



FIRESMART COMMUNITY ASSESSMENT REPORT

FIRESMART CANADA COMMUNITY RECOGNITION PROGRAM



Introduction

This report was prepared as part of a project initiated by the Regional District of East Kootenay (RDEK) to reduce the potential for future residential losses to wildfire in rural RDEK areas. More specifically, the project aims to provide knowledge of FireSmart wildfire risk mitigation practices and foster community engagement to implement them. Risk mitigation is one of the four main pillars of emergency management, the others being “planning and preparedness”, “response” and “recovery”. Given the inevitability of wildland fires, mitigating risk and reducing hazards is pivotal to ensuring the effectiveness wildfire response actions, and minimizing the amount of recovery afterwards.

The report was prepared following methodology developed by FireSmart Canada, in support of the FireSmart Canada Community Recognition Program (FCCRP). The FCCRP is an effective, time-tested approach for reducing the potential for wildfire losses at the neighbourhood scale. It is grassroots, based on providing property owners with sound information, and lays out a framework for advancing simple solutions to mitigate known risks.

Three key recommendations of the 2012 “*Community Wildfire Protection Plan*” (CWPP) lie within the scope of the current project. That plan was prepared for RDEK by B.A. Blackwell and Associates:

- **Recommendation #1:** Work with unincorporated communities to develop approaches to support and deliver enhanced communication and education.
- **Recommendation #3:** Provide education for property owners outside Fire Protection Areas.
- **Recommendation #33:** Work with property owners to help them understand FireSmart principles and management of hazardous fuels on private property.

The FCCR Program is well suited and very applicable to dispersed rural communities and summer cottage developments like Wasa, British Columbia. In addition to reducing wildfire hazards the contractor is also very mindful of the importance to Wasa residents of preserving the scenic, wildlife conservation, recreational and other important values they enjoy and cherish in this special wildland setting.

Wildfire risk to this community is described in the CWPP by Blackwell (2012). They rated “Area E” – Wasa as having “high – moderate” wildfire risk. This author concurs with the CWPP, and agrees with the designation of Wasa area fuel typing as C-7; predominantly open savanna-like ponderosa pine/ Douglas-fir forest and grasslands likely to burn with moderate to vigorous surface fire and intermittent crown fire. Despite its potential for causing wildfire hazards, local vegetation also provides the scenic backdrop for residents and visitors to this area. It also creates opportunities for viewing wildlife, birds and wildflowers; an essential element of Wasa’s quality of life and tourism appeal.

The following report and its recommendations provide a wildfire risk mitigation resource and a blueprint for risk reduction actions in the future. It applies to the entire community of Wasa, B.C. which is clustered along the shores of Wasa Lake, near the Kootenay River about 35km north of Cranbrook. The report also includes recommendations which could be the basis for residents to prepare their own *FireSmart Community Plan*¹. The FireSmart Community Plan could then be implemented by area residents working as a team to conduct annual 1-day *FireSmart Events*. By doing so, they can achieve *National FireSmart Recognition*.

¹ Because the community of Wasa is dissected by geography and settlement patterns into a number of separate sub-divisions, it can be expected that program uptake will also be uneven or patchy. However, experience tells that, with time, levels of engagement will increase and participation expands from islands where uptake is quick to encompass the entire community.



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Information in this *FireSmart Community Assessment Report* was gathered and synthesized by wildland/urban interface consultant and *Local FireSmart Representative* Alan Westhaver, owner of ForestWise Environmental Consulting Ltd. Mr. Westhaver was contracted by the RDEK under the 2018 Columbia Basin Trust Wildfire Initiative. Field orientation and assistance during the September/October field visits were provided by members of the Wasa Lake Fire Protection Group.

Special thanks are extended to Mike Gall, Kathy McCauley, Bill Walkley, Jane Walters, Sharon Prinz, and Lyle Zaksauskas for their assistance and hospitality. Each of them is a passionate local champion for FireSmart practices and community safety.

2) Situation Overview and the Home Ignition Zone Concept

The community of Wasa is located in a wildland fire environment, on level to gently sloping terrain adjacent to the Kootenay River, in the valley bottom. It is surrounded by natural grasslands, aquatic features with surrounding riparian deciduous shrublands and forest, agricultural and grazing lands, and open dry-interior pine forests which occupy the remainder of the valley bottom and surrounding forested slopes. As elevation increases on the valley sides, forest density and the abundance and continuity of fuel in adjacent forest types also increases. Significantly, ponderosa pine is the dominant tree species in Wasa; Douglas-fir is also present and fills in from beneath in the absence of periodic disturbance by wildfire.

Altogether, it is estimated that there are about 300 – 350 individual homes in the Wasa community. Unlike many wildland/urban interface communities, these homes are not concentrated in a single area. Nor are they widely dispersed on large acreages. Instead, residences are distributed in a number of “neighbourhood” clusters spread out along the shores of Wasa Lake, and on surrounding lands. This development pattern impacts both the wildfire issues described in this report and the subsequent recommendations for implementing wildfire risk mitigations.

The historic fire regime (i.e. long-term frequency, intensity and timing of past wildfires) is particularly relevant to the current status of wildfire hazard in the Wasa ecosystem. That is, this ecosystem evolved and is highly adapted to frequent fires (e.g. every 10 – 20 years) of low to moderate intensity which burned along the ground surface. Occasionally, these fires would have candled or torched individual mature trees (or small groups of them) but mainly spread across the ground in the grassy understory, fine litter and low brush. These fires served to maintain a very open forest, grasslands and prevented woody fuel from building up on the ground. Periodic fire also maintained habitats for flora, birds and wildlife. In the absence of further disturbance by fire or intervention by fuel treatments, the forest will continue to become denser as woody vegetation encroaches on open spaces and new trees establish and cause “in-filling” between existing trees. This process detracts from the health of native forests and grasslands.

Wasa is also remarkable for its array of wetland and riparian habitats which range from cat-tail and bullrush marshes to lush deciduous shrublands and aspen forest fringes. These vegetation/habitat types are deemed to be fire resistant and beneficial to risk reduction – except during brief spring and fall periods when leafless conditions prevail. Wasa is completely surrounded by a network of formal and informal roads and walking/ cycling trails.

Also unique to the Wasa area, British Columbia Provincial Parks has multiple land holdings including a campground and day use area that are distributed within the community of Wasa. Most of these lands have been subject to fuel modification treatments at some time in the past. Those treatments achieved dual goals for ecosystem restoration and to reduce fire hazards. BC Parks has a long tradition of combining fuel modification and ecosystem restoration goals, but some of these lands are again in need of forest maintenance activities. A matrix of other privately held and Crown lands surround the community.



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Wasa is populated by year-round residents (about 30%) and summer residents (about 70%). Most residences are single-family, standard-built homes of wood construction. About 20% are single or double-wide manufactured homes and the remainder are either winterized RV's or 1-2 room cottages. The density of homes is generally low, given large lot sizes. The exception to this is a small mobile home park containing about 30 trailers adjacent to #93/95 on the west side of Wasa Lake. The age range of homes varies widely from small, circa 1950 cottage-style dwellings to fully modern residential builds. Many of the older homes have recently undergone modernization or significant renovation and feature more current design features and building materials. Development is ongoing, and new homes are abundant. Newer homes and recent renovations feature much more fire resistant materials and features, thereby helping to mitigate some important wildfire hazard factors related to structural characteristics.

As they always have, wildfires will continue to occur in the Kootenay Valley and in the vicinity of Wasa. Historically, 74% of wildfires are human-ignited and 21% by lightning (Blackwell, 2012). Prevention or exclusion of all wildland fires is not possible; therefore risk mitigation efforts are critical. Although wildfires are more probable when weather leads to dry fuel, no one knows exactly when or where they will occur. Due to the combination of bio-geo-climatic factors at Wasa, the fire season can extend almost year-round in this dry valley-bottom.

It is particularly noteworthy that Wasa is outside the formal Fire Protection Area and without organized structural fire protection. This deficiency helps motivate resident interest in fire prevention and mitigation; it was also a key factor in initiating this community wildfire assessment and public engagement project.

This assessment addresses the wildfire-related characteristics of Wasa and the surrounding area and evaluates hazardous conditions within the neighbourhood that could be altered by residents to reduce the risk of losses prior to the occurrence of a wildfire. The assessment does not focus on specific homes; nor does it specifically address wildfire response capability and prevention of fires. Instead, it examines the community in its entirety - looking for trends or patterns that contribute to overall risk and the potential for loss reduction.

Despite its clustered development pattern, Wasa neighbourhoods exhibit great similarities with regards to their fire environment, typical hazards, and the types of solutions required to resolve them. Therefore, for the purposes of the FireSmart Community Recognition Program, it was concluded that Wasa is best served by progressing as a single FireSmart Community – rather than a series of adjacent communities or neighbourhoods.

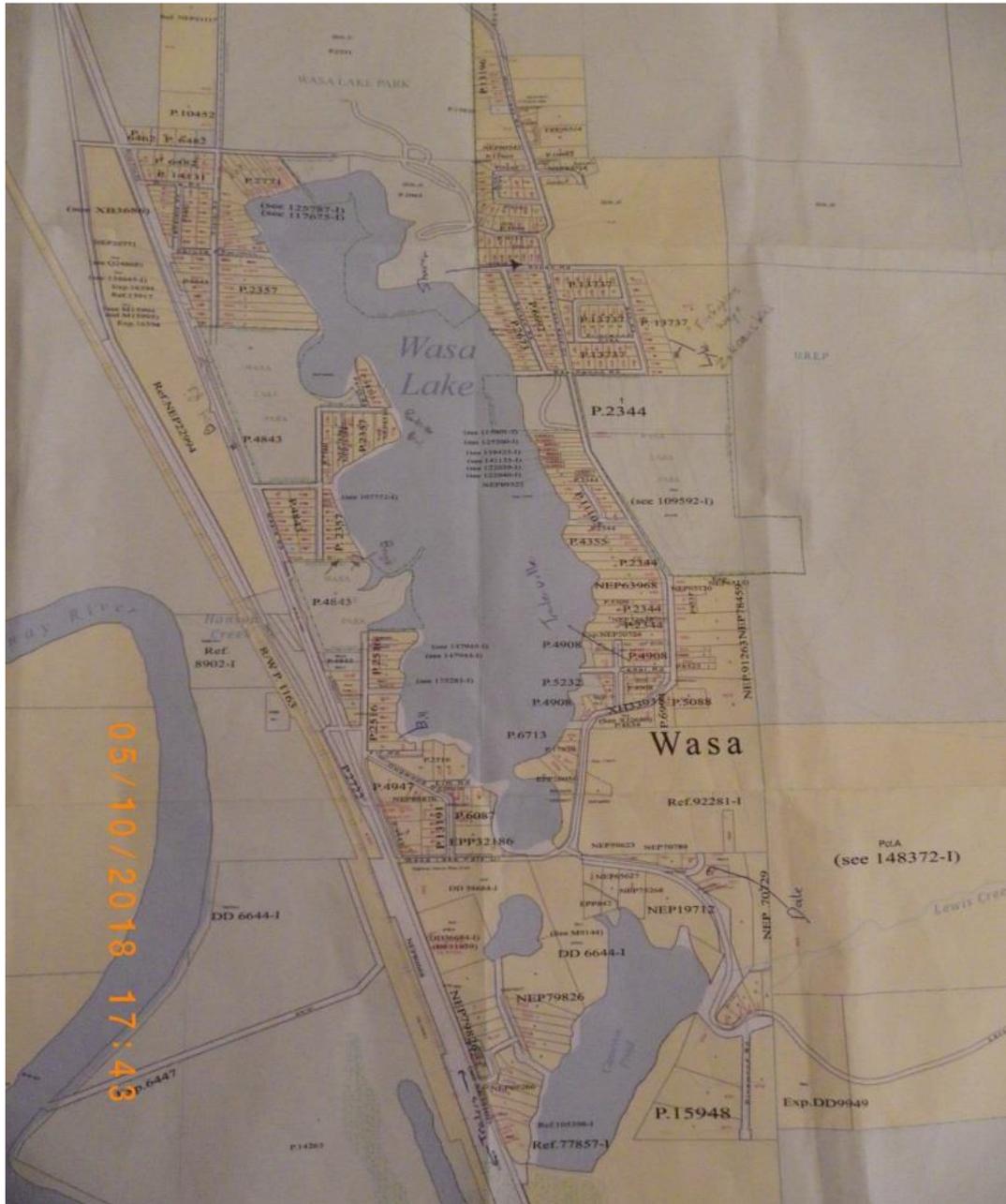


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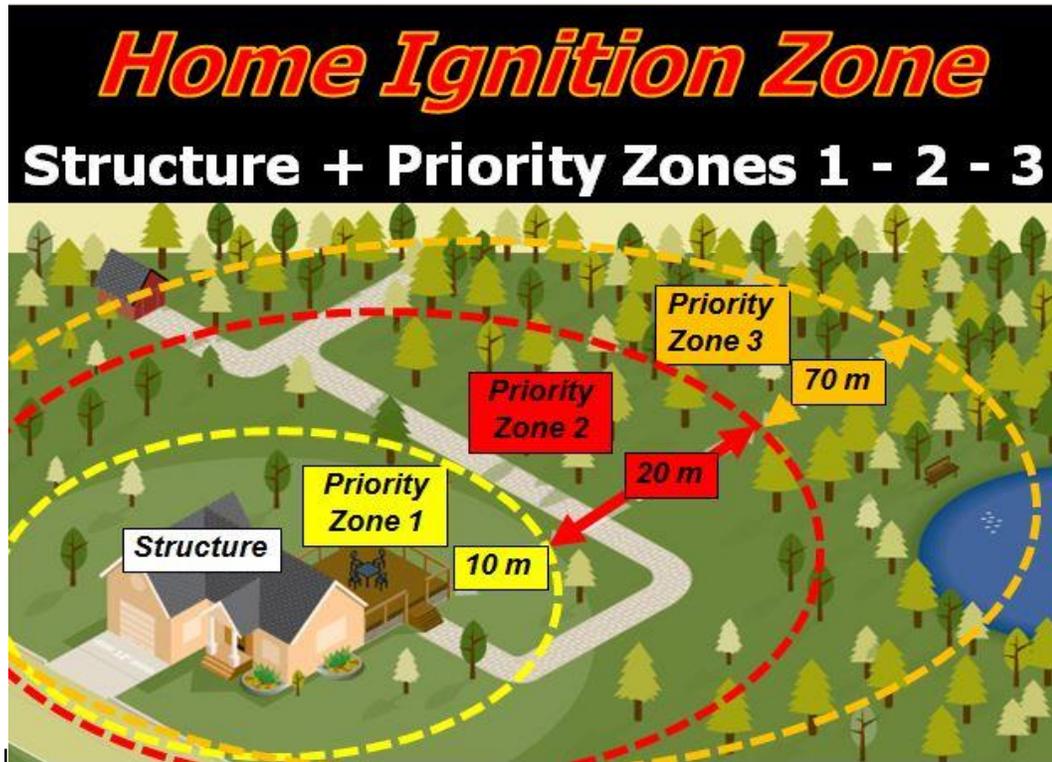
Map 1: Overview of the Community of Wasa Showing Clustered Development/ Neighbourhoods



Research and past experience demonstrate that a house burns because of its relationship with flammable elements within a relatively small area called the “Home Ignition Zone” (see Figure 1). The home ignitions zone is comprised of the house and its immediate surroundings. Each individual home has its own *Home Ignition Zone* however, these often overlap with those of adjacent homes.



Figure 1: The Home Ignition Zone



NOTE: In addition to Priority Zones shown in the diagram above, Priority Zone 1a has recently been added; it is located on the innermost edge of PZ-1 and extends outwards for 1.5m from buildings and decks.

To reduce the risk of home loss, a homeowner must reduce the homes susceptibility to fire. This is accomplished by eliminating or interrupting the multiple pathways that fire could take to reach the home and by making the home itself more resistant to ignition. This requires that all sources of fuel within the *Home Ignition Zone* be assessed and treated to meet recommended FireSmart guidelines (i.e. vegetation, miscellaneous combustible materials, and building materials).

By working together, residents can be a powerful force in reducing the overall wildfire risk to their neighbourhood. For example this can be accomplished directly by removing, reducing, re-arranging or converting vegetation around the neighbourhood to limit fire intensity; by cleaning up forest debris and man-made combustibles to reduce the likelihood for embers to start a small fire that eventually spreads to homes and; by strengthening resident knowledge of FireSmart measures. Indirectly, conditions can also be improved by lobbying local authorities, corporate land owners and industry or utility companies for improvements to local infrastructure, fire prevention and response, or better land management practices.

This Assessment is based on direct observations made during several site visits to the Wasa community conducted in fall, 2018. The assessment addresses potential for home ignition and loss under severe wildfire conditions and how these probabilities can be reduced. Residents of Wasa can reduce the risk of home losses during a wildfire in two important ways: by taking collective FireSmart actions within and around their neighbourhoods, and by applying FireSmart measures within their individual *home ignition zones*.



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Post-fire investigations of past wildland/urban interface disasters indicate that the level of losses are largely dictated by the residential characteristics of an area – hazard factors that are close to home and mostly under control of residents. This is actually good news. It tells us that, with proper guidance, residents can be effective in reducing wildfire vulnerabilities. That is, they can influence the outcome of a wildfire event and are not entirely dependent upon fire response efforts. Experience also shows that relatively small investments of time and effort can reap great rewards.

3) Probable Wildland Fire Scenario for Wasa

First and foremost it is recognized that a *wildland/urban interface fire* is one that usually spreads from the forest, grassland or bush into developed area. However, it can also develop when a structural fire within the community spreads into the surrounding wildland fuel.

Behaviour of a wildfire depends on fuel, weather and topographic conditions; called the fire environment. The following generalizations about the fire environment and wildland fire behavior apply to all communities, and have important implications for Wasa:

- Fine fuels ignite more easily and spread fire faster with higher intensities, than larger diameter fuels. The greater the amount of fuel, and the more continuous it is (both horizontally along the ground and vertically between layers of the forest) the faster the fire spreads and the greater its intensity. Fine fuels like shed needles, loose bark, and leaves ignite more readily and take a shorter time to burn out, than larger diameter fuels like logs.
- High temperatures and low relative humidity are the key weather conditions affecting the moisture content of dead and living forest vegetative/fuels. Smaller diameter fuels (needles, dead leaves) dry fastest, but with time all fuels dry out and become more flammable. As more fuel dries out, the potential for fire ignitions and extremely intense, fast moving fire increases.
- The greater the wind speed, the faster fire spreads and greater fire intensity becomes. Higher winds also carry burning embers further towards communities from wildland fires.
- Topography enhances fire behavior too. Fire spreads faster on slopes than on level ground. Terrain features such as slope, valleys, and small draws channel wind to affect the direction of fire spread. In general, the steeper the slope, the higher the uphill fire spread and intensity.
- When winds and slope combine, especially dangerous conditions can result.
- Weather and topography cannot be managed by residents but they can readily influence many characteristics of fuel. Therefore, FireSmart measures focus on fuel factors in order to reduce fires rate of spread, its intensity, and the amount of firebrands/embers generated and transported towards homes.

Specific aspects of the fire environment and fire behavior pertaining to Wasa's neighbourhoods include:

- The annual cycle of weather predictably exposes the community to periods when fire could spread quickly, escape initial control actions, and threaten the community. In particular, watch out for: 1) early spring prior to green-up of grasses and leaf flush of broad-leaved trees; 2) short periods of high temperatures, low humidity and wind throughout the summer; 3) shorter but warm fall days when grasses are brown and needle and leaf accumulations on the ground peak.



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- During these seasonal periods fire danger can spike quickly over the span of just a couple of days. Favourable burning conditions occur whenever winds and low humidity create dried fuel.
- There are ample opportunities for human-caused fire ignitions that could result in forest fires adjacent to or within Wasa. Accidental human ignitions are most likely. These may result from fire escapes from wood burning appliances or approved fire pits of residents, recreational campfires enjoyed by residents or campers, careless smoking, and ATV or machinery use. Area residents point out that illegal gatherings and bonfires or bush parties are a concern. Structural fires, especially where dwellings and other structures are concentrated, also threaten to spread into adjacent grass and forest fuels. Construction activity, railways, highway vehicle accidents and powerline strikes by danger trees are other significant human ignition sources to be considered. In addition, lightning-caused fires are a fact of life in the Kootenay Valley. Any of the above could lead to a wildfire that threatens homes. Burning at the local landfill/dump site is also a concern.
- Mountains bounding the S-N oriented Kootenay valley channel prevailing westerly and SW winds – most common on high fire danger days. These winds would enhance the potential for fire spread towards Wasa from the south, or across the valley from the west.
- Expanses of dense evergreen forest located on adjacent mountainsides on both sides of the valley provide continuous fuel sources that are expected to burn as running crown fires, generate massive convection columns and transport dense ember showers for significant distances. Therefore, Wasa must be prepared for homes to be exposed to intense ember storms as well as flames and radiant heat from these areas.
- In the most likely wildfire scenario (i.e. a wildfire moving north or northeast through the Kootenay Valley) Wasa would be exposed to the fast moving head or flanks of a wildfire - were fire intensity is great and fire control most difficult.

Overall, these aspects of the fire environment add up to a significant degree of exposure to wildfire risk for Wasa and its component neighbourhoods. The wildfire threat is considered to be “high -moderate” and trending upwards. Without diligent mitigating actions by residents, significant home losses can be anticipated in this neighbourhood during a wildland fire scenario.

4) Site Description

Map 1 above and the aerial view in Map 2 below help understand the wildfire situation faced by the residents of Wasa.

Much of the areas wildfire hazard emanates from local forest and grassland vegetation. The Wasa Lake area is a very dry environment which supports a patchy matrix of open pine forest, grasslands, deciduous shrublands on riparian margins, and small water bodies. These are located on level to gently sloped terrain in the Kootenay River valley bottom. Valley bottom forests are dominated by moderate density, multi-aged ponderosa pine with varied amounts of Douglas-fir. Forests on the east side of the Kootenay valley become increasingly dense with elevation.

Forest encroachment and in-growth processes gradually act to increase forest density, giving rise to increasing fuel load/continuity and fire hazard.



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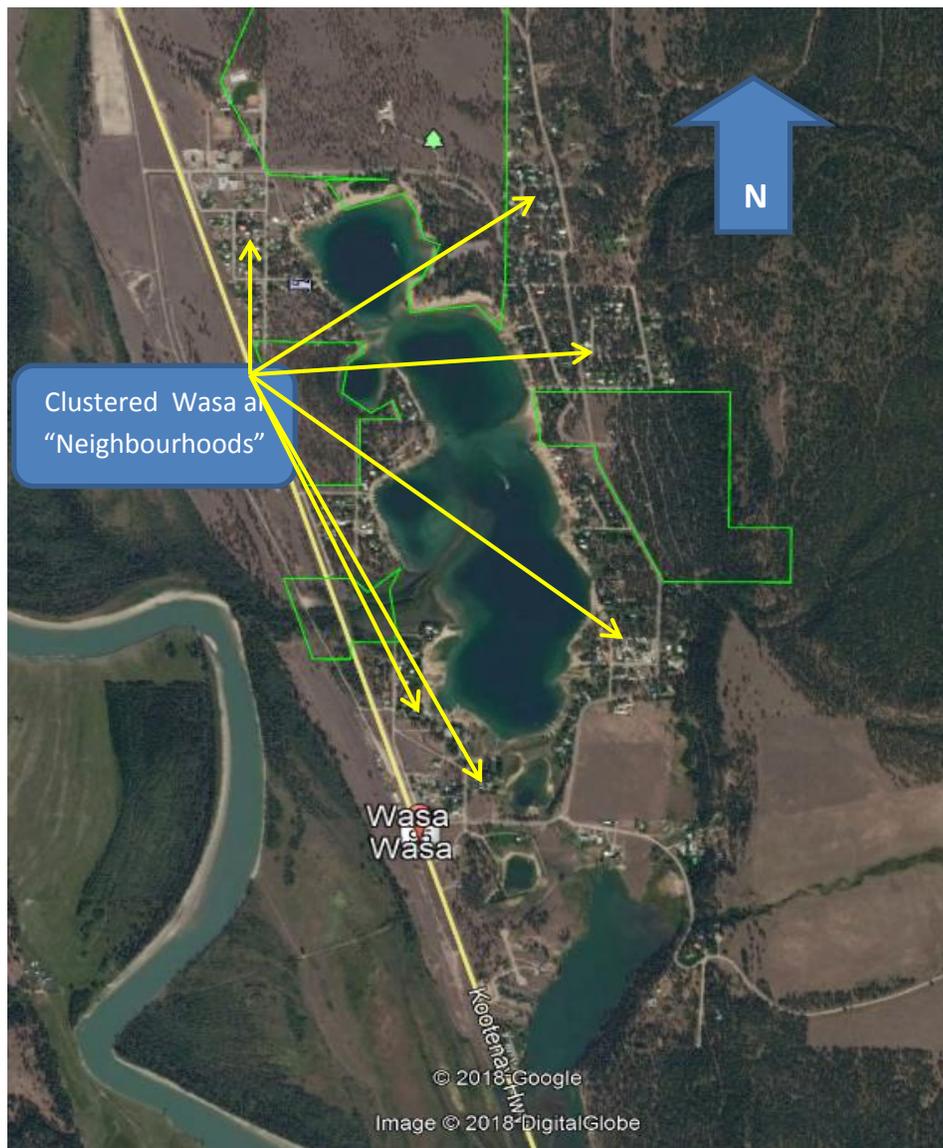


This ecosystem/fuel type is characterized by a nearly continuous ground cover of heavy grass fuels, annually supplemented by very heavy deposits of pine needle “straw”. This creates a highly flammable matrix of readily ignited fine fuel, capable of burning with rapid rates of spread.

Young-growth pine and Douglas-fir is continually establishing in the forest understory. This creates “*ladder fuel*” which enhances the probability of fire spreading into the tree crowns and sustaining more extreme “*crown fire*.” This has the effect of substantially increasing wildfire risk to homes.

Emergency access and egress from the neighbourhood is provided via looping access to Highway #93/95, the primary evacuation route. Incoming and outgoing traffic must follow the same routes.

Map 2: Aerial View of Wasa.



Reportedly, prevailing winds during typical periods of high fire danger blow from the south to southwest. Therefore, fires burning in this area would most commonly advance towards the north or northeast.



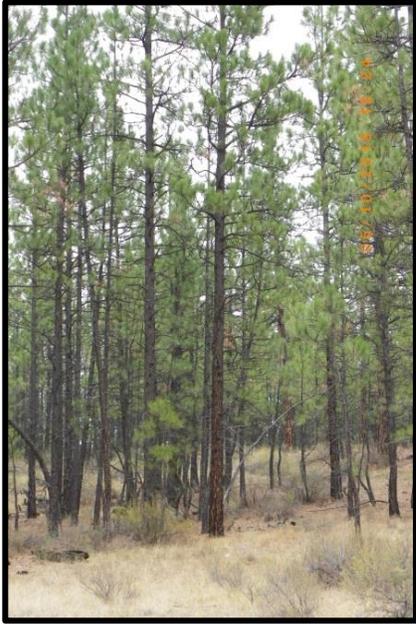
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Figure 2: Views of Typical Open Forest/Grassland Conditions at Wasa

Dense Untreated Pine Forest



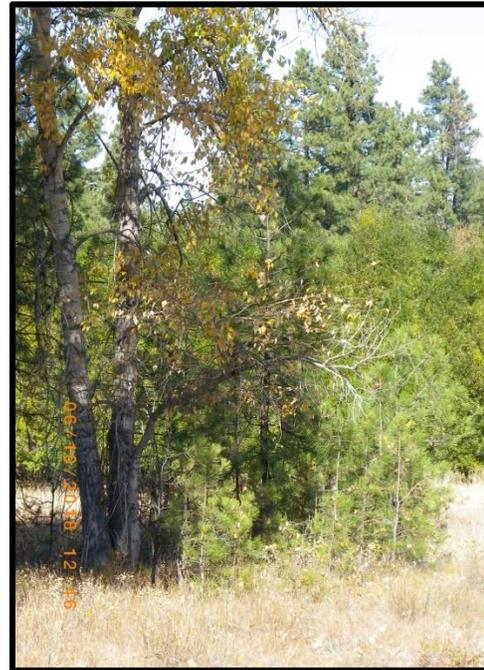
Open Forest, Thinned ~2000 in Wasa Provincial Park



Treated Ponderosa Pine Forest Thinned to Ecological and FireSmart Standards



Young Pine In-filling Forest, Encroaching Grassland, forming Hazardous Fuel Ladders





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Typical Needle Mat formed Beneath Ponderosa Pine Forest



Typical Riparian Shrublands, Pine Forest on Gentle Slopes above Wasa



Residential landscaping is another important contributor to local wildfire hazard. Overall the amount of planted trees and shrubs are modest, and many properties feature irrigated lawns. Numerous flower beds are weighted towards lush, low flammability flowers and shrubbery. These are very positive attributes. Elsewhere, planted vegetation is overly dense, comprised of highly flammable species, or arranged to promote fire spread into contact with combustible elements of the home. Many, single-specimen evergreens or groups of them are unpruned with large needle accumulations at the tree base, and present significant hazards within Priority Zones 1 and 2. Evergreen hedges and improperly placed ornamental junipers, cedars and ground pines greatly increase potential for home destruction.

Figure 3: Non-conforming Landscaping Practices Raise Hazard and Increase Home Vulnerability



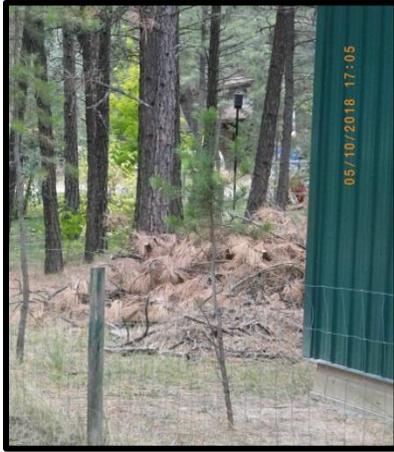


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Figure 3: Further Examples of Excessive Debris or Vegetation that Threatens Homes



In contrast, many Wasa property owners have applied good FireSmart practices that help reduce susceptibility of structures to ignition, especially by embers, and make them more fire resistant. These make it more difficult for fire to spread to the home and easier for fire responders to provide a measure of fire control, if they are able to attend.

Figure 4: Good Building Design/Materials and Landscaping Practices Provide FireSmart Advantages





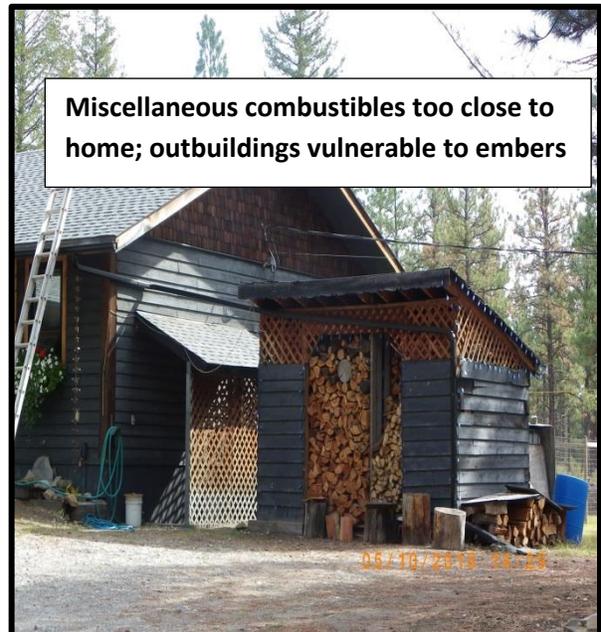
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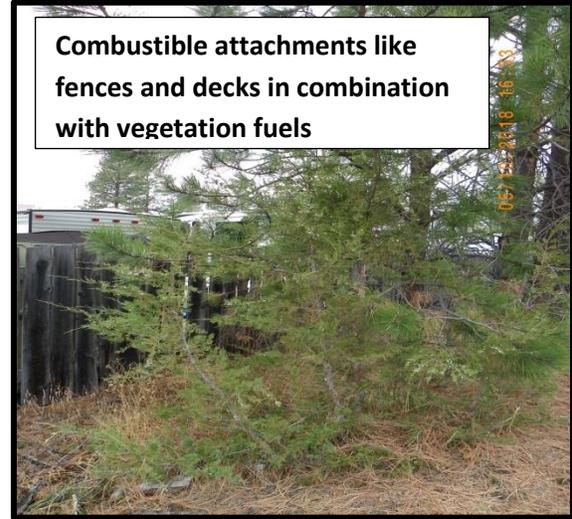
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FireSmart landscaping choices were prominent at several homes. For example, well-maintained and irrigated green lawns; solid rock, coarse gravel, or concrete walkways bordering flammable vegetation and separating it from homes and outbuildings. These are key features that create narrow but critical flame-free 1A zones (i.e. 1.5m) that partly or completely surrounding a number of homes. Top-soiled flower bed surfaces with predominantly deciduous fire resistant plantings are wise choices in the subdivision; they are resistant to ember ignitions and fire spread.

Figure 5: Hazards in Priority Zones 1 and 2 significantly add to the vulnerability of homes





5) Assessment Process

The community of Wasa and component neighbourhoods were assessed during two visits by Local FireSmart Representative Alan Westhaver, a consultant and FireSmart advisor to the RDEK. During these evaluations he was accompanied and assisted by long-time resident and former BC Parks employee, Mike Gall. Further insights were provided by his fellow Community Champions. The entire community and adjacent vegetation within a 350m radius were carefully inspected, and observations recorded using the *FCCRP Community Wildfire Hazard Assessment Form* (see Appendix 1).

The assessment process noted many inherent advantages provided by existing FireSmart design features and further improvements (as described above) that could be made by Wasa residents. Additional risk mitigations would contribute to lowered levels of wildfire susceptibility.

6) Problems, Issues and Concerns

A number of important issues and concerns came to light as a result of the Community Wildfire Hazard Assessment. These are described below, and none are insurmountable. Instead, they provide opportunities for risk reduction and are the subject of recommendations that follow.

1. Overall, fuel conditions in forests adjacent to homes (Priority Zones 2 and 3) and non-conforming landscaping in Priority Zones 1A, 1 and 2 account for the majority of wildfire hazards present at Wasa. This is not uncommon in rural and urban communities.
2. Because of the dry climate and the predominance of ponderosa pine, light and flashy fuels (i.e. cast needles, dried tall native grasses, leaf litter) create a nearly continuous matt of easily ignited, highly combustible fuel on the ground. This material accumulates rapidly, constantly and provides a very receptive fuel bed allowing wind-driven embers to readily ignite spot fires. In turn, small spot fires grow, spreading surface fire toward homes. This is a key feature of Wasa's fire environment, and a hazard factor that requires continual maintenance action on the part of residents and all land owners. On the plus side, the lower intensity of surface fires burning in light fuels are more easily controlled or contained than crown fires in dense forest fuel types.



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3. The abundance of easily ignited untreated single-specimen evergreens with branches sweeping to ground level and small clusters or hedges of mature evergreens and ornamental shrubs (mostly juniper and cedars) located in Priority Zones 1A, 1 and 2 are serious and widespread concerns at Wasa. These situations create high potential for exposure of homes to contact with intense flames to extreme radiant heat, enough to ignite residential homes and outbuildings. There is need for better decision-making in choosing landscaping materials closest to homes and other structures.
4. Historically, ponderosa pine and Douglas-fir forests growing in warm dry regions of the Columbia Basin were maintained in a very open, savanna-like state by relatively frequent (~20 years), low-intensity surface fires. In the recent era of fire suppression these ecosystem have been dramatically in-grown by younger trees which continually reproduce, making the forest much denser. Also, young trees have encroached into former openings and grasslands. These modified ecosystems burn with extreme intensity (i.e. crown fire) which replace, rather than maintain, the forest. Provincial land managers (including BC Parks) took actions in the 1980's and 1990's to reverse this problem with programs of forest thinning and prescribed burns but young forest growth is now quickly advancing again. Further maintenance action is now required, especially with increased development and residential population. This is a dynamic problem, rapidly increasing in its magnitude and extent.
5. The warm Wasa climate also results in an extraordinarily long “fire season”. That is, the combination of dry fuel, low relative humidity and winds required for wildfires to occur could reasonably happen at almost any time of year. Therefore, exposure to wildfire risk is greater at Wasa than for many other communities the Rocky Mountains. This makes following recommended FireSmart guidelines even more important. One impact of global climate warming has been to further extend the fire season.
6. The property surrounding many Wasa homes is tidy and meticulously maintained by its owners. This helps to lower wildfire risk. However nearly all properties have one or more isolated instances where combustible man-made materials (e.g. surplus building materials, household items, stored yard waste, motorized equipment, petroleum products, recreational vehicles, re-cycling, firewood, etc.) are placed near to the home or outbuildings in Priority Zones 1A, 1 and 2. These anomalies make homes susceptible to ignition by wind-driven embers or creeping, low-intensity ground fire. Collectively, they create myriad locations for embers to flourish - and possible pathways for flames to spread directly to homes, decks or outbuildings. In these cases, “going the last mile” to tidy up and mitigate these small but important hazard anomalies, would solidify the FireSmart status of many more individual homes and properties.
7. Combustible wooden attachments to homes like decks, porches, verandas, stairways and fences are prominent features at many Wasa homes, and many are highly vulnerable. These place homes at significant risk. Awareness and hazard mitigations are required in this regard.
8. It was observed that outbuildings such as garages, tool sheds, workshops and play structures located close to homes have not been given the same thorough attention to FireSmart guidelines as are primary residences. As a result, they are more vulnerable to ignition. In many cases these smaller structures are located close to the home (or attached to them) and would subsequently spread fire to the home – leading to its destruction.
9. Wood burning appliances are an important and widespread source of primary or secondary home heating in the community of Wasa. Consequently most homes have a requirement for storage and curing of firewood, and some require locations for stock-piling logs to be processed into firewood. This raises concern for proper storage of firewood, and for proper maintenance of chimney outlets to avoid accidental fire ignitions by fireplace emissions.



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10. Although it is not commonly used at Wasa homes, wood chip and bark mulches are readily combustible and a substantial source of fuel. These materials dry quickly and burn persistently. This is problematic when used in planters, flower beds or other locations where it is in direct contact with siding, wooden attachments, wooden fencing, landscaping timbers or vegetation that is flammable or can spread fire.
11. It is unknown if adequate water supply sources for replenishing mobile water tenders are available or evenly distributed in the community.

6a) Existing Advantages

At the same time, it is very important to highlight the numerous positive FireSmart assets noted in Wasa neighbourhoods. Some of these characteristics provide important advantages:

1. Without doubt, the number one asset at Wasa is the high level of wildfire awareness and concern expressed by many of its residents. As well, there is an exceptional degree of fire prevention organization and momentum already in place within the community. People are the strength of community wildfire risk mitigation programs.
2. A very large percentage of homes and outbuildings have non-combustible asphalt and metal roofing thus negating one of the most significant vulnerabilities. As well, many of the homes are newer or have been recently renovated and fitted with highly fire resistant exteriors and windows, and modern design features that block entry by wind-driven embers into the home.
3. The areas ponderosa pine forest, with its relatively open structure and low density of mature trees/hectare) and occasional mixture of deciduous trees is less able to burn with extreme intensity than typical closed pine and spruce forests of the boreal and high-elevation Rocky Mountains. Consequently, it is more easily thinned, modified and maintained to further reduce fire intensity.
4. The large property lots found in rural communities and recreational subdivisions like Wasa generally provide an advantage to owners with regards to reducing wildfire losses. This is because each owner controls more of the variables that must be managed to ensure home survival. As a result, fire is much less likely to spread directly from one home to another. This is also an advantage at Wasa however, that benefit is somewhat reduced by the ease which fire can spread between widely separated homes through the extraordinarily dry grass and surface fuels common here.
5. The high diversity of native deciduous forest trees and shrubs as well as the wide array of fire resistant ornamentals that are able to grow in this climate provide Wasa residents with many options for developing low risk landscaping schemes that retain aesthetic and wildlife habitat values.
6. Abundant water for irrigation and the apparent preference for expansive irrigated lawns; good placement of lush rockeries and the abundance of low-flammability shrubs and perennials in Priority Zones 1A, 1 and 2; and the high frequency of coarse gravelled or cement walkways and driveways bordering homes help to protect many homes within the community.
7. The road network and emergency vehicle access is generally good, although some driveways are narrow and turn-offs sharp and limiting to large vehicles.



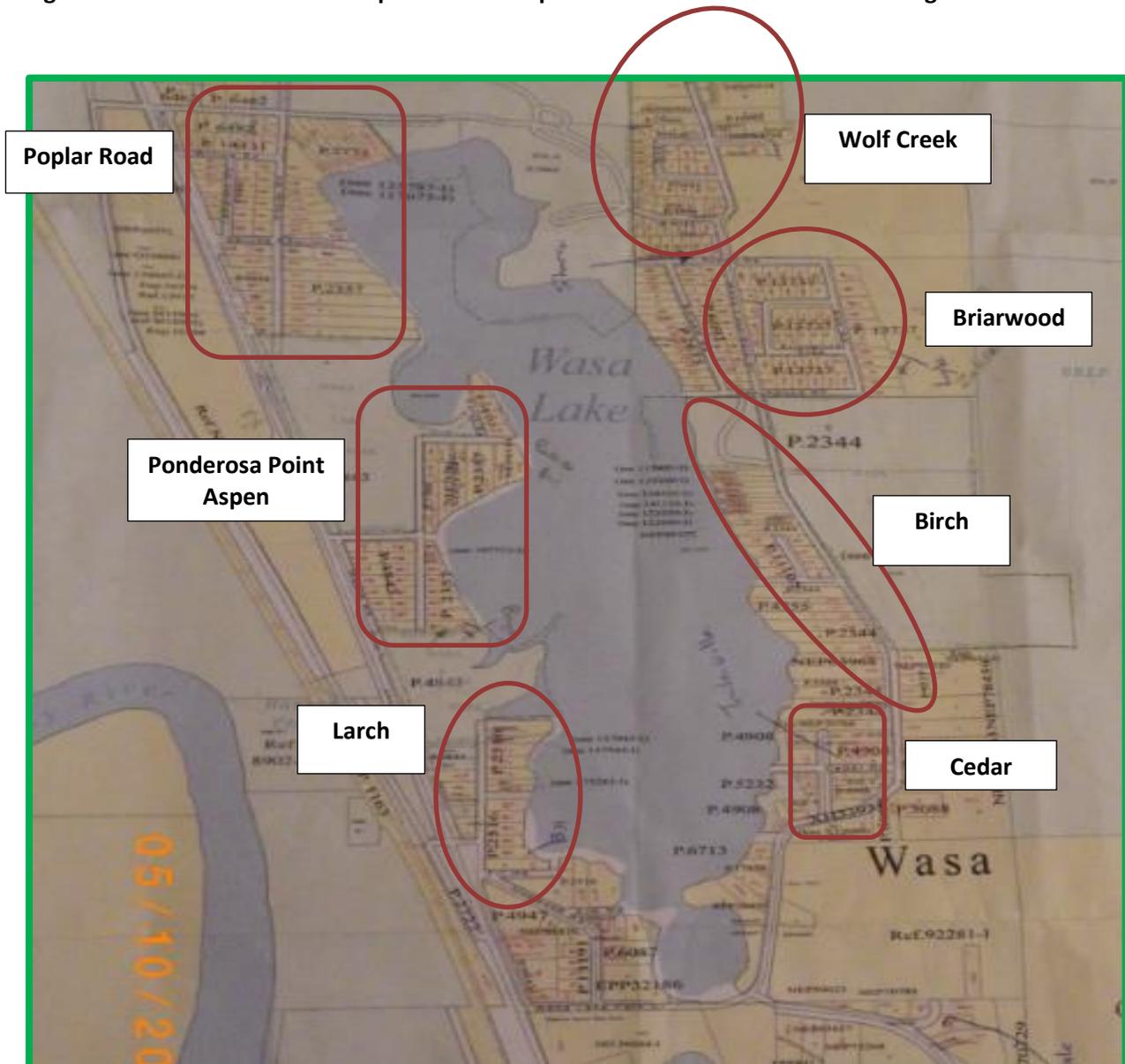
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8. Within the larger Wasa community there are several distinct residential clusters, each consisting of 20 to 50+ properties. See Figure 6 below. This clustered distribution may be helpful in motivating and organizing FireSmart Events that are best to focus on resolving neighbourhood scale issues. In particular, it may aid in co-ordinating synchronized FireSmart events at Wasa to target scattered islands of over-abundant hazardous vegetation/fuel.

Figure 6: Residential clusters are potential focal points for future FireSmart Risk Mitigation Events



Potential neighbourhood boundaries depend primarily on commonality of local risk management issues, existing relationships among residents and geographic proximity. They are best determined by residents themselves.



7) Recommendations

The following recommendations are provided for consideration by residents of Wasa and the Regional District of East Kootenay. They are directed specifically towards effective mitigation of current wildfire risks, the proactive approach to emergency management.

Because of the great energy and progress already made by the **Wasa Volunteer Fire Prevention and Suppression Committee** and the extraordinary level of wildfire awareness and concern being expressed by residents overall, the recommendations offered below are compressed into an accelerated timeframe. That is, relative to most other potential FireSmart Communities in BC.

Collectively the recommendations support, but do not supplant or replace, the need for concurrent actions toward improved fire protection and regional land management.

In order of priority, it is recommended that:

1. Residents of Wasa fully adopt the FireSmart Canada Community Recognition Program (FCCRP) as the best and most comprehensive means for addressing the full range of current wildfire hazards and systematically implementing effective wildfire risk mitigation solutions to the issues outlined in Section 6. This approach would significantly complement and reinforce current efforts by residents towards preventing the occurrence of wildfires and bolstering local wildfire response capabilities.
2. The Regional District of East Kootenay provide continued fiscal and logistical support to the community of Wasa as they progress toward implementation of the FCCR Program and systematically undertake prioritized FireSmart risk mitigation activities.
3. A unified FireSmart Board be formed by recruiting concerned Wasa residents from its constituent neighbourhood clusters - and that they develop a simple FireSmart Plan based on these recommendations and content of this report. To facilitate the work of the FireSmart Board, the RDEK is offering a 3-hour Community Champion Workshop to familiarize neighbourhood leaders/Board members with the FCCRP program and particulars of the wildfire hazards that prevail at Wasa (early November, 2018).
4. Residents of Wasa (supported by RDEK) organize 3 distinct types of formal FireSmart Events as they move ahead with implementation of the FCCR Program:
 - a. Wasa residents are offered an educational workshop, led by a Local FireSmart Representative², to receive training to conduct their own home and property hazard assessments using the *BC Homeowners Manual (FireSmart Begins at Home)*. This would mean organizing an educational 3 – 4 hour workshop. The workshop would be comprehensive of all structural, vegetation, and other miscellaneous hazards as well as recommended FireSmart guidelines to resolve them. The preferred format would be a 2.5 hour classroom session followed by a 1.5 outdoor practical (hands-on) session to observe and practice hazard assessment skills. Residents would be provided with personal copies of the BC Homeowners Manual. (Suggested timing: mid-March to mid-April, 2019).

² A Local FireSmart Representative is a wildland or structural fire professional that has received special training from FireSmart Canada to deliver the FireSmart Canada Community Recognition Program, and certified to conduct workshops such as this – and to facilitate neighbourhood FireSmart Events.



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- b. An annual community-wide FireSmart Clean-up Event is sponsored at Wasa between mid- April and early June, 2019. The recommended format is a 1 to 1.5 hour morning workshop to train residents in use of FireSmart landscaping techniques followed by residents returning to their respective properties to work on reducing or eliminating hazards resulting from untreated trees and shrubs in Priority Zones 1a, 1 and 2 for the remainder of the day. Residents would receive education, develop practical skills for resolving vegetation/fuel hazards arising from native and ornamental plants, and gain experience with hazard reduction treatments (i.e. pruning, thinning, re-arranging, removing, reducing, and replacing). Information on selecting low-risk fire resistant landscape materials should also be provided. The morning workshop and roving expert advice throughout the day would be provided by their Local FireSmart Representative, a qualified wildland/urban interface fire professional.

Woody debris gathered and piled by residents along their driveways will be chipped and removed by a contracted landscaping firm (in the days following the event). Residents would gather at days-end (or mid-day) for a meal and information exchange. Preferably, a communal “tool kit” consisting of hand tools for lopping, pruning and cutting branches and small conifer growth could be acquired for use at annual FireSmart Events. (Suggested timing: mid-April to late May, 2019; repeating in 2020 and 2021).

- c. Targeted, site-specific annual FireSmart Events be organized in one or more Wasa neighbourhoods (see Figure 6, Page 16) each year in late spring or early summer to address the issues of rapidly advancing forest ingrowth and encroachment (Page 14). These are areas where thickets of young ponderosa pine regrowth (i.e. seedlings and saplings 1 – 5m in height and up to 15cm in diameter) is encroaching on roadsides or open grasslands or re-establishing beneath mature trees creating ladder fuel arrangements and potential for extreme fire intensity. Priority sites occur on the lower and upwind fringes of neighbourhoods, roadsides and larger pockets of forest reserve on public or private land are of priority concern.

Under guidance of the Local FireSmart Representative³, gathered residents would work together to reduce or remove regenerating ponderosa pine from designated public or private lands where dense woody re-growth is raising the risk to neighbourhoods. Generally, these are located upwind and or downslope from clusters of residential properties. Hand tools would be used by residents, woody debris hauled to roadside by them and (as in Item “b” above), and woody debris will be chipped and removed by a contracted landscaping firm.

- d. All residents should be encouraged through education and/or local regulation to adopt an annual routine of: 1). Mowing wild grasses within 5m of all structures and 1m of wooden fences to a height of 5cm at about the time of full curing – about the end of July. This could be facilitated by declaring and advertising July 15 – August 01 as “Wasa Wildfire Hazard Reduction Week.”
5. FireSmart Events as described above in 4a, 4b, 4c and 4d are conducted annually until a re-evaluation determines that a satisfactory level of wildfire risk mitigation has been achieved. .
 6. The Regional District of East Kootenay should investigate the need for installing additional, strategically located, “dry hydrants” to tap into the abundant local water table thus increasing the overall emergency water supply.

³ Potentially, expert staff from collaborating agencies like BC PARKS would also provide project oversight and added expertise.



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7. Residents of Wasa, actively supported by the Regional District of East Kootenay, should lobby British Columbia Provincial Parks to re-instate their former program of forest thinning and forest restoration, focussing on areas where the potential for wildfire losses in the community is greatest, and join with residents in conducting annual targeted fuel reduction FireSmart Events (Item 4c).
8. A standardized system for house numbers (e.g. large numbers, consistently placed at driveway entrances, and reflective material) be implemented to aid emergency responders of all types.
9. Each homeowner should ensure they have basic fire control tools (shovel, water buckets, rake, and grass flapper), sufficient garden hose to reach every corner of PZ-2 (minimum), and 2 – 3 rotating sprinkler heads/sprinklers available for emergency deployment. Hoses should be left connected to hose bibs April through October, regardless if homes are occupied or not.

8) Successful FireSmart Mitigations

When adequately prepared, a house and whole neighbourhoods can likely withstand a wildfire without intervention by the fire service. Further, a house and its surrounding community can be both FireSmart and compatible with the area’s ecosystem. The recommendations and FireSmart guidelines noted above are proven and time-tested to be effective in reducing the risk of wildfire losses. We believe there is great potential at Wasa for residents to work together to reduce the wildfire threat quickly and substantially.

9) Next Steps

This assessment and accompany hazard evaluation will be submitted to the RDEK and the Wasa Volunteer Fire Prevention and Suppression Committee prior to the end of October, 2018 for review and a subsequent meeting with the Project Contractor.

At that time RDEK will seek a decision by the Wasa community to proceed with subsequent steps in the FireSmart Canada Community Recognition Program, a voluntary undertaking to continue moving forward to achieve national recognition status. At this point in time, Wasa has already accomplished Steps #1 to 5, out of eight of that Program. RDEK could consider offering local “*FireSmart Boards*” with ongoing information and support to keep advancing this program to its final stages (see Figure 6 below).

More specifically, after reviewing the contents of this assessment and its recommendations, the Wasa Volunteer Fire Prevention and Suppression Committee/ FireSmart Board will determine whether or not it wishes to continue seeking FireSmart Community recognition status.

If this report and recommendations are accepted and FireSmart Recognition status is to be pursued, the Wasa FireSmart Board must then prepare a simple *FireSmart Community Plan* (see the FCCRP “User Guide”) outlining their intentions, incorporating at least 3 of this reports recommendations (see Section 7) and describing one or more planned FireSmart Events to implement the recommendations.

Figure 7: Schematic of the FireSmart Canada Community Recognition Program





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Upon working through this 8-step process, Wasa residents and its FireSmart Board are assured of meeting criteria for achieving national recognition as a FS Community:

1. You will have obtained a Community Wildfire Hazard Assessment and FireSmart Community Assessment Report (i.e. this document).
2. You will have established a local FireSmart Board.
3. You will have created a FireSmart Community Plan which adopts several recommendations from this report and which identifies tangible wildfire risk reduction actions.
4. You will have planned and conducted a one-day FireSmart Event to implement your FireSmart Plan; and demonstrated an investment of a minimum of \$2.00 per capita in local FireSmart activities⁴.
5. You will have submitted an application through your Local FireSmart Representative to FS Canada to obtain national recognition and a sign to post prominently somewhere in the neighbourhood.

10) Signatures of Project Consultant/ Interim Local FireSmart Representative (LFR)

This report was prepared by Alan Westhaver, Project Consultant and interim Local FireSmart Representative.

A copy of this document (including the completed Community Wildfire Hazard Assessment Form) has been provided to Terry Balan, RDEK Emergency Services Coordinator, Cranbrook as well as to the Wasa Volunteer Fire Prevention and Suppression Committee.

Alan Westhaver

Alan Westhaver

ForestWise Environmental Consulting Ltd.

General Delivery, Fernie, B.C. V0B 1M0
(250) 430-7206

November 02, 2018

CC: Terry Balan, RDEK Emergency Services Coordinator, Cranbrook.

⁴ The time volunteered by Board members to organize the October 06, 18 FireSmart Information Session and time taken by residents to attend can be logged and counted towards the per/capita investment required.



Appendix 1: List of Suggested Locations for Thinning Forest Regrowth during Resident-organized Annual FireSmart Events*.

NEIGHBOURHOOD	APPROXIMATE LOCATION
Poplar Road	<ul style="list-style-type: none"> • South end of Poplar Road, bordering Wasa Lake Prov. Park
Ponderosa Point/Aspen	<ul style="list-style-type: none"> • North ½ of Ponderosa Rd + Perch Rd; ditch and Wasa Lake P.P. • South end of Ponderosa Rd. bordering Wasa Lake Prov. Park
Larch	<ul style="list-style-type: none"> • Sporadic roadside, property margins
Wolf Creek	<ul style="list-style-type: none"> • Sporadic concentrations along Wolf Ck. Rd. Ditches and patches of private & Wasa Lake P.P. land below road and homes.
Briarwood	<ul style="list-style-type: none"> • Roadsides and N. end of Wasa Lake P.P. along Beechwood Rd. • Roadsides and property fringes along Ash Rd.
Birch	<ul style="list-style-type: none"> • Sporadic-continuous, full length of Wasa Lake Park Dr. • WLPP day use area bordered by Beechwood an Wasa Lake Park Dr.
Cedar	<ul style="list-style-type: none"> • Dense development; pine regrowth is hazard regardless of location

* List is not comprehensive

Appendix 2: Completed Community Wildfire Hazard Assessment Form

Attached (also E-mailed as a separate attachment).