



CITY OF MERRITT 2019 CWPP UPDATE - AMENDMENT -

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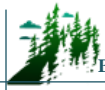
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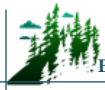
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COMMONLY USED ACRONYMS

AOI	Area of Interest
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CRI	Community Resilience Investment Program
CWPP	Community Wildfire Protection Plan
DBH	Diameter-at-breast height
HIZ	Home Ignition Zone
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
MOTI	Ministry of Transportation and Infrastructure
NFPA	National Fire Protection Agency
PSTA	Provincial Strategic Threat Analysis
SPH	Stems per Hectare
SWPI	Strategic Wildfire Prevention Initiative
UBCM	Union of British Columbian Municipalities
TU	Treatment Unit
WRMS	Wildfire Risk Management System
WTA	Wildfire Threat Assessment
WUI	Wildland Urban Interface



1.0 INTRODUCTION

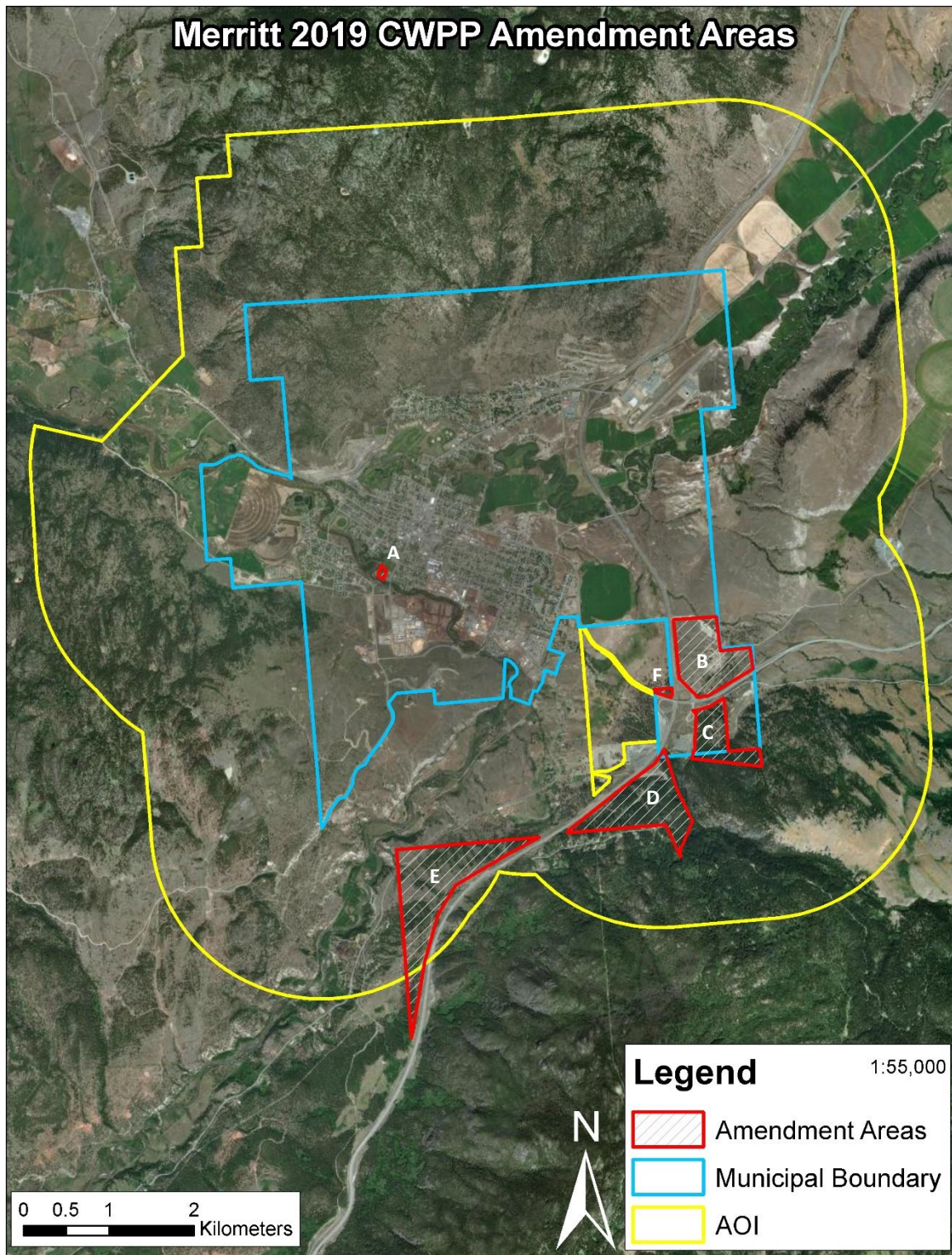
B.A. Blackwell and Associates Ltd. was retained by the City of Merritt to add additional wildfire threat assessment areas for consideration of inclusion into the 2019 CWPP Update, and referred to subsequently throughout this report as the 'Amendment'. At the request of the City of Merritt's Fire Chief, Dave Tomkinson, additional polygon areas totaling 256 ha have been included for re-assessed in anticipation of future subdivision development. Five polygons are located in the southwest corner of the Area of Interest (AOI) and one polygon is located within the City Centre (Map 1). This Amendment serves as an additional document and does not void or invalidate the recommendations made in the 2016 CWPP Update document. For characterizing the probability and consequence levels of wildfire risk to the community, the 2016 CWPP Update used a spatial model (Wildfire Risk Management System or WRMS). Determining wildfire threat for the Amendment polygons, the WUI Threat Assessment methodology was used which is the current standard for characterizing wildfire risk to communities during a CWPP planning process.

With the exception of Polygon E which extends beyond the AOI boundary, all remaining polygons (#'s 1 - 4, and 6) are all contained within the AOI boundary and occur predominantly along the Coquihalla Highway (Highway # 5). Understorey vegetation types were consistent throughout and featuring varying proportions and densities of bluebunch wheat grass (*Pseudoroegneria spicatum*) and antelope brush (*Purshia tridentata*) which was continuous across the landscape. Forested vegetation was variable and ranged from isolated and patchy groups of conifers interspersed with grass land and dominated by Ponderosa pine (*Pinus ponderosa*) and interior Douglas-fir (*Pseudotsuga menziesii* subsp. *glauca*), to denser and contiguous forested areas with high ladder fuel continuity.

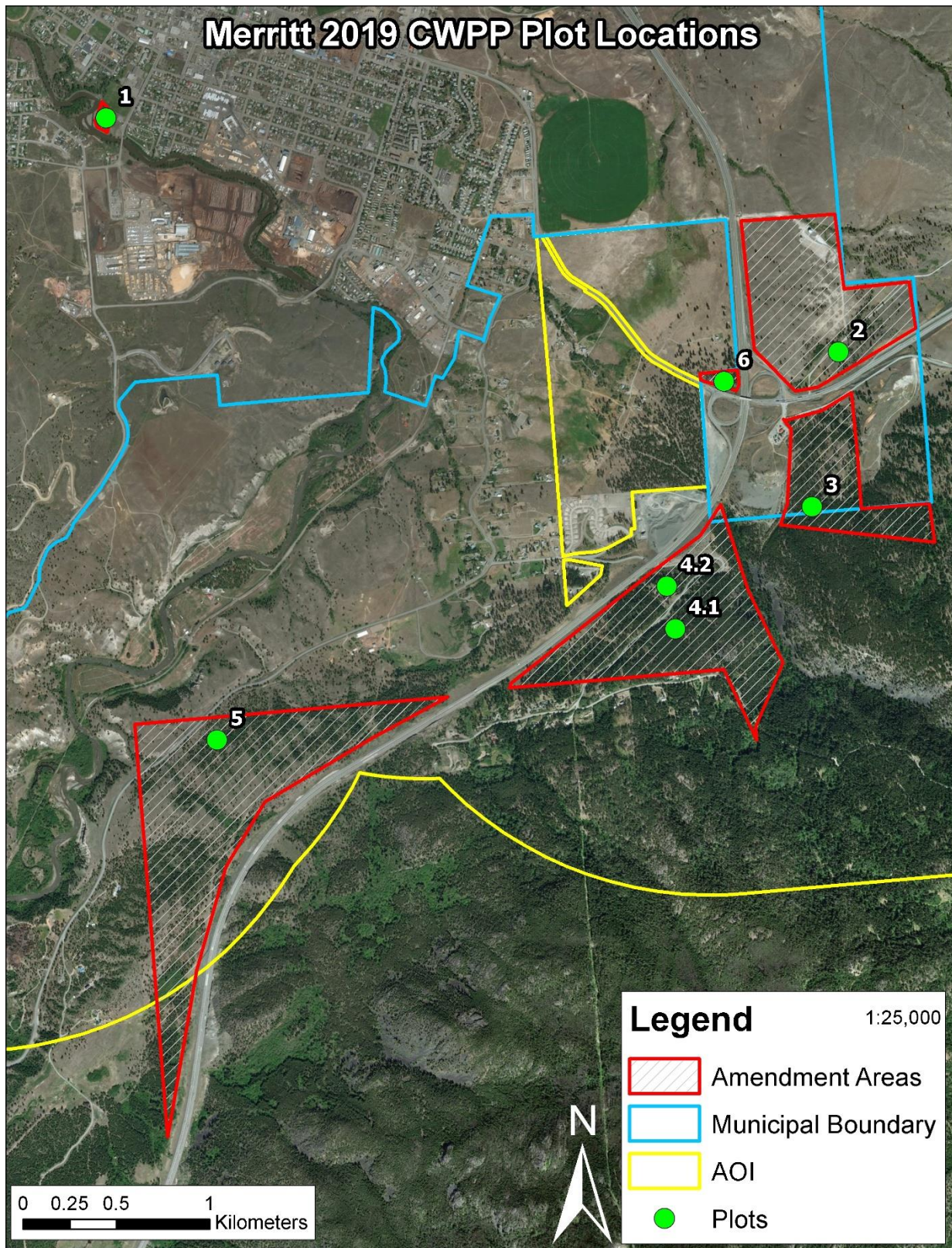
1.1 WILDFIRE HAZARD THREAT ASSESSMENTS

The assessment was conducted on November 24th 2019, and was performed using the 2012 Wildfire Threat Assessment (WTA) worksheet. Plots were chosen in locations that were representative of the 6 assessed areas. Assessed areas and plot locations can be found in Map 2 and Table 1. Recommended treatments for these areas should be focused where new development will occur. Treatments are dependent on subdivision plans and layout. In all cases, new development should follow FireSmart standards. The most likely areas to require treatment are in Polygons C and D.

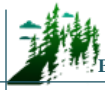
2.0 AMENDMENT STUDY AREA



Map 1: Additional polygons to be included with the City of Merritt 2019 CWPP Update.



Map 2. Threat plot locations for the Amendment to the City of Merritt CWPP Update.



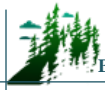
3.0 FUEL TYPES

POLYGON A

Wildfire threat Assessment plot MERR-1 is a deciduous stand situated within an urban park along Coldwater River. This is a D1/2 fuel type with low flammability. Stand is low density and ground debris is mostly grass and leaf litter. Possible fuel treatments include removal of surface fuels and debris, including regular mowing of grasses to prevent build up during drought.



Figure 1. Fuel type D-1/2 within Polygon A.

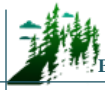


POLYGON B

WTA plot MERR-2 is located in open parkland with little tree cover within the polygon. The understory is bluebunch wheat grass, and antelope brush which is highly flammable. This is a representative O-1a/b fuel type. Trees within the polygon were young Ponderosa pine with some evidence of drought stress.



Figure 2. Vegetation and fuel type within Polygon B.

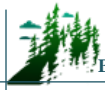


POLYGON C

WTA plot MERR-3 is a homogenous, even aged C7 stand with little understorey. This polygon consisted of trees that were predominately below 30 cm DBH with ladder fuels that were patchy and sparse. Hiking and biking trail networks featured throughout and high recreational public use was evident. Signs of charred wood occurred sporadically indicating previous spot ignitions and small scale (*i.e.* campfire), likely caused by humans.



Figure 3. Vegetation within Polygon C.



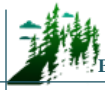
POLYGON D

Two plots were selected within Polygon D in order to measure the two distinct forest structures surrounding Fox Farm Rd (Plots 4.1 and 4.2). The plots were taken on either side of Fox Farm Rd. to better represent the varied tree density within the entire polygon.

MERR-4-1 has the densest forest stand found (> 2500 SPH) situated south and uphill from MERR 4-2 and Fox Farm Rd. It is representative of a C3 fuel type with a steep slope and shallow gullies throughout the polygon. Adjacent values at risk include Fox Farm road which may serve as an evacuation route.



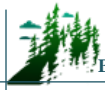
Figure 4. Vegetation within Polygon D, plot MERR 4-1.



MERR-4-2 is north and downslope of MERR 4-1. Comprised of a more mature forest, this is a patchier C7 forest interspersed with open grassy areas and pine saplings in gaps.



Figure 5. Vegetation within Polygon D, plot MERR 4-2.



POLYGON E

MERR-5 is a mosaic of open grassland and patchy forest land. The polygon is located in between Coldwater Rd Highway # 5. Forest land is patchy and Douglas fir / lodgepole pine (*Pinus contorta* var. *latifolia*) dominant. Forested portions of the polygon are young with patchy clumps of regeneration conifers with a density of approximately 1,000-1,500 sph). Much of the land within the polygon is private and fenced off with no direct access from Highway # 5, making access into and throughout the southern reaches inaccessible except on foot.



Figure 6. Vegetation within Polygon E.

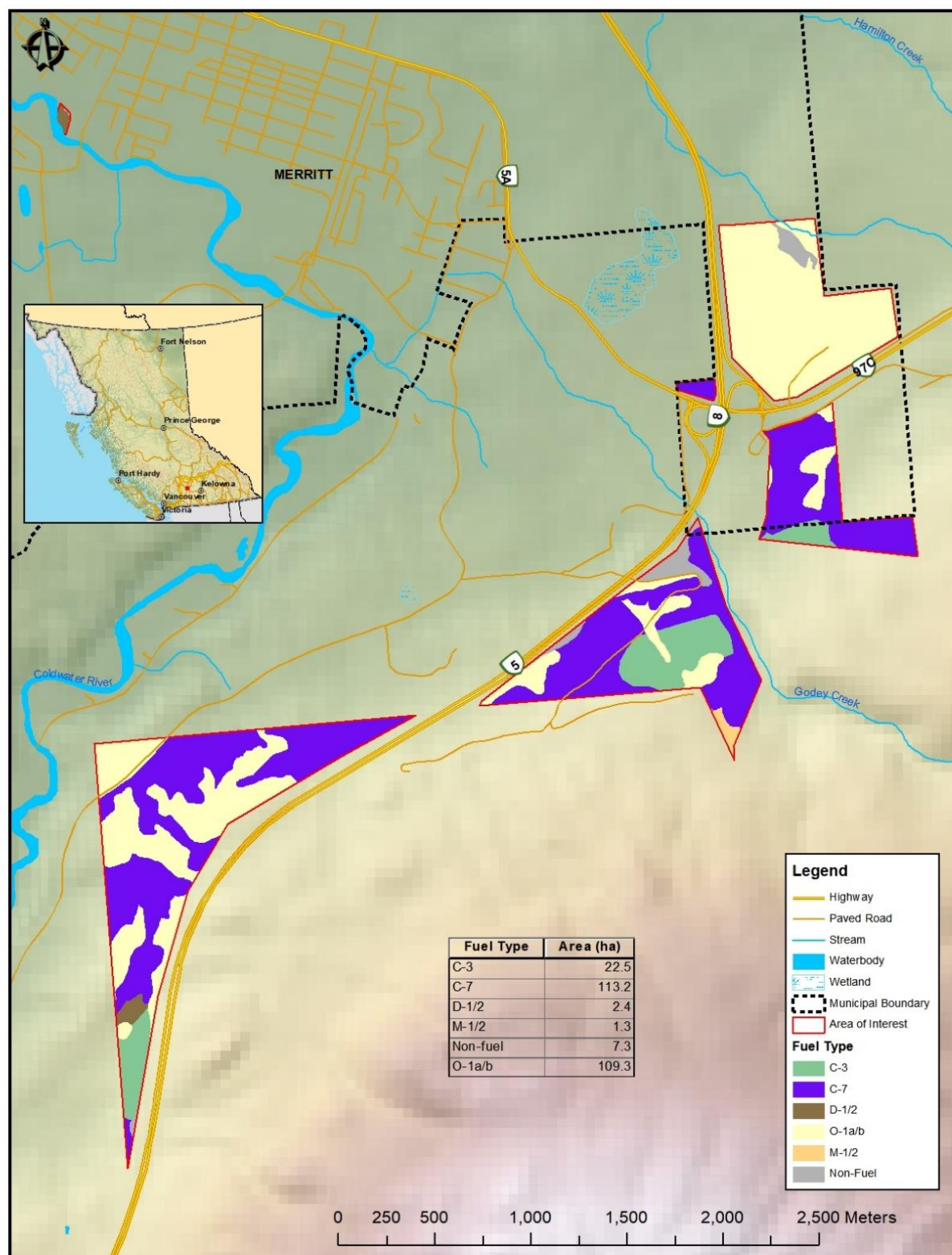
POLYGON F

MERR-6 is located in a fenced off private parcel adjacent to the Coquihalla highway (Highway # 5). The stand consisted of pole sized Douglas fir and lodgepole pine. This polygon has evenly scattered large woody debris with diameters over 20 cm DBH, and absent fine woody debris although the primarily grass understory can cure during the hot summer months into flashy fuels capable of supporting a surface fire.



Figure 7. Vegetation within Polygon F.

Table 1 summarizes the fuel types by general fire behaviour and total area for the study area. In general, the fuel types considered hazardous in terms of dangerous fire behaviour and spotting potential are C2, C4 and C3. An M-1/2 fuel type can sometimes be considered hazardous, depending on the proportion of conifers within the forest stand. If cured during the summer dry season, the O-1 a/b fuel type can become flashy fuels capable of supporting a rapidly spreading surface fire. Map 3 illustrates the study area hazardous fuel types with 22.5 ha of hazardous C-3 fuel type. A significant portion of fuel type O-1 a/b occurs in Polygon B.



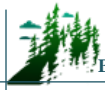
Map 3: Updated Fuel Type map from Wildfire Threat Assessment plots for the Amendment area.



4.0 SYNTHESIS OF WTA PLOTS AND SUBSEQUENT RISK RATING

Table 1: Wildfire Threat Assessment plots.

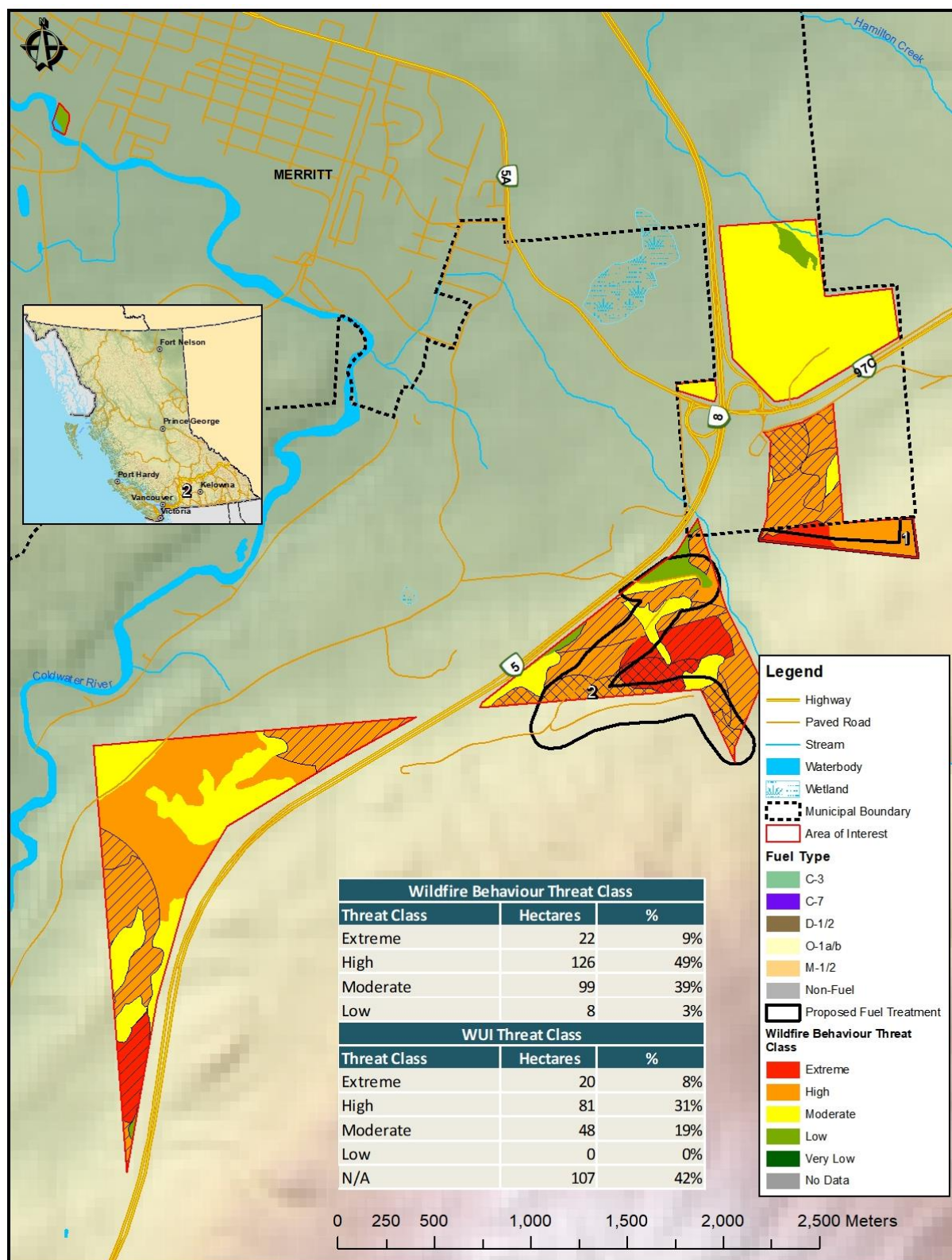
Fuel Type	Plot	BEC	2012 WTA	2012 WUI	2017 WTA	Description	Wildfire Behaviour under High Wildfire Danger Level	Area (ha)	Percent (%)
D 1/2	MERR 1	BGxw	Low (16)	N/A	Low (30)	Deciduous pole - mature black cottonwood stand (<i>Populus trichocarpa</i>) with separated crowns. Wet site with continuous cover of grass	Always a surface fire, low to moderate rate of spread and fire intensity	0.9	0.4
O 1a/b	MERR 2	PPxh	Moderate (84)	N/A	Moderate (61)	Open, park like landscape with continuous grass and antelope brush understorey, pole sized pine. Gently sloping site with west aspect.	Rapidly spreading, high-intensity surface fire when fuels are cured	1.5	0.6
C7	MERR 3	IDFxh	High (106))	9 (Low)	Moderate (69)	Even aged pole-sized stand with DBH <30 cm. Sparse ladder fuels, well-separated from the ground. understorey.	Surface fire spread, torching of individual trees, rarely crowning (usually limited to slopes > 30%), moderate to high intensity and rate of spread	30.9	12
C3	MERR 4-1	IDFxh; PPxh	High (112))	9 (Low)	High (73))	Fully stocked young forest with high sapling density. Steep slopes and gullies throughout with high ladder fuel continuity	Surface and crown fire, low to very high fire intensity and rate of spread	55.9	22
C7	MERR 4-2	IDFxh; PPxh	High (105))	9 (Low)	High (76))	Patchy forest of pole sized conifers with regen. Forested patches are interspersed with continuous grasses and antelope brush.	Surface fire spread, torching of individual trees, rarely crowning (usually limited to slopes > 30%), moderate to high intensity and rate of spread		
C7	MERR 5	PPxh; BGxw; IDFxh	High (96))	9 (Low)	High (61))	Young stand with moderately dense understorey. Forest is patchy with trees separated with open grassy patches			
C7	MERR 6	PPxh	Moderate (88)	9 (Low)	Moderate (67)	Patchy treed areas with 25% standing dead, heavy down woody debris, little ladder fuel continuity.			
Total:								256	100%



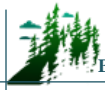
5.0 UPDATED WILDFIRE THREAT RATING

The wildfire assessment and updated fuel typing have identified two potential treatment unit areas (TU) for consideration to address the Extreme threat rating in Polygons C and D. These TUs have been proposed with this assessment because they occur along the southern boundary of Polygon C and along major infrastructure (Fox Farm Road – Polygon D). Since it is unlikely that these elements will not change despite the final layout of any new development, they likely will only need refinement once development plans have been approved. Due to the uncertainty of new development plans, these TU's should be considered the lowest priority (Priority #6) for treatment in the 2016 CWPP Update for the City of Merritt as outlined in Table 8 (page 60, Section 8.4 Fuel Management, 2015 City of Merritt CWPP Update)

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Map 4: Updated Fire Threat map of amendment areas to be included in the Merritt CWPP Update.



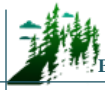
6.0 RECOMMENDATIONS FOR FIRE HAZARD MITIGATION

The City of Merritt anticipates that future subdivision or commercial development will occur in the Amendment polygons thereby introducing more values-at-risk (people and structures) that were not considered in the 2016 CWPP Update. Integrating the findings from this wildfire risk assessment for the Amendment polygons into future development plans will allow the City of Merritt to engage in advance planning to actively reduce the threat from wildfire.

Because subdivision plans have not been developed nor a development footprint established for the Amendment area, proposed fuel treatment works cannot be finalized. However, two proposed treatment units are initially proposed as they occur along a polygon interface and an access road. These two treatment units (TU's) consist of:

- an interface fuel break along the southern boundary of Polygon C adjacent to intact forest (TU 1 - Map 4). It is most likely that development will occur in the norther portion with access off of Highway 5A / Okanagan Connector and;
- a primary fuel break along Fox Farm Rd in Polygon. The road infrastructure will remain in place despite future development plans and will become the primary access / evacuation route into any proposed new development (TU 2 - Map 4). D characterizing it as a access / evacuation route When development plans are in the incipient stages, a Registered Professional Forester (licensed in BC) should be hired to assess the current wildfire hazard; assess conditions on and off-site including neighbouring lands; evaluate the proposed development for wildfire susceptibility; and provide FireSmart recommendations that will reduce the wildfire hazard below a moderate rating.

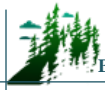
From this evaluation, fuel treatment prescriptions prepared by a Registered Professional Forester should address the wildfire hazard for new development tracts by prescribing a 100-m fuel treatment zone (at a minimum) measured outward from the footprint, and target the reduction of hazardous fuels through a combination of thinning, pruning, woody debris removal, and grass management to reduce surface fire rate of spread.



7.0 PROFESSIONAL SIGNATURE

Bruce Blackwell R.P.F. #2073
B.A. Blackwell and Associates Ltd.

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8.0 APPENDIX I: WILDFIRE THREAT ASSESSMENT PLOTS

Wildfire Hazard Assessment plots MERR-1 to MERR-6 in both 2012 and 2017 forms are provided as a separate pdf package

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