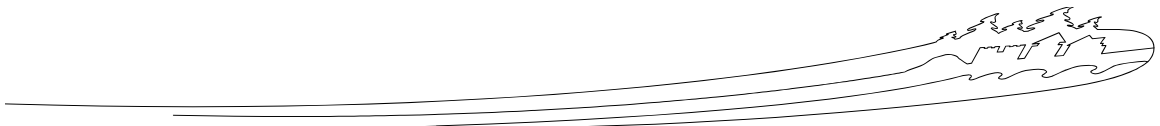
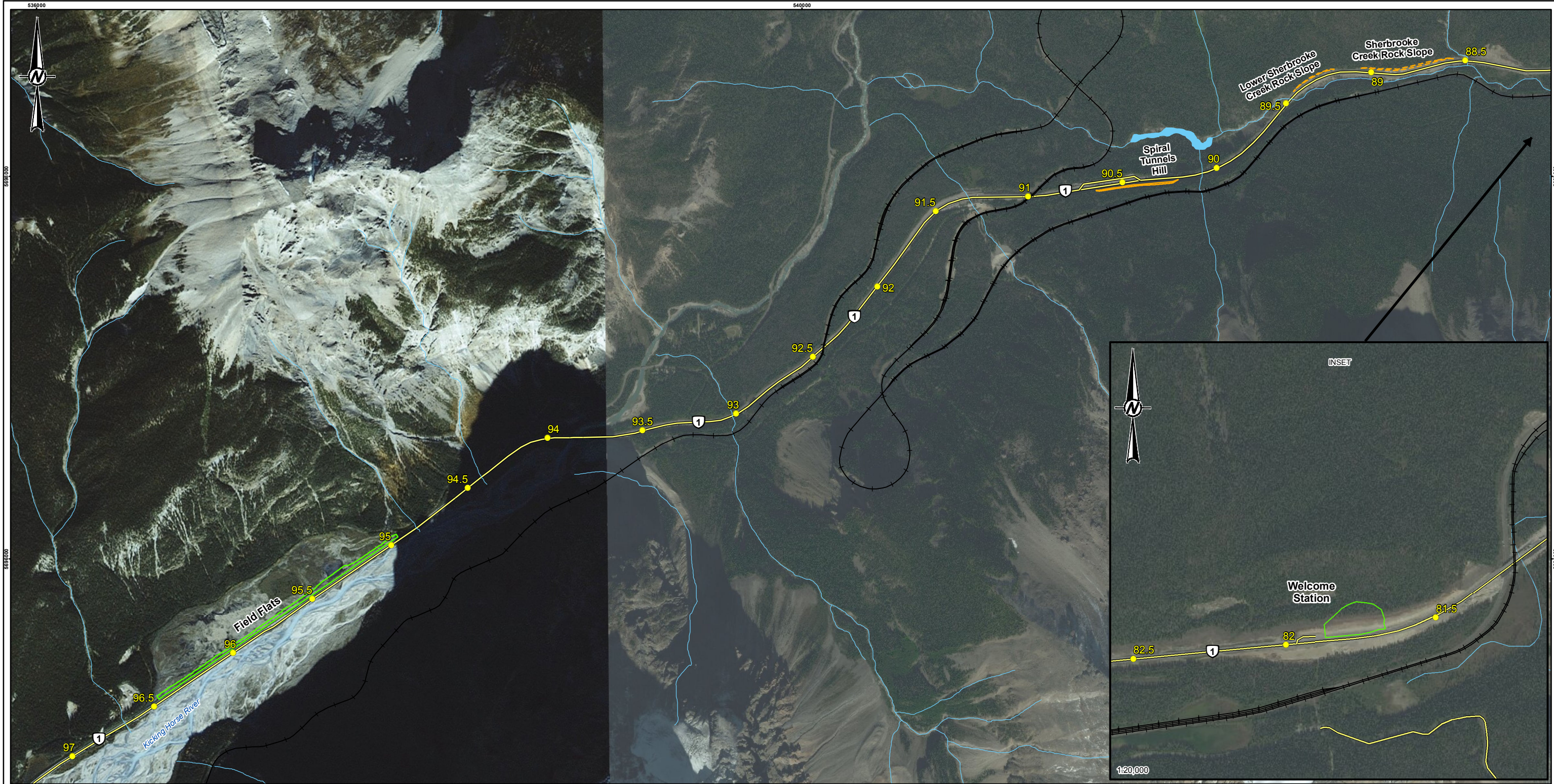




Appendix A Figures






LEGEND

- TRANS-CANADA HIGHWAY KILOMETRE POST WITHIN YOHO NATIONAL PARK
- RAILROAD
- TRANS-CANADA HIGHWAY (TCH)
- WATERCOURSE
- APPROVED CONSTRUCTION/ REPROFILING SITE
- PROPOSED CONSTRUCTION/ REPROFILING SITE
- PROPOSED DEPOSIT SITE

0 800 1,600
1:20,000 METRES

CLIENT
PARKS CANADA

CONSULTANT


YYYY-MM-DD	2016-04-01
DESIGNED	MP
PREPARED	RC
REVIEWED	MP
APPROVED	MJ

REFERENCE(S)
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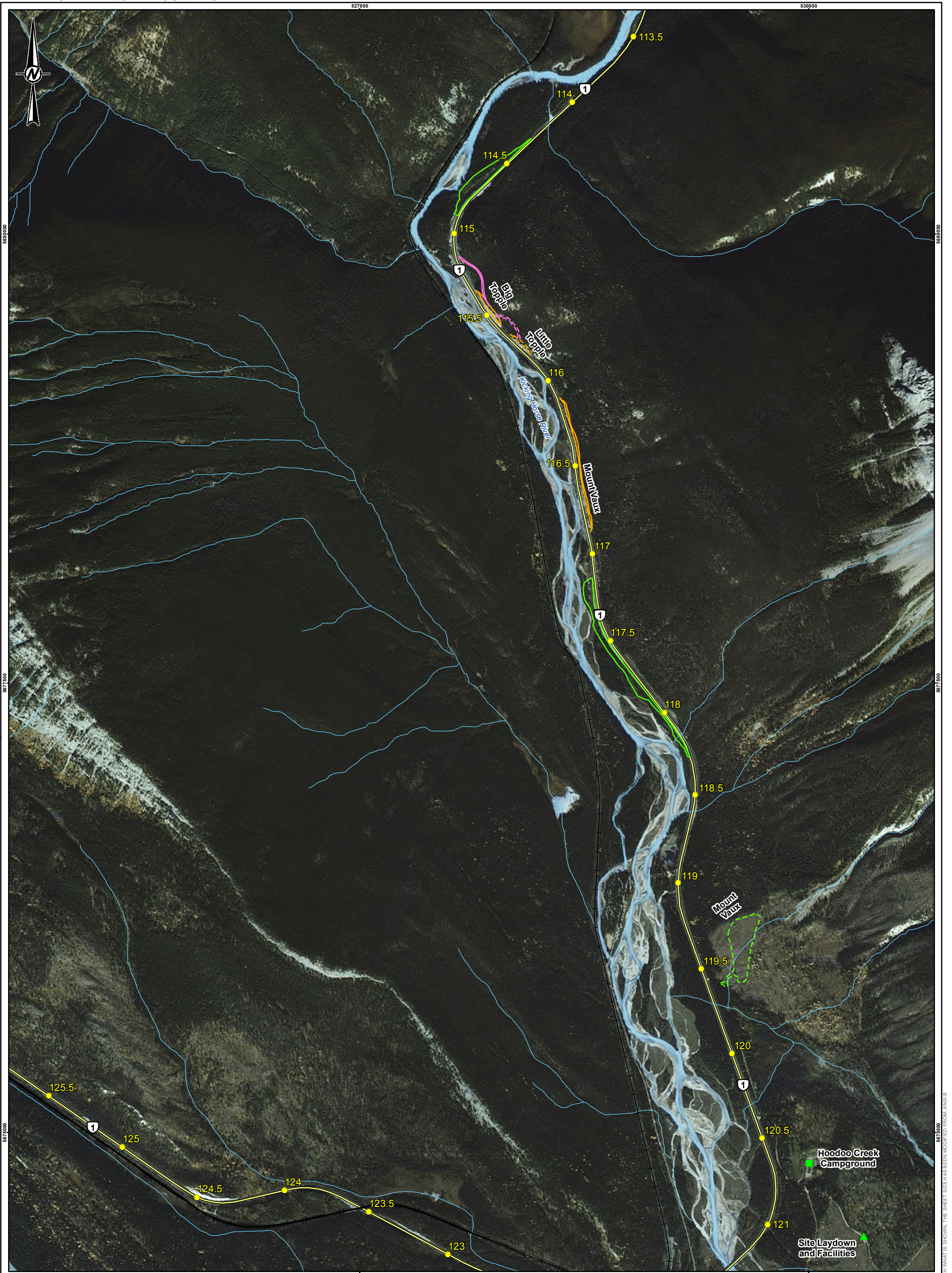
PROJECT
TRANS-CANADA HIGHWAY SLOPE REPROFILING – YOHO NATIONAL PARK - 2016 WORKS

TITLE
OVERVIEW OF PROJECT AREA

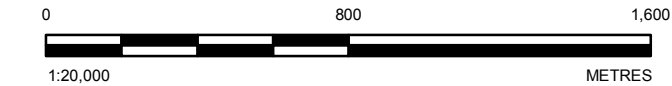
PROJECT NO. 1540777	CONTROL 2000	REV. 0	FIGURE 1A
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PATH: I:\CLIENTS\PARKS_CANADA\1540777\Maping\MXD\General\Fig 1A_ProjectOverview_Rev0.mxd PRINTED ON: 2016-04-01 AT: 8:51:31 AM

28mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



- LEGEND**
- HOODOO CREEK CAMPGROUND
 - SITE LAYDOWN AND FACILITIES
 - TRANS-CANADA HIGHWAY KILOMETRE POST WITHIN YOHO NATIONAL PARK
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - APPROVED CONSTRUCTION/ REPROFILING SITE
 - PROPOSED CONSTRUCTION/ REPROFILING SITE
 - APPROVED CONSTRUCTION/ CLEARING SITE ACCESS ROUTE
 - PROPOSED CONSTRUCTION/ CLEARING SITE ACCESS ROUTE
 - APPROVED DEPOSIT SITE
 - PROPOSED DEPOSIT SITE



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PROJECT

TRANS-CANADA HIGHWAY SLOPE REPROFILING – YOHO NATIONAL PARK - 2016 WORKS

TITLE

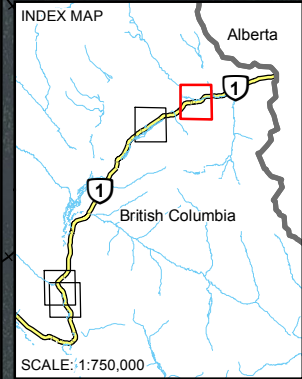
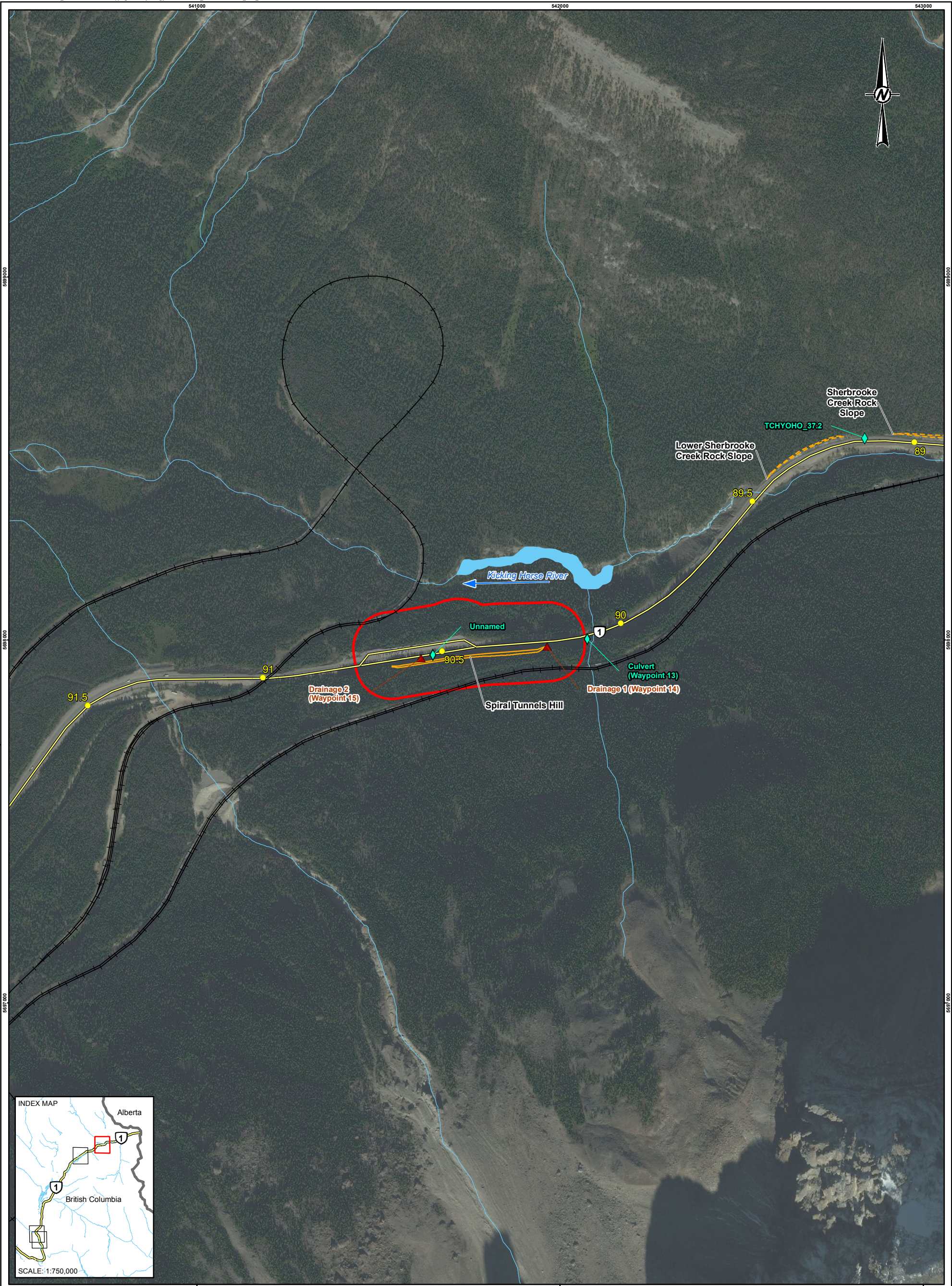
OVERVIEW OF PROJECT AREA

PROJECT NO.
1540777

CONTROL
2000

REV.
0

FIGURE
1B



- LEGEND**
- 2015 SURVEY LOCATION
 - CULVERT
 - KILOMETRE POST
 - FLOW DIRECTION
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - APPROVED REPROFILING SITE
 - PROPOSED REPROFILING SITE
 - LOCAL STUDY AREA
 - WATERBODY



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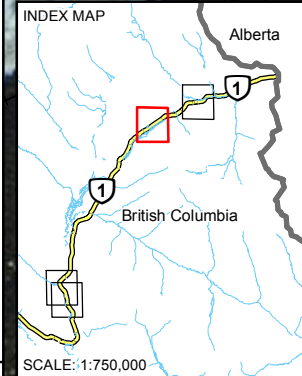
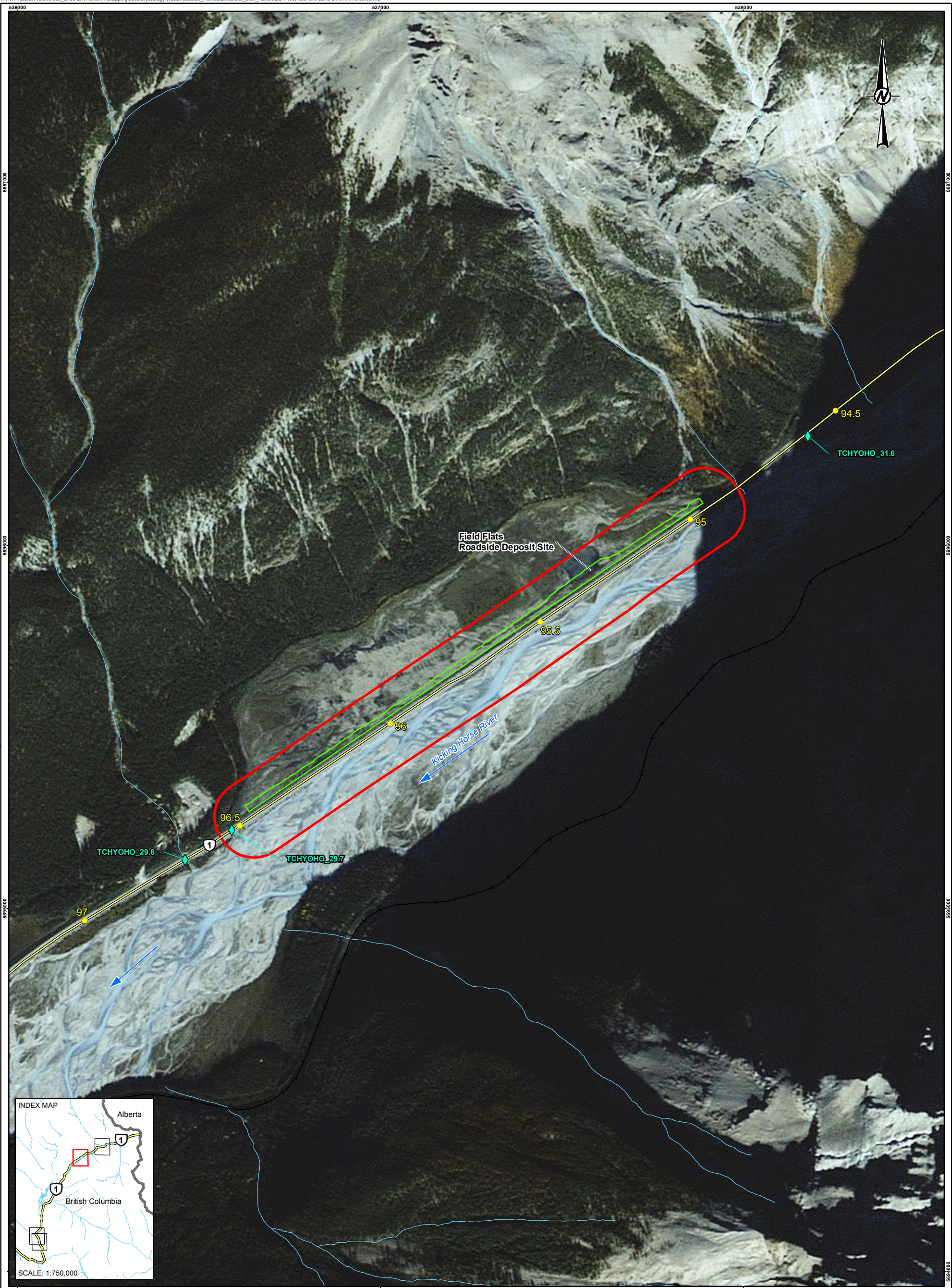
NOTE(S)
UNNAMED CULVERT LOCATIONS ARE APPROXIMATE AND ARE BASED ON A LOCATION DESCRIPTION IN TTEBA 2015A

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PROJECT
**TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS**

TITLE
AQUATIC RESOURCES WITHIN THE PROJECT LSA

PROJECT NO. 1540777	CONTROL 2000	REV. 0	FIGURE 2A
------------------------	-----------------	-----------	---------------------



- LEGEND**
- CULVERT
 - KILOMETRE POST
 - FLOW DIRECTION
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - PROPOSED DEPOSIT SITE
 - LOCAL STUDY AREA



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CONSULTANT



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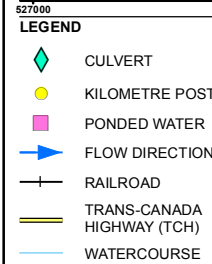
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PROJECT
**TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YHOHO NATIONAL PARK - 2016 WORKS**

TITLE
AQUATIC RESOURCES WITHIN THE PROJECT LSA

PROJECT NO. 1540777 CONTROL 2000 REV. 0

FIGURE
2B



	APPROVED CLEARING SITE ACCESS ROUTE
	PROPOSED CLEARING SITE ACCESS ROUTE
	APPROVED REPROFILING SITE
	PROPOSED REPROFILING SITE
	PROPOSED DEPOSIT SITE
	LOCAL STUDY AREA

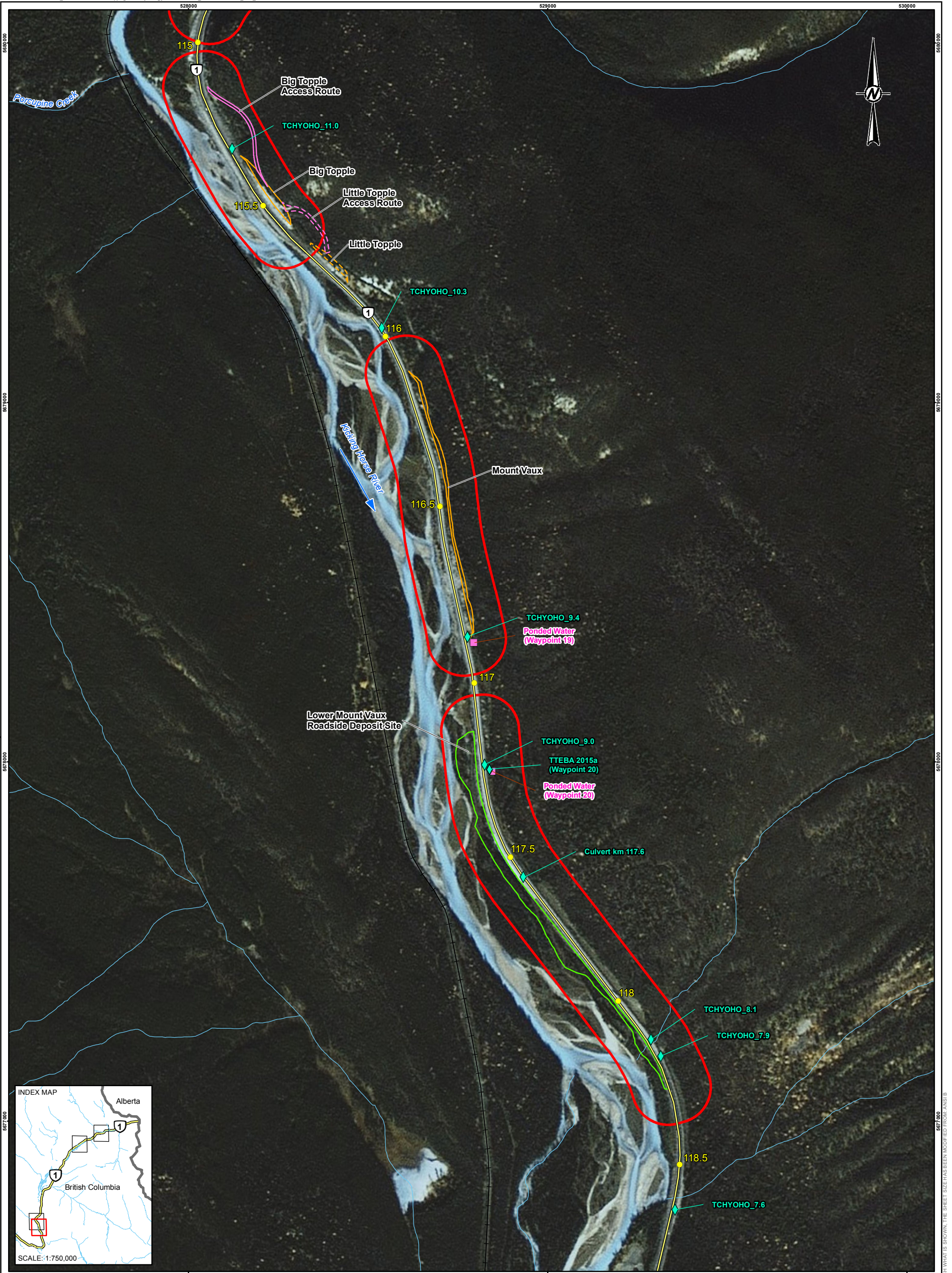
CONSULTANT

 **Golder
Associates**

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PREPARED	RC
REVIEWED	MP
APPROVED	MJ

TITLE

FIGURE
2C



- LEGEND**
- | | | | |
|--|----------------------------|--|-------------------------------------|
| | CULVERT | | APPROVED CLEARING SITE ACCESS ROUTE |
| | KILOMETRE POST | | PROPOSED CLEARING SITE ACCESS ROUTE |
| | PONDED WATER | | APPROVED REPROFITING SITE |
| | FLOW DIRECTION | | PROPOSED REPROFITING SITE |
| | RAILROAD | | PROPOSED DEPOSIT SITE |
| | TRANS-CANADA HIGHWAY (TCH) | | LOCAL STUDY AREA |
| | WATERCOURSE | | |



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CONSULTANT



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APPROVED	MJ

NOTE(S)

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PROJECT

**TRANS-CANADA HIGHWAY SLOPE REPROFITING –
YHO NATIONAL PARK - 2016 WORKS**

TITLE

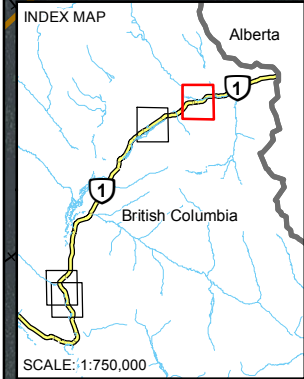
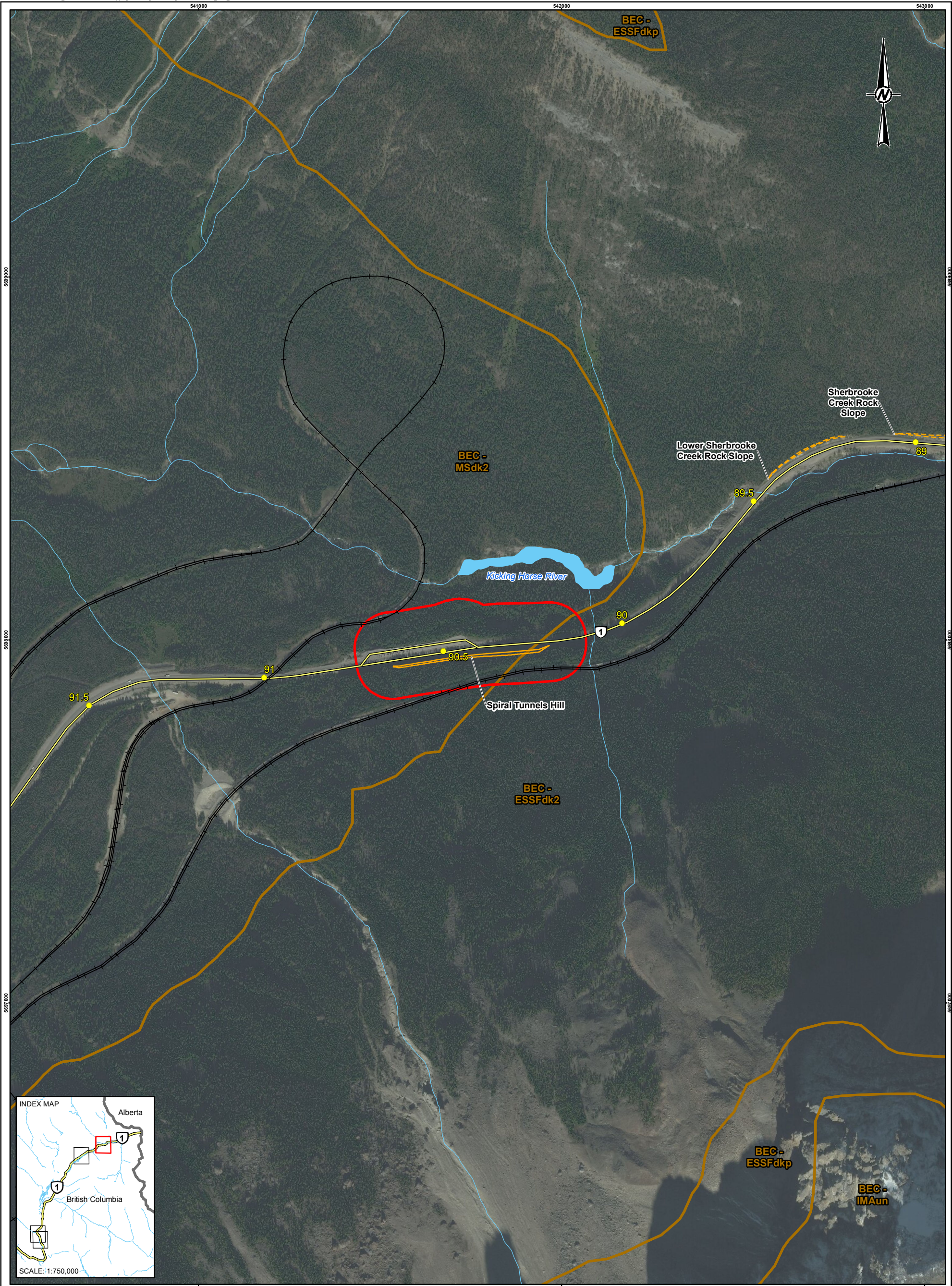
AQUATIC RESOURCES WITHIN THE PROJECT LSA

PROJECT NO.
1540777

CONTROL
2000

REV.
0

FIGURE
2D



- LEGEND**
- KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - BIOGEOCLIMATIC ZONE
 - - - APPROVED REPROFILING SITE
 - PROPOSED REPROFILING SITE
 - LOCAL STUDY AREA
 - WATERBODY



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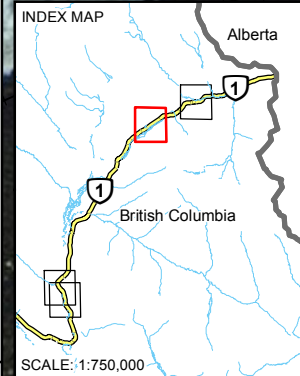
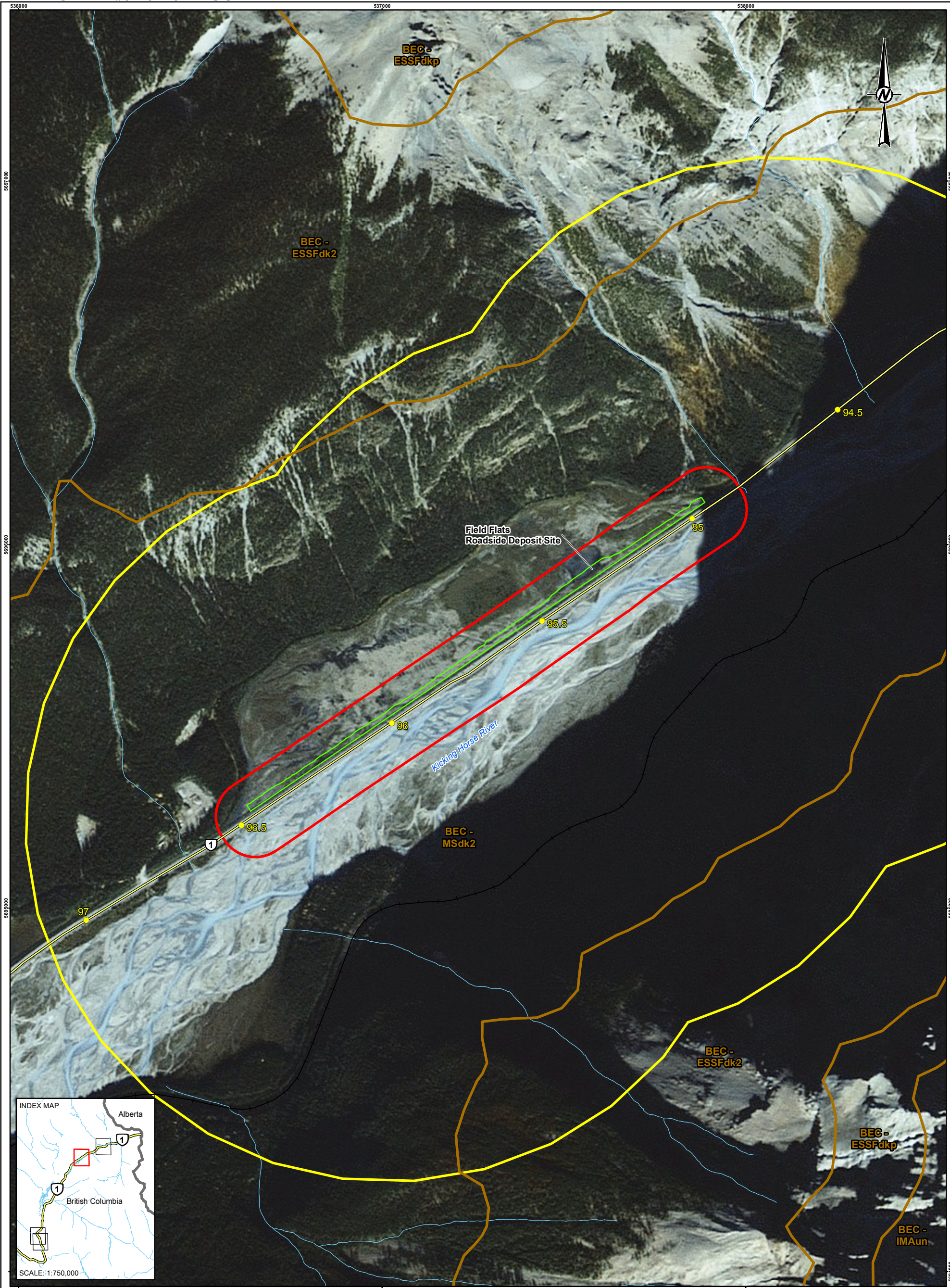
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PROJECT
TRANS-CANADA HIGHWAY SLOPE REPROFILING – YOHO NATIONAL PARK - 2016 WORKS

TITLE
VEGETATION ELEMENTS OCCURRING WITHIN THE PROJECT LSA

PROJECT NO. 1540777	CONTROL 2000	REV. 0
------------------------	-----------------	-----------

FIGURE
3A



- LEGEND**
- KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - BIOGEOCLIMATIC ZONE
 - PROPOSED DEPOSIT SITE
 - LOCAL STUDY AREA
 - MCCALLA'S DWARF BRAYA OCCURRENCE



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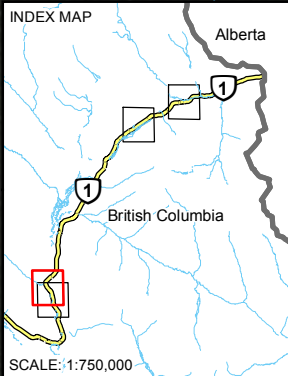
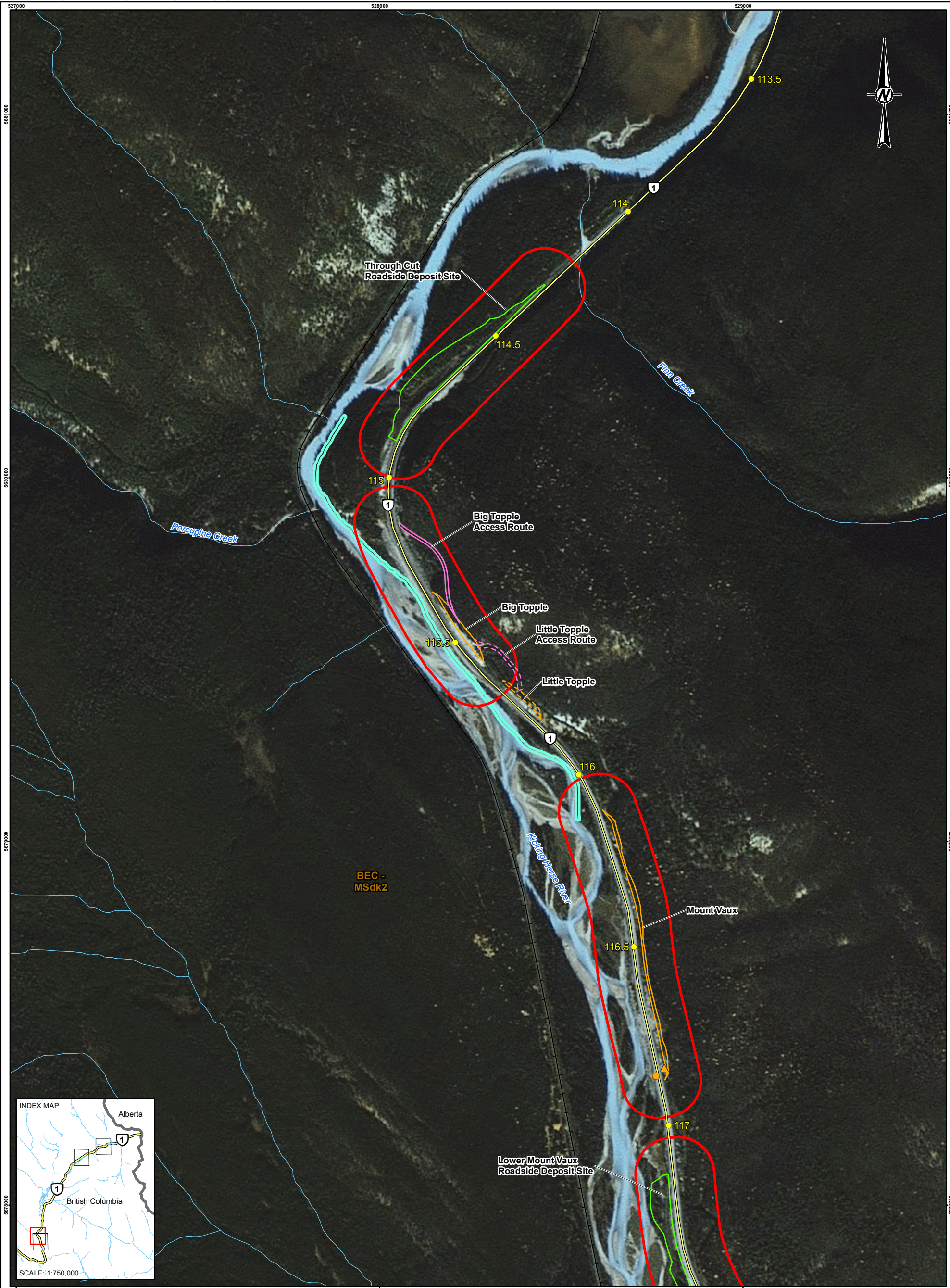
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PROJECT
TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS

TITLE
**VEGETATION ELEMENTS OCCURRING
WITHIN THE PROJECT LSA**

PROJECT NO. 1540777	CONTROL 2000	REV. 0
------------------------	-----------------	-----------

FIGURE
3B



- LEGEND**
- COMMON TANSY
 - ORANGE HAWKWEED
 - KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - BIOGEOCLIMATIC ZONE
 - APPROVED CLEARING SITE ACCESS ROUTE
 - PROPOSED CLEARING SITE ACCESS ROUTE
 - APPROVED REPROFILING SITE
 - PROPOSED REPROFILING SITE
 - PROPOSED DEPOSIT SITE
 - LOCAL STUDY AREA
 - CRAWE'S SEDGE OCCURRENCE



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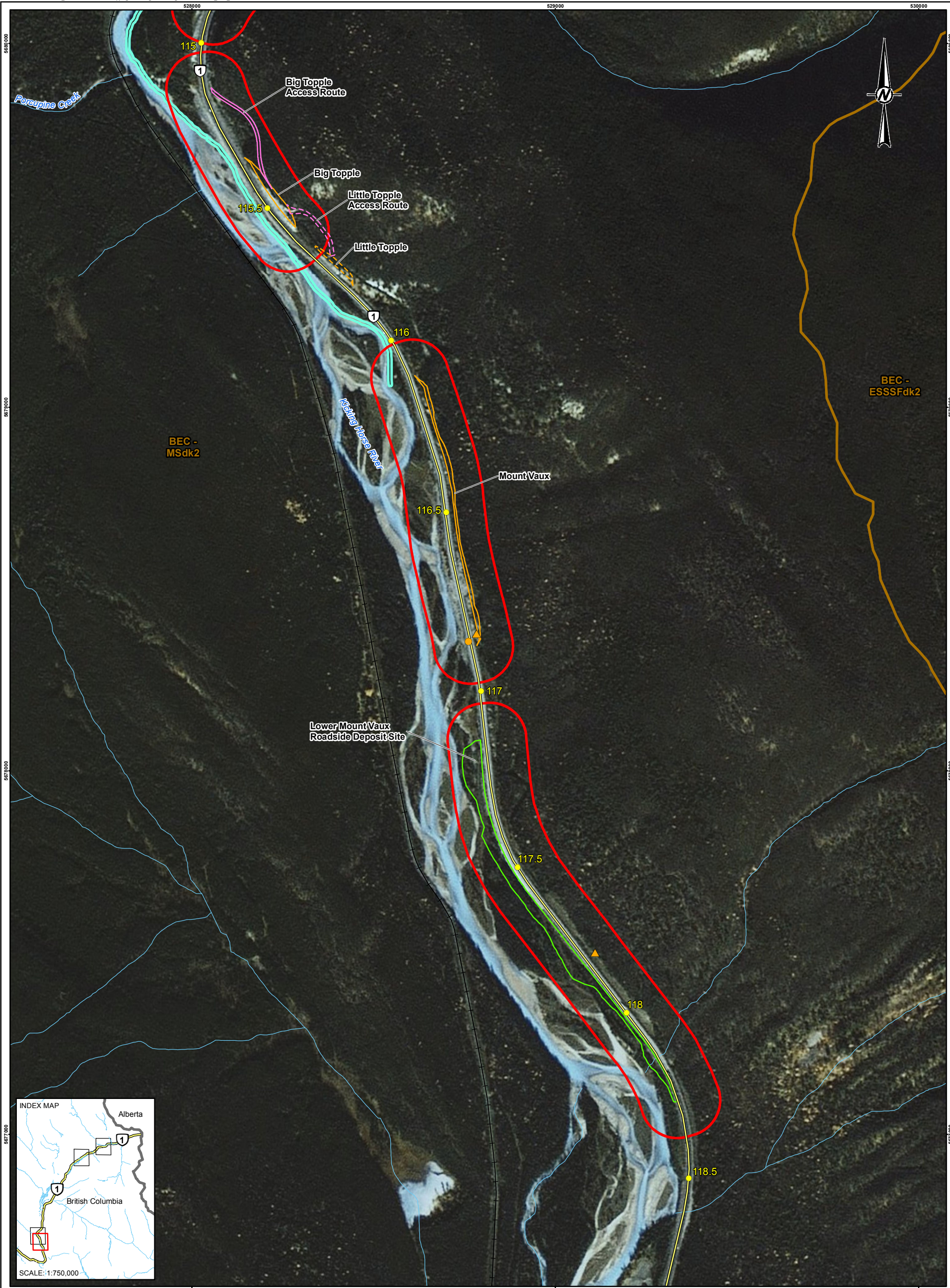
YYYY-MM-DD	2016-04-01
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PROJECT
**TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS**

TITLE
**VEGETATION ELEMENTS OCCURRING
WITHIN THE PROJECT LSA**

PROJECT NO. 1540777	CONTROL 2000	REV. 0	FIGURE 3C
------------------------	-----------------	-----------	---------------------



- LEGEND**
- COMMON TANSY
 - ORANGE HAWKWEED
 - KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - BIOGEOCLIMATIC ZONE
 - APPROVED CLEARING SITE ACCESS ROUTE
 - PROPOSED CLEARING SITE ACCESS ROUTE
 - APPROVED REPROFILING SITE
 - PROPOSED REPROFILING SITE
 - PROPOSED DEPOSIT SITE
 - LOCAL STUDY AREA
 - CRAWE'S SEDGE OCCURRENCE



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PROJECT
TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS

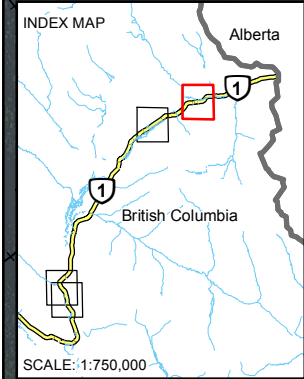
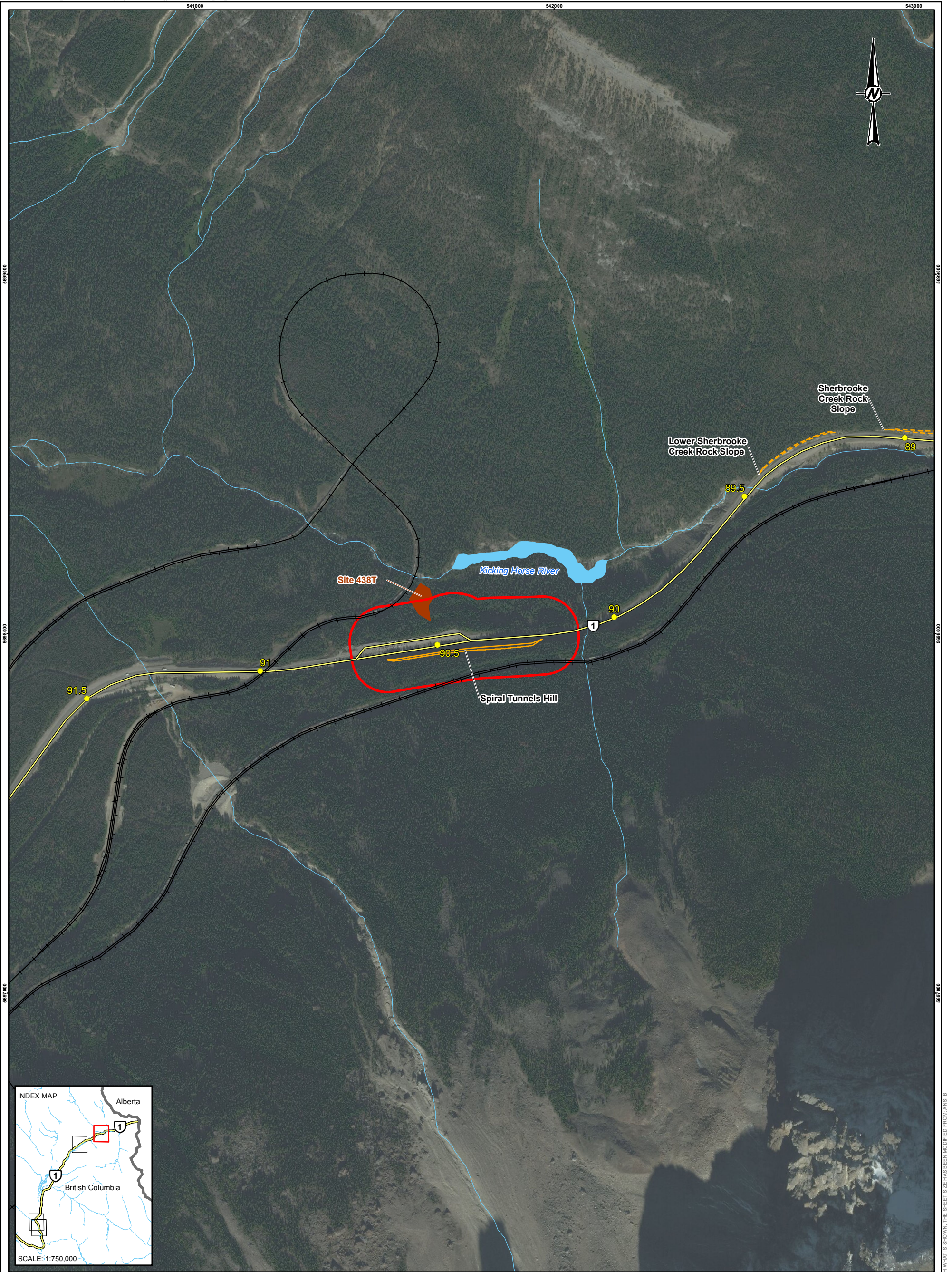
TITLE
**VEGETATION ELEMENTS OCCURRING
WITHIN THE PROJECT LSA**

PROJECT NO.
1540777

CONTROL
2000

REV.
0

FIGURE
3D



- LEGEND**
- KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - ARCHAEOLOGICAL AREA
 - - - APPROVED REPROFILING SITE
 - - - PROPOSED REPROFILING SITE
 - LOCAL STUDY AREA
 - WATERBODY



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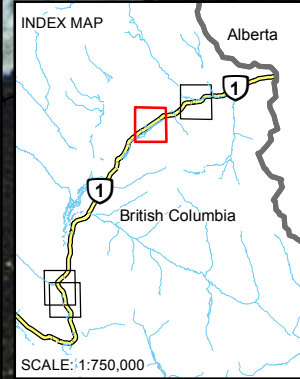
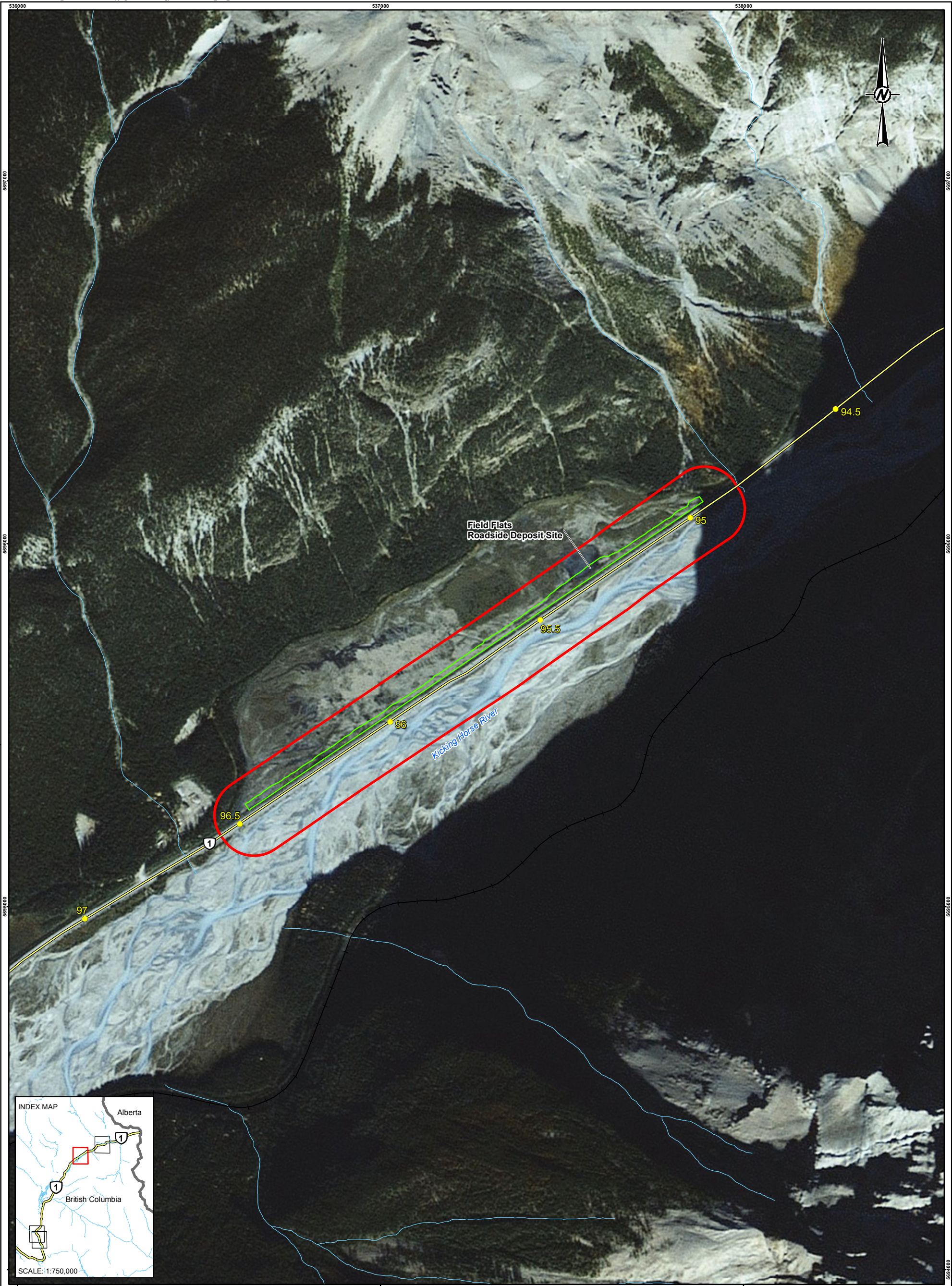
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PREPARED	RC
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PROJECT
**TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS**

TITLE
CULTURAL RESOURCES WITHIN THE PROJECT LSA

PROJECT NO. 1540777	CONTROL 2000	REV. 0	FIGURE 4A
------------------------	-----------------	-----------	---------------------



- LEGEND**
- KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - ▭ PROPOSED DEPOSIT SITE
 - ▭ LOCAL STUDY AREA



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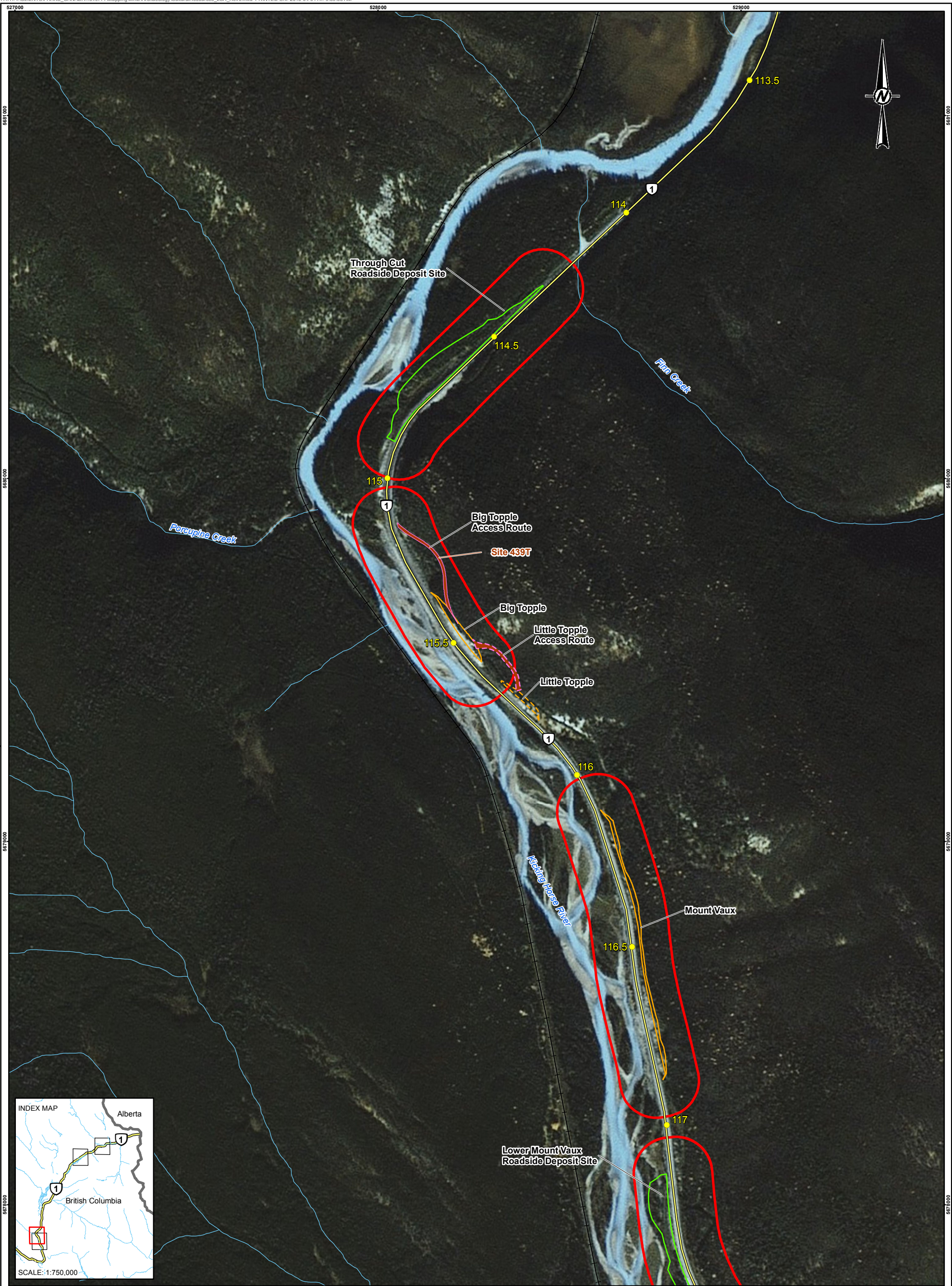
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PROJECT
**TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS**

TITLE
CULTURAL RESOURCES WITHIN THE PROJECT LSA

PROJECT NO. 1540777 CONTROL 2000 REV. 0

FIGURE
4B



- LEGEND**
- KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - ARCHAEOLOGICAL AREA
 - - - APPROVED CLEARING SITE ACCESS ROUTE
 - - - PROPOSED CLEARING SITE ACCESS ROUTE
 - - - APPROVED REPROFILING SITE
 - - - PROPOSED REPROFILING SITE
 - - - PROPOSED DEPOSIT SITE
 - LOCAL STUDY AREA

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CONSULTANT			
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		PREPARED	RC
		REVIEWED	MP
		APPROVED	MJ

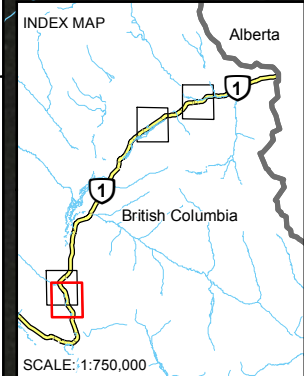
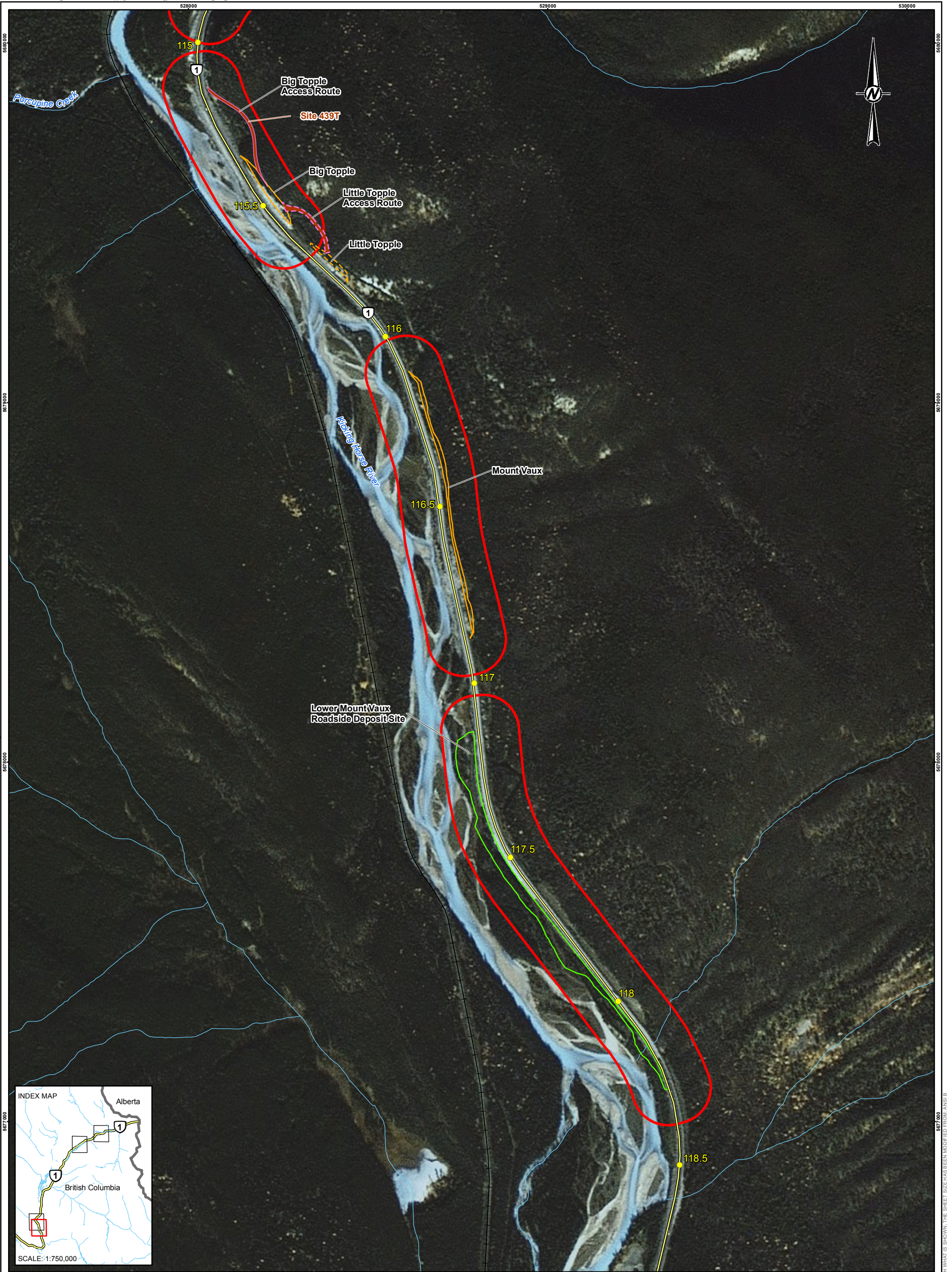


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PROJECT
TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS

TITLE
CULTURAL RESOURCES WITHIN THE PROJECT LSA

PROJECT NO. 1540777	CONTROL 2000	REV. 0	FIGURE 4C
------------------------	-----------------	-----------	--------------



- LEGEND**
- KILOMETRE POST
 - RAILROAD
 - TRANS-CANADA HIGHWAY (TCH)
 - WATERCOURSE
 - ARCHAEOLOGICAL AREA
 - - - APPROVED CLEARING SITE ACCESS ROUTE
 - - - PROPOSED CLEARING SITE ACCESS ROUTE
 - - - APPROVED REPROFILING SITE
 - - - PROPOSED REPROFILING SITE
 - - - PROPOSED DEPOSIT SITE
 - LOCAL STUDY AREA



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PARKS CANADA

CONSULTANT



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REVIEWED	MP
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PROJECT
**TRANS-CANADA HIGHWAY SLOPE REPROFILING –
YOHO NATIONAL PARK - 2016 WORKS**

TITLE
CULTURAL RESOURCES WITHIN THE PROJECT LSA

PROJECT NO.
1540777

CONTROL
2000

REV.
0

FIGURE
4D

April 2016



Appendix B Effects Identification Matrix

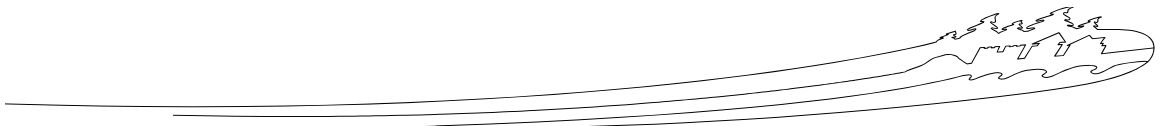




Table B-1. Direct Effects of the Project											
	Project Phases	Project Activities	Valued components potentially directly affected by the proposed project								
			Natural Resources						Cultural Resources	Visitor Experience	
			Fish and Fish Habitat	Aquatic Resources	Surface Water Quality	Vegetation (vegetation communities, listed plant species)	Wildlife (Black Bear, Migratory Birds, SAR Species [Western Toad, Olive Sided Flycatcher])	Terrain and Soils	Archaeological artifacts	Changes in traffic flow	Aesthetics
Project Components	Site Preparation	Tender and award project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Preparation of Environmental Protection Plan (EPP)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Mobilization of Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X	X
		Temporary Facility	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Construction	Clearing and Grubbing	X	X	<input type="checkbox"/>	X	X	X	X	<input type="checkbox"/>	X
		Grading	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>	X	X	X	X
		Excavation	X	X	X	<input type="checkbox"/>	<input type="checkbox"/>	X	X	X	X
		Material / Equipment Transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X	X
		Stockpiling	<input type="checkbox"/>	X	X	<input type="checkbox"/>	<input type="checkbox"/>	X	X	<input type="checkbox"/>	X
		Disposal of Waste	X	X	<input type="checkbox"/>	X	X	X	<input type="checkbox"/>	<input type="checkbox"/>	X
		Use of Machinery	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	X	X	X	X	X
		Use of Chemicals	<input type="checkbox"/>	X	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Vehicle Traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
	Operation	Re-Vegetation	X	X	X	X	X	X	<input type="checkbox"/>	<input type="checkbox"/>	X
		Use/Removal of Temporary Facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Road Signs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
		Vehicle Traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

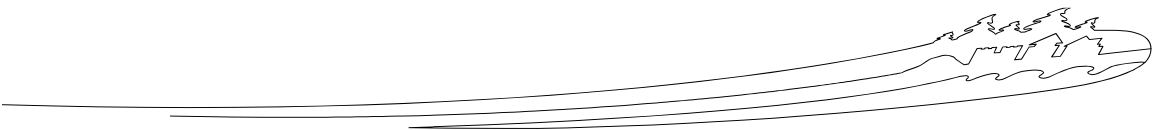
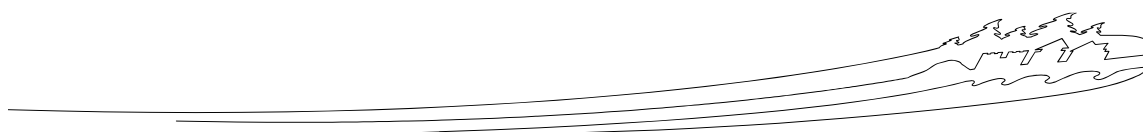




Table B-2. Indirect Effects that may result from the Project

Phase	Natural resource components affected by the project	Impacts as a result of changes to the environment					
		With respect to non-Aboriginal peoples:	With respect to Aboriginal peoples:		With respect to visitor experience		
		Health and socio-economic conditions	Health & socio-economic conditions	Current use of lands and resources for traditional purposes	Access & services	Recreation & accommodation opportunities	Safety
Preparation /construction operation/implementation/decommissioning	Could impacts to <u>air</u> lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Could impacts to <u>soils and landforms</u> lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Could impacts to <u>water</u> (e.g., surface, ground water and water crossings) lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Could impacts to <u>flora</u> (including SAR) lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
	Could impacts to <u>fauna</u> (including SAR) lead to adverse effects on...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



April 2016



Appendix C Vegetation and Wildlife Elements of Management Concern with Potential to Occur Near Project Sites

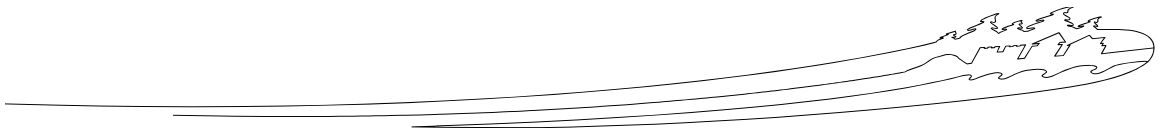


Table C-1: Vegetation Elements of Management Concern with Potential to Occur Near Project Sites
BC Species and Ecosystems Explorer Search Results

Scientific Name	Common Name	Status					Habitat
		Provincial	BC List	COSEWIC	SARA	Global	
<i>Anemone canadensis</i>	Canada anemone	S3? (2015)	Blue	n/a	n/a	G5 (1984)	Moist meadows, thickets and forest openings in the montane zone.
<i>Arnica longifolia</i>	seep-spring arnica	S2 (2015)	Red	n/a	n/a	G5 (1988)	Moist to wet meadows and seepage slopes in subalpine and alpine zones.
<i>Botrychium lineare</i>	linear-leaf moonwort	S3 (2015)	Blue	n/a	n/a	G2G3 (2013)	Mostly at higher elevations (about 1500-3000 m) in mountains, but specific habitats have ranged from a meadow dominated by knee-high grass, shaded woods and woodlands, grassy horizontal ledges on a north-facing limestone cliff, and a flat upland section of a river valley.
<i>Carex krausei</i>	Krause's sedge	S2S3 (2015)	Blue	n/a	n/a	G4 (1994)	Moist gravel bars, exposed banks and dry grassy slopes in the subalpine zone
<i>Carex lenticularis</i>	lakeshore sedge	S3 (2011)	Blue	n/a	n/a	G5T5 (1988)	Marshes and wet meadows in the lowland zone (var. limnophila), streambanks and ponds in the subalpine and alpine zones (var. dolia), wet meadows, sandy beaches and marsh edges in the lowland zone (var. lenticularis), and bogs and wet sites in all but the alpine zone (var. lipocarpa).
<i>Delphinium bicolor</i> ssp. <i>bicolor</i>	Montana larkspur	S3 (2015)	Blue	n/a	n/a	G4G5T4T5 (2002)	Dry grasslands, shrublands, rocky slopes and forests from the steppe to subalpine zones.
<i>Delphinium sutherlandii</i>	Sutherland's larkspur	S3 (2015)	Blue	n/a	n/a	GNR	Mesic to dry shrublands and open forests in the montane zone.
<i>Dryopteris cristata</i>	crested wood fern	S3 (2015)	Blue	n/a	n/a	G5 (2011)	Wet swamps and meadows in the steppe and montane zones.
<i>Eleocharis elliptica</i>	elliptic spike-rush	S2S3 (2004)	Blue	n/a	n/a	G5 (1984)	Lakeshores, streambanks and wet meadows in the steppe and montane zones.
<i>Epilobium glaberrimum</i> ssp. <i>fastigiatum</i>	smooth willowherb	S3 (2015)	Blue	n/a	n/a	G5T4T5 (2004)	Moist streambanks, rocky slopes, and open forests in the montane to alpine zones.
<i>Epilobium x treleaseianum</i>	Trelease's hybrid willowherb	S3 (2007)	Blue	n/a	n/a	GNA (2006)	Springs, streams and river habitat.
<i>Gentianopsis macounii</i>	Macoun's fringed gentian	S3 (2008)	Blue	n/a	n/a	G5 (1986)	Wet to moist fens, meadows and streambanks in the montane zone; rare in SE BC, known only from Field and Wapta Falls..
<i>Juncus albescens</i>	whitish rush	S3 (2015)	Blue	n/a	n/a	G5 (1989)	Wet calcareous fens in the montane to alpine zones.
<i>Lomatium triternatum</i> ssp. <i>platycarpum</i>	nine-leaved desert-parsley	S2 (2001)	Red	n/a	n/a	G5T3T5 (2002)	Dry open slopes and grasslands in the lowland, steppe and montane zones; frequent in SC and SE BC (ssp. triternatum), rare on S Vancouver Island (ssp. platycarpum); E to SW AB and S to CO, UT and CA.
<i>Pellaea gastonyi</i>	Gastony's cliff-brake	S3 (2015)	Blue	n/a	n/a	G2G3 (2011)	Dry calcareous cliffs and crevices in the montane and subalpine zones; rare in SE BC; E to SK and disjunct in WY, SD, and MO.
<i>Pinus albicaulis</i>	whitebark pine	S2S3 (2013)	Blue	Endangered (2010)	Schedule 1-E (2012)	G3G4 (2011)	From high-elevation krummholz forests to lower elevations as part of mixed and/or closed subalpine forests. Elevations ranging from approximately 1,950 to 2,250 masl; and occasionally at lower elevations.
<i>Pinus flexilis</i>	limber pine	S2 (2014)	Red	Endangered (2014)	No Status	G4 (2011)	Warm, dry sites on the lower portions of the mountains and foothills at elevations approximately 850 to 1900 masl. They generally exist on southerly or westerly aspects and gentle to steep slopes.
<i>Ranunculus pedatifidus</i> ssp. <i>affinis</i>	birdfoot buttercup	S3 (2015)	Blue	n/a	n/a	G5T5 (1991)	Moist meadows in the montane to alpine zones; rare throughout BC in and east of the Coast-Cascade; circumpolar, N to AK, YT and NT, E to NF and S to NJ, WY, CO, NM and AZ; Eurasia.
<i>Stellaria obtusa</i>	blunt-sepaled starwort	S3? (2015)	Blue	n/a	n/a	G5 (1990)	Wet to moist meadows and streambanks in the montane zone; rare E of the Coast-Cascade Mountains in S BC; N to S AK, E to AB and S to CO and CA.
<i>Thalictrum dasycarpum</i>	purple meadowrue	S2 (2015)	Red	n/a	n/a	G5 (1985)	Wet meadows, streambanks and woodlands in the montane zone; rare in SE BC; E to NB and NS and S to LA, FL, NM, AZ and NE WA.

n/a: not listed by COSEWIC or SARA

References:

BC Conservation Data Centre (BC CDC). 2015. BC Species and Ecosystems Explorer. BC Ministry of Environment, Victoria BC. Available: <http://a100.gov.bc.ca/pub/eswp/search.do?method=reset> [accessed February 7, 2016].
Klinkenberg, Brian. (Editor) 2015. *E-Flora BC: Electronic Atlas of the Plants of British Columbia* [eflora.bc.ca]. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver. [Accessed:14/02/2016 5:19:36 PM]

Results

Sat Feb 13 12:58:17 PST 2016
20 records.
Search Type: Plants & Animals

AND Species Groups: Vascular Plants

AND BC Conservation Status:Red (Extirpated, Endangered, or Threatened) OR Blue (Special Concern)

Search Criteria

AND Forest Districts:Columbia Forest District (DCO) (Restricted to Red, Blue, and Legally designated species)

AND MOE Regions:4- Kootenay (Restricted to Red, Blue, and Legally designated species)

AND Habitat Types: Forest,Riparian,Stream/River,Wetland (Restricted to Red, Blue, and Legally designated species)

AND BGC Zone:ESSF, MS

Sort Order:Scientific Name Ascending

[1. Citation: B.C. Conservation Data Centre. 2016. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: <http://a100.gov.bc.ca/pub/eswp/> \(accessed Feb 13, 2016\).](#)

Notes

2. Forest District, MoE Region, Regional District and habitat lists are restricted to species that breed in the Forest District, MoE Region, Regional District or habitat (i.e., species will not be placed on lists where they occur only as migrants).

Table C-2: Wildlife Species of Management Concern with the Potential to Occur within the Project LSA

Common Name	Scientific name	COSEWIC Status ^(a)	SARA Schedule ^(a)	SARA Legal Status ^(a)	Regularity within YNP ^(b)	Population ^(c)
Amphibians						
Western toad (non-calling population)	<i>Anaxyrus boreas</i>	Special Concern	No Schedule	No Status	Regular	Year-round
Birds						
Bank swallow	<i>Riparia riparia</i>	Threatened	No Schedule	No Status	Unknown	Unknown
Barn swallow	<i>Hirundo rustica</i>	Threatened	No Schedule	No Status	Regular	Breeding
Black swift	<i>Cypseloides niger</i>	Endangered	No Schedule	No Status	Unknown	Unknown
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	No Schedule	No Status	Accidental / Nonregular	Unknown
Common nighthawk	<i>Chordeiles minor</i>	Threatened	Schedule 1	Threatened	Accidental / Nonregular	Transient
Ferruginous hawk	<i>Buteo regalis</i>	Threatened	Schedule 1	Threatened	Accidental / Nonregular	Unknown
Olive-sided flycatcher	<i>Contopus cooperi</i>	Threatened	Schedule 1	Threatened	Regular	Breeding
Peregrine falcon	<i>Falco Peregrinus anatum/tundrius</i>	Special Concern	Schedule 1	Special Concern	Accidental / Nonregular	Unknown
Red-necked phalarope	<i>Phalaropus lobatus</i>	Special Concern	No Schedule	No Status	Unknown	Unknown
Rusty blackbird	<i>Euphagus carolinus</i>	Special Concern	Schedule 1	Special Concern	Accidental / Nonregular	Unknown
Short-eared owl	<i>Asio flammeus</i>	Special Concern	Schedule 1	Special Concern	Accidental / Nonregular	Unknown
Yellow-rail	<i>Coturnicops noveboracensis</i>	Special Concern	Schedule 1	Special Concern	Accidental / Nonregular	Unknown
Horned grebe- western Population	<i>Podiceps auritus</i> pop. 2	Special Concern	No Schedule	No Status	Unknown	Unknown
Western grebe	<i>Aechmophorus occidentalis</i>	Special Concern	No Schedule	No Status	Unknown	Unknown
Bats						
Little brown myotis	<i>Myotis lucifugus</i>	Endangered	Schedule 1	Endangered	Regular	Year-Round
Ungulates						
Mountain goat	<i>Oreamnos americanus</i>	Not Ranked	No Schedule	No Status	Regular	Year-Round
Carnivores/ Fur Bearers						
American black bear	<i>Ursus americanus</i>	Not Ranked	No Schedule	No Status	Regular	Year-Round
Grizzly bear	<i>Ursus arctos</i>	Special Concern	No Schedule	No Status	Regular	Year-Round
Wolverine	<i>Gulo gulo</i>	Special Concern	No Schedule	No Status	Regular	Year-Round
American Badger jeffersonii subspecies - Eastern population	<i>Taxidea taxus</i> pop. 2	Endangered	No Schedule	No Status	Regular	Unknown

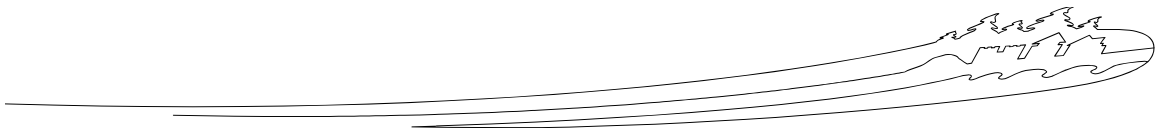
^(a) COSEWIC – Committee on the Status of Endangered Wildlife in Canada; SARA - *Species at Risk Act* (Environment Canada 2016a)

^(b) Regularly occurring - Occurrence of the Element is consistent in the Managed Area (e.g., it may migrate in and out of the area, but it returns on a regular basis).

April 2016



Appendix D Cultural Resources Report: Archaeological Overview Assessment THC Rock Reprofilng Yoho Nation Park. February, 2015



Archaeological Overview Assessment TCH Rock Reprofilng Yoho National Park

Bill Perry, Terrestrial Archaeology, HCCD
February 2015

Introduction

Yoho National Park is undertaking rock scaling and vegetation removal at several locations along the TransCanada Highway through Yoho National Park (Fig. 1). Proposed work is scheduled for the 2015-16 fiscal year, likely beginning this spring (T. Kinley, pers. comm., 2015).

This archaeological overview assessment evaluates whether there is a requirement for an archaeological impact assessment due to the proposed construction activities. Construction activities that will impact ground surface will involve:

- Rock scaling at 8 locations along the TCH;
- Removal of vegetation at these same locations; and
- Access to sections of an old road bed (Site 439T; old highway grade and site 438T; old railway spur grade).

Overview and Recommendations

Project manager Trevor Kinley (Environmental Assessment-Highway Service Centre, Parks Canada in Radium) has asked Terrestrial Archaeology in Calgary to conduct an archaeological overview assessment (AOA) of 8 sites within YNP along the TCH where rock scaling and vegetation removal are required. This also includes two locations where rock and soil will be temporarily stored. In general, rock scaling, vegetation removal and equipment access will impact all of the areas. One of the two stockpile areas (Mt. Vaux) will result in further impacts such as vegetation removal and soil stripping in a previously logged and burnt area. The other stockpile location at the BC/Alberta boundary is in previously disturbed context with no potential for archaeological resources. The following impacts are anticipated at the 8 locations:

1. Upper Sherbrook area (figure 2-at right). There are no known archaeological sites at this location. The landform is assessed as having low archaeological potential. **No further work is required.**
2. Lower Sherbrook area (figure 2- at left). This involves rock scaling and vegetation removal of the rock slope across the highway from the historic highway bridge, site 521T (figure 2 and 8).
 - a. Upslope of the proposed rock scaling area is historic site 530T (figures 2 and 8), an historic railway- related train wreckage site and associated rail spur (Site 438T). All three of these historic resources are associated with the Kicking Horse Pass National Historic Site and therefore are of national significance. The train wreckage from site 430T is located 20m north of the edge of rock while the lower section of the rail grade is potentially vulnerable to impact from its use as a vehicle/equipment access way. **Site avoidance is recommended.** The rock scaling and vegetation removal should not impact the known location of the site but vegetation removal may result in the accidental uncovering of additional historic items. If this occurs, **please refer to the “accidental discovery clause”** contained in Appendix 1 of this document. **In addition, if the**

use of machinery to remove vegetation can be avoided, that would be preferable as removal by hand would minimise impact on the nearby historic scatter of artifacts.

- b. The historic highway bridge, site 521T, will not be impacted from proposed construction (see figure 8). There is a possibility however, that construction staging/parking may take place in the gravel pull-out in front of the historic structure. **It is recommended that any such activity keep away from the actual bridge structure.**
- c. The historic rail grade, site 438T, is part of the Big Hill Safety Switch system put in place to deal with run-away trains before the construction of the Spiral Tunnels (a portion of this safety switch grade can be seen in figure 8). The lower portion of this rail grade where it has been impacted by the TCH may be vulnerable to proposed machinery access to the project area. **It is recommended that care should be taken to not impact the grade with heavy machinery or tracked vehicles without mitigating adverse effects on the rail grade.**
3. Phyllite Rock slope (figure 3). There are no known archaeological sites at this location and the landform is assessed as having low archaeological potential. **No further work is required.**
4. Little Topple Slope (figure 4). Site 439T, the historic highway grade, traverses the backside of the project area at this location as can be seen on the air photograph in figure 4. If access to the construction site is required through the use of this historic highway grade, it is recommended **that care should be taken to not impact the grade with heavy machinery or tracked vehicles without mitigating the effects on the road grade.** Otherwise, there are no known archaeological sites at this location and the project area affords low archaeological potential.
5. Mt. Vaux Rock Slope (figure 5). There are no known archaeological sites at this location and the landform is assessed as having low archaeological potential. **No further work is required.**
6. Access point for Equipment on old Roadbed near Porcupine Creek (figure 6). This is required to get equipment onto the upper slopes above the highway to access the “Little Topple” project area, located just to the south. The road bed is again, part of site 439T, the old highway grade which can be seen traversing the upper slopes in the air photograph in figure 6. If this historic highway grade is required to facilitate construction access, it is recommended **that care should be taken to not impact the grade with heavy machinery or tracked vehicles without mitigating the effects on the road grade.**
7. Stockpile area at B.C./Alberta boundary DUA-pull-off. This area has been identified as a temporary storage for stockpile. Extensive disturbances resulting from previous development and re-contouring of the landform negates archaeological concerns for this area. **No further work is required.**
8. A second stockpile area was identified on the lower colluvial slopes of Mt. Vaux (figure 7). This area has been subject to past burning and logging activities. Proposals call for stripping of the soils and surface preparations. This project area has no nearby known archaeological sites and the landform has low archaeological potential. No concerns are warranted. **No further work is required.**

This archaeological overview reflects a review of project information obtained from the project proponent (in this case, Trevor Kinley) as well as a search of available records, maps, photographs and known site locations contained within Terrestrial Archaeology, Calgary’s records and databases. In addition, in the absence of an archaeological predictive model of the project areas, ecological landform information, examination of high resolution air photographs and the author’s personal experience within YNP and surrounding mountain environments has also gone into determining the archaeological potential of project landforms where no previous archaeological investigations have been conducted. Having said that, the **recommendations noted above are given with the understanding that archaeological resources may exist in these project areas despite our professional assessment to the contrary. It is vital therefore, that the contractors doing the work be vigilant, especially in areas of known archaeology such as at the lower Sherbrooke project area, and follow the above recommendations and the “Accidental finds” guidelines outlined in Appendix 1 of this assessment.**



Figure 1. Project locations (in red), Yoho National Park.

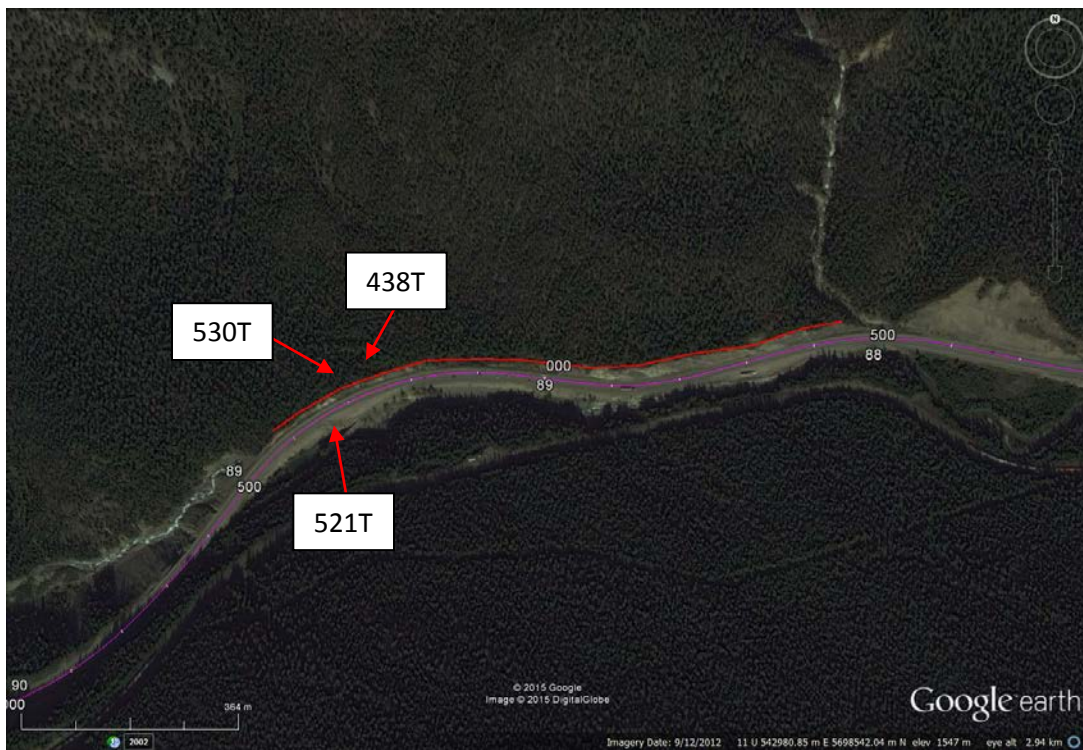


Figure 2 Upper (to the right) and lower Sherbrook (to the left) areas. Red line indicates area of proposed rock scaling and vegetation removal. Sites 521T, 530T and 438T are located at arrows.



Figure 3. Phyllite Rock Slope project area.



Figure 4. Little Topples Slope. Site 439T, the old highway grade can be seen behind the rock face.



Figure 5. Mt. Vaux Rock slope.



Figure 6. Access point for Little Topple. Site 439T can be seen traversing the slopes east of the TransCanada Highway on this air photograph.



Figure 7. Stockpile area at base of Mt. Vaux (outlined in red).

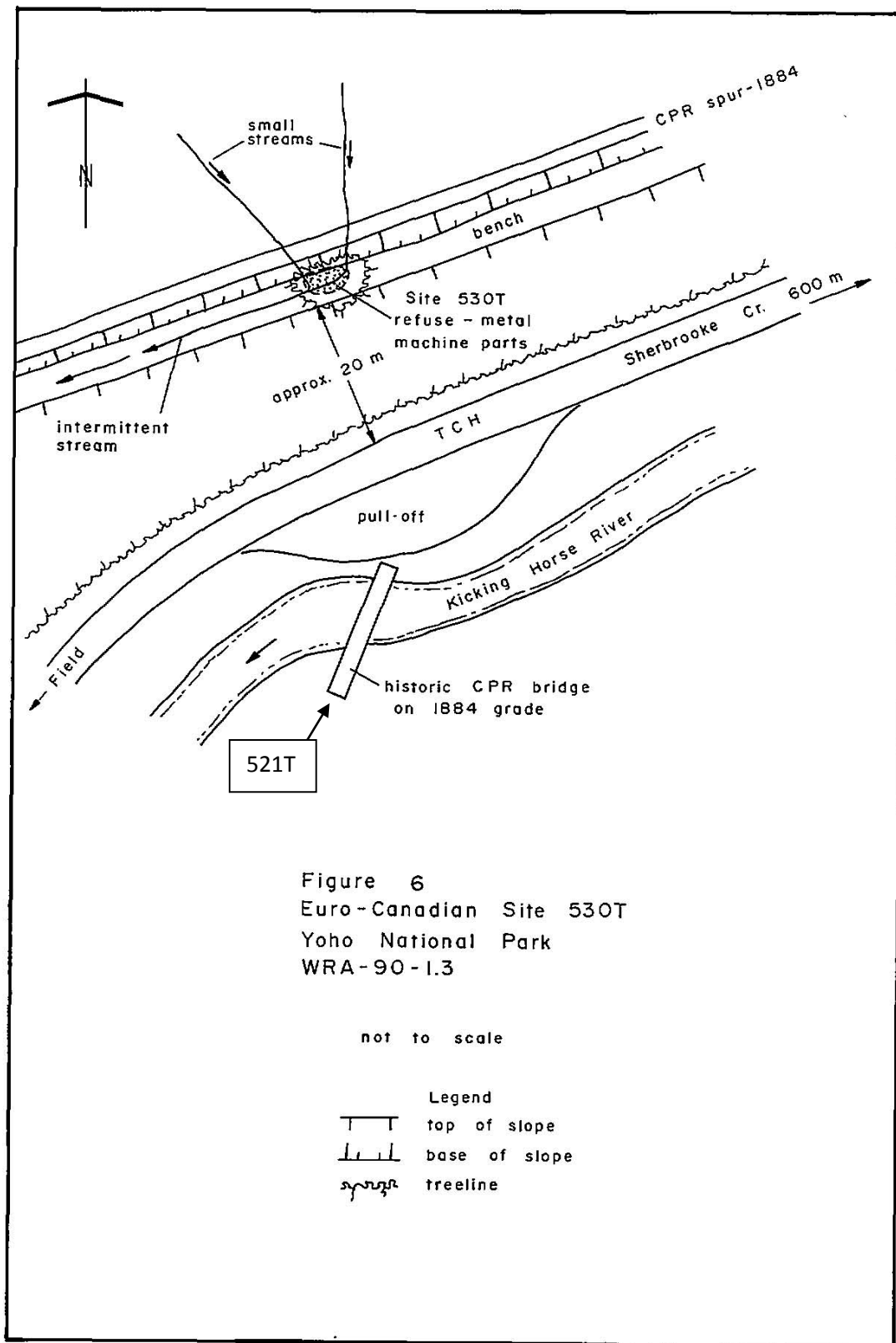


Figure 8. Sketch map of sites 530T and 521T.

Appendix 1:

Accidental Discovery:

If artifacts or features are encountered, construction should be **stopped and onsite manager should wait for instructions before proceeding with the work**. The YNP Environmental Surveillance Officer or Cultural Resource Management Officer should be notified who will contact Parks Canada's Terrestrial Archaeology Section for further guidance. In order to assess the situation, documentation should include, what was seen, the location of where the material was encountered, what the surrounding soil looked like, how deep it was from the ground surface, or if it was at ground surface. If possible, a photograph should be taken and sent along with the description information to the archaeologist. Preferably, artifacts should be left in place until a Parks Canada archaeologist has been consulted.



Archaeological Overview Assessment TCH Rock Slope Reprofilng Yoho National Park, 2016 TCH Km 88-91 and 114-128

Bill Perry, Terrestrial Archaeology, HCCD
March 24 2016

Introduction

In 2015, Yoho National Park undertook rock scaling and vegetation removal at several locations along the TransCanada Highway through Yoho National Park. Some additional proposed work is scheduled for the 2016-17 fiscal year for which this Archaeological Overview Assessment relates (Fig. 1 and individual overview project discussions). The reader is referred to Perry (2015) for the archaeological overview assessment (AOA) relating to the original project. Where applicable, the recommendations from the project areas covered in the 2015 AOA have been brought forward into this document.

This assessment relates to the second year of an ongoing project to improve highway safety and reduce maintenance on the TransCanada Highway (TCH). It is a continuation of work initiated in 2015 and the addition of work at three additional sites.

Observations and recommendations for each project area are offered below. In addition, in areas not covered off with specific recommendations, the "Casual finds" clause contained in Appendix 1 will suffice. Site forms and available maps can be found in Appendix 2 as attachments.

Overview and Recommendations

This archaeological overview assessment evaluates whether there is a requirement for an archaeological impact assessment from the proposed construction activities. As part of the CRIA (Request for Cultural Resource Impact Analysis), Project manager Trevor Kinley (Environmental Assessment-Highway Service Centre, Parks Canada) and Assets Manager Zachary Boles have asked HCCD and specifically Terrestrial Archaeology in Calgary to conduct an archaeological overview assessment of project locations within Yoho National Park along the TransCanada Highway (TCH) where rock scaling and vegetation removal are required including locations for rock and soil disposal. The following activities and locations have the potential to affect archaeological resources and are summarized in Table 1.

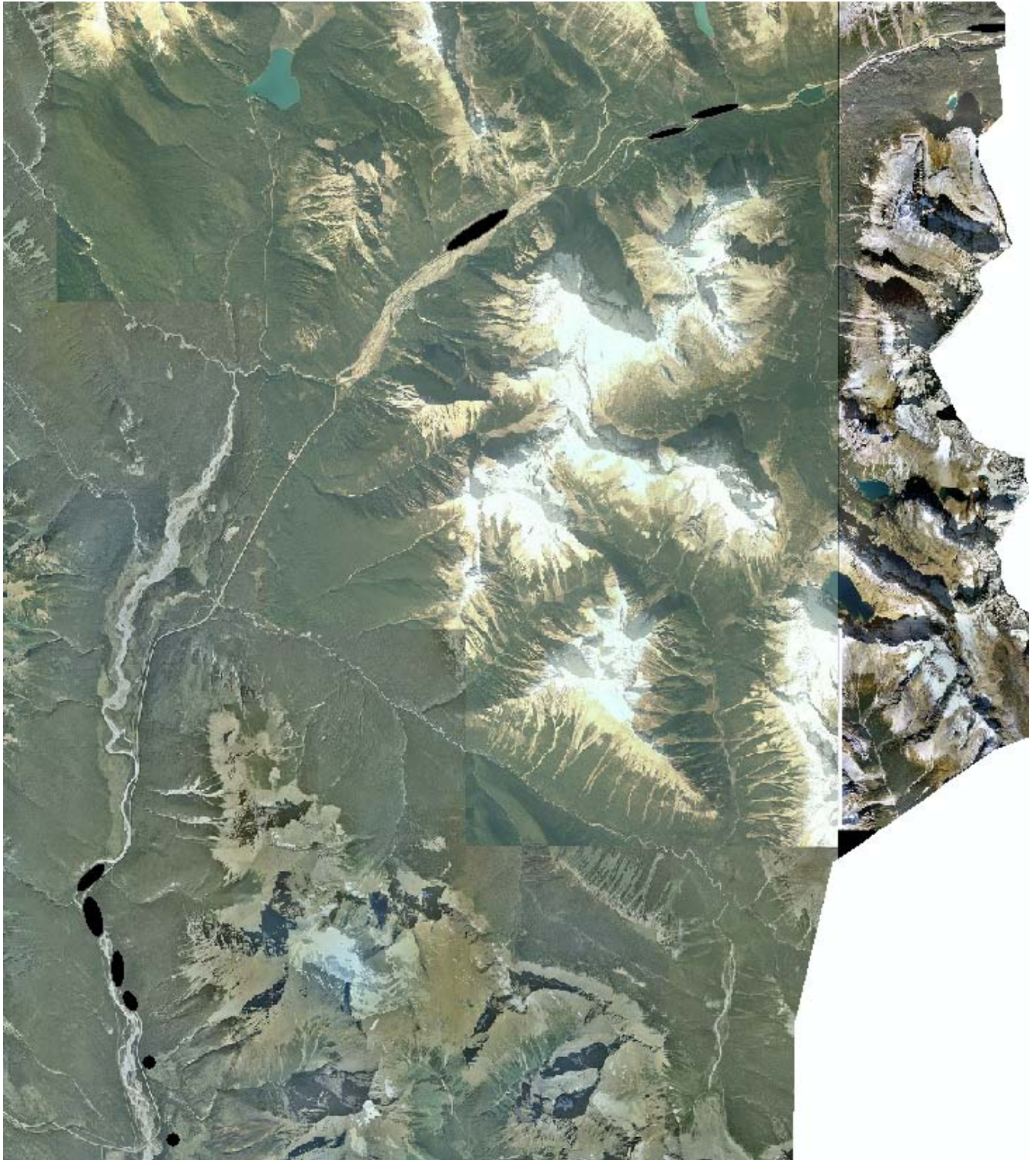


Figure 1. Project locations (in black), Yoho National Park.

- Rock scaling at the proposed locations along the TCH;
- Removal of vegetation at these same locations;
- Materials will be excavated at 6 re-profiling areas:



- Sherbrook Creek Rock Slope;
- Lower Sherbrook Creek Rock Slope;
- Spiral Tunnels Hill;
- Big Topple;
- Little Topple;
- Mount Vaux.
- In addition, excavated materials will be hauled and placed at five disposal sites:
 - Welcome station at Ab/BC border;
 - Mount Vaux Storage Site;
 - Road side at Field flats;
 - Road side at Km 114+300 to 114+900;
 - Road side at Km 117+150 to 118+200.
- Catchment ditches and access roads will be constructed within existing right of way;
- Clearing will be required for equipment the Big and Little Topple sites;
- Construction facilities will be located to the east of the Hoodoo Creek Campground near the Sanistation.

These project locations (discussed east to west) have been assessed for conflict with archaeological resources and the following observations and recommendations are given below:

Table 1

Location	Archaeological Concerns?	Recommendations
Welcome station at Ab/BC border	no known archaeological resources	accidental discovery clause
Sherbrook Creek Rock Slope		
Lower Sherbrook Creek Rock Slope	site 521T; 530T; and 438T.	Site avoidance; accidental discovery clause; if the use of machinery to remove vegetation can be avoided, that would be preferable as removal by hand would minimise impact on the nearby historic scatter of artifacts; keep away from the actual bridge structure (521T); care should be taken to not impact the grade with heavy machinery or tracked vehicles without mitigating adverse effects on the rail grade (438T).
Spiral Tunnels Hill	Scattered artifacts related to the construction and use of the grade is possible along this stretch so that the construction/reprofiling activities may uncover artifacts (438T).	accidental discovery clause
Road side at Field flats	396T;	Both archaeological resources should be avoided; accidental discovery clause.
Road side at Km 114+300 to 114+900		accidental discovery clause



Big Topple	439T	accidental discovery clause
Little Topple	439T	accidental discovery clause
Mount Vaux	Scattered artifacts are possible along this stretch and may be encountered during construction.	accidental discovery clause
Mount Vaux storage site		accidental discovery clause
Road side at Km 117+150 to 118+200	Scattered artifacts are possible along this stretch and may be encountered during construction.	accidental discovery clause
Hoodoo Campground laydown and facilities	390T and 397T.	accidental discovery clause

Welcome station at Ab/BC border (km 82+00)

This project area is located at the pull-off and interpretive area adjacent to the Alberta/BC boundary (figure 1 and 2). This is a proposed disposal site. There are no known archaeological resources for this location which has minimal archaeological potential. If the proposed construction activities should impact historic items, adherence to the **“accidental discovery clause”** contained in Appendix 1 of this document is recommended.



Figure 2. Location of Welcome station disposal area.



Sherbrook Creek Rock Slope (Km 88+530 to 89+050) and lower Sherbrook Creek Rock Slope (89+195 to 89+430)

Located east of Sherbrook Creek, two closely spaced areas are slated for approved construction/reprofiling (figure 3). Both areas were previously assessed as part of the 2015 Rock profiling archaeological overview assessment (Perry 2015). The lower Sherbrook Creek Rock slope is coincident with the location of archaeological resources. The following observations and recommendations were offered in 2015:

Across the highway from the project area lays the historic masonry bridge structure, recorded as archaeological resource site 521T (see figure 4). Upslope of the proposed rock scaling area is historic site 530T (figure 4), an historic railway- related train wreckage site and associated rail spur (Site 438T-figure 4). All three of these historic resources are associated with the Kicking Horse Pass National Historic Site and therefore are of national significance. The train wreckage from site 530T is located 20m north of the edge of rock (figure 4) while the lower section of the rail grade is potentially vulnerable to impact from its use as a vehicle/equipment access way. **Site avoidance is recommended.** The rock scaling and vegetation removal should not impact the known location of the site but vegetation removal may result in the accidental uncovering of additional historic items. If this occurs, **please refer to the “accidental discovery clause”** contained in Appendix 1 of this document. **In addition, if the use of machinery to remove vegetation can be avoided, that would be preferable as removal by hand would minimise impact on the nearby historic scatter of artifacts.**

The historic highway bridge, site 521T, will not be impacted from proposed construction (see figure 4). There is a possibility however, that construction staging/parking may take place in the gravel pull-out in front of the historic structure. **It is recommended that any such activity keep away from the actual bridge structure.**

The historic rail grade, site 438T, is part of the Big Hill Safety Switch system put in place to deal with run-away trains before the construction of the Spiral Tunnels (a portion of this safety switch grade can be seen in figure 8). The lower portion of this rail grade where it has been impacted by the TCH may be vulnerable to proposed machinery access to the project area. **It is recommended that care should be taken to not impact the grade with heavy machinery or tracked vehicles without mitigating adverse effects on the rail grade.**



Figure 3. Sherbrook and Spiral Tunnels Hill project areas.

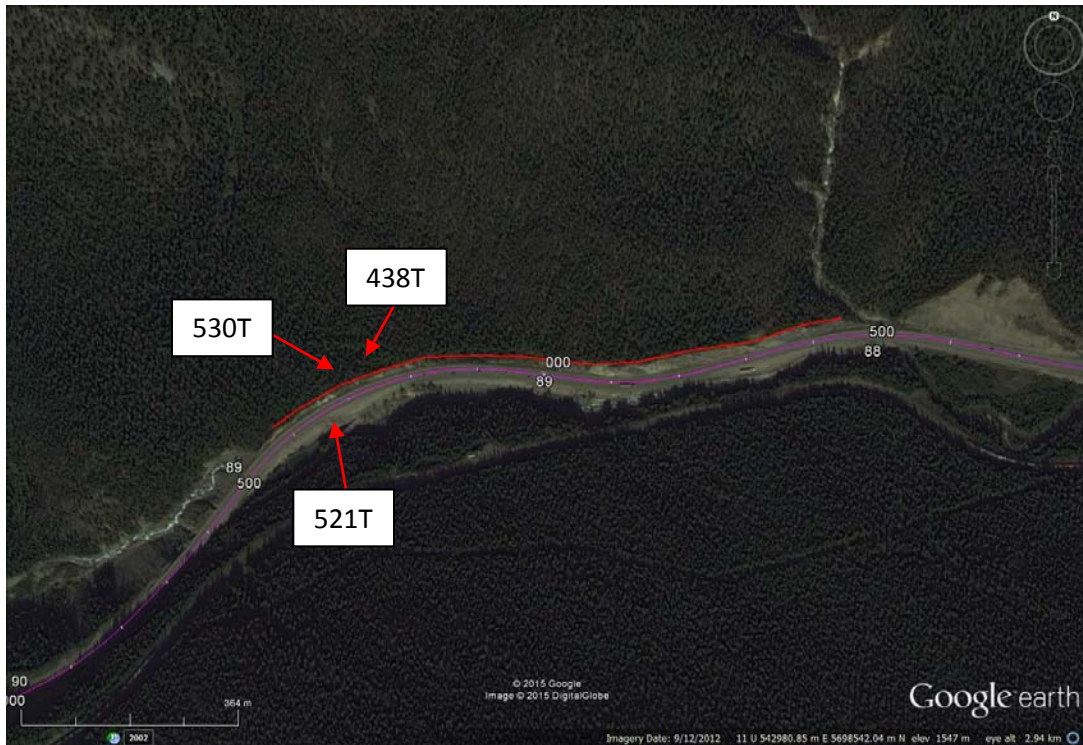


Figure 4 Upper (to the right) and lower Sherbrook (to the left) areas. Red line indicates area of proposed rock scaling and vegetation removal. Sites 521T, 530T and 438T are located at arrows.

Spiral Tunnels Hill (km 90+220 to 90+635)

This is located across the highway from the Spiral Tunnels viewpoint (figure 5). The area is slated for proposed construction and reprofiling. The scaling is to take place on the south side of the highway. Attention to the nearby historic site of the original 1884 or “Big Hill” railgrade (438T-see attached site form) is noted. The grade is located some 40-50m upslope of the project area and will not be directly affected. Scattered artifacts related to the construction and use of the grade however, is possible along this stretch so that the construction/reprofiling activities may uncover artifacts. **If this occurs, please refer to the “accidental discovery clause”** contained in Appendix 1 of this document.



Figure 5. Spiral Tunnels Hill project area.



Field Flats (km 94+916 to 96+441)

The Field Flats is located along the TCH, east of Field and west of the junction of the TCH and the Yoho Valley Road (figure 6). This location is a proposed disposal site. The project footprint is not in any direct conflict with archaeological resources but two nearby historic sites 396T (figure 7), a refuse dump located north of the highway and west of the project area adjacent to the old explosives bunkers and gravel storage area. The site comprises old CPR china and bottle remains from the turn of the 19th/20thC. **This site is of moderate potential and should be avoided.** In addition, site 439T (figure 7), the historic Kicking Horse Trail road grade follows the toe of the mountain slopes north of the project area but comes out to the TCH in the vicinity of the refuse dump site 396T (figure xx). **Both archaeological resources should be avoided.** Scattered artifacts related to the sites however, are possible along this stretch so that the disposal of rock debris may uncover artifacts. **If this occurs, please refer to the “accidental discovery clause”** contained in Appendix 1 of this document.



Figure 6. Field Flats project area.



Figure 7. Archaeological resource adjacent to the Field Flats project area. The Kicking Horse Trail highway grade is in purple and the refuse dump 396T is located at the arrow.

Road side at Km 114+300 to 114+900

This roadside area is a proposed disposal site located along the northwest side of the TCH north of the Topple project areas (figure 8). There are no known archaeological sites at this location and the landform is assessed as having low archaeological potential. There are no known archaeological sites at this location and the landform is assessed as having low archaeological potential. Scattered artifacts are possible along this stretch and may be encountered during construction. **If this occurs, please refer to the “accidental discovery clause”** contained in Appendix 1 of this document.

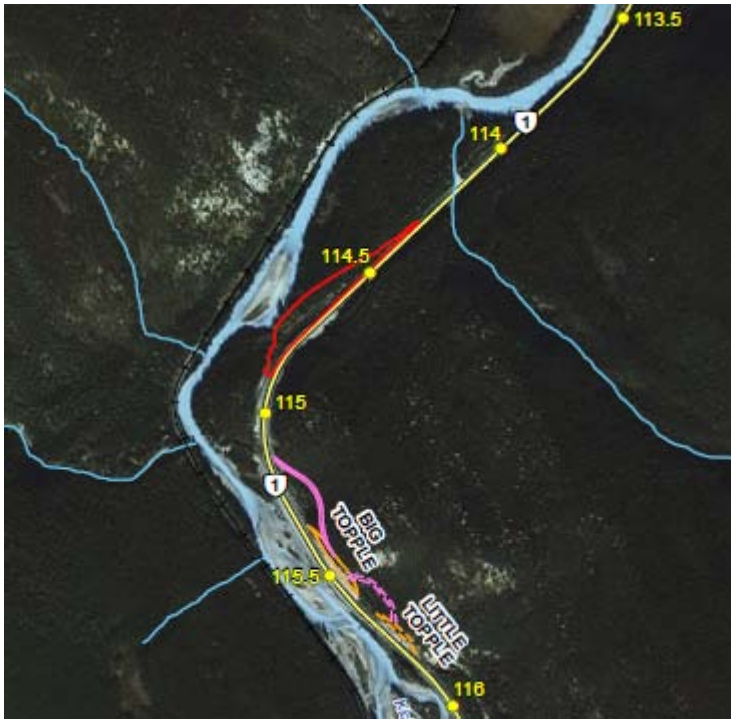


Figure 8. Location of disposal area km 114.5, and Big/Little Topple sites.

Big Topple (km 115+370 to 115+600) and Little Topple (km 115+675 to 115+820)

These areas are located toward the southern end of Yoho National Park on the stretch of highway north of the Hoodoo Creek Campground (figure 8). Both Big Topple and Little Topple are the sites for proposed disposal sites as well as proposed and approved construction/reprofiling. Site 439T, the historic highway grade, traverses the backside of the Little Topple project area (figured 9 and 10 – taken from Perry 2015). If access to the construction site is required through the use of this historic highway grade, it is recommended **that care should be taken to not impact the grade with heavy machinery or tracked vehicles without mitigating the effects on the road grade.** Otherwise, there are no known archaeological sites at this location and the project area affords low archaeological potential.



Figure 9. Little Topple Slope. Site 439T, the old highway grade can be seen behind the rock face.



Figure 10. Access point for Little Topple. Site 439T can be seen traversing the slopes east of the TransCanada Highway on this air photograph.



Mount Vaux Rock Slope (116+155 to 116+865)

The Mount Vaux Rock Slope project area is located along the TCH between the Porcupine Creek/Kicking Horse River confluence and the Hoodoo Creek campground (figure 11). There are no known archaeological sites at this location and the landform is assessed as having low archaeological potential. Scattered artifacts are possible along this stretch and may be encountered during construction. **If this occurs, please refer to the “accidental discovery clause”** contained in Appendix 1 of this document.



Figure 11. Location of Mount Vaux project area.

Road side at Km 117+150 to 118+200.

Another roadside area identified for debris disposal is located between the Mount Vaux reprofiling area and the Mount Vaux Storage site on the east side of the highway (figure 12). There are no known archaeological sites at this location and the landform is assessed as having low archaeological potential. Scattered artifacts are possible along this stretch and may be encountered during construction. **If this occurs, please refer to the “accidental discovery clause”** contained in Appendix 1 of this document.



Figure 12. Location of Km 117.5 disposal area.

Mount Vaux Storage Site (km 119+550)

The Mount Vaux disposal site is located on the lower colluvial slopes of Mt. Vaux, north of the Hoodoo Creek Campground (figure 13). This area has been subject to past burning and logging activities. Proposals call for stripping of the soils and surface preparations. This project area has no nearby known archaeological sites and the landform has low archaeological potential. No concerns are warranted. **No further work is required.**

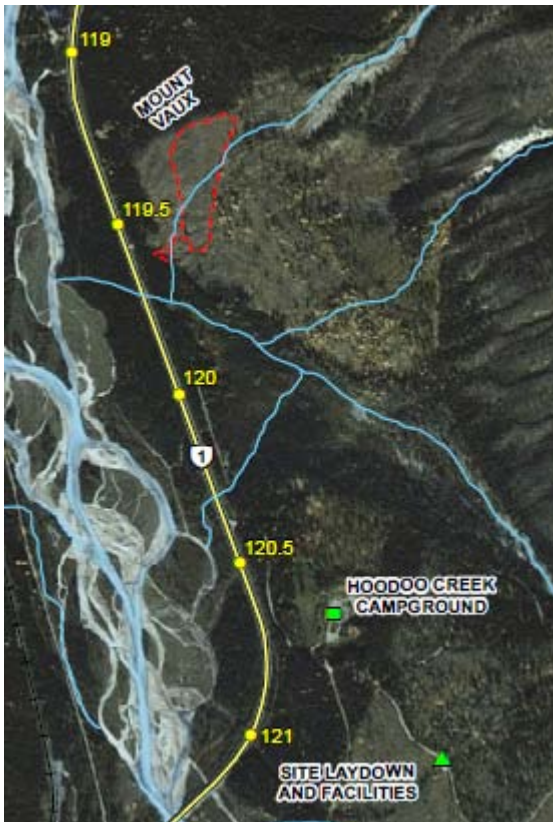


Figure 13. Location of the Mount Vaux storage site (hatched red line) and the site laydown and facilities area.

Hoodoo Creek Campground laydown and facilities location

The area south of Hoodoo Creek Campground adjacent to Km 121+000 is planned to house the project's laydown area and facilities (figure 13). A collapsed log bridge (390T) is located along an historic roadgrade servicing the east side of Kicking Horse River (figure 14). The bridge is in poor shape and is of low significance. It is interpreted to be part of the road system servicing the east side of the river. The bridge is located 300m east of the highway and 100m west of the hiking trail. Scattered artifacts are possible near this site and may be encountered during construction. **If this occurs, please refer to the “accidental discovery clause”** contained in Appendix 1 of this document.

An additional site located adjacent to the project area is the historic Deer Lodge Warden Cabin (site 397T-figure 14). The cabin is located south of the campground and 1.6km along the trail to the hoodoos. **This is an structure of high historic significance and must be avoided.** Scattered artifacts are possible near this site and may be encountered during construction. **If this occurs, please refer to the “accidental discovery clause”** contained in Appendix 1 of this document.



Figure 14. Location of sites 390T (at red triangle) and 397T (at star).

This archaeological overview reflects a review of project information obtained from the project proponent as well as a search of available records, maps, photographs and known site locations contained within Terrestrial Archaeology, Calgary's records and databases. In addition, in the absence of an archaeological predictive model for the project areas, ecological landform information, examination of high resolution air photographs and the author's personal experience within Yoho National Park and surrounding mountain environments has also gone into determining the archaeological potential of project landforms where no previous archaeological investigations have been conducted. Having said that, the **recommendations noted above are given with the understanding that archaeological resources may exist in these project areas despite our professional assessment to the contrary. It is vital therefore, that the contractors doing the work be vigilant, especially in areas of known archaeology and follow the above recommendations and the "Accidental finds" guidelines outlined in Appendix 1 of this assessment.**



References Cited

- Perry, William 2015 Archaeological Overview Assessment TCH Rock Reprofilng, Yoho National Park. February 2015
Terrestrial Archaeology, HCCD
- Parks Canada 2016 Parks Canada EIA Requirment Checklist. Yoho_Reprofilng_EIA Requirement
Checklist_Feb_2016. Document on file.
- Parks Canada 2016 Trans-Canada Highway Rock Slope Reprofilng – Yoho National Park – 2016 Works
1540777_RP0037 Project_Description_TCH_Yoho_Reprofilng_2016-02-08MP.
- Parks Canada 2016 Request for Cultural Resource Impact Analysis (CRIA). Document dated Feb 10, 2016.
Document on file.

Appendix 1:

Accidental Discovery:

If artifacts or features are encountered, construction should be **stopped and onsite manager should wait for instructions before proceeding with the work**. The YNP Environmental Surveillance Officer or Cultural Resource Management Officer should be notified who will contact Parks Canada's Terrestrial Archaeology Section for further guidance. In order to assess the situation, documentation should include, what was seen, the location of where the material was encountered, what the surrounding soil looked like, how deep it was from the ground surface, or if it was at ground surface. If possible, a photograph should be taken and sent along with the description information to the archaeologist. Preferably, artifacts should be left in place until a Parks Canada archaeologist has been consulted.

Appendix 2: Site forms and maps

Sites 438T, 439T, 530T, 521T, 396T, 390T and 397T.

See attachments.

NUMBER: 390 CODE: T RECORDER: Choquette

BORDEN: SEQUENCE: VISIT_DATE: 9/9/89

PARK: Yoho National Park PARK_CODE: YNP

NAME: PERMIT: VISITS: 1

SITE_TYPE:

structural remains; transportation:
bridge feature

ABO:

NONABO: 1

NOTE:

LATITUDE: 511405 MAP: 82 N/2

LONGITUDE: 1163414 OTHER_MAP:

EASTING: 530000 GRID: 11UNG

NORTHING: 5673930 ELEVATION: 1120

NAD_27: NAD_83:

EVIDENCE:

LOCATION:

LEGAL:

TRADITIONAL:

Located 300 m due E of the Trans-Canada Highway crossing of the Kicking Horse River and 100 m W of the trail.

LEVEL: recorded

TESTS:

DESCRIPTION: extant recording

PHOTOS:

REFERENCES:

Choquette in YNP ARDA (1989)

AIR_PHOTO:

GEOGRAPHY: SHORE_ZONE: ENVIRO_ZONE: NATURAL_FEATURES: terrace:999m; fan:999m;
confluence:0mVEGETATION: AGE: COMPON1: COMPON5: DATE: COMPON2: COMPON6: AREA: COMPON3: COMPON7: STRATIFIED: COMPON4: COMPON8:

DISTURBANCE: ; natural decay: moderate

CONDITION: partially disturbed

RECOMMENDED:

From YNP ARDA (1989): Further assessment is considered a moderate priority. It is recommended that this site be monitored every five years, with the next visit to take place in 1994.

Francis and Porter (2011): No paper file and no map found. Site requires revisit to confirm UTM, update conditions, and gather photos. Site placed on 2011 schedule (or later).

SCHEDULE: THEME: UNIQUE: SIGNIFICANCE:

CRM_STATUS: Site requires revisit to confirm UTM, update conditions, and gather photos. location. Archival research is required to determine the feature's date of construction.

COMMENTS:

DIAGRAM:

Originally in database: Consists of a collapsed log and plank bridge and a road grade. This is a new site. The old 390T was combined under 388T.

From YNP ARDA (1989): Site 390T is located in Watershed Unit 6, at the 1120 m level, on the southwest edge of Hoodoo Creek Campground. It is a log timber bridge with log rails and milled plank decking which has rotted and partially collapsed into the creek. The site is moderately vulnerable to natural disturbances such as flooding and decay. This site was located and recorded during the 1989 survey. Further assessment is considered a moderate priority. It is recommended that this site be monitored every five years, with the next visit to take place in 1994.

NUMBER: 396 CODE: T RECORDER: Loy
BORDEN: EiQc SEQUENCE: 7 VISIT_DATE: 1/1/72
PARK: Yoho National Park PARK_CODE: YNP
NAME: Old China Dump PERMIT: VISITS: 1

SITE_TYPE:

transportation feature: CPR refuse
scatter

ABO:

NONABO: 1

NOTE:

LATITUDE: 512403 MAP: 82 N/8
LONGITUDE: 1162910 OTHER_MAP:
EASTING: 535700 GRID: 11UNG
NORTHING: 5694300 ELEVATION: 1255
NAD_27: NAD_83:

EVIDENCE:

LOCATION:

LEGAL:

TRADITIONAL:

Site 396T is located approximately 1.6 km northeast of the turn-off to Field townsite from the Trans-Canada Highway, on the northwest side of the highway in Watershed Unit 6. Loy 1972: This site is located about one mile easterly of the Field turn off along the TransCanada highway, close to a gravel storage area and explosives bunker, which are presently being used.

LEVEL: recorded, surface collected

TESTS:

DESCRIPTION: recorded and surface collected

PHOTOS:

REFERENCES:

Loy 1972; Choquette 1989 (YNP ARDA)

AIR_PHOTO:

GEOGRAPHY: SHORE_ZONE: ENVIRO_ZONE: NATURAL_FEATURES: terrace:999m; pond:999m;
river:999m; stream:150mVEGETATION: AGE: COMPON1: historic-early
20th C.COMPON5:

DATE: early 20th C.

COMPON2: COMPON6: AREA: COMPON3: COMPON7:

STRATIFIED: n/a

COMPON4: COMPON8: DISTURBANCE: Past and current pothunting, stream
erosion, potential for highway
impacts

CONDITION: largely disturbed

RECOMMENDED:

From Loy 1972: This site has been known to the residents of the townsite of Field for some time and has therefore been pretty well picked over. Also, the action of the steam has scattered the artifacts about. For these reasons, we do not recommend any further collecting in this area, unless it is under consideration for development.

From Choquette 1989 (YOHO ARDA): The site's proximity to the highway makes it vulnerable to future disturbance from development. Additional assessment will then be required. The site is of unknown archaeological/historic significance and low assessment priority.

Francis and Porter (2011): Site requires revisit to confirm UTM, update conditions, and gather photos. Site placed on 2011 schedule (or later).

SCHEDULE: every 10 years (1999)

THEME: transportation, CPR

UNIQUE: no

SIGNIFICANCE:

Low

CRM_STATUS:

Site requires revisit to confirm UTM,
update conditions, and gather photos.

COMMENTS:
DIAGRAM:

Originally in database: Located by Loy (1972: 48-49), who inferred from the nature of the glass and ceramic artifacts recovered that the dump was used by the C.P.R. to dispose of their broken dining car paraphernalia.....

From Choquette 1989 (YNP ARDA): Site 396T is located approximately 1.6 km northeast of the turn-off to Field townsite from the Trans-Canada Highway, on the northwest side of the highway in Watershed Unit 6. The site is situated close to a gravel storage area and explosives bunker. The site was surface collected by Loy (1972) who found ceramic tableware, glass jars, and bottles. The majority of ceramic tableware was marked with the C.P.R. monogram. The C.P.R. evidently used this area as a dump for broken dining car paraphernalia. The site has undergone extensive pot hunting and stream related impacts. Loy (1972) recommends no further work at this site. The site's proximity to the highway makes it vulnerable to future disturbance from development. Additional assessment will then be required. The site is of unknown archaeological/historic significance and low assessment priority.

From Loy (1972): EjQd - H2 ("Old China dump"). This site is located about one mile easterly of the Field turn off along the TransCanada highway, close to a gravel storage area and explosives bunker, which are presently being used. This site is well known to other residents of the townsite of Field and they refer to it as the "Old China Dump". This appellation causes confusion as some informants stated that the area was the dump area of a town where the Chinese labourers working on the railway lived. As far as our research has revealed, no such town existed. Other informants stated the name meant simply that "old china" could be found there. No excavation was made at this site but various pieces of ceramic tableware, glass, jars and bottles were surface collected. The artifacts were seldom whole. The exception was the remains of a cache of canning type jars and one patent medicine bottle. The medicine bottle was stamped "Slocums Coltsfoot Expectorant". The majority of ceramic table ware was marded with the CPR mongram. Two styles of monogram are represented. From the artifacts represented in this site, it is evident that the CPR used this area as a dump for its broken dining car paraphernalia. As of this writing, attempts to date the use period of this site from the CPR monograms have not been successful. This site has been known to the residents of the townsite of Field for some time and has therefore been pretty well picked over. Also, the action of the steam has scattered the artifacts about. For these reasons, we do not recommend any further collecting in this area, unless it is under consideration for development.

NOTE #1: In 2007, a brief inventory was conducted in the Winnipeg collections storage facility. It was observed that there were 6 boxes of uncatalogued material labelled 43T, 136T, 381T, 382T, 376T, 378T, 384T, 387T, 389T, 397T, 396T, 392T, 394T, 395T. Investigation is needed to determine the contents of these boxes and then a plan can be created to manage the collection for this site. The current database has 27 historic objects catalogued for this site, 04/08/2010, J.W.

NUMBER: 397 CODE: T RECORDER: Loy; Choquette; Francis; Francis
BORDEN: EhQd SEQUENCE: 6 VISIT_DATE: 07/07/1971;
09/09/1989;06/10/1992;06/28/19
94;10/01/2003
PARK: Yoho National Park PARK_CODE: YNP
NAME: Deer Lodge Warden Cabin PERMIT: WRA92-8;
WRA94-6 VISITS: 5

SITE_TYPE:

warden cabin

ABO:

NONABO: 1

NOTE:

LATITUDE: 51o13'10" MAP: 82N/2
LONGITUDE: 116o33'55" OTHER_MAP:
EASTING: 530300 GRID: 11UNG
NORTHING: 5673900 ELEVATION: 1189
NAD_27: 1 NAD_83:

EVIDENCE:

LOCATION:

LEGAL:

TRADITIONAL:

The site is located S of Hoodoo Creek Campground on the nearby Beaver Nature Trail (approximately 1.6km along the trail to the Hoodoos formation).

LEVEL: recorded; recorded; recorded;
recorded

REFERENCES:

TESTS: Loy 1972; Sumpter & Perry 1984, 1985, 1986, 1987; Francis
1992

DESCRIPTION: extant recording and monitoring

PHOTOS: 397R-20t to 34t

AIR_PHOTO:

GEOGRAPHY:

SHORE_ZONE:

ENVIRO_ZONE:

NATURAL_FEATURES: glacial-fluvial plain: 0m; flood plain: 0m; stream: 20m

VEGETATION: Aspen and spruce trees adjacent to building, marsh SW.

AGE: historic

COMPON1:

COMPON5:

DATE: 1904 with 1924 addition

COMPON2:

COMPON6:

AREA:

COMPON3:

COMPON7:

STRATIFIED:

COMPON4:

COMPON8:

DISTURBANCE: water erosion: high; general decay: low; pothunting/vandalism: low; animal disturbance: high; area use: high

CONDITION: partially disturbed

RECOMMENDED:

From Loy (1972): However, due to the fact that tourists have had easy access to the cabin and its contents the only items left are the rather heavy wood stove and a large, bulky bed frame. The area around the cabin has been badly disturbed by bottle collectors. No further investigations are necessary at this site.

From Choquette (1989): Further assessment of this site is considered a moderate priority. It is recommended that the site be monitored every 10 years, with the next visit to take place in 1999.

Francis & Perry 92: Processes of decay will continue apace until conservation measures are implemented. Annual monitoring by WP Warden Services is strongly recommended given vulnerability to tourist traffic/vandalism. Monitor every three years by Archaeological Services.

Francis 94:

1) Given the historical significance of Deer Lodge Cabin as one of the first warden patrol cabins in Yoho National Park, its generally good state of preservation, and its location on the route of a popular nature trail, complete with its own interpretive sign on site, it is essential tha the building receive stabilisation measures to ensure structural integrity. Processes of decay will continue apace until conservation measures are initiated.

2) A regularised schedule of annual monitoring by Archaeological Services and the YNP Warden Services is recommended, particularly when seasonal high water levels can flood the locality. Also, vandalism is always a possibility given the easy accessibility to the site.



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3) We recommend consultations be initiated with historical architectural specialists in A&E Services as soon as possible.

Francis and Porter (2011): No further archaeological work is required at this time unless threatened by prescribed burn again.

SCHEDULE:

THEME:

park operation, warden station, famous
character association

UNIQUE:

SIGNIFICANCE:

Moderate

CRM_STATUS:

No further archaeological work is required
at this time unless threatened by
prescribed burn again.

COMMENTS:

DIAGRAM:

Originally in database: 2003: Revisit consisted of additional photography and was last photographed in the 1990s by K.Lesick. Constructed in 1904 by Ruben Gable as a two-room structure, with a kitchen added between 1920-24 by Park Warden John Tocher, Deer Lodge Cabin is one of the first warden patrol cabins in the park.

From Choquette 1989 (YNP ARDA): Site 397T is located in Watershed Unit 6, at the 11 15 m level, on an alluvial fan mantled by colluvial deposits. It is the Deer Lodge warden's cabin which has been partially disturbed by pot hunting. The area is being disturbed by visitor use, because the site is part of a selfguided nature trail, but the site is currently stable. Investigation of this site has been limited to locating and recording. The cabin was built in 1904 and was one of the first warden patrol cabins established in Yoho National Park. Originally constructed as a two room structure, the kitchen was added between 1920 and 1924 (Sumpter and Perry 1987). Further assessment of this site is considered a moderate priority. It is recommended that the site be monitored every 10 years, with the next visit to take place in 1999.

From Loy (1972): EhQd - H6 (Deerlodge Warden's Cabin). This cabin is located about 1 mile along the trail to the Hoodoos formation. It is also located along a short nature trail which branches off the nature trail. No excavations were made of the cabin; surface collections were made from disturbed trash dumps scattered around the cabin. The predominant artifacts were Gordon's Gin bottles (in fragments). A few pieces of broken ceramics were found, as well as the parts of two harmonicas and one moderately decomposed brass cartridge case (30 calibre). This cabin was built as a warden's station in 1906 (Brooks n.d.:10 and pers.comm.) In the 1950s this cabin was restored by the park. The restoration included the placing of antiques in the cabin to make it more authentic and educational. However, due to the fact that tourists have had easy access to the cabin and its contents the only items left are the rather heavy wood stove and a large, bulky bed frame. The area around the cabin has been badly disturbed by bottle collectors. No further investigations are necessary at this site.

From Sumpter and Perry (1987): Site 397T. Initially recorded in 1971 (Loy 1972: 53), the site is the historic Deerlodge Warden Cabin located south of Hoodoo Creek Campground on the nearby Beaver Nature Trail. Physiographically, the site locale is positioned on the perimeter of a wet, undulated, fluvial area. Whereas the wet area supports a wetland scrub and sedge meadow vegetation, drier areas are predominantly covered with a white spruce and Douglas fir forest canopy. According to the Deerlodge Cabin interpretive sign located on site, the cabin was "...built in 1904 by Ruben Gable and... was



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one of the first warden patrol cabins established in Yoho National Park." Originally constructed as a two-room structure, the kitchen was later added by Park Warden John Tocher between the years 1920 and 1924. Measuring approximately 5 m wide by 8 m long, the two-room, log frame structure evinces both dovetail and saddle-notching. Additional historic features associated with the cabin site include an outdoor privy positioned northeast of the structure and a corral located to the southeast. Possibly constructed on a section of the original Kootenay Trail, the interpretive sign indicates that the cabin was a favourite stopover for both White and Native peoples. Exposed to human disturbance and natural processes, structural decay to this presently stable building can be expected in the future unless preventative measures are initiated.

From Francis (1995): Site 397T: Deer Lodge Warden Cabin. In June, during the course of inspecting the area potentially affected by resurfacing the Deer Lodge trail, Archaeological Services examined the historic Deer Lodge Warden Cabin located south of Hoodoo Creek Campground on the nearby Beaver Nature Trail. Constructed in 1904 by Ruben Gable as a two-room structure, with a kitchen added between 1920 and 1924 by Park Warden John Tocher, Deer Lodge Cabin is one of the first warden patrol cabins in Yoho National Park. Its physiographic location on the perimeter of a wet, undulated fluvial area affected by intermittent beaver activities is a cause for concern due to seasonal inundation that has submerged the lower log tiers of the structure.

The cabin and associated features (i.e., a corral located to the southeast and an outdoor privy situated northeast of the cabin) remain essentially intact, but are undergoing natural decay from normal weathering processes. Occasional seasonal inundation, particularly during late spring-early summer high water periods, hastens the destabilisation of the cabin. Remarkably, given the volume of tourist traffic along the Beaver Nature Trail, the cabin has not been vandalised. Archaeological Services rephotographed and otherwise redocumented the site and immediate environs to augment the existing site data file.

From Frances & Porter 03: Revisit consisted of additional photography and was last photographed in the 1990s by K.Lesick.

NOTE #1: In 2007, a brief inventory was conducted in the Winnipeg collections storage facility. It was observed that there were 6 boxes of uncatalogued material labelled 43T, 136T, 381T, 382T, 376T, 378T, 384T, 387T, 389T, 397T, 396T, 392T, 394T, 395T. Investigation is needed to determine the contents of these boxes and then a plan can be created to manage the collection for this site. The current database has 121 historic objects catalogued for this site, 04/08/2010, J.W.

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
397T-1M	397	historic Deer Lodge warden's cabin: interpretive sign	20/08/1985	Sumpter	E
397T-1T	397	Deer Lodge warden cabin: south side	20/08/1985	Sumpter	SW
397T-2M	397	historic Deer Lodge cabin: rear view	20/08/1985	Sumpter	NE
397T-2T	397	Deer Lodge warden cabin: east side	20/08/1985	Sumpter	N
397T-3M	397	historic Deer Lodge cabin: front view	20/08/1985	Sumpter	SW
397T-3T	397	Deer Lodge warden cabin: associated privy	20/08/1985	Sumpter	NW
397T-4M	397	historic Deer Lodge: associated privy	20/08/1985	Sumpter	NE
397T-4T	397	Deer Lodge warden cabin: north side	20/08/1985	Sumpter	NW
397T-5M	397	SE corner of historic Deer Lodge cabin: note construction method	20/08/1985	Sumpter	NW
397T-5T	397	Deer Lodge warden cabin: associated corral	20/08/1985	Sumpter	NW
397T-6M	397	historic Deer Lodge: associated corral	20/08/1985	Sumpter	NE
397T-6T	397	Door and exterior wall detail of cabin showing some of the water damage.	12/09/1996	Lesick	N
397T-7M	397	proposed water line right-of-way along existing road	20/08/1985	Sumpter	SW
397T-7T	397	Door and exterior wall detail of cabin showing some of the water damage.	12/09/1996	Lesick	N
397T-8M	397	general view of HooDoo Creek flooding and site of proposed berm construction	20/08/1985	Sumpter	W
397T-8T	397	North and east (front) sides of the cabin. Note the replaced basal logs at the base of the north wall.	12/09/1996	Lesick	SW

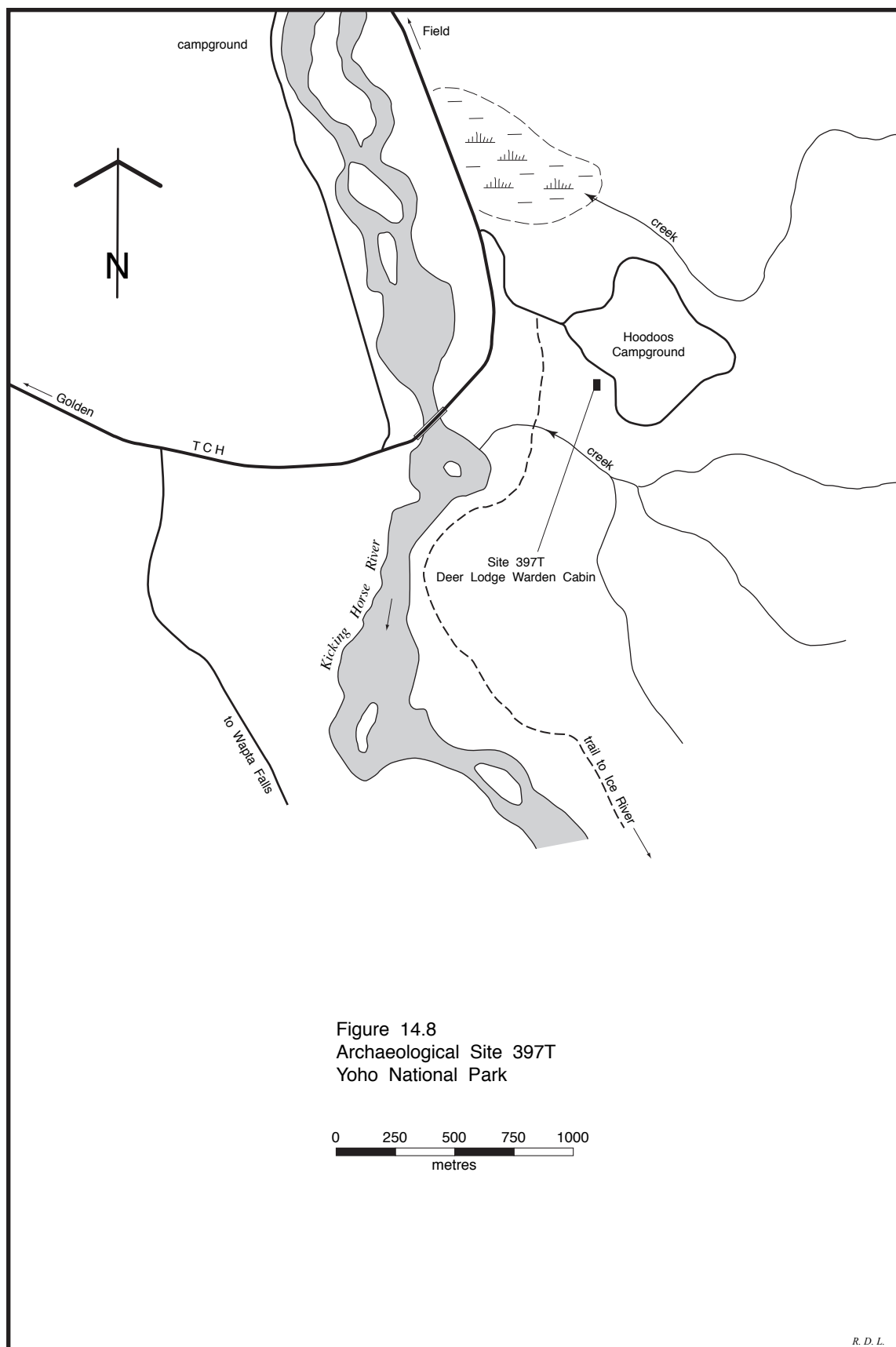
PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
397T-9M	397	proposed water line right-of-way with swings in the background	20/08/1985	Sumpter	S
397T-9T	397	North and east (front) sides of the cabin. Note the replaced basal logs at the base of the north wall.	12/09/1996	Lesick	SW
397T-10M	397	view of completed waste dump site	20/08/1985	Sumpter	SE
397T-10T	397	General view of the south side of the cabin.	12/09/1996	Lesick	NE
397T-11M	397	view of completed waste dump site	20/08/1985	Sumpter	NE
397T-11T	397	General view of the south side of the cabin.	12/09/1996	Lesick	NE
397T-12M	397	Door and exterior wall detail of cabin showing some of the water damage.	12/09/1996	Lesick	N
397T-12T	397	General view of corral near cabin.	12/09/1996	Lesick	
397T-13M	397	North and east (front) sides of the cabin. Note the replaced basal logs at the base of the north wall.	12/09/1996	Lesick	SW
397T-13T	397	General view of corral near cabin.	12/09/1996	Lesick	
397T-14M	397	General view of the south side of the cabin.	12/09/1996	Lesick	NE
397T-14T	397	General view of corral near cabin.	12/09/1996	Lesick	
397T-15M	397	General view of the south side of the cabin.	12/09/1996	Lesick	NE
397T-15T	397	General view of corral near cabin.	12/09/1996	Lesick	
397T-16M	397	General view of corral near cabin.	12/09/1996	Lesick	
397T-16T	397	View of front (east) and south side of cabin.	12/09/1996	Lesick	N

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
397T-17M	397	General view of corral near cabin.	12/09/1996	Lesick	
397T-17T	397	View of front (east) and south side of cabin.	12/09/1996	Lesick	N
397T-18M	397	View of front (east) and south side of cabin.	12/09/1996	Lesick	N
397T-18T	397	Privy associated with cabin.	12/09/1996	Lesick	NW
397T-19M	397	Privy associated with cabin.	12/09/1996	Lesick	NW
397T-19T	397	Privy associated with cabin.	12/09/1996	Lesick	NW
397T-20T	397	View NE of the SW and SE sides of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-21T	397	View NE of the SW and SE sides of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-22T	397	View NE of the SW and SE sides of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-23T	397	View NE of the SW and SE sides of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-24T	397	View NE of the 'east' side of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-25T	397	View NE of the 'east' side of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-26T	397	View NE of the 'east' side of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-27T	397	View NE of the 'east' side of Deerlodge Warden Cabin.	01/10/2003	Porter	NE
397T-28T	397	View SE of the front (NW side) of the Deerlodge Warden Cabin.	01/10/2003	Porter	SE
397T-29T	397	View SE of the front (NW side) of the Deerlodge Warden Cabin.	01/10/2003	Porter	SE

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
397T-30T	397	View SE of the front (NW side) of the Deerlodge Warden Cabin.	01/10/2003	Porter	SE
397T-31T	397	View SE of the front (NW side) of the Deerlodge Warden Cabin.	01/10/2003	Porter	SE
397T-32T	397	View ESE of the Deerlodge Warden Cabin interpretive sign.	01/10/2003	Porter	ESE
397T-33T	397	View ESE of the Deerlodge Warden Cabin interpretive sign.	01/10/2003	Porter	ESE
397T-34T	397	View ESE of the Deerlodge Warden Cabin interpretive sign.	01/10/2003	Porter	ESE



CATALOGUE	NUMBER	YEAR	SUBJECT	DRAWN_BY	STORAGE_LOCATION
397T-XXD-1E	397 XX		Figure 14.8, Archaeological Site 397T, Yoho National Park	R. Lalonde	CD7
397T-95D-1E	397 95		Figure 14.8, Archaeological Site 397T, Yoho National Park	R. Lalonde	DVD56



NUMBER: 438 CODE: T RECORDER: Perry; Perry
BORDEN: EiQc SEQUENCE: 11 VISIT_DATE: 1987; Aug 1988
PARK: Yoho National Park PARK_CODE: YNP
NAME: The Big Hill PERMIT: WRA88-6 VISITS: 1

SITE_TYPE:

structural remains: Transportation, rail,
railgrade

ABO:

NONABO: 1

NOTE:

LATITUDE: MAP: 82N/8
LONGITUDE: OTHER_MAP:
EASTING: 544650 GRID: 11UNH
NORTHING: 5698650 ELEVATION: 1500
NAD_27: NAD_83:

EVIDENCE:

LOCATION:

LEGAL:

TRADITIONAL:

The site parallels the S side of the TCH across from the Spiral Tunnel Viewpoint, 9 km E of Field.

Numerous locations throughout YNP. See comments for specifics

LEVEL: recorded; recorded

TESTS:

DESCRIPTION: extant recording

PHOTOS:

REFERENCES:

Choquette 1989); Sumpter (1988); Perry (1988)

AIR_PHOTO:

GEOGRAPHY:

SHORE_ZONE:

ENVIRO_ZONE:

NATURAL_FEATURES: fan: 999m; moraine: 999m;
mountain pass: 999m

VEGETATION:

AGE:

COMPON1: historic-1884

COMPON5:

DATE: 1884 - 1909

COMPON2:

COMPON6:

AREA:

COMPON3:

COMPON7:

STRATIFIED: n/a

COMPON4:

COMPON8:

DISTURBANCE: Numerous - park-wide linear feature

CONDITION: Various

RECOMMENDED:

Originally in database: Future terrain modifications with potential to affect either the railgrade or historic features posi...

From Sumpter (1988): The archaeological significance of Site 438T is deemed to be low. However, the site's historic significance potential is felt to be moderate to high due to the feature's age, the unique engineering feat represented by the Big Hill route, and its representation of Canada's first trans-continental rail line. As such, the feature holds high interpretive potential. Future terrain modifications with potential to affect either the railgrade or historic features positioned along its right-ofway will require further archaeological assessment.

From Perry (1988): Site 438T. Conflicting with the proposed development right-of-way, archaeological recording and site documentation at Site 438T meets archaeological mitigative requirements. No further work is required. However, due to the feature's age, the unique engineering feat represented by the Big Hill route, and its representation as Canada's first trans-continental rail line, Site 438T is to be referred to Region's Historical Research Services Unit to determine its historic significance. The feature possesses high interpretive potential. Future terrain modifications proposed for the site area with potential to impact either the railgrade or historic features along its right-of-way will require additional archaeological assessment.

SCHEDULE: N/A

THEME: CPR; TransContinental railway, building of
the railway

UNIQUE: yes



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ARCHAEOLOGICAL SITE VISIT FORM

SIGNIFICANCE: Level 1

CRM_STATUS: Site requires no further work

COMMENTS:

DIAGRAM:

Originally in database: Site 438T comprises an abandoned portion of the CPR 1884 railgrade. The 1884 railgrade was recorded in association with an assessment of potential TCH intersection improvements at the Spiral Tunnel V....

Perry in 2006: Several intact portions of abandoned 1884 railgrade (digitized in GIS based on site forms and satellite imagery):

1. 1.93km stretch over what is now the access road to the Chancellor Peak campground from TransCanada Highway to intersection with existing railgrade.
2. 230m abandoned stretch over the Kicking Horse River at the Black Bridge crossing. This along with bridge pilings have been separately recorded as Site 584T.
3. A 530m stretch of abandoned grade on the west side of the TransCanada Highway south of the Ottertail crossing.
4. A 2.66km stretch of abandoned grade on the east side of the highway both north and south of the Ottertail crossing ending north opposite the road into the Ottertail gravel source. Sites 534T and 535T, both bridge remains, are associated with this stretch.
5. A 2.45km discontinuous stretch of grade on both sides of the highway between the Ottertail pits and the Boulder Creek Operations compound.
6. A 1.2km section located north of Boulder Creek compound, parallels the west side of the highway and ends immediately south of the west access road to Field townsite.
7. A 1.2km section along the most westerly portion of the west Field townsite access until the grade drops to and intersects with the current grade.
8. A 2.053km section from the Monarch Mine site (161T) (where it junctions with the current railgrade) to a point where it junctions with the TransCanada Highway just west of the Spiral Tunnels viewpoint.
9. A 300m stretch across the Big Hill on either side of the old rail and highway bridge (521T).
10. A short 75m section associated with the remnants of a concrete culvert (512T) over the outlet of Wapta Lake.

From Choquette (1989): Site 438T is located in Watershed Unit 5 and 6, at the 1500 m level, on a wide range of landforms stretching from Wapta Lake to the Leancoil area. It is the Big Hill rail grade which has been partially disturbed by area development. The site is potentially vulnerable to disturbance caused by visitors and development. Investigation of this site was limited to locating and recording. Further assessment of this site is not considered a priority, and periodic monitoring is not warranted at this time.

From Sumpter (1988): Site 438T comprises an abandoned portion of the C.P.R.'s 1884 railgrade. The 1884 railgrade was recorded in association with an assessment of potential T.C.H. intersection improvements at the Spiral Tunnel Viewpoint (WRA-87-85D) (Figs.114, 115). This section of the abandoned mainline represents a remnant of the former Big Hill route. The grade remnant measured 9 m wide and 500 m in length. It paralleled the south side of the T.C.H., across from the Spiral Tunnel Viewpoint, 9 km east of Field. Whereas certain sections of the original 1884 grade are still employed by the C.P.R., portions of the alignment were abandoned in 1902, 1909, 1924, and 1960 - these being associated with the Ottertail, Spiral Tunnel, Leancoil, and Hector diversions, respectively (Burrows 1981). Extant sections of the C.P.R.'s 1884 grade in Yoho National Park include: the park's East Boundary to immediately east of Wapta Lake; the north side of the Kicking Horse River, west of Wapta Lake; the approaches to the Big Hill's Kicking Horse River Bridge crossing; across from the Spiral Tunnel Viewpoint to its junction with the 1909 diversion, immediately east of Mount Stephen Tunnel, and from the Mount Stephen Tunnel west to Field. Extant 1884 grade sections also occur between Field and the Ottertail River and immediately east of the Wapta Falls - T.C.H. turnoff to the park's West Boundary. Historical documents (C.P.R. 1896, 1908, 1913, 1935) indicate several historic features having once been positioned east of Field along the 1884 grade. These included, from east to west:



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Stephen Station/Siding, at present a 123-car siding, was the former site of a station and a major turn-point for helper locomotives through the employment of a wye (Burrows 1981: 33); Sink Lake Siding; a major ballast pit immediately west of Sink Lake; the former Hector Station and passing siding; and three safety switches positioned along the Big Hill; an old mine concentrator site; Mount Stephen Tunnel. West of Field Station and Yard, Site 408T (&g above), historic railway-related facilities on the 1884 alignment included: former sidings and/or stations at Old Ottertail, Misko, Old Leancoil, and Leancoil. In addition, 19 trestle bridge crossings, 26 culverts, and a number of snowsheds were positioned along the alignment in the park. Historic and recent disturbances to Site 438T include: construction of the 1911 Field to Lake Louise Highway, 1926-27 Kicking Horse Trail Highway, and the Trans-Canada Highway; current rail operations; various park-related visitor and maintenance facilities; and natural erosional processes such as avalanche debris, river erosion, and vegetation growth. The archaeological significance of Site 438T is deemed to be low. However, the site's historic significance potential is felt to be moderate to high due to the feature's age, the unique engineering feat represented by the Big Hill route, and its representation of Canada's first trans-continental rail line. As such, the feature holds high interpretive potential. Future terrain modifications with potential to affect either the railgrade or historic features positioned along its right-of-way will require further archaeological assessment.

From Perry (1988): Originally recorded in 1987 (Sumpter and Perry 1988), Site 438T comprises extant portions of the 1884 C.P.R. railgrade through Yoho National Park. The proponent's right-of-way traverses sections of the "Big Hill" route extending from Wapta Lake to Field. This historic feature traverses a variety of landforms. Impacts to Site 438T include past construction of the former Kicking Horse Trail roadgrade, Site 439T, (see-below), the construction of the Trans-Canada Highway, current C.P.R. railway operations, various park-related visitor and maintenance facilities, and natural erosional impacts such as avalanche debris, river erosion, and vegetation growth.

The field methodology comprised an intensive surface reconnaissance of the site's alignment for the presence of historic railway-related features. Two additional historic features were located within the boundaries of the project-Sites 509T and 521T (see- below).

Extant portions in conflict with the proposed cable installation include: a 1.1 km section east of Wapta Lake; a 600 m section immediately west of Wapta Lake; 340 m approaches to the abandoned Kicking Horse River crossing, Site 521T (See below); and a 4.1 km portion presently used as a C.P.R. access road to the Monarch Creek area, between the Spiral Tunnel Viewpoint and its junction with the present C.P.R. line 300 m east of Mount Stephen Tunnel (Fig. 2). The railgrade, extending discontinuously the length of the park, averages 9 m wide along the proponent's right-of-way and holds potential for project-related impacts at all of the portions listed above. Constructed in 1884 as part of the original Big Hill route, the alignment was abandoned due to excessive grade in 1909 with the construction of the Spiral Tunnel diversion (Burrows 1981). Historical documents (C.P.R. 1913, 1935) indicate a number of historic features positioned along the grade evincing indirect project-related conflict with the proposed development: Stephen Station/Siding (See Site 508T below) and three safety switches positioned at intervals along the Big Hill route.

The site is felt to possess low archaeological significance.

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
438T-1M	438	view of CPR 1884 railgrade in vicinity of Spiral Tunnel View Pt.	13/08/1987	Perry	SW
438T-2M	438	general view of abandoned 1884 CPR grade in vicinity of Yoho Station	29/06/1988	Sumpter	NW



NUMBER: 439 CODE: T RECORDER: Perry; Sumpter; Heitzmann
BORDEN: SEQUENCE: VISIT_DATE: Aug 1987; 8/8/89; 9/18/91
PARK: Yoho National Park PARK_CODE: YNP
NAME: Kicking Horse Trail PERMIT: VISITS: 4

SITE_TYPE:

structural feature: road grade

ABO:

NONABO: 1

NOTE:

LATITUDE: 51o24'40" MAP: 82N/7
LONGITUDE: 116o28'00" OTHER_MAP:
EASTING: 544900 GRID: 11UNG
NORTHING: 5699000 ELEVATION: 1280
NAD_27: NAD_83:

EVIDENCE:

LOCATION:

LEGAL:

TRADITIONAL:

The site extends through the park in the Kicking Horse River valley.
Various locations. Park-wide linear feature. See comments for detailed locations.

LEVEL: recorded; recorded; exposed

TESTS:

DESCRIPTION: extant recording

PHOTOS:

REFERENCES:

Choquette (1989); Sumpter (1988); Sumpter (1989); Sumpter and Heitzmann (1994)

AIR_PHOTO:

GEOGRAPHY: SHORE_ZONE: ENVIRO_ZONE: NATURAL_FEATURES: terrace: 999m; fan: 999m;
stream: 0mVEGETATION: AGE:

COMPON1: historic-1927

COMPON5:

DATE: 1927

COMPON2: COMPON6: AREA: COMPON3: COMPON7:

STRATIFIED: n/a

COMPON4: COMPON8:

DISTURBANCE: Numerous - park-wide linear feature.

CONDITION: Various

RECOMMENDED:

From Sumpter (1988): The archaeological significance of Site 439T is deemed low. The historical significance potential, however, is felt to be moderate as the feature represents extant remains of the original trans-park roadgrade and may be regarded as a forerunner to the present Trans-Canada Highway. It is recommended that additional surveys be conducted along the abandoned road's entirety for the recording of associated features. Further archaeological assessment of future land-altering disturbances proposed along the feature's right-ofway is requisite.

From Perry (1988): The archaeological significance of Site 439T is deemed low. The historic significance potential, however, is felt to be moderate as the feature represents extant portions of the original trans-park roadgrade and may be regarded as a forerunner to the present Trans-Canada Highway.

From Sumpter (1989): A surface reconnaissance along those abandoned road sections anticipating proposed highway improvements, for example, the Yoho Valley and townsite entrances, failed to yield archaeological concerns. Future development along abandoned sections of the former highway route will require additional assessment studies.

From Sumpter and Heitzmann (1994) in Francis et al (1994): This site is a small part of the transportation history of Yoho National Park. The entire route is of moderate historical interest but of low archaeological significance. The site has been recorded and removal of the eroded features and rehabilitation may proceed.

SCHEDULE: none.

THEME: transportation, building of the roadways,
tourism, park operation



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ARCHAEOLOGICAL SITE VISIT FORM

UNIQUE:	no
SIGNIFICANCE:	Level 1
CRM_STATUS:	Site requires no further work

COMMENTS:

DIAGRAM:

Originally in database: 1987:

The site comprises extant portions of the former Kicking Horse Trail, the forerunner of the TCH (1926-27). See attached topo for locations of extant portions (Yoho Park Alberta – British Columbia...

From Perry in 2006: GIS layer from site forms and satellite imagery:

1. extant section from TCH 1.8km northward to intersection with current railgrade.
2. short section at Faeder Lake picnic area where grade crosses the river (site 354T).
3. 8.78km of abandoned grade along the previously abandoned Muskeg Summit CPR grade between the Ottertail River and Field townsite.
4. approximately 3km of abandoned grade on the north side of the Kicking Horse River between Field townsite and Cathedral Mtn Chalets.
5. 430m of grade ascending towards the Monarch Creek mine concentrator (site 161T) to link with the abandoned 1884 Big Hill grade where it proceeds up hill 2.2km to where it intersects with the TransCanada highway.
6. a short distance on either side of the old CPR and highway bridge at site 521T 7. And finally, a 3.5km stretch which was most recently used as Highway 1A between Lake Louise and Field stretching from the Lake O'Hara turnoff to the YNP/BNP boundary at the Great Divide.

From Choquette (1989): Site 439T, recorded in 1987 Sumpter and Perry 1988), represents the historic 1926-7 Kicking Horse Trail, or the Golden to Banff Highway in watersheds 5 and 6. Extant sections of this road grade include: from the park's east boundary to Wapta Lake, between the former Yoho Station Siding area to 2.5 km east of Field, from 0.75 km west of Field to 0.75 km west of the Ottertail River, sections opposite Porcupine Creek, and a section between Faeder Lake and the Chancellor Peak turn-off on the Trans-Canada Highway. Upon completion of the Trans-Canada Highway in the 1950s, major sections of the former highway road grade were abandoned or used by later road systems. The archaeological significance of Site 439T is deemed low. The historic significance potential, however, is rated as moderate, because the feature represents extant remains of the original trans-park road grade and may be regarded as a forerunner of the present Trans-Canada Highway. The assessment priority of this site is judged to be low.

From Sumpter (1988): Site 439T encompasses the extant remains associated with the former 1926-27 Kicking Horse Trail roadbed (Fig. 115). Spanning the length of the park, the sporadically-preserved abandoned roadgrade traverses a variety of landforms. Recorded in affiliation with the Trans-Canada Highway intersection and highway improvements project, the site is in conflict with proposed modifications at the entrance to the Yoho Valley (WRA-87-853) and the Presidents Peak Look-out (WRA-87-851).

Extant sections of this historic roadgrade extend from: the park's East Boundary to Wapta Lake, between the former Yoho Station/Siding area to 2.5 km east of Field, 0.75 km west of Field to 0.75 km west of Ottertail River, sections opposite Porcupine Creek, and a section extending between Faeder Lake to the Chancellor Peak turnoff - T.C.H. junction. Previous and ongoing disturbances for this historic feature include: avalanche and debris-flow activity, vegetation growth, water/stream erosion, construction of various C.P.R. rail alignments, fire and access roads, the Trans-Canada Highway, and visitor facilities.



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Following the 1909 diversion of the C.P.R.'s 1884 Big Hill route, the railgrade was utilized as a scenic route to Wapta Lake. Another abandoned section of 1884 railgrade between Field and Ottertail, the retired Muskeg Summit route, was also utilized by park vehicles at this time. By 1924, public demand spurred the construction of a roadgrade from Lake Louise to link with the scenic drive at Wapta Lake, and an extension of the road west of Field to link with a provincial road from Golden at the park's West Boundary. The combined route was completed in 1926 and referred to as the Kicking Horse Trail Highway. It opened to the public in July, 1927 (Lothian 1976: 40).

The archaeological significance of Site 439T is deemed low. The historical significance potential, however, is felt to be moderate as the feature represents extant remains of the original trans-park roadgrade and may be regarded as a forerunner to the present Trans-Canada Highway. It is recommended that additional surveys be conducted along the abandoned road's entirety for the recording of associated features. Further archaeological assessment of future land-altering disturbances proposed along the feature's right-of-way is requisite.

From Sumpter (1989): Site 439T, recorded in 1987 (Sumpter and Perry 1988a), represents the historic 1926-27 Kicking Horse Trail or Golden to Banff Highway (Fig. 2). Extant sections of this historic roadgrade extend from: the park's East Boundary to Wapta lake, between the former Yoho Station/Siding area to 2.5 km east of Field, 0.75 km west of Field to 0.75 km west of Ottertail River, sections opposite Porcupine Creek, and a section extending between Faeder Lake to the Chancellor Peak turnoff - T.C.H. junction.

Upon the completion of the 1950s Trans-Canada Highway, major sections of the former highway right-of-way were abandoned or used by later road systems. Other previous and ongoing disturbances to the feature include: avalanche and debris-flow activity, vegetation growth, water/stream erosion, construction of various CPR alignments, and visitor facilities. The archaeological significance of Site 439T is deemed low. The historic significance potential, however, is felt to be moderate as the feature represents extant remains of the original trans-park roadgrade and may be regarded as a forerunner to the present Trans-Canada Highway.

A surface reconnaissance along those abandoned road sections anticipating proposed highway improvements, for example, the Yoho Valley and townscape entrances, failed to yield archaeological concerns. Future development along abandoned sections of the former highway route will require additional assessment studies.

From Sumpter and Heitzmann (1994) in Francis et al (1994): This feature is the former Boulder Creek crossing on the abandoned Golden-Banff Highway (Site 439T) (Figs. 13.2, 13.28). The former highway route was completed in 1927, and extended from the eastern to western boundaries of Yoho National Park (Lothian 1976:41). The highway was originally recorded in 1987 (Sumpter and Perry 1988). Site 439T includes the entire route plus various bridges and other features. The historic Boulder Creek crossing has been designated Feature 43912. Boulder Creek was originally crossed by a bridge with rough stone and cement abutments. At a later date the bridge was replaced by a large culvert embedded in gravel. When the Trans Canada Highway was constructed from 1955 to 1958 a new route was followed higher up on the mountain side. After abandonment of this route, stream erosion had undermined the culvert and bridge abutments.

Recommendations: This site is a small part of the transportation history of Yoho National Park. The entire route is of moderate historical interest but of low archaeological significance. The site has been recorded and removal of the eroded features and rehabilitation may proceed.

From Perry (1988): Recorded in 1987 (Sumpter and Perry 19881, Site 439T encompasses extant portions of the former 1926-27 Kicking Horse Trail roadgrade (Fig. 2). Sporadically spanning the length of Yoho National Park, the abandoned roadgrade traverses a variety of landforms.

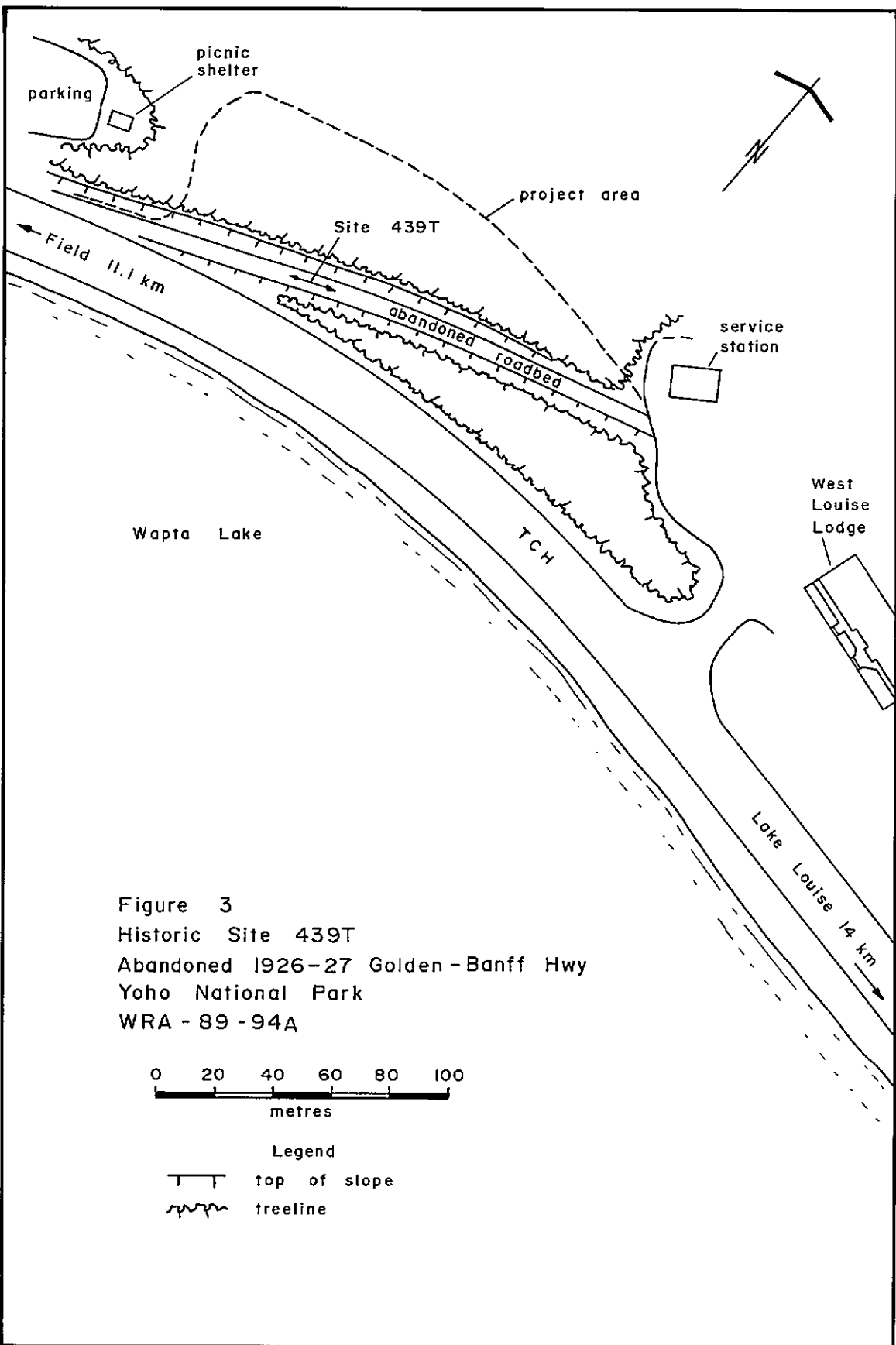
The linear site transects Synex Energy's proposed cable installation at the following locations: 4.1 km west of the Lake Louise Drive/Highway 1A intersection (Site 1474R); west and east of the Lake O'Hara access road/Highway 1A junction to its intersection with the Trans-Canada Highway along an abandoned section of roadgrade, northeast and northwest corners of the Wapta Lake/Trans-Canada Highway junction; the approaches to the Kicking Horse River crossing (See Site 521T Below); a 3.5 km abandoned section extending between the Spiral Tunnel View Point on the Trans-Canada Highway to approximately 160 m east of Monarch Creek where it branches from its shared alignment with the former 1884 C.P.R. alignment (See Site 4382 above); and a 900-m stretch immediately north of the Trans-Canada Highway, 60 m west of Monarch Creek, to the

Yoho Valley Road Visitor Reception Centre along the Yoho Valley Road (Fig. 2). Existing impacts to Site 439T include: avalanche and debris-flow activity; vegetation growth; water/stream erosion; general erosional forces; the construction of various C.P.R. rail alignments, fire and access roads, and the Trans-Canada Highway; and visitor facility development. Following the abandonment of the C.P.R. 1884 Big Hill route in 1909 (Burrows 1981: 35), the railgrade was utilized in 1911 as a automobile drive to Wapta Lake. That same year, the abandoned C.P.R. railgrade between Field and Ottertail was retired due to the Ottertail Diversion and utilized as a roadgrade. By 1924, the construction of a scenic drive between Lake Louise and Wapta Lake had commenced along with an extension of the road west of Field to Golden. The combined route was completed in 1926 under the name of the Kicking Horse Trail which opened to the public in July, 1927 (Lothian 1976: 40). The archaeological significance of Site 439T is deemed low. The historic significance potential, however, is felt to be moderate as the feature represents extant portions of the original trans-park roadgrade and may be regarded as a forerunner to the present Trans-Canada Highway.

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
439T-1M	439	YOHO HIGHWAY -BOULDER CREEK. BOULDER CREEK CROSSING.	18/09/1991	Heitzmann	W
439T-2M	439	YOHO HIGHWAY -BOULDER CREEK. BOULDER CREEK CROSSING.	18/09/1991	Heitzmann	E



CATALOGUE	NUMBER	YEAR	SUBJECT	DRAWN_BY	STORAGE_LOCATION
439T-90X-1	439	90	SITE PLAN: FIGURE 3 HISTORIC SITE 439T ABANDONED 1926-27 GOLDEN - BANFF HWY YOHO NATIONAL PARK WRA-89-94A		CAB C; PAGE SIZE
439T-90D-1E	439	90	Figure 3 Historic Site 439T Abandoned 1926-27 Golden-Banff Hwy Yoho National park	R. Lalonde	CD133
439T-91X-1	439	91	SITE PLAN: FIGURE 13.28 - ARCHAEOLOGICAL FEATURE 439T2 YOHO NATIONAL PARK WRA-91-1.15		CAB C; PAGE SIZE
439T-91D-1E	439	91	Figure 13.28 Archaeological Feature 439T2 Yoho National Park	R. Lalonde	CD133



NUMBER: 521 CODE: T RECORDER: Sumpter/Perry
BORDEN: EiQc SEQUENCE: 28 VISIT_DATE: Aug 1988
PARK: Yoho National Park PARK_CODE: YNP
NAME: Big Hill highway bridge PERMIT: WRA88-6 VISITS: 1

SITE_TYPE:

Transportation, rail, bridge feature

ABO:

NONABO: 1

NOTE:

LATITUDE: MAP: 82N/8
LONGITUDE: OTHER_MAP:
EASTING: 542600 GRID: 11UNG
NORTHING: 5697950 ELEVATION:
NAD_27: NAD_83:

EVIDENCE:

observed steel truss bridge

LOCATION:

LEGAL:

TRADITIONAL:

The site comprises an abandoned steel truss bridge located on the original Big Hill grade, immediately south of the TransCanada Highway adjacent to a highway pull-off.

LEVEL: recorded

TESTS:

DESCRIPTION: extant recording

REFERENCES:

Perry (1988); Yeats (1985:39); C.P.R. (1898); Sumpter and Perry (1988); Lothian (1976: 40)

CPR

1898 Plan of the Canadian Pacific Right of Way From the Eastern Boundary of British Columbia to Donald. On file, Cultural Resource Services, Parks Canada Agency, Calgary. Also [On-line] 1898 CPR trackplan Donald to Stephen 8189_CLSR. Available: Natural Resources Canada (NRCAN)

website:

http://www.lsd.nrcan.gc.ca/english/search_adv_e.asp?

Lothian, W.F.

1976 A History of Canada's National Parks Volume 1. Minister of Supply and Services Canada, Ottawa.

Perry, William

1988 Archaeological Resource Impact Assessment, Synex Energy Resources Ltd. Power Transmission cable Burial, Banff and Yoho National Parks. Submitted to Synex Energy Resources Ltd., Vancouver. Copies available from Archaeological Research Services Unit, Environment Canada, Parks Service, Calgary.

Sumpter, Ian D. and Wm. Perry

1988 1987 Salvage Archaeology Program Western Region National Parks. Manuscript Report Series , Environment Canada, Parks Service, Ottawa.

Yeats, F.

1985 Canadian Pacific's Big Hill: A Hundred Years of Operation. The Calgary Group of the British Railway Model lers of North America, Calgary.

PHOTOS:

1988

AIR_PHOTO:

GEOGRAPHY:

SHORE_ZONE:

ENVIRO_ZONE:

NATURAL_FEATURES: mountain pass: 999m; pond: 0m;
river: 0m

VEGETATION:

AGE:

COMPON1:

historic-1884

COMPON5:

DATE:

1884, 1911, 1927

COMPON2:

COMPON6:

AREA:

COMPON3:

COMPON7:

STRATIFIED:

n/a

COMPON4:

COMPON8:

DISTURBANCE: visitor use: low; general decay: low

CONDITION: partially disturbed

RECOMMENDED:

Originally in database: refer to HRC to determine the feature's historic significance. Future structural modification/remov

From Choquette (1989): Further assessment of this site is not considered a priority. Periodic monitoring is recommended every ten years.

From Sumpter (1988): Site 521T is possesses moderate to high archaeological\ significance. The crossing represents the only extant bridge structure in the park from this time period. Recommendations for this significant railway/highway crossing include annual monitoring against visitor disturbance and structural deterioration by the park's General Works and Region's Architecture and Engineering, Historic Buildings and Restoration, and the Archaeological Research Services Unit. Referral to Region's

Historical Research Services Unit to determine the feature's historic significance is requisite. Future structural modification/removal or highway-related improvements will require detailed archaeological/architectural recording and assessment.

From Perry (1988): Situated immediately outside the proponent's development right-of-way, no project-related impact is anticipated for Site 521T. The site is deemed as possessing moderate to high archaeological significance as the feature represents the only extant bridge structure in the park from this time period. Site documentation is deemed an adequate archaeological mitigative measure. Recommendations for this significant railway/highway crossing include annual examinations against visitor impacts and structural deterioration by the park's General Works and Region's Architecture and Engineering Division, and the Archaeological Research Services Unit. Referral to Region's Historical Research Services Unit to determine the feature's historic significance is requisite. Future structural modification or removal and highway improvements in the site area will require additional archaeological-architectural recording and assessment.

Francis and Porter (2011): Site requires revisit to confirm UTM, update conditions, and gather photos. Site placed on 2011 schedule (or later).

SCHEDULE: annually

THEME: transportation; CPR Big Hill, Kicking Horse highway; tourism

UNIQUE: no

SIGNIFICANCE: moderate/high

CRM_STATUS: Site requires periodic monitoring and referral to Public Works for a structural analysis

COMMENTS:
DIAGRAM:



Parks
Canada

Parcs
Canada

WESTERN AND NORTHERN SERVICE
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ARCHAEOLOGICAL SITE VISIT FORM

Originally in database: An abandoned steel truss bridge crossing positioned on the original 1884 C.P.R. Big Hill/1911 Highway grade, approx. 10.5 km E of Field Townsite (Fig. 115). The structure is located immediately S of

From Choquette (1989 ARDA): Site 521T is located in Watershed Unit 5, on bedrock. It is a bridge crossing of the Kicking Horse River along the abandoned 1884-85 C.P.R. Big Hill grade. The structure is a steel truss span supported on masonry arches. It was built sometime in the 1890s to replace an original timber trestle structure (built in 1884). The structure was abandoned in 1909 when the C.P.R. mainline was re-aligned. The bridge served as a highway crossing in 1911 and again in 1926 when a concrete decking was added (Yeats 1985:39). The area is currently being disturbed by wind and water erosion, and the site is vulnerable to disturbance by visitor use. Investigation of this site has been limited to locating and recording, and it consists of a surface deposit and contains one identifiable cultural component. Further assessment of this site is not considered a priority. Periodic monitoring is recommended every ten years.

From Sumpter (1988): Site 521T comprises an abandoned steel truss bridge positioned on the original 1884 C.P.R. Big Hi11/1911 road grade, approximately 10.5 km east of Field Townsite (Fig. 115). The structure is located immediately south of the Trans-Canada Highway, adjacent to a highway pull-off. Spanning the Kicking Horse River, the crossing abuts bedrock on both approaches.

The bridge measures 6.5 m wide, 60 m long, stands a height of approximately 15 m, and features two stone abutments. The south stone abutment is arched and measures approximately 13 m high, 7.5 m long, and 6.5 m wide (Figs. 129, 130). The north abutment is similar in dimension, but not arched. Approximately 100 m of the abandoned rail/road grade's west approach is extant (Fig. 131).

The construction of the Trans-Canada Highway has adversely affected a large section of the former 1884 railgrade at this vicinity. Other site-related disturbances include: installation of a pull-off east and west of the bridge crossing, structural deterioration, and visitor impact. The installation of a chainlink fence on the features' east approach to discourage visitor access has not been entirely successful as visitors are noted on the structure on a regular basis.

The crossing, dating back to 1884, originally employed a timber trestle. Sometime in the 1890s the initial structure was replaced with a steel truss span, Trestle 855 (C.P.R. 1896), and supported on masonry arched footings. Abandoned in 1909 with the completion of the Spiral Tunnel diversion, it served as a highway bridge in 1911. When the Kicking Horse Trail Highway was completed in 1926, a concrete deck was added. The bridge was utilized until the completion of the Trans-Canada Highway (Yeats 1985: 39).

Site 521T possesses moderate to high archaeological significance. The crossing represents the only extant bridge structure in the park from this time period. Recommendations for this significant railway/highway crossing include annual monitoring against visitor disturbance and structural deterioration by the park's General Works and Region's Architecture and Engineering, Historic Buildings and Restoration, and the Archaeological Research Services Unit. Referral to Region's Historical Research Services Unit to determine the feature's historic significance is requisite. Future structural modification/removal or highway-related improvements will require detailed archaeological/architectural recording and assessment.

From Perry (1988): Site 521T, comprising the remains of a historic bridge crossing, was originally recorded in 1987 (Sumpter and Perry 1988). Positioned 10.5 km east of Field along the Trans-Canada Highway, Site 521T is located along an abandoned portion of the 1911 Big Hi11/1927 Kicking Horse Trail roadgrade (Fig. 2). The structure is located immediately south of the Trans-Canada Highway adjacent to a highway pull-off. Spanning the Kicking Horse River, the crossing abuts bedrock on both approaches (Fig. 13).

Dating to 1884, the crossing locale originally employed a timber trestle. In the 1890s a steel truss span, Trestle 855, replaced the original timber structure supported on masonry arched footings (C.P.R. 1898). Abandoned in 1909 due to the Spiral Tunnel rail diversion, the structure was utilized in 1911 by the Big Hill roadgrade (Lothian 1976: 40) and later as part of the Kicking Horse Trail in 1927 when a concrete decking was added. The structure was abandoned with the completion of the Trans-Canada Highway in 1958 (Yeats 1985: 39).

The feature measures 6.5 m wide, 60 m long, and stands 15 m high. The west masonry abutment possesses an arched



Parks
Canada

Parcs
Canada

WESTERN AND NORTHERN SERVICE
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ARCHAEOLOGICAL SITE VISIT FORM

configuration. Approximately 300 m of the feature's west approach is extant. Construction of the Trans-Canada Highway has adversely impacted a large section of the 1884 railgrade at this vicinity. Other site-related impacts include: the installation of a pull-off east and west of the bridge crossing, structural deterioration, and visitor impact. The installation of a chain-link fence on the feature's east approach to discourage visitor access has not been entirely successful as visitors are noted on the structure on a regular basis.

Site 521T is deemed to be of low archaeological significance.

From Perry and Langemann (2002): This site was not revisited in 2000. The site comprises an abandoned steel truss bridge located on the original Big Hill grade, immediately south of the TransCanada Highway adjacent to a highway pull-off. This is the CPR's second crossing of the Kicking Horse River (figure 193 and 194).

The crossing, dating back to 1884, originally employed a timber trestle. Sometime in the 1890s, the first structure was replaced by a steel truss span, Trestle 855, which was supported on masonry arched footings (CPR 1898; figure 195). A circa 1895 photograph (figure 196) shows Trestle 855 with its steel truss span and masonry footings. Abandoned in 1909 with the completion of the Spiral Tunnel diversion, the bridge was used as a highway bridge in 1911 by the Big Hill roadgrade (Lothian 1976:40) and later as part of the Kicking Horse Trail in 1927 when the concrete decking was added. The structure was abandoned with the completion of the TransCanada Highway in 1958 (Yeats 1985:39).

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
521T-1M	521	general view of site/feature 521T	13/08/1987	Perry	NE
521T-2M	521	view of grade (1884) immediately west of bridge crossing	13/08/1987	Perry	SE
521T-3M	521	view of west bridge abutment	13/08/1987	Perry	S



CATALOGUE	NUMBER	YEAR	SUBJECT	DRAWN_BY	STORAGE_LOCATION
521T-88X-1	521	88	SITE PLAN: FIGURE 129 HISTORIC SITE 521T YOHO NATIONAL PARK (WRA-87-85C) [MYLAR ORIGINAL MISSING 08/02/92]		CAB C; PAGE SIZE
521T-88X-2	521	88	SITE PLAN: FIGURE 13 HISTORIC SITE 521T YOHO NATIONAL PARK WRA-88-6		CAB C; PAGE SIZE
521T-88D-1E	521	88	Figure 13 Historic Site 521T Yoho National Park WRA-88-6	R. Lalonde	CD133

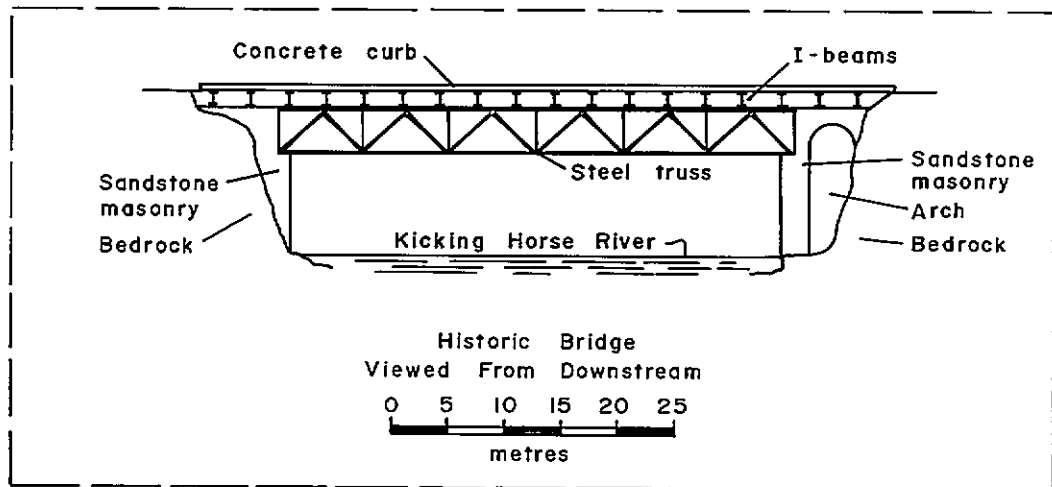
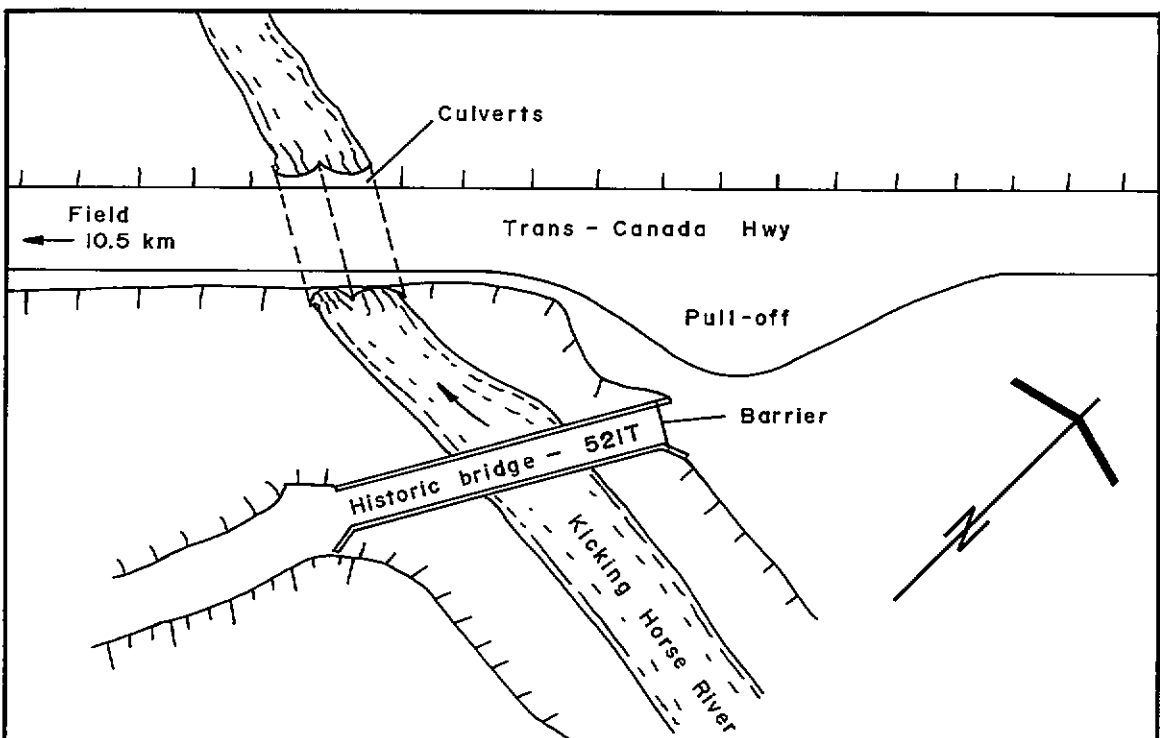
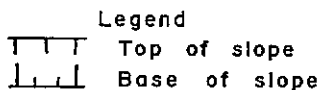
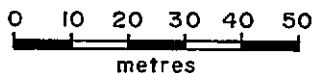


Figure 13
Historic Site 521T
Yoho National Park
WRA - 88 - 6



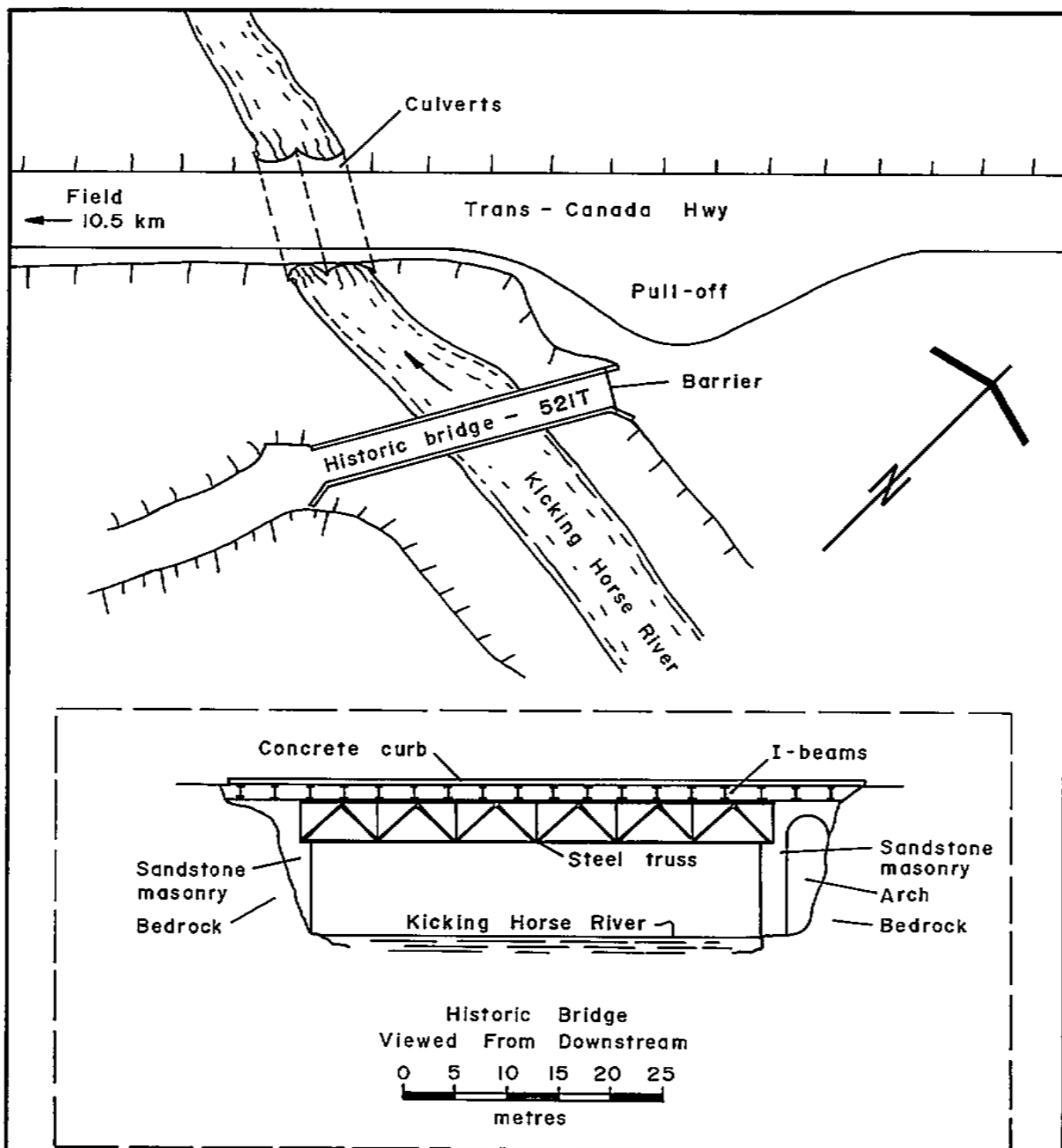


Figure 13
Historic Site 52IT
Yoho National Park
WRA - 88 - 6





NUMBER: 530 CODE: T RECORDER: Sumpter
BORDEN: EiQc SEQUENCE: 25 VISIT_DATE: June 1990
PARK: Yoho National Park PARK_CODE: YNP
NAME: YNP H-1 PERMIT: YNP 1.1-3 VISITS: 1

SITE_TYPE:

Industrial, machinery

ABO:

NONABO: 1

NOTE:

LATITUDE: MAP: 82N/8
LONGITUDE: OTHER_MAP:
EASTING: 543000 GRID: 11UNG
NORTHING: 5698300 ELEVATION: 1524
NAD_27: NAD_83:

EVIDENCE:

2 iron/wooden machinery sections

LOCATION:

LEGAL:

TRADITIONAL:

The site is located on a narrow bench approximately 20 m above the north side of the Trans- Canada Highway, overlooking the abandoned C.P.R. steel truss Kicking Horse River bridge, approximately 600 m west of the confluence of the Kicking Horse River and Sherbrooke Creek.

LEVEL: recorded

TESTS:

DESCRIPTION: extant recording

PHOTOS: 1988

REFERENCES:

Choquette (1989 ARDA); Sumpter et al (1992)

AIR_PHOTO:

GEOGRAPHY:		SHORE_ZONE:	
ENVIRO_ZONE:		NATURAL_FEATURES:	terrace: 999m; fan: 999m; mountain pass: 999m; stream: 0m
VEGETATION:			

AGE:		COMPON1:	historic-1884-1909	COMPON5:	
DATE:	1884-1909	COMPON2:		COMPON6:	
AREA:	50	COMPON3:		COMPON7:	
STRATIFIED:	n/a	COMPON4:		COMPON8:	

DISTURBANCE:	water erosion: moderate	CONDITION:	partially disturbed
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RECOMMENDED:

From Choquette (1989): The site is felt to be of low archaeological significance and of moderate archaeological assessment potential. Archaeological monitoring is recommended every 10 years.

From Sumpter et al (1992): At present, site 530T represents one of a small number of extant features in the park associated with railroading activity along the C.P.R.'s original 1884 mainline. In view of the site's fragile state, it is recommended that the asset be reviewed by Western Region's Historic Resource Conservation Unit for the purpose of salvaging those items warranting conservation/protection measures. Site avoidance by the Man-Disturbed Sites Rehabilitation Program is suggested.

SCHEDULE:	10 years (2000)
THEME:	industrial
UNIQUE:	no

SIGNIFICANCE:

low

CRM_STATUS:

Site requires periodic monitoring and assessment to determine if the machine parts can be salvaged.

COMMENTS:

DIAGRAM:

Originally in database: Site comprises the remains of two iron/wooden machinery sections. The site is vulnerable to water erosion as the creek flows through and over the features.

From Choquette (1989 ARDA): Site 530T comprises the remains of historic iron-wood composite machinery parts. These are partially submerged in an unnamed creek flowin from the glacio-fluvial terrace overlooking the Kicking Horse River, adjacent to Safety switch No. 1 of the former Big Hill rail grade in Watershed Unit 5. The site is extremely vulnerable to water erosion. The function of these historic machinery parts is at present unknown. It seems likely that a relationship with the historic rail grade may be the case. The site is felt to be of low archaeological significance and of moderate archaeological assessment potential. Archaeological monitoring is recommended every 10 years.

From Sumpter et al (1992): Recorded in 1990, site 530T consists of historic railroad machinery situated adjacent to former Safety Switch No. 1 spur line on the C.P.R.'s abandoned 1884 Big Hill route. The site is located on a narrow bench approximately 20 m above the north side of the Trans-Canada Highway, overlooking the abandoned C.P.R. steel truss Kicking Horse River bridge, approximately 600 m west of the confluence of the Kicking Horse River and Sherbrooke Creek (Figs. 2, 6, 7). The site locale is situated on inclined morainal deposits supporting a spruce forest cover. Currently exposed to stream flow and natural decay, the site's integrity is also threatened by a park sponsored site clean-up/rehabilitation program. The historic debris comprises undetermined engine components and other miscellaneous parts possibly associated with mechanized railway equipment, steel ferrous rods, threaded bolts with square nuts, pipes, plates, and wooden members. The machinery parts are concentrated in a 50 square metre area, approximately 12 m below the abandoned safety switch spur.

Safety Switch No. 1 represented one of three safety switches employed by the C.P.R. on their steep, 6.4 km long, 4.5 per cent gradient descent into the Kicking Horse Valley. Installed as safeguards, Burrows mentions that:

... the switches were normally set for the inclined runaway track and were opened for the mainline only after each downgrade train was proven to be properly under control by coming to a complete stop. These elaborate precautions did not completely eliminate runaways and wrecks, but fortunately no serious accidents occurred with passenger trains. (Burrows 1981:35)

The C.P.R. continued to use the "temporary" Big Hill line and its safety equipment until 1909, when the steep alignment was replaced by the more manageable Spiral Tunnel Diversion.

At present, site 530T represents one of a small number of extant features in the park associated with railroading activity along the C.P.R.'s original 1884 mainline. In view of the site's fragile state, it is recommended that the asset be reviewed by Western Region's Historic Resource Conservation Unit for the purpose of salvaging those items warranting conservation/protection measures. Site avoidance by the Man-Disturbed Sites Rehabilitation Program is suggested.

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
530T-1E	530	HP wire insulator on tree, first safety switch	25/09/2009	D. Ebert	S
530T-1M	530	view of historic horse-drawn earth scoop; Ross Lake Tr	05/07/1988	Sumpter	NNE
530T-2E	530	1902 straightened safety switch grade	25/09/2009	D. Ebert	NW
530T-2M	530	view of historic horse-drawn earth scoop; Ross Lake Tr	05/07/1988	Sumpter	NW
530T-3E	530	1902 straightened safety switch grade, looking back down towards TCH	25/09/2009	D. Ebert	SE
530T-3M	530	historic machinery/industrial debris associated with safety switch no. 1 on CPR's 1886 Big Hill	14/06/1990	Sumpter	SE
530T-4E	530	top of original 1884 s-curve safety switch grade, looking towards TCH	25/09/2009	D. Ebert	SE
530T-5E	530	bent angle bracket at end of S-curve safety switch grade	25/09/2009	D. Ebert	
530T-6E	530	remains of boxcar wreckage off end of S-curve safety switch grade	25/09/2009	D. Ebert	W
530T-7E	530	portion of broken brake wheel, in boxcar wreckage	25/09/2009	D. Ebert	
530T-8E	530	group of artefacts set out to test for looting or disturbance	25/09/2009	D. Ebert	
530T-9E	530	W end of boxcar wreckage facing E	25/09/2009	D. Ebert	E
530T-10E	530	detail of coupler facing E	25/09/2009	D. Ebert	E
530T-11E	530	W end of boxcar debris field facing W	25/09/2009	D. Ebert	W
530T-12E	530	detail of coupler pin release mechanism	25/09/2009	D. Ebert	
530T-13E	530	roof end of brake stem, Dennis Letourneau showing orientation of brake wheel	25/09/2009	D. Ebert	E

PHOTO_CATALOG	NUMBER	SUBJECT	MM_DD_YY	PHOTOGRAPHER	DIRECTION
530T-14E	530	detail of brake stem from roof end to break linkage end, facing W	25/09/2009	D. Ebert	W
530T-15E	530	detail of overturned bolster for truck (W end of boxcar wreckage)	25/09/2009	D. Ebert	W
530T-16E	530	detail of in situ bolster for truck (E end of boxcar wreckage)	25/09/2009	D. Ebert	
530T-17E	530	detail of grab irons (NW side of boxcar wreckage) either for side ladder or to open hatch	25/09/2009	D. Ebert	
530T-18E	530	detail of D. Letourneau holding damaged brake assembly (far S edge of debris field)	25/09/2009	D. Ebert	
530T-19E	530	detail of D. Letourneau and brake linkage, on far S edge of debris field	25/09/2009	D. Ebert	
530T-20E	530	detail of coal frag, SW of debris field and S of 1950s bulldozer road	25/09/2009	D. Ebert	
530T-21E	530	view of boxcar wreckage field in clearing from W side, facing E to end of S-curve safety switch	25/09/2009	D. Ebert	E
530T-22E	530	view of site area from TCH and pullout for Old Bridge on the Big Hill	25/09/2009	G. Langemann	N
530T-23E	530	view of site area from TCH and pullout for Old Bridge on the Big Hill, site in L centre	25/09/2009	G. Langemann	NE



CATALOGUE	NUMBER	YEAR	SUBJECT	DRAWN_BY	STORAGE_LOCATION
530T-90X-1	530	90	SITE PLAN: FIGURE 6 EURO-CANADIAN SITE 530T - YOHO NATIONAL PARK WRA-90-1.3 (1990/91 YOHO EARP (SALVAGE) ARCHAEOLOGY PROGRAM)		CAB C; PAGE SIZE
530T-90D-1E	530	90	Figure 6 Euro-Canadian Site 530T Yoho National Park WRA-90-1.3	R. Lalonde	CD133

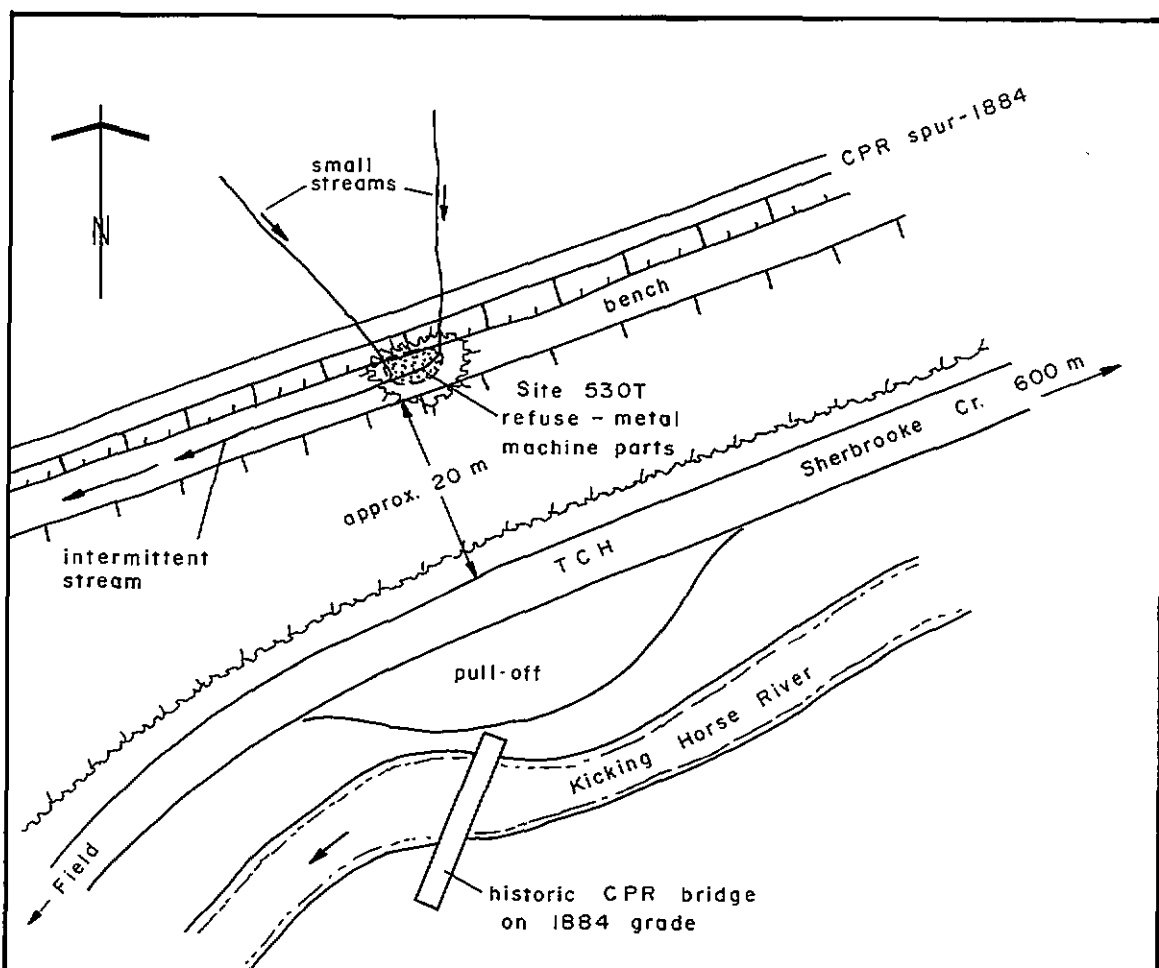


Figure 6
Euro-Canadian Site 530T
Yoho National Park
WRA-90-1.3

not to scale

Legend	
	top of slope
	base of slope
	treeline

DESIGNATION	NUMBER	DESCRIPTION	INVESTIGATION_DATE	ASSIGNED_BY
530T1A1	530	CPR derailment site; surface collection of train car parts.	07/30/2010	A. Woods

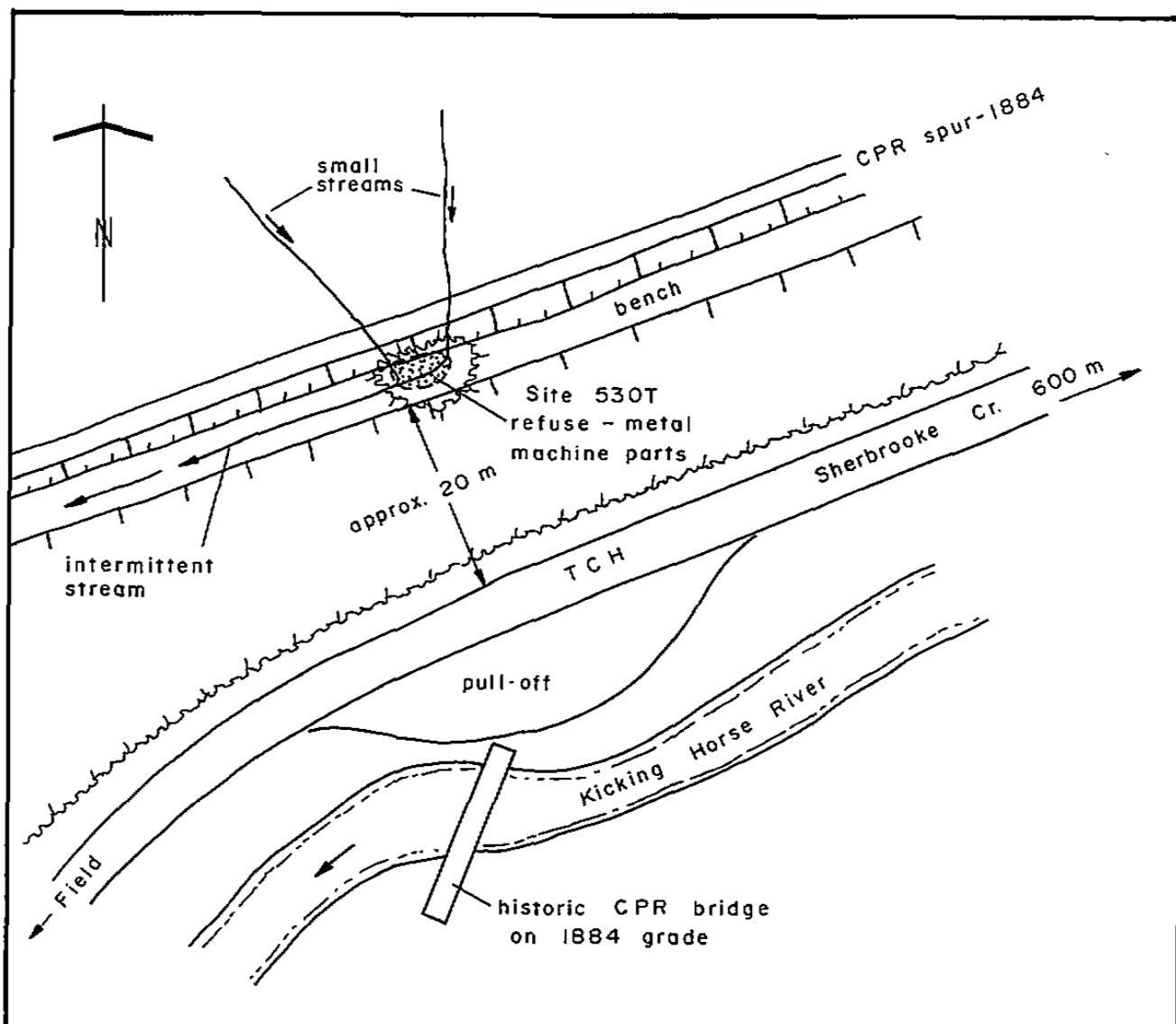
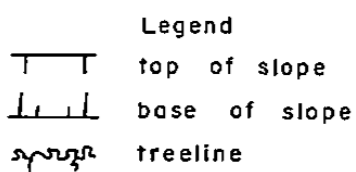


Figure 6
Euro-Canadian Site 530T
Yoho National Park
WRA-90-1.3

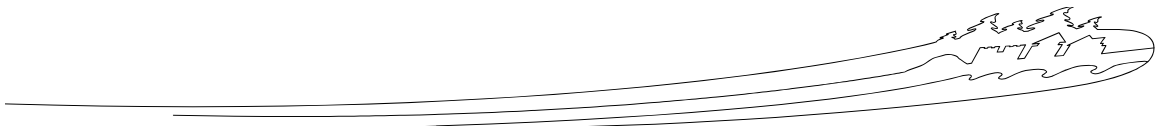
not to scale



April 2016



Appendix E Visitor Experience Report: BC Ministry of Transportation and Infrastructure – Annual Day of Week Summary for 2014



BC Ministry of Transportation and Infrastructure

Annual Day of Week Summary for 2013

Site Names: Kicking Horse P-37-5EW - NY

County: N/A

Funct. Class: Rural Local System

Location: Route 1, 15.0 km east of Route 95 (at the east end of Park Bridge), GoldGrowth Factor Group: Highly Seas

Seasonal Factro Group: Highly Seas

Daily Factor Group: Highly Seas

Axle Factor Group:

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	MADT	MAWDT	MAWET	% POS
Jan	3,176	2,567	3,136	3,129	3,274	3,547	2,826	3,094	3,026	3,001	52
Feb	3,695	3,673	3,046	3,239	3,670	4,251	3,114	3,527	3,407	3,404	49
Mar	4,687	3,451	3,376	3,646	4,750	4,816	3,724	4,064	3,806	4,206	47
Apr	4,522	4,716	4,068	3,966	4,445	4,677	3,553	4,278	4,299	4,038	52
May	5,231	6,647	5,038	4,777	5,812	6,615	4,455	5,510	5,568	4,843	50
Jun	5,592	4,851	4,397	4,780	5,227	6,338	4,783	5,138	4,814	5,188	46
Jul	10,400	9,556	7,930	8,310	9,224	10,610	9,653	9,383	8,755	10,026	49
Aug	12,786	12,334	9,543	9,271	11,514	13,784	11,557	11,541	10,665	12,171	51
Sep	7,742	7,882	6,302	5,920	6,448	7,379	5,585	6,751	6,638	6,663	53
Oct	4,391	5,935	4,796	4,643	5,112	6,516	4,298	5,099	5,121	4,344	49
Nov	2,791	3,387	3,056	3,382	3,525	3,827	2,703	3,238	3,337	2,747	48
Dec											

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	AADT	AAWDT	AAWET	% POS
2013	5,910	5,909	4,971	5,005	5,727	6,578	5,114	5,602	5,403	5,512	50
2012	5,457	5,513	4,586	4,550	5,383	6,110	4,945	5,221	5,008	5,201	49
2011	5,210	5,355	4,565	4,513	5,522	5,948	4,495	5,087	4,989	4,852	49
2010	5,613	5,463	4,637	4,790	5,493	6,006	4,850	5,265	5,096	5,231	49
2009	5,491	5,189	4,530	4,484	5,159	5,858	4,784	5,071	4,841	5,138	49
2008	5,126	5,103	4,464	4,418	5,016	5,793	4,723	4,949	4,750	4,925	49
2007											
2006											
2005											
2004											



Appendix F Definition of Criteria Used to Describe Predicted Residual Effects for Valued Components and/or Key Indicators





Table F-1: Definition of Criteria Used to Describe Predicted Residual Effects for Valued Components and/or Key Indicators

Criteria	Definition	Natural Resources Description	Cultural Resources Description
Direction	Direction relates to the value of the effect in relation to the environment.	Positive – net gain or benefit; effect is desirable	Positive – an improvement over existing values or conditions
		Neutral – no change compared with existing conditions and trends	Neutral – no change compared with existing conditions and trends
		Negative – net loss or adverse effect; effect is undesirable	Negative – a less favorable change relative to existing values or conditions
Magnitude	Magnitude is the intensity of the effect, or a measure of the degree of change from existing (baseline) conditions.	Negligible – no detectable change is expected from existing values	Negligible – no detectable change is expected from existing values
		Low – effect occurs that might be detectable, but is expected to be within the range of existing or guideline values, or within the range of natural variability	Low – the change has no effect on the cultural resources setting beyond that of a nuisance (annoyance) value
		Moderate – effect is expected to be at or to slightly exceed the limits of existing or guideline values – clearly an effect, but unlikely to be a management concern ^(a)	Moderate – the change modifies the cultural resources setting, but there is no change in the system
		High – effect is expected to exceed the limits of existing or guideline values – the effect can pose a serious risk and represents a management concern ^(a)	High – the change is large enough to result in a change of cultural resources
Geographic Extent	Geographic extent refers to the spatial extent over which an environmental or socio-economic effect will occur.	Local – the effect is confined to the Local Study Area	Local – the effect is confined to the LSA
		Regional – the effect extends beyond the LSA but is confined within the region (i.e., Yoho National Park)	Regional – the effect extends to users throughout Yoho National Park
		Beyond regional – the effect extends beyond Yoho National Park	Beyond regional – the effect extends beyond Yoho National Park





Table F-1: Definition of Criteria Used to Describe Predicted Residual Effects for Valued Components and/or Key Indicators

Criteria	Definition	Natural Resources Description	Cultural Resources Description
Duration/ reversibility	Duration is the period of time over which the natural or cultural resource effect will be present. The amount of time between the start and end of a Project activity or stressor, plus the time required for the effect to be reversed. Duration and reversibility are functions of the length of time the valued component (VC)/key indicator are exposed to Project activities.	Short-term – the effect occurs during construction or during operation as a result of maintenance activities, and is reversible before or during operation	Short-term – the effect occurs during construction or during operation as a result of maintenance activities, and is reversible before or during operation
	Reversibility is an indication of the potential for recovery of the VC/key indicator from the Project effect. Reversible implies that the effect will not result in a permanent change of state of the VC/key indicator compared to similar environments not influenced by the Project (similar being an environment of the same type, region and time period). For effects that are permanent, the effect is determined to be irreversible.	Medium-term – the effect occurs during construction or operation and is reversible on completion	Medium-term – the effect occurs during construction or operation and is reversible on completion
		Long-term – the effect occurs during construction or operation and persists beyond completion, but is reversible	Long-term – the effect occurs beyond the operational life of the Project, but is reversible
		Permanent – the effect occurs during construction or operation and is irreversible	Permanent – the effect occurs during construction or operation and is irreversible
Frequency	Frequency refers to the occurrence regularity of the effect over the duration of the Project.	Infrequent – the effect is expected to occur rarely	Infrequent – the effect is expected to occur rarely
	Discussions on seasonal considerations are made when they are important in the evaluation of the effect.	Frequent – the effect is expected to occur intermittently	Frequent – the effect is expected to occur intermittently
		Continuous – the effect is expected to occur continually	Continuous – the effect is expected to occur continually
Probability	Probability of occurrence is a measure of the likelihood that a Project activity will result in an effect.	Unlikely – the effect is not likely to occur	Unlikely – the effect is not likely to occur
		Possible – the effect may occur, but is not likely	Possible – the effect may occur, but is not likely
		Probable – the effect is likely to occur	Probable – the effect is likely to occur
		Certain – the effect will occur	Certain – the effect will to occur

(a) Effects that pose a management concern can require actions such as research, monitoring or recovery initiatives.

Note: If a residual effect was identified as positive or neutral, no additional assessment criteria other than likelihood were summarized for that key indicator.



**Table F-2: Definitions of the Significance Determination of Predicted Residual effects on Valued Components**

Significance	Definition
Natural Resources Valued Components	
Not significant	The effect might be detectable, but is not predicted to result in a change that will alter the sustainability of the valued component (VC) beyond an acceptable level.
Significant	The effect is measurable, and is predicted to result in a change to the VC that will alter its sustainability beyond an acceptable level.
Cultural Resources Valued Components	
Not significant	The degree of change is considered to be either no change or negligible to minor changes (very minor changes, or slight changes to the resource)
Significant	The degree of change is considered to be moderate change (resource is clearly modified) or major change (resource is totally altered and removed/destroyed).

