January 4, 2020

0825840BCLTD
Granite Creek Quad Ranch
1500 Blackburn Road
Coalmont B.C.

Regarding test results for sewage disposal system for proposed eight homes.

April 2019, excavated test holes at cabin sites.

Soil texture - gravity coarse to medium sand.

Soil grade - single grain.

Waste water loading rate for type one sewage disposal system 25-29 litres per square meters per day proposed.

Each home has sufficient area for type one disposal field and reserve disposal field.

When building permits are submitted for the eight homes as per the accompanying site plan,
sewage disposal permits will be filed with interior health.

Auke Feenstra ROWP, planer, installer.

Feenstra Backhoe Ltd.
Box 191
Agassiz B.C.
V0M 1A0
604-796-3443
Fax - same
asmap05@hotmail.com

REGISTERED ONSITE WASTEWATER PRACTITIONER
ASTTBC
AUKE FEENSTRA
PL IN
OW0058

PETERS DRILLING
A DIVISION OF SOUTHERN IRRIGATION

P: 604.819.935!

6" Well Flow Test

Granite Creek Guides

1500 Blakeburn Rd.

V0X 1WO

February 14, 2020

The 6" 82 ft well at 1702 Rice Rd (Well ID plate # 26982) drilled by Fields Drilling Ltd. on April 20, 2010. This well supplies potable drinking water to the buildings at 1500 Blakeburn Rd.

The static level (non pumping level) was measured at 7ft 7" from the top of the casing (FTOC)

The water well was pumped using a 2" Honda gas pump with suction hoses installed

The flow was measured using a 5GPM US. bucket. (20Liters)

Pumping started at 11:30 PM and stopped at 12:30 PM.

The pumping level was 8ft 2" (FTOC) while pumping 75GPM (283LPM) for the duration of the 1hr flow test. The difference between the static and pumping level was .5ft or 6"

The pump was stopped at 12:30 PM and the water level came back to original static within 20 seconds.

The specific capacity on this well is 150GPM/Ft of available drawdown. (.5ft of drawdown@ 75GPM)

This well is easily capable of producing enough water for the proposed additional dwellings.

In the 1hour duration we pumped approximately 4500 Gallons or (17,000liters)

Thank you,

Albert Oostenbrink

BC Qualified Well Driller

BC Qualified Pump Installer

FIELD DRILLING CONTRACTORS LTD

P. O. Box 841
25320 Fraser Highway
Aldergrove, BC V4W 2V1

Phone: (604)857-2266
Toll free: 1-866-857-2266
Fax: (604)857-2267

WATER WELL RECORD

OWNER: GRANITE CREEK COTTAGES	DATE: APRIL 20, 2010
ADDRESS: 49862 YALE ROAD	SITE ADDRESS: COALMONT, BC
CHILLIWACK, BC V4Z 0B3	
PHONE: 604-316-2838	

Date Begun:	APRIL 14, 2010	
Date Completed:	APRIL 16, 2010	
Hole Diameter:	6	Inch
Surface casing:		
Dia: 10"	15	Feet
Drive shoe:	YES	
MEASUREMENTS GROUND LEVEL:	FROM	
Stick-Up:	2	Feet
Bottom of Casing:	73	Feet
Hole Depth:	95	Feet
Open Hole: From:		Feet
To:		Feet
SCREENS:		
Number of Screens:	2	
Slot Size:		
Slot 60	Slot	30
Slot	Slot	
Screen Length:	10	Feet
	11	Inch
Top at: 71 Feet	1	Inch
Bottom At: 82 Feet		Inch
K. Packer: YES	Riser:	2Ft
B. Bottom: YES		
WELL COMPLETION:		
Rate:	125+	GPM
Pump Setting:	69	Feet
Static Water Level:	3 ½	Feet
Develop:	5	Hours

FROM	TO	WELL LOG DESCRIPTION
0	6	TOPSOIL
6	13	COBBLES AND SAND
13	15	W.B. SAND & GRAVEL
15	25	SILTY, W.B. FINE GRAVEL & SAND
25	30	CLEAN W.B. COARSE SAND
30	50	SILTY BROWN SAND & GRAVEL
50	70	COARSE W.B. SAND & GRAVEL
70	82	CLEAN COARSE SAND, SMALL GRAVEL
82	95	IRONY RED FINE SAND, SOME GRAVEL

Rig No: 5	Rotary: YES
	Cable:
Driller:	DARYL SMITH
Helper:	ROB SPENCER

SITE LEGAL DESCRIPTION:

WELL I.D.
26982

NAME: GRANITE CREEK COTTAGES
NUMBER: 4125-5
SHOULD BE PUMP TESTED FOR EXACT GPM

BRITISH COLUMBIA The Best Place on Earth | Ministry of Environment

Pumping Test Report

Stamp company name/address/ phone/fax/e-mail here.

Ministry Well ID Plate Number: 26982

Ministry Well Tag Number: _____

Red lettering indicates minimum mandatory information. Requirements for flow reports are found in Part 5 of the *Water Act*, available at: http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/index.html#leg.

Owner name: Granite Creek Guides

Mailing address: 1500 Blakeburn Road Town Coalmont Prov. BC Postal Code V0X 1W0

Well Location: Address: Street no. 1702 Street name Rice Road Town Coalmont

or **Legal description:** Lot____ Plan____ D.L.____ Block____ Sec.____ Twp.____ Rg.____ Land District____

or **PID:** 014-998-963 and **Description of well location (attach sketch, if nec.):**

In field near bush area on right of way from Bert Rice. NW corner of field

NAD 83: Zone:____ and **UTM Easting:**____ m or **Latitude:** deg: 49 min: 30 sec: 25.59N

(Datum must be set to NAD83) **UTM Northing:**____ m **Longitude:** deg: 120 min: 41 sec: 12.59W

Ground elevation:____(ft) asl Method: ☐ GPS ☐ Differential GPS ☐ Level survey ☐ Other (specify):____

Class of well (see Table 1): Water Supply **Sub-class of well:** private domestic

Water supply wells: indicate intended water use: ☐ private domestic ☐ water supply system ☐ irrigation ☐ commercial or industrial ☐ other (specify): ____

Pumping Test Summary Information

Type of well pump:

☒ Submersible ☐ Jet (end-suction)

☐ Vertical turbine ☐ Other (specify Gas Pump

Depth of pump setting: 69 ft ft (btoc)

Type of Pumping Test:

☒ Constant Rate ☐ Step Test ☐ Other (specify)____

Method of water level measurement:

☒ Water level sounder ☐ Datalogger ☐ Air line

☐ Wetted tape ☐ Other (specify)____

Reference datum for water level measurements:

☒ Top of casing ☐ Ground level ☐ Other (specify)____

Final stick-up: 2.5 ft in

Method of flow measurement:

☐ Flow meter ☐ Orifice ☐ 45-gallon drum ☒ 5-gallon pail

☐ Other (specify)____

Start date of pumping test: 2020/02/14 (YYYY/MM/DD)

Static water level: 7 ft 7 in TOC ft

Duration of pumping: 1 hrs **Duration of recovery:**____ hrs

Well yield estimated from pumping test: 75 USgpm

Available drawdown: 50 ft Specific Capacity: 150 USgpm/ft

Method of estimating long-term well yield from pumping test:

5 gallon bucket

Pumping test data sheet(s) attached: ☐

Person conducting the pumping test (please print):

Name (first, last): Albert Oostenbrink

Company name: Peters Well Drilling

Registration number of person responsible*: WD08101501

Consultant (if applicable; please print):____

* Fill in the registration of the Qualified Well Driller/Pump Installer. If the test was conducted by a driller/pump installer who is not registered, the Qualified Well Driller/Pump Installer who is directly supervising the work should fill in their registration number.

Declaration:

The pumping test has been done in accordance with the requirements in the *Water Act* and the Ground Water Protection Regulation.

PLEASE NOTE: The data recorded in this pumping test report reflect conditions at the time of the test. Water levels, well performance, estimated long-term well yield and water quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities, and condition of the works, which may change over time.

Signature of Person Responsible:

X A Oostenbrink

Note: Well reports submitted to the Deputy Comptroller, or retained by the person responsible, as required under the *Water Act* shall be considered part of Provincial Government records and are subject to the *Freedom of Information and Protection of Privacy Act*.

Return Completed Report and Data Sheets to:
Deputy Comptroller Ministry of Environment, Water Stewardship Division
Watershed & Aquifer Science Section
PO Box 9362 Stn Prov Govt Victoria BC
V8W 9M2

Questions? If you have any questions about the *Water Act* or this report form, please contact your local Ministry of Environment office.

white: Customer copy
canary: Driller copy
pink: Ministry copy

Pumping Test Drawdown Data Sheet

Pumping test drawdown data sheet for: Granite Creek Guides **(include well name)**

☒ Pumping well ☐ Observation well, include well ID plate number (if available): 26982 and distance to pumping well: _____ ft or m (circle)

Type of pumping test: ☒ Constant rate ☐ Step ☐ Other (specify): _____

Date and time at start of pumping (YYYY/MM/DD; hh:mm): 2020/02/14 **Static water level prior to pumping:** 7.7 ft

Water level at end of pumping: 8.2 ft

Time since pumping started (min) (enter to the nearest minute)	Measured water level (m or ft)	Drawdown (m or ft)	Measured pumping rate (USgpm, lgpm, l/s) (enter pumping rate before re-adjusting)	Remarks or observations (e.g., pumping rate adjusted, field water quality observations, weather observations, water sample collected)
11:30	8.2		75 GPM	murky, dirty water
11:31	8.2			
11:32				
11:33	8.2		75 GPM	
11:34	8.2			
11:35	8.2		75 GPM	
11:36	8.2			
11:37	8.2		75 GPM	
11:38	8.2			
11:39	8.2		75 GPM	
11:40	8.2			
11:42	8.2			
11:44	8.2		75 GPM	Clear Water
11:46	8.2			
11:48	8.2		75 GPM	
11:50	8.2			
11:52	8.2		75 GPM	
11:54	8.2			
11:56	8.2		75 GPM	
11:58	8.2			
12:00	8.2		75 GPM	
12:05	8.2			
12:10	8.2		75 GPM	
12:15	8.2			
12:20	8.2		75 GPM	
12:25	8.2			
12:30	8.2		75 GPM	

Notes: Drawdown is the difference between the measured water level during pumping and the static water level prior to pumping.

Pumping Test Recovery Data Sheet

Pumping test recovery data sheet for: Granite Creek Guides **(include well name)**

☒ Pumping well ☐ Observation well, include well ID plate number (if available): 26982 and distance to pumping well: _____ ft or m (circle)

Type of pumping test: ☐ Constant rate ☐ Step ☐ Other (specify): _____

Date and time at end of pumping (YYYY/MM/DD; hh:mm): 2020/02/14 12:30 PM **Static water level prior to pumping:** 7.7 ft **Water level at end of pumping:** 8.2 ft

Time since pumping started (min) (enter to the nearest minute)	Time since pumping stopped (min) (enter to the nearest minute)	Time since pumping started / Time since pumping stopped	Measured water level (m or ft)	Residual drawdown (m or ft)	Remarks or observations (e.g. weather observations)
12:32			7.7 ft		backup to original static in 20 sec.
					after pumping stopped.

Notes: Residual drawdown is the difference between the measured water level during recovery and the static water level prior to pumping.

Fire Mitigation Report

for 1500 Blakeburn Rd, BC

Submitted by: Kyle Broome, RPF & Sidney Potter, BSc

Submitted to: Regional District Okanagan Similkameen

Cabin Forestry

Registered Professional Signature

RPF Printed Name	
Kyle Broome	RPF 4672
Date Signed: November 28th, 2019	
	
I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work	

Contents

SECTION 1: Introduction

A Wildfire Threat Assessment (WTA) examines the susceptibility of an area to wildfire by analyzing factors such as fuel, topography, and weather (FLNRO, 2017). Using a scoring system, a threat rating is determined for a site after the completion of the assessment. The objectives of a WTA are to:

1) Ensure that fire hazards are identified
2) Determine whether fuel hazard abatement is required
3) Provide treatment specifications and recommendations

With meeting the objectives listed above, this report will outline relevant details on the fuel, topography, and climate specific to 1500 Blakeburn road. The results and interpretations of the WTA and the cruise data will also be documented in the report. This report will conclude with treatment specifications and recommendations for hazard abatement (FLNRO, 2017).

Located in the Interior Douglas fir Biogeoclimatic dry, cool variant zone (IDFdk2), the falls under the Regional District Okanagan Similkameen (TEI, 2019). On November 12, 2019 a site review of the property was conducted in accordance with BC Wildfire Service Wildfire Threat Assessment. A threat rating of **High** was assigned to the site based on two fuel assessments and 8 stand assessments. (FLNRO, 2017).

SECTION 2: Wildfire Factors

This section outlines the three key factors that influence fire behavior: weather, topography, and fuel. The relevance of each factor, in reference to wildfire behavior, will be described and then applied to the site in SECTION 3: of this report. The focus will be on fuel as this is a factor, we can influence at a more direct level. Although topography and weather cannot be adjusted to reduce wildfire threats, a foundational knowledge of their influence is beneficial in mitigating against wildfires.

2.1 Topography & Geography

Slope and aspect are both descriptors of topography, each having major influence on wildfire activity. A greater slope means increased fire spread; this is due in part to the convection of heat upwards and the angling of the flame towards the fuel ahead. The convecting heat dries the fuels while the angled flame can access the fuel ahead. Aspect influences what fuels are present and how much moisture they hold. A north facing aspect will receive less solar radiation and more precipitation and therefore have heavier fuel loads and higher moisture content. Contrarily, a south facing slope will be exposed to more solar radiation, less precipitation and have lighter fuel loads and lower moisture content (Idaho Firewise Inc, 2019). *Slope percent, slope position of value,* and *aspect* are examined in the Priority Setting Scoring to determine rate of spread and fuel size/moisture (FLNRO, 2017).

2.2 Climate & Weather

More variable than topography and fuel, the only thing consistent about climate, is change. Even more so, weather can be unpredictable and change quickly. Weather's influence on fire comes down to its impact on fuel moisture and the direction in which fire travels. Temperature, precipitation, wind, and relative humidity are all relevant characteristics of weather that must be considered when analysing wildfires (Idaho Firewise Inc, 2019). *Predominant wildfire spread direction* is the single weather component examined; it determines wildfire rate of spread and direction of spread (FLNRO, 2017).

2.3 Vegetation & Fuel

Wildfires need fuel, oxygen, and an ignition source to catch fire. Fuels for wildfires are any combustible materials including, but not limited to, trees - alive and dead-, shrubs, herbs, woody debris, and duff. Different characteristics of fuel play a role in wildfire behaviour such as rate of spread and head fire intensity. These characteristics include fuel type, continuity, size, and loading, each of which is measured in the fuel assessment. Fuel loading is in reference to the amount of fuel present, both horizontally and vertically. The size of fuel influences how easily it will ignite; continuity and distribution impacts rate and amount of wildfire (FLNRO, 2017).

2.3.1 Fuel Types

Fuel type can be identified using those outlined by the Fire Behaviour Prediction (FBP) system. FBP fuel types of relevance to this report are immature Lodgepole pine (C4), Ponderosa pine/Douglas fir (C7), and leafless aspen (D1) (Natural Resources Canada, 2019).

- C4: Encompasses immature Lodgepole pine (Pl) with some surface fuel loads of dead, downed woody fuel. Figure 8. FBP Fuel Type C4: Immature Lodgepole pine illustrates this fuel type on site.
- C7: Are open stands with uneven aged Ponderosa pine (Py) and Douglas fir (Fd). C7 fuel type can also be defined by: a canopy cover of less than 50%, needle dominant surface fuel, and a nearly non-existent organic layer. Figure 7. FBP Fuel Type C7: Ponderosa pine/Douglas fir illustrates this fuel type on site.
- D1: On site are stands of pure semi mature leafless Trembling aspen (At). Understory is likely made up of tall shrubs with some dead down fuels and deciduous leaf litter surface fuels. Figure 9. FBP Fuel Type illustrates this fuel type on site.

2.3.2 Fuel Groups

Fuel can be divided into 4 groups, each of which is assessed during a WTA (BC Wildfire, 2019):

- **Ground Fuel**: combustible material below the surface of the ground. This includes duff and the organic layer of soil. The depth of the organic layer is measured in the WTA to reflect fuel moisture and rate of ignition.

- **Surface Fuel**: ground surface litter including dead wood and needles. *Surface fuel composition* and *dead and down material continuity* are both examined because different fuel types result in different fire intensity, rate of spread, fuel moisture, and flame length.

- **Ladder Fuel**: encompasses understory and fuel typically 1-3m in height, which allow for a fire to transfer from the surface to the crown. *Ladder fuel composition*, *horizontal continuity*, and *amount of understory* are all quantified to assess the stands ability to support a crown fire. The ability of a stand to support a crown fire is of extreme relevance as these are the most intense and consequently, the most dangerous fires.

- **Crown Fuel**: needles in the trees canopy as well as any limbs, cones, or plant growth. *Overstory composition*, *crown closure*, *fuel strata gap*, *amount of overstory*, and *percent of dead/dying stand* are all inspected; illustrating the ability of the crown to support a fire and the ability of the flame to transition from ladder fuels to crown fuels (USDA Forest Service)

SECTION 3: WTA Methods & Results

SECTION 4:

This section outlines the methodology and results of the WTA. From the collected data, conclusions on treatments will be extracted and discussed in

SECTION 4: Fuel Management and Treatment. A WTA is made up of two worksheets: The Priority Setting Scoring and the Site Level Fuel Assessment. The Priority Setting Scoring collects information on topography, weather, and any previous mitigation activities conducted in the area of interest (AOI). Site Level Fuel Assessment is a detailed analysis of ground, surface, ladder, and crown fuels in the AOI. Two Site Level Fuel Assessments were conducted on site; plot 1 was in Lot 8, while plot 2 was in Lot 7. A singular Priority Setting Scoring is required per site. Refer to Appendix I: Wildfire Threat Assessments for the completed work sheets.

3.1 Plot 1 Site Level Fuel Assessment

Using a 3.99m fixed-radius plot, the AOI was examined; 11 components were given a level/class, each with an associated value. The sum of the 11 values provided a score of 77/110. Using the derived score from the assessment a threat rating of **High** was assigned to the site, see **Error! Reference source not found.**.

3.2 Plot 2 Site Level Fuel Assessment

Using a 3.99m fixed-radius plot, the AOI was examined. The 11 components examined in plot 1 were reexamined in plot 2. The sum of the 11 values provided a score of 75/110. Using the derived score, a threat rating of **High** was assigned to the site, see **Error! Reference source not found.**.

3.3 Site Priority Setting Scoring

The Priority Setting Scoring was conducted at plot 1; 9 components were given a level/class, each with an associated value. The sum of the 9 values provided a score of 42/110. This is a separate score that is only applicable when comparing and prioritizing treatment areas. Since this assessment has a single treatment area, the information provided by the Priority Setting Scoring is strictly an asset in determining fuel management strategies.

Table 1 Threat Rating Table

Threat Rating (Max Score 110)				
Eco - province	Low	Moderate	High	Extreme
Coast and Mountains, Georgia Depression	0 - 43	44 -59	60 - 72	73 - 110
Central Interior	0 - 46	47 - 63	64 - 77	78 - 110
Southern Interior	0 - 51	52 - 71	72- 86	87 - 110
Southern Interior Mountains	0 - 51	52 - 71	72- 86	87 - 110
Sub Boreal Interior	0 - 43	44 -59	60 - 72	73 - 110
Boreal Plains	0 - 43	44 -59	60 - 72	73 - 110
Northern Boreal Mountains, Taiga Plains	0 - 40	41 - 56	57 - 68	69 - 110

3.4 Stand-level Measurements

8 stand-level assessments were conducted to gather information on the current under and overstory stand conditions. The tables below summarize the data collected during the Stand-level measurements and are outlined by treatment unit as illustrated in Map 1 WTA Treatment Units Based on FBP Fuel Types.

Table 2 Pre-treatment Unit 1 - C4 Lodgepole Pine Fuel Type

Layer	Layer Description	Species %	Stems/ha	Mean DBH	Mean Total Height	Crown Closure (%)
Overstory (L1)	>17.5cm	Pl_{10}	300	27.1	19.8	35 - 55%
Overstory Submerch (L1)	12.5-17.5cm DBH	-	-			
Poles (L2)	7.5-12.5cm DBH	Fd_{10}	100			
Saplings (L3)	0-7.5cm DBH >1.3m height	Pl_6Fd_4	900			
Regen (L4)	<1.3m height	Pl_4Fd_6	800			

Table 3 Pre-treatment Unit 2 - C7 Douglas Fir Fuel Type

Layer	Layer Description	Species %	Stems/ha	Mean DBH	Mean Total Height	Crown Closure (%)
Overstory (L1)	>17.5cm	Pl_2Fd_8	333	27.9	19.86	35%
Overstory Submerch (L1)	12.5-17.5cm DBH	Pl_{10}	133			
Poles (L2)	7.5-12.5cm DBH	Fd_{10}	533			
Saplings (L3)	0-7.5cm DBH >1.3m height	Pl_2Fd_8	1100			
Regen (L4)	<1.3m height	Fd_{10}	2700			

SECTION 4: Fuel Management and Treatment

The section provides information on FireSmart, fuel management information, and treatment specifications for the site.

4.1 Treatment Specifications and Regimes

Treatment specifications include brushing, pruning, fuel removal, and debris disposal. The area has been broken up into 4 treatment units based on the fuel types described in section 2.3.1 Fuel Types.

4.1.1 General Stand Description

All treatment zones are located in the Interior Douglas fir Biogeoclimatic dry, cool variant (IDFdk2). The Interior Douglas fir BEC zone is found in low to mid elevations of the Okanagan-Similkameen, here warm, dry summer seasons and cool winters are experienced. This stand is dominated by Douglas fir trees and predominantly grassy understory. Lodgepole pines are common at higher elevations, as seen in both TU1 and TU2. In both treatment units understory is dominated by regen and sapling Douglas fir. TU3 is a small island of Trembling aspen while TU4 is the hydro corridor composed of grasses and shrubs, this treatment unit requires no treatment actions. Refer to Map 1 WTA Treatment Units Based on FBP Fuel Types.

Table 4 Treatment Unit Specifications Summary Table

TU	Stand Description (Fuel Type if applicable)	Treatment Type	Debris Management	Debris Disposal
1	C4 Immature jack lodgepole pine	HTR TFB	SFR P	PB CDAR
2	C7 Ponderosa pine – Douglas Fir	HTR TFB	SFR P	PB CDAR
3	D1 Leafless aspen	HTR	SFR	PB CDAR
4	Hydro Right of Way	-	-	-

Treatment Type Key Hazardous Tree Removal (HTR), Thin from Below (TFB), Surface Fuel Removal (SFR), Prune (P), Pile Burn (PB), Chip Debris and Remove (CDAR)

Table 5 Treatment Type Specifications

Treatment Type	Specifications
Hazard Tree Removal (HTR)	**TU1-3:** All hazardous trees are to be felled before other treatment activities can take place. Modified work procedures can take place to avoid the unnecessary removal of high value wildlife trees.
Thinning from below (TFB) **Target** L1 submerch, L2 and L3 combined 200sph Stump height <10cm Stump angle <20 deg	**TU 1 and 2:** Removal of L1 submerch, L2 and L3 to achieve **targets of 200sph**. Where applicable, preferred retention of more fire resistant Fd over Pl. To provide natural barriers from noise and dust pollution as well as mimic natural variation in stand-level structure, clumps of Pl and Fd can be retained assuming they do not pose a threat as a significant ladder fuel hazard. This may be left to supervisor discretion and can only be carried out where practicable. All Deciduous and L4 regen are "ghost trees" and should not contribute to target densities, they are therefore exempt from TFB treatments
Prune (P) **Target** 3m Crown Base Ht	**TU 1 and 2:** Prune all L1 and L1 submerch species to increase crown base height to a minimum of 3m. Cut branches flush to branch collar.
Surface Fuel Removal (SFR) **Target** CWD 15pieces/ha FF <0.5kg/m2	Following brushing and pruning, fuel should be removed in areas where surface fuel amounts to <0.5kg/m2 via mechanical or manual means. All jackpots should be completely removed from the property. Coarse woody debris (>12cm diameter) is important to ecosystem and representative of natural forest dynamics. Retention of 15 pieces/ha that is >12cm diameter and >3m in length with random distribution is acceptable. Fine Fuel (<12cm diameter) should not exceed <0.5kg/m2. Excess of this target should be pile burned or chipped and hauled/dispersed
Pile Burn (PB)	All burning to be conducted must be in compliance with RDOS bylaws and permits. Burning days must fall under the appropriate Air Quality and Venting Index. Burn piles should be on site, ideally occurring concurrently with thinning operations to reduce post-treatment fuel loading. Burn piles should not exceed size of 3x3x1m tall (category 3)
Chip Debris and Remove (CDAR) **Target** Chip layer<10cm	An additional/alternative form of debris disposal is chip and disperse or chip and haul offsite. If chipping and dispersing have a maximum chip depth on site of 10cm

4.2 FireSmart

FireSmart is a wildfire educational program for homeowners and communities, outlining steps that can be taken to reduce the risk of wildfires and to provide a landscape in which firefighters can defend our homes more effectively. Working from the priority value, in this case where the house will be built, into the surrounding landscape is the most effective way to carry out fuel management. The FireSmart Homeowners Manual divides properties into 3 priority zones that encompass working from the home, outwards (FireSmart Canada, 2018).

4.2.1 Priority Zone 1

Zone 1 includes the house and the property within a 10m radius; this is the most important zone. There should be no easily ignitable fuels in this area; all landscaping should be done with native, fire resistant vegetation. Using crushed rock in landscaping around the home is another way to mitigate against wildfires impact (FireSmart Canada, 2018).

Other factors to consider are the materials used when building structures. The structure located presently on the property has some good examples of fire resistant building materials such as metal roofing and enclosed eaves. Some FireSmart improvements would be enclosing the openings under the structure and deck as sparks and embers can easily settle and ignite here, see Figure 6 Recommended FireSmart Improvements. Fire rated doors, double pained windows, and the installation of a spark arrestor in the chimney are other steps that can be taken to fire proof structures. Refer to the FireSmart Homeowners Manual for further examples of fire-resistant and retardant materials to build your structure with. Once structures are built, upkeep includes but is not limited to, regular removal of debris from gutters, corners, eaves, and vents (District of Lake Country, 2018).

4.2.2 Priority Zone 2 and 3

Priority Zone 2 spans from 10 to 30m outside of the structure while Priority Zone 3 covers 30 to 100m outside the house. Priority zone 2 should have a minimum spacing of 3m between trees to prevent the progression of crown fires. All ladder fuels should be removed to allow for a minimum spacing of 2m between the tree canopy and ground to prevent surface fires from turning into a crown fire. (FireSmart Canada, 2018). In Priority Zone 3 is the first line of defence against approaching wildfires, therefore FireSmarting here must not be overlooked. Continuation of removing ladder fuels and spacing trees a minimum of 3m apart is recommended (FireSmart Canada, 2018)

4.3 Recommendations

1. Communication with adjacent property owners to promote the continuation of fuel treatment into surrounding area.
2. In addition to the metal roofing, implementing other fire resistant and retardant materials to the construction of the home

3. FireSmart landscaping in priority zone 1, including planting fire resistant, native vegetation and decorative crushed rock
4. Regular property maintenance such as cutting the grass in priority zone 1 and debris removal from gutters, eaves, corners, and vents.

Appendix I: Wildfire Threat Assessments

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)

Location	Coalmont, BC	Date	Nov 12 2019
Latitude	49.50543	Longitude	120.69346
Crown Species Composition (species %)	Fd5Pl5		
Ladder Fuel Species Composition	Fd10		

Plot # 1 (Lot 8)
Assessor Kyle Broome, RPF, Sidney
ABCFP No. 4672
TOTAL SCORE 77

	Component	Levels / Classes
Forest Floor and Organic Layer		
1	Depth of Organic Layer (cm)	2 - <5 cm
Surface and Ladder Fuel (0.1 - 3.0 meters in height)		
2	Surface Fuel Composition	Dead Fines (Leaves, needles, or fine branch material) fuel (<1
3	Dead and Down Material Continuity (>7cm)	10 - 25% Coverage
4	Ladder Fuel Composition	Spruce / Pine / Fir
5	Ladder Fuel Horizontal Continuity	Uniform >60% Coverage
6	Stems/ha (Understory)*	2501 - 4000
Stand Structure and Composition (Dominant and Co-Dominant Stems)		
7	Overstory Composition CBH**	Conifer w. Low Crown Base (<5 m)
8	Crown Closure	41 - 60%
9	Fuel Strata Gap (m)***	< 3m
10	Stems / ha (overstory)****	601 - 900
11	Dead & Dying (% of dom & codom stems)	Standing Dead / Partial Down (< 20%)

Comments: Fuel free zones will be necessary around structures in zone 1. In lots where a clearing is already present structures would be easiest to build there.

EcoProvince: Southern Interior

Threat Rating: High

Threat Rating (Max Score 110)

Eco-province	Low	Moderate	High	Extreme
Coast and Mountains, Georgia Depression	0 - 43	44 - 59	60 - 72	73 - 110
Central Interior	0 - 46	47 - 63	64 - 77	78 - 110
Southern Interior	0 - 51	52 - 71	72 - 86	87 - 110
Southern Interior Mountains	0 - 51	52 - 71	72 - 86	87 - 110
Sub Boreal Interior	0 - 43	44 - 59	60 - 72	73 - 110
Boreal Plains	0 - 43	44 - 59	60 - 72	73 - 110
Northern Boreal Mountains, Taiga Plains	0 - 40	41 - 56	57 - 68	69 - 110

Total threat score is out of 110 points based on 65 points on ground, surface and ladder fuel, and 45 points on overstory
*Understory is considered ladder and suppressed stems in this category (distinct break between these stems and overstory)
**Overstory is dominant and co dominant stems (Green/ Living)
***Fuel Strata Gap – Distance from top of ladder fuel to live crown base height of overstory

Figure 1. Plot 1 Site Level Fuel Assessment

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)

Location	Coalmont, BC	Date	Nov 12 2019	Plot #	2 (Lot 7)
Latitude	49.50536	Longitude	120.69014	Assessor	Kyle Broome, RPF, Sidney I
Crown Species Composition (species %)			Fd9Pl1	ABCFP No.	4672
Ladder Fuel Species Composition			10Fd	TOTAL SCORE	75

	Component	Levels / Classes
Forest Floor and Organic Layer		
1	Depth of Organic Layer (cm)	1 - <2 cm
Surface and Ladder Fuel (0.1 - 3.0 meters in height)		
2	Surface Fuel Composition	Lichen, Conifer, Shrubs
3	Dead and Down Material Continuity (<7cm)	10 - 25% Coverage
4	Ladder Fuel Composition	Spruce / Pine / Fir
5	Ladder Fuel Horizontal Continuity	Uniform >60% Coverage
6	Stems/ha (Understory)*	> 4000
Stand Structure and Composition (Dominant and Co-Dominant Stems)		
7	Overstory Composition (Sb)**	Conifer w. Low Crown Base (<5 m)
8	Crown Closure	20 - 40%
9	Fuel Strata Gap (m)***	< 3m
10	Stems / ha (overstory)****	401 - 600
11	Dead & Dying (% of dom & codom stems)	Standing Dead / Partial Down (< 20%)

Comments: Fuel free zones will be necessary around structures in zone 1. In lots where a clearing is already present structures would be easiest to build there.

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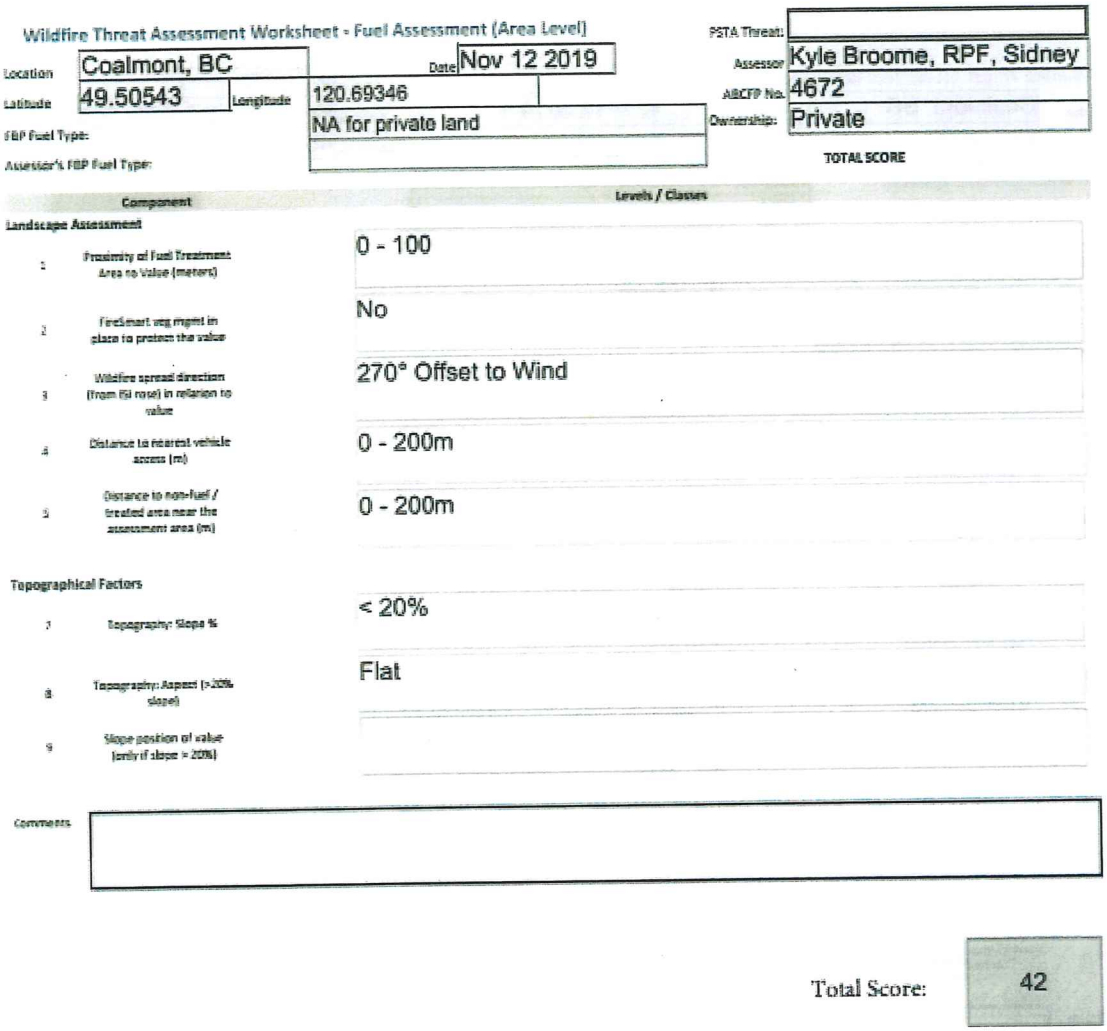
**Overstory is dominant and co dominant stems (Green/ Living)
***Fuel Strata Gap = Distance from top of ladder fuel to live crown base height of overstory

Figure 2. Plot 2 Site Level Fuel Assessment



Wildfire Threat Assessment Worksheet - Fuel Assessment (Area Level)

Location	Coalmont, BC	Date	Nov 12 2019	PSTA Threat:	
Latitude	49.50543	Longitude	120.69346	Assessor	Kyle Broome, RPF, Sidney
FBP Fuel Type:			NA for private land	ABCFP No.	4672
Assessor's FBP Fuel Type:				Ownership:	Private
				TOTAL SCORE	

	Component	Levels / Classes
Landscape Assessment		
1	Proximity of Fuel Treatment Area to Value (meters)	0 - 100
2	FireSmart veg mgmt in place to protect the value	No
3	Wildfire spread direction (from ISI rose) in relation to value	270° Offset to Wind
4	Distance to nearest vehicle access (m)	0 - 200m
5	Distance to non-fuel / treated area near the assessment area (m)	0 - 200m
Topographical Factors		
7	Topography: Slope %	< 20%
8	Topography: Aspect (>20% slope)	Flat
9	Slope position of value (only if slope > 20%)	

Comments:

Total Score: 42

Figure 3. Priority Setting Scoring

Appendix II: Wildfire Threat Assessment Photos

Surface Ladder Aerial/Crown

Figure 4. Plot 1 Site Fuel Strata

Surface Ladder Aerial/Crown

Figure 5. Plot 2 Site Fuel Strata

Figure 6 Recommended FireSmart Improvements

Appendix III: FBP Fuel Type Photos

Figure 7. FBP Fuel Type C7: Ponderosa pine/Douglas fir

Figure 8. FBP Fuel Type C4: Immature Lodgepole pine

Figure 9. FBP Fuel Type D1: Leafless Deciduous