



Harrop-Procter Community Co-operative

ROAD SITE PLAN

East Harrop Mainline Road Section C4 (Low Road)

A. ROAD IDENTIFICATION

ROAD NAME	SECTION	LENGTH (km)	LOCATION	POC	POT
East Harrop Mainline (Low Road)	C4	3.1	East Harrop	496126E 5492615N	497069E 5489922N

B. RESULTS AND/OR STRATEGIES

This Site Plan is consistent with HPCC's approved Forest Stewardship Plan and the Forest and Range Practices Act and Regulations (FRPA S.10(2)(b)).

Value/ Objective	FSP Section	Reference	How the result or strategy applies to the site
Wildlife	4.3	Species at Risk strategy	No observations of species at risk during road planning and layout.
		GAR #U-4-012 Mountain Caribou	N/A. The road is outside of the area covered by this GAR Order.
Riparian Areas	4.4	Riparian Management Areas	Riparian assessments have been completed. This road crosses one S6 stream at 1+660. A 600mm culvert is prescribed for this crossing. Other than this S6 stream crossing, the road does not impact any Riparian Management Areas.
Fish Habitat	4.5	FPPR S.8.1	N/A. The block is not in a Fisheries Sensitive Watershed.
Water	4.6.1	Community Watersheds	N/A. The block is not in a Community Watershed.
	4.6.2	Domestic Watersheds	<p>This road is in the Harrop Creek domestic watershed. A detailed Harrop Creek watershed assessment was completed in 2006, and a watershed update was completed in July 2010. Road building will be consistent with the recommendations of the watershed assessment.</p> <p>POD's have been mapped. Water agreement holders were sent notification/ consultation letters on June 30, 2010 and were invited to provide comments on this road.</p> <p>No road building will occur within a 100 m radius upslope of a licensed waterworks.</p>
Visual Quality	4.8	Visual quality objectives	This block is in a Scenic Area with a Retention VQO. A Visual Impact Assessment has been completed. The VIA indicates that the VQO will be met.
Cultural Heritage Resources	4.9	CHR strategy	<p>Archaeological Overview Assessments indicate that this area has 'low' archaeological potential.</p> <p>Referral letters were sent out to the appropriate First Nations on</p>

			June 30, 2010.
Recreation	4.10	Recreation trails and sites	This road crosses Mill Lake Trail at 0+230. A sign and/or physical barrier will be erected adjacent to the road to control motorized access to the trail.

C. ADDITIONAL COMMENTS

-

D. ADMINISTRATION

RPF PRINTED NAME	RPF SIGNATURE and SEAL
DATE SIGNED	
I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been done to standards acceptable of a Registered Professional Forester.	

The attached map forms an integral part of this site plan.

ROAD SITE PLAN SUPPORT DOCUMENT

ROAD NAME	SECTION	LENGTH (km)	LOCATION	POC	POT
East Harrop Mainline (Low Road)	C4	3.1	East Harrop	496126E 5492615N	497069E 5489922N

1 SITE AND ECOLOGICAL INFORMATION

BEC	Elevation (m)	Slope (%)	Terrain/ Soils
ICHdw1-01a	1040 - 1200	35 – 65	See Perdue Geotechnical Summary Table (July 2010)

2 ASSESSMENTS

TERRAIN STABILITY FIELD ASSESSMENTS (TSFA's)—including gentle over steep assessments		
DATE	CONSULTANT	RECOMMENDATIONS
July 2010	Perdue Geotechnical Services	<p>See Perdue <u>Geotechnical Recommendations Summary</u> table which prescribes culvert locations, cut/fill slope angles, and construction recommendations.</p> <p>"¾ bench and full bench construction has been prescribed for limited sections of the road rated as Moderate and High hazard terrain (respectively) where side hill gradients are considered too steep to support conventional fill slopes for permanent or longer-term use roads. It is likely that within the sections prescribed for ¾ and full bench construction that short sections will exist where additional fill can be placed while maintaining a Low residual hazard rating. The remaining majority of the proposed alignment may be built using conventional, side cast construction techniques."</p> <p>"Bedrock excavation is expected to generate coarse rock fragments which should be utilized through the prominent drainage features to construct permeable, placed rock fills and road grades to provide additional drainage capacity and stability of the road crossings."</p> <p>"Road construction practices should be completed in accordance with Chapter 6 of the Ministry of Forests and Range <i>Engineering Manual</i> (Anonymous, 2006)".</p>
COMMENTS	<p>All Perdue recommendations will be followed. Timberland (2001) road design for first 1.7 km of road (July 2010) has incorporated Perdue recommendations, including culvert locations, cut/fill slope angles, and ¾ and full bench recommendations.</p> <p>"... the construction methods recommended above are expected to result in a Low (or better) residual hazard of landslide initiation both during and after construction."</p>	

THE FOLLOWING INFORMATION IS ATTACHED FOR INFORMATION ONLY AND DOES NOT FORM PART OF THE SITE PLAN

HYDROLOGICAL/ WATERSHED ASSESSMENTS		
DATE	CONSULTANT	RECOMMENDATIONS
March 2006	Aqua Environmental Associates	<p><i>Relevant recommendations:</i></p> <p>2 (b) Avoid a high degree of green roads in a short period. Implement a staged and gradual approach to road construction.</p> <p>(c) Avoid twinned road systems ... Drainage planning is particularly important above gullies and potential instability. Consider using long forwarding trails to limit the need for road construction.</p> <p>(d) Avoid roads with steep gradient (above 10%), particularly if surfaced with fine materials (fine sands, silts, and clays).</p> <p>(e) Pursue best management practices for road location and construction to minimize the hydrologic risks posed by new roads. These measures include:</p> <ul style="list-style-type: none"> • On steeper hillsides, build narrow roads (4 m) to limit interception of subsurface flow. • Avoid locating roads in areas of high or very high potential for sediment yield resulting from landslides or waterborne erosion. • Avoid drainage interception and diversion. • Maintain natural drainage patterns. • Minimize soil disturbance and revegetate promptly. • Maintain roads or 'put them to bed'. <p>4(a) Where development is planned upslope of Class IV or V terrain:</p> <ul style="list-style-type: none"> • Avoid altering drainage patterns onto these slopes • In the absence of following the recommendations of a professional site-specific assessment, limit the ECA over sensitive sites (Class IV or V terrain) to 20% • Ensure that Detailed Terrain Stability Assessments include explicit consideration and field review of all potential downslope changes in groundwater loading which might affect slope stability. <p>7) If the risk-reduction strategies and recommendations in this report are followed and the total drainage road density does not exceed 1.0km/km², the following guidelines may be used as a planning tool in your risk-management planning:</p> <ul style="list-style-type: none"> • To maintain a very low risk of your activities to the flow regime and to the stability of the alluvial fan, maintain weighted ECA at or below 15% and limit harvest rates to a maximum of 5% incremental ECA in five years and 10% in ten years (etc.) <p>15) Once the initial layout and site plans are prepared for the Harrop Face and areas downslope of the Harrop Mainline, retain the services of an appropriate qualified professional to review your plans in light of the downslope water resource values.</p>

THE FOLLOWING INFORMATION IS ATTACHED FOR INFORMATION ONLY AND DOES NOT FORM PART OF THE SITE PLAN

July 2010	Aqua Environmental Associates	<p>Watershed assessment report card update for the Harrop Creek Watershed.</p> <p>Weighted ECA of the Harrop Creek drainage is currently 9.1%. Proposed CP143 logging and road building would increase the weighted ECA to 10.1%.</p> <p>Total road density is currently 0.075 km/km². This road section would increase road density to 0.13 km/km². This total road density would “in general terms, be considered to be at low levels hydrologically”.</p>
COMMENTS	<p>Rec. 2 (b): This road is part of a staged approach to road building in East Harrop Creek. Road Sections C and C1 were built in 2007; Section C2 was built in 2008; Section C3 was built in 2009. None of these older road sections would be currently considered ‘green’ roads.</p> <p>Rec. 2 (c): This road is not a ‘twinned’ road, except arguably for the first 400 meters of this road section. Drainage planning has been used to avoid concentrating water. Forwarding trails are not appropriate for this mainline road section.</p> <p>Rec. 2 (d): Steep road gradients have generally been avoided, with road grades <10% to 1.7km and slightly steeper after 1.7km. Road surface materials will be primarily coarse sandy till and rock fragments.</p> <p>Rec. 2 (e): The road will be built as narrow as is safely feasible—design specification is 4.5 m width. The road has been located to avoid steep terrain with very high surface erosion potential and/or moderate to high risk of landslides. The remaining recommendations under 2 (e) are standard operating practices for HPCC.</p> <p>Recs. 4(a) and 15: This road is upslope of Class V terrain above Harrop Creek. As per Aqua recommendations 4(a) and 15, following initial layout and site plan development, Perdue Geotechnical Services completed a terrain stability field assessment for this road (July 2010). The Perdue assessment indicated the construction methods recommended are expected to result in a Low (or better) residual hazard of landslide initiation both during and after construction. See TSFA recommendations and comments above.</p> <p>Rec. 7: As per Aqua (July 2010), the total road density will be 0.13 km/km² and the weighted ECA will be 10.1%. Incremental ECA from 2005 to 2010 will be 2.3%.</p>	

RIPARIAN ASSESSMENTS					
Road Section	Road station	Riparian ID	RMA Width (m)	Culvert	Comments (Rationale if road located in RMA other than for stream crossing)
C4	1+674	S6	30	600 mm	This road crosses this one S6 stream, but otherwise is not located in an RMA.

VISUAL IMPACT ASSESSMENTS	
RESULTS	Visual Impact Assessment (July 2, 2010) indicates that portions of this road could potentially be visible from a very oblique angle from the highway viewpoint. The VIA indicates that the Retention Visual Quality Objective will continue to be met.
COMMENTS	Road right-of-way will be as narrow as possible (1 meter from top of cut, 2 meters from toe of fill).

ARCHAEOLOGICAL IMPACT ASSESSMENTS		
DATE	CONSULTANT	RECOMMENDATIONS
-	-	-

THE FOLLOWING INFORMATION IS ATTACHED FOR INFORMATION ONLY AND DOES NOT FORM PART OF THE SITE PLAN

COMMENTS	AOA mapping (Choquette 2002, and Kutenai West Heritage Consulting 2001) indicates that there is Low archaeological potential in this area, and no archaeological impact assessments are required.
-----------------	---

RPF PRINTED NAME	RPF SIGNATURE and SEAL
DATE SIGNED	
I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been done to standards acceptable of a Registered Professional Forester.	