



SUMMER VILLAGE OF WAIPAROUS

Community FireSmart Plan

2013 Update



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Executive Summary

The Summer Village of Waiparous (SVW) was incorporated on January 1st, 1986. The SVW mayor and council are responsible for the overall governance of the village as well as protective services for all SVW residents. Protective services include bylaw enforcement, emergency response (Fire, EMS) and emergency preparedness. The SVW has an agreement with the MD of Bighorn to provide emergency response services. The mayor and council are responsible for the emergency preparedness planning required to protect the residents of SVW, notably, wildfire preparedness.

This Community FireSmart Plan focuses on the current preparedness level of the SVW, the work completed to lessen the impact of wildfires on the community, and operational guidance for future wildfire preparedness projects. The first step of plan development was to conduct a wildfire risk assessment. This included an assessment of forest fuels and fire behavior and an investigation of fire history. An inspection of structures and properties was then conducted, identifying spaces with fire hazard potential and assessing wildfire mitigation strategies. Emergency response and current FireSmart programs were then addressed and assessed. Lastly, communications and legislation was assessed, determining the community level of understanding and involvement as well as applicable local, municipal, and provincial authoritative grounds.

Following the assessments, recommendations for future fire prevention planning and development were made. There are five types of recommendations made in the development of this document; immediate, short term, long term, and annual. Those which require immediate attention include:

- Move firewood piles that are in close proximity to residences
- Dispose of all non-essential flammable household materials
- Maintain surface fuels and vegetation on property
- SVW provides debris management options for use by residents
- Distribute evacuation route maps to residents
- Install “No Parking” signs along all municipal roadways within SVW boundaries
- Ensure emergency response does not compromise evacuation
- Purchase 4-6 backpack water tanks and hand pumps as well as portable water tanks and/or bladders
- Assignment of persons responsible for monitoring and maintenance of fire suppression equipment
- Ease of access to fire equipment
- Preparation of initial attack kits
- Private and village lot numbering within SVW
- Full time residents volunteering with local Fire Department

In total, 42 recommendations were made to the Summer Village of Waiparous.

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Abbreviations and Terms

- “Village” or “SVW” – refers to the Summer Village of Waiparous
- “UFNS” – Upper Foothills Natural Subregion
- “LFNS” – Lower Foothills Natural Subregion
- “Zone 1” – refers to the 10 meter area surrounding a home or outbuilding in which FireSmart treatments can occur
- “Zone 2” – refers to the 10-30 meter area surrounding a home or outbuilding in which FireSmart treatments can occur
- ESRD – Ministry of Environment and Sustainable Resource Development – Alberta
- “GPLUZ” – Ghost Public Land-Use Zone
- “CPPENV” – Charette Pell Poscente Environmental Corp.
- Rate of Spread – the distance a fire front can cover per minute or hour
- Understory – vegetation (trees, shrubs, herbaceous plants) that are growing below or near the lowest branches of the veteran trees in the stand
- “Browse” or “browsing” – refers to foraging or grazing of surface vegetation by small mammals and ungulates
- Surface fuels – forest vegetation (needles, branches, shrubs) that are growing or have accumulated on the forest floor
- Crown fuels – the branches and needle/leaf material located at the top of a tree

Introduction

The Summer Village of Waiparous (SVW) is 1 of 54 summer villages in the province. It was incorporated on January 1st, 1986. The SVW has a mayor and council, who are responsible for the overall governance of the village and more specifically, the management of all development and land use within the village boundaries and protective services for all SVW residents. Protective services include bylaw enforcement, emergency response (Fire, EMS) and emergency preparedness. The SVW has an agreement with the MD of Bighorn to provide emergency response services. The mayor and council are responsible for the emergency preparedness planning required to protect the residents of SVW. This planning is required for all types of disaster situations; however, this plan focuses on wildfire preparedness and outlines the current preparedness level of the SVW, the work completed to lessen the impact of wildfires on the community and operational guidance for future wildfire preparedness projects.



Figure 1 Overview map of SVW boundaries

The SVW currently has a population of 68 full time residents with 30 homes occupied full-time. There are 66 lots within the SVW boundaries that currently have structures located on them; there 2 vacant lots owned by the SVW. The SVW is separated by Waiparous Creek – there are private residences on both the east and west sides of the creek. The Ghost River runs parallel to the south boundary of the SVW and separates the village from crown and private land to the south. Highway 40 (Forestry Trunk Road) bisects and connects the east and west sections of the SVW. This is the only route into and out-of the community.

The surrounding MD of Bighorn encompasses a variety of land-use types including residential, industrial, recreation, forestry, oil and gas and agriculture.

Description of Area

Climate

The SVW is located within the Upper Foothills Natural Subregion (UFNS) of Alberta. The average elevation for this area of the Eastern Slopes is 1300 meters over varied terrain features. This area of the province receives moderate snow loading throughout the winter and is affected annually by Chinook systems from the west producing high winds and unseasonable temperatures, usually resulting in significant snow melt and vegetation curing.

The UFNS receives the highest average July precipitation of any Natural Sub-region (see Table 1.0); this is a notable factor when determining the seasonal indicators of high or extreme wildfire hazard in the area.

Table 1.0 6-year average rainfall and snow amounts during fire season (May-October)

2006-2012	RAIN (mm)	SNOW (mm)
MAY	6.38	6.09
JUNE	14.11	1.95
JULY	19.68	5.19
AUGUST	4.85	4.20
SEPT	11.23	0.01
OCT	4.00	0.01

Forest Ecology

The forest types in the UFNS are dominated by fire-renewed Lodgepole pine stands, typically with a black spruce understory. White spruce can be found in most river valleys and lower elevations, along with mixed-wood and pure deciduous stands

The transition between the UFNS and Lower Foothills Natural Sub-region is noted by an obvious type change from conifer-dominated to mixed-wood stands. Some indicator shrub species include Labrador tea, Tall bilberry and Grouseberry.



Figure 2 Representative forest stand within the village

Geology and Landforms

The UFNS is characterized by steep, hilly and rolling terrain, merging into the sedimentary foundations of the Canadian Rockies to the west and the open prairie to the east.

The bedrock of the rolling terrain primarily consists of sandstone and mudstone. Coal seams are common in this type of bedrock

Agricultural Land Use

Livestock grazing occurs to the east and west of the Waiparous Village. The area to the east of the village is wide, open valleys leading into open plain – cattle, horses and sheep observed grazing on private lands in this area. The area to the west of the village is comprised of steep, rolling terrain – the valley located at the south end of the Ghost Public Land Use Zone is part of a grazing lease and cattle have been observed grazing in this area

Grazing is a highly-effective management tool for fine fuels and maintenance of fire breaks. Livestock tend to focus their grazing along fence corridors, which further enhances these existing fire breaks by removing the remaining fine fuels on a continual basis.

Industrial Land Use

- Oil and gas
 - The majority of the oil and gas presence in the area is remote well-sites. The only major industrial gas operation in the area is the Wildcat Gas Plant, located 19km to the southeast of the SVW.



Figure 3 Natural gas lines within the SVW are well marked

- Forestry
 - The Forest Management Agreement holder in the Waiparous area is Spray Lakes Sawmills. Their FMA extends to the southern boundary of Kananaskis Country, the BC/Alberta border to the west, HWY 22 to the east and the James River to the north.
 - A Community Timber Program Forest Management Unit (FMU B9) is located west and southwest of the SVW. The program allows small operators and residents to harvest timber for commercial purposes through issuance of a Commercial Timber Permit (CTP). A CTP is “a timber disposition issued pursuant to section 22 of the Forests Act, and sections 74.1 to 74.8 of the Timber Management Regulation authorizing a person to harvest Crown timber.” (Alberta ESRD website)

Recreational and Public Land Use

- Ghost Public Land Use Zone (GPLUZ)
 - The GPLUZ encompasses 1,500 square kilometers and is located northwest of the SVW. The purpose of the GPLUZ is to “Address the growing demand for recreation and the potential conflicts with other resource values and stakeholders in the Ghost-Waiparous area” (Alberta Tourism, Parks and Recreation)
 - The area is popular for mechanized recreation (ATV, UTV, 4x4 vehicles) throughout the year, with peak usage being in the summer months and consequently the peak of fire season. Given the area’s proximity to Calgary, the primary type of recreation is day-use, with a large percentage of recreationists leaving the area and not camping overnight. There are a number of campgrounds and random camping areas available in the GPLUZ, which can reach full capacity throughout the summer and increase the potential for wildfire resulting from unattended campfires and other human-caused fires.

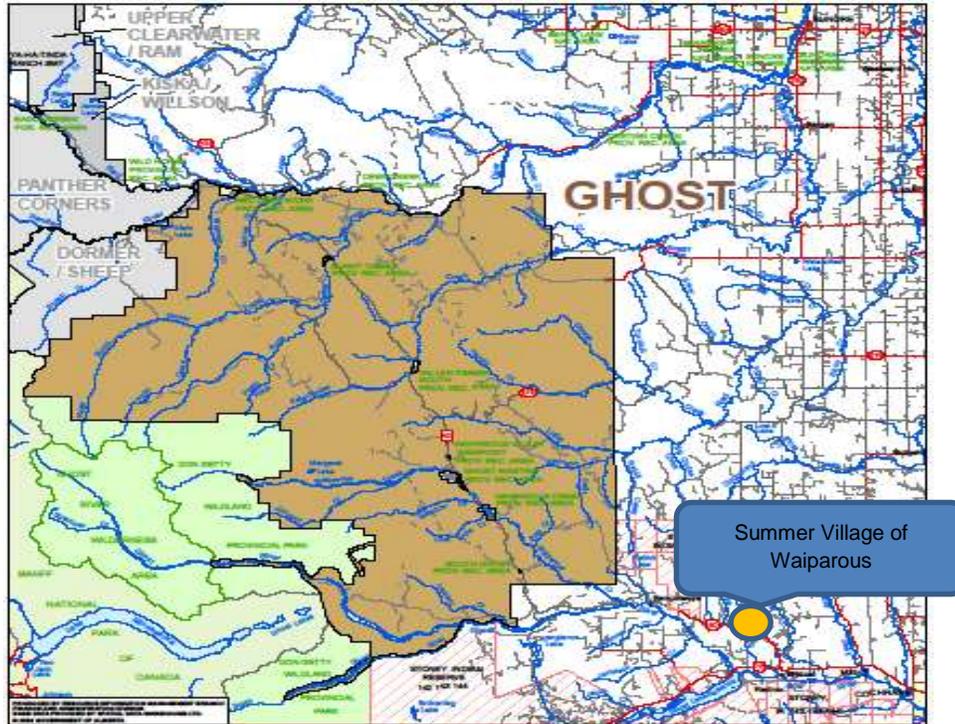


Figure 4 Map of Ghost Public Land Use Zone (source ESRD)

Highway 40

- There are a number of recreation-based tourism operators in the immediate vicinity of the SVW, including paintball and “capture the flag” facilities, horseback outfitters and ATV tour operators. These attractions draw in visitors from Calgary and elsewhere, which increases vehicular traffic through the SVW and potential for human-caused wildfire in the HWY 40 corridor on the south boundary of the SVW.

Wildfire Risk Assessment

Assessment of Forest Fuels and Fire Behavior

Forest Fuels

The term “forest fuels” refers to the vegetation present in a forest stand that can be ignited, sustain and spread wildfire. These fuels include standing timber (pine, spruce), shrubs (willow, juniper) and fine surface materials (needles, branches, downed timber). Characteristics of fuels considered in wildfire risk assessment are: ease of ignition, fuel continuity, patch size, forest health, and flammability.

Ease of ignition is the time required for forest fuels to fully ignite and spread. For example, dry grass ignites easily and promotes rapid fire spread. Large woody debris (stumps, fallen trees) however, requires more time to fully ignite and fuel consumption (burning) is slow.

Fuel continuity refers to the ability of a fire to continuously spread through a forest’s crown or surface fuels without interruption. The aim of forest fuel management is to break up the fuel continuity of a forest, by selective thinning for example. This will interrupt the spread of crown and surface fire, by increasing the space between standing trees and bringing fire out of the crowns and down to the surface where it can be managed more easily.

Patch size refers to the area a forest stand covers. In relation to wildfire behavior, knowing the amount of forested area available to be burned may help to determine, for example, the suppression resources, operational tactics and time required to manage a wildfire in that size of area.

Forest health is the condition of a forest based on stand density, forest insects (Mountain pine beetle), disease and local factors (drought, wind).

- High-density forest stands have the ability to sustain crown fire
- Stands affected by insects or disease, for example, may have significantly lower moisture content within their main stem and branches, which can produce mass die-off and blowdown
- Similar to insect and disease, abnormal drought and high winds can lead to blowdown, which increases the amount of surface fuels available for consumption in a wildfire

Flammability is the ability for fuels to ignite and sustain fire based on their structural and chemical makeup. Conifer trees, such as spruce and pine, have natural oils present in their needles and bark which make them highly flammable. Deciduous trees, such as aspen and Balsam Poplar, have high water content in their main stem and branches, which make them less flammable.



Figure 5 Typical Lodgepole Pine stand with fuel modification completed (pruning and removal of dead and down fuels)



Figure 6 Typical coniferous stand within the Back 40 woodlot area (untreated)

Table 2.0 Fuel type codes within the Canadian Forest Fire Behavior Prediction System (FBP) that are present within the SVW and adjacent private and crown lands

Fuel Type	
C3	Lodgepole Pine
C2	Boreal Spruce (Black Spruce)
D	Aspen
O1	Grasses
M1	Boreal Mixedwood, leafless
M2	Boreal Mixedwood, green

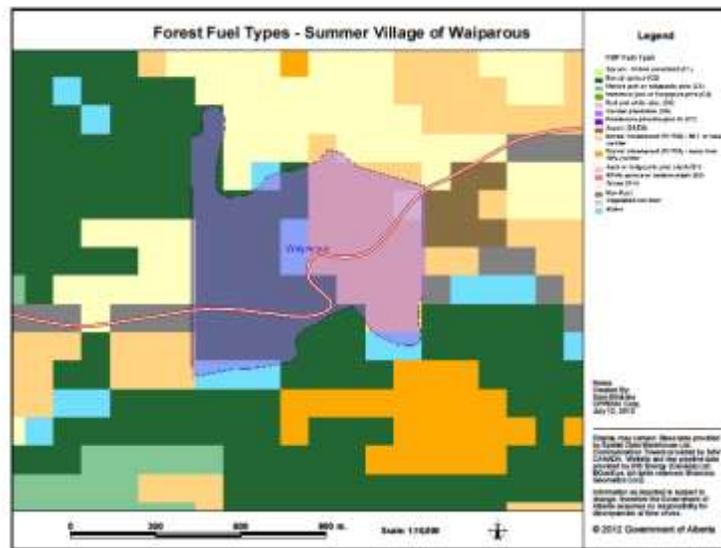


Figure 7 Shows forest fuel types present within the SVW and surrounding area

Canadian Forest Fire Behavior Prediction System (CFFBPS)

The CFFBPS provides a quantitative prediction of fire behavior, specifically the rate of spread, forest fuels consumption and head fire intensity. This system is used across Canada by fire management agencies as a decision making tool in wildfire suppression operations.

Fire Behavior and Potential (FBP)

Fire Behavior is the result of the interaction between the three elements of the Fire Triangle – fuel, weather and topography. All wildfire suppression plans depend on the anticipated behavior of a fire.

Fire Behavior Potential is the anticipated fire behavior characteristics of an area based on the type, density and structure of forest fuels, predominant winds and topography of the area.

(Refer to Appendix 3 for FBP maps – Spring, Summer, Fall)

Table 3.0 Typical fire behavior in local fuel types

Fuel Type		Wildfire Behavior under High Wildfire Danger Level
C3	Lodgepole Pine	Surface, torching, and crowning fire
C2	Boreal Spruce (Black Spruce)	Almost always a crown fire
D1	Leafless Aspen	Always surface fire or ground fire
O1	Grasses	Intense surface fire – possible rapid spread
M1	Boreal Mixedwood, leafless	Surface, torching, and crowning fire
M2	Boreal Mixedwood, green	Surface, torching, and crowning fire

Head Fire Intensity (HFI)

HFI measures the predicted intensity, or energy output, that the head of a fire may produce. This information dictates where fire managers will focus their efforts and place resources during wildfire suppression efforts. (Refer to Appendix 3 for HFI maps – Spring, Summer, Fall)

Wildfire Threat Potential (WTP)

WTP is determined by analyzing the available forest fuels, both standing and on the surface and their density, structure and age class. The WTP does not account for topography, winds or precipitation. For example, a dense conifer stand (pine, spruce) with large veteran and smaller sapling trees has a higher WTP value than a well-spaced deciduous stand with no understory growth and short, browsed grass.

(Refer to Appendix 3 for WTP maps – Spring, Summer, Fall)

Wind and Topography

The SVW is located on the eastern slopes of the Southern Rockies. This type of landscape is characterized by rocky peaks and steep and rolling terrain. The influence of the topography and local winds can make fire behavior in this area highly unpredictable.

Wind is one of the most significant and closely monitored aspects of a wildfire. In the SVW area, the predominant wind direction, as outlined in Table 4.0, is from the west or southwest.

Topography plays a significant role in fire behavior and predicting the direction and rate of spread of a fire. Fire spread is faster uphill than downhill, due to the radiant heat of the fire front pre-heating the forest fuels ahead of the fire front and creating pockets of warm air that draws the fire uphill. The pre-heated fuels ahead of the fire front also allow for faster ignition from fire brands (“sparks”) spread from the upslope winds.

Table 4.0 6-year average daily wind directions

2006-2012	# of Days	%
SW	265	27
W	160	16
NW	143	15
NE	131	13
SE	119	12
N	64	6
S	46	5
E	26	3
CALM	32	3
Total:	986	100%



Figure 8 Typical topography looking north along Jamieson Road

Fire History

Local Wildfire Response

Between 2003 and 2012, ESRD wildfire crews responded to 50 fires within a 15km radius of the SVW. Of those 50, 43 (86%) were human caused. The other 7 (14%) were lightning, undetermined or prescribed burns. Due to the high density of recreation immediately adjacent to the SVW, the highest risk of wildfire approaching and affecting the community will be from human-caused fire. The increased population density of the SVW in the summer also means increased risk of a wildfire or structure fire starting within the community and spreading into the surrounding forested land.

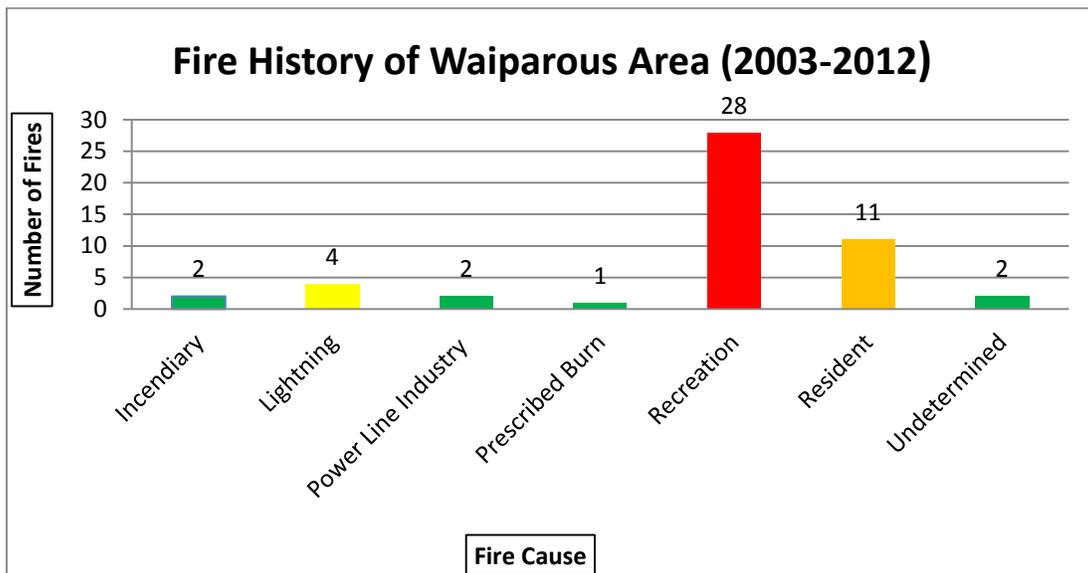


Figure 9 The number of fires, sorted by cause, responded to by ESRD within Ghost/Waiparous area



Figure 10 Fire occurrence for the SVW area

Inspection of Structures and Properties

In June of 2013, consultants from CPPENV completed a structure and property assessment of every accessible property within the SVW boundaries. The structures and surrounding properties were only observed from the road; this limited the amount of detailed data that could be collected.

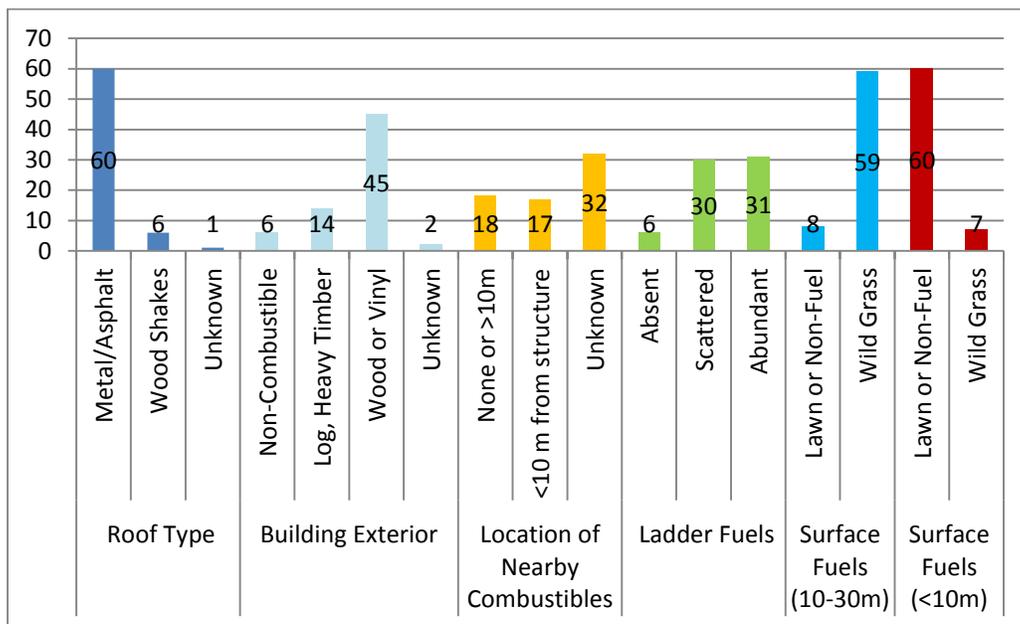
The total number of properties, with residences, assessed was 67. There are a number of vacant lots adjacent to developed properties within the Village, whose ownership was not known or immediately obvious at the time of the assessment.

The properties were assessed for flammable building material on the main residence and all visible outbuildings. Other combustible materials such as woody debris piles, fuel storage or construction waste were also noted. Table 6.0 outlines the findings of the assessment.



Figure 11 Typical White Spruce stand within the SVW showing an abundance of ladder fuels

Table 5.0 Outline of findings from roadside inspection of 67 properties within the SVW



Roof Type

In the wildland-urban interface, the primary cause of structure fire and loss is fire brands from approaching wildfire being transported onto the roofs of nearby structures with flammable roofing material. The fire brands settle into crevasses and between roofing sections (primarily wooden shake roofs) and ignite the roofing material, burning into the interior of the structure. Non-flammable roofing material such as aluminum or fire-rated asphalt shingles is the primary preventer of ignition and spread of fire brands when they are transported onto these types of roofing material.

The majority of roofing material (89%) found on residences and outbuildings was observed to be non-combustible materials; metal, terra cotta or asphalt. Combustible roofing materials

comprised 9% of residences, primarily wooden shakes. The other 1% are unknown as the assessment was conducted from the main public roadway; the line of sight into some properties was obstructed by vegetation or a long driveway and roofing materials could not be observed.

RECOMMENDATIONS:	
LONG-TERM	<p>Replacement of roofing material When replacement of roofing material is required, consider installing asphalt or metal roofing material instead of wooden shakes or other flammable material</p>
ANNUAL	<p>Continued maintenance of structures on property (when required) Continued monitoring and repair of roofing and decking materials, fences and outbuildings</p>

Building Exterior

The second most important feature of a rural residence is the external building material. Wooden and vinyl siding are highly susceptible to radiant heating from approaching wildfire and when ignited/melted, these materials spread fire quickly throughout the rest of the attached structure and adjacent buildings.

Combustible materials make up 89% of the inspected residence’s exterior material. These materials include vinyl, wooden paneling and heavy timbers. 9% of the residences used non-flammable materials for exterior covering. At 2 of the 67 properties, the residences were not immediately visible to assess the building exterior.

RECOMMENDATIONS:	
LONG-TERM	<p>Replacement of building exterior materials When replacement of building exterior is required, consider installing non-combustible or fire resistant material instead of wooden or vinyl siding</p>

Location of Nearby Combustibles

Combustibles on a residential property include vegetation and construction debris (wood, plastics, etc.) and firewood (decked or split). Other types of combustibles include propane tanks, stored fuels (gas, diesel), paints/solvents and lawn care products (herbicides, fertilizer). These items are quite often overlooked when assessing a property for wildfire hazard. In a wildfire situation, these items, in combination with building materials and poor vegetation management practices, can be extremely hazardous to emergency responders, can increase the difficulty to control the wildfire and can result in the total loss of structures and surrounding vegetation.

26% (18 of 67) properties assessed had no visible combustible materials or the materials were greater than 10 meters (Zone 2) from the primary residence. 17 (25%) of the total properties assessed had combustible materials within the Zone 1 area of the primary residence. These materials were primarily firewood and piles of pruned tree branches. The inspection of the

remaining properties was inconclusive for combustibles due to setback from road and dense vegetation.



Figure 12 Combustible fuels (firewood) piled along a wooden fence increases the difficulty to control wildfire



Figure 13 Fuelwood piled a safe distance from structures makes it easier for protection of property during a wildfire

RECOMMENDATIONS:	
IMMEDIATE	<p>Move firewood piles that are in close proximity to residences Re-locate any firewood piles within a 10 meter radius of the main residence and all outbuildings; do not pile under or next to conifer trees</p>
IMMEDIATE	<p>Dispose of all non-essential flammable household materials - fertilizer, paints, solvents or fuels Paint, paint thinner, pesticides, fertilizer and spare fuels should be disposed of if not essential - ensure that the items being stored are in CSA or ULC approved containers and are kept away from the main residence</p>
SHORT-TERM	<p>Remove or relocate excess building materials Any accumulations of building materials (lumber, plywood, etc.) should be removed from the property or moved to a suitable location (away from all conifer trees) greater than 10 meters from the main residence or any outbuildings</p>

Surface Fuels

Surface fuels are vegetative material that has accumulated on the forest floor, is lacking moisture and is capable of sustaining and spreading fire. These types of fuels include dry leaves, conifer needles/branches and dead woody debris (fallen trees, discarded firewood, etc.). Excessive and continuous accumulations of this type of material, combined with poor conifer pruning practices, can easily turn a small, localized surface fire into a running crown fire.

(< 10 meters)

59 or 88% of the properties surveyed had wild grass and other surface fuels present within Zone 1 of the main residence. The remaining 12% had well-maintained lawns or areas of non-fuels within Zone 1.

(10 - 30 meters)

60 or 89% of the properties surveyed had well-maintained lawn or non-fuels within Zone 2 of the main residence. 7 or 10% of the properties had wild grasses and other surface fuels within Zone 2.



Figure 14 Debris pile from stewardship day FireSmart work still requires disposal



Figure 15 Woody debris piles are common on private property and are the responsibility of the landowner to dispose of them

RECOMMENDATIONS:	
IMMEDIATE	<p>Maintain surface fuels and vegetation on property Assess your capabilities for maintaining the vegetation on your property (pruning conifers, removal of dead standing trees, mowing grass, raking of fine fuels) and establish goals that are realistic for your availability and resources</p>

Ladder Fuels

Ladder fuels are defined as “the vertical arrangement of forest fuels that allow fire to spread from the forest floor, up the lower branches of conifer trees and into the crown”. Once fire has reached the crown or canopy of a conifer stand, the rate of spread increases exponentially and the head of the fire is incredibly hard to control.

By removing the lower branches and continually mowing the tall grass in patches of conifer trees, the risk of fire spread from surface fuels to the crown is significantly reduced.

In total, 31 (46%) of the 67 properties assessed had abundant ladder fuels present; a label of “abundant” is applied if >75% of the trees on the property have ladder fuels closer than 2 meters to the ground. Equally as many properties (44%) had scattered ladder fuels present; scattered ladder fuels are considered to be 25-75% of the conifers on the property having branches closer than 2 meters to the ground. 8% of the properties assessed had all visible conifers pruned to >2 meters in height.



Figure 16 Lodgepole Pine stands typically are self-pruning and have dead and dry ladder fuels



Figure 17 Spruce and spruce mixedwood stands typically have ladder fuels comprised of live branches

It should be noted again that these observations were made from the main access road. Only the areas of the properties easily observed from the road were included in this survey.

RECOMMENDATIONS:	
IMMEDIATE	<p>Prune all conifer trees within 20 meters of your home Prune all lower branches on conifer trees within 20 meters of your home to 2 meters above the ground</p>



Figure 18 Hazard rating for private properties within the village - using Wildfire

Wildfire Risk Mitigation Strategies

Resident FireSmart Treatments and Maintenance

Current Conditions

Private property within the SVW boundaries is the area of highest risk for wildfire ignition and spread from within the village. This is due to the following:

- individual or small patches of conifer trees within 10-20 meters of main residences and outbuildings
- large accumulations of yard debris (branches, wood chips, firewood) stockpiled in close proximity to residences and throughout properties; and
- a high percentage of combustible roofing materials present on resident houses and outbuildings



Figure 19 Stewardship days event with community volunteers and ESRD support

Goals and Objectives

A collaborative effort between the SVW administration and residents would reduce this risk drastically. Simple tasks completed on an on-going basis can eliminate a large percentage of the risk. Some of these tasks include removal of all fine fuels within a 10 meter radius around the home, pruning all conifers to 2 meters around the entire tree, relocating firewood piles to areas of non-fuels (no overhead vegetation, bare ground) and commitment to convert flammable roofing materials to non-flammable material types. With the assistance of the village administration, materials gathered from private property cleanup can be chipped or gathered in a large disposal bin and removed from the site.

RECOMMENDATIONS:	
IMMEDIATE	<p>SVW provides debris management options for use by residents Residents should utilize all debris management program options provided by the SVW (e.g. debris disposal bins, roadside chipping and winter burning permits)</p>

SV Waiparous Forest Fuel Reduction and Maintenance

Current Conditions

Since the last Community Wildfire Plan was developed in 2008, the SVW has made significant progress in forest fuel reduction within the village boundaries. The conifer pruning and surface fuels reduction throughout the contracted treatment and stewardship areas was excellent and met the standards for a FireSmart treatment area. This initial treatment, with the addition of short-term canopy thinning and long term forest fuel conversion programs, will create strategic fuel-converted zones within the village that will act as barrier to fire spread.



Figure 20 Fuel modification (pruning and removal of dead and down fuels)

Goals

The primary goals of the SVW FireSmart Committee and Council should now be the following:

- Continued maintenance of completed FireSmart treatment areas
- Maintenance of all green space and SVW-owned properties within the village
- Assisting residents in initiating and maintaining their own forest fuel reduction plan for their property

RECOMMENDATIONS:	
SHORT-TERM	<p>Implement community debris disposal program in support of resident's vegetation management efforts</p> <p>Suggested methods for disposal of village and resident yard debris:</p> <ol style="list-style-type: none"> 1) Bin collection - removes material with no hazard, cost effective 2) Roadside chipping - high cost involved, labour intensive, contractor required 3) Winter burning - requires inspection by a Fire Guardian and a fire permit
LONG-TERM	<p>Maintenance of FireSmart treatment areas</p> <p>Using the suggestions outlined in Appendix 2, maintain vegetation in treatment areas on an annual basis, using summer students, MD personnel or contractors</p>

Fortis Alberta

Overhead power lines have the potential to ignite a wildfire when they come in contact with flammable vegetation. Fortis Alberta has adopted a program of ongoing maintenance of their powerline right-of-ways (ROW) throughout Southern Alberta. The right of way standard is 7 meters from the outside line on both sides. This program includes a 5-year rotation of hazard tree assessment and removal and tree trimming/pruning. The program standards include 6 meter clearance from any 3-phase line (primary) (main line running through Waiparous Village),

with a minimum of 1.2 meters at all times. Deciduous or any slow-growing type of vegetation within a right-of-way is required to have a 4.5 meter clearance.



Figure 21 Fortis powerline within SVW

RECOMMENDATIONS:	
ANNUAL	<p>Communication with Fortis AB representative Communication with local Fortis vegetation manager regarding annual ROW maintenance, future FireSmart projects, etc. - Inclusion in future Stewardship Days - Notify area representative of suspect trees and vegetation on or in close proximity to ROW</p>

Emergency Response

Declaring a State of Local Emergency and Cost Recovery

State of Local Emergency

Under the Alberta Emergency Management Act section 21, local authorities can declare a state of local emergency to create a legal state of affairs of a temporary nature so that the local authority may take extraordinary actions to deal with the situation at hand. Examples of extraordinary powers available under section 19 (1) of the Emergency Management Act include:

- acquire real or personal property (e.g. resources, equipment)
- conscript people to assist with the emergency
- enter land and buildings without a warrant

- control or prohibit travel
- remove structures, trees, crops
- fix prices for essential items, such as food, clothing, fuel, equipment, medical supplies
- evacuate people

Section 28 states "No action lies against a local authority or a person acting under the local authority's direction or authorization for anything done or omitted to be done in good faith while carrying out a power or duty under this Act or the regulations during a state of local emergency". "Good Faith" requires decisions to be made openly and honestly. A state of local emergency may be for all or any part of the municipality.

The declaration must identify the nature of the emergency and the area in which it exists.

The local authority is also required to notify the affected population.

A state of local emergency lapses after 7 days unless it is renewed or cancelled by the local authority or cancelled by the Minister. After a local authority declares a state of local emergency, they would monitor the situation and cancel the state of local emergency if it is no longer required.

(Alberta Municipal Affairs website: <http://apsts.alberta.ca/online-courses/bem/chapter-5-municipal-responsibilities/declaration-of-a-state-of-local-emergency/>)

A declaration of a state of local emergency is not a requirement in order for a local authority or citizens to be eligible for financial assistance through a disaster recovery program. The Disaster Recovery Regulation governs eligibility and criteria for a disaster recovery program. However, section 24 (2) of the Act says that the local authority of a municipality may borrow, within 60 days of declaring a SOLE, any money necessary to pay expenses caused by the emergency.

A local authority is not required to declare a state of local emergency in order to activate their emergency operations centre or their municipal emergency plan. Portions or the entire municipal emergency plan may be activated as required to manage an emergency or disaster. The local authority must forward a copy of the official declaration of the state of local emergency to the Minister, Alberta Municipal Affairs via the AEMA.

The guiding document for operational and administrative response in an emergency situation, such as a wildfire, is the "Summer Village of Waiparous – Municipal Emergency Plan".

Below is an excerpt from the Municipal Emergency Plan outlining the requirements for activation of a State of Local Emergency:

"This plan may be activated in whole or in part:

(1) On a declaration of a State of Local Emergency by those authorized to do so in accordance with the Summer Village of Waiparous Municipal Emergency Services Bylaw. See below.

(2) On a declaration of a Provincial State of Emergency by the Lieutenant Governor in Council in accordance with the Alberta Emergency Management Act.

(3) When NO declared state of emergency exists:

- by Council; or
- by Mayor, or Committee of Council;
- by the Director Emergency Management (subject to immediate report to a Member of Council and prompt ratification by Council).”

Cost Recovery

The need for immediate and organized financial assistance to initiate the recovery process after a major disaster in Alberta has been widely illustrated in recent years with the Slave Lake fires of 2011 and more recently, the Southern Alberta floods of 2013.

The Alberta Ministry of Municipal Affairs, along with the Alberta Emergency Management Agency (AEMA) and Alberta Environment and Sustainable Resource Development (ESRD) have created the “Alberta Guidelines for Municipal Wildfire Assistance Program (MWAP)”. These guidelines support the administration of the provincial MWAP. The goal of the program is to “provide financial assistance to municipalities who incur extraordinary incremental costs in the suppression of wildfire outside Alberta’s Forest Protection Area (FPA)”. The lands within the boundaries of the SVW are not considered to be within the FPA; therefore, in the event of a catastrophic wildfire, the SVW may be eligible for funding (Section 3.1 of the MWAP Guidelines) through this provincial program.

The full MWAP Guidelines document can be found at:

[http://www.aema.alberta.ca/images/Municipal_Wildfire_Assistance_Guidelines\(1\).pdf](http://www.aema.alberta.ca/images/Municipal_Wildfire_Assistance_Guidelines(1).pdf)

The general principles of the guidelines are as follows:

- “The MWAP is intended to assist in:
 - helping reduce both the risk and losses associated with wildfires outside FPA;
 - supporting local emergency preparedness for emergencies and disasters; and
 - motivating municipalities to implement wildfire prevention initiatives.
- Only those losses and damages for which insurance was not readily and reasonably available at the time of the event are eligible for financial assistance.
- Only those losses and damages for which a responsible party cannot be determined at the time of the event are eligible for financial assistance.

- There is an underlying principle of cost share involved in the MWAP whereby once a municipality has incurred a cost of \$25 per capita, costs should be shared using the province's Sustainability Fund. The provincial share has been set at 75 per cent of the total eligible amount. The premise for this formula is based on the formula used in federal cost shared disaster recovery programs.”

MWAP Approval Process

In order for an MWAP to be approved and initiated, the following steps (in order) must be taken:

1. Information Gathering
 - a. ESRD and/or AEMA is notified a wildfire situation
 - b. ESRD and/or AEMA monitor the situation to determine extent of loss, damage and impact
 - c. The AEMA provides the affected municipalities with the appropriate application forms to assist with a timely and effective application process.
 - i. For the application to be considered for approval, it must be submitted to the AEMA with 90 days of the initial day of the event.
2. Analysis
 - a. Information relating to the event will be reviewed by the AEMA Disaster Recovery Committee to determine eligibility for funding through the MWAP.
 - b. Once the review is completed, the Disaster Recovery Committee will provide recommendations to the Minister of Municipal Affairs concerning the approval of a MWAP.
 - c.
3. Approval and Administration
 - a. The Minister of Municipal Affairs makes the final decision on the approval of a MWAP application; once approved, the designated Managing Director will administer the MWAP. This includes all aspects of the program (delivery, design and availed resources).

Evacuation

In the event of a wildfire approaching or starting within the SVW, successful evacuation of all residents is possible with sufficient planning and preparation. As shown in the map below, residents living west of Waiparous Creek and the bridge would proceed to Highway 40 and travel east to Benchlands and Cochrane. On the east side of Waiparous Creek and the bridge, residents could utilize Highway 40 for travel east, as well as Chickadee Road to Eagle Drive. Directing residents to travel west in the event of a wildfire is not advised, as the nearest egress route from the Ghost Public Land Use Zone is 28km north at the Water Valley turn off. This route travels through a high-use recreational and heavily forested area and could become hazardous with a change in wind direction or a new fire start in the area.

RECOMMENDATIONS:	
IMMEDIATE	<p>Distribution of evacuation route maps to residents Distribute evacuation route maps to residents showing the desired direction of travel and roads to avoid in an evacuation due to a dead-ends or turnarounds</p>



Figure 22 Evacuation routes for residents of the SWW

Roadways and Emergency Access

The current state of the roadways within the village would not allow for safe access by emergency response personnel and egress by residents. A standard fire engine is between 2 and 3 meters wide; the average road width in the village is between 3 and 4 meters. This deficiency in road width would not allow a resident’s personal vehicle to safely pass by an emergency response vehicle without driving in the ditch or being blocked completely from exiting the area. Fire engines, tenders and other response vehicles would be limited to staging from Highway 40 and running smaller equipment and extensive water delivery systems to residences from that point. (Refer to Appendix 5)



Figure 23 Typical subdivision access road



Figure 24 A turn-around at the end of access roads is critical for emergency response vehicles

RECOMMENDATIONS:	
IMMEDIATE	<p>Installation of “No Parking” signs along all municipal roadways within SVW boundaries Install signs in locations where road is narrow and no designated pull-out is present; Used to deter residents and visitors from parking on road shoulders and impeding the already limited access by emergency response personnel</p>
IMMEDIATE	<p>Emergency response does not compromise evacuation Emergency response and wildfire suppression plans should include provisions for completing structural and wildfire response operations without compromising evacuation efforts. This involves preventing response vehicles or equipment from entering private driveways and blocking resident egress to Highway 40.</p>

Fire Equipment and Response

The SVW currently has an agreement with the MD of Bighorn to provide emergency response services to the village. The primary response station for all structure and wildfires within the village boundaries is the Ghost River Fire Department located in Benchlands; this station is not manned full-time, is volunteer-run and responders are on-call. Table 7.0 and Table 7.1 show the equipment that would typically respond to a wildfire within the village boundaries and the equipment available within the SVW for use in wildfire suppression.

Equipment

Ghost River Fire Department

Table 6.0 – Typical response equipment for Ghost River FD to SVW

Equipment Type	Apparatus Type	Capacity (gal)	Notes
Front Line	Engine	1000	Standard Engine
Second Line	Engine	1600	Standard Engine
Water Delivery	Tender	-	Exshaw FD
Water Delivery	Portable Water Tank	1800	Exshaw FD
Bush Buggy	4x4 Crew Cab Pickup	200	Fire Caddy w/ Foam
Hand Tools	Shovels, Pulaskis	-	-
Hand Tools	Backpack Water Tank	-	-
Water Delivery	Bladder Tank	1500	Exshaw FD

Summer Village of Waiparous

Table 6.1 - Wildfire suppression equipment located in the SVW Fire Shed

# of Items	Item Name	# of Items	Item Name
800' (8 x 100)	1.5" forestry hose (2 w/out quick connect) (for use w/ MK3)	3	Pulaskis
500' (5 x 100)	1.0" forestry hose (for use w/ MK3)	4	Shovels
2	500' quick deploy bags (1.5" forestry hose) (for use w/ MK3)	7	Fire brooms
400' (4 x 100)	4" forestry hose (for use w/ Kohler pump)	2	Pump fuel containers (1 for MK3
3	Hydrant wrenches	1	DR Brush Mower
1	Hose strangler	1	Spare commercial battery for Kohler pump
2	Gated Y's (1 forestry, 1 reducer 3" to 1.5")	-	Various road signs and pylons
1	Siamese w/ quick connect	1	Cart and dolly for Kohler pump
3	Fog nozzles (forestry)	1	First Aid Kit (Alberta # 3) - Stocked
1	Mark 3 pump w/ intake hose + foot valve	1	Set of ear muffs
1	Kohler 2-stroke trash pump w/ intake hose + foot valve	1	10lbs Fire Extinguisher



Figure 25 Fire pump used to fill cistern



Figure 26 3-inch diameter fire hose



Figure 27 Interior of fire shed



Figure 28 Firefighting hand tools

The following recommendations will further compliment the available equipment and response capabilities of emergency personnel:

RECOMMENDATIONS:	
IMMEDIATE	<p>Purchase 4-6 backpack water tanks and hand pumps Purchase of 4-6 solid plastic or collapsible backpack water tanks for use in wildfire suppression - maintain often and store in a weather controlled environment (Chapter 2-25 in the "FireSmart Guidebook")</p>
IMMEDIATE	<p>Purchase of portable water tanks and/or bladders for use in water delivery systems Portable water tanks and bladders to be used in water delivery systems where access by engines and tenders is not viable or safe. Portable water systems can be setup on public village roads, access routes and driveways. SVW to initiate discussion with MD Emergency Services</p>

IMMEDIATE	<p>Assignment of persons responsible for monitoring and maintenance of fire suppression equipment Assigning 2 or more permanent residents to maintain all fire suppression equipment</p>
IMMEDIATE	<p>Access to fire equipment Consider use of a lock or electronic security system which requires a combination rather than a key for access - the code can be given over the phone or by text</p>
IMMEDIATE	<p>Preparation of initial attack kits - Prepare and store initial attack kits consisting of hand tools and water delivery system kits (Appendix 6 outlines the contents of an initial attack kit) - The Mark III pump kit should be visibly labeled as an "Initial Attack Pump Kit" and made visible and accessible within the fire equipment shed. The intake hose that is required for use of the Mark III pump should be attached to the box containing the pump, so all required equipment will be available and transported to the site of the fire</p>

Response

The MD of Bighorn – Ghost River Fire Department are currently the only primary and legitimate first responders for structure and wildfires within the SVW. The response personnel are highly trained and knowledgeable, and are supervised by professionally trained firefighters. In the event of a larger wildfire event, ESRD Forest Protection staff will be contacted to assist the MD Fire Department staff.

1. Currently, there is no consistent private and village lot numbering and display system within the SVW. The ability for emergency personnel to respond quickly relies heavily on precise location information for the incident. The setback of some properties from the road may not allow emergency responders to visually confirm the location of an incident if there is no standard lot identifier at roadside.

2. In the past, residents of SVW have been first responders to structure and wildfires within the village boundaries. This is understandable given that they reside within the village and have high-value properties that they would like to protect. Some of the residents who have responded to these situations in the past have had no formal training in fire suppression and are not formal members of the local volunteer fire department. By engaging in fire suppression within the village, these individuals put themselves at risk of being liable for losses resulting from the fire and more importantly, serious injury or death. *The SVW council and administration also put themselves at risk of legal action, by relying on untrained residents to respond to wildfire within the village and the possibility for loss of property and life that may result from this.*

RECOMMENDATIONS:	
IMMEDIATE	<p>Private and village lot numbering within SVW Implementing a consistent, visible lot numbering system for each private lot within the SVW, in consultation with local emergency response agencies</p>
IMMEDIATE	<p>Full-time residents volunteering with local FD Full-time residents who wish to be first responders to wildfire in the SVW should volunteer with the Ghost River FD and receive formal training in structure and wildland fire suppression (S-100) and basic Incident Command System training (ICS-100); without formal training and association with the volunteer FD, residents who respond to any type of fire are not covered under WCB or most personal insurance policies</p>

FireSmart Program Initiatives

Alberta FireSmart Community Grant Program

In 2012, after submission of an application outlining their intentions to complete FireSmart-related projects within their community, the Summer Village of Waiparous was awarded a grant of \$50,000 to complete a variety of forest fuels management projects within the village boundaries and contract the services of a FireSmart Planning firm to update the existing Community FireSmart Plan, create a Wildfire Preparedness Plan and prepare a Maintenance Plan for completed forest fuel management projects. All three of these projects were completed in the fall of 2013.

RECOMMENDATIONS:	
SHORT-TERM	<p>Village administration to continue seeking funding for fire-related projects Continue to seek funding and grants for forest fuel management projects, training and education projects within the village. Some sources of funding may include federal and provincial emergency preparedness funding and grants and municipal fire training and equipment grants</p>
ANNUAL	

FireSmart Committee

The creation of a FireSmart Committee to represent the SVW residents, local provincial government and stakeholders was a vital component in the development and maintenance of a Community FireSmart Program. In the spring of 2013, the four members of the SVW FireSmart Committee met for the first time, in a formal meeting with FireSmart Planner Sam Stickney of CPPENV. The committee consists of two Village Councilors, one full-time Village resident and

one representative from the Forestry and Emergency Response section of the Calgary ESRD office. The intention of the committee is to incorporate more resident input by adding additional full-time resident members to the FireSmart Committee.

RECOMMENDATIONS:	
SHORT-TERM	<p>Resident FireSmart Recognition Program 1) Develop recognition program for residents who have met FireSmart standards on their property; the program would recognize them with a "FireSmart Property" or similar sign to mount on their property 2) The program would track their FireSmart treatment maintenance in order to keep their status as a "FireSmart Property"</p>
ANNUAL	<p>Continued coordination of Stewardship Days Continued annual Stewardship days; inclusion of residents, ESRD staff, local stakeholders (Fortis AB); designating resident "Volunteer" properties to have FireSmart treatments completed on</p>
ANNUAL	<p>Communication with Fortis AB representative Communication with local Fortis vegetation manager regarding annual ROW maintenance, future FireSmart projects, etc. - Inclusion in future Stewardship Days - Notify area representative of suspect trees and vegetation on or in close proximity to ROW</p>

FireSmart Canada – Community Recognition Program

The FireSmart Canada – Community Recognition Program is modeled after the FireWise Community Recognition Program currently operating in the United States. It allows communities within the wildland-urban interface to be recognized and supported in their efforts to decrease the impact of catastrophic wildfire on their community by organizing their efforts and resources to effectively complete and maintain forest fuel management projects within their community and take ownership of their work and become part of a national network of similar communities achieving similar goals. The steps toward certification as FireSmart Community include training of a local FireSmart Representative, creation of a FireSmart Committee, creation of a Community FireSmart and Preparedness Plan, ongoing maintenance of treatment areas and financial support for the program from within the community (\$2 per capita).

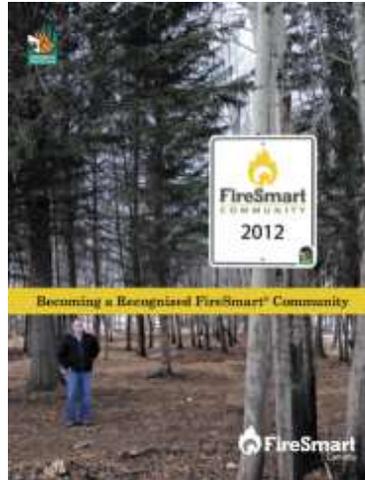


Figure 29 Guidelines are established for becoming a recognized FireSmart Community

SHORT-TERM	<p>RECOMMENDATIONS:</p> <p>Partnership with ESRD to join FireSmart Canada - Community Recognition Program Partnership with ESRD to initiate the FireSmart Community Recognition Program within the SVW and maintain membership through Stewardship Days, individual resident projects and overall buy-in from residents</p>
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Forest Fuels Management Projects

Completed Treatments

A total of 5.02 hectares have been treated to FireSmart standards in the SVW through contracted projects and Stewardship events. Countless more areas have been treated on private property. Below are the specifics of each project:

Contracted Projects

In the winter of 2012/2013, crews from H.I.S Ventures initiated a number of small fuels management projects within the Summer Village of Waiparous. This was the first contracted fuel management project completed within the village. In total, the contractor treated a total of 4.4 hectares (2.0 hectares - Phase 1, 2.4 hectares - Phase 2). The treatment included removal of trees infected with disease, insects or with extensive visual damage. All vegetative debris was piled in appropriate locations and burnt when environmental conditions allowed.



Figure 30 Fuel modification underway in a typical spruce stand



Figure 31 Spruce stand after fuel modification is complete

Stewardship Days

A collaborative effort between the residents of the SVW and ESRD Forest Protection staff allowed for 0.62 hectares to be treated during SVW Stewardship Days. With assistance from local Junior Forest Ranger crews and ESRD staff, the SVW residents were able to complete tree removal, pruning and removal of dead surface vegetation in two strategic areas of the Village on Stewardship Days in June 2007 (0.32 hectares) and July of 2009 (0.30 hectares).



Figure 32 Fuel modification on a stewardship day; falling a dead spruce



Figure 33 Stewardship day volunteers and ESRD personnel at work

Resident-Completed Projects

A number of residents within the SVW have completed small-scale fuel management treatments on their properties. These treatments have included pruning of conifers, continued mowing of tall grass areas, removal of dead/damaged/diseased trees and removal of downed vegetative material (trees, branches, leaf litter) from around their properties.



Figure 34 Examples of FireSmart fuel modification work completed on private properties within the SVW

Proposed Treatments

Thinning and Conversion of Forest Fuels

A large majority of the areas suitable for FireSmart treatment within the SVW have been treated. The areas outlined in Figure 7.0 are suitable for treatment during future Stewardship Days.



Figure 7.0 – Areas for new or further forest fuels treatments within the SVW

The initial treatments completed within the SVW included pruning and removal of surface fuels. One of the most important goals of forest fuel management in the wildland-urban interface is to reduce the potential for sustained crown fire. This is accomplished by removal of overstory trees (thinning) in strategic locations to breakup fuel continuity. (Refer to Appendix 1)

Thinning can be completed using a variety of methods. “Strip” thinning is the general removal of trees to a 2-4 meter crown spacing along linear corridors (e.g. trails, fence lines); “Patch” thinning is removal of trees to a 2-4 meter crown spacing within a specified area (e.g. an area of trees surrounded by maintained grass on 3 sides and a powerline right-of-way on the other). Thinning treatments typically complement existing fuel or fire breaks; the identification and layout of a thinning treatment area should be completed by a forest professional.

These types of thinning projects can be completed “passively”, where areas of least concern are treated first, followed by areas of higher concern. Treatments can be staggered over time or by area, to allow for regeneration of shrubs for visual and sound buffering between resident properties and common use areas. Skilled forest fuel management contractors should be capable of maintaining shrub and small tree sound and visual buffers, while still removing the required amount of overstory vegetation.

Another goal of forest fuel management is the conversion of forest stands from highly-flammable (pure conifer with a conifer understory) to less flammable (deciduous) fuel types. This can be accomplished through thinning. By removing overstory trees, you allow more

sunlight and precipitation to reach the understory and forest floor, which promotes growth of tree saplings and less-flammable shrubs. The preferred forest stand structure to prevent ignition, fire spread and sustained crown fire is little or no fine fuels (small branches, tall grass, and dry mosses), low-density regenerated conifer and shrubs, and a deciduous-dominated canopy. This type of forest may regenerate naturally once thinning has been completed or may require spacing of regenerated conifer trees and planting of deciduous seedlings to promote a deciduous-dominant forest stand.

RECOMMENDATIONS:	
SHORT-TERM	<p>Compliment initial forest fuel treatment with thinning Passive thinning, completed in stages:</p> <ul style="list-style-type: none"> - <i>“Strip” thinning</i> of conifer trees in areas where fuels are linear and continuous (i.e. along a property fence line) – 2 to 4 meter crown spacing - <i>“Patch” thinning</i> of conifer trees – small patches/areas of trees – allowing for growth of new, preferably deciduous, stems and shrubs to buffer the openings produced between thinning – 2 to 4 meter crown spacing - Thinning treatments will include sight-line buffers between properties and common-use areas (Refer to Figure 7.0)
LONG-TERM	<p>Conversion of forest fuels from pure conifer to deciduous-dominated mixedwood forest stands</p> <ul style="list-style-type: none"> - In strategic locations and in combination with natural thinning - Where possible, promote natural deciduous seedling regeneration by removing unhealthy conifers shadowing deciduous seedlings from sunlight and precipitation - Where natural deciduous regeneration is not viable, remove unhealthy conifer stems and plant deciduous seedlings in the openings produced - Due to the high number of ungulates in the area, areas of high-density natural or planted seedlings should be fenced to promote sustained growth and prevent excessive browsing (Refer to Figure 7.0)

“Back 40” Recreation and Firewood Removal Area

The area known as the “Back 40” has been identified as an area of high risk with regard to the spread of wildfire into and out of the community. The following recommendations outline some proposed forest fuel management treatments for the area; Appendix 4 provides more details on the proposed treatments.



Figure 35 Photos of the "Back 40" firewood cutting area

RECOMMENDATIONS:	
SHORT-TERM	<p>Initial forest fuel treatment in "Back 40" area (Refer to Appendix 4)</p> <p>1) Complete initial treatment on "Back 40" area immediately adjacent to the NW corner of SVW</p> <p>2) The treatment will involve the following: Removal of dead standing and spacing 3-4 meter crown spacing for conifers in a 30-50 meter strip between existing fuel breaks along west boundary and Waiparous Creek</p>
LONG-TERM	<p>Development of a forest fuel management strategy for "Back 40" area</p> <p>1) Incorporate a forest fuel management strategy into the firewood removal program in the "Back 40" area</p> <p>2) Marking of specific trees in strategic areas to be completed by a forest professional</p> <p>3) Treatments would start in close proximity to the village boundary and move northwest as treatments were completed and firewood supply decreased</p> <p>4) The goals of this project would be thinning to reduce sustained crown fire, promote growth of sub-dominant trees, convert the forest stand to deciduous-dominant mixedwood and produce useable firewood for local residents</p>

The commercial harvesting of timber to achieve forest fuel management goals on a landscape scale is becoming more common on Crown land throughout Alberta. Some local examples of completed landscape-level FireSmart treatments include Bragg Creek and Kananaskis Country.

The Final Harvesting Plan for the CTP area is in review and awaiting approval. The block design and mapping have been completed as of June 2013.

LONG-TERM	<p>RECOMMENDATIONS:</p> <p>Incorporate forest fuel management objectives into commercial harvesting of B9 Forest Management Unit</p> <p>It is recommended that the SVW FireSmart Committee initiate discussion with ESRD Forest Management staff and Spray Lakes Sawmills to implement commercial harvesting plans for the CTP areas west and southwest of the SVW area should include:</p> <ul style="list-style-type: none"> • Strategic harvesting of high-density conifer stands • Landscape-level fuel breaks, utilizing existing anchor points and natural barriers to fire spread (i.e. lakes, rocky ridge tops, drainages)
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Education, Communication and Legislation

Education and Communication

A key component of implementing any FireSmart program within a community is the involvement of residents and local stakeholders in the planning, development and maintenance of the program. This will allow for effective education on the overall program and provide them with some ownership of that program.

For a FireSmart program to be successful, residents and stakeholders must be consulted early and encouraged to maintain their involvement throughout. The SVW has the unique situation of engaging both full-time and seasonal residents. This presents some significant communication challenges. Below are some suggestions for effective ways to communicate the actions and developments of the FireSmart program:

Further Treatments

As noted above, passive thinning (completed in stages) is required to further strengthen the previously treated areas within the SVW, as well as the “Back 40” recreation and firewood area. Prior to commencing this work, the residents must be given ample opportunity to voice their opinions, concerns and views on the project. This communication between the Village administration and the residents will presumably allow for specific concerns to be addressed (e.g. buffering) and common ground to be reached. On-going communication throughout the project is required also. Communication may include email updates, newsletters, public displays in common use areas, and evening information sessions. Residents should be encouraged to voice their concerns prior to and during the project and have their questions and concerns addressed by a knowledgeable source (e.g. village councilor, ESRD rep or local FireSmart representative).

Fortis Alberta

When residents of the SVW have concerns regarding tree(s) on their property that they feel fall within Fortis Alberta's right-of-way (7 meters from the outside line on either side), they can contact Fortis Alberta directly. A field representative will visit the individual's property to assess the tree(s) and discuss options. Residents should note whether the tree is located next to a primary (main, 3 non-insulated lines) or secondary (1 or 2 insulated lines running off the main line to a property) before contacting Fortis Alberta. Residents of SVW should never trim, prune or remove trees within 7 meters of a primary or secondary line.

RECOMMENDATIONS:	
SHORT-TERM	<p>Communication of further forest fuel treatments Residents of the SVW should be consulted prior to any further treatments being completed (e.g. thinning, burning). Resident input should be taken into consideration and village townhall-style meetings should be included in the process. A local wildfire specialist should be present to discuss specifics of the further treatments</p>
ANNUAL	<p>Host a local Emergency Response Exercise Host an Emergency Response Exercise annually, which involves residents, local Emergency Response staff and village administration. Exercises could involve wildfire or structure fire, evacuation, etc. Exercises can be small or large in scale and can be tabletop or real-life scenarios; Alberta Emergency Management officers may be able to assist with coordination and/or funding</p>
ANNUAL	<p>Improved and continued communication between SVW residents and the FireSmart Committee Communication through mail-outs, emails, public displays and community events to promote FireSmart and showcase the actions being taken within the community</p>
ANNUAL	<p>Make the SVW Community FireSmart and Maintenance Plans available on the SVW website Post copies of the Community FireSmart and Maintenance Plans on the Village website for review and future reference by residents</p>

Legislation

Fire Guardians and MD Bylaw Enforcement

The bylaw (SVW Bylaw No.52-97) currently in place which governs, among other fire-related topics, construction, maintenance and use of fire pits, open burning and fire bans within the SVW is sufficient and thorough. However, this legislation is only useful in prevention of wildland and structure fire if it is monitored closely and enforced by forest protection designates and enforcement personnel.

The following recommendations, combined with strict adherence to the current bylaw, should produce an effective fire prevention program for the SVW:

RECOMMENDATIONS:	
SHORT-TERM	<p>Appoint annually 2-3 Fire Guardians for the SVW Under Bylaw # 52-97, Fire Guardians can be appointed by Council to provide duties within the boundaries of the SVW; it is recommended that a formal Fire Guardian program be implemented, where 2-3 Fire Guardians are appointed annually within the SVW; Fire Guardians should be Village Councilors or members of the local FD, and work closely with MD Enforcement staff to prevent wildland and structure fires within the SVD (with the signing of an MOU)</p>
ANNUAL	
SHORT-TERM	<p>Develop an MOU with the MD of Bighorn to enforce SVW Fire Bylaws The SVW could initiate an agreement with the MD of Bighorn Bylaw Enforcement staff to periodically patrol the SVW to compliment Fire Guardians with enforcement of open burning, fire pits, etc. and issue warnings/fines for infractions</p>

Municipal and Provincial Fire Bans

In the current legislation (SVW Bylaw # 52-97), declaration of a partial or complete Fire Ban within the boundaries of the SVW is determined by the Fire Ban status of the MD of Bighorn and ESRD. If either declares a complete or partial Fire Ban, the SVW administration, through the bylaw, has committed to following their direction and maintaining the fire ban for its entirety outside of the SVW boundaries. Further to this, if the Village administration determines that localized conditions within the SVW boundaries are not suitable for burning, despite a fire ban not being implemented outside the Village boundaries, they may also declare a fire ban on all types of burning (warming/cooking fires, incinerator and open burning).

Future Planning and Development

Maintenance of forest vegetation is not the only aspect of maintaining a FireSmart community. Legislation, administrative controls and maintenance of infrastructure all play a role in maintaining a FireSmart community. Below are some recommendations for future planning and development actions relating to legislation, administrative controls and infrastructure.

Legislation and Administrative Controls

Currently, there is no legislation within the SVW bylaws that requires residents to incorporate FireSmart principles into any development or modification to their residence(s) or property. These bylaws exist in other wildland-urban interface communities to administratively reduce the risk of property loss or loss of life in the event of a wildfire, due to private dwellings and other buildings being constructed with flammable materials. Some more intensive bylaws require residents to not only construct or improve their residences and buildings with non-flammable building materials, but also maintain their property to FireSmart standards.

RECOMMENDATIONS:	
SHORT-TERM	<p>Development of legislation to include FireSmart principles Creation of bylaws to administratively govern the construction, modification or improvement of a private residence or property relating to FireSmart principles. These types of bylaws should be modeled after existing bylaws in other wildland-urban interface communities. Some examples of areas to be covered in the bylaw include:</p> <ul style="list-style-type: none"> • Acceptable/unacceptable building materials • Thinning and pruning within 20 meters of the main residence and outbuildings • Removal or relocation of firewood and excess building materials • Maintenance of vegetation around combustibles (propane, fuel storage) • Construction of access roads to allow for safe dead-end turnaround or 2-way access • Maintenance of all vegetation along private roads to allow access by emergency response personnel

Infrastructure Improvement and Maintenance

As noted above and in Appendix 5, the road widths within the SVW are not suitable for safe egress and access by emergency personnel and evacuation of residents. These types of improvements are costly; however, they should be taken into consideration by mayor and council in the near future.

RECOMMENDATIONS:	
<p style="text-align: center;">LONG-TERM</p>	<p>Improvement of municipal roadways within the SVW -Widening of all municipal roads within the SVW to a minimum of 8 meters to allow for safe access and egress by emergency personnel and residents - As noted above, this is a major deficiency in the emergency preparedness plan of the SVW – planning and budgeting for this type of infrastructure improvement should start as soon as possible</p>

Appendices

Appendix 1 – Maintenance Plan

Summer Village of Waiparous Community FireSmart Plan Treatment Area Maintenance Plan

The goal of this maintenance plan is to identify the time interval requirements for maintaining the 12 treatment areas within the SVW. The treatments associated with each block are only suggestions; specific treatments may or may not be required and may vary between growing seasons. Continued consultation with a forest professional is recommended to revisit these suggested maintenance methods and time intervals for validity.

Definition of Treatment Types

Pruning – removal of lower branches to 2 meters above ground; branches should be cut flush with the main bowl of the tree

Blowdown removal – in areas where overstory vegetation has been removed, there is potential for trees to naturally blow over, due to increased wind exposure and increased pressure on rooting systems. Any blown down trees should be bucked into manageable pieces and either removed or used for local firewood

Existing debris removal – Large accumulations of woody debris (branches, small trees) still remain piled within some of the treatment areas and next to roads. These debris piles should be chipped, burned or hauled away to reduce the risk of wildfire within the treatment area or next to roadways.

Brushing and mowing – where tall, dead/dying shrubs (willow) are present in previously treated areas, they should be brushed out using a brush or chainsaw and removed from the site. In the treatment areas where grass is present (shortwild grass), mowing should be conducted as needed using a gas weed trimmer or similar equipment.

Spacing regen – spacing of regen (regenerated conifer trees) is required to maintain conifer densities and reduce fuel continuity within the treatment areas. It also allows for promoted growth of both understory conifer and deciduous trees. Spacing of regen should be similar to overstory spacing (2-4 meters) depending on the patch size and continuity. This type of project requires on-going consultation with a forest professional.

Table 8.0 - Block information (Block #, total hectares, stand type and who completed the work)

Block #	Hectares	Stand Type	Completed By:
1	0.60	Sw, Aw*	Contractor
2	0.04	Sw, Willow	Contractor
3	0.09	Sw, Willow	Stewardship
4	1.07	Pl, Sw	Contractor
5	1.91	Sw, Pl	Contractor
6	0.32	Sw	Stewardship
7	0.30	Sw	Contractor
8	0.11	Sw	Contractor
9	0.51	Sw, Pl	Contractor
10	0.14	Sw	Contractor
11	0.03	Sw	Contractor
12	0.05	Sw	Contractor
TOTAL:	5.17		

* Sw = White Spruce, Aw = Trembling Aspen, Pl = Lodgepole Pine

Table 8.1 - Block numbers and their associated maintenance requirements with time intervals

BLOCK #	PRUNING (5-7 Years)	BLOWDOWN REMOVAL (ANNUAL)	EXISTING DEBRIS REMOVAL (AS NEEDED)	BRUSHING AND MOWING (AS NEEDED)	SPACING REGEN (APPROX.10 YRS)
1	X	X	-	X	-
2	X	X	-	X	X
3	X	X	-	-	-
4	X	X	-	-	-
5	X	X	-	-	-
6	X	X	X	-	-
7	X	X	X	-	-
8	X	X	-	-	-
9	X	X	-	-	-
10	X	X	-	-	-
11	X	X	-	-	-
12	X	X	-	-	-

Appendix 2 – Recommendations for Residents and Village

Resident FireSmart Recommendations		
FACTOR	PRIORITY LEVEL	NOTES
Moving firewood piles that are in close proximity to residences	IMMEDIATE	Re-locate any firewood piles within a 10 meter radius of the main residence and all outbuildings; do not pile under or next to conifer trees
Homeowner fire suppression equipment	IMMEDIATE	Have on hand fire suppression hand tools (sturdy metal rakes and shovels), sufficient hose lengths to reach all 4 corners of home, sturdy buckets and sprinklers
Maintain vegetation on property	IMMEDIATE	Assess your capabilities for maintaining the vegetation on your property (pruning conifers, removal of dead standing trees, mowing grass, raking of fine fuels) and establish goals that are realistic for your availability and resources
Dispose of all non-essential flammable household materials - fertilizer, paints, solvents or fuels	IMMEDIATE	Paint, paint thinner, pesticides, fertilizer and spare fuels should be disposed of if not essential - ensure that the items being stored are in CSA or ULC approved containers and are kept away from the main residence
Prune all conifer trees within 20 meters of your home	IMMEDIATE	Prune all lower branches on conifer trees within 20 meters of your home to 2 meters above the ground
Remove or relocate excess building materials	SHORT-TERM	Any accumulations of building materials (lumber, plywood, etc.) should be removed from the property or moved to a suitable location (away from all conifer trees) greater than 10 meters from the main residence or any outbuildings
Backyard fire pits	SHORT-TERM	Inspect your fire pit to confirm it meets the standards outlined in the SVW bylaws (SVW Bylaw # 52-97 - Section 2.b.1) (Chapter 2-23 in the "FireSmart Guidebook")
Removal of leaf and vegetation litter from eaves on all buildings	SHORT-TERM	Bi-annual removal of all vegetative material from the eaves and downspouts of all buildings
Replacement of roofing material	LONG-TERM	When replacement of roofing material is required, consider installing asphalt or metal roofing material instead of wooden shakes or other flammable material
Replacement of building exterior material	LONG-TERM	When replacement of roofing material is required, consider installing non-combustible or fire resistant material instead of wooden or vinyl siding
Cover all openings on building exterior	LONG-TERM	Cover all openings on building exterior (attic, air conditioning and dryer vents) with 1/8 inch wire mesh. This will prevent transfer of fire brands from nearby forest and vegetation to the inside of your house in the event of a wildfire
Addition or replacement of deck and porch skirting	LONG-TERM	Replace with or install non-combustible or fire resistant sheet skirting around all above ground decks and porches
Utilize debris management tools provided by the SVW	ANNUAL	Residents should utilize all debris management program options provided by the SVW - debris disposal bins, roadside chipping and winter burning permits
Maintain an organized property to aid in emergency responder access	ANNUAL	Maintain a clear driveway for access to main residence and outbuildings by emergency vehicles; Prevent all vegetation from overgrowing driveway; Dispose of and/or organize stockpiled building materials or firewood; Materials on property should not impede the efforts of emergency responders
Attend a Community Emergency Response Exercise	ANNUAL	Attend a local Community Response Exercise to learn about preparing yourself in the event of a wildfire or other emergency. Meet local emergency responders, practice evacuating you and your family, etc.
Continued maintenance of structures on property (when required)	ANNUAL	Continued monitoring and repair of roofing and decking materials, fences and outbuildings

Village FireSmart Recommendations			
FACTOR	PRIORITY LEVEL	RESPONSIBILITY	NOTES
Private and Village Lot Numbering within SVW	IMMEDIATE	VILLAGE/MD	Implementing a consistent, visible lot numbering system for each private lot within the SVW, in consultation with local emergency response agencies
Installation of "No Parking" signs along all municipal roadways within SVW boundaries	IMMEDIATE	VILLAGE	Install in locations where road is narrow and no designated pull-out is present; Used to deter residents and visitors from parking on road shoulders and impeding the already limited access by emergency response personnel
Distribute property hazard and evacuation route maps to residents	IMMEDIATE	VILLAGE	Property hazard maps show generic hazards for each property within the SVW based on the forest fuels present in the area; evacuation route maps show the desired direction of travel and roads to avoid in an evacuation due to a dead-ends or turnarounds
Purchase 4-6 backpack water tanks	IMMEDIATE	VILLAGE	Purchase of 4-6 solid plastic or collapsable backpack water tanks for use in wildfire suppression - maintain often and store in a weather controlled environment (Chapter 2-25 in the "FireSmart Guidebook")
Purchase of portable water tanks and/or bladders for use in water delivery systems	IMMEDIATE	MD/VILLAGE	Portable water tanks and bladders to be used in water delivery systems where access by engines and tenders is not viable or safe. Portable water systems can be setup on public village roads, access routes and driveways. SVW to initiate discussion with MD Emergency Services
Assignment of persons responsible for monitoring and maintenance of fire suppression equipment	IMMEDIATE	VILLAGE	Assigning 2 or more permanent residents to maintain all fire suppression equipment
Full-time residents volunteering with local FD	IMMEDIATE	VILLAGE/MD	Full-time residents who wish to be first responders to wildfire in the SVW should volunteer with the Ghost River FD and receive formal training in structure and wildland fire suppression (S-100) and basic Incident Command System training (ICS-100); without formal training and association with the volunteer FD, residents who respond to any type of fire are not covered under WCB or most personal insurance policies
Preparation of initial attack kits	IMMEDIATE	VILLAGE	Prepare and store initial attack kits consisting of hand tools and water delivery system apparatus (Appendix 6 outlines the contents of an initial attack kit). The Mark III pump kit should be visibly labeled as an "Initial Attack Pump Kit" and made visible and accessible within the fire equipment shed. The intake hose that is required for use of the Mark III pump should be permanently attached to the box containing the pump, so all required equipment will be available and transported to the site of the fire
Access to fire equipment	IMMEDIATE	VILLAGE	Consider use of a lock or electronic security system which requires a combination rather than a key for access - the code can be given over the phone or by text

Village FireSmart Recommendations			
Develop an MOU with the MD of Bighorn to enforce SVW Fire Bylaws	SHORT-TERM	VILLAGE/MD	The SVW could initiate an agreement with the MD of Bighorn Bylaw Enforcement staff to sporadically patrol the SVW to compliment Fire Guardians with enforcement of open burning, fire pits, etc. and issue warnings/fines for infractions
Designate annually 2-3 Fire Guardians for the SVW	SHORT-TERM	VILLAGE	Under Bylaw # 52-97, Fire Guardians can be appointed by Council to provide duties within the boundaries of the SVW; it is recommended that a formal Fire Guardian program be implemented, where 2-3 Fire Guardians are designated annually within the SVW; Fire Guardians should be Village Councilors or members of the local FD, and work closely with MD Enforcement staff to prevent wildland and structure fires within the SVW
Make the SVW Community FireSmart and Maintenance Plans available on the SVW website	SHORT-TERM	VILLAGE	Post copies of the Community FireSmart and Maintenance Plans on the Village website for review and future reference by residents
Initial forest fuel treatment in "Back 40" area	SHORT-TERM	VILLAGE	Complete initial treatment on "Back 40" area immediately adjacent to the NW corner of SVW
Communication of further forest fuel treatments	SHORT-TERM	VILLAGE	Residents of the SVW should be consulted prior to any further treatments being completed (e.g. thinning, burning). Resident input should be taken into consideration and village townhall-style meetings should be included in the process. A local wildfire specialist should be present to discuss specifics of the further treatments
Conversion of forest fuels from pure conifer to deciduous-dominant	LONG-TERM	VILLAGE	<ul style="list-style-type: none"> o In strategic locations and in combination with natural thinning <ul style="list-style-type: none"> <input type="checkbox"/> Where possible, promote natural deciduous seedling regeneration by removing unhealthy conifers shadowing deciduous seedlings from sunlight and precipitation <input type="checkbox"/> Where natural deciduous regeneration is not viable, remove unhealthy conifer stems and plant deciduous seedlings in the openings produced o Due to the high number of ungulates in the area, areas of high-density natural or planted seedlings should be fenced to promote sustained growth and prevent excessive browsing
Incorporate forest fuel management objectives into commercial harvesting of B9 Forest Management Unit	LONG-TERM	VILLAGE	<p>It is recommended that the SVW FireSmart Committee initiate discussion with ESRD Forest Management staff and Spray Lakes Sawmills to implement commercial harvesting plans for the CTP areas west and southwest of the SVW area should include:</p> <ul style="list-style-type: none"> • Strategic harvesting of high-density conifer stands • Landscape-level fuel breaks, utilizing existing anchor points and natural barriers to fire spread (i.e. lakes, rocky ridge tops, drainages)
Improvement of municipal roadways within SVW	LONG-TERM	VILLAGE	Widening of all municipal roads within the SVW to a minimum of 8 meters to allow for safe access and egress by emergency personnel and residents
Development of a forest fuel management strategy for "Back 40" area	LONG-TERM	VILLAGE	- As noted above, this is a major deficiency in the emergency preparedness plan of the SVW – planning and budgeting for this type of infrastructure improvement should start as soon as possible
Maintenance of FireSmart treatment areas	LONG-TERM	VILLAGE/MD	Using the the suggestions outlined in Appendix xxxx, maintain vegetation in treatment areas on a annual basis, using summer students, MD personnel or contractors.
Thinning of overstory trees in previously treated areas with the SVW	LONG-TERM	VILLAGE	Using "strip" or "patch" thinning methods outline in the plan, treatment areas with standing conifer trees should be thinned to 2-4 meter crown spacing. All material should be bucked up and removed from the site. Marking of trees for removal should be completed by a forest professional

Village FireSmart Recommendations			
Maintain fire suppression equipment	ANNUAL	VILLAGE/MD	During fire season (April to October), inspect monthly all fire suppression equipment (pumps, hand tools, hose), start and run all pumps, dispose of worn out or broken equipment and replace immediately
Village administration to continue seeking funding for fire-related projects	ANNUAL	VILLAGE	Continue to seek funding and grants for forest fuel management projects, training and education projects within the village. Some sources of funding may include federal and provincial emergency preparedness funding and grants and municipal fire training and equipment grants
Continued coordination of Stewardship Days	ANNUAL	VILLAGE	Continued annual Stewardship days; inclusion of residents, ESRD staff, local stakeholders (FortisAB); designating resident "Volunteer" properties to have FireSmart treatments completed on
Host a local Emergency Response Exercise	ANNUAL	VILLAGE/MD	Host an Emergency Response Exercise annually, which involves residents, local Emergency Response staff and village administration. Exercises could involve wildfire or structure fire, evacuation, etc. Exercises can be small or large in scale and can be tabletop or real-life scenarios; Alberta Emergency Management officers may be able to assist with coordination and/or funding
Improved and continued communication between SVW residents and the FireSmart Committee	ANNUAL	VILLAGE	Communication through mail-outs, emails, public displays and community events to promote FireSmart and showcase the actions being taken within the community
Communication with Fortis AB representative	ANNUAL	VILLAGE/MD	Communication with local Fortis vegetation manager regarding annual ROW maintenance, future FireSmart projects, etc. - Inclusion in future Stewardship Days - Notify area representative of suspect trees and vegetation on or in close proximity to ROW

Appendix 3 – Wildfire Behavior Maps

Figure 8.0 – Fire Behavior Potential (FALL)

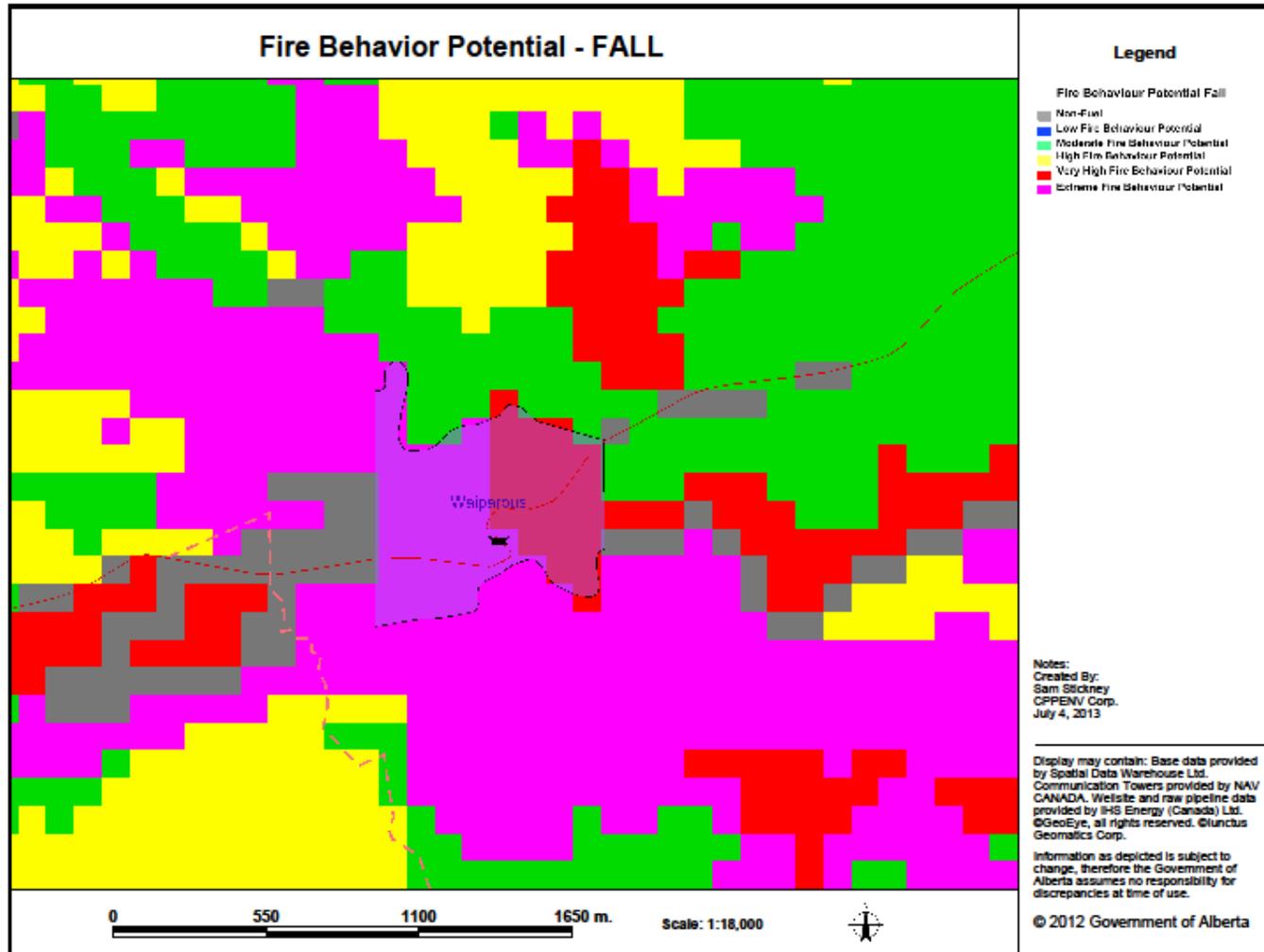


Figure 8.1 - Fire Behavior Potential (SPRING)

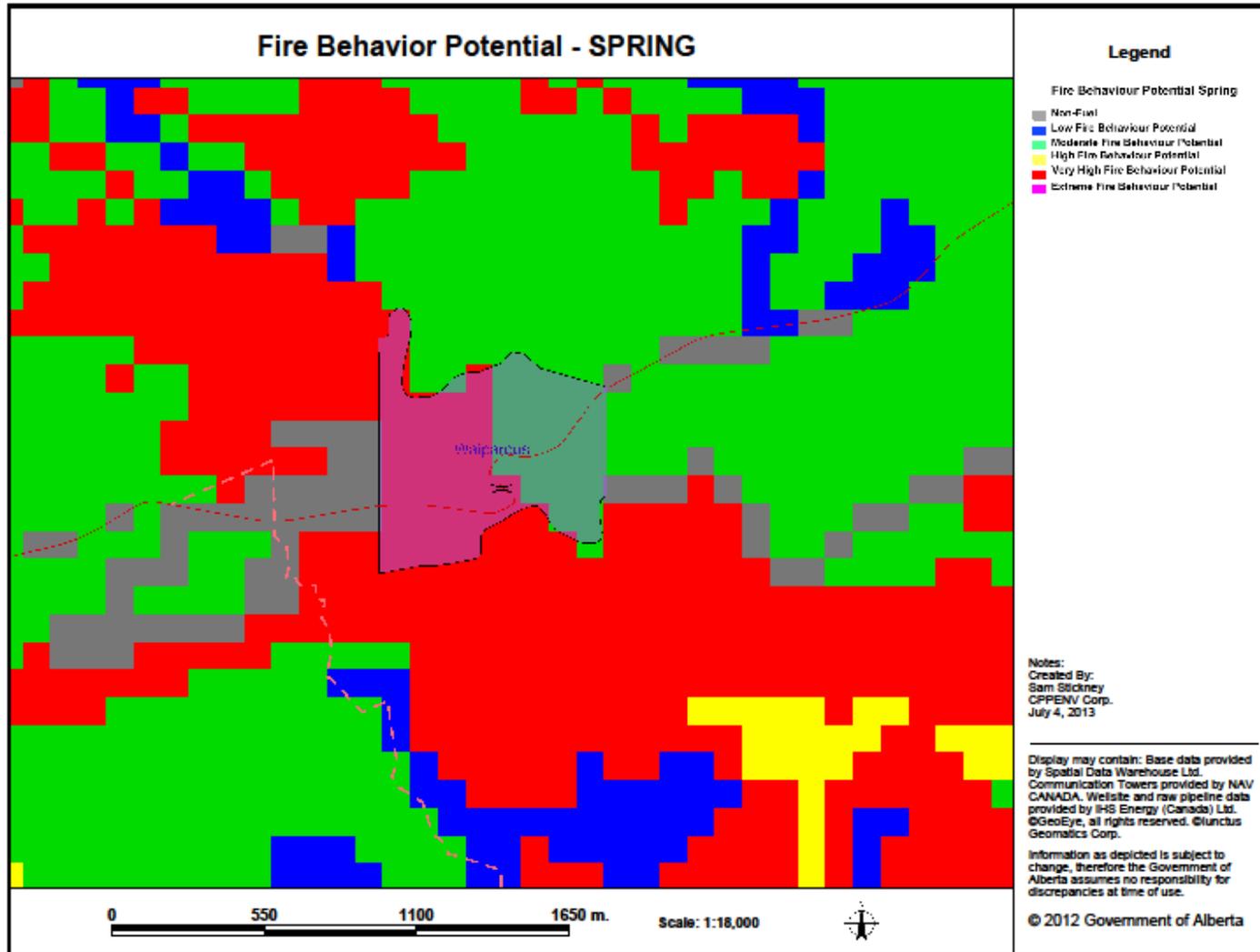


Figure 8.2 - Fire Behavior Potential (SUMMER)

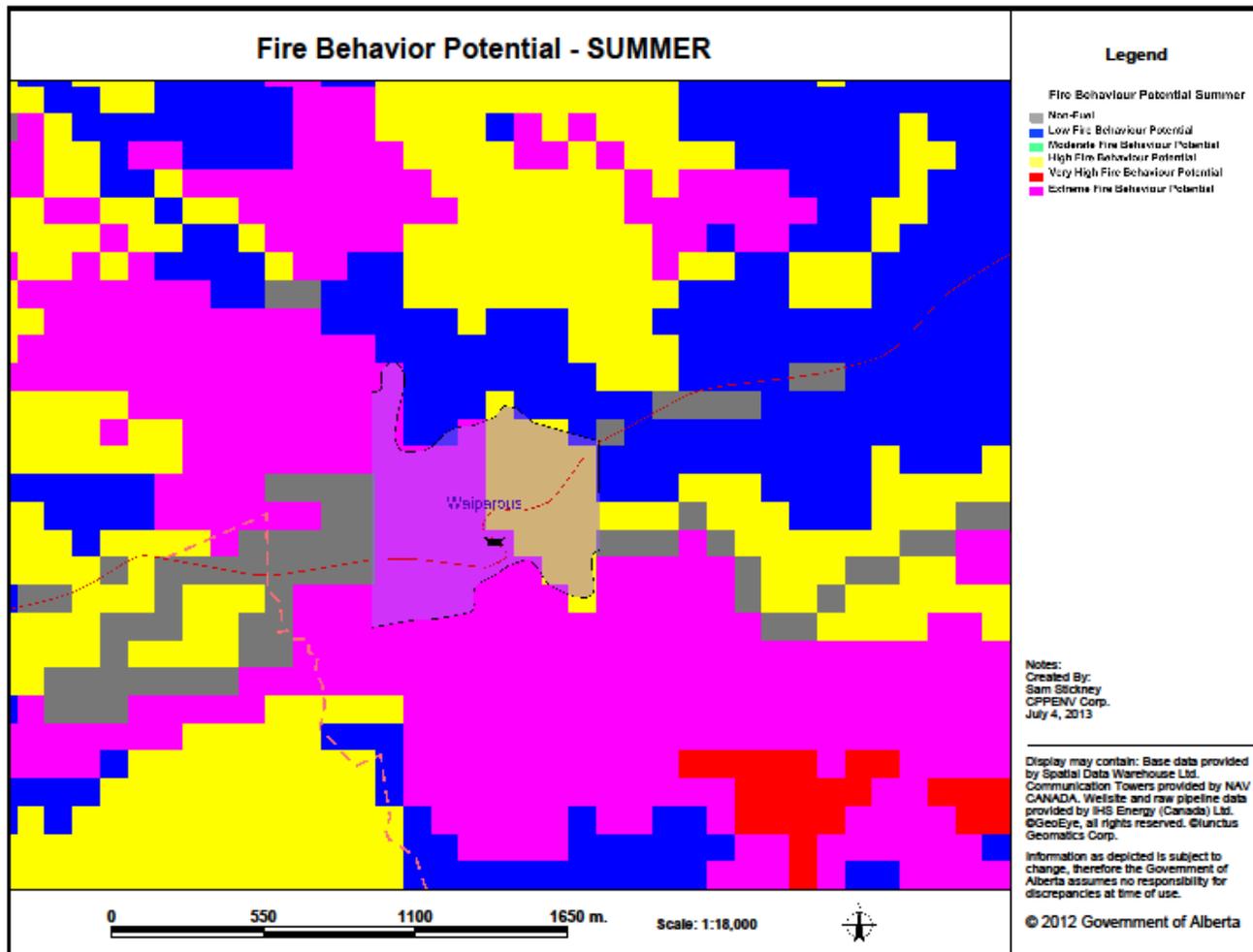


Figure 8.3 - Head Fire Intensity (FALL)

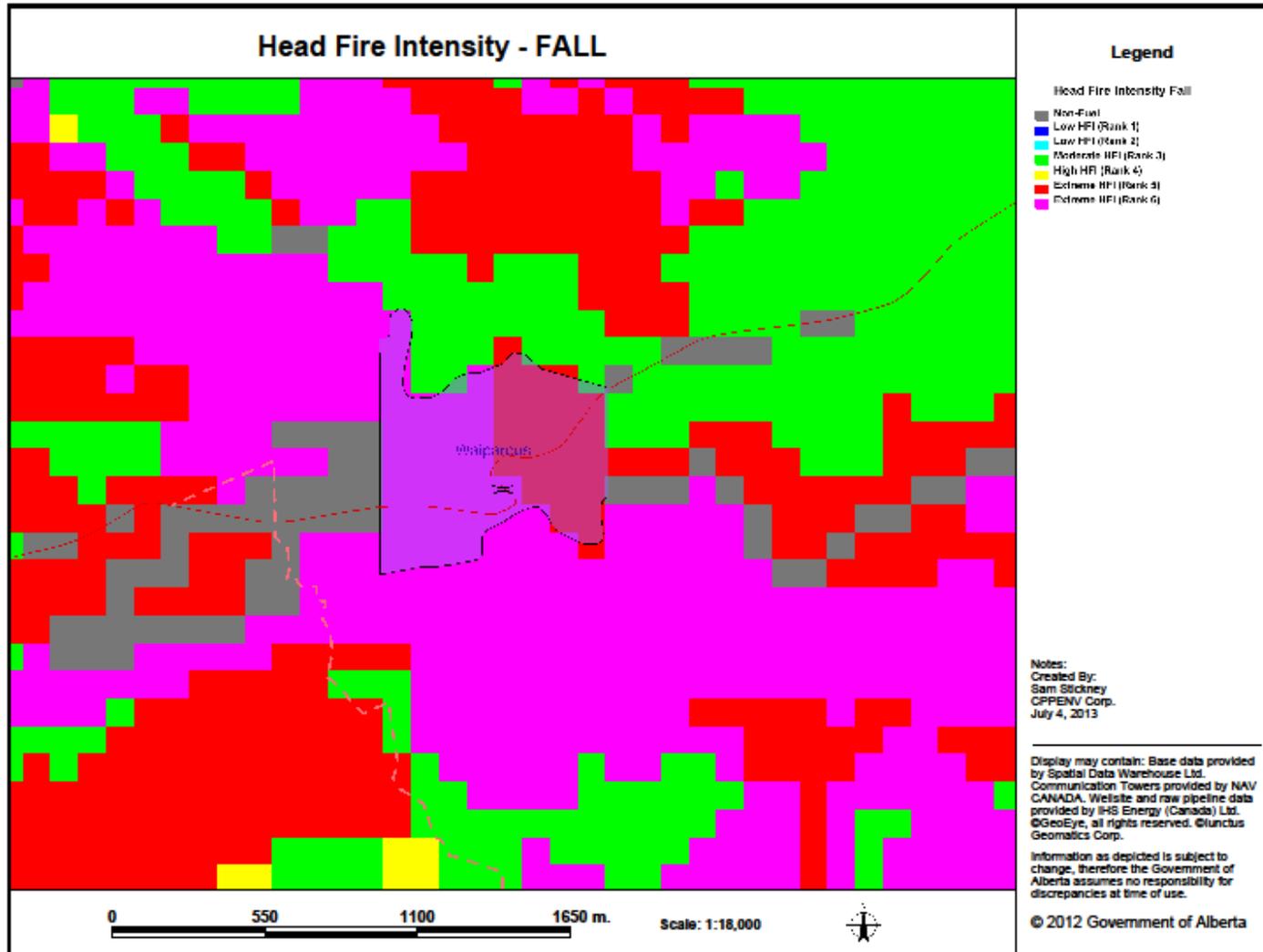


Figure 8.4 – Head Fire Intensity (SPRING)

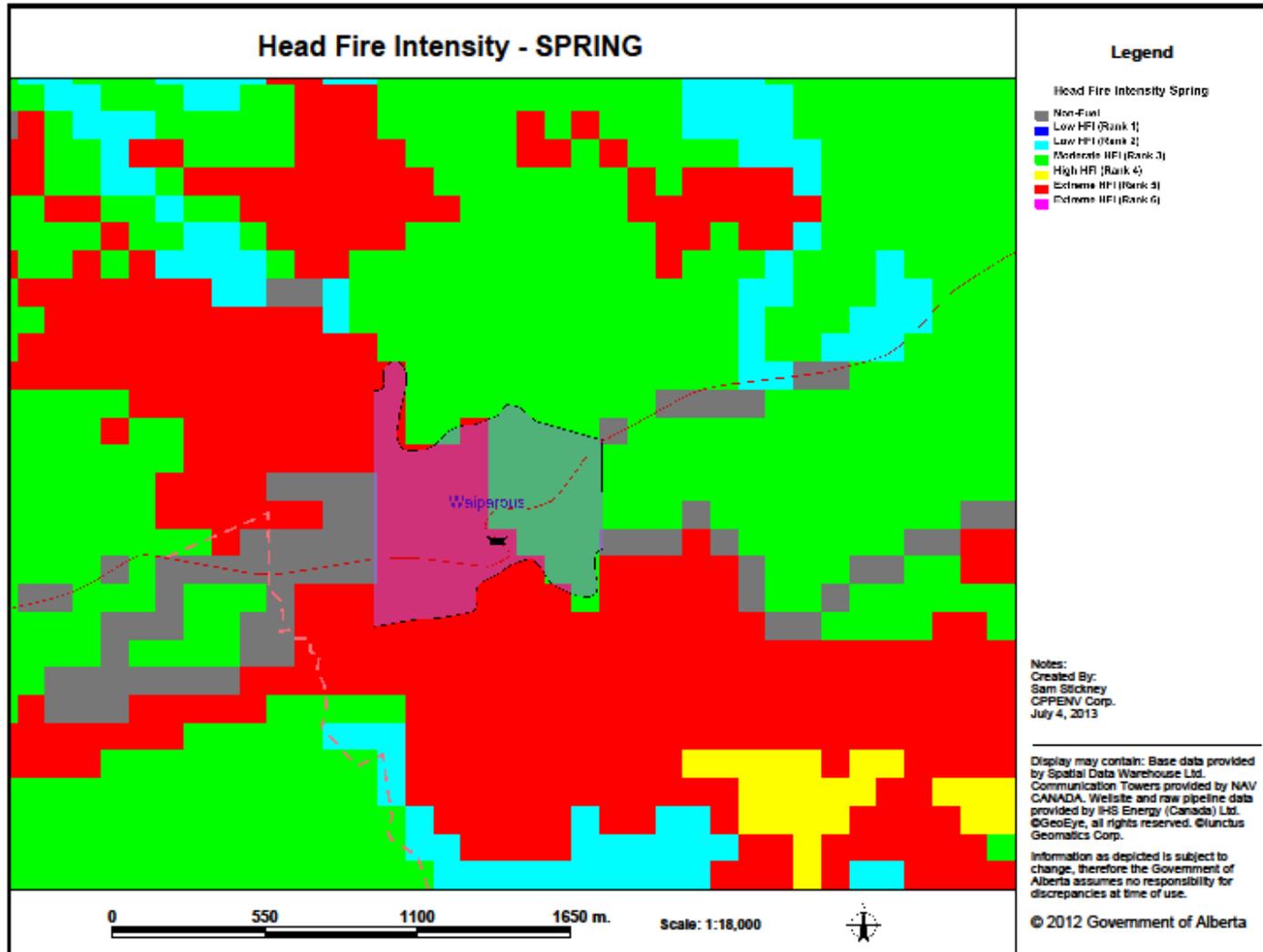


Figure 8.5 - Head Fire Intensity (SUMMER)

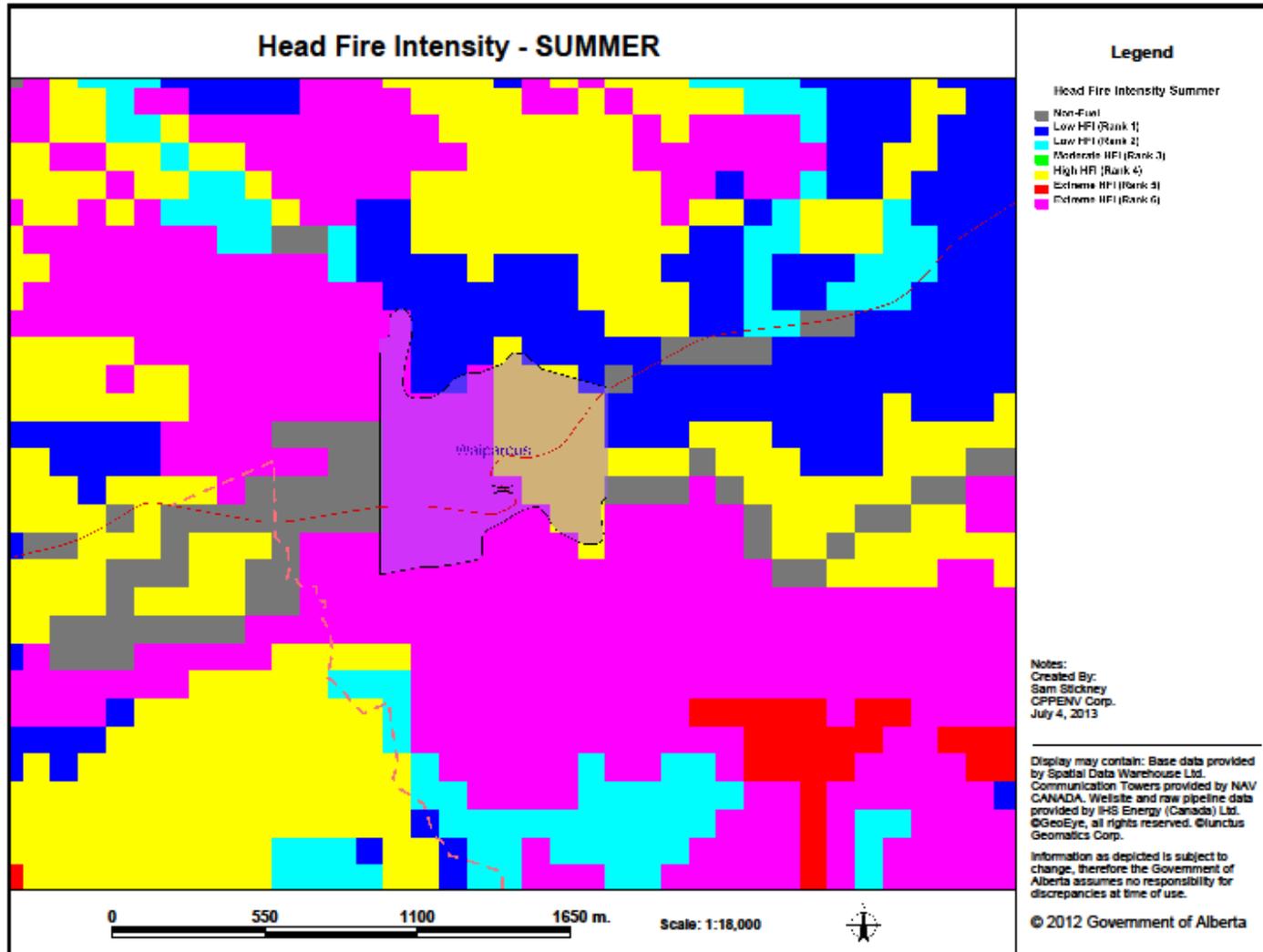


Figure 8.6 – Wildfire Threat Potential (FALL)

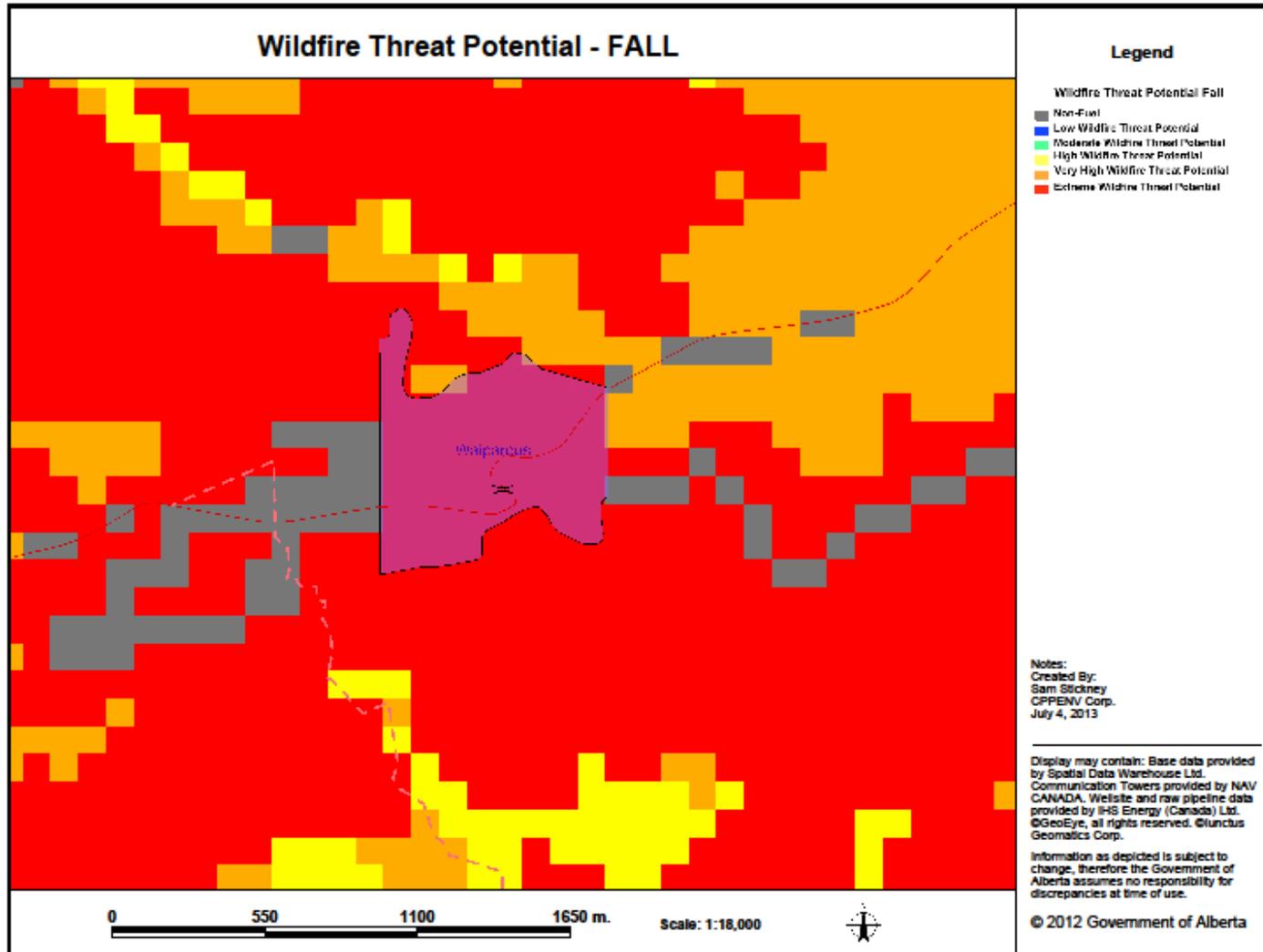


Figure 8.7 - Wildfire Threat Potential (SPRING)

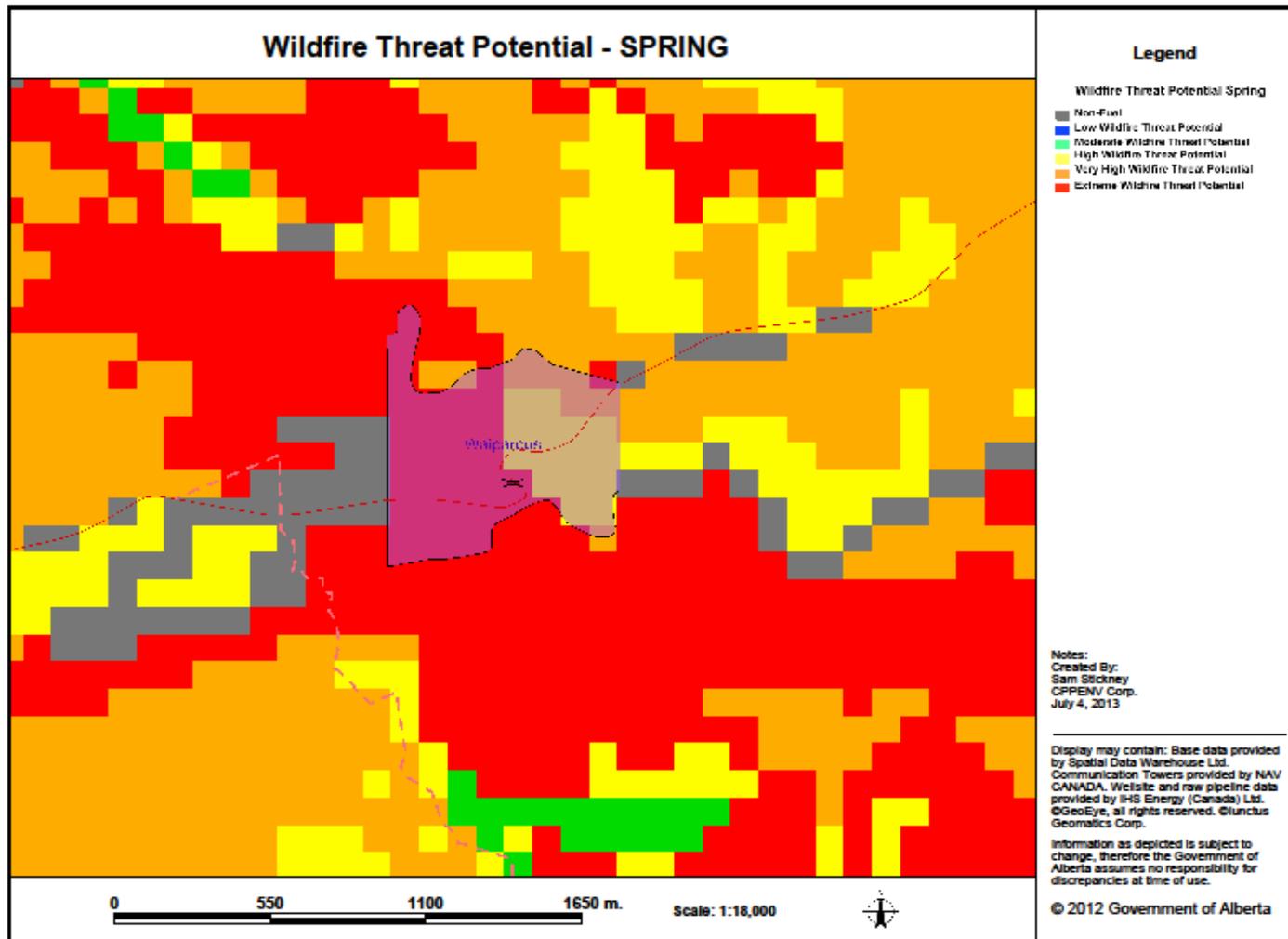


Figure 8.8 – Wildfire Threat Potential (SUMMER)

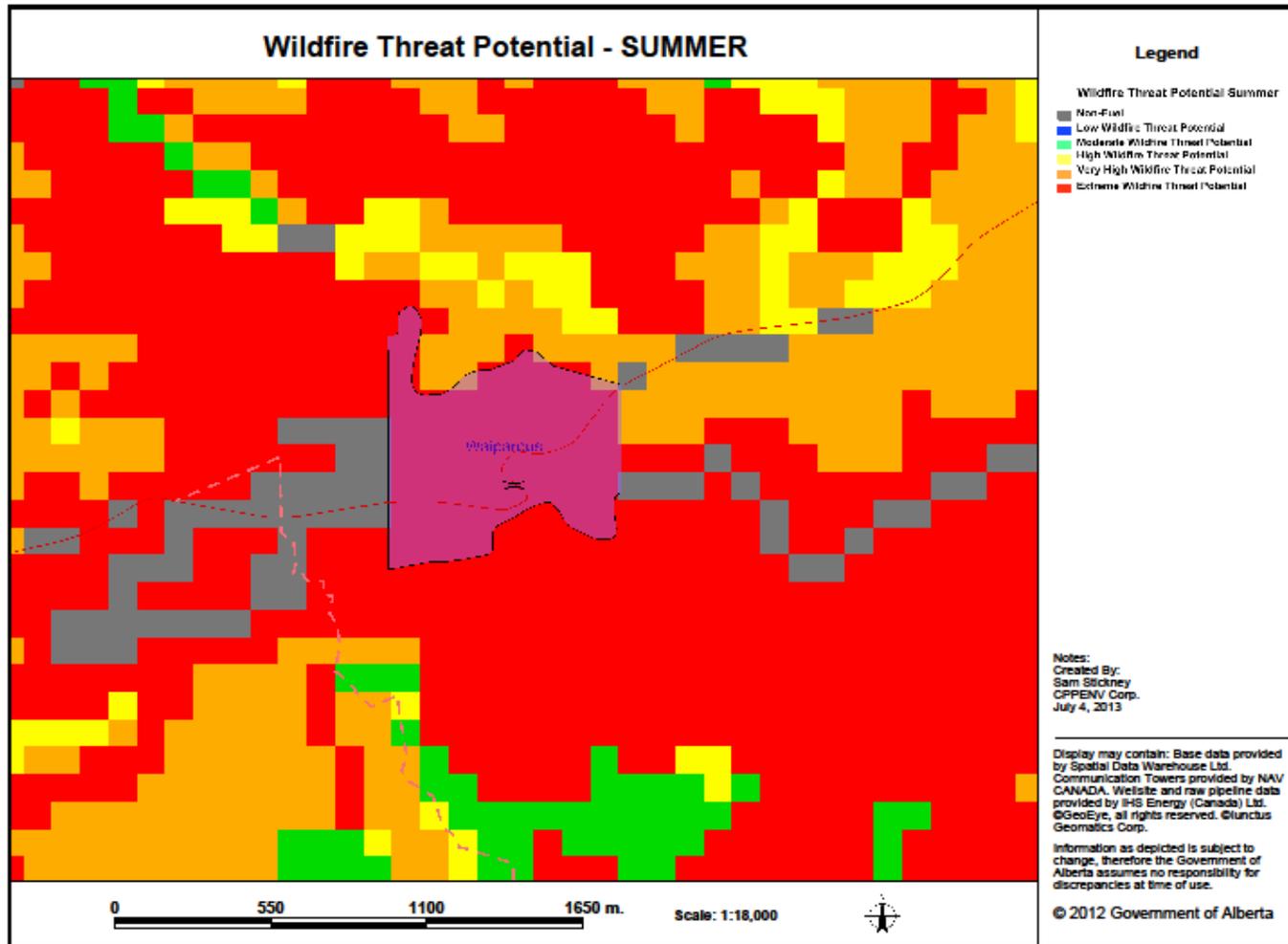
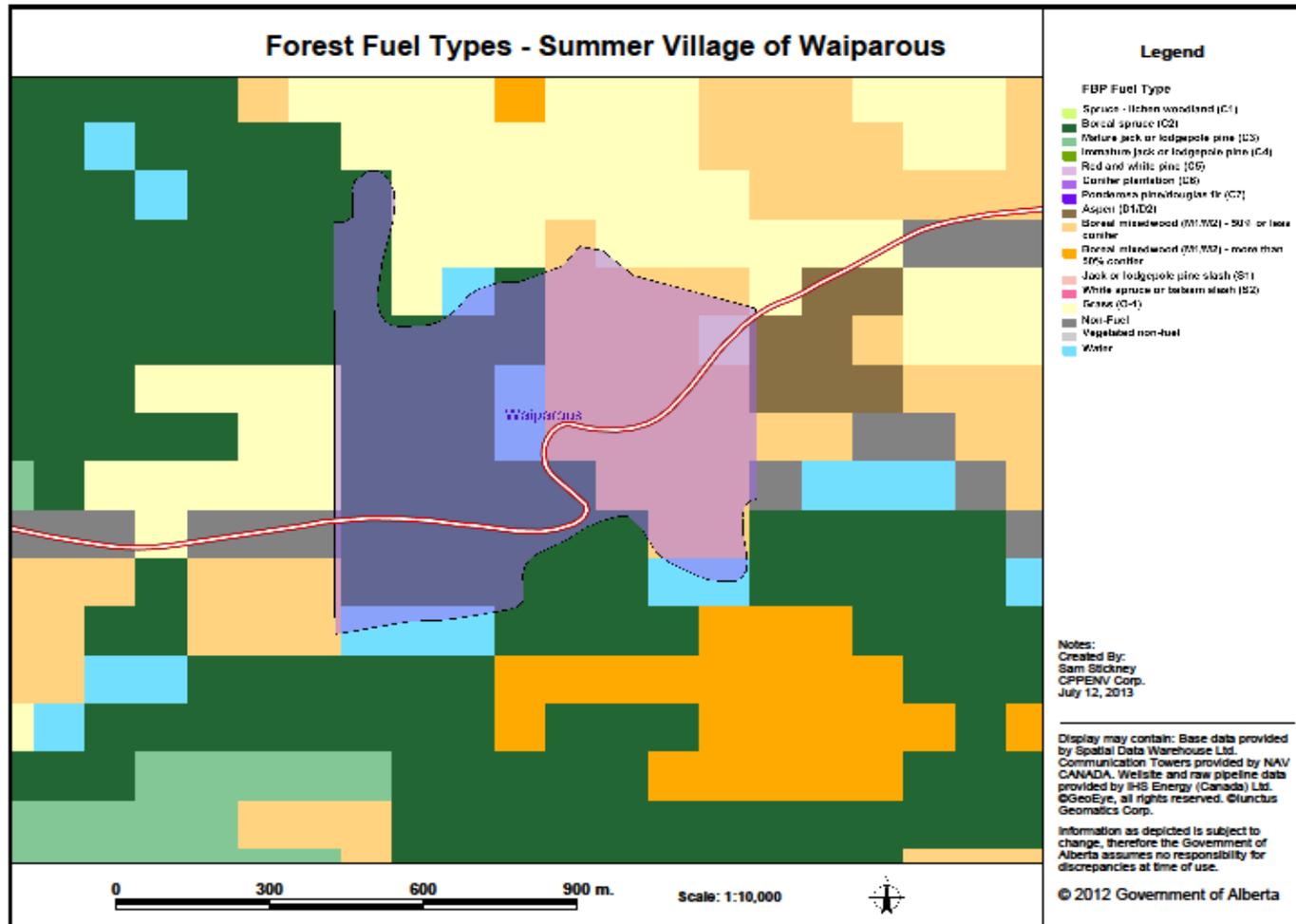


Figure 8.9 – Forest Fuel Types (CFFDRS)



Appendix 4 – “Back 40” Recommendations

Optional Fuel Reduction Methods - “Back 40” Recreation/Firewood Area

NOTE: *The purpose of this appendix is only to guide future decision making by the various planning committees associated with the “Back 40” area adjacent to the Summer Village of Waiparous. This appendix was not part of the original planning contract; however, an information gap pertaining to the “Back 40” area was identified and therefore was important to include in this plan.*

The “Back 40” area is crown land, designated for recreational use and firewood removal by the residents of the Summer Village of Waiparous, Benchlands and Ghost River. The area has designated trails throughout and minimal infrastructure (a sign kiosk and benches).

The goal of reducing wildfire hazard in the “Back 40” area can be achieved through a combination of dead standing/woody debris removal, brushing/spacing of regenerated conifer and promotion of deciduous growth through selective overhead canopy removal and option for fencing (would only be necessary in lower density areas). The information below should be considered as options for implementing a longer-term forest management program for the “Back 40” area.

1. Incorporate forest fuel reduction into current firewood removal program

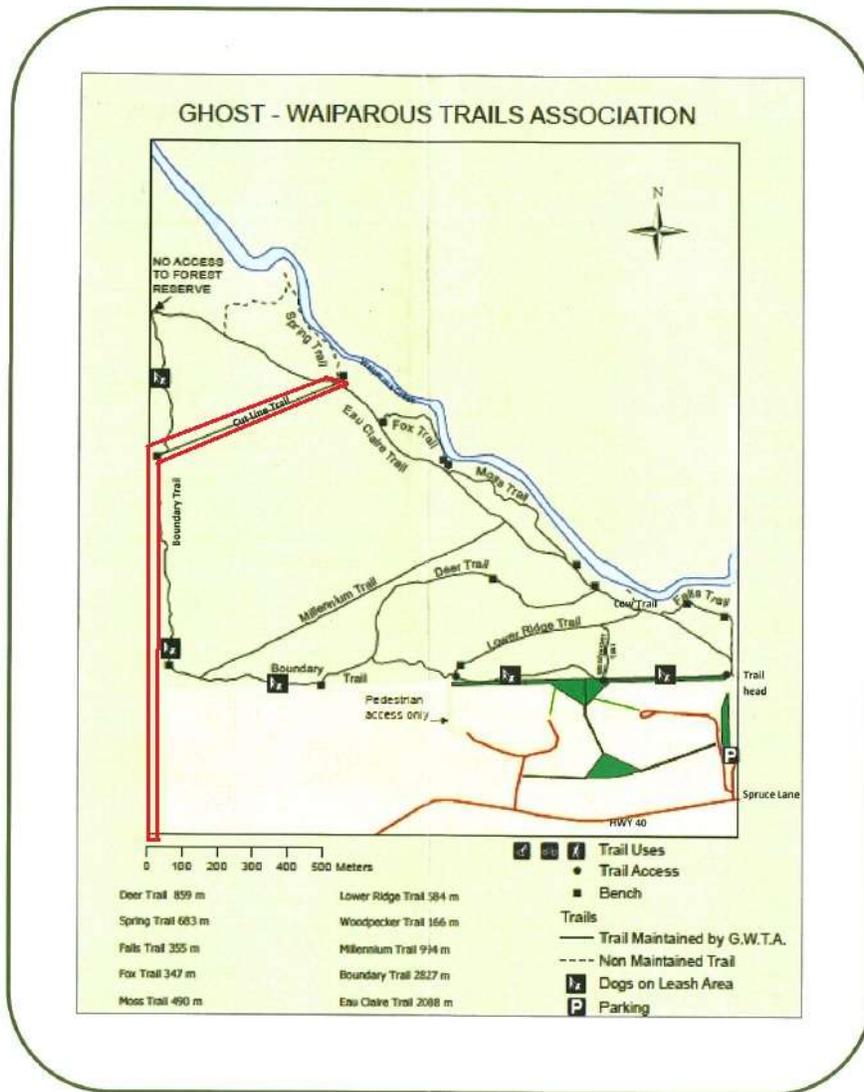
The goal of incorporating forest fuel reduction into the firewood removal program in the “Back 40” area is two-fold: remove hazardous sub-dominant and surface fuels and create breaks in the canopy to reduce the risk of sustained crown fire.

- **Locations for removal**
 - *Initial removal* program should focus on thinning a 30-50 meter strip between existing fuel breaks along west boundary and Waiparous Creek
 - *Continued removal* should concentrate on the following:
 - Buffering existing trail corridors for access in the event of a wildfire
 - Continued selected-tree thinning (dead standing and down) throughout entire use area
- **Marking of trees for removal**
 - Completed by a contractor or FireSmart committee member with guidance from ESRD
 - Trees are marked with paint or tag
- **Types of trees for removal**
 - *Initial thinning*
 - Dead and down coniferous
 - Standing dead coniferous
 - Damaged and/or diseased trees

- **Continued thinning**
 - Coniferous regeneration spacing
 - Selective thinning of overstory to promote growth of sub-dominant deciduous stems
 - **Tracking of program**
 - Track removal of painted/tagged trees
 - These trees will be removed first to achieve the thinning goals before other, non-marked trees are removed
- 2. Promote forest fuel type conversion from pure conifer to deciduous-dominant**
- **Spacing of regenerated conifer stems**
 - 2 to 3 meter spacing of clumps of regen conifer stems
 - **Promoting growth of deciduous stems**
 - Natural regeneration of Trembling aspen
 - Supplement with planting of aspen seedlings
 - Thinning overstory for release of sapling Trembling aspen and Balsam poplar
 - **Fencing of deciduous saplings**
 - Use in low-density deciduous patches to prevent browsing and promote growth
 - Remove fencing when stems are no longer suitable for or won't be adversely impacted by ungulate browsing
 - Some notable issues with fencing include:
 - High cost for material and height requirements to prevent access by ungulates
 - Possibility for injury to wildlife if fences aren't maintained
 - Cost of maintaining the fence until browsing is no longer an issue
- 3. Development and maintenance of firebreak on Eau Claire Trail**
- **NOTE:** The following recommendation was provided to CPPENV by the Summer Village of Waiparous Council for inclusion in this document on October 9th, 2013:
- “The Village recommends that the existing cut line in the Back 40 be enhanced to become a viable firebreak.”* (Sharon Plett, on behalf of the SVW Council)
- The area being referred to above is:
- “The cutline going SW / NE and starts from the Eau Claire Trail approximately 300m east of the west boundary and then heads to the SW. To create a meaningful guard, it should be recommended to tie into the slope break to the north and the fenceline to the south.”* (Ken Birkett, SVW FireSmart Committee and Village Council Member)

In order for a fire break to be effective, the area requires on-going maintenance (as needed) on the entire length of the fire break to remove encroaching vegetation (tall grass, shrubs, trees).

Figure 9.0 - "Back 40" trail network with identified firebreak area (in red)



Appendix 5 – Access Road Information for SVW

Road Name	Width (m)	Length (m)	Type	Notes
Wildrose Place	3.50	300.00	Turn around (Loop)	No shoulder, steep ditches, trees on both sides right up to road edge
Aspen Circle	3.50	150.00	Turn around (Loop)	Turnaround is very constricted - not suitable for large vehicles or equipment
Willow Drive	3.50	500.00	Turn around (Loop)	May be sufficient for large vehicle use
Poplar Drive	3.50	175.00	Turn around (Loop)	May be sufficient for large vehicle use
Chickadee Road	3.50	250.00	Two-way	Connects with Eagle Drive to access HWY 40
Eagle Drive	3.50	220.00	Two-way	Connects with Chickadee Road to access HWY 40
Meadowlark Way	3.50	240.00	Turn around (Dead End)	Use resident driveways for turnaround
Meadowlark Lane	N/A	N/A	N/A	Not constructed yet
Hummingbird Lane	3.50	280.00	Turn around (Dead End)	Use resident driveways for turnaround
Forestry Trail	10.00	1200.00	Main highway	Sufficient for two lane traffic (east - west)

Appendix 6 – Wildfire Suppression Equipment

MARK III - BASIC PUMP KIT	EQUIPMENT	QTY	COMMENTS
	ADAPTER, 1 1/2" NH-F to 1 1/2" NPSH-M	2	
	ADAPTER, 1 1/2" NPSH-F to 1 1/2" NH-M	1	
	BERM, Containment, Mark III	2	Required by all provincial wildland fire agencies to prevent spills of fuel and oil while operating a water delivery system
	TOOL BOX, 32" x 16" x 17" (MKIII kit accessories)	1	Large enough to fit all small accessories for Mark III pump kit
	CLAMP, Hose Shut-off 1"-1 1/2" hoses	1	
	CLOTH, Oil Sorbent, 36" x 36" x 3/8"	4	
	CORD, Cotton, Braided, 1/8" x 100'	2	If the cord breaks, the pump will no longer operate - replacement cords are mandatory
	COUPLING, DBL Female, 1-1/2" NH-F (9TP)	1	
	COUPLING, DBL Male, 1-1/2" NH-M (9TP)	1	
	EARPLUGS, Foam, Disposable (1 PR/PK)	20 Pkgs	Consider addition of TWO sets of ear muffs (Peltor) to be used with ear plugs
	GASKET, Hose 1-1/2"	3	Spare part
	GASKET, Hose 1-1/2"	3	Spare part
	GOGGLES, Clear Lens	2	
	HOSE, cotton-synthetic, jacket, rubber line, 1-1/2" NH x 3'	1	
	HOSE, Suction, Rubber, 1-1/2" NH x 10'	1	
	INSTRUCTION, Mark III Pump	1	Spark plug wrench, small flathead screwdriver, spare spark plug
	KIT, Pump Tool Roll, Fire	1	
	NOZZLE, Plastic, 35 GPM, 1" NPSH-F	1	
	NOZZLE, Plastic, 60 GPM, 1.5" NH-F x 4-3/4" LG	1	
	NOZZLE, Twin Tip, Combo 1" NPSH-F	1	
	OIL, 2-cycle	2 litres	GAS TO OIL RATIO IS 24:1 - Fuel should be pre-mixed in a labeled container - Spare oil and gas for mixing later should be available
	PAIL, Collapsible, w/ carrying handle	1	Used for priming the Mark III pump if using intake hose for priming is not viable
	PUMP, Fire Portable (Mark III) w/ fuel line	1	
	RAG, Wiping	2	
	REDUCER, 1-1/2" - 1" NPSH (Usually Attached to pump)	1	
	REDUCER, 1-1/2" NH-F to 1" NPSH-M	2	
	TAG, 2 Stroke Mix UNI203, Flammable Yellow	2	
	TAG, Shipping (Blank)	10	
	TANK, Gasoline, 5 Gal., Pump Adapted	1	GAS TO OIL RATIO IS 24:1 - Fuel should be pre-mixed in a labeled container - Spare oil and gas for mixing later should be available
	VALVE, Automatic Check & Bleeder, 1 1/2" NH-F	1	
	VALVE, Foot, 1-1/2" NH-F w/strainer	1	
	VALVE, Pressure relief	1	
	VALVE, Wye, Gated, 1 1/2" NH-F x 1 1/2" NH-M x 1 1/2" NH-M	1	Gated wye valves allow for multiple hose lays to be run various directions off of one pump
	WRENCH, Spanner, 11", 1-1/2" to 2-1/2" (hose)	1	
	PUMP TOOL ROLL KIT		
	CASE, pump tool roll 1 EA 0620 WRENCH adjustable 8"	1	
	GAUGE, feeler, spark plug & points	1	
	GUN, grease	1	
	PLIERS, slip joint 6" long	1	
	PLUG, spark, pump 18 mm	1	
	PLUG, spark, pump 14 mm	1	
	SCREWDRIVER, flat tip 2"	1	
	SCREWDRIVER, flat tip, double bend, 3"	1	
	SCREWDRIVER, flat tip, 1/2" x 4"	1	
	TOOL, Carburetor	1	
	WRENCH, box, open end	1	
	WRENCH, Combination, box, open end	1	

Appendix 7 – Additional Photos



Photo 1: Firewood stacked against fence – firewood and fence are potential ladder fuels for ignition of spruce surrounding spruce trees



Photo 2: Community FireSmart Shed (current) – contains wildfire suppression equipment



Photo 3: Access to Waiparous Creek for drafting and water delivery to village (Pre-flood 2013) (Environment Canada – Hydrological Monitoring Site)



Photo 4: Access to Waiparous Creek for drafting and water delivery to village (Post-flood 2013) (Environment Canada – Hydrological Monitoring Site)



Photo 5: Post-forest fuel management treatment in BLK 5 (Facing East)



Photo 6: Forest fuels remaining from treatment in BLK 7



Photo 7: "Waiparous Bar" – construction materials of bar are potential ladder fuels for surrounding spruce



Photo 8: Example of access (driveway) to private resident lot



Photo 9: FortisAB powerline right-of-way in NW corner of village (Facing east)



Photo 10: MD of Bighorn - Ghost Fire Hall located in Benchlands



Photo 11: Forest fuel piled in private resident lot within village boundaries



Photo 12: Hand pump located next to the information kiosk on Aspen Circle



Photo 13: Forest fuel management treatment area located SE of Willow Drive (east of community trail) (BLK 4)



Photo 14: Forest fuel management treatment area located W of Aspen Circle (west of community trail) (BLK 4)



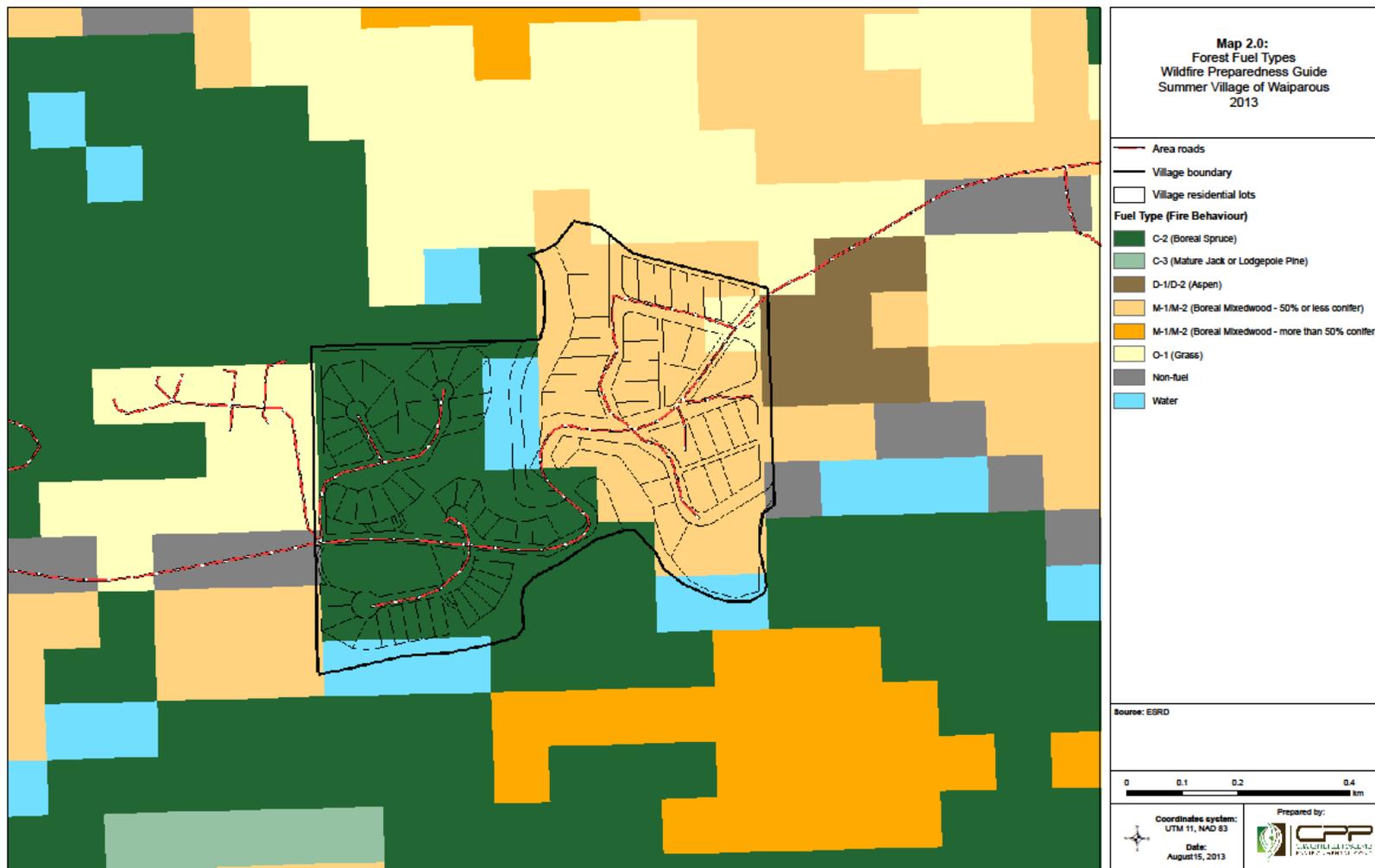
Photo 15: Example of access (driveway) to private resident lot



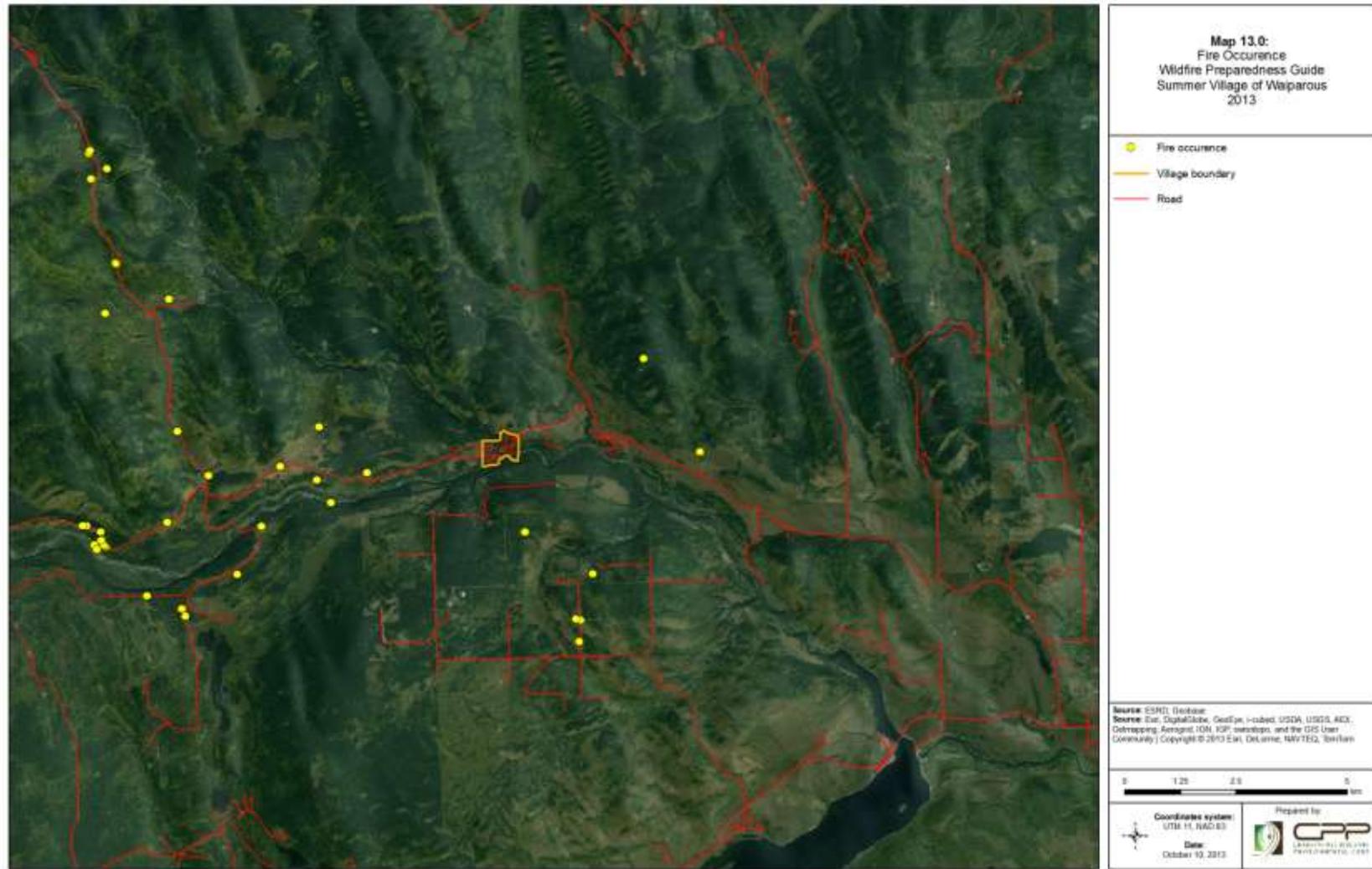
Photo 16: Access road/trail located in "Back 40" area (Facing NW)

Appendix 8 – Additional Enlarged Maps

(Copy of Figure 3.0 - Shows forest fuel types present within the SVW and surrounding area)



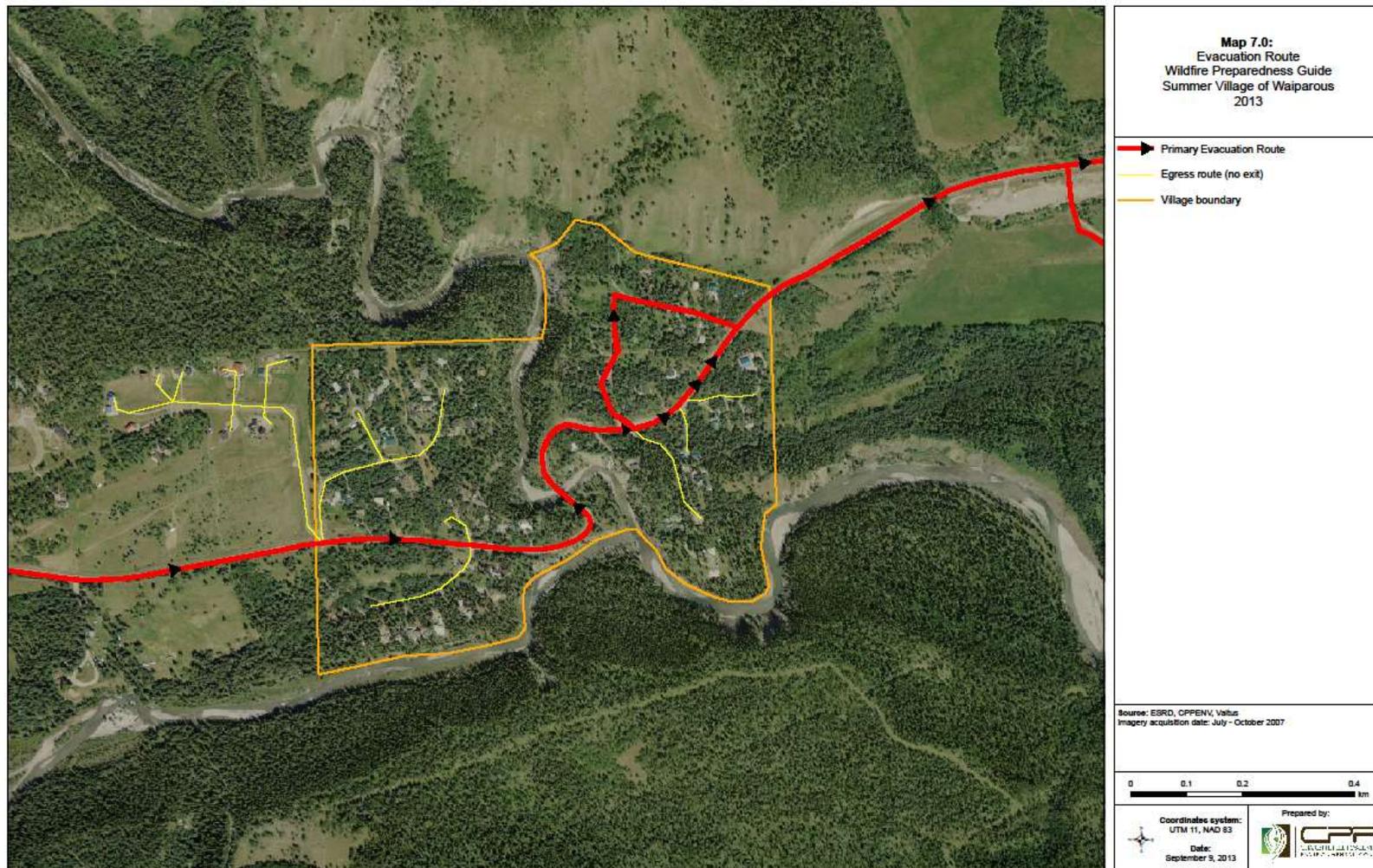
Copy of Figure 4.0 - Fire occurrence for the SVW area)



(Copy of Figure 5.0 - Hazard rating for private properties within the village - using wildfire threat potential)



(Copy of Figure 6.0 - Evacuation routes for residents of the SVW)



(Copy of Figure 7.0 - Areas for new or further forest fuels treatments within the SVW)

