

A. PROJECT IDENTIFICATION	
PROJECT ID AND UNIT ID: District of Mackenzie CRI 2021 Recovery John Dahl Park Demonstration Fuel Management Prescription	LAND OR TENURE HOLDER: Crown Municipal (District of Mackenzie)
LATITUDE/LONGITUDE: -123.085040°, 55.338002° N (approximate).	GEOGRAPHIC DESCRIPTION: The proposed treatment area is located within the WUI, directly adjacent to private property at the northeast perimeter of town.
HIGHER-LEVEL PLAN(s): <ul style="list-style-type: none"> • Community Wildfire Protection Plan Update (CWPP)– District of Mackenzie (2017) • McLeod Lake Mackenzie Community Forest (K2M) Forest Stewardship Plan 2016-2021 • Mackenzie Land Resource Management Plan (2000) • Mackenzie Sustainable Resource Management Plan • Mackenzie Natural Resource District (MNRD) Integrated Silviculture Strategy – Situation Analysis (2015) • MNRD Fire Management Plan (2017) • Fire Management Stocking Standards Guidance Document (2016) 	MAP REFERENCE NUMBER: 930.035

B. FUEL TREATMENT PROJECT DESCRIPTION	
FUEL MANAGEMENT OBJECTIVE:	<p>According to BC Wildfire Service's Provincial Strategic Threat Analysis (PSTA) Fire Threat data, the majority of the proposed treatment area is classified as a 'high' fire threat. Furthermore, the proposed area has a high priority for treatment due to its proximity to residences, community centres and places of worship, as well as high-use mountain biking and cross-country ski recreation trails.</p> <p>The objectives of this prescription are to:</p> <ul style="list-style-type: none"> • Demonstrate the principles and practices of effective FireSmart fuel/vegetation management to local community members and the broader public through the use of permanent signage and community outreach; • Reduce the risk of wildfire ignition, spread, and spotting within forested areas adjacent to private land, residences and businesses, community gathering places, and critical infrastructure; • Reduce wildfire intensity and potential for crown fire around the town of Mackenzie; • Enhance public safety; • Accelerate forest succession to mature forest structural conditions with generally lower stand densities; • Enhance forest health and resilience to biotic and abiotic elements including mountain pine beetle, spruce beetle, western gall rust and windthrow; • Minimize negative impacts to, and where possible enhance, community values including recreation, cultural heritage, and visual quality; and • Minimize impacts to, and where possible, protect and enhance the availability/diversity of habitat and important ecosystem features.
STRATEGIES:	<p>Strategies to achieve the above objectives include:</p> <ul style="list-style-type: none"> • Thinning from below (i.e., remove suppressed, intermediate trees and select overstory trees) to reduce ladder fuels, crown bulk density, and ultimately reduce the risk of crown fire; • Retention of dominant and co-dominant canopy trees to a threshold that maintains a cool and moist understorey microclimate, where appropriate, while reducing wildfire behaviour intensity; • Pruning of retained trees to increase crown base height and reduce ladder fuel continuity; • Reduce fine surface fuel loading and flammable understorey vegetation to reduce surface fire intensity and rate of spread; • Retain and encourage live deciduous tree and shrub species with a high moisture content to reduce fire behaviour and provide wildlife habitat.

METHODS: Thin from below (TFB), Commercial thin (CT), Hazard tree removal (HTR), Pruning (PR), Surface fuel removal (SFR), Chipping (CHIP) into bins, Grinding (GRIND) into bins, Pile and burn (PB), FIREWOOD.

C. TREATMENT UNIT (TU) SUMMARY

TU	NET AREA (ha)	GROSS AREA (ha)	LEAVE AREAS (ha)	NP (ha)	NAR (ha)	TREATMENT REGIME (i.e., PRU, THIN, PIL, BURN)	GENERAL DESCRIPTION
TU-1	1.8	1.8	-	-	-	CT, TFB, HTR, PR, SFR, CHIP, GRIND, PB	This treatment unit is characterized as a C-3 fuel type comprised primarily of Bl, with lesser components of Sx, and Ep in the overstory. Understorey density is moderate, with approximately 800 SPH of Bl, Sx, and Ep. A commercial thin from below, hazard tree removal, pruning of retained trees, surface fuel removal and chipping for debris disposal (or pile and burn in select locations upon the development of a smoke management plan) is proposed. All healthy deciduous trees will be retained, as well as healthy conifers over 22.5cm dbh.
TOTALS			-	-	-	-	-

D. SITE CHARACTERISTICS

TU	CFFBPS FUEL TYPE	TIMBER TYPE	BGC SUBZONE, VARIANT & SITE ASSOC.	ELEVATION RANGE (m)	SLOPE POSITION	SLOPE RANGE (%)	ASPECT
TU-1	C-3	Bl80Ep20	SBSwk2/05	760-780	Plateau	0-25	180-240°
FUEL TYPE DETERMINATION		Fuel types were determined using the provincial PSTA fuel type data and field verification.					

E. SOIL CHARACTERISTICS

TU	SOIL TEXTURE	DUFF DEPTH (cm)	COARSE FRAGMENTS (%)	SOIL DISTURBANCE LIMIT (%)	SOIL HAZARD RATING		
					Compaction	Erosion	Displacement
TU-1	SiCL	1-4	15	5	Very High	Moderate	Low
According to FPPR, soils on this site are sensitive ¹ , therefore soil disturbance must be limited by conducting fuel management treatments during the winter season with a minimum of 30 cm of snowpack.							

F. VALUES – FOREST AND RANGE PRACTICES ACT

RIPARIAN & LAKESHORE AREAS - Forest Planning and Practices Regulation (FPPR) division 3, Government Action Regulation (GAR) section 6, Forest and Range Practices Act (FRPA) sections 180 and 181

Is the proposed cutting, modification or removal of trees, or site preparation, in an area that	Yes	A non-classified drainage area is located just outside TU-1: 1. NCD #1: This NCD is approximately 2-5 metres NW of the upper boundary of TU-1.
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¹ B.C. Ministry of Forests. 2001. Soil Conservation Guidebook. 2nd ed. For. Prac. Br., Min. For., Victoria, B.C. Forest Practices Code of British Columbia Guidebook. URL: <http://www.for.gov.bc.ca/tasb/leqsregs/fpc/fpcguide/soil/soiltoc.htm>

contains streams, lakes or wetlands?			
RIPARIAN MANAGEMENT AREAS (RMAs) - FPPR sections 51 and 52			
STREAM, LAKE, WETLAND ID	CLASS	RRZ (m)	RMZ (m)
NCD #1	-	-	-
See Appendix A: Maps. NCD #1 is located along the NW boundary of TU-1. Winter harvest is required given wet soils near the NCD.			
TEMPERATURE SENSITIVE STREAMS - FPPR section 53, GAR section 15, FRPA sections 180 and 181			
Are there temperature sensitive streams or direct tributaries to temperature sensitive streams within or adjacent to the proposed treatment area?		No	There are no temperature sensitive streams or tributaries to temperature sensitive streams within or adjacent to the treatment area.
ROAD CONSTRUCTION IN RIPARIAN MANAGEMENT AREAS - FPPR section 50			
Is road construction proposed in riparian management areas within the treatment area or an associated road permit (RP)?		No	Not applicable as no road construction is proposed.
STREAM CROSSINGS - FPPR section 55			
Will stream crossings be constructed within the proposed treatment area or a road permit road providing access to the treatment area?		No	No stream crossings will be constructed for the proposed activities. There is already an access road with a culvert installed that crosses NCD #1. No additional crossings will be required.
MAINTAINING STREAM BANK AND CHANNEL STABILITY ON S4, S5, and S6 STREAMS - FPPR section 52 (2)			
Is the proposed treatment in the RMZ of an S4, S5 or S6 stream that is directly tributary to an S1, S2 or S3 stream and the activity is likely to contribute significantly to the destabilization of the stream bank or the stream channel?		No	There are no streams or RMZs in the proposed treatment area.
DOMESTIC WATER LICENCES (inside or outside of community watershed) - FPPR section 59			
Does the proposed treatment area contain water sources that are diverted for human consumption by a licensed waterworks?		No	The proposed treatment area does not contain water sources.
LICENCED WATER WORKS (inside or outside of a community watershed) - FPPR section 60			
Does the proposed treatment include areas that are within 100 m of a licensed waterworks?		No	The proposed treatment is approximately 240 m from the nearest licensed waterwork line.
FISHERIES SENSITIVE WATERSHED - GAR section 14, FPPR section 8.1			
Are any activities proposed within a fisheries sensitive watershed?		No	The proposed treatment is not within a fisheries sensitive watershed.
COMMUNITY WATERSHED - GAR section 8, FPPR section 8.2, 61, 62 and 84			
Does the proposed treatment area include areas that are within a community watershed?		No	The treatment area is not within a community watershed.
Will this project require road construction or deactivation within a community watershed?		No	The project does not require road construction or deactivation.

WATERSHED ASSESSMENT CONSIDERATIONS - FRPA section 180 areas with "significant watershed sensitivity"

Does the proposed treatment area include areas that have watershed assessment considerations?		No	Since the proposed treatment areas are not within a community watershed, this is non-applicable.
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SOIL DISTURBANCE AND PERMANENT ACCESS STRUCTURES - FPPR sections 35 and 36

Treatment Area/Unit	Proposed Max. Allowable Soil Disturbance (%) (5% or 10%)	Proposed Max. Soil Disturbance for Roadside Work Areas (%)	Proposed Max. Permanent Access Structures (%)	Comments
TU-1	5%	25	N/A	No permanent access structures are allowed. This site has sensitive soils; therefore, fuel treatment must be conducted during the winter and with a minimum of 30 cm of snowpack to minimize soil disturbance.

Do the proposed Permanent Access Structures exceed 7% of the total area?		No	No permanent access structures are proposed. Temporary access skid trails only are proposed.
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LANDSLIDES AND TERRAIN STABILITY - FPPR section 37

Does the proposed treatment area include areas where terrain stability is a concern?		No	Slopes do not exceed 25% within the treatment unit.
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SUITABLE SECONDARY STRUCTURE - FPPR section 43.1

Does the proposed treatment area include a "targeted pine leading stand"?		No	The stand is sub-alpine fir (Bl) leading.
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UNGULATE WINTER RANGE - GAR section 12, FRPA sections 180 and 181, FPPR section 69

Does the proposed treatment area include areas within an Ungulate Winter Range?		No	The proposed treatment area is not within an Ungulate Winter Range.
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WILDLIFE HABITAT AREA - GAR section 10, FRPA sections 180 and 181, FPPR section 69

Does the proposed treatment area include any wildlife habitat areas (WHA)?		No	The proposed treatment area does not include any wildlife habitat areas.
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OBJECTIVES SET BY GOVERNMENT FOR WILDLIFE - FPPR section 7

Does the proposed treatment area include areas to which objectives for wildlife under FPPR section 7 apply?	Yes		The proposed treatment area is within the range/distribution of the central mountain caribou population. However, the treatment unit is within a suburban area that is not used by caribou.
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OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Landscape Level) - FPPR section 9

Does the proposed treatment area include areas to which objectives for landscape level biodiversity under FPPR section 9 apply?		No	<p>The proposed treatment area is within the Morfee Landscape Unit, established under the Mackenzie Land and Resource Management Plan (LRMP). The Morfee LU contains the following biodiversity assignment:</p> <ul style="list-style-type: none"> Intermediate Biodiversity Emphasis Option <p>No legal or non-legal biodiversity objectives currently exist for the Morfee Landscape Unit. However, the proposed treatment will retain stand species and structural diversity, including considerations for wildlife trees and retention of coarse woody debris.</p>
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			<p>TU-1 is within the SBSwk2 BEC zone, with a Natural Disturbance regime of infrequent stand-initiating events (NDT2). Historically, these forested ecosystems are represented by even-aged stands with patches of uneven-age stand structure due to an infrequent wildfire regime. Wildfires ranging from 20-1,000 ha resulted in a patchwork of primarily mature forests with patches of younger forests. The SBS ecosystems in this disturbance regime experience a mean disturbance interval of 200 years. The proposed treatment will maintain existing mature forest where it exists, targeting removal of understorey stems while retaining veteran and large mature trees. This approach is consistent with the spatial and temporal pattern of natural disturbance in SBSwk2.</p>
OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Stand Level) - FPPR section 9.1			
Are considerations for maintaining stand structure (wildlife trees, wildlife tree reserves, etc.), coarse woody debris, and maintaining tree and vegetation species composition incorporated into this prescription?	Yes		<p>As part of this prescription, all dominant and co-dominant overstorey trees will be retained, with the exception of danger trees that pose a risk to crew workers. Wildlife Danger Tree Assessments are required prior to implementation to identify and retain high-value wildlife trees; where practicable. 'No work zone' areas will constitute no more than 5% of the entire net treatment, measured by TU.</p> <p>Coarse woody debris will be retained as per Section H: Surface Fuel Loading. Larger diameter pieces (>25 cm) greater than 5m in length are preferred for retention. All deciduous trees and low flammability understorey shrub and herb species will be retained within the treatment area.</p>
RECREATION FEATURES - FRPA section 56 and 149, FPPR section 70			
Does the proposed treatment area contain interpretive sites, recreation trails, recreation sites, recreation facilities that are considered to be of significant recreation value and are designated a resource feature?	Yes		<p>The treatment unit does not overlap with recreation features inventory polygons (iMapBC, Nov. 2021).</p> <p>However, recreational cross-country skiing and mountain biking occur on the trail immediately north of TU-1 that links into the nearby John Dahl Regional Park. Precautions will be taken during the operational phase of this project to maintain this trail in its original condition. As the trail has sufficient width to fit heavy machinery, it will be used for worker and machine access. Should an unacceptable level of soil disturbance occur on this trail or within the treatment area, the contract Supervisor will develop an appropriate rehabilitation plan. The trail will be maintained in or restored to pre-treatment condition, or as specified by the contract Supervisor.</p>
VISUAL QUALITY OBJECTIVES - GAR section 7, FRPA sections 180 and 181, FPPR section 9.2			
Is the proposed treatment within a scenic area?		No	<p>No visual quality objectives exist for the proposed treatment area. However, numerous community values (community centres, churches, ski hill, recreation trails) border the TU boundary, therefore visual quality has been considered. The proposed treatment will follow a thin-from-below approach, retaining the largest conifer trees and all of the healthy deciduous trees. As such, it is not expected that the treatment will negatively impact the scenic value of the demonstration area.</p>
ARCHAEOLOGICAL RESOURCES/CULTURAL HERITAGE RESOURCES - FPPR section 10			
Are there any known archaeological sites or cultural heritage resources that are important to First Nations within the proposed area?		No	<p>A request for known archaeological/cultural sites was submitted to the MFLNRORD Archaeology Branch on November 8, 2021. The Archaeology Branch replied on December 10, 2021, stating that no known archaeological sites are recorded within any of the treatment areas, and there is no data available describing the potential for unidentified sites. If, during any phase of implementation, a believed archaeological site above or below surface is discovered, all activities in the vicinity must</p>

			stop immediately and the contract supervisor must contact the Archaeology Branch for direction at 250-953-3334.
INVASIVE PLANTS - FRPA section 47 and FPPR section 17			
Is the introduction and spread of invasive plants likely as a result of the proposed treatment?	Yes		<p>The Invasive Alien Plant Program (IAPP) database reports the following species have been identified in the vicinity of the treatment area, within the town of Mackenzie:</p> <ul style="list-style-type: none"> • Hawkweed spp. (HS), • Oxeye Daisy (OD), • Orange Hawkweed (OH), • Common Tansy (TC), • Yellow Hawkweed (YH). <p>The treatment unit is adjacent to disturbed areas, locations where invasive plants often thrive. Therefore, there is potential for further spread of established invasive species. The following best management practices shall be employed to reduce the introduction and spread of invasive plants to the treatment area:</p> <ol style="list-style-type: none"> 1. Contractors shall be aware of potential invasive plants on site and be capable of accurate identification of these species (during flowering and non-flowering periods), as well as the most common B.C. invasive species. 2. Confirmed identifications should be reported to the Invasive Species Council of BC. This can be done through the Report Invasives or Report a Weed apps, online through the ISCBC, or by phoning 1-888-933-3722. 3. All machinery must be clean of soil and plant material before being transported to the site. 4. Avoid driving through or parking on weed infestations. Avoid areas of weed infestations for muster points, staging areas, or other gathering locations. 5. Carefully clean clothes, boots, hand tools, and other equipment used for treating invasive plants or working in or around an infested area before leaving a site. 6. Minimize soil disturbance, retain understory shrubs where practicable. 7. Areas of exposed mineral soil within 100 m of an infested site should be re-seeded with an appropriate seed mix of Canada Certified native species. <p>The contract supervisor shall consult the local chapter of the Invasive Species Council of B.C. to request recommendations on a seed mix appropriate to the site / area, if necessary, to ensure that the most appropriate species mix is utilized.</p>
NATURAL RANGE BARRIERS - FRPA section 48, FPPR section 18			
Are there natural range barriers within the proposed treatment area that are likely to be removed or rendered ineffective?		No	There are no natural range barriers within the proposed treatment area.
LAND USE OBJECTIVES (Higher Level Plans and objectives set by Government under the <i>Land Act</i>)			
Are there land use objectives (higher level plans or objectives under the <i>Land Act</i>) that apply to the proposed treatment area or a Road Permit necessary to provide access to the treatment area?	Yes		<p>The Mackenzie Land and Resource Management Plan (LRMP) provides direction for planning and natural resource management for the area of interest. The proposed treatment area overlaps the following land use polygons:</p> <ul style="list-style-type: none"> • 'Mackenzie Townsite - Resource Management Zone #43'– Objectives regarding visual quality. No established visual quality objectives exist for the treatment areas.

			<ul style="list-style-type: none"> The Morfee landscape unit, which has a biodiversity emphasis option of intermediate.
Do the proposed activities conflict with land use objectives (higher-level plans or objectives under the <i>Land Act</i>)?		No	Treatment activities proposed within this prescription do not conflict with legal requirements or non-legal guidance set out in the Mackenzie LRMP, including objectives for wildlife, biodiversity, visual quality, recreation, cultural resources, and water quality.

G. OTHER CONSIDERATIONS AND REQUIREMENTS

CONSULTATION – FIRST NATIONS

FIRST NATION	CONCERNS IDENTIFIED AND MEASURES TO ADDRESS	
McLeod Lake Indian Band	TBD – Treaty 8 disputed area.	
West Moberly First Nations	Rob Sweeney (First Nations Liaison, MFLNRORD) advised the District of Mackenzie to consult with the Nations listed. Referral packages were sent via email on November 16, 2021. Follow-up emails were sent to MLIB on December 30, 2021, and January 14, 2022. To date, no responses have been received.	
Doig River First Nation		
Halfway River First Nation		
First Nations consultation complete?	No	First Nations consultation is ongoing.

CONSULTATION – GENERAL

District of Mackenzie – A draft of this prescription was sent to District of Mackenzie staff on Feb. 16, 2022.

MFLNRORD – A copy of this draft was sent to Andrea Rainey on Feb 7, 2022, and reviewed on Feb. 14, 2022.

Mackenzie Autumn Lodge Society – A referral package was sent via email on Jan. 11, 2022. To date, no response has been received.

Mackenzie Baptist Church – A referral package was sent via email on Feb. 16, 2022. To date, no response has been received.

Mackenzie Outdoor Route and Trail Association (MORATA) – Ross Hobbs of MORATA was sent a referral package via email on Jan. 11, 2022. Ross replied on Jan. 16, 2022, that MORATA did not have any concerns with the project. Recreational trail construction is planned for that area however they intend to delay construction until after treatment. Ross noted that minimizing soil disturbance (in particular, limiting the mixing of LFH layers into mineral soil) will help reduce the impact on future trail construction.

Mackenzie Sikh Society – A referral package was sent via email on Jan. 20, 2022. To date, no response has been received.

Provincial Rental Housing Corp – A referral package was sent via email on Jan. 20, 2022. To date, no response has been received.

Trustees Congregation of Jehovah's Witnesses – A referral package was sent via email on Jan. 20, 2022. To date, no response has been received.

Youth for Christ Prince George – A referral package was sent via email on Jan. 20, 2022. To date, no response has been received.

EXISTING TENURE HOLDERS (Forest, Range, Guide Outfitters, Trappers)

Tenure Holder	Concerns	Measures proposed to address licensee's concerns
Trapline Licence Holder Trapline Tag: TR0730T002	N/A	Trapline tenure holder contact information is not made available from FLNRO due to existing privacy laws. Therefore, we were unable to contact the trapline tenure holder.

PRIVATE PROPERTY

Does private property border the proposed treatment area?	Yes	The treatment area borders 3 private land parcels: PID 015344801 (Gurdwara Sahib Sikh Temple) PID 008990212 PID 009370064 See map Appendix A.
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SMOKE MANAGEMENT

Does a smoke management plan exist for the proposed treatment area?	No	A smoke management plan currently does not exist for the proposed treatment area. The treatment area is within a 'High' smoke sensitivity polygon. Therefore, if any burning is to occur all OBSCR regulations must be adhered to (see sections below). To
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			avoid burning, chipping and off-site removal is the preferred method of debris disposal.
SAFETY			
Have any specific safety concerns been identified in or adjacent to the proposed treatment area?	Yes		<p>Due to the close proximity of community centres and high-use recreation trails to this treatment area, a 6-month post-treatment hazard tree assessment must occur. Retained trees may be at higher risk of failure soon after treatment and they are within close proximity to buildings or other valuable targets.</p> <p>The assessor must be either a Tree Risk Assessment Qualification (TRAQ) assessor or an individual certified as a Danger Tree Assessor (Parks Module). The assessor may recommend creating wildlife trees (i.e., stub and limb) where trees represent high value to wildlife and will no longer remain hazardous to surrounding values (community centres) and to recreationalists.</p>
UTILITIES			
Are utilities located in or adjacent to the proposed treatment area? i.e., power lines, gas lines, etc.		No	No utilities are located in or within a 10m buffer of the proposed treatment area.
ACCESS CONTROL			
Are there any foreseen issues with access and access control during and post-treatment?	Yes		<p>An Access Control Plan must be developed before operations commence. This is due to the close proximity of this treatment area to private land and residences as well as high recreational use within some of the treatment areas.</p> <p>The project supervisor will coordinate with the contractor and district public works on an access control plan. The area will be blocked off from public use and details will be shared via the radio and info packages at the Recreation Center front desk. Details of the access control must be communicated to members of the public at least 30 days before operations commence.</p> <p>The access control must address the protection of recreationalists or citizens that enter the treatment area during the following phases: active tree felling.</p> <p>During active tree felling, trails must be blocked off with signage clearly indicating that the trail is closed. Trails may be reopened and the trail blocks removed when those hazards are no longer present. Overhead hazards, including danger trees, must be made safe before recreationists re-enter sections of the treatment area.</p>
TRAFFIC CONTROL			
Is traffic control required at any point during operations?		No	No traffic control plan will be required as the area nor the proposed activities will affect local traffic in any way.
OTHER (Public Notification)			
<p>Public Notification will be led by the District of Mackenzie and will commence 30 days before the start of operations. This notification will include social media, websites and written notice in local media.</p> <p>Five permanent metal signs will also be installed at high visibility locations around the site at project completion to inform the public about FireSmart principles and how the fuel management treatments that have taken place help to mitigate the threat of wildfire.</p>			

H. STAND AND STOCK TABLE: TU-1

Species	Average Crown to Base Height (m)	Average Tree Height (m)	STEM PER HECTARE (SPH)			VOLUME (m³/ha)			BASAL AREA (m²/ha)		
			Existing	Cut	Leave	Existing	Cut	Leave	Existing	Cut	Leave
Layer 1 (>45 cm dbh)											
Total Live	-	-	-	-	-	-	-	-	-	-	-
Total All Species	-	-	-	-	-	-	-	-	-	-	-
Total Conifer	-	-	-	-	-	-	-	-	-	-	-
Layer 1 (35 - 45 cm dbh)											
Ep	-	24	21	0	21	20	0	20	3	0	3
Sx	2	24	25	0	25	24	0	24	3	0	3
Total Live	-	24	46	0	46	44	0	44	5	0	5
Total All Species	-	24	46	0	46	44	0	44	5	0	5
Total Conifer	2	24	25	0	25	24	0	24	3	0	3
Layer 1 (27.5 - 35 cm dbh)											
Bl	-	24	34	0	34	19	0	19	3	0	3
Sx	2	24	32	0	32	23	0	23	3	0	3
Total Live	-	24	66	0	66	42	0	42	5	0	5
Total All Species	-	24	66	0	66	42	0	42	5	0	5
Total Conifer	2	24	66	0	66	23	0	23	3	0	3
Layer 1 (22.5 cm - 27.5 cm dbh)											
Bl	-	22	103	0	103	40	0	40	5	0	5
Total Live	-	22	103	0	103	40	0	40	5	0	5
Total All Species	-	22	103	0	103	40	0	40	5	0	5
Total Conifer	2	22	103	0	103	40	0	40	5	0	5
Layer 1 (17.5cm dbh - 22.5 cm dbh)											
Bl	-	19	693	693	0	151	151	0	21	21	0
Ep	-	19	110	0	110	11	0	11	3	0	3
Sx	2	19	104	0	104	9	0	9	3	0	3
Total Live	-	19	907	693	214	171	151	20	27	21	6
Total All Species	-	19	907	693	214	171	151	20	27	21	6
Total Conifer	2	19	797	693	104	160	151	9	24	21	3
Layer 1 (12.5 cm - 17.5 cm dbh)											
Bl	-	19	267	267	0	-	-	-	-	-	-
DU	2	19	67	67	0	-	-	-	-	-	-
Ep	-	19	133	0	133	-	-	-	-	-	-
Sx	2	19	67	67	0	-	-	-	-	-	-
Total Live	-	19	467	334	133	-	-	-	-	-	-
Total All Species	-	19	533	400	133	-	-	-	-	-	-
Total Conifer	2	19	334	334	0	-	-	-	-	-	-
Total Layer 1											
Total Layer 1 - All Species	-	-	1655	1093	562	297	151	146	42	21	21

H. STAND AND STOCK TABLE: TU-1

Total Layer 1 - Conifers Only	2	22	1325	1027	298	247	151	96	35	21	14
Layer 2 (7.5-12.49)											
BI	2	10	67	67	0	-	-	-	-	-	-
DU	2	10	67	67	0	-	-	-	-	-	-
Total Live	2	10	67	67	0	-	-	-	-	-	-
Total All Species	2	10	133	133	0	-	-	-	-	-	-
Total Conifer	2	10	67	67	0	-	-	-	-	-	-
Layer 3 (2.5-7.49)											
DU	1	2	133	133	0	-	-	-	-	-	-
Total Live	1	2	0	0	0	-	-	-	-	-	-
Total All Species	1	2	133	133	0	-	-	-	-	-	-
Total Conifer	1	2	0	0	0	-	-	-	-	-	-
Layer 4 (<1.3m)											
Total Live	-	-	-	-	-	-	-	-	-	-	-
Total All Species	-	-	-	-	-	-	-	-	-	-	-
Total Conifer	-	-	-	-	-	-	-	-	-	-	-

TREATMENT SPECIFICATIONS SUMMARY OVERVIEW– OVERALL GUIDELINES FOR ALL TREATMENT AREAS/TUs

The main goal for TU-1 will be to create a relatively even-spaced forest, retaining the healthiest and largest trees. Years after treatment and when adjacent tree crowns coalesce, the area will display characteristics of a shaded fuel break. The contractor will follow the following bulleted guidelines across all treatment areas/units:

- Remove all dead standing trees (except designated high-value wildfire trees). Target non-thrifty or unhealthy trees for removal.
- Preference for conifer tree retention will be (in descending order): Sx, BI.
- Target standing dead Sx and living Sx showing signs of spruce beetle attack for removal to reduce the potential spread of spruce beetle.
- Scarring and/or scorching of retained trees will represent < 10% of retained trees, measured by net ha.
- Preserve natural clumping characteristics where practical and where wildfire threat objectives are not compromised, and
- Maximum stump height will be 15 cm and cut at an angle of less than 10 degrees.

SURFACE FUEL LOADING (kg/m ²)	Existing: Small-Med (0.1-7.5cm diameter): 0.3 kg/m ² Large (>7.6cm diameter): 3.6 kg/m ²	Target: Total fine fuels: Maintain at under < 0.7 kg/m ² Large fuels: Reduce to < 1.7 kg/m ²
	Distribution: Scattered	Distribution: Scattered
	Method used to measure: The USFS photoload photo method.	
Crown Closure (%)	Existing: 40%	Target: 25%

BIODIVERSITY AND FOREST HEALTH CONSIDERATIONS AND TARGETS

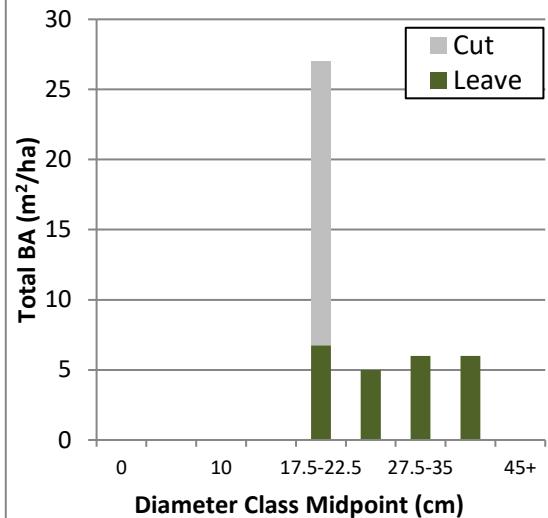
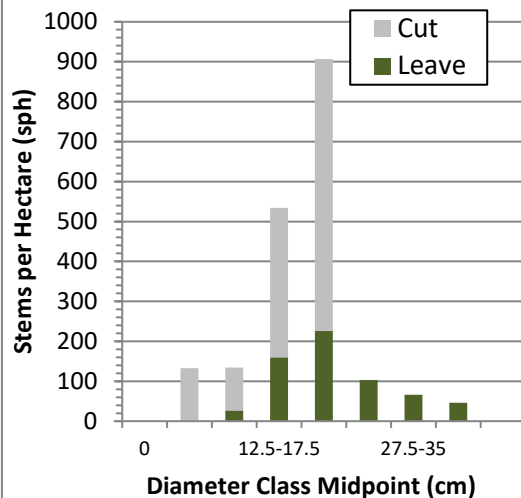
COARSE WOODY DEBRIS (CWD) RETENTION TARGET - SPH	Current CWD: approximately 320 pieces/ha (>5m in length) Target CWD: maximum 150 pieces/ha (>5m in length) CWD is an important habitat element. Where available, retain a minimum of 150 pieces/ ha with a preference for larger CWD pieces (>25 cm diameter at top and >3 m in length), scattered randomly
---	---

AND DISTRIBUTION	<p>throughout the area. Existing decayed large diameter CWD (Decay Class 3, 4 or 5² will be given preference for retention to enhance wildlife habitat and ecosystem values. CWD in decay class 4 or above is not counted towards the CWD target.</p> <p>No Sx in CWD decay class 1 or 2 (bark intact) will be left as CWD to limit the spread of spruce beetle; all Sx felled must be removed from the site.</p> <p>A piece is defined as a 5-meter piece and therefore a long log may be counted as multiple pieces.</p>
WILDLIFE TREE RETENTION TARGET	A danger/wildlife tree assessment will be conducted by a qualified professional prior to operations commencement. Trees that exhibit valuable wildlife characteristics will be retained where operationally safe to do so. Retention of high-value wildlife trees will occur provided that they represent <5% of the treatment unit.
FOREST HEALTH & WINDTHROW	<p>There are no forest health concerns in the stand to be treated. However, spruce beetle has been noted in nearby stands. Dead/dying or beetle attacked conifers should be targeted for removal. Felled Sx will not be left on the site as CWD.</p> <p>The windthrow hazard is assessed as low-moderate for the treatment area. Given the treatment specifications (majority overstorey retention, thin from below, retain healthiest and dominant stems); only endemic windthrow (5-10%) is expected over time. Endemic windthrow that does occur will contribute to long-term CWD and structural biodiversity within the unit.</p> <p>Due to the suburban location of this treatment unit, a hazard tree assessment must be completed 6 months post-treatment by either a Tree Risk Assessment Qualification (TRAQ) assessor or an individual certified as a Danger Tree Assessor (Parks Module). The assessor may recommend creating wildlife trees (i.e., stub and limb) where trees represent high value to wildlife and will no longer remain hazardous to surrounding values and recreationalists. A utility arborist will be used to manage all tree felling/topping operations.</p>

TREATMENT SPECIFICATIONS SUMMARY:

TU	TREE REMOVAL/RETENTION STRATEGY BY SIZE/SPECIES (Summarize specifications identified in table above)																																																																																																		
TU-1	<p>Thin from below conifers up to 22.5 cm DBH to a total target average overstorey (+17.5 cm DBH) density of 300 SPH (+/- 50 SPH) or average retention of 14 m²/ha. In addition, all overstorey deciduous stems will be retained, and retention of understorey conifers will exceed no more than 55 SPH. See figures and table below.</p> <table><tr><th rowspan="2">Stand Layer</th><th rowspan="2">DBH Class Midpoint (cm)</th><th colspan="4">Species</th><th rowspan="2">Cutting Specs</th><th rowspan="2">Cut</th><th rowspan="2">Leave</th></tr><tr><th>Bl</th><th>Ep</th><th>Sx</th><th>Dead</th></tr><tr><td>L4</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0%</td><td>0</td><td>0</td></tr><tr><td>L3</td><td>5</td><td>0</td><td>0</td><td>0</td><td>133</td><td>100%</td><td>133</td><td>0</td></tr><tr><td>L2</td><td>10</td><td>67</td><td>0</td><td>0</td><td>67</td><td>80%</td><td>107</td><td>27</td></tr><tr><td rowspan="6">L1</td><td>12.5-17.5</td><td>267</td><td>133</td><td>67</td><td>67</td><td>70%</td><td>374</td><td>160</td></tr><tr><td>17.5-22.5</td><td>693</td><td>110</td><td>104</td><td>0</td><td>75%</td><td>680</td><td>227</td></tr><tr><td>22.5-27.5</td><td>103</td><td>0</td><td>0</td><td>0</td><td>0%</td><td>0</td><td>103</td></tr><tr><td>27.5-35</td><td>34</td><td>0</td><td>32</td><td>0</td><td>0%</td><td>0</td><td>66</td></tr><tr><td>35-45</td><td>0</td><td>21</td><td>25</td><td>0</td><td>0%</td><td>0</td><td>46</td></tr><tr><td>45+</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0%</td><td>0</td><td>0</td></tr><tr><td colspan="2">L1 Totals</td><td>1097</td><td>264</td><td>228</td><td>67</td><td>Totals</td><td>1294</td><td>629</td></tr></table>	Stand Layer	DBH Class Midpoint (cm)	Species				Cutting Specs	Cut	Leave	Bl	Ep	Sx	Dead	L4	0	0	0	0	0	0%	0	0	L3	5	0	0	0	133	100%	133	0	L2	10	67	0	0	67	80%	107	27	L1	12.5-17.5	267	133	67	67	70%	374	160	17.5-22.5	693	110	104	0	75%	680	227	22.5-27.5	103	0	0	0	0%	0	103	27.5-35	34	0	32	0	0%	0	66	35-45	0	21	25	0	0%	0	46	45+	0	0	0	0	0%	0	0	L1 Totals		1097	264	228	67	Totals	1294	629
Stand Layer	DBH Class Midpoint (cm)			Species							Cutting Specs	Cut	Leave																																																																																						
		Bl	Ep	Sx	Dead																																																																																														
L4	0	0	0	0	0	0%	0	0																																																																																											
L3	5	0	0	0	133	100%	133	0																																																																																											
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L1 Totals		1097	264	228	67	Totals	1294	629																																																																																											

² <https://www.for.gov.bc.ca/hfd/pubs/docs/Misc/NIVMA.PDF>



TREATMENT SPECIFICATION RATIONALE (See notes to assist)

This prescription specifies treatment activities that will result in a reduction in stand stem density, crown bulk density, surface fuel loading, ladder fuels, and vertical and horizontal fuel continuity. Fuel management in this treatment unit will function to reduce aggressive fire behaviour to an extent that will limit crown fire behaviour, reduce rate of spread, and meet overall objectives for public safety and wildfire risk reduction within the WUI. See Appendix C: Fire Behaviour Modeling.

TU-1:

Factor	Pre-Treatment	Post-Treatment
Fire Type	Passive Crown	Surface Fire
Likelihood of Crown Fire (%)	61	0.06
Rate of Spread (m/min)	9.90	2.36
Critical Surface Fire Intensity (kW/m)	449	4920
Wildfire Intensity (kW/m)	3351	637

I. TREATMENT DESCRIPTION

MERCHANTABLE TIMBER HARVEST

ROADS, LANDINGS AND TRAILS: Existing access is good; therefore, no road building is anticipated. The main access road for logging trucks is the trail north of the unit. Landings will be placed along this trail. See Appendix A: Operations Map.

FELLING:

TU-1: It is recommended that trees are felled using a small feller buncher or other harvesting equipment system.

YARDING/SKIDDING:

TU-1: Skid trails are expected to be minimal due to treatment size and favourable roadside landings. Whenever practicable, machines should use existing old roads and skid trails. Bladed trails must be located with approval from the contract supervisor and must avoid areas of seepage.

LOADING AND HAULING: Roadside loading via the trail north of the unit is plausible for the treatment unit. See Appendix A: Operations Map.

SLASH DISPOSAL: Chipping and grinding off-site are the preferred methods of debris disposal due to the proximity of community centres and residences, and current levels of fuel loading.

SOIL DISTURBANCE: Any soil disturbance/displacement must be rehabilitated as soon as possible, including slope recontouring and surfacing with material that inhibits erosion and the establishment of invasive species. During burning, debris hauling, and equipment transport:

- Minimize soil disturbance and forest floor displacement,
- Machine access corridors must be approved by the contract supervisor, mapped and photo-documented prior to treatment,
- Should an unacceptable level of soil disturbance occur on trails or within the treatment area, the contract supervisor will develop an appropriate rehabilitation plan,
- Established trails will be maintained in or restored to pre-treatment condition, or as specified by the contract supervisor,

- Deactivation of temporary access will be completed immediately following treatment implementation, in order to inhibit any future vehicular/ATV access into treatment areas, and
- Deactivation and rehabilitation are site-specific and can involve any combination of the following approaches:
 1. Removal and/or redistribution of woody materials as necessary to limit the concentration of subsurface moisture in the area;
 2. Decompaction of compacted soils, where possible;
 3. Returning displaced surface soils and berm materials; and/or
 4. Revegetation of exposed mineral soils.

SPECIAL MEASURES: None

STAND MODIFICATION TREATMENTSMERCHANTABLE TIMBER UTILIZATION: Was commercial timber harvest considered? Yes ☒ No ☐The estimated merchantable timber volume to be removed for TU-1: approximately 260 m³/ha with the majority being BI (gross).

BRUSHING: N/A

PRUNING:

All retained overstory conifers will be pruned to 3 m. Pruning will remove branches to a height that maintains at least 40% of the total tree height as live crown. Pruning will be measured from the ground to the lowest reaching point of a branch (usually the branch tip). It is expected that live crown ratio will be minimally impacted by this treatment prescription. Pruning cuts will aim to be flush with the tree stem without cutting into the branch collar, and branch stubs must be less than 1cm long. Dead branches >5 cm in diameter may be left unpruned at the discretion of the contract supervisor.

THINNING: Existing stand condition and target retention densities for the treatment unit is described in detail in Section H of this prescription. Target density for TU-1 was determined according to stand structure, topography, and soil sensitivity.

DEBRIS PILING under the *Wildfire Act and Regulation*:

Debris piles will be constructed manually, and all piles must be disposed of following the below guidelines. All burning is to be conducted in compliance with the *BC Wildfire Act and Wildfire Regulation*.

When burning is used to dispose of piles, the following requirements apply to either Category 2 and 3 fires:

- Burn piles must be constructed within the boundaries of TUs to facilitate effective ignition and complete combustion with minimal tending by ground crews. Piles will feature a mix of small/large and live/dead stem and branch sections arranged to burn efficiently with minimal smoke production. Levels of dirt/soil must be kept to a minimum.
- Burn piles must not be located inside or within a distance of **3m** of any recreation trail, an animal burrow, a snag, and must not result in scorching or heat damage to more than 5% of retained trees.
- It is the contractor's responsibility to obtain all necessary burn permits and facilitate ongoing communication with both the Local Fire Department and the BCWS.

Guidelines for Category 2 piles³:

- The Contractor will not concurrently burn more than two piles, and adhere to a maximum pile size of 3m x 3m x 2m tall,
- To reduce the number of piles, burning can occur concurrently with thinning operations using the hot-fed technique. However, up to 80 piles per hectare may be created if concurrent burning during thinning is not possible due to fire weather conditions.

Guidelines for Category 3 piles⁴:

The Contractor, under Category 3 may burn either more than 2 piles outlined above (3m x 3m x 2m tall) or may burn larger roadside piles. However, the Contractor must still follow the below regulations whether burning small (3m x 3m x 2m tall) or large roadside piles:

- To reduce the number of piles, burning can occur concurrently with thinning operations using the hot-fed technique. However, up to 100 piles per hectare (for small piles only) may be created if concurrent burning during thinning is not possible due to fire weather conditions,
- The Contractor must obtain a burn registration number (BRN) for the fire for the entire Category 3 burn duration (the BRN normally lasts 2 weeks),
- The Contractor must ensure that there is sufficient fireguard around piles while ensuring that the fire is contained in the burn area, and while the fire is burning and there is risk of escape, the Contractor must ensure an adequate fire suppression system at the burn area.

³ https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/fire-bans-and-restrictions/bcws_backyardburning.pdf

⁴ https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/fire-bans-and-restrictions/bcws_resourcegmt.pdf

PILE BURNING and SMOKE MANAGEMENT:

Burning is to be conducted in compliance with the 2019 *Environmental Management Act Open Burning Smoke Control Regulations*⁵ (OBSCR). OBSCR contains two parts or Division 1 and Division 2. It is recommended that burning be implemented following OBSCR's Division 2 (Plans for Community Wildfire Risk Reduction). It is also recommended that a custom venting forecast be acquired for optimal use of favourable burning windows.

Direction and Requirements under OBSCR Division 2 for smoke management within a 'high' smoke sensitivity zone is as follows:

District of Mackenzie staff will assist the Contractor in burning under Division 2, including contacting the local MOE Director. Some basic requirements of Division 2 are as follows:

- Burning may occur on days when ventilation forecasting is classified as 'fair' followed by 'good' and with reduced setbacks as compared to Division 1,
- Setbacks are reduced to 50 m from a residence or business and 100m from a school, hospital or community care facility.

Requirements under OBSCR Division 1 for smoke management within a 'high' smoke sensitivity zone is as follows:

- Burning is at least **100m from a residence or business, or 500m from a school, hospital or community care facility**, See operations map for no-pile burning zone.
- Every reasonable alternative must be used to minimize burning amounts by reducing, reusing or recycling vegetative debris,
- Debris must be piled and seasoned before burning can start. Seasoned debris is defined as:
 - Debris with dry-basis moisture content within 30%, or
 - Debris that has been piled for at least 4 months, or
 - Debris that originated from standing dead timber
- All reasonable efforts must be taken to minimize smoke by following best practices for open burning such as: minimizing soil content, maximizing seasoned vegetative debris, no stumps, and constructing debris piles in a way that maximizes air flow;
- No later than 24 hours in advance of starting the open burning, all reasonable efforts are made to give notification of the location of the open burning to the occupants of all residences, businesses, schools, hospitals and community care facilities within 500 m of the open burning;
- Records of burning must be kept as required in the regulation;
- Within a 'high' smoke sensitivity zone, **burning of each pile(s) can occur for up to two consecutive days: start time for burning will be one hour after sunrise (or later) on day 1 and end time will be by 4 pm on the second day;**
- Ignition of new piles or addition of combustible vegetation to existing burning piles must end 4 hours before sunset on the first day of burning,
- The ventilation index must be indicated as 'good' (>54) prior to igniting burn piles on the first day, and burning may continue if ventilation index is 'good' or 'fair' on the second day. If the ventilation index drops to 'poor', open burning cannot continue until ventilation improves.
- Local ventilation must be confirmed by lighting a small test pile before lighting multiple piles. The contract supervisor may halt burning at their discretion if concerns related to public safety or health are identified.

It is the contractor's responsibility to monitor venting and adjust activities accordingly. Smoke should not negatively impact residences adjacent to the proposed treatment area. Further requirements may be imposed, depending on public reaction and smoke conditions at the time of implementation.

CHIPPING/MULCHING: Chipping and mulching on-site dispersal are not fundable activities through the WRR/CRI programs and so therefore the prescribing foresters have not provided explicit guidance for these activities. Further information and additional guidance may be forthcoming.

MASTICATION: N/A

GRINDING: This may be a viable option but ground material must be hauled away (one option is to grind into bins and transport to the CONIFEX plant) and adhere to all fuel loading limits outlined within this prescription.

PRESCRIBED FIRE: N/A

PLANTING: N/A

⁵ https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/152_2019/#division_d1e1441

OTHER (Firewood): Production of firewood for community members will occur. Firewood will be left at designated locations accessible to community members as approved by the contract supervisor in order to facilitate its pickup. Piece size will not exceed 1.5 m in length. **All Sx firewood must be picked up prior to March 31, to prevent spruce bark beetle brooding⁶. Any remaining Sx firewood will be disposed of by April 15.**

AUTHORIZATION AND TIMBER TENURE

All cutting on Crown Municipal land must either comply with District of Mackenzie Bylaws or exemptions will need to be obtained prior to operational treatment.

Park Use Permit: N/A

Road Permit or Road Use Permit: N/A

Other (i.e., local government, utilities, etc.): N/A

J. POST-TREATMENT

EXPECTED VEGETATION RESPONSE:

SBSwk2/05:

Opening the canopy may encourage shrub and herb understorey growth. Post-treatment shrub/herb response is anticipated to be **Moderate** with black twinberry, thimbleberry, and fireweed. Increased light conditions may also encourage the response of deciduous species such as birch. Natural regeneration of conifers is anticipated to be **low** due to high overstorey retention and to consist primarily of Bl and Sx.

The prescription is expected to achieve the primary fuel management objectives for 10–15 years. After this time, it is likely that natural regeneration may create flammable ladder fuels which will increase fire hazard and fire behaviour potential. Forest health factors, both biotic and abiotic, as well as natural overstorey mortality, may lead to accumulations of surface fuel loading.

ADDITIONAL TREATMENTS OR MAINTENANCE: It is recommended that a qualified professional complete a wildfire hazard assessment 10-12 years (or after a natural disturbance or major forest health factor) post-treatment to assist in scheduling and prioritization of maintenance activities. Maintenance activities may include additional thinning, brushing, or surface fuel loading reduction.

SILVICULTURE OBLIGATIONS: Do silvicultural obligations apply to the treatment area? Yes ☐ No ☒

PLANTING: Is planting a treatment identified in this prescription or required as a legislative obligation? Yes ☐ No ☒

STOCKING STANDARDS:

There are no applicable stocking standards for TU-1 as the proposed treatment area is within municipal boundaries and no part of the treatment area overlaps with the Mackenzie Community Forest.

In addition, stocking standards are generally inconsistent with fuel management objectives because Forest Stewardship Plans (FSPs) and Woodlot License Plans (WLPs) primarily deal with maintaining future timber production. This fuel management prescription applies the following principles: removing hazardous understorey conifers, decreasing ladder fuels, increasing deciduous understorey shrub and herbaceous plant production, and decreasing crown bulk density. Therefore, reforestation and timber production at the stand level are considered secondary objectives within the context of fire hazard reduction.

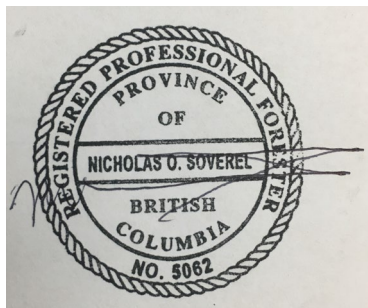
TU	Stocking Standard ID	Pref. Spp.	Acc. Spp.	Well Spaced Stem/ha				Minimum Height (m)		Regen Delay	Free Growing (years)
				TSSpa	Max Density		MITD (m)				
					Deciduous	Conifer max		Pref	RTH (%)		
TU-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

K. Outstanding Works

⁶ https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/bark-beetles/7455_sprucebeetles_factsheet_flnro_web.pdf

- The appropriate cutting authority/firewood permits must be obtained prior to commencement of operations;
 - This will require a written response from the McLeod Lake Indian Band to be included in the application for the timber cutting permit,
- If this FMP is implemented during breeding bird season (late April – mid-August)⁷, a breeding bird survey must be conducted prior to treatment by a qualified professional;
- Public notification by the District of Mackenzie will occur 30 days before implementation,
- An Access Control Plan signed off by the contract supervisor will be developed before the commencement of operations, and,
- When and if the contractor plans to conduct any burning, they must notify the District of Mackenzie prior to ignition; in addition, the contractor must obtain a burn reference number from the BC Wildfire Service.

L. ADMINISTRATION**PREPARATION**

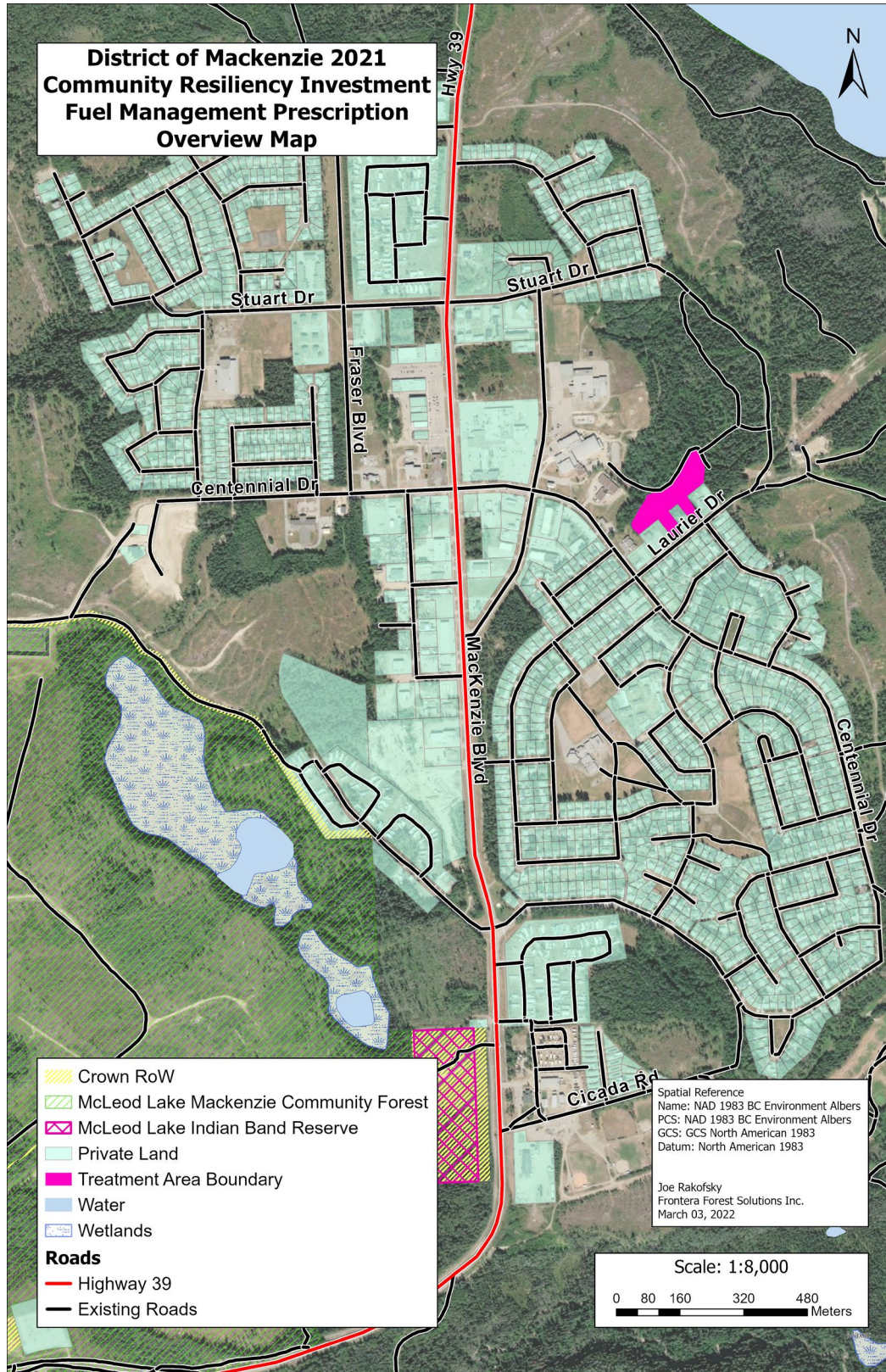
FOREST PROFESSIONAL NAME (<i>Printed</i>)	FOREST PROFESSIONAL SIGNATURE
Nicholas Soverel	
MEMBER NUMBER	
5062	March 1, 2022

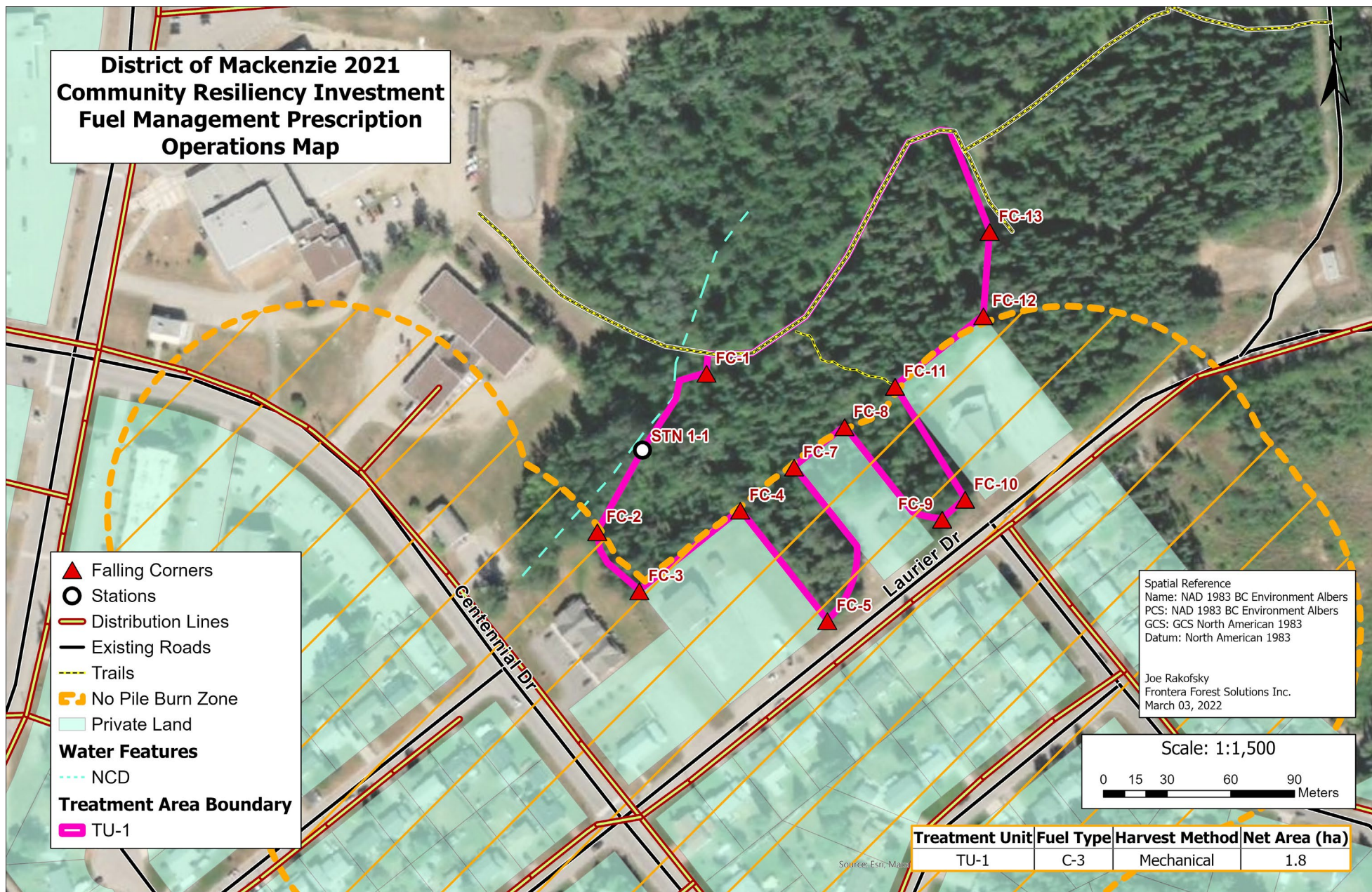
M. ATTACHMENTS

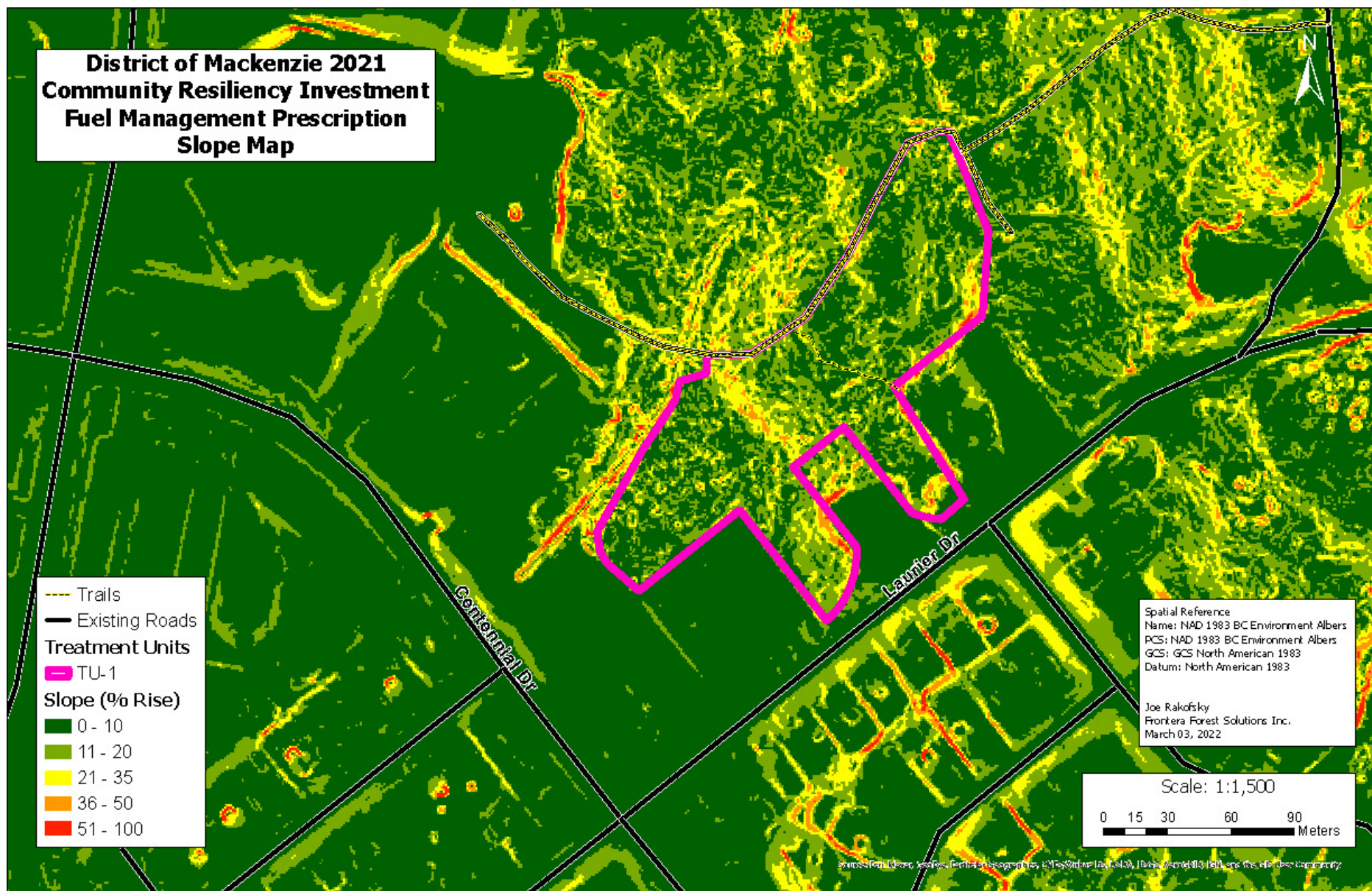
MAPS:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	FIELD DATA CARDS:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
WUI WTA Plots and Photos:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CRUISE DATA:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
AIR PHOTOS/IMAGERY:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	BURN PLAN:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
MODELING/DATA ANALYSIS:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	OTHER:	N/A
BROWNS TRANSECT:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
TERRAIN STABILITY ASSESSMENT	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	VISUAL IMPACT ASSESSMENT	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Completed By:	-	Completed By:	-
Date:	-	Date:	-
ARCHAEOLOGY IMPACT ASSESSMENT	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	BIOLOGIST ASSESSMENT	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Completed By:	-	Completed By:	-
Date:	-	Date:	-
ADDITIONAL COMMENTS: N/A			

⁷ <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#ZoneA>

Appendix A: Maps







Appendix B: Representative Photos

TU-1

TU-1: Representative photos of density and diameter distribution of stand
Moderately dense C-3 fuel type, predominantly BI with scattered Sx and Ep



Plot 1



Plot 2



Plot 3

TU-1: Representative photos of canopy closure and ground fuels

Moderately high canopy closure; ground fuels predominantly dead fines and deciduous leaf litter, with scattered CWD



Plot 1



Plot 1



Plot 2

Appendix C: Fire Behaviour Modeling

LINKS TO INFORMATION ABOUT SOFTWARE PROGRAMS:										
Fuelcalc:			https://www.firelab.org/project/fuelcalc-canopy-fuel-calculator-and-model							
Crown Fire Initiation and Spread (CFIS) Model:			https://www.frames.gov/catalog/7374							
Critical Surface Intensity Worksheet:			https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/fuel-management							
Canadian Conifer Pyrometrics:			https://fireresearch.ca/conifer-pyrometrics/							
	RESULTS (PRE-TREATMENT)						FuelCalcBC-Generated Factors (PRE-TREATMENT)			Compiled Surface Fuel Load Plot Data
Block & Stratum	Likelihood of Crown Fire from CFIS Model (%)	Fire Type	ROS (m/min)	Critical Surface Fire Intensity (kW/m)	Wildfire Intensity (kW/m)	Flame Length (m)	Crown Bulk Density (kg/m3)	Canopy Base Height (m)	Canopy Fuel Load (kg/m2)	Surface Fuel Consumption Class (SFC) (low-med-high)
TU-1	61	Passive Crown	9.90	449	3351	3.24	0.096	2.00	2.18	0.3
NOTE: Results produced from CFIS (Canopy Fire Initiation and Spread model) and Critical Surface Intensity Worksheet (CSI) using FuelCalcBC and Weather/Site Factors. If surface fire is predicted, then Canadian Conifer Pyrometrics model is used to determine rate of spread. TU 1 : According to CCP: at 13.5 km/hr wind, approx. 38 % of canopy and a max of 0.88 kg/m2 of surface fuel is involved in a passive fire. Based on comparing measured fuel loads with CCP estimates of SFC which use BU1 percentile.							NOTE: Both overstory and understory trees included in calculations EXCEPT Layer 4 of understory (<1.3 m)	NOTE: CBH was used in place of Fuel Strata Gap (FSG) for CFIS predictions	NOTE: for crown fires, CFL is used in Wildfire Intensity calculation	NOTE: low class (labelled green) is < 1 kg/m2 of total fuel load (1 to 100 hour) medium is 1 - 2 kg/m2 (orange), and high is > 2 kg/m2 (red)

		CFIS RESULTS (POST)		Canadian Conifer Pyrometrics Results (POST)	CSI Results (POST)		FUEL CALC AND CSI RESULTS (POST)			
Cutting Specifications	Surface Fuel Load (kg/m ²)	Likelihood Crown Fire from CFIS Model (%)	Fire Type	ROS (m/min)	Wildfire Intensity (kW/m)	Flame Length (m)	Crown Bulk Density (kg/m ³)	Canopy Base Height (m)	Canopy Fuel Load (kg/m ²)	Critical Surface Fire Intensity (kW/m)
TU-1	0.90	0.06	Surface	2.36	637	1.51	0.023	9.87	0.26	4920
NOTE: low class (labelled green) is < 1 kg/m ² of total fuel load (both fine and medium fuels) medium is 1 - 2 kg/m ² (orange), and high is > 2 kg/m ² (red)		NOTE: Results produced from CFIS (Canopy Fire Initiation and Spread model), Critical Surface Intensity Worksheet, and Canadian Conifer Pyrometrics, using FuelCalcBC and Weather/Site Factors				NOTE: Both overstory and understory trees included in calculations EXCEPT Layer 4 of understory (<1.3 m)		NOTE: CBH was used in place of Fuel Strata Gap (FSG) for CFIS predictions	NOTE: for crown fires, CFL is used in Wildfire Intensity calculation	

Weather and Site Factors									
Block & Stratum	Estimated Fine Fuel Moisture (%)	Wind Speed (km/hr)	Air Temp (°C)	Relative Humidity (%)	Month	Time of Day	Slope (mean %)	Aspect (mean degrees)	Crown Closure (%)
TU-1	9	14.6	25	32	August	1300-1500	8	240 (SW)	40
NOTE: Moisture of fine fuels estimated using weather and site variables for CFIS. Used weather station data to obtain percentiles of relevant variables LINK TO THE WEBSITE SHOWING WEATHER STATION NETWORK DATA THAT WAS UTILIZED: https://data.pacificclimate.org/portal/pcds/map/									
Block & Stratum	Percentile used for weather data	Wx station used	Wx station Season and Annual Range	Wx station elevation (m ASL)	Wx station coordinates (lat, long)	Foliar Moisture Content (%)			
TU-1	90	Mackenzie FS	May 15 - Sept 15 2010 - 2021	690	lat: 55.3042 lon: -123.1347	95			
NOTE for Critical Surface Fire: Intensity, FMC calculator from CCP is used (taking Wx station elevation and latitude and percentile date)									

Appendix D: FireSmart Recommendations

Background on FireSmart

There are several structures located around the proposed treatment areas. These structures are at risk from an approaching wildfire but they also pose a risk as a possible ignition source for wildfires spreading from the structure to the surrounding forests and beyond. FireSmart principles are currently the most accepted forestry practice to protect such structures within the Wildland Urban Interface.

As this area is both heavily forested and there are high-value structures, the prescribing forester recommends that FireSmart principles be employed in all areas surrounding these structures. It is recommended that these FireSmart treatment activities be completed simultaneously with this FMP's treatment activities. However, before any FireSmart treatment commences, a trained Local FireSmart Representative (LFR) will conduct LFR assessments and determine specific recommendations for each structure.

Broad FireSmart Recommendations

The prescribing forester does not provide any building material recommendations within this Appendix as it is outside the scope of this prescription document. A full assessment by a qualified Local FireSmart Representative will need to be completed in order to make specific recommendations. More information on building materials can be found within the manual: 'FireSmart Begins at Home Manual'⁸. This manual provides information on the vegetation management aspect of FireSmart.

As a helpful guide outlined in the text below and in Figure 1, the prescribing foresters provide a broad description of recommended activities for areas surrounding structures, based on the FireSmart manual. The manual states the following vegetation management zones (measured from the footprint of each structure):

Non-Combustible Zone (0-1.5 m) – see Figure 1:

A non-combustible surface should surround the structure including gravel, brick or concrete placed in this Zone. No vegetation is allowed within this Zone.

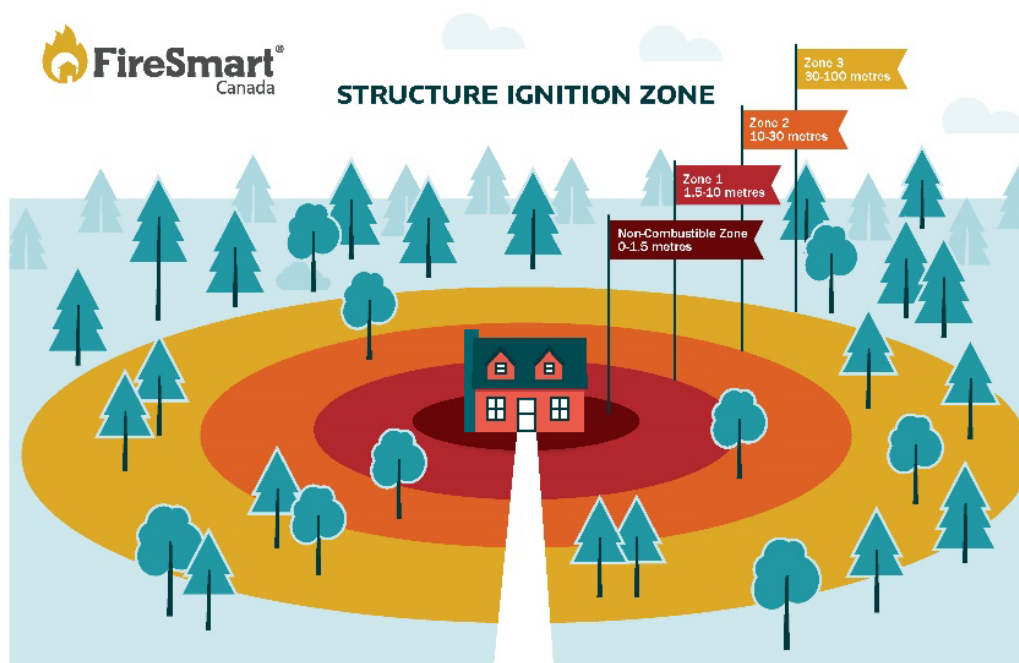
Priority Zone 1: (1.5 – 10 m) – see Figure 1:

This Zone must only contain deciduous trees or shrubs and very little conifer tree cover. Any conifers retained within this zone will be pruned. Any outbuildings should be built or retrofitted with fire-resistant building materials.

Priority Zone 2: (10 – 30 m) and Priority Zone 3: (30 – 100m) – see Figure 1:

As many of these zones overlap onto Crown land, the recommendations within this Fuel Management Prescription should be sufficient for both Zones 2 and 3.

⁸https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/prevention-home-community/bcws_homeowner_firesmart_manual.pdf



Work with your neighbours in any overlapping priority zones!

Non-combustible Zone (0-1.5 metres)	<p>Reduce the chance of wind-blown embers igniting materials near your home. A non-combustible surface should extend around the entire home and any attachments, such as decks. Creating a non-combustible surface can be as easy clearing vegetation and combustible material down to mineral soil. To add to your landscape design, use non-combustible materials such as gravel, brick, or concrete in this critical area adjacent to your home. Woody shrubs, trees or tree branches should be avoided in this zone, any that are present should be properly mitigated.</p>
Zone 1 (1.5-10 metres)	<p>Create a landscape that will not easily transmit fire to the home. A FireSmart yard includes making smart choices for your plants, shrubs, grass and mulch. Selecting fire-resistant plants and materials can increase the likelihood of your home surviving a wildfire. Plant a low density of fire-resistant plants and shrubs. Avoid having any woody debris, including mulch, as it provides potential places for fires to start. Storing items such as firewood piles, construction materials, patio furniture, tools and decorative pieces against or near a house is a major fire hazard. Move firewood piles, trailers/ recreational vehicles, storage sheds and other combustible structures out of this zone and into Zone 2. If unable to move, store firewood inside your mitigated garage, shed or other ember resistant structures, create a non-combustible zone underneath and for 1.5 metres around trailers/ vehicles and mitigate sheds and other structures to the same standards as those of your home.</p>
Zone 2 (10-30 metres)	<p>If your property extends out to this zone, thin and prune evergreen trees to reduce hazard in this area. Within 30 metres of your home, selectively remove evergreen trees to create at least 3 metres of horizontal space between the single or grouped tree crowns and remove all branches to a height of 2 metres from the ground on the remaining evergreen trees. If possible, pruning trees up to 100 metres from your home (Zone 3) is recommended. Regularly clean up accumulations of fallen branches, dry grass and needles from on the ground to eliminate potential surface fuels. Consider seeking the guidance of a forest professional with wildland fire knowledge on appropriate management options for this zone.</p>
Zone 3 (30-100 metres)	<p>Taking FireSmart actions in Zone 3 on your property will influence how a wildfire approaches your home. You can change the dynamics of wildfire behaviour by managing vegetation within this zone. Look for opportunities to create a fire break by creating space between trees and other potentially flammable vegetation. Thinning and pruning is effective here as well. These actions will help reduce the intensity of a wildfire. Consider seeking the guidance of a forest professional with wildland fire knowledge on appropriate management options for this zone.</p>

Figure 1 FireSmart Priority Zones