbia, especially in the dry interior, although no parts of the province are immune from this hazard. Fire management plans can support wildfire management decisions by identifying the values on the landscape and the objectives of the land manager, including where fire might be wanted and where it is not. This project seeks to highlight the importance of fire management planning because it is neither possible nor desirable to actively suppress every wildfire and knowing where and when fire might be beneficial means that limited suppression resources can be used efficiently.

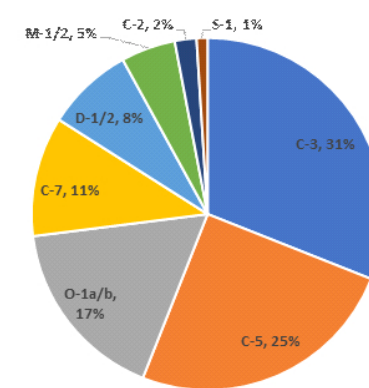
The study area in this project is Columbia-Shuswap Regional District (CSRD) in British Columbia, Canada. The region had one of British Columbia's worst wildfires, occurred in Salmon Arm in 1998. It damaged over 6,000 hectares, caused the evacuation of approximately 7,000 people, destroyed 40 buildings, and cost over \$10 million to extinguish.

### Metrology:

The fire risk map was developed by GIS-based Analytic Hierarchy Process method that spatially quantifies and analyzes the relationships that exist between the critical factors affecting wildfire risk. The overall rating spatially expresses wildfire risk by incorporating four key components as follow:  
 Fuel (vegetation) types.  
 Risk of Ignition.  
 Values at Risk.  
 Suppression Constraints.

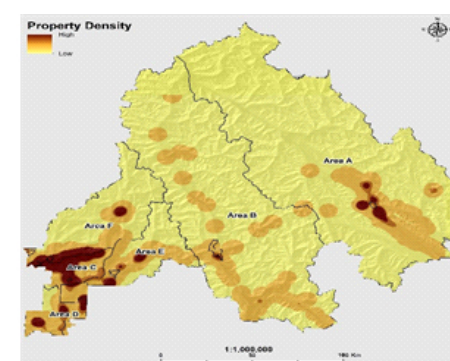
### Component #1 Fuel (vegetation) type :-

Forest vegetation structures considered in this study were tree species and crown closure. According to The Canadian Fire Behavior Prediction System (FBP), the fuel types in the study area were classified into four categories as shown in (Table 1), and the fuel type vector layer was used to generate fuel types raster as shown in (Figure 1).



### Component #2 Risk of Ignition :-

A 30-meter buffer has been established around populated places, roads, hydro lines, Trails, and railways. Where these areas run through fuel types that are likely to sustain a fire ignition, the area has been assigned a high-risk ranking. Although lightning is the primary cause of fire, it is difficult to predict the risk of the lightning striking across a landscape. Therefore, all fuel types that are likely to sustain a fire ignition have been identified and assigned a moderate risk.

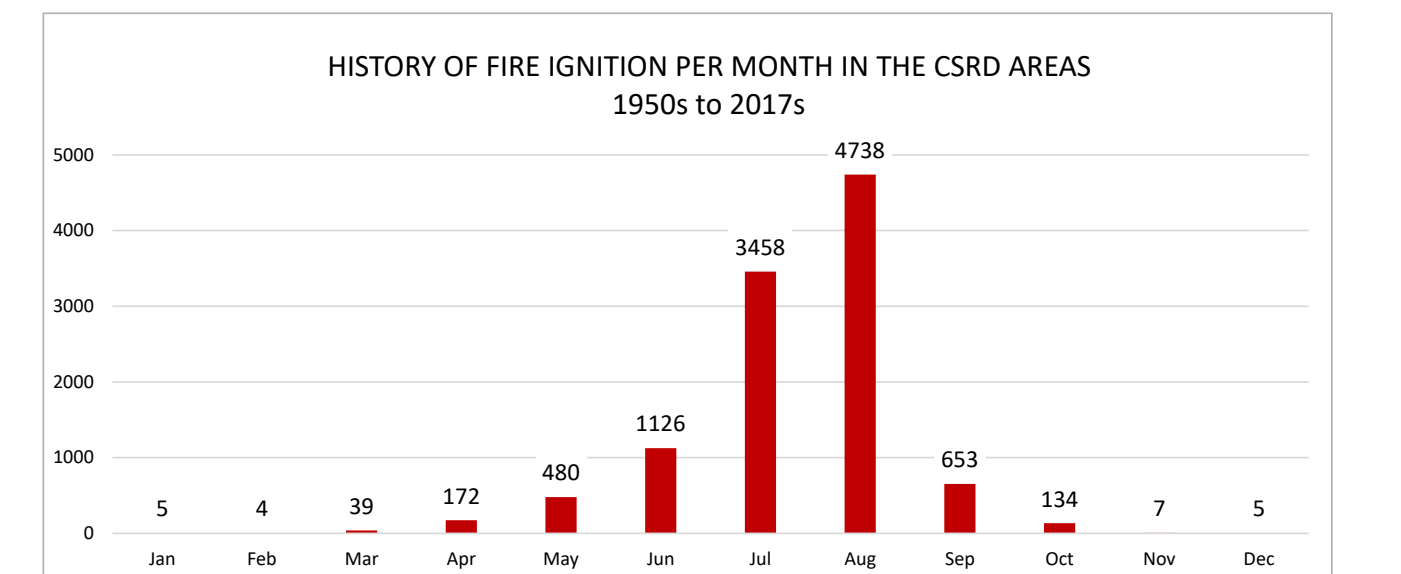


### Component #3 Values at Risk :-

Wildfire result in important economic losses and even threaten human lives. All structures within the wildland interface were identified and multiple buffer zones with 30m, 100m, and 2 km were created around these structures. Weightings were assigned to these buffers.

### Component #4 Suppression Constraints :-

Identifying distance to roads in the area can be useful in locating possible paths used for fire suppression. For this study, multiple buffers with four zones were created starting with 100m, 500m, 1 km, and more than 1 km. The buffers were assigned threat weightings that decreased with their proximity to roads.



**Data Sources**  
 1) Columbia Shuswap Regional District  
 2) BC Data Distribution Service, BC Data Catalogue, GeoGratis Canada.

**Literature Sources:**  
 1) The Canadian Forest Fire Behavior Prediction (FBP) system. 1996. Taylor, S.W.; Pike, R.G.; Alexander, M.E. First edition. Natural Resources Canada, Canadian Forest Service, Pacific Forestry Centre, Victoria, BC. FRDA Handbook 012, published by the BC Ministry of Forests

Coordinate System: NAD\_1983\_UTM\_Zone\_11N  
 Projection : Transverse Mercator  
 Datum : North American 1983

Cartography: Omar Algasena, BCIT GIS, ArcGIS Pro 2.8.0, June 2021.

