



BMC MINERALS (NO.1) LTD

KUDZ ZE KAYAH PROJECT

RESPONSE #5 TO YESAB EXECUTIVE COMMITTEE INFORMATION REQUEST KZK

PROJECT PROPOSAL

April 2020

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APPENDIX A. PROPOSED RIGHT OF WAY FOR ACCESS ROAD AND TYPICAL CROSS SECTIONS FOR ROAD UPGRADE

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Definition
BMC	BMC Minerals (No 1.) Ltd.
CAC	Criteria Air Contaminants
cm	centimetre
FCH	Finlayson Caribou Herd
h	hour
ha	hectare
IR	Information Request
km	kilometre
km ²	square kilometre
KZK	Kudz Ze Kayah
LFN	Liard First Nation
m ³	cubic metre
masl	metre above sea level
MSDS	Material Safety Data Sheet
PAH	polycyclic aromatic hydrocarbon
PHC	petroleum hydrocarbon compound
RRDC	Ross River Dena Council
VOC	volatile organic compound
YESAB	Yukon Environmental and Socio-economic Assessment Board

1. INTRODUCTION

BMC Minerals (No.1) LTD (BMC) submitted the Kudz Ze Kayah (KZK) Project Proposal to the Yukon Environmental and Socio-economic Assessment Board (YESAB) for a Screening level assessment in March 2017(BMC, 2017a).

In November 2019 YESAB prepared the Draft Screening Report (YESAB, 2019) and made it available for public comment. The Rules for Screenings Conducted by the Executive Committee (YESAB, 2005) allow for a 30 day comment period but YESAB can extend the comment period by an additional 30 days. For this assessment the entire 60 day period was provided for public comment rather than extending the 30 day period after the initial 30 days had passed. Despite the Rules for Screening by the Executive Committee, on February 14th, 2020 YESAB extended the public comment period until May 31, 2020. Therefore, the current public comment period on the Draft Screening Report is over 6 months versus the maximum of two months provided for in the Rules for Screenings. YESAB has also stated that the commencement of drafting the final screening report will only commence once it has determined it has sufficient information to do so. Thus, providing additional uncertainty with respect to the completion of the assessment.

Given the unprecedented length of the public comment period, YESAB has issued BMC an information request prior to the public comment period ending (Information Request #5) (YESAB, 2020). The information request is based on their review of the public comments that had been received as of March 13, 2020 (YESAB, 2020). Table 1-1 presents the parties that had submitted comments which were reviewed by YESAB.

Table 1-1: Comments Received and Reviewed by YESAB as of March 13, 2020

Party	Document Description	YOR Document #
Federal Departments	Federal Comments Regarding KZK Project	#2017-0083-3256
Dena Cho Environmental and Remediation Inc.	Dena Cho Draft Screening Report	#2017-0083-0728
BMC Minerals (No.1) LTD	Response to Draft Screening Report	#2017-0083-2320
YESAA Program Ross River Dena Council	Comment Submission – Ross River Dena Council YESAA Program	#2017-0083-1434
Ross River Dena Council (RRDC)	Clarification indicating some statements in RRDC’s YESAA Program Comment Submission do not accurately reflect RRDC’s position	#2017-0083-1801

Party	Document Description	YOR Document #
Yukon Big Game Outfitters Ltd	Email	#2017-0083-9753
Yukon Conservation Society	Yukon Conservation Society Comments on Kudz Ze Kayah YESAB Screening Report	#2017-0083-9445
Yukon Government	Yukon Government Compiled Comments on KZK Draft Screening Report	#2017-0083-3398
Canadian Parks and Wilderness Society – Yukon Chapter	Comment Submission	#2017-0083-8029

This Response Report #5 provides the additional information requested by YESAB. For clarity and ease of understanding, BMC has listed the Information Requests (IRs) from YESAB’s Information Request #5 (in black text) followed BMC’s response (in blue text). The requests and responses follow the same order as YESAB’s IR #5.

2. FINLAYSON CARIBOU HERD

2.1 R5-1

To increase confidence in the effects prediction and characterization for caribou, if there is any newly available caribou survey data relevant to the project, please provide it.

BMC has been collaborating with Yukon’s Department of Environment (Yukon Environment) on collection of Finlayson Caribou Herd (FCH) survey data since 2015. All data are shared with Yukon Environment on an ongoing basis as per permit requirements. All surveys follow the methods presented in the Wildlife Baseline Report (Appendix E-8 of the Project Proposal) (BMC, 2017a).

The following information summarizes data collected until the March 2019 late winter survey. All data have been included rather than just new data to allow for interpretation of data over time.

A post-calving and rutting survey was also completed in 2019 in collaboration with Yukon Environment; however, the data are still being analyzed. The results will be sent to Yukon Environment as per the permit requirements. Note that the additional data continues to confirm the interpretation and conclusions of the data provided to date and the later 2019 data are expected to continue to confirm the conclusions.

2.1.1 SURVEY RESULTS

This section presents the results of the 2015 through March 2019 caribou surveys, including late winter, post calving, rut, and early winter.

During this period, human activity in the Project area was primarily exploration activities for this Project and hunting, including an active outfitter concession. The intensity of exploration activity varied between 2015 and 2019. The local outfitter has a permanent camp located 12.5 km to the west of the Project site.

Late Winter

The focus of the late winter ungulate surveys is to assess the distribution of moose and caribou in the Project area. Any caribou observed during the survey were recorded. This study is useful in determining habitat use by caribou during late winter. Generally, the FCH core winter habitat is located further north and west than the Project footprint, in the lowlands closer to the Pelly River. Therefore, it was anticipated there would be few caribou sightings during the surveys.

Annual late winter survey details are presented in Table 2-1.

Table 2-1: Late Winter Ungulate Survey Details

Survey Date	Observers	Aircraft ¹	Total Survey Time (h)	Survey Path Length (km)	Survey Area ² (km ²)	Survey Intensity (minutes/km ²)
March 25-27, 2015	Led by EDI G. Pelchat (EDI biologist) T. Morgan (Yukon Environment biologist) N. Etzel (RRDC member)	Cessna 206	14.2	2,319	1,855	0.46
March 20-22, 2016	L. Knight (AEG biologist) Observers not recorded	Jet Ranger	25.5	2,626	2,101	0.73
March 23-24, 2017	R. Farnell (Wildlife biologist) D. Yacura (AEG biologist) D. Dick (BMC, RRDC member)	Jet Ranger	11.3	1,570	1,256	0.54
March 16-17, 2018	G. Rivest (AEG biologist) T. Morgan (Yukon Environment biologist) J. Inkster (BMC, RRDC member)	Jet Ranger	10.7	1,417	1,134	0.57
March 9-10, 2019	G. Rivest (AEG biologist) T. Morgan (Yukon Environment biologist) C. Jakesta (BMC, LFN member)	Jet Ranger	13.9	1,395	1,116	0.75

¹ Fixed wing surveys were carried out at 120-150 km/h and 200-300 m above ground. Helicopter surveys were carried out at 80-90 km/h and 200-300 m above ground.

² Assumes area surveyed covers 400 m on either side along the length of the flight path.

During the 2015 survey, a total of 19 caribou were observed (Table 2-2), along with numerous tracks in the low elevation habitat in the northwest section of the Project site on lakes and meadows. The conditions for the survey were good to excellent, with recent snow allowing fresh tracks to be distinguished from older tracks. Only fresh caribou tracks and sign were tallied when intercepted by the flight path. Older tracks, feeding craters, and beds were also observed, but not counted as they would have been more than 72 hours old. Caribou in forested areas were difficult to see due to tree cover; therefore, the counts in the forested areas are likely lower than the actual numbers present. The forested areas in the lowlands are mature to old growth white and black spruce, with many wetlands and small lakes. Regional snow depths were normal in March 2015.

During the 2016 survey, more caribou were using the Project area, with a total of 143 caribou observed in 20 groups. Of those 143 animals, there were 109 cows, 16 bulls, 11 calves, and 7 unknown sex (Table 2-2). Recruitment rate could not be calculated for the limited count. The 2016 survey had good observation conditions and fresh snow had fallen within three days of the initial day of the survey. The 2016 caribou observations and track sightings are shown in Figure 2-1.

During the 2017 late winter survey, a total of 198 caribou (175 adults and 23 calves) were observed in 21 groups (Table 2-2). Band sizes ranged from three to 19 with a similar distribution as in 2015 and 2016. The highest number of observations were southwest of Finlayson Lake, but caribou were not distributed as far east as in 2016. Snow depths regionally were less than normal (Yukon Environment, 2017a). At the low elevation (1,445 masl) snow sampling station at the Project area, snow depth was 65.2 cm during the March 2017 survey compared to 41 cm measured in March 2016.

During the 2018 late winter survey, a total of 61 caribou (56 adults and five calves) were observed in five groups (Table 2-2). Band sizes ranged from 9 to 18 and were all located in the northwest portion of the Regional Study Area. Snow depths regionally were just below normal at 96% (Yukon Environment, 2018). At the low elevation (1,445 masl) snow sampling station at the Project area, snow depth was at 67 cm, comparable to the March 2017 measurement.

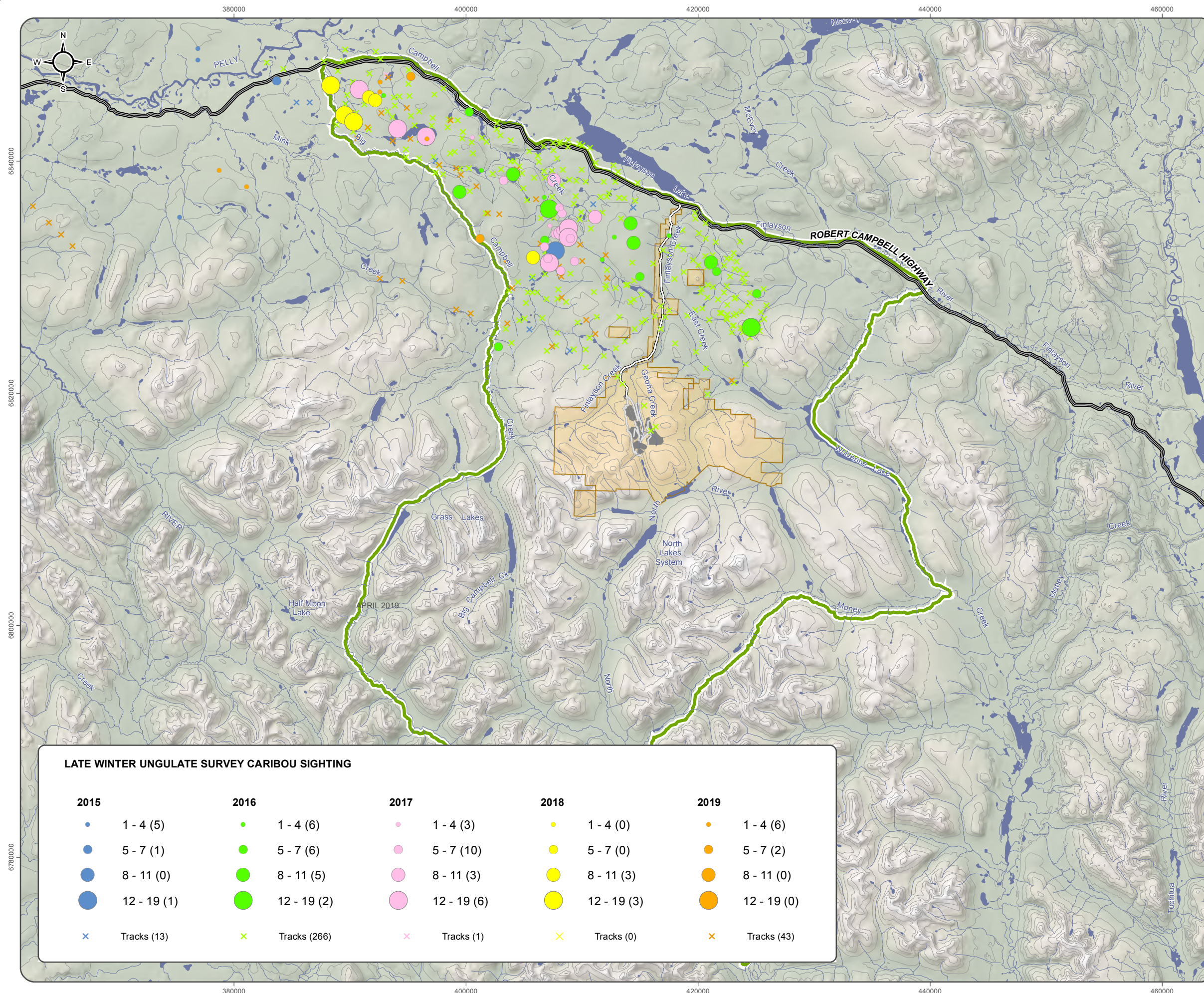
In 2019, a total of 22 caribou were observed in six groups (three cows, three calves, three bulls, and 13 unclassified adults). Band size ranged from three to six animals, with one lone caribou observed. Similar to other years, caribou were observed in the lowlands in the northwest portion of the Regional Study Area (Figure 2-1). Ten caribou were also observed outside of the Regional Study Area and were not included in the summary results. Snow depth at the low elevation snow sampling station (1,445 masl) was 20 cm, which is lowest snow depth recorded during the baseline period (2015-2019) and much lower than recorded during all previous years.

Table 2-2: Summary of Caribou Observations During the Late Winter Ungulate Surveys (2015–2019)

Year	Number of Groups	Cows	Calves	Bulls	Unclassified	Total
2015	-	-	-	-	-	19
2016	20	109	11	16	7	143
2017	21	-	23	-	175	198
2018	5	0	5	0	56	61
2019	6	3	3	3	13	22

FIGURE 2-1
LATE-WINTER UNGULATE SURVEY -
CARIBOU OBSERVATIONS 2015 TO 2019

APRIL 2019



- Location of Proposed Mine Infrastructure
- Regional Study Area (Game Management Subzone 10-7)
- BMC Minerals (No.1) Ltd. Mineral Claim Areas
- Tote Road/Proposed Access Road
- Proposed Mine Road
- Watercourse
- Waterbody

LATE WINTER UNGULATE SURVEY CARIBOU SIGHTING

2015	2016	2017	2018	2019
1 - 4 (5)	1 - 4 (6)	1 - 4 (3)	1 - 4 (0)	1 - 4 (6)
5 - 7 (1)	5 - 7 (6)	5 - 7 (10)	5 - 7 (0)	5 - 7 (2)
8 - 11 (0)	8 - 11 (5)	8 - 11 (3)	8 - 11 (3)	8 - 11 (0)
12 - 19 (1)	12 - 19 (2)	12 - 19 (6)	12 - 19 (3)	12 - 19 (0)
Tracks (13)	Tracks (266)	Tracks (1)	Tracks (0)	Tracks (43)

* Numbers in brackets represent the number of groups seen of this size range



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From 1986 to 2017, six late winter population censuses were completed by Yukon Environment for the FCH, and a population estimate in 1982. The methods used for these late winter surveys, conducted by Yukon Environment biologists, have been consistent. Results show that the population was highest in 1990 (5,950; SE=641) a year after the wolf control program ended. The four censuses that followed in 1996, 1999, 2007, and 2017 have showed a declining trend. The demographics derived from the March 2007 survey found that the FCH had 62.9% cows, 13.6% calves, 9.8% young bulls, and 13.2% mature bulls, indicating a ratio of 22 calves per 100 cows and 37 bulls per 100 cows (Farnell, 2009). While the herd’s winter range does not usually include the Project site, the late winter 2007 census showed a concentration of bulls around the Tote Road. This may have been a result of an unusually low snowpack further east of Ross River (Adamczewski et al., 2010).

A late winter census was completed in March 2017 by Yukon Environment and BMC Minerals. Based on the survey data from this most recent survey, the FCH population is estimated to be 2,712 caribou (SE=131 with a 95% confidence interval of 2,454 to 2,970 caribou. As per Yukon Environment’s memo (2017), the FCH has continued to decline, although the decline in the last decade has slowed. Between 1999 and 2008, the herd decline was approximately 25% with an average annual growth rate of 0.96. Between 2007 and 2017, the decline was 12% with an average annual growth rate of 0.99.

During the March 2017 survey, 1,139 of the 1,785 animals observed were classified by sex and age. The herd size was estimated to be 2,712 with 58% cows, 18% calves, and 24% bulls with a ratio of 30 calves per 100 cows and 42 bulls per 100 cows (Yukon Environment, 2017b).

Post Calving

The post calving surveys conducted between 2015 and 2018, survey dates, observers and intensity are presented in Table 2-3.

Table 2-3: Post Calving Caribou Survey Details

Survey Date	Observers	Aircraft ¹	Total Survey Time (h)	Survey Path Length (km)	Survey Area ² (km ²)	Survey Intensity (minutes/km ²)
July 10-15, 2015	R. Farnell (Wildlife biologist) L. Knight (AEG biologist) D. Dick (BMC, RRDC member)	EC120	6.8	1,025	820	0.50
July 6, 2016	R. Farnell (Wildlife biologist) L. Knight (AEG biologist)	Jet Ranger	8.1	932	746	0.65

Survey Date	Observers	Aircraft ¹	Total Survey Time (h)	Survey Path Length (km)	Survey Area ² (km ²)	Survey Intensity (minutes/km ²)
	D. Dick (BMC, RRDC member)					
July 12-13, 2017	L. Knight (AEG biologist) G. Rivest (AEG biologist) D. Dick (BMC, RRDC member) for July 12 J. Inkster (BMC, RRDC member) for July 13	Jet Ranger	9.6	1,368	1,094	0.53
July 10-11, 2018	G. Rivest (AEG biologist) T. Morgan (Yukon Environment) D. Dick (BMC, RRDC Member)	Jet Ranger	9.6	910	728	0.79

¹ Helicopter surveys were carried out at 80-90 km/h and 200-300 m above ground.

² Assumes area surveyed covers 400 m on either side along the length of the flight path.

During the 2015 post calving survey a total of 93 caribou were observed. Of those 93 animals, there were 61 cows, 12 calves, 8 immature bulls, and 12 mature bulls. Locations of caribou observations from the post calving surveys are presented in

Figure 2-2.

During the 2016 post calving survey, a total of 145 caribou were observed. Of those 145 animals, there were 101 cows, 18 calves, 11 immature bulls, 11 mature bulls, and four unclassified.

During the 2017 post calving survey, a total of 233 caribou were observed. Of those 233 animals, there were 147 cows, 43 calves, 1 immature bull, 40 mature bulls and 2 unclassified.

In 2018, a total of 197 caribou were observed in the study area.

Table 2-4: Summary of Caribou Post Calving Survey Observations (2015–2018)

Year	Cows	Calves	Immature Bulls	Mature Bulls			Unclassified	Total
2015	61	12	8	12			0	93
2016	101	18	11	11			4	145
2017	147	43	1	40			2	233
2018	30	35	3	17			112	197

**KUDZ ZE KAYAH PROJECT
WILDLIFE BASELINE REPORT**

**FIGURE 2-2
FINLAYSON CARIBOU HERD
POST-CALVING OBSERVATIONS
2015-2018**

POST-CALVING SURVEY CARIBOU SIGHTING

Year 2015	Year 2016
● 1 - 5 (23)	● 1 - 5 (46)
● 6 - 10 (2)	● 6 - 10 (6)
● 11 - 15 (0)	● 11 - 15 (0)
● 16 - 21 (2)	● 16 - 21 (1)
Year 2017	Year 2018
● 1 - 5 (48)	● 1 - 5 (33)
● 6 - 10 (8)	● 6 - 10 (9)
● 11 - 15 (1)	● 11 - 15 (2)
● 16 - 21 (3)	● 16 - 21 (0)

- Location of Proposed Infrastructure
- Regional Study Area (Game Management Subzone 10-7)
- BMC Minerals (No.1) Ltd. Mineral Claim Areas
- Tote Road/Proposed Access Road
- Proposed Mine Road

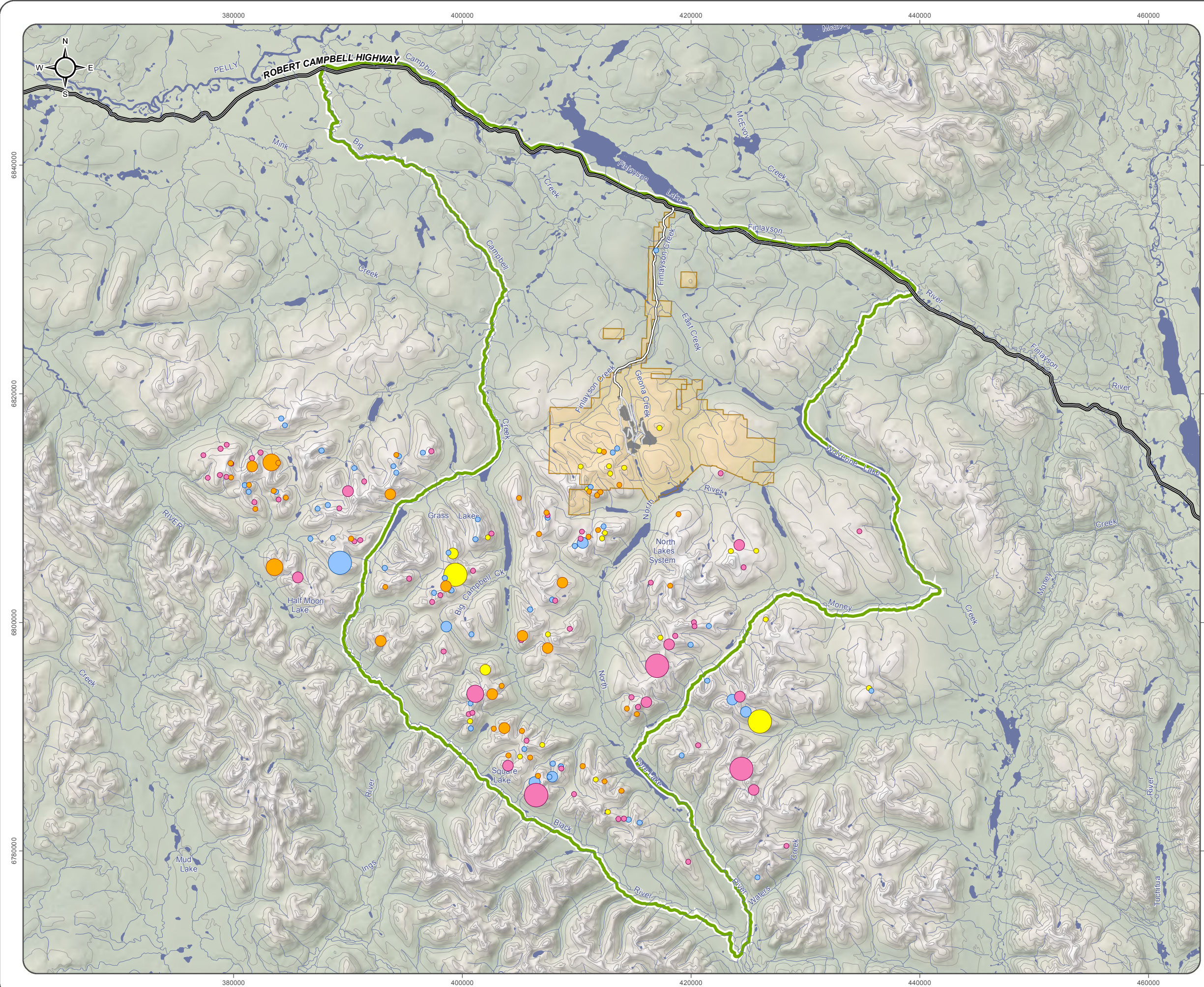
* Numbers in brackets represent the number of groups seen of this size range



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Rut

Caribou rut surveys were conducted between 2015 and 2018. Details of each survey, including dates, observers and survey intensity, are provided in Table 2-5.

Table 2-5: Rut Caribou Survey Details

Survey Date	Observers	Aircraft ¹	Total Survey Time (h)	Survey Path Length (km)	Survey Area ² (km ²)	Survey Intensity (minutes/km ²)
October 2-4, 2015	R. Farnell (Wildlife biologist) T. Morgan (Yukon Environment biologist) D. Dick (BMC, RRDC member)	A-Star 350 B	10.3	1,540	1,232	0.50
October 3-4, 2016	R. Farnell (Wildlife biologist) T. Morgan (Yukon Environment biologist) D. Dick (BMC, RRDC member)	Bell Jet Ranger	11.1	1,211	969	0.69
October 1-2, 2017	R. Farnell (Wildlife biologist) G. Rivest (AEG biologist) C. Foster (Yukon Environment)	Bell Jet Ranger	9.6	1,137	910	0.63
October 2-3, 2018	G. Rivest (AEG biologist) T. Morgan (Yukon Environment biologist) J. Inkster (BMC, RRDC member)	Bell Jet Ranger	11.3	1,080	864	0.78

¹ Helicopter surveys were carried out at 80-90 km/h and 200-300 m above ground.

² Assumes area surveyed covers 400 m on either side along the length of the flight path.

In 2015, the caribou rut survey was conducted on October 2 to 4. A total of 712 caribou were observed during the survey including 449 cows, 123 calves, 62 immature bulls, and 78 mature bulls. This results in a recruitment rate of 27 calves per 100 cows and a sex ratio of 31 bulls per 100 cows (Table 2-6).

The 2016 survey was completed on October 3 and 4. A total of 660 caribou observed in 60 groups with a recruitment rate of 27 calves per 100 cows and 39 bulls per 100 cows.

In 2017, the survey was conducted on October 1 and 2. A total of 463 in 48 groups, with a recruitment rate of 37 calves per 100 cows, and a sex ratio of 42 bulls per 100 cows.

The 2018 survey was completed on October 2 and 3. A total of 650 caribou were observed in 60 groups with the demographics listed in Table 2-6. Because of the atypical ratio of immature bulls, it is believed that many of the cows were misidentified as immature bulls during the survey. Therefore, cow to calf ratio and sex ratio were not calculated. Results of the 2015 through 2018 rut surveys are summarized in Table 2-6. The flight paths from the survey for all years are shown in Figure 2-3.

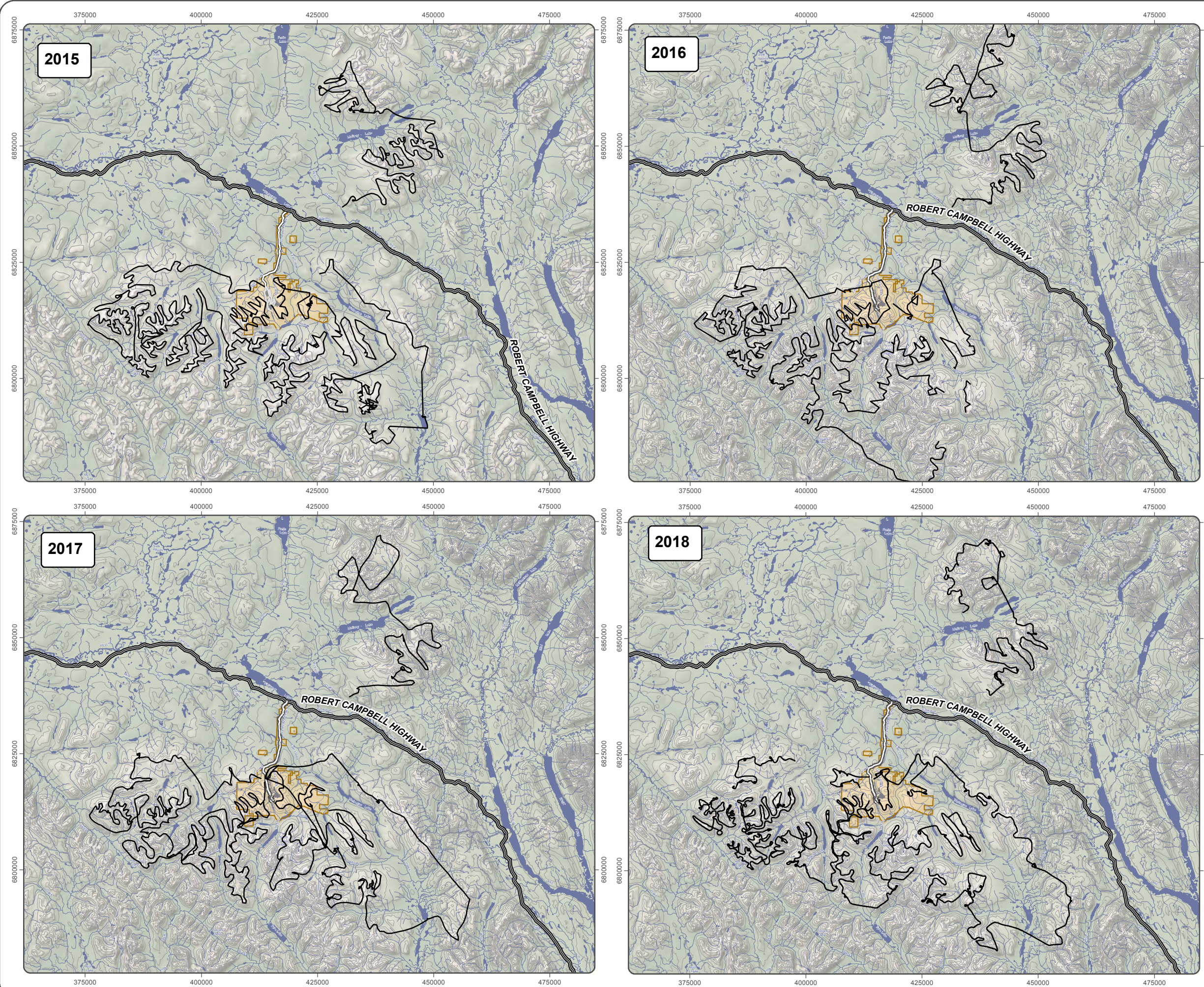
Table 2-6: Summary of Caribou Rut Survey Observations (2015–2018)

Year	Cows	Calves	Immature Bulls	Mature Bulls	Unclassified	Total	Recruitment Rate (calves/100 cows)	Sex Ratio (bulls/100 cows)
2015	449	123	62	78	-	712	27	31
2016	398	107	73	82	-	660	27	39
2017	260	95	56	52	-	463	37	42
2018	298*	96	153*	91	12	650	n/a	n/a

*During the 2018 survey, it is assumed that some cows were incorrectly classified as immature bulls since the number of immature bulls is inconsistent with typical survey results. For this reason, recruitment rate and sex ratio can not be accurately calculated.

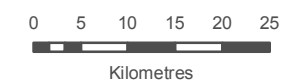
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**FIGURE 2-3
FINLAYSON CARIBOU HERD
2015-2018 RUT SURVEY FLIGHT
LINES**
MAY 2019



- Caribou Rut Survey Flight Lines
- Location of Proposed Infrastructure
- BMC Minerals (No.1) Ltd. Mineral Claim Areas
- Tote Road/Proposed Access Road
- Watercourse
- Waterbody

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The alpine plateaus to the southwest of the Project, within 10 km of the proposed Project footprint, have been used by caribou in all recent survey years (2015–2018). These survey results show that caribou are present in and adjacent to the Project site during the rutting period.

Caribou rut surveys have been carried out around the Project area since 1982. Due to the potential for detrimental outcomes to caribou from providing location data to the public during hunting season, Yukon Environment requires that the caribou rut location information not be made public as per the data sharing agreement between Yukon Environment and BMC. Instead, the caribou distribution data are presented in terms of relative distance from the Project without providing direction. Location data were compiled for the period from 1982 through 2018 and is presented as a percentage of distribution within 5 km, 10 km, and 15 km from the Project footprint (Table 2-7).

Figure 2-4 and Figure 2-5 graph the counts of individuals and groups, respectively, located in three distance ranges (0–5 km, 5–10 km, and 10–15 km) from the Project footprint for data from 1982 to 2018 and illustrated in Figure 2-6. The high number of caribou observed between 1990 and 2001, relative to other years, has been interpreted as the lag effect following the wolf control program. The herd was larger in those years. As expected, the number of groups, count of individuals, and their average group sizes did not vary substantially with distance from the proposed Project footprint. Caribou were present around the Project in all survey years.

Table 2-7: Caribou Distribution Around Project During Rut Surveys 1982-2018

Radius from Project	Percent of Groups	Percent of Individuals	Mean Group Size
5 km	8.7%	10.6%	22.6
10 km	9.9%	11.6%	21.6
15 km	9.2%	8.4%	16.9

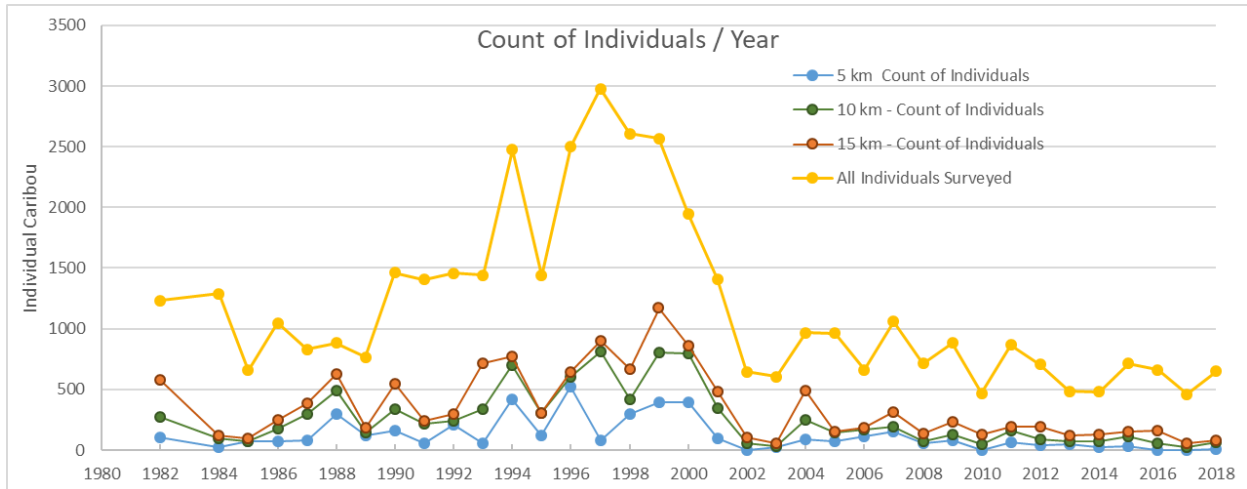


Figure 2-4: Rut Surveys Individual Counts and Distance of Observations Relative to the Project 1982 through 2018

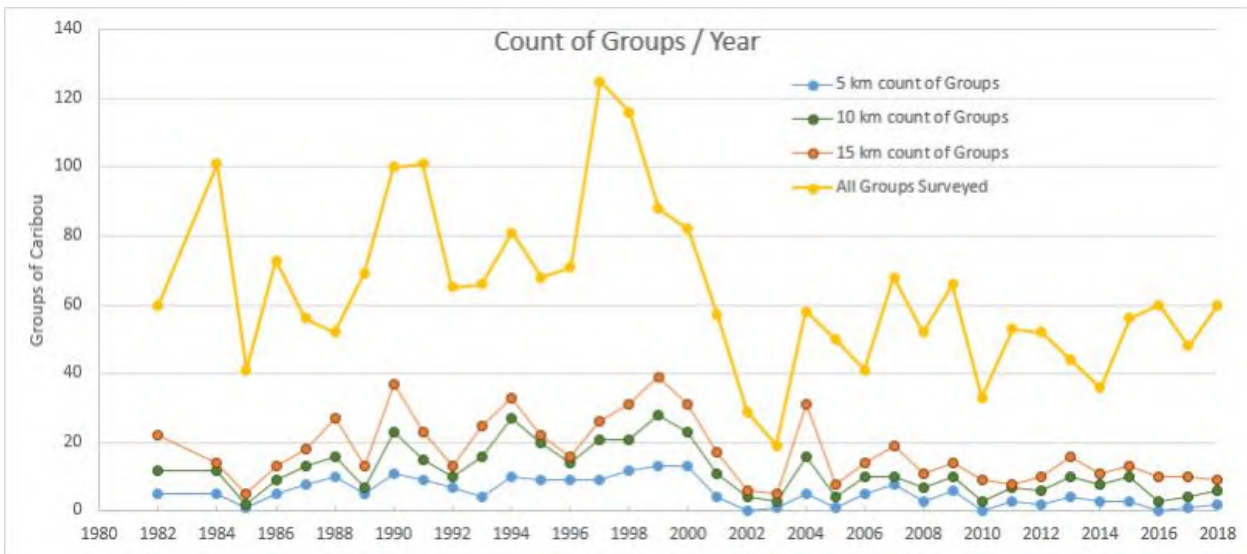
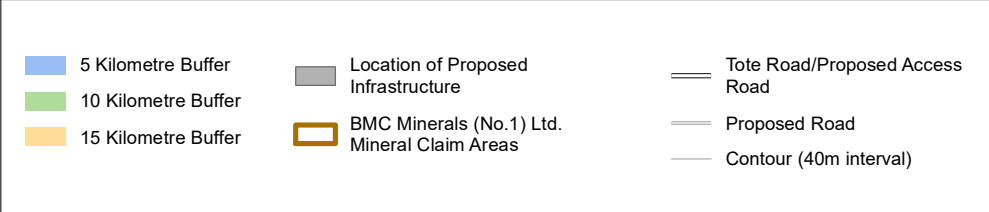
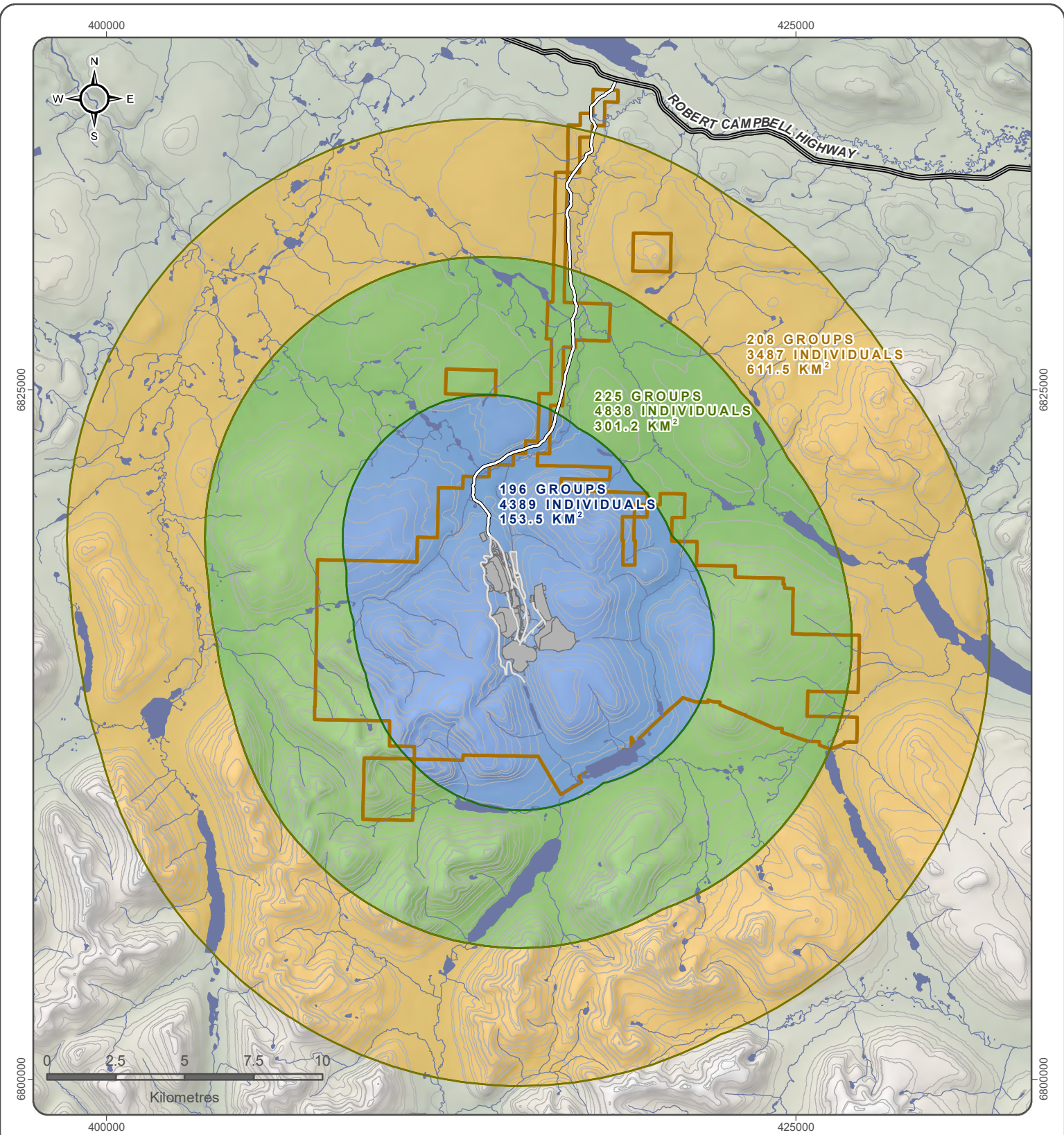


Figure 2-5: Rut Surveys Group Counts and Distance of Observations Relative to the Project 1982 through 2018



**KUDZ ZE KAYAH PROJECT
WILDLIFE BASELINE REPORT**

**FIGURE 2-6
CARIBOU OBSERVED DURING RUT SURVEYS
IN VARYING ZONES OF INFLUENCE
1982-2018**

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Early Winter Surveys

Caribou were observed during the early winter ungulate surveys that were conducted annually in November/early December between 2015 and 2018. Total survey flight time was as follows:

- 2015 was 14.1 hours, from November 18 through 22,
 - 2016 was 12.0 hours from December 5 to 6;
 - 2017 was 9.4 hours from December 16 to 17; and
 - 2018 was 11.4 hours from November 5 to 6.

In 2015, a total of 116 caribou were observed. Most observations were in the lowlands of the Local Study Area and were mostly small groups. A number of these groups and associated tracks were observed either on or near frozen ponds. Wolves and wolf sign were often associated with these caribou observations.

In 2016, a total of 318 caribou were observed. Approximately two thirds of caribou were in lowland areas and the remaining were in upland habitats.

In 2017, a total of 44 caribou were observed. All groups observed were in the lowland section of the survey area and no caribou were found in the Project claim blocks, which includes the Project footprint. The caribou have mostly been observed near small lakes and ponds and tracks showed evidence of caribou congregating to ice licks.

In 2018, 185 caribou were observed in 22 groups. Caribou observed during this survey were mainly to the north and east of the Project footprint, with two larger groups (>16 animals) and several smaller groups located within the claim blocks. A few other large groups were located to the south east of the Project, within the Regional Study Area but outside of the claim boundaries and Local Study Area.

2.2 R5-2

If there are any known nearby sites where calving caribou show site fidelity, provide the distance to the mine site and describe the location and the potential for sensory disturbance resulting from the project.

The FCH move from their wintering grounds in the Pelly River and Finlayson River valleys to the Pelly mountains for spring calving and through to early winter after the rut when they then move back to the River valleys where their food is more accessible.

The calving period for the FCH is from May 7 to June 8 with a median peak of calving from May 16 to 20 (Chisana Caribou Recovery Team, 2010). Northern mountain caribou disperse into the mountains where they seek out solitary calving sites that are distant from alternate prey species such as moose, and spaces them away from predators (Bergerud et al., 1984; Bergerud and Page, 1987; Bergerud, 1992, Fenger et al., 1986). The woodland caribou anti-predation tactics make it difficult for biologists to make meaningful quantitative measure of their sensitivities during this life cycle period.

While the proposed Project site is within the Pelly Mountains calving grounds, in the 5 years of post-calving surveys that BMC has conducted (in collaboration with Yukon Environment and with assistance from RRDC members) no specific fidelity calving sites have been identified within the Project footprint. Note that calving surveys for mining projects are typically not permitted by the Yukon Government as it causes disturbance to sensitive, calving caribou and because the ability to sight them is low since cows are alone and often camouflaged. Although specific fidelity calving sites have not been identified there is likely to be some sensory disturbance of calving from the Project. Is also likely that the caribou will adapt and if disturbed by Project activities, may redistribute within the calving habitat away from Project disturbance.

3. ROADS

3.1 R5-3

Extend the road access management plan to account for the post operations and post active closure phases of the project, including:

- a) Possible decommissioning methods
- b) Access control methods
- c) Predicted effectiveness of any proposed mitigations

This Information Request is very similar to or the same as R3-37 (YESAB, 2018) which posed the following questions:

“The proposal confirms that the road will be reclaimed and decommissioned when access to the site is no longer required. This proposed measure poses three questions.

- a) First, this deactivation and associated techniques will be implemented over time. Outline the projected timelines and how the below two elements are considered as part of these timelines.*
- b) Second, this project requires long-term water treatment and/or monitoring. Confirm that the access road will continue to have restricted access and the nature of that restricted access (e.g. a manned gate) during the post- closure stage to support water treatment and/or monitoring activities.*
- c) Third, this road potentially provides access to other resources in the area. Describe how the proposed measure to reclaim and decommission the road have considered other uses for the road, potential requests to maintain its existence and the roles of BMC, Yukon Government and First Nations in determining its end use”.*

This Information Request is also very similar to or the same as R244d (YESAB, 2017) in which stated:

- a) *“Revegetation in relation to vehicle access and predator efficiency: What measures will be taken once reclamation of the Tote Road has been completed to ensure that vegetation can re-establish to prevent motorized vehicle access and reduce predator efficiency?”*

BMC’s responses to R3-37 (BMC, 2018a) and R244d (BMC, 2017b) were previously deemed sufficient by YESAB and therefore the response to the current information request is largely a repeat of what was previously provided. For reference, BMC’s initial response to R3-37 is presented on pages 106 to 107 of Response Report #3A (BMC, 2018a) while BMC’s initial response to R244d is presented on page 252 of Response Report #1 (BMC, 2017b).

For reference, the current Tote Road is leased under lease 105G07-001 from the Government of Yukon as represented by Land Management Branch of the Department of Energy Mines and Resources.

Clause 66 of the current lease states:

“That on the termination or expiration of this lease, the Lessee will deliver up possession of the land in a condition satisfactory to Yukon. In particular, Yukon may require the Lessee to remove any improvements affixed to or placed on the land, and any chattels or other property placed on the land, and otherwise to restore the land. In the event the Lessee does not carry out such removals and restoration within ninety (90) days of termination of the lease, despite being requested to do so, Yukon may carry out the removals and restoration and may recover the cost of so doing from the Lessee.”

The lease specifies that the leased land must be returned to a condition that is satisfactory to Yukon. BMC’s intention is to relinquish the road lease once BMC’s reclamation program for the road meets the conditions of the lease.

As a contingency measure, the Tote Road lease was renewed in March 2020 and Yukon Government increased the amount of security to reflect changes in costs for Yukon to *“carry out any restoration necessary resulting from the Lessee’s non-compliance.”*

- a) Possible decommissioning methods

The closure measures for the Access Road are detailed in Section 7.9 of the Conceptual Reclamation and Closure Plan (Appendix H-1 of the Project Proposal). Road reclamation will involve the removal of the culverts and drainage structures and decommissioning of the roadbed. The roadbed will be contoured and rounded throughout its length. All exposed soils along the length of the road will be stabilized and contoured to prevent surface erosion, then seeded with an appropriate seed mix.

During the life of the Project, an ongoing reclamation research program will be conducted. This reclamation research program will ensure that a detailed, location specific and a sustainable reclamation process is developed.

These decommissioning methods are the same as those in the Tote Road Reclamation & Closure Plan which was presented to and approved by Yukon Government as part of the exiting Tote Road Lease.

b) Access control methods

Until the road is relinquished back to the Yukon Government, BMC will continue to restrict public access in accordance with the existing license conditions through the continued use of security stations and gates as required to ensure that only authorized vehicles will be allowed on the road. Over the winter period, if there are limited site operations, the gate will be locked.

Post-closure the access restriction strategies may include: additional gates, signs and barriers.

c) Predicted effectiveness of any proposed mitigations

The decommissioning methods proposed to support the reclamation and closure plan are predicted to be effective as the methods are generally the same or similar to the methods that BMC has successfully used over the past 5 years to reclaim exploration trails and drill pads at the Project site. In addition, BMC's ongoing reclamation research program and monitoring programs (which will continue through all project phases) provide additional confidence that the road can be successfully reclaimed to meet the conditions of the lease.

The current system of having a gate and a gatehouse keeper to restrict access to only authorized vehicles at the gatehouse has been an effective mitigation to prevent access to the area. This is evidenced by the gatekeeper keeping confidential records of the number of vehicles that that have been turned away over the 21 plus years that the gate has been manned. Because of this access control method, the general community is also aware that the road is for private use only. This is evidenced by feedback that BMC has received over the past 5 years from numerous community members in Ross River, Faro, Whitehorse and Watson Lake (including feedback from Kaska citizens, the local guide outfitter, numerous Yukon Government staff members etc.).

Further, the Tote Road lease was renewed in March 2020 and as a contingency measure to determine the effectiveness of the access control methods, Yukon Government added a new clause (53) to the lease.

"The Lessee shall report in writing to Yukon each instance of unauthorized use of the Land within one month of the instance becoming known to the Lessee".

Additional Commentary:

BMC realizes that there are other natural resources in the area and that the Access Road could potentially be used to access and exploit these, and that there may be some First Nation's interest in maintaining the existence of the road for access to the region. However, under the current lease the lessee is obliged to return the land to Yukon in a condition that is satisfactory to Yukon. The final decision on whether the lease could be relinquished with the access road un-reclaimed will be made by the Yukon Government. BMC does not have any position on this matter except that we will comply with whatever decision is made by the Government.

3.2 R5-4

Additional mitigations relating to highway transport are provided in Appendix G of BMC's 2nd response to Information Request #4. These include identification of additional pull out locations and where increased brushing may increase sight lines. Describe the location of existing pull outs and current visibility limitations along portions of the Robert Campbell Highway that would be used by ore trucks.

In order to fully respond to this information request, BMC contacted Yukon Government's Department of Highways and Public Works who are responsible for ensuring the Robert Campbell Highway is maintained and safe for public use. This response is subsequently based on the information provided to BMC by Yukon Government's Department of Highways and Public Works and from the publicly available Yukon Transportation Division Highways Log Book (<http://www.hpw.gov.yk.ca/pdf/ReportHwyLogPublic2012withedits.pdf>).

Figure 3-1 presents the locations and kilometre markers of the pullouts and rest areas along the Robert Campbell Highway from Watson Lake (km 0) to the turn off to the KZK Access Road (km 231.8).

400000

500000

FIGURE 3-1
ROBERT CAMPBELL HIGHWAY
 PULLOUTS AND REST AREAS
 WATSON LAKE TO KZK ACCESS ROAD

The data on this map is a compilation obtained from various sources including the © Government of Yukon 2018 and The Yukon Geological Survey. Contains information licensed under the Open Government Licence - Canada.

6800000

6800000

6700000

6700000

KM POST	TYPE
231.8	ROAD JUNCTION
190	ROAD JUNCTION
170.6	REST STOP
148.5	PULLOUT
129.1	PULLOUT
110.4	MAINT. CAMP
107.6	REST STOP
107	PULLOUT
92.5	PULLOUT
80.9	PULLOUT
46.8	ROAD JUNCTION
10.3	PULLOUT
0	ROAD JUNCTION



KILOMETERS

400000

500000

231.8 km
Kudz Ze Kayah Access Road

190 km
Wolverine Access Road

170.6 km

148.5 km

129.1 km

110.4 km
Tuchitua Highway
Maintenance Camp

107.6 km
Nihanni Range Road

107 km

92.5 km

80.9 km

46.8 km
Sa Dena Hes Road

10.3 km

0 km
Alaska Highway

Watson Lake

The Yukon Department of Highways and Public Works has a regularly scheduled brush and weed program on all Yukon Highways, in part to minimize visibility limitations and improve safety of Yukon Highways. Brushing schedules can be advanced when capital budget savings are found within the annual brushing program or within other components of the capital budget. The current schedule for brushing the entire 232 km of the Robert Campbell Highway (that is proposed to be used for hauling concentrate) is presented in Table 3-1. This schedule is based on Yukon Department of Highways and Public Works assessment of current vegetation growth, visibility limitations and is prioritized based on estimated budget in years going out.

Table 3-1: Highways and Public Works Proposed Brushing Schedule

Highway	Start km	End km	Calendar Year
Campbell Highway	0.0	10.2	2020
Campbell Highway	10.2	27.8	2019
Campbell Highway	27.8	58.0	2021
Campbell Highway	58.0	113.7	2024
Campbell Highway	113.7	126.0	2021
Campbell Highway	126.0	156.1	2022
Campbell Highway	156.1	170.0	2023
Campbell Highway	170.0	174.0	2020
Campbell Highway	174.0	190.0	2023
Campbell Highway	190.0	210.0	2020
Campbell Highway	210.0	232.0	2023

Given the current permitting and construction schedule for the Project, any existing visibility limitations along the Robert Campbell Highway would be eliminated or minimized prior to the commencement of any haul traffic from BMC.

As per BMC’s previous response to R4-7 (BMC, 2019), throughout the Project life BMC will:

- Work with Yukon Department of Highways and Public Works to identify areas where additional spot improvements could enhance usability and visibility (i.e. previously brushed areas may need to be re-brushed more frequently than others); and
- BMC will also work with Yukon Department of Highways and Public Works to identify locations for potential truck pullout construction between kilometre 190 to 232.

3.3 R5-5

Locate and describe proposed borrow sites for improvements to the access road and airstrip.

This Information Request is similar to or the same as R281 (YESAB, 2017) in which YESAB requested BMC to:

“Provide information on borrow sources for the mine site, access road and airstrip upgrade including:

a) the locations of borrow sources;

b) description of dimensions of borrow source excavations including area and depth of excavations;

c) the estimated quantities of suitable borrow material available;

d) the quantity of borrow material required for engineered mine components;

e) length of time individual sources will be used for; and

f) proposed mitigation measures to minimize potential adverse effects associated with the development and use of the proposed borrow sites.”

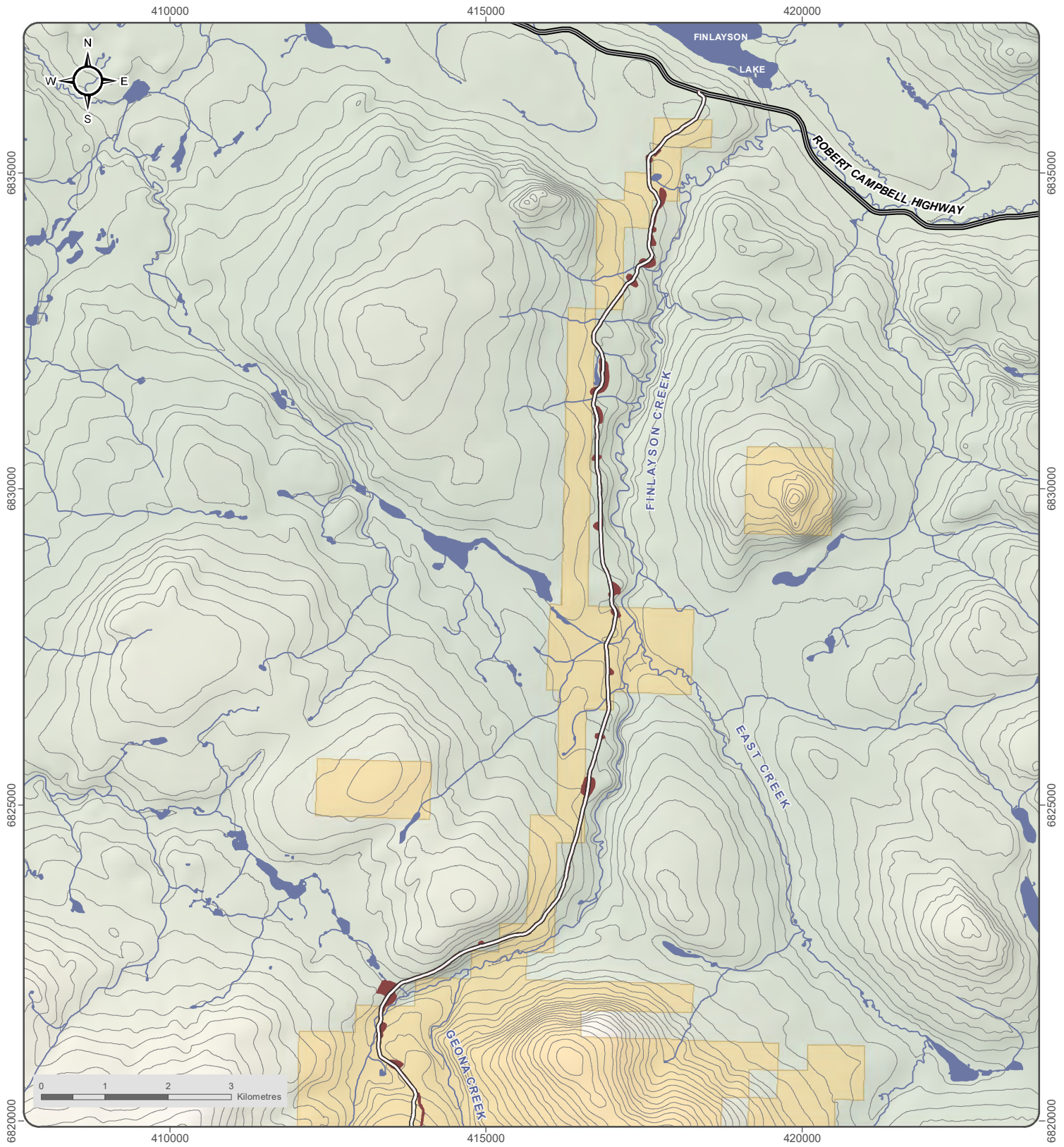
BMC’s response to R281 (BMC, 2017b) was previously deemed sufficient by YESAB and therefore the response to the current information request is largely a repeat of what was previously provided. For reference BMC’s initial response to this Information Request is presented on page’s 291 to 294 of Response Report #1 (BMC, 2017b).

Access Road

Section 4.12.1 of the Project Proposal (Tote Road Upgrade to Access Road) presents the locations of the potential borrow sites (BMC, 2017a). Figure 4-19 from this section of the Project Proposal shows these locations as does Figure 20-1 of Response Report #1 (BMC, 2017b). This figure has been reproduced again as Figure 3-2 for this response. Appendix C-8 of the Project Proposal (Proposed Right of Way for Access Road and Typical Cross Sections for Road Upgrade) also shows the locations and sizes of each of the proposed borrow sources at a scale of 1:3,000. This figure has also been re-submitted as Appendix A of this Response Report.

Table 3-2 presents a summary of the proposed borrow site locations and specifications (Onsite Engineering Ltd, 2017). This table is presented as Table 20-1 in Response Report 1 (BMC, 2017b).

These locations were largely those that had previously been identified and utilized as borrow sources for the construction of the Tote Road in 1995. While all potential borrow sources have been identified on this Figure, only some of them will be required for construction purposes, and the selection of specific borrow sources for construction is intended to be determined by the construction contractor during detailed planning of construction activities.



- | | |
|--|---|
|  Tote Road/Proposed Access Road |  Waterbody |
|  Potential Borrow Sources |  Watercourse |
|  BMC Minerals (No.1) Ltd. Mineral Claim Areas |  Contour (40 m interval) |

KUDZ ZE KAYAH PROJECT

**FIGURE 3-2
ACCESS ROAD ALIGNMENT AND
POTENTIAL BORROW SOURCES**

National topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Reproduced under license from Her Majesty the Queen, as represented by the Minister of Natural Resources Canada. All rights reserved. Datum: NAD 83; Projection: UTM Zone 9N



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MARCH 2020

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Table 3-2: Proposed Borrow Site Locations and Specifications

BORROW ID	CENTROID LOCATION (UTM ZONE 9)		AREA (HA)	CLASSIFICATION	*MATERIAL SOURCE
	NORTHING (M)	EASTING (M)			
OEL-64-2	683533	417698	0.59	Pit	Surfacing
OEL-64-1	683522	417579	0.59	Pit	Surfacing
OEL-63	683431	417703	5.10	Pit	Surfacing
OEL-62	683358	417564	2.48	Pit	Subgrade
OEL-61	683329	417312	1.63	Pit	Surfacing
OEL-59	683176	416842	6.32	Pit	Surfacing
OEL-57/OEL-58	6831176	416775	2.42	Pit	**Surfacing/Subgrade
OEL-56	683049	416748	0.75	Pit	Surfacing
OEL-55	682941	416771	1.09	Pit	Surfacing
OEL-54	682841	417031	2.46	Pit	Surfacing
OEL-30	682804	417050	1.30	Pit	Subgrade
OEL-21	682711	416963	0.72	Pit	***Mix
OEL-51	682608	416796	0.78	Pit	Surfacing
OEL-50	682529	416615	4.56	Pit	Subgrade
OEL-6	682280	414923	0.47	Pit	**Surfacing/Subgrade
OEL-2	682137	413321	0.83	Pit	Surfacing
OEL-1	682090	413565	2.05	Pit	***Mix
OEL-10	681943	413915	0.27	Quarry	Riprap
OEL-11	681910	413905	0.28	Quarry	Riprap
OEL-12	681902	413937	0.40	Quarry	Riprap
OEL-13	681889	414009	0.22	Quarry	Riprap
OEL-14	681844	414092	0.22	Quarry	Riprap
OEL-19	681778	414227	0.04	Quarry	Riprap
OEL-15	681744	414268	0.27	Quarry	Riprap
OEL-16	681707	414395	0.30	Quarry	Riprap
OEL-17	681674	414542	0.12	Quarry	Riprap
OEL-18	681630	414725	2.02	Pit	Surfacing
OEL-4/OEL-5	6822107	413436	4.60	Pit	Surfacing
*Surfacing sources are suitable for use as subgrade.					
**The area delineated exceeds the area expected to be usable for surfacing with portions of the pit only suitable for subgrade material.					
*** This pit on its own may not be used as surfacing. It may be used to meet assigned surfacing gradation bands by mixing with other deposits.					

All borrow sources identified in Table 3-2 have been considered as the largest possible size, dictated by the expected extents of the desired deposit. Volumes to be extracted from each source have not been specified at this time in order to allow the construction contractor a degree of flexibility (while

staying inside the designated sites) with which to manage how they meet final material gradation bands, and to maximize their productivity based on the equipment available. Note that the total volume of road construction material will be significantly less than the total available material identified in the above study.

The following volumes are expected to be sourced from borrow sites.

- Subgrade Material – 31510 m³
- Surfacing Material – 17991 m³
- Riprap Material – 1400 m³

With the identification of specific borrow sources not expected to be completed until final construction drawings are prepared, it is not possible to specify how long each individual borrow source will be used for. However, road construction is expected to be completed within a three to four month period during the summer period, and therefore the maximum time that any borrow source is expected to be used for is four months.

The identified borrow sites have been classified as quarries or pits. Quarries are primarily composed of bedrock and will be established by working into the back wall of the borrow site (the excavation will start at the road edge and work into the slope as material is required, ensuring minimal disturbed area). Quarry construction will require the site to be cleared and stripped of organic and mineral soil, with stripped organics stored for later use in reclamation at the edge of the borrow site. Once the bedrock is exposed it will be blasted or ripped, then sorted (if required), loaded, and hauled to the necessary location.

Borrow pits primarily target organic-free, surficial materials that are to be excavated with an excavator, loader, or bulldozer. Like quarries, they will be stripped of the organic soil layer before use, with stripped organics stored for later use in reclamation at the edge of the borrow site. They will be established by working into the cut slope as required. Once the site has been stripped the material will be excavated, reworked as necessary, and hauled to the required location.

As borrow sources are no longer required for construction purposes, the cut slopes will be reduced to match the cut slopes specifications applicable to the ground type at the site, to provide long-term stability of the site. The organics previously stored will be spread and reclamation of the sites will be commenced.

Samples were collected from all borrow site test pits and were tested for acid rock drainage (ARD) and metal leaching (ML) potential. Test results identified no ARD or ML concerns associated with the identified borrow sites. A detailed description of the sampling program and results are included in the Project Proposal (Appendix D-5 - Acid Rock Drainage and Metal Leaching Characteristics Kudz Ze Kayah) (BMC, 2017a) and are also presented in Appendix R3-D of Response Report #3A (BMC, 2018a).

All surfacing borrow sources were sampled for grain size analysis to confirm their suitability for use as road fill and a weather resistant surfacing medium (Onsite Engineering Ltd, 2017).

New information since BMC's initial response to this Information Request:

In 2017 a Heritage Resource Impact Assessment was conducted over the proposed borrow areas (Ecofor, 2018). Field assessment focused on 18 proposed borrow area locations along the exiting Tote Road. In total, 133 shovel tests were excavated at eight shovel test locations. Two of these shovel tests, at two borrow locations were positive for heritage resources, resulting in the identification of two new archaeological sites. The locations of these sites are not presented in this response report due to confidentiality reasons. The complete non-confidential report was provided to the Yukon Government's Heritage Branch, Ross River Dena Council and Liard First Nation. A modern campsite was also observed at Borrow OEL-50, but it was considered to be relatively recent and is not a heritage resource concern. No heritage resource concerns were found at any of the other proposed borrow areas. Following the field assessment, the two sites were flagged with 30 m avoidance buffer zones.

In 2018, systematic data recovery excavations at the two sites were undertaken (Ecofor, 2019). The goal of the systematic data recovery was to better define the site boundaries and recover a representative sample of cultural materials from both sites to mitigate any disturbances to the site areas related to the development of the proposed borrow pits. The systematic data recovery work included both additional shovel testing and excavation. At one site, the excavations yielded 41 lithic artifacts and four pieces of faunal material. No additional heritage resources were recovered from the second site. Based on these results, no further heritage resource assessments were recommended at these two sites (Ecofor, 2019). However, future work within these areas (if required) will adhere to the chance finds policy already followed by BMC (Ecofor 2019). The complete non-confidential report from the 2018 work was also provided to the Yukon Government's Heritage Branch, Ross River Dena Council and Liard First Nation.

Airstrip

As per BMC's response to Information Request R2-25 (BMC, 2017c), BMC is now proposing to use Finlayson Lake airstrip in its current configuration (with the exception of the addition of an apron which will be undertaken by Yukon Government's Department of Highways and Public Works). BMC will charter suitable aircraft that are capable of landing and taking off on the current airstrip. For clarity, BMC is not proposing any construction works at the Finlayson Lake airstrip. Note that the Project Scope presented by YESAB in the Draft Screening Report also does not include any construction works by BMC at the Finlayson Lake airstrip (YESAB, 2020).

4. AIR QUALITY

4.1 R5-6

Characterize predicted metals in dust and provide predicted concentrations of NH₃, VOCs, PAHs and diesel PM concentrations resulting from the project.

This Information Request is similar to R65 (YESAB, 2017) in which YESAB requested BMC to:

“Update the assessment to include relevant Criteria Air Contaminants (CACs) or provide justification for the exclusion of: metals in dusts; NH₃; volatile organic compounds (VOCs); polycyclic aromatic hydrocarbons (PAHs); petroleum Hydrocarbons (PHCs); and diesel PM.”

BMC’s response to R65 (BMC, 2017b) was previously deemed sufficient by YESAB (YESAB, 2017). BMC’s response was:

“BMC’s consultants have thoroughly reviewed all CACs against relevant guidelines and in doing so have been rigorous in providing adequate information for a relevant assessment of potential effects. These additional CACs are not typically modelled for mining projects, and there are no terms of reference or guidelines against which to compare modelling results for the additional CACs listed. The inclusion of these additional CACs would not be material to the project effects assessment.”

The above response was previously deemed sufficient by YESAB during the Adequacy stage of the assessment, and it is not clear from the question as to why it has been asked again or what if any additional information is expected. However, given that this information request was based on YESAB’s review of the public comments on the Draft Screening Report, BMC reviewed those comments and assumes that the question has arisen in response to that Yukon Governments request for an assessment of the additional air parameters based on Health Canada’s comments on the Project Proposal during Adequacy (Yukon Government, 2020). However, Health Canada’s comments on the Draft Screening Report do not indicate that BMC’s response to YESAB during adequacy was insufficient or that they still view this as a requirement of the environmental assessment. It is suspected that the initial data provided in our response has simply been missed by Health Canada in their review and we respectfully refer them back to the original response.

BMC has proposed extensive measures to minimize the release of CACs during all Project Phases and so respectfully disagrees with Yukon Government’s statement that without modelling there will be “uncontrolled release of these pollutants” (Yukon Government, 2020). There is no basis in fact for that statement.

BMC requests YESAB to consider the following information:

BMC did not provide modelling of these air parameters in the original Project Proposal (BMC, 2017a) or in Response Report #1 (BMC, 2017b) for the following reasons:

- These additional air parameters are not typically modelled for mining projects due to the lack of terms of reference for such modelling.

- With limited air quality guidelines to compare the model results to, interpretation of results would be challenging if not impossible from a practical perspective.

Given that there are no terms of reference for modelling the requested air parameters, BMC undertook a literature review to see how other mine projects in northern and western Canada undertook such modelling. In addition, the request did not identify what VOCs or PAHs were required to be modelled. In the case of VOCs there are potentially hundreds and in the case of PAHs there are about 16 common PAHs but arguably many more that could occur. It is unclear what specific parameters are a potential concern for Yukon Government. Therefore, the second objective for the literature review was to see what specific VOCs and PAHs other mine projects had modelled. The review included recently proposed mines in Yukon, British Columbia Northwest Territories (NWT) and Alberta. Table 4-1 presents the results of the literature review.

Table 4-1: Parameters included in Air Quality Effects Assessment for Mining Projects

Project	Metals	NH ₃	VOCs	PAHs	Diesel PM	Project Details
Casino (Yukon)	Not included	Not included	Not included	Not included	Not included	Conventional open-pit, truck and shovel operation. Most of the ore is processed by conventional milling to produce a concentrate, and a portion of the ore will be heap leached to recover the gold. The mill is expected to process about 120,000 tonnes of ore per day and the heap leach 25,000 tonnes per day over a 22-year mine life.
Coffee (Yukon)	Monitored as indicator through dustfall but not modelled.	Not included	Average annual emissions (in tonnes) provided. 99 tonnes/year during peak year. No dispersion modelling.	Not included	Not included	Coffee will consist of four open pits mined by conventional truck and shovel methods at a nominal ore mining rate of 5 million tonnes per annum, for approximately 8 to 10 years.
Eagle Gold (Yukon)	Not included	Not included	Not included	Not included	Not included	Heap leaching process using two heap leaching pads – a primary and a secondary. Production rate will be an average of 13.0 million tonnes per annum comprised of 29,500 tonne per day ore and 7,500 tonne per day run of mine over a 13 year mine life, excluding the ramp-up period.
Grassy Mountain Coal Project (Alberta)	Not included	Not included	Not included	Not included	Not included	Open-pit metallurgical coal mine. the production capacity of the project would be a maximum of 4.5 million tonnes of clean coal per year, over a mine-life of about 25 years.
Brucejack Gold Mine (BC)	Not included	Not included	Average annual emissions (in tonnes) provided. 24 tonnes/year during operation.	Not included	Not included	2,700 tonne per day underground gold/silver mine, with a minimum 16-year mine life.

Project	Metals	NH ₃	VOCs	PAHs	Diesel PM	Project Details
			No dispersion modelling.			
KSM Project (BC)	Not included	Not included	Not included	Not included	Not included	The Kerr-Sulpherets-Mitchell Project is a proposed copper and gold open pit mining project located 65 km northwest of Stewart British Columbia.
Galore Creek (BC)	Not included	Not included	Not included	Not included	Not included	Open pit copper/gold/silver project in northwest British Columbia with an anticipated production capacity up to 60,000 tonnes per day. Expected mine life of 25 years.
Kitsault Mine (BC)	Estimated from % in mined and processed mineral materials. No dispersion modelling	Not included	Not included	Not included	Not included	Open pit mine -extraction 40,000 tonnes of ore per day, explosives manufacturing, mill processing, ancillary facilities.
Harper Creek (BC)	Not included	Not included	Not included	Not included	Not included	Proposed copper-gold-silver mine with an annual production capacity of up to 25,000,000 tonnes of ore over an anticipated active life span of 23 years.
Vista Coal Mine Project (Alberta)	Estimated in grams/day, estimated from Diesel or gasoline combustion from mine and plant operations and dryer stack)	Not included	Included (modelled)	Estimated in grams/day, estimated from Diesel or gasoline combustion from mine and plant operations	Not included	Proposed open pit coal mine - 5 million tonnes of low-rank bituminous coal per year for an estimated active mine life of 20 years. Located 280 Km west of Edmonton.

Project	Metals	NH ₃	VOCs	PAHs	Diesel PM	Project Details
				and dryer stack)		
Giscome Quarry and Lime Plant (BC)	Not included	Not included	Not included	Not included	Not included	Lime processing facility and quarry. Extraction capacity is 600,000 tonnes per year with a mine life greater than 25 years.
Willow Creek coal mine (BC)	Not included	Not included	Not included	Not included	Not included	Metallurgical Coal Surface Mine. 1.2 million tonnes per year of hard coking coal. Estimated active mine life 25 years.
Kemess Mine (BC)	Not included	Not included	Not included	Not included	Not included	Kemess Underground is a 9 million tonnes-per-year copper-gold operation which utilizes existing Kemess South infrastructure as well as the open pit for tailings and waste rock storage.
Nico Project (Northwest Territories)	Included (modelled)	Not included	Included (modelled)	Included (modelled)	Not included	Cobalt-gold-bismuth mining and milling project, comprising a mine site with open pit and underground operations, ore processing mill facilities, tailings and mine rock management areas, a camp site, waste management facilities, an effluent treatment facility and roads within the mine site. Planned 15 year mine life at an annual processing rate of approximately 1.7 million tonnes per year.
Prairie Creek Mine (Northwest Territories)	Lead and zinc (modelled)	Not included	Not included	Not included	Not included	The resource to be mined totals over 5 million tonnes, contains the metals lead, zinc, silver and copper, and will be mined over 14 years. All mining is underground and produces between 600 to 1,200 tonnes of ore per day.

Of the 15 mine projects reviewed two of them modelled metals (NICO Project and Prairie Creek which are both in the Northwest Territories) and one of them modelled VOCs and PAHs (NICO Project). In both instances Golder Associates conducted the modelling. Given the limited amount of modelling and the fact that it was done by single consulting firm, BMC was not able to identify (with any confidence) what the industry or national standards would be for such modelling or what specific VOCs or PAHs should be modelled.

The NICO project is comparable to KZK in scope and size: open pit and underground operations, ore processing facilities, tailings and mine rock management areas, a camp site, waste management facilities, an effluent treatment facility and roads within the mine site with a planned 15 year mine life at an annual processing rate of approximately 1.7 million tonnes per year. In comparison KZK has a planned 10 year mine life at an annual processing rate of approximately 2 million tonnes. The two projects are likely similar with respect to emissions of VOCs, PAHs and diesel particulate matter. Overall the effects assessment for the NICO project found that “based on the calculated exposure doses, it is anticipated that aerial depositions and hydrological discharges from the NICO Project will result in no anticipated change in human health outcomes in comparison to baseline conditions from the NICO Project (Golder, 2011)”. This conclusion was not based on comparing the results to air quality guidelines and instead it was based on a human health risk assessment which used toxicity reference values and land use assumptions.

The Prairie Creek mine (which modelled lead and zinc) is an underground mine and is much smaller than the proposed KZK Project and is not comparable.

Although the environmental assessment for the Eagle Gold Project did not include modelling of these air parameters, recommendation #91 of the Eagle Gold Screening Report required the following:

“The Proponent shall update the air quality model to include emissions related to the gold recovery process (e.g. electrowinning and on-site smelting to gold ore). This includes emissions such as SO₂, PM, and metals such as arsenic, cadmium, chromium, mercury, and lead. This information shall be provided to responsible regulators during the regulatory approval process.”

The updated model was provided to Yukon Government’s Department of Energy Mines and Resources as part of their Environmental Monitoring, Surveillance and Adaptive Management Plan (StrataGold, 2019). The updated model results showed TSP, PM₁₀ and PM_{2.5}, NO₂, SO₂, CO, and NH₃, and metals concentrations to be well below air quality criteria. It is understood that the modelled metals concentrations were compared to the Ontario air quality objectives. With the exception of NH₃ and metals, the modelled parameters are consistent with the parameters that BMC modelled. No modelling for PAHs, VOCs or diesel particulate matter has been conducted at for the Eagle Gold Project. Based on this example, BMC has still not been able to identify (with any confidence) what the industry standard would be for modelling PAHs, VOCs or diesel particulate matter or what specific VOCs or PAHs should be modelled.

It would appear, for most of the mines reviewed, the requested parameters were not considered a potential risk as no modelling was conducted. This has been somewhat validated by the mines that did conduct the modelling as their models predicted no unacceptable human health risks due to changes in air quality. Overall, this review has validated BMC’s initial response to R65.

Monitoring air quality (including metals) at KZK will be much more exact than any model. BMC has committed to an air quality monitoring program for the Project and it will be part of the Monitoring and Adaptive Management Plan (see response to R5-7).

BMC stands by its previous conclusions that with the proposed mitigation measures there will be no unacceptable human health risks due to changes in air quality from the Project. This conclusion is consistent with YESAB's Draft Screening Report (YESAB, 2019) which concluded

"The Executive Committee has determined that the Project is not likely to result in significant adverse effects to the respiratory health of off-duty workers and local land users. Air contaminant modelling identified the potential for air contaminant concentrations to increase above applicable territorial and/or federal standards intermittently during the life of the Project. Project design and measures committed to by the Proponent, however, will effectively eliminate, reduce or control the adverse respiratory health effects of the Project"

4.2 R5-7

Describe any additional potential air quality mitigations that would be implemented if air quality indicators exceed 2020 Canadian Ambient Air Quality Standards.

Specific adaptive management thresholds for air quality indicators will be developed as part of the Monitoring and Adaptive Management Plan for the Project. This is a requirement for the Quartz Mining Licence application. These adaptive management thresholds will be below the 2020 Canadian Ambient Air Quality Standards as it would be inappropriate to wait for exceedances prior to investigating or implementing additional mitigation measures to protect human health. If a specific threshold is reached, either for a 24-hour average or for the annual mean, the following adaptive management responses will be undertaken:

- Identify the source if possible and investigate the cause as appropriate (i.e., visible dust transport observations, meteorological conditions, site activities, inspection records, etc.);
- Conduct a trend analysis to determine if there is a statistically significant trend towards the 2020 Canadian Ambient Air Quality Standards or if this is an isolated event;
- The application of additional mitigation measures will be dependent on the results of the investigation (i.e., will be dependent on the source of the increased concentrations) and could include any of the contingency mitigation measures presented in the Air Quality Management Plan (Section 18.11 of the Project Proposal (BMC, 2017a)) that are appropriate for the identified source(s)/cause(s), including (but may not be limited to):
 - Increased frequency of watering/dust suppressant application to road(s) and other exposed areas;
 - Traffic re-routing and work reduction in areas where dust is generated;

- Early surface preparation and scheduling of revegetation activities for disturbed areas so that they may be seeded as early as practicable;
- Adjust timing of dust generating activities to reduce cumulative effects;
- For drilling water injection, collaring of holes and use of cyclones and other dust collection devices as required;
- Installation of design modifications and the use of technology based solutions to rectify source defects where they are identified during Operations. These may include such areas as;
 - modifications to transfer points on conveyors,
 - installation of additional dust suppression capacity in the form of sprinklers/misters or the use of specialised dust suppression compounds in the dust suppression sprays within the processing plant;
 - design modifications to conveyor covers,
 - changes to conveyor speeds;
 - changes to the way water is used in suppression of dust during blasting, excavation and hauling of rock from the mine to its final deposition point;
- Wind barrier (windrow) construction such as crushed rock, soil berms or fences upwind of roads and exposed areas to reduce wind exposure;
- Protocols around the use of ventilation;
- Protocols and Rules in relation to the use of personal protective equipment where engineering solutions are not viable; and
- Review of dust control and the overall management plan as needed.

5. HUMAN HEALTH

5.1 R5-8

Describe proposed mental health supports for workers on site, as well as any off site resources specifically available to workers and their families.

The Project Proposal (Chapter 15 (BMC, 2017a)) and Response Reports #1, #2, and #3A (BMC, 2017b, 2017c, and 2018a respectively) have described BMC's commitments to providing a Health and Wellness Program to all employees and eligible family members. As described previously, the mental health supports will be provided (in part) through the Employee Assistance Program (which is a component of the overall Health and Wellness Program and Employee Benefits Package). The Employee Assistance Program will include counselling services that deliver education and counselling support across a broad range of issues including family, substance use and addiction, marital, work, financial, depression, anxiety, grief/loss or other concerns. Services provided under the Employee Assistance Programs are provided to employees and immediate family members free of charge and they can access this support on an anonymous basis. Similar services and support are also available from Yukon Government's Department of Social Services and the Canadian Mental Health Association (Yukon). BMC expects to work collaboratively with Government supported mental health and other service providers to ensure the wellbeing of its employees, their families and to provide support for local communities.

5.1.1 SUPPORT PROVIDED BY BMC (EMPLOYEE ASSISTANCE PROGRAM)

The Employee Assistance Program is a counselling program designed to support and enhance the emotional, mental and general psychological wellbeing, through the provision of solution focused counselling, coaching and practical advice about how to deal with a particular issue which is causing concern to the employee or family members.

The aim of the Employee Assistance Program is to provide preventive and proactive intervention for the early detection, identification and/or resolution of both work and personal issues which could be affecting work performance and personal wellbeing.

The Employee Assistance Program will be delivered by an independent counselling service, with programs provided in partnership with BMC. Most health insurance providers provide this independent service as a component of the Company's Employee Benefits Package and therefore there is no cost to the employee or their dependents. BMC has not yet selected the health insurance provider for the Project; however, it has to date reviewed the Employee Assistance Programs offered from 5 different health insurance providers. The programs typically consist of access to the following counselling services and online programs:

Home Life: parenting advice, relationship guidance, education advice and materials, or advice for caring for elderly parents, conflict resolution, separation and divorce, blended family concerns, fatigue, sleep problems, coping with bereavement, and low or low self esteem.

Health & wellness: programs and resources, such as nutritional consultations, naturopathic services, weight management, boost energy and resilience, high cholesterol, high blood pressure diabetes, and heart disease.

Financial Planning: from housing to buying a car, to saving and investing, credit and debt management, budgeting, bankruptcy, and financial emergencies.

Legal Assistance: separation and divorce, civil litigation, custody and child support, wills and estate planning, domestic violence, criminal and employment law explanation.

Career: Employees can access the support they need to get the most out of their career, including listening to podcasts or reading engaging and relevant articles on career development; workplace change; job loss, co-worker conflict, referral strategies, interview practice, work life balance, bullying and harassment.

Life in General: Stress management, situation management, anger management, life transition, depression, addictions (alcohol, tobacco, drugs, gambling, internet/electronic device) and post-recovery support.

Crisis Management: group support for employees and managers after a critical incident, on-site trauma intervention.

Referrals – to community resources.

Access to counselling services through the Employee Assistance Program is voluntary and will be available to all BMC employees and eligible dependents. Eligible dependents include the employee's spouse (or partner) and dependents who live at the same address.

The Employee Assistance Program services will also be available to BMC's supervisory and management personnel to assist in developing strategies to deal with workplace issues, including conflict management and resolution and stress management.

Counselling is available upon initiation by the employee or their spouse and this can be achieved via a simple process that guarantees the confidentiality of the initiator. Counselling experts are available to speak with employees and eligible family dependents by making an appointment. Counselling can be provided 24 hours per day, 7 days per week via toll free telephone, video or face to face. The counsellor will assist in developing strategies and recommending programs to assist the employee and will make referrals to other providers for ongoing and longer-term counselling matters.

The counselling services are multilingual.

The employee does not need permission from BMC to use this service, nor will BMC be advised of any detailed information in relation to personnel that utilize this service. The insurance provider will send BMC a summary of the number and types of services that were provided to employees and their dependents on a semi-annual basis so that the company can identify key themes and where applicable make changes to the operations and/or promote company wide support for those themes. The insurance provider would also generally work with BMC to develop materials and programs to foster a healthier workplace and suggest proactive solutions to meet the emerging needs of the employees. This may include seminars or workshops (on site or in the communities). It may also

include the development of focused communication tools such as posters, monthly features, quarterly newsletters and employee-driven customized communications.

The Employee Assistance Program will be complementary with BMC's existing and successful mentoring program that was developed in consultation with Ross River Dena Council and this mentoring program will be continued over the life of the Project.

5.1.2 SUPPORT PROVIDED BY YUKON GOVERNMENT'S DEPARTMENT OF SOCIAL SERVICES

Mental wellness supports are also available through the Yukon Government's Department of Social Services and are described on their website (http://www.hss.gov.yk.ca/mwsu_communities.php):

***Carmacks** - The Carmacks office is a hub, providing specialist services to Pelly Crossing, Ross River and Faro.*

The Carmacks office will be staffed with:

- *Mental Wellness and Substance Use Counsellor*
- *Mental Wellness and Substance Use Support Worker*
- *Mental Health Nurse*
- *Two Child and Youth Counsellors*

The communities serviced by the Carmacks hub will each have additional local staff

***Faro** - Resident staff:*

- *Mental Wellness and Substance Use Support Worker*
- *Visiting specialists from the Carmacks hub*

***Ross River** - Resident staff:*

- *Mental Wellness and Substance Use Counsellor*
- *Child and Youth Counsellor*
- *Visiting specialists from the Carmacks hub*

***Watson Lake** - The Watson Lake office is a hub, providing specialist services to Teslin and Carcross/Tagish.*

The Watson Lake office will be staffed with:

- *Two Mental Wellness and Substance Use Counsellors*

- *Clinical Counsellor*
- *Mental Health Nurse*
- *Child & Youth Counsellor”*

Services are also provided in Whitehorse including a Withdrawal Management Services Centre.

Yukon Government’s Mental Wellness Strategy is a 10 year strategy (2016 to 2026) to address mental wellness in Yukon and provides the overall direction for system response and improvement. Through this strategy the Innovation Fund, has been funding activities and programs throughout Yukon to improve mental wellness for residents. Examples of recent programs in the communities closest to the proposed Project included:

Ross River – Tu’Lidlini Youth Group, Dena Council Youth Worker, Ross River Dena Council Sweat Lodges, Ross River Dena Council Cultural Workshops.

Watson Lake – Liard Aboriginal Women’s Society - Youth for Culture and Safety

There is still 6 years left of the Mental Wellness Strategy and it is anticipated that Yukon based BMC employees and their families would be able to participate in the programs being offered. The programs include free training opportunities in the communities (i.e. Mental Health First Aid for Adults Who Interact with Youth).

5.1.3 SUPPORT PROVIDED BY CANADIAN MENTAL HEALTH ASSOCIATION (YUKON)

The Canadian Mental Health Association (Yukon) offers workplace mental health programming as well as school level and individual level training. BMC has had preliminary discussions with the Association regarding the programming they offer. The discussions have indicated that the Association is keen to grow their relationships with the communities and work with business such as BMC with respect to developing training programs and workshops which could be held both at site and in the communities.

5.1.4 SUMMARY

With the mental health supports available through: BMC’s Employee Assistance Program; BMC’s Mentoring Program; Yukon Government’s Department of Social Services; and the Canada Mental Health Association, BMC’s conclusions presented in the Socio-economic Effects Assessment remain the same: “with the proposed mitigations, no significant adverse effects are predicted” (Chapter 15 of the Project Proposal) (BMC, 2017a). A full description of the mitigations presented in the Project Proposal and the various Response Reports that relate to mental health are provided in Table 6-2 of this Response Report. It is noted that most of these mitigations were not acknowledged in YESAB’s Draft Screening Report (YESAB, 2020).

6. ADMINISTRATIVE

Government of Yukon has requested a list of all proposed proponent mitigations. For readability and clarity, the Draft Screening Report does not highlight a number of these mitigations where they are not instrumental to an effect's characterization or significance determination. However, a singular list of measures, organized by VESEC or project component, may be a method to more clearly highlight and present the extent of proposed mitigation measures. These could be incorporated into the final screening report as part of the project scope.

6.1 R5-9

Provide a singular list of all proponent mitigations.

For readability, the proposed mitigations are presented in three tables:

- Table 6-1 presents the proposed mitigations for the Environmental Valued Components;
- Table 6-2 presents the proposed mitigations for the Socio-Economic Valued Components; and
- Table 6-3 presents proposed mitigations that are not Valued Component specific.

Note that generally the design mitigations are not included in the tables presented. BMC has engaged with government agencies and boards, First Nations, various stakeholder groups and interested parties, and has consulted with these parties regarding the proposed Project, the Project planning and design, and Project Proposal content. The outcomes from those discussions and the input provided by these parties have been used by the Company to inform the development of the Project plan which aims to minimize negative effects on the natural environment while enhancing beneficial effects on the socio-economic environment through Project design. These design mitigations are presented in Chapter 4 and other chapters of the Project Proposal (BMC, 2017a) and various Response Reports (BMC, 2017b, 2017c, 2018a, 2018b, and 2019), The design mitigations will be included in each of the applicable management plans that will be submitted as part of the Quartz Mining Licence, Water Use Licence(s) and ancillary permit applications. Some design mitigations have been included in the Table 6-1 through 6-3 but only where BMC felt they were key mitigating features to support the outcome of the effects assessments.

By law BMC will be required to adhere to all applicable federal and territorial acts and regulations during all Project Phases. These acts and regulations are listed in the various Project Proposal chapters (BMC, 2017a). Because these are requirements under the law for BMC to follow, they have generally have not been included in the tables of proposed mitigations but there is no doubt that they will contribute to the mitigation of potential Project effects.

BMC's mitigation measures as presented in Table's 6-1 through 6-3, and all policies as referenced in the tables and presented in Appendix A of the Project Proposal, were developed taking into account appropriate environmental so socio-economic objectives, current statutory requirements, current and proposed site activities, existing and expected site conditions, designed outcomes and industry standard methods of management. In accordance with world best practice, it is normal for the

efficacy of mitigation measures and operating policies and practices to be reviewed by the operator on an ongoing basis during a project's lifespan to account for any new "real time" information as it becomes available. This and any changes in statutory requirements, or the development/availability of new technology, may result in the implementation of changes to site activities, programs, monitoring, applied technology etc. for the purpose of ensuring the achievement of the targeted environmental and socio-economic objectives.

Finally, BMC's proposed monitoring programs for the Valued Components and site conditions have generally not been included in the proposed mitigations tables. Monitoring is not considered a mitigation measure and instead it is a tool to evaluate the efficacy of the implemented mitigation measures. However, some monitoring has been included in Table 6-2 where the monitoring results will be a key component in risk communication to traditional land users.

Table 6-1: Summary of Proposed Mitigations for Environmental Valued Components

Valued Component	Proposed Mitigation	Source
Air Quality	Crusher enclosure, and material handling and transfers at the process plant facility will occur indoors	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Cover over the live portion of coarse ore stockpile	Project Proposal Chapter 6 (BMC, 2017a) and BMC Response on Draft Screening Report (BMC, 2020)
Air Quality	Progressive reclamation of disturbed areas	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Road and exposed surfaces watering, as required	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Use of dust collectors and proper chute design to prevent air entrainment of dust	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Dust extraction with conveyance to and processing in dust collectors	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Cover or enclosure of conveyors or conveyor galleries.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Installation of water sprays at conveyor transfer points as required (unless not practicable or safe to do so due to sub-zero temperatures.)	Project Proposal Chapter 6 (BMC, 2017a) and BMC Response on Draft Screening Report (BMC, 2020)
Air Quality	Minimize land clearing activities (i.e. waste storage facilities will be cleared progressively through the Project construction and operations phase).	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Construction of the Access Road and site roads with low silt content material.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Appropriate speed limits for all mobile equipment.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Orientation of material stockpiles so that the length is parallel with prevailing winds where practicable.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Re-vegetate waste rock storage areas final surfaces early where practicable.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Construction of wind breaks or stationary misters (if required).	Project Proposal Chapter 6 (BMC, 2017a) and BMC Response to Draft Screening Report (BMC, 2020)
Air Quality	Visual inspections to identify and address potential dust emissions.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Use filters, scrubbers, and other pollution control devices at processing facilities.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Avoid engine idling.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Ensure vehicles and equipment are maintained according to manufacturers' guidelines.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Use catalytic control systems on diesel engines.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Waste reduction at source and recycling.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Waste segregation.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Incinerator operation for optimum combustion.	Project Proposal Chapter 6 (BMC, 2017a)
Air Quality	Regular inspection and maintenance of incinerator.	Project Proposal Chapter 6 (BMC, 2017a)
Noise	Noise dampening enclosures for boilers, generators, and compressors.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Crusher, grinding mills, conveyor shielding (enclosed building).	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Equip all vehicles and internal combustion engines with appropriate muffler systems.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Ensure regular equipment maintenance including lubrication.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Keep noisy equipment inside buildings or sheds and/or near ground level whenever possible.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Impose speed limits for all vehicles.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Avoid engine idling.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Maintain natural cover (vegetation) between noise sources and the camp.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Maintain the Project roads regularly to minimize vehicle noise associated with vibration.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Maintain a noise control standard when procuring equipment.	Project Proposal Chapter 7 (BMC, 2017a)
Noise	Adhere to BMC's blasting plan that implements controlled blasting procedures, optimizes blasting operations, and minimizes non-productive noise.	Project Proposal Chapter 7 (BMC, 2017a)
Surface Water Quality and Quantity	The following conceptual management plans (presented in the Project Proposal) outline mitigation measures to minimize potential effects to surface water from Project activities: <ul style="list-style-type: none"> ○ Waste Management Plan (Section 18.2); ○ Hazardous Materials Management Plan (Section 18.3); 	Project Proposal (BMC, 2017a)

Valued Component	Proposed Mitigation	Source
	<ul style="list-style-type: none"> ○ Surface Water Management Plan (Section 18.4); ○ Spill Response Plan (Section 18.5); ○ Sediment and Erosion Control Plan (Section 18.6); ○ Waste Rock Management (Section 4.9); and ○ Conceptual Reclamation and Closure Plan (Appendix H-1). 	
Surface Water Quality	Water quality objectives have been established and will be incorporated into the adaptive management plan to mitigate potential effects to surface water quality.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	Effluent quality standards will be established during the Water Use Licencing to mitigate potential effects and the Project will be subject to effluent standards under Metal and Diamond Mine Effluent Regulations.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	Manage ABM open pit development water in Pit Rim Pond to settle Total Suspended Solids and aerate water.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	Line Fault Creek diversion ditch.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	Energy dissipation structure at Fault Creek diversion outlet to South Creek catchment.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	Construction of Water Treatment Plant which will remain on site until the closure objectives are met in the receiving environment.	Project Proposal Chapter 8 (BMC, 2017a) and BMC Response on Draft Screening Report (BMC, 2020)
Surface Water Quality	Discharge at minimum dilution ratios to Geona Creek and Finlayson Creek.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	Class A and B Storage Facilities will be constructed with very low permeability composite liner and cover systems.	Response Report 3A (BMC, 2018a) and BMC Response on Draft Screening Report (BMC, 2020)
Surface Water Quality	Upper Water Management Pond, Lower Water Management Pond, Pit Rim Pond, Class A and B Storage Facilities Water Collection Ponds will be constructed with a high-density polyethylene liner.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	ABM lake treatment with lime and carbon source as it fills (as required).	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quality	Constructed wetland treatment system at closure.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quantity and Quality	Fault Creek and other small portions of the upper Geona Creek catchment which would drain to the ABM open pit will be diverted into South Creek to mitigate the volume of water becoming contact water in Geona Creek during the Construction and Operations phases of the Project.	Project Proposal Chapter 8 (BMC, 2017a)
Surface Water Quantity and Quality	Diversions around all other Project infrastructure will drain to the north of the Lower Water Management Pond to reduce the volume of contact water and help maintain natural runoff regimes in the receiving environment.	Project Proposal Chapter 8 (BMC, 2017a)
Groundwater	Class A and B Storage Facilities will be constructed with very low permeability composite liner and cover systems.	Project Proposal Chapter 9 (BMC, 2017a) and BMC Response on Draft Screening Report (BMC, 2020)
Groundwater	Upper and Lower Water Management Ponds, Pit Rim Pond, and Class A and B Facility Water Collection Ponds will be constructed with an impermeable synthetic (high-density polyethylene) liner.	Project Proposal Chapter 9 (BMC, 2017a)
Groundwater	Waste Management Facility will be constructed and operated in accordance with applicable regulations and guidelines (e.g., Land Treatment Facility will be constructed in accordance with the Yukon Contaminated Sites Regulation).	Project Proposal Chapter 9 (BMC, 2017a)
Groundwater	Sewage disposal system will be constructed and operated in accordance with applicable regulations (<i>Waters Act</i> , <i>Waters Regulation</i> and <i>Sewage Disposal Systems Regulation</i>) and guidelines (<i>Design Specifications for Sewage Disposal Systems</i>) which includes considerations for protection of the environment.	Project Proposal Chapter 9 (BMC, 2017a)
Groundwater	Dewatering system will be designed to minimize the required groundwater extraction and associated drawdown of the groundwater table.	Project Proposal Chapter 9 (BMC, 2017a)
Groundwater	Re-divert Fault Creek into Geona Creek watershed and the ABM lake to accelerate the filling of the ABM open pit during Closure.	Project Proposal Chapter 9 (BMC, 2017a)
Groundwater	Safe practices will be applied when handling explosives and during blasting to reduce undetonated explosive residues to a minimum and to minimize impacts to groundwater from ammonia, nitrite, and nitrate.	Project Proposal Chapter 9 (BMC, 2017a)
Groundwater	<p>If acid generating conditions are identified in the underground mine, based on the severity and how widespread they are, various mitigative measures would be investigated and implemented accordingly.</p> <p>Such measures may include cement grouting of bolts, use of chemical or mechanical anchors, use of galvanized steel bolts or mesh instead of ungalvanized, replacement of friction bolts with point anchor or full contact solid steel bolts, use of non-metal ground support materials such as shotcrete or many other common practices.</p>	Response Report #1 (BMC, 2017b)
Aquatic Ecosystems and Resources	<p>The following conceptual management plans (presented in the Project Proposal) outline mitigation measures to minimize potential effects to Aquatic Ecosystems and Resources from Project activities:</p> <ul style="list-style-type: none"> ○ Fish Offsetting Plan (Appendix E-4); ○ Waste Management Plan (Section 18.2); ○ Hazardous Materials Management Plan (Section 18.3); ○ Surface Water Management Plan (Section 18.4); ○ Spill Response Plan (Section 18.5); ○ Sediment and Erosion Control Plan (Section 18.6); 	Project Proposal (BMC, 2017a)

Valued Component	Proposed Mitigation	Source
	<ul style="list-style-type: none"> ○ Waste Rock Management (Section 4.9); and ○ Conceptual Reclamation and Closure Plan (Appendix H-1). <p>The detailed management plans will be submitted to the appropriate licensing agencies and will become conditions of the respective licenses.</p>	
Aquatic Ecosystems and Resources	All mitigation measures described above to mitigate impacts to the Surface Water Quality and Quantity Valued Component will also mitigate impacts to the Aquatic Ecosystems and Resources Valued Component.	Project Proposal Chapter 10 (BMC, 2017a)
Aquatic Ecosystems and Resources	Develop a fish salvage strategy to minimize salvage requirements.	Project Proposal Chapter 10 (BMC, 2017a)
Aquatic Ecosystems and Resources	Adhere to instream construction timing windows (instream construction will be avoided, when practicable, during grayling spawning and incubation period mid-May to late June).	Project Proposal Chapter 10 (BMC, 2017a)
Aquatic Ecosystems and Resources	Geochemical control of construction materials for in-stream works.	Project Proposal Chapter 10 (BMC, 2017a)
Aquatic Ecosystems and Resources	<p>BMC will protect aquatic and riparian habitat by:</p> <ul style="list-style-type: none"> ○ Other than at the site of the ABM open pit and construction of water management infrastructure, keeping machines out of, and avoiding work in 15 m of the ordinary high water mark adjacent to non-fish bearing waterbodies and 30 m adjacent to fish bearing waterbodies, where practicable; ○ Using existing roads where practicable; ○ Establishing lay-down and storage areas at least 15 m from the ordinary high water mark adjacent to non-fish bearing water bodies and 30 m adjacent to fish bearing water bodies, where practicable; ○ Preventing deleterious substances and other debris from entering watercourses; and ○ Screening pump intakes in accordance with the <i>Fisheries Act</i>. 	Project Proposal Chapter 18 (BMC, 2017a)
Aquatic Ecosystems and Resources	<p>Specific mitigation measures BMC will adhere to during any in-water works will include:</p> <ul style="list-style-type: none"> ○ Avoiding in-stream construction in fish-bearing watercourses whenever practicable, and respecting the work timing windows described in Fish Offsetting Plan when avoidance is not practicable; ○ Completing water crossings and in-water works in accordance with approvals and permits; ○ Diverting streams and isolating work activities wherever practicable; ○ Installing water diversion pump intakes in a manner that prevents entrainment of sediments; ○ Installing water diversion discharge points in a manner that prevents erosion of the downstream substrates; and ○ Removing temporary structures and restoring the area when such structures become redundant, wherever possible. 	Project Proposal Chapter 18 (BMC, 2017a)
Aquatic Ecosystems and Resources	<p>BMC will relocate and/or salvage fish in the ABM open pit area before the start of construction activities in accordance with the Fish Offsetting Plan (Appendix E-4 of the Project Proposal). Specific measures will include:</p> <ul style="list-style-type: none"> ○ Excluding fish in advance of works using a temporary fish barrier and/or stop-nets (or similar) well downstream of the construction area; ○ Maintaining fish barriers during in-stream works; ○ Capturing fish using seining or trapping in isolated areas; ○ Electrofishing after seining or trapping; ○ Using alternate approaches, such as capturing fewer mobile populations or life stages, or backpack or boat electrofishing, in areas where exclusion is not expected to be feasible, such as the ponds located over the proposed ABM open pit; and ○ Relocating fish downstream of the Project area. <p>BMC will carry out fish salvage activities in accordance with fish collection permits to be issued by Federal Department of Fisheries and Oceans and the <i>Fisheries Act Authorization</i>. During release of captured fish, BMC will consider habitat suitability and capacity.</p>	Project Proposal Chapter 18 (BMC, 2017a)
Aquatic Ecosystems	<p>BMC will manage aquatic and other invasive species. Specific measures will include:</p> <ul style="list-style-type: none"> ○ Cleaning equipment (at its point of shipment) before transport to site; 	Project Proposal Chapter 18 (BMC, 2017a)

Valued Component	Proposed Mitigation	Source
and Resources	<ul style="list-style-type: none"> ○ Unloading equipment away from watercourses; ○ Environmental staff will inspect all equipment to ensure that it is free of soil and vegetation during unloading; ○ Inspection results will be documented on an equipment inspection form; and ○ Contaminated equipment will either be rejected or cleaned, and any material that may contain invasive species will be properly disposed. 	
Terrain and Soils	<p>Several approaches will be used to mitigate potential effects of the Project on terrain stability. Many of them are related to mine design to help eliminate risks and include approaches such as:</p> <ul style="list-style-type: none"> ○ Remove all unsuitable (from a geotechnical perspective) soils overlying bedrock from Project facilities; ○ Progressive construction of a low permeability liner system below the Class A and B Storage Facilities with collection conveyance systems constructed below the liners; ○ Grading waste storage facilities to collect and convey water away from each facility; ○ Construction of a buttress at Class A Storage Facility for confinement at the downstream slope of the facility; ○ Assessing the volume of material on waste rock storage facilities to not affect stability; ○ Construction of storage facilities with nominal final design slopes of 3H:1V (Class B and Class C Storage Facilities) for long-term physical stability and to allow for recontouring for closure reclamation; ○ Construction of the Class A Storage Facility with a nominal final design slope of 4:1; ○ Planning of progressive reclamation to help ensure slope stability; ○ Reduction of catchment areas by decreasing the lateral extents of each facility along the valley slopes; ○ Containment of Class C waste rock volume in the side-valley northeast of the ABM open pit, confining the pile along the northeast and south slopes; ○ Utilizing the guidelines for the Dump Stability Rating scheme, a semi-quantitative method for assessing the relative potential pile stability and recommending the appropriate level of pile investigation and design; and ○ Cover systems on waste storage facilities such to promote stability and prevent erosion. <p>Construction and operational approaches may also include:</p> <ul style="list-style-type: none"> ○ Identification of temporary run-off and erosion controls for construction (such as run-off collection channels, settlement ponds, and sediment control devices such as silt fences); and ○ Trial sections in the field during the initial stages of development to monitor rock fill pile stability and foundation performance. 	<p>Project Proposal Chapter 11 (BMC, 2017a)</p> <p>Response Report #1 (BMC, 2017b)</p> <p>BMC Response on Draft Screening Report (BMC, 2020)</p>
Terrain and Soils	Procedures in the Sediment and Erosion Control Plan (Section 18.6 of the Project Proposal) will aid in terrain stability.	Project Proposal Chapter 11 (BMC, 2017a)
Terrain and Soils	Mitigation measures listed above for the Air Quality Valued Component will also mitigate the potential for impacts to soil quality.	Project Proposal Chapter 11 (BMC, 2017a)
Terrain and Soils	Reclamation methods that reduce equipment traffic during soil redistribution and placement will be utilized to lessen compaction of soil in stockpiles and reclaimed areas. For example, where practicable, instead of a dozer, a backhoe will be used to distribute topsoil cover in the reclaimed areas. Ripping will be used in areas where surficial soils are excessively compacted.	Project Proposal Chapter 11 (BMC, 2017a)
Terrain and Soils	During salvage operations, mitigation against soil degradation by having multiple topsoil storage areas, will focus on minimizing the number of times the soil is moved, reducing vehicle traffic over the stockpile surface, and avoiding handling soils when they are too dry or too wet.	Project Proposal Chapter 11 (BMC, 2017a)
Terrain and Soils	Reduction of topsoil stockpile erosion will be accomplished by covering topsoil stockpiles with plastic sheeting or tarps, or establishing vegetative cover, to prevent erosion (as per the Sediment and Erosion Control Plan) (Section 18.6 of the Project Proposal).	Project Proposal Chapter 11 (BMC, 2017a)
Terrain and Soils	Minimize land clearing to the areas necessary for Project Footprint.	Project Proposal Chapter 11 (BMC, 2017a)
Terrain and Soils	Risks associated with increased gully erosion of the Class A, B and C Waste Storage Facilities will be mitigated through the inclusion of benches to reduce the length of the overall slope. The benches will be sloped appropriately to minimize down slope flow, while the slopes will be contoured to minimize the potential for erosion. The upper terraces of the facilities will be graded to a slope of 2% to convey water at a reduced velocity and reduce ponding water. Concurrent reclamation and revegetation will minimize the areas susceptible to erosion during operations and the majority of the longer steeper slopes will be revegetated prior to the active closure phase. This design concept is commonly used for reducing the potential for gully erosion and has become accepted practice throughout the mining industry.	Response Report #1 (BMC, 2017b)

Valued Component	Proposed Mitigation	Source
	If gully erosion is observed in areas on the storage facilities it will be remedied by a combination of some or all of: armoring, backfilling, recontouring, and revegetation.	
Terrain and Soils	For the Upper and Lower Water Management Ponds BMC will pre-strip all overburden with permafrost (to bedrock or competent, ice-free material) within the pond and dam footprints, and extend stripping long the pond perimeter/berm, including the immediate upslope area. Ensure the dam foundation is keyed into competent, ice-free material. Monitor and manage (as required) the stripped areas above the pond perimeter/berm for deposition of localized mass movements. Where required, implement spur road construction techniques specifically designed for ice-rich permafrost.	Response Report #3 (BMC, 2017c)
Vegetation Cover and Composition	An alternatives assessment was conducted for tailings and waste rock management. The preferred alternative is for the major storage facilities to avoid permanently flooding the Geona valley (which was the original design by Cominco) in order to reduce the permanent loss of wetland and riparian ecosystems. This change in design has substantially reduced the effects to wetland and riparian ecosystems that would have occurred under the previously approved Cominco design.	Project Proposal Chapter 12 (BMC, 2017a)
Vegetation Cover and Composition	Fish Offsetting Plan includes (in part) the construction of wetland and riparian habitat in the fish habitat offsetting ponds, this will offset impacts to wetlands.	Project Proposal Chapter 12 (BMC, 2017a) and BMC Response on Draft Screening Report (BMC, 2020)
Vegetation Cover and Composition	The alignment for the Access Road upgrade was designed to minimize new disturbance, which also minimizes disturbance of old growth forest.	Project Proposal Chapter 12 (BMC, 2017a)
Vegetation Cover and Composition	A chance find procedure will be implemented with particular attention in likely areas of rare plant occurrence during the construction phase and clearing activities during operations. If equipment operators (or anyone else) encounters a potential rare plant, clearing in that area will stop immediately, the plant and surrounding vegetation will be cordoned off, and the site environmental officers will be notified. The environmental officers will then have the identification confirmed by a qualified person. If the plant is determined not to be rare, then the environmental officers will give approval to continue work in that area. If the plant is confirmed to be rare, the Environmental Manager will contact Yukon Environment and the designated RRDC environmental contact to determine the appropriate mitigation measures to be taken if the area cannot be avoided.	Project Proposal Chapter 12 (BMC, 2017a) Project Proposal Chapter 18 (BMC, 2017a)
Vegetation Cover and Composition	Invasive Species Management Plan, which includes: <ul style="list-style-type: none"> ○ Minimize disturbance of the natural vegetation and exposure of soils around the Project Footprint; ○ Allow disturbed and reclaimed areas to revegetate naturally to the extent practicable to reduce the risk of introducing invasive plant species to the area; ○ Re-use salvaged soil for reclamation to promote successful regeneration of the natural seed bank; ○ Collection and use of local seeds for reclamation; ○ If necessary, procurement of seeds will be done from reputable seed suppliers with quality control programs; ○ Transplant seedling to disturbed ground to encourage quick regeneration of ground cover and reduce likelihood of invasive species colonization; ○ If concerns of an invasive species infestation are immediate, establish a vegetation cover as soon as practicable after ground disturbance using a native grass seed mix; ○ Where practicable, limit vehicle use to existing roads and trails (included in BMC's ATV policy) to limit additional ground disturbance and therefore potential introduction of invasive species; ○ Ensure equipment, vehicles, and personnel clothing are free of invasive plants prior to entering the Project by way of a check station at the Access Road gatehouse. Check station will include information on invasive species, instructions for proper disposal, and a disposal bin; ○ All new equipment/vehicles entering Project area, will need to be weed free prior to site access; ○ Ensure employees are briefed on proper invasive species prevention strategies during induction; and ○ Use of Yukon recommended invasive plant management methods. 	Project Proposal Chapter 12 (BMC, 2017a)
Vegetation Cover and Composition	If preventative measures are unsuccessful at stopping the spread of invasive plants to the Project operations area, BMC will take action to control the spread and removal of the invasive species. BMC commits to using Yukon recommended invasive plant management methods for the control of invasive plants. Non-chemical methods for controlling the spread and removal will include hand pulling and digging out the root system, followed by revegetation. All plants and seeds removed will be placed in bags and incinerated. Following the control effort, the areas will be monitored to assess the efficiency and condition of the site and revegetation success. BMC will continue to carry out follow-up inspections and efforts to minimize invasive plants. Furthermore, BMC will remain responsive, and if one method or attempt is not successful, another will be selected. For example, if	Project Proposal Chapter 18 (BMC, 2017a)

Valued Component	Proposed Mitigation	Source
	<p>hand-pulling and digging are not effective, other methods can be applied, such as controlled burns (in consultation with Yukon Environment), matting or mowing.</p> <p>BMC will engage the Territorial Highways and Public Works Department regarding their maintenance and weed control on the Robert Campbell Highway right-of-way (if required).</p> <p>Control methods used to treat an infestation and the date and location of the control effort will be recorded in the invasive plant log. Tracking the level of success in the application of different control methods used in battling invasive plant infestations will assist in developing an effective control program.</p>	
Vegetation Cover and Composition	Mitigation measures listed above for the Air Quality Valued Component will also mitigate the potential for impacts to vegetation quality.	Project Proposal Chapter 12 (BMC, 2017a)
Wildlife and Wildlife Habitat	<p>The Wildlife Protection Plan is the primary document that BMC will use to implement wildlife and wildlife habitat protection. In addition, the following conceptual management plans (presented in the Project Proposal) outline mitigation measures to further minimize impacts on the Wildlife and Wildlife Habitat Valued Component:</p> <ul style="list-style-type: none"> ○ Waste Management Plan (Section 18.2); ○ Spill Contingency Plan (Section 18.5); ○ Hazardous Materials Management (Section 18.3); ○ Traffic and Access Management Plan (Section 18.12); ○ Noise Management Plan (Section 18.10); and ○ Air Quality Management Plan (Section 18.11). <p>The detailed management plans will be submitted to the appropriate licensing agencies and will become conditions of the respective licenses.</p>	<p>Project Proposal Chapter 13 (BMC, 2017a)</p> <p>A Draft Detailed Wildlife Protection Plan was submitted as Appendix R2-J of Response Report 2 (BMC, 2017c).</p>
Wildlife and Wildlife Habitat	<p>BMC's main policies related to wildlife protections include:</p> <ul style="list-style-type: none"> ○ Environment Policy (Appendix A-4); ○ No Firearms Policy (Appendix A-8); and ○ No Feeding of Animals Policy (Appendix A-9). 	Project Proposal (BMC, 2017a)
Wildlife and Wildlife Habitat	<p>The following are general mitigation measures to reduce or eliminate Project effects on all wildlife species during all Project phases:</p> <ul style="list-style-type: none"> ○ The Project Footprint was designed to cover as little area as practicable to minimize habitat loss and disturbance; ○ Clearing will be kept to a minimum and only include areas needed to safely construct and operate the Project; ○ Adhere to the policy of no feeding, harassment, or hunting of wildlife by employees and contractors; ○ Present a wildlife protection component in employee, contractor, and visitor orientation/induction program to communicate wildlife policies, safety, and protection measures; ○ Avoid construction in and around sensitive areas, such as calving grounds, raptor nesting sites, den sites, or mineral licks during important seasonal periods (where practicable; the only known nearby mineral licks are south of the Project Footprint as noted in the ethnographic summary in Appendix F-3 of the Project Proposal); ○ Sensory disturbances will be minimized where practicable throughout the year; ○ Fugitive dust will be controlled using water sprays or approved dust suppressant (environmentally-benign that do not contain salts that would attract wildlife) to minimize the Project's zone of influence over the surrounding landscape (including passerine habitat); ○ Regularly scheduled blasting; ○ Progressive reclamation; and ○ Reclaim the Project areas at closure to return the area to existing habits (where practicable) (Appendix H-1 of the Project Proposal). 	Project Proposal Chapter 13 (BMC, 2017a)

Valued Component	Proposed Mitigation	Source
Wildlife and Wildlife Habitat	<p>The following are general mitigation measures to reduce or eliminate Project effects on all wildlife species resulting from use of the Access Road during all Project phases:</p> <ul style="list-style-type: none"> ○ Keep snowbanks less than one-metre high and provide wildlife passageways through banks along the Access Road and around site roads; ○ Breaks in snowbanks will be placed every 50 m to 100 m on both sides of the Access Road to enable passage of large mammals; ○ Road embankments will be low profile to prevent the road acting as a barrier to, or channel for, wildlife movement; ○ Enforce vehicle speed limits on employees and contractors and use radios to report wildlife on roads to reduce the incidence of collisions; ○ Travel speeds along the road will be restricted to a maximum of 50 km/h for daytime travel, and reduced during night-time or hazardous weather conditions (as appropriate); ○ Radio controlled Access Road; ○ Minimum traffic levels will be maintained along the Access Road to the extent practical. Convoys of 2 or 3 vehicles will travel together along the Access Road to reduce periods of sensory disturbance, when practicable; ○ Clearing vegetation from right-of-way; ○ Implement protocol for vehicle-ungulate encounters; ○ Signage will be posted in high collision risk areas (e.g., blind or obstructed turns, water and wildlife crossings; current known areas are present in Figure 18-5 of the Project Proposal). Road travel speeds will be reduced to 30 km/h in these areas. The signs will instruct drivers to reduce speed, remain alert, stop for wildlife, and wait for wildlife to move away (Figure-18-6 of the Project Proposal). Wildlife will have the right-of-way along the road; ○ Individual or groups of animals standing on the road will be allowed to move off the road unalarmed; ○ Wildlife incidents (e.g., collisions) will be reported within 24 hours or as soon as practicable, and an investigation will try to identify the cause and remedial actions; ○ A guard at the gatehouse on the Access Road is in place to prevent public and hunter access. The gatehouse will continue to be guarded throughout the Project phases to restrict hunter access to the Project area; ○ Decommission and reclaim Access Road; and ○ All other requirements currently included in the existing Tote Road Licence. 	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	Minimize activities in alpine and subalpine during caribou rut period (September 28 to October 31).	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	Minimize activities in alpine during the caribou calving period (May 1 to May 31).	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	Fencing or provision of egress ramps from high-density polyethylene lined facilities.	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	Clearing of the Overburden Stockpile, Class A, B, and C Facilities will be progressive, to minimize total area of disturbance at any given time.	Project Proposal Chapter 18 (BMC, 2017a)
Wildlife and Wildlife Habitat	Class A Storage Facility will be progressively reclaimed, to minimize total area of disturbance at any given time.	Project Proposal Chapter 18 (BMC, 2017a)
Wildlife and Wildlife Habitat	Buttresses will be reclaimed following construction; to minimize total area of disturbance at any given time.	Project Proposal Chapter 18 (BMC, 2017a)
Wildlife and Wildlife Habitat	Equipment laydown areas will be distant from known wildlife trails or wildlife road crossings. The distance will be finalized during final design on a case-by-case basis depending on the specific trail, topography, and borrow material location.	Project Proposal Chapter 18 (BMC, 2017a) Response Report #1 *BMC, 2017b)
Wildlife and Wildlife Habitat	Ancillary facilities including Waste Management Facility, Upper and Lower Water Management Ponds, and all water collection ponds with engineered liners will be surrounded by wildlife proof fences and emergency egress ramps will also be installed. If conditions are warranted, the camp shall be enclosed with wildlife proof fencing. Warranted conditions will be developed in consultation with the Conservation Officer and include site-specific bear activity.	Project Proposal Chapter 18 (BMC, 2017a) and BMC Response to Draft Screening Report (BMC, 2020)

Valued Component	Proposed Mitigation	Source
Wildlife and Wildlife Habitat	Construction of new roads will be minimized (e.g., Tote Road will be upgraded to Access Road largely in the existing alignment).	Project Proposal Chapter 18 (BMC, 2017a)
Wildlife and Wildlife Habitat	Leave haul road in pit to provide egress from ABM lake.	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	Follow designated flight and landing route for flights to Finlayson Lake airstrip during winter that stay 1.5 km away from animals and maximize height above ground if practicable at landing and takeoff.	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	Install permanent wildlife barrier around ABM lake.	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	<p>The following are general mitigation measures for waste management for the Project to reduce human-bear conflicts (Waste Management Plan is presented in Section 18.2 of the Project Proposal):</p> <ul style="list-style-type: none"> ○ BMC will provide bear awareness training to all employees and contractors; ○ Site personnel will not attempt to handle nuisance or problem wildlife without specific direction from the Conservation Officer (district office in Faro 867-994-2862 or Watson Lake 867-536-3210); ○ Wildlife interactions (e.g., traffic accidents) and nuisance or problem animals will be reported to the Environmental Manager immediately. Observations of wildlife behaving abnormally will be reported in 24 hours; ○ The harassment of wildlife is prohibited under the <i>Yukon Wildlife Act</i>. Attempts to chase, catch, divert, follow, or otherwise harass wildlife by on-road or off-road vehicles, boats, aircraft, or on foot will not be permitted at any time; ○ Personal wildlife deterrents (e.g., air horns, bear spray, bear bangers) will be issued and carried by all field personnel, as well as functioning radios. Training on wildlife deterrents will be completed prior to issuance and use. Workers will follow scheduled check-in times; ○ BMC will be responsible for the regular collection and disposal of all waste material generated during the course of the Project; ○ BMC will establish regular clean-up and disposal programs to prevent the unnecessary accumulation of wastes; ○ Procedures will be adopted to promptly collect and remove any accumulated debris; ○ BMC will ensure these wastes are stored in suitable containers until such time as they are removed from Project or incinerated; ○ All waste removed from Project will be disposed of at an approved disposal facility, in compliance with applicable legislation and regulations; ○ All food waste and domestic garbage from all Project areas will be collected and placed in an appropriate receptacle daily, and will be disposed of in an appropriate and safe manner; ○ All food wastes will be stored and disposed of in a manner that does not attract nuisance animals, and will be incinerated daily; and ○ The waste management facility will be surrounded by a wildlife barrier. 	<p>Project Proposal Chapter 13 (BMC, 2017a)</p> <p>Project Proposal Chapter 18 (BMC, 2017a)</p>
Wildlife and Wildlife Habitat	At closure, the ABM lake will be batch treated to maintain water quality within acceptable guidelines for wildlife protection.	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	Prevent creation of new nest sites (i.e. during the nesting season inspect for old nests including (including but not limited to) inspection of tall inactive equipment (i.e. crane booms) and building ledges under eaves.	Project Proposal Chapter 13 (BMC, 2017a)
Wildlife and Wildlife Habitat	<p>As much as possible, land clearing will occur outside the nesting season. If land clearing is to be conducted during the nesting season, breeding bird surveys will be conducted prior to clearing and active nests will be buffered. This is required to ensure compliance with the <i>Migratory Birds Convention Act 1994</i>, which prohibits the disturbance or destruction of migratory bird nests and eggs in Canada.</p> <p>The following items will be applied while conducted breeding bird surveys:</p> <ul style="list-style-type: none"> ○ Surveys will be led by qualified and experienced individuals (including involvement from Kaska representatives identified by RRDC); ○ Survey results will be communicated to the on-site construction manager and clearing contractors, including any nests found and ensuing buffer zones; ○ Any nest found will be protected with a buffer zone. Buffer zones vary depending on the species and the type of disturbance and will be determined by the expert contracted for 	Project Proposal Chapter 13 (BMC, 2017a)

Valued Component	Proposed Mitigation	Source
	<p>clearing. Buffer zones are species dependent and are presented in the Wildlife Protection Plan. The buffers can be removed after the young have permanently left the nest;</p> <ul style="list-style-type: none"> ○ If no nests are found, clearing activities will be completed within a 3-day window of survey conclusion; and ○ A summary of results and proposed mitigation are to be provided to RRDC for their input and feedback. 	
Wildlife and Wildlife Habitat	The Yukon standard for the no disturbance buffer for cliff-nesting raptors is 300 m. In Yukon, cliff-nesting raptors occupy nests around the 15th of March to the 31st of April. If helicopter flights are necessary near cliff-nesting raptor nests between this period, BMC will avoid repeat aerial disturbance, where practicable. Routine flights during this period will be as far away as are safe and practical. In addition, approach to nests would be along a tangential visible path to avoid approaching cliff nests from behind.	Response Report #1 (BMC, 2017b)
Wildlife and Wildlife Habitat	The diversion of Fault Creek during construction and at closure will be scheduled to minimize fluctuations during nesting periods as much as practicable (ideally during the late fall or through the winter).	Response Report #3A (BMC, 2018a)
Wildlife and Wildlife Habitat	The transportation route goes through the range of the Little Rancheria and Horseranch caribou herds in southeast Yukon and northern BC near Watson Lake, Alaska Highway, and the north end of the Stewart-Cassiar Highway. Mitigation measures are already in place in high collision areas and include cautionary signage at high incidence areas along the road that ask motorists to slow down and stay alert during key seasons of caribou use. Training of transport contractors by BMC will include information and procedures to alert drivers to the higher potential for caribou and to maintain slower speeds in winter in these key areas. Driver training and information specific to the Little Rancheria and Horseranch Caribou Herds is included in the Wildlife Protection Plan.	Response Report #2 (BMC, 2017c)
Heritage Resources	Implementation of the Heritage Resource Management Plan (Appendix F-2 of the Project Proposal) and then site by site management Plan.	Project Proposal Chapter 14 (BMC, 2017a)

Table 6-2: Summary of Proposed Mitigations and Enhancement Measures for Socio-economic Valued Components

Valued Component	Proposed Mitigation and Enhancement Measures	Source
Economy and Sustainable Livelihood (Traditional Economic Activities – hunting, fishing, trapping, food gathering)	<p>BMC will implement several mitigation measures to reduce any adverse effects of the Project on traditional economic activities, including:</p> <ul style="list-style-type: none"> ○ All firearms are prohibited unless otherwise authorized by BMC management (Appendix A-8 of the Project Proposal); ○ All hunting of wildlife or recreational shooting by employees, contractors and visitors is strictly prohibited, as outlined in the No Firearms Policy (Appendix A-8); this policy will be communicated to all employees and contractors during the site orientation; ○ Recreational use of all-terrain vehicles (ATVs) and snowmobiles are prohibited (Appendix A-11 of the Project Proposal); ○ Access and use of the Tote Road has been strictly controlled since the 1990s and there will be ongoing access control to the mine site, as per the requirements of the Tote Road Licence. Use of the Access Road during Project operations to access recreational areas for ATV and snowmobile use will be strictly prohibited; ○ Implementation of the Traffic and Access Management Plan (see Section 18.12 of the Project Proposal) will mitigate the adverse effect of increased traffic on area wildlife; ○ As part of the Socio-economic Participation Agreement, BMC has agreed to pay a land use interruption supplement to mitigate the effects of the Project on the RRDC citizens who hold trapping rights under the registered group trapline, and operated trap lines within the Project area; and ○ Two x four-week periods of annual vacation/time off plus regular time off on rotation. 	Project Proposal Chapter 15 (BMC, 2017a)
Economy and Sustainable Livelihood (Economic Growth)	<p>The point of hire for the Project will be Yukon (i.e., Whitehorse, Ross River, Faro and Watson Lake). This will help ensure that the Project’s residual effects on economic growth are beneficial. In order to achieve the requirements of the Community Relations Policy (Appendix A-2) and further support local participation, BMC will:</p> <ul style="list-style-type: none"> ○ Encourage the participation of local communities, local Indigenous Peoples and associated businesses in its projects wherever practicable; and ○ Develop and implement community relations management procedures and strategies that includes business alliances, employment and training initiatives on safety in the workplace and practical operating skills. 	Project Proposal Chapter 15 (BMC, 2017a)
Economy and Sustainable Livelihood (Diverse and Stable Economy)	BMC’s plans for continued exploration on the KZK property and nearby properties to delineate further ore reserves and extend the mine life.	Project Proposal Chapter 15 (BMC, 2017a)
Economy and Sustainable Livelihood (Diverse and Stable Economy)	BMC will continue to communicate openly with Yukon Big Game Outfitters and provide regular updates on our proposed plans for development at KZK.	Response Report #1 (BMC, 2017b)
Economy and Sustainable Livelihood (Employment)	<p>The point of hire for the Project will be Yukon.</p> <p>BMC will continue to honour the terms of the Socio-economic Participation Agreement by working with the Kaska to fill openings at the Project (for both BMC and its contractors) for qualified persons, and to the extent permitted by law, give preference to qualified job applicants in the following priority:</p> <ul style="list-style-type: none"> ○ Ross River Dena Council citizens; ○ Other Kaska citizens; ○ Other Yukon First Nation citizens; ○ Other Yukon residents; and ○ Others. 	Project Proposal Chapter 15 (BMC, 2017a)
Economy and Sustainable Livelihood (Employment)	<p>In the event of an unplanned closure, BMC will give as much advance notice as practicable so that employees will know well in advance that the closure will be taking place and can start looking for new employment. The period from a decision to close to cessation of activity to only Care & Maintenance would be no less than 6 months and could be as high as 18 months under some circumstances.</p> <p>During operations of the Project, BMC will implement a health and well-being program for all mine employees. This program in part will include training programs (e.g., trades, apprenticeships, management) to promote progression in employee careers but also to promote transferable skills to enable employees to be more employable, which will facilitate any transitions from working on the Project to another mine or even a different industry. Also, as part of the health and well-being program, all BMC employees will have the opportunity to take financial management training, which will teach employees about the importance of saving as well as debt avoidance.</p> <p>In addition, if an unplanned closure is required, BMC will help all employees prepare resumes, practise interviews and facilitate in the job search, with the intent that employees would transition quickly to new employment.</p>	Project Proposal Chapter 17 (BMC, 2017a)
Economy and Sustainable Livelihood (Employment)	In the case of a temporary or unplanned closure, the Employee Assistance Program will still be in place and will be funded by the company (and in certain circumstances by the company’s insurer). This program will provide emotional and mental health support for those that are in need of it. This program will be supplemented by the provision of externally managed outplacement services for all personnel employed by the company at the Project. Typically, these programs run from between 3 to 12 months from the cessation of employment (but can run longer if required) and are designed to help employees to either obtain other employment in the same field or to prepare for and subsequently obtain employment if a different field if that is their wish.	Response Report #2 (BMC, 2017c)
Economy and Sustainable	During the last one to two years of the operational phase of the Project, mining activity will reduce steadily.	Response Report #3A (BMC, 2018a)

Valued Component	Proposed Mitigation and Enhancement Measures	Source
Livelihood (Employment)	<p>At some point during the Active Closure period the company will offer voluntary redundancy packages to general employees. Employees with critical skills that are required for the Active, Transitional and Passive closure periods will not be offered termination packages. In this way the company expects to reduce employees on site to those number required for the next stage of closure (i.e. Transitional or Passive).</p> <p>The company will consider the unique circumstances of every employee and will give retention preference to locally based employees. This will not preclude locally based employees from requesting a termination package if they wish to take advantage of another employment opportunity elsewhere.</p> <p>Redundancy packages typically include the following elements:</p> <ul style="list-style-type: none"> ○ Relocation/transfers into other roles within the company (for example into exploration or environmental monitoring roles); ○ Retention bonus so that employees finish their employment at a time that suits the company's operational needs; ○ Retraining allowances to help the employees upskill to fit their future desired roles; ○ Employment outsourcing support, where the company pays for third party support for new employment roles. The degree of this support will vary depending upon the level of employment activity that is prevalent in the Yukon and Canada at the time but typically these packages are provided for 3-12 months. Outsourcing support typically includes assistance with preparing resumes, letters of application, career counselling and advice, sourcing of opportunities and coaching for interviews. It can be as comprehensive as the employee needs; ○ References will be provided for all employees; and ○ Termination redundancy payments will vary depending upon circumstances but typically these payments will vary from 1-6 months of the average annual wage of the employee. 	
Economy and Sustainable Livelihood (Employability – Education, Training and Experience)	<p>The Project's employability enhancement measures include:</p> <ul style="list-style-type: none"> ○ BMC's Kaska Education Scholarship Program (initiated in 2016); ○ BMC's Mentor Program; ○ General workplace training for employees; ○ Trades apprenticeships; and ○ Summer employment for Kaska students. 	Project Proposal Chapter 15 (BMC, 2017a)
Economy and Sustainable Livelihood (Broad Participation in Economic Development)	<p>BMC will continue to apply its Kaska hiring preference and will continue to honour its Socio-economic Participation Agreement commitments to Kaska business.</p> <p>BMC will rigorously apply its Employment and Anti-Discrimination Policy (Appendix A-3 of the Project Proposal).</p>	Project Proposal Chapter 15 (BMC, 2017a)
Economy and Sustainable Livelihood (Business Opportunities)	<p>As part of the Socio-economic Participation Agreement, Kaska companies will be offered the right to submit a first proposal on the following contracts for goods and services:</p> <ul style="list-style-type: none"> ○ Winter road construction; ○ Site clearing for the permanent access road; ○ Access road security; ○ Miscellaneous "civil" work (e.g., backhoe, cat hauling); ○ Camp catering; ○ Reclamation work such as re-seeding; ○ Janitorial services; ○ Laundry and linen services; ○ Line-cutting; ○ Concentrate haulage; ○ Expediting; and ○ Mine site fuel supply. <p>The list is not to be considered exhaustive. In addition, the Socio-economic Participation Agreement statement includes the provision that BMC shall ensure that all its sub-contract tender documents contain a "local benefits" component and that BMC shall give the local benefits component meaningful consideration when evaluating tender bids. This will benefit both Kaska and non-Kaska businesses.</p> <p>All of BMC's contractors will also be required to honour the letter and the spirit of the Socio-economic Participation Agreement.</p>	Project Proposal Chapter 15 (BMC, 2017a)
Human Health and Well-being (Individual Health)	<p>To help employees and their families maintain good health, BMC will negotiate on behalf of all employees for favourable arrangements with suppliers of life and property insurance to significantly reduce the costs of these products and offer a dental and health plan for employees.</p> <p>BMC will also support the provision of information regarding health and wellness education programs and will initiate an Employee Assistance Program to ensure that access to counselling services will be made available to all employees and employee families as required.</p>	Project Proposal Chapter 15 (BMC, 2017a)
Human Health and Well-being (Family Stress)	<p>BMC will mitigate possible family stress of its employees through:</p> <ul style="list-style-type: none"> ○ Extensive screening of employees before hire to gauge their suitability for shift work and to help educate them on its potential effects; 	

Valued Component	Proposed Mitigation and Enhancement Measures	Source
	<ul style="list-style-type: none"> ○ Point of hire being in Yukon reduces travel time of employees to get back to their families; ○ Provide assistance and education through its Employee Assistance Program to all employees and their families as required including: <ul style="list-style-type: none"> ○ Financial management training; ○ Drug and alcohol counselling (including time off for employees who need treatment); ○ Marriage counselling; and ○ Healthy living education (i.e., benefits of diet and exercise); ○ BMC will host annual family days at the mine site to show spouses and children of the employees the mine and associated facilities (BMC's experience is that families are more comfortable with their spouses being away if they have seen the site and facilities firsthand); ○ Communications at the site will be via microwave (to maximize bandwidth) and individual connections in each room to ensure that employees can easily communicate via Skype/Facetime etc. with their spouses and children in the privacy of their room rather than in a communal area; ○ BMC will provide recreational facilities at the site and all meal times will have healthy food options, to promote health and well-being of employees while on-shift (with the intent that this would also extend to off-shift healthy living); ○ Training of employees (e.g., trades, apprenticeships, management) to promote progression in their careers (which may enhance job satisfaction); ○ Bereavement leave will be available to all employees; and ○ The 2 week in and 1 week out shift rotations, when combined with the four weeks of annual holiday available after the first year of employment, will allow employees to take one month off twice per year. 	
Human Health and Well-being (Family Stress)	<p>If BMC becomes aware that lack of available day care becomes a disincentive to employment at Kudz Ze Kayah, it will engage with community and First Nation input to develop appropriate solutions. However, it should not be assumed that single parent families without strong family support will see the proposed mine as an employer of choice. BMC expects that many parents in such circumstances may not wish to work away from their family at all.</p>	Response Report #2 (BMC, 2017c)
Human Health and Well-being (Reducing Alcohol and Drug Abuse)	<p>The camp will be dry through all phases of the Project; no alcohol or recreational drugs will be permitted.</p> <p>BMC will follow the industry standard and institute mandatory drug and alcohol testing for potential new employees and random testing thereafter (see BMC's Fitness for Work Policy in Appendix A-5 of the Project Proposal);</p> <p>BMC will also support the provision of information regarding health and wellness education programs and access to counselling services will be made available to all employees and employee families through its Employee Assistance Program, as required.</p>	Project Proposal Chapter 15 (BMC, 2017a)
Human Health and Well-being	<p>BMC will also support the provision of information regarding health and wellness education programs, and access to counselling services will be made available to all employees and their families through its independent Employee Assistance Program. The presence of an Employee Assistance Program service provider operating in the local communities offers other community members access to these services. Employee Assistance Program support is offered on a confidential basis and is subject to normal patient – doctor privilege. However, the company will be advised monthly on a nonspecific basis, as to the quantity, general nature and cost of the support that has been provided by the Employee Assistance Program to our employees and contractors. Experience on other mining projects has shown that significant changes in the level of demand and the type of demand for support services is a useful indicator as to the effectiveness or otherwise of company policies and management tools. If required these tools can then be modified to provide better support for employees and thereby better outcomes.</p>	Response Report #1 (BMC, 2017b)
Human Health and Well-being	<p>The company currently has in place a Mentor program for First Nation personnel employed at the Kudz Ze Kayah project. The initial purpose of this program was to support potential First Nations employees to become 'job ready' and to support them in successfully applying for, preparing for and maintaining employment on the project site. However, this program will be expanded to become a more general support program for all site personnel. While it is not specifically discussed in the Project Proposal, this program will act as a useful personnel management feedback loop for the company since the Mentor is often the first point of contact for local personnel experiencing difficulties at work or at home. Where "at risk" circumstances are identified the opportunity for corrective actions by the Company exists and can be acted upon such as engaging with the Employee Assistance Program. The mentor also has the capacity to propose to the Senior Site executive mitigation measures based on his or her special knowledge of the matter at issue, the person and the immediate family/social situation.</p>	Response Report #1 (BMC, 2017b)
Human Health and Well-being	<p>The company will provide general training to site supervisors and managers that will enable them to be better prepared to recognize the signs and symptoms of employees that may be either at risk of, or be suffering from, substance abuse either directly or indirectly. Once identified, support mechanisms can be initiated.</p> <p>BMC has stated that its intended employment point will be local communities within the Yukon including Ross River, Faro, Watson Lake and Whitehorse. The company will seek to avoid wherever practicable, employment of personnel outside the Yukon on long fly-in fly out commutes. The practical effect of this will be that company supervisors and managers will be embedded into the local community and will therefore be more aware of local issues and social stresses that may lead to unintended social outcomes either for the community or for individual family groups within the community. Our experience is that social networking will provide a level of information flow that might not be available in workplaces that operate in a predominantly longer distance fly-in-fly out structure.</p>	Response Report #1 (BMC, 2017b)

Valued Component	Proposed Mitigation and Enhancement Measures	Source
	BMC has a strong relationship with Ross River Dena Council and is seeking to establish similarly strong relationships with local governments of Watson Lake, Liard First Nation, Faro and Whitehorse. These relationships will be supported by regular meetings between company representatives and government bodies. It is anticipated that unintended social and community issues including drug and alcohol abuse will be a routine topic in those discussions and will be a valuable source of feedback information for the company.	
Human Health and Well-being (Gathering Traditional Medicine)	Due to the Tote Road licence requirements and BMC's commitment to public health and safety the operating area of the Project will continue to not be available for collection of traditional medicines however the Company will work with local elders to find a way to allow collection in other areas where safety will not be compromised. As part of the progressive reclamation and final reclamation planning, BMC has committed to working with RRDC in identifying the species that will be used for the reclamation purposes and developing a seed collection program and seed bank in Ross River. Therefore, the potential effects on traditional medicines will be in part mitigated through this program.	Project Proposal Chapter 15 (BMC, 2017a)
Human Health and Well-being (Public Health and Safety – Increase Traffic, Hazardous Material Transport, Waste Disposal)	<p>The impacts of the increased truck transportation due to concentrate haulage will be mitigated in part through the Traffic and Access Management Plan (Section 18.12 of the Project Proposal). This plan includes BMC's commitment to contracting a qualified trucking firm that will:</p> <ul style="list-style-type: none"> ○ Use only experienced, professional drivers; ○ Equip all trucks with two-way radio communications; and ○ Implement design, safety and operating procedures proven by similar trucking systems utilized in Yukon and Canada. <p>Risks from hazardous materials and from spills will be mitigated through the application of the Hazardous Materials Management Plan (Section 18.3 of the Project Proposal) and Spill Contingency Plan (Section 18.5 of the Project Proposal).</p> <p>To ensure public health is protected, BMC will follow all relevant regulations concerning potable water, food safety, and the disposal of sewage and garbage under the oversight of the Environmental Health Services Branch of Yukon Government.</p>	Project Proposal Chapter 15 (BMC, 2017a)
Human Health and Well-being (Public Health and Safety – Increase Traffic, Hazardous Material Transport, Waste Disposal)	<p>Any school bus zones that occur along the truck route will be identified as part of driver orientation and training program prior to the first trip of any new drivers.</p> <p>New driver orientation sessions will also include briefings on known high incidence areas of wildlife crossings along the route, which will be updated with new sightings as they occur as part of the Wildlife Management Plan.</p>	Response Report #1 (BMC, 2017b)
Human Health and Well-being (Public Health and Safety – Increase Traffic, Hazardous Material Transport, Waste Disposal)	Additional mitigation measures for public health and safety due to increased traffic on the Robert Campbell highway are presented below for the Valued Component "Infrastructure and Services (Transportation Infrastructure – Roads and Airports).	
Human Health and Well-being (Workplace Health and Safety)	<p>The company will rigorously follow all applicable safety laws and regulations in all aspects of its operations.</p> <p>All employees will receive the safety training they require to do their jobs properly and safely. A rigorously enforced dry camp will also improve workplace safety.</p> <p>There will be a fully trained nurse and Emergency Medical Technician/Paramedic on site at all times along with all required medical supplies and equipment. Included in that equipment will be a properly equipped vehicle dedicated for medical evacuations, if necessary. In addition, helicopter medevacs will be available when needed.</p> <p>Underground mining can pose its own unique workplace safety risks. The planned approach to the underground portions of the Project is to have a specialized underground mining contractor do the work. BMC may alternatively choose to employ suitably qualified and experienced personnel to manage and undertake underground mining operations BMC will ensure that the contractor and/or personnel rigorously follows all applicable safety laws and regulations for the underground operations.</p> <p>Implementation of BMC's Occupational Health and Safety Policy (Appendix A-6) and Safety, Health, and Emergency Response Plan (conceptual level detail of the plan provided in Section 18.15 of the Project Proposal).</p>	<p>Project Proposal Chapter 15 (BMC, 2017a)</p> <p>Response Report #3A (BMC, 2018a)</p>
Human Health and Well-being (Workplace Health and Safety)	During operations ABM open pit blasting will occur approximately 4 times a week or on average once every 2 days. The blasts will occur at shift change at the end of Day Shift prior to Night Shift starting work, nominally this will be between 4 and 6 pm. Due to the proposed blasting schedule being at shift change there will be no adverse sleep related effects for employees. Day Shift employees will be coming off shift while Night Shift employees will be preparing to go on shift and there will be no personnel attempting to sleep at the time of the blasts.	Response Report #3 (BMC, 2018)
Human Health and Well-being (Workplace Health and Safety)	The drinking water filtration and disinfection (i.e., Ultraviolet units) equipment is and will continue to be National Sanitation Foundation/American National Standards Institute certified and is/will be tested monthly and serviced according to manufacturer's guidelines. Note this system includes a solenoid shutoff valve that is triggered by malfunction of the ultraviolet sterilizer unit.	Response Report #3 (BMC, 2018a)
Community Vitality	BMC will continue to provide local communities (Ross River, Watson Lake and Faro) with employment and business opportunities, especially through its Socio-economic Participation	Project Proposal Chapter 15 (BMC, 2017a)

Valued Component	Proposed Mitigation and Enhancement Measures	Source
(Healthy Local Business Sector)	Agreement with the Kaska.	
Community Vitality (Traditional Land Use)	Air Quality - All of the mitigation measures described in Section 6.4.2 (Mitigation Measures) and Section 18.11 (Conceptual Air Quality Management Plan) of the Project Proposal are aimed at minimizing the potential air quality effects that could subsequently effect water, soil, vegetation, wildlife and people (i.e. people on the land conducting traditional land use activities outside of the Project footprint). These mitigation measures are presented in this Response Report in Table 6-1 for the air quality Valued Component.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Noise Levels - All of the mitigation measures described in Section 7.4.2 (Mitigation Measures) and Section 18.10 (Conceptual Noise Management Plan) of the Project Proposal are aimed at minimizing the potential effects from increased noise to wildlife and people (i.e. people on the land conducting traditional land use activities outside of the Project footprint). These mitigation measures are presented in this Response Report in Table 6-1 for the noise Valued Component.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Surface Water – All of the mitigation measures presented in Table 6-1 for the surface water valued component will minimize effects from changes in water quality and quantity in traditional land users.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Groundwater - All the mitigation measures presented in Table 6-1 for the groundwater valued component will minimize effects from changes in groundwater in traditional land users.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Aquatic Ecosystems and Resources: <ul style="list-style-type: none"> ○ Fish Offsetting Plan will facilitate the removal of the fisheries passage barrier at the Robert Campbell Highway. This will result in Finlayson Creek being able to be used again for fishing as the fish will move back into the creek. ○ Mitigations to ensure traditional fishing activities are not impacted due to Project activities include not constructing any of the Project facilities outside of the Geona Creek Valley (i.e. the Project will not affect the ability of RRDC/Liard First Nation (LFN) Kaska to fish in North Lakes, lower Finlayson Creek and other traditional land use waterbodies in the region). Additional mitigation measures to protect the aquatic ecosystems to the south is the pit crest height design of the ABM open pit, which will ensure all groundwater and surface water from the pit will flow north (i.e. no long term impacts to the South Lakes watershed). ○ Fish tissue monitoring results will be communicated to RRDC and LFN citizens (likely by the RRDC/LFN Kaska citizen or consultant who participates in or leads the monitoring program). will to help ensure that the community is re-assured that the mitigation measures are in fact protecting fish health and that the fish can safely be consumed by the traditional land users. 	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Terrain and Soils - BMC has established No Recreational Use of ATVs and Snowmobiles Policy. This policy will (in part) ensure that terrain in the region of the Project (which is used for traditional activities) is not impacted by BMC employees or contractors. This policy is included in Section 1.2.2 of the Project Proposal.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Vegetation Cover and Composition - BMC has established a No Recreational Use of ATVs and Snowmobiles Policy. This policy will (in part) ensure that vegetation in the regional area of the Project (used for traditional berry and medicinal collection purposes) is not impacted by BMC employees or contractors. This policy is included in Section 1.2.2 of the Project Proposal.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Vegetation Cover and Composition - Through BMC’s cross-cultural awareness training program provided to BMC by two RRDC Elders (one of which is one of the traditional land stewards for the Project area) and several of the site tours with the Elders, BMC has learned a lot about the culturally important plants at KZK. Re-establishment of these plants during progressive and final reclamation will be critical to the success of the proposed Reclamation and Closure Plan (details are presented in Appendix H-1 of the Project Proposal), with the ultimate goal of “Return the mine site and affected areas to viable and, wherever practicable, self sustaining ecosystems that are compatible with a healthy environment and with traditional land use activities”. In 2017 BMC’s Kaska Environmental Scientists (LFN and RRDC) initiated a revegetation research program which (in part) is evaluating which culturally important species are amenable for use in reclamation. This research is ongoing and in 2018 Elders from LFN and RRDC were on site to help with this research. BMC has committed to ongoing collaboration with both RRDC and LFN in continuing this research program in order to ensure that the land used for traditional hunting, trapping, and gathering which will be temporarily lost during mine operations will be restored through revegetation and reclaiming wildlife habitat at closure.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Vegetation Cover and Composition - Invasive species are known to spread extensively, rapidly and can outcompete indigenous species resulting in decreased biodiversity. This in turn can have impacts on the abundance of culturally important plants used for food and medicines. In order to ensure invasive species don’t cause such adverse effects, BMC has implemented an invasive species management program for exploration, and this will continue throughout all the proposed Project Phases. Details of this plan are presented in Section 18.8.1 of the Project Proposal (Invasive Plant Management Plan).	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Vegetation Cover and Composition - BMC has proposed a rare plant chance find procedure (Section 18.8.2 of the Project Proposal). If one of the plants listed in the procedure are confirmed to be at site, the protocol will be to contact Yukon Environment and the designated RRDC/LFN Kaska environmental contact to determine the appropriate mitigation measures to be taken if the area cannot be avoided. In this way RRDC/LFN Kaska can make the determination if the rare plant is considered culturally important and can help determine the best course of action.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Vegetation Cover and Composition - The RRDC Elders have had concerns that the vegetation that is planted or re-established on the Class A Facility will accumulate metals from the tailings below the cover and subsequently the vegetation would not be safe to use for food or medicines. BMC has	Response Report #4A (BMC, 2018b)

Valued Component	Proposed Mitigation and Enhancement Measures	Source
Land Use)	designed the covers (high-density polyethylene liner, 3 meters of clean waste rock, overburden and organic soil) to ensure that there is no possibility for the roots of any of the plants on the Class A Facility to encounter the tailings. The Class B facility has been designed the same. Therefore, in post closure the traditional use activities (i.e. berry picking, traditional medicine gathering, and hunting can safely resume). BMC has committed to monitoring the vegetation in collaboration with RRDC/LFN Kaska. Preliminary berry trigger levels are presented in response to YESAB's information request R3-27 (BMC, 2018a). Collaboration by both parties in monitoring, reporting and communicating will to help ensure that the community is re-assured that the design measures are in fact protecting vegetation and that is can safely be consumed by the traditional land users. This strategy is aimed at promoting traditional land use activities in post closure.	
Community Vitality (Traditional Land Use)	Wildlife and Wildlife Habitat - BMC has established Environmental, No Hunting / No Fishing, No Firearms, No Recreational Use of ATVs and Snowmobiles, and No Feeding of Animals policies. These policies will (in part) ensure that traditionally harvested wildlife in the Project area are not impacted by BMC employees or contractors. These policies are included in Section 1.2.2 of the Project Proposal.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Wildlife and Wildlife Habitat - In order to minimize the effects on wildlife and wildlife habitat, BMC has minimized the Project footprint so that all Project infrastructure is confined to one watershed. By minimizing the impact to the habitat, the effects on the land users who use the land base for hunting the wildlife are also reduced.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Wildlife and Wildlife Habitat - During one of the RRDC Elders Oversight Committee Meetings, one of the Elders indicated that wildlife (moose and caribou) could be at risk of falling in the ABM open pit at closure, based on this knowledge BMC committed to constructing a bund around the highwall edges of the open pit to prevent inadvertent access by wildlife and people (Section 7.2.1 Appendix H-1 of the Project Proposal). In more recent discussions with RRDC Elders it was determined that a second bund would reduce this risk even further. Subsequently, BMC has committed to construct a second bund to ensure protection of wildlife and people (i.e. traditional land users).	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Wildlife and Wildlife Habitat - Potential impacts to the Finlayson Caribou Herd during their annual migration route to their winter range has been raised as one of the main concerns of the RRDC Elders Oversight Committee. The primary risk is the potential for vehicle collisions along the Access Road when the animals are migrating. Mitigation measures to reduce this potential effect are: <ul style="list-style-type: none"> ○ Wildlife will have the right-of-way along the entire Access Road; ○ If caribou are encountered on the road, the equipment and/or activity is to be halted until the wildlife has left the immediate area; ○ Radio communication among road users will be required to communicate information such as sightings of caribou; ○ The road will be plowed so that snowbanks are less than 1 m in height; ○ All wildlife observations on access road will be reported; ○ Breaks in snowbanks will be placed on both sides of the road to enable passage of large mammals; and ○ Gravel and/or sand will be used on compacted snow or ice to improve road safety. Salt will not be used as it is a wildlife attractant. Additional mitigation measures to reduce the potential effects on this important traditionally harvested species is included in the Wildlife Protection Plan (Appendix R2-J of Response Report #2) (BMC, 2017c).	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Wildlife and Wildlife Habitat - It is understood that game birds are an important food source for the RRDC traditional land users. During construction BMC will avoid clearing during the breeding bird window (May 1st to August 15th), where practicable. This avoidance measure will ensure the populations of game birds used for traditional purposes are not impacted from Project activities. If construction during the breeding bird window cannot practicably be avoided, BMC has proposed nest surveys to be completed prior to clearing and if nests are identified (by the qualified and experienced person in collaboration with an RRDC/LFN Kaska representative) an avoidance buffer will be placed around the nest (buffer area will depend on the species) and no clearing will take place until the young have permanently left the nest. A summary of the survey results and proposed mitigation are to be provided to RRDC/LFN Kaska for their input and feedback. This mitigation measure will ensure the populations of game birds used for traditional purposes are not impacted from Project activities. More detailed information is presented in Section 13.4.2 of the Project Proposal and in the Wildlife Protection Plan (Appendix R2-J of Response Report #2) (BMC, 2017c).	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Wildlife and Wildlife Habitat - Increased hunting pressure has been raised as one of the key factors impacting RRDC's ability to harvest caribou and moose in their traditional territory. The most important mitigation measure that BMC will continue to implement is the operation of the manned gate to prevent hunter access to the Project (as per the lease requirements for the road). This is a proven mitigation measure which will continue for the life of the Project until the road is decommissioned and reclaimed. With this mitigation measure the KZK project will prevent overhunting and subsequent impacts to traditional land use activities.	Response Report #4A (BMC, 2018b)
Community Vitality (Traditional Land Use)	Wildlife and Wildlife Habitat -BMC's wildlife monitoring program will focus on identifying changes to wildlife use and movement patterns resulting from Project development and operations. Traditional knowledge and scientific research will be integrated as it becomes available to help in the interpretation of ongoing monitoring data. In general, where possible and interest exists, one to two RRDC/LFN Kaska Land Stewards and/or Traditional Knowledge Team with RRDC/LFN Traditional Knowledge Kaska regarding wildlife will be contracted to participate in ongoing surveys of the wildlife monitoring programs. RRDC/LFN involvement will ensure their understanding of the effects of the mine on wildlife, especially culturally important species, and to ensure consideration and/or integration of RRDC/LFN Kaska TK into the monitoring program. RRDC/LFN Land Stewards and/or Traditional Knowledge Team will review their contributions to the programs as part of the annual report before it goes to regulators. More detailed information is presented in Section 13.6 of the Project Proposal and in the Wildlife Protection Plan (Appendix R2-J of Response Report #2) (BMC, 2017c).	Response Report #4A (BMC, 2018b)
Community Vitality (Reducing	The mitigation measures for this subcomponent are BMC's policies on alcohol and drug abuse and provision of counselling as required.	Project Proposal Chapter 15 (BMC, 2017a)

Valued Component	Proposed Mitigation and Enhancement Measures	Source
Crime)		
Community Vitality (Reducing Discrimination and Racism)	<p>BMC will attempt to have a beneficial effect of reducing discrimination and racism by doing all it can to eliminate all forms of discrimination and racism in the workplace. The company's Employment and Anti-Discrimination Policy (Appendix A-3) reads, in part:</p> <p><i>"All employment processes and ongoing employee performance evaluation shall be merit based, without regard to other factors such as sex, marital status, pregnancy, parental status, age, race, impairment, religion, political belief, social origin, lawful sexual activity, social preference and family responsibilities.</i></p> <p><i>Managers and staff at every level of the organization shall ensure they and the people around them do not engage in discriminatory behaviour. All employees will be held responsible for the implementation of this policy and relevant programs within their area of responsibility."</i></p> <p>BMC will strictly enforce its Employment and Anti-Discrimination Policy prohibiting any form of discrimination or racism in the workplace. Complaints will be treated seriously and dealt with immediately. In addition to the community mentors providing a conduit to the Kaska, every department manager will have a specific requirement to maintain direct contact with the local communities.</p> <p>All BMC directors, supervisors and managers will have mandatory, ongoing (annual) cultural awareness training. The higher the level of employee within the company, the greater the degree of training required.</p> <p>In its Community Relations Policy (Appendix A-2) BMC states: <i>"We will strive for the improvement of cross-cultural awareness through the induction, training and education of our personnel in local Indigenous Peoples culture and workplace relationships."</i></p> <p>BMC commits to hiring two Kaska citizens (one from LFN and one from RRDC) as community mentors. The mentors will be responsible, in part, for building and maintaining Kaska employee's workplace relationships and assisting with Kaska employee retention.</p>	Project Proposal Chapter 15 (BMC, 2017a)
Community Vitality (Community Events and Volunteerism)	BMC will continue to support community events and projects as the Project proceeds.	Project Proposal Chapter 15 (BMC, 2017a)
Community Vitality (Community Events and Volunteerism)	As the Project proceeds, BMC will consider making donations to community recreation projects on a case-by-case basis.	Project Proposal Chapter 15 (BMC, 2017a)
Infrastructure and Services (Housing and Land Availability)	<p>In order to mitigate impacts on housing availability BMC has adopted a position of preferential hire for local people. The point of hire for most personnel is expected to be in the Yukon. The three closest towns to the Project are Ross River, Faro and Watson Lake. BMC notes that the definition of a "local hire" is somebody that already lives locally. BMC considers it unlikely that new employees will relocate to the towns of Ross River and Watson Lake due to current housing supply constraints.</p> <p>The town of Faro is different from Watson Lake and Ross River since the number of available houses in Faro outnumbers that number of residents likely to seek employment with BMC. BMC has purchased three apartment complexes in Faro, containing approximately fifteen 2 to 3 bedroom dwellings. These dwellings will be renovated and available for relocating staff as required. Excess dwellings will be made available to locals requiring accommodation.</p> <p>BMC is committed to working with the towns of Faro, Ross River, Watson Lake and Whitehorse as well as RRDC and LFN Chiefs and Councils to ensure that employment opportunities and housing outcomes for locally employed BMC employees are optimised.</p> <p>No additional mitigation is proposed for the City of Whitehorse given the programs adopted by the Whitehorse Council in relation to housing and the councils publicly stated housing targets.</p>	Project Proposal Chapter 15 (BMC, 2017a) Response Report #3A (BMC, 2018a)
Infrastructure and Services (Transportation Infrastructure – Roads and Airports)	BMC may need to clear the Finlayson Lake airstrip in the winter (if Yukon Transportation is unable to clear it in a timely fashion).	Project Proposal Chapter 15 (BMC, 2017a)
Infrastructure and Services (Transportation Infrastructure – Roads and Airports)	Prior to construction and operations BMC commits to discuss with the local communities BMC's preliminary plans and request any suggestions on ways to assist with managing the increased traffic to maximize safety and minimize disruptions that they may have.	Response Report #3A (BMC, 2018a)

Valued Component	Proposed Mitigation and Enhancement Measures	Source
Infrastructure and Services (Transportation Infrastructure – Roads and Airports)	<p>BMC will have some control over the actions of certain portions of the traffic using the highway such as the haulage trucks, supply trucks, and light vehicles driven by employees, and contractors, of BMC. However, BMC has no control over other users of the roads and must rely on these users to abide by Yukon’s road rules and to drive in a manner that takes into consideration road conditions. With this limited control it may be possible to mitigate some of the potential safety concerns:</p> <ul style="list-style-type: none"> ○ Communications: All Project related heavy traffic on the Robert Campbell Highway will be equipped with radio communication. The radios will be used to advise of relative positions on the highway and advise others about oncoming traffic and road conditions. These radios can also be used to call for assistance if there have been mechanical or road problems. This communication network could also be of advantage to non-company users of the road in cases where assistance is needed, and no communication is available due to the lack of cell coverage on the highway. ○ There are limited locations where vehicles can pass traffic going in the same direction safely, as the road has numerous blind curves and is generally too narrow for safe overtaking. Prior to construction and operations, the locations of safe passing zones will be identified, and drivers associated with the Project will be advised of these locations. A list will be provided and appropriate actions to take at the passing areas will be outlined. These actions may include reducing speed, or even stopping, to allow traffic to pass at these locations. ○ Dust can be reduced by limiting the speeds of vehicles travelling the road however this also could lead to unsafe passing by traffic travelling in the same direction. Vehicles will be advised to allow other users to pass as early as it is safe to do. Yukon Highways can help limit this problem by judicious use of chemical sealants. Chemical sealants may also decrease the overall cost of road maintenance if applied correctly. ○ Traffic travelling on the Robert Campbell Highway will have to pass approximately 4 Project related heavy vehicles travelling in the opposite direction when driving on the stretch of the highway under discussion. Radio communications will warn the trucks of oncoming traffic however there will be no warning for private vehicles and other road users. Prior to construction and operations, it is suggested that BMC travels a number of times to the local communities and asks for their suggestions on ways to assist with managing the increased traffic to maximize safety. ○ One possible way to limit encounters on the highway is for the trucks to travel in convoys rather than individually. This, however, can also lead to increased safety issues both for opposing traffic and passing traffic. This is an area where community input will be requested and where there may need to be trials to evaluate the effectiveness of each strategy. ○ Increased traffic will degrade road conditions more rapidly than at present. The worsening can be minimized by reducing the speed that traffic uses the road and using proper driving techniques such as; minimizing the use of brakes and selecting appropriate gears on sections with steep grades. The company and contract drivers using the road will have appropriate skillsets and training on handling large vehicles on gravel roads. ○ Yukon Highways, and contractors working for them, are continually upgrading and maintaining the highway and BMC realizes that communications with the various work crews is essential. BMC commits to maintaining communications with Yukon Highways at all stages of the Project and working with them to minimize disruption to their projects. This will mean informing Highways of trucking schedules and may mean scheduling trucking to certain times of the day to minimize effects on the various activities. ○ Winter driving: In winter the drivable width of the highway may be decreased due to high snow amounts and the associated snow plowing activities by the Highways Department. This will increase the risk to all travel on the highway. There will be less non Project related traffic on the highway however the decreased road widths will mean that extra restrictions may have to be implemented. This could include speed restrictions applied to company traffic as well as more frequent mapping of potential passing zones. 	Response Report #3A (BMC, 2018a)
Infrastructure and Services (Transportation Infrastructure – Roads and Airports)	<p>The Robert Campbell Highway is prone to washouts during high rainfall events and ice “glaciers” during the spring melt. The glaciers will occur during the highway weight restriction period and during this period there will be less site specific traffic and thus less potential risk for vehicles passing at specific icy locations. Potential washouts can be identified by company traffic prior to actual road closure. If this information is forwarded to Yukon Highways, then there is the possibility that the potential problem may be resolved prior to the washout causing a highway closure. High rainfall events will be monitored and if there is a chance of road closures then company traffic will be restricted from highway use. In the event of a highway closure, due to washouts or other causes, BMC will provide any assistance required and will advise all company users of the closure and prevent all Project related traffic from entering the affected stretch.</p>	Response Report #3A (BMC, 2018a)
Infrastructure and Services (Transportation Infrastructure – Roads and Airports)	<p>Additional mitigations include:</p> <ul style="list-style-type: none"> ○ BMC will keep records of all traffic entering and exiting the mine and will request that the Transportation and Engineering Branch resume the traffic counts at km 110 of the Robert Campbell Highway such that the daily and annual traffic on the Highway can be presented along side with the safety stats for comparison purposes. These reports will be publicly available through the Yukon Government’s Department of Energy Mines and Resources website and will be presented at community meetings in Ross River and Watson Lake and meetings with LFN and RRDC; ○ BMC will work with Yukon Government’s Department of Highways and Public Works.to increase the frequency of brushing from km 114 to 232; ○ BMC will also work with Yukon Government’s Department of Highways and Public Works.to identify areas where additional spot improvements could enhance usability and visibility from km 114 to 232; 	Response Report #4B (BMC, 2019)

Valued Component	Proposed Mitigation and Enhancement Measures	Source
	<ul style="list-style-type: none"> BMC will also work with Yukon Government's Department of Highways and Public Works to identify locations for pullout construction between km 190 to 232; and BMC will propose the creation of a road user interest group that can act as a focal point for the raising of any ongoing issues or suggestions for improvement of the road or BMC's use of the road. This group would be made up of representatives of RRDC, LFN, Town of Watson lake, RCMP and Yukon Government's Department of Highways and Public Works. 	
Infrastructure and Services (Municipal Services – Water, Sewer, Solid Waste)	<p>The Project will not use the solid waste disposal facilities at Watson Lake, Ross River or Faro at any stage of construction, operations or closure. Waste disposal for the Project will be as outlined in Section 18.2 (of the Project Proposal), the conceptual Waste Management Plan:</p> <ul style="list-style-type: none"> All combustible waste will be incinerated on site; Incinerator ash will be landfilled on site; Hazardous and special wastes will be shipped to licensed recycle or disposal facility on regular basis; Waste oil will be burned to provide heat for buildings on site; and Treated grey water will be diverted to an on-site septic field while bio-solids will be dried and deposited in the on-site landfill. 	Project Proposal Chapter 15 (BMC, 2017a)
Infrastructure and Services (Health Care Services)	BMC will ensure that the level of primary and emergency care available on site is maximized to the extent feasible and appropriate. There will be a fully trained nurse and Emergency Medical Technician/Paramedic on site at all times along with all required medical supplies and equipment.	Project Proposal Chapter 15 (BMC, 2017a)
Infrastructure and Services (Child Care)	If BMC becomes aware that lack of available day care becomes a disincentive to employment at Kudz Ze Kayah, it will engage with community and First Nation input to develop appropriate solutions. However, it should not be assumed that single parent families without strong family support will see the proposed mine as an employer of choice. BMC expects that many parents in such circumstances may not wish to work away from their family at all.	Response Report #2 (BMC, 2017c)
Culture, History and Heritage (Language preservation and restoration)	<p>BMC will strictly enforce its Employment and Anti-Discrimination Policy (Appendix A-3) and its Community Relations Policy (Appendix A-2) BMC states: <i>We will strive for the improvement of cross-cultural awareness through the induction, training and education of our personnel in local Indigenous Peoples culture and workplace relationships.</i></p> <p>BMC is committed to hiring Kaska citizens through the Socio-economic Participation Agreement. BMC will also be hiring two community mentors to assist Kaska employees while on-shift and off-shift. Through these measures, BMC intends that Kaska employees will be comfortable and supported to speak Kaska while at work.</p>	Project Proposal Chapter 15 (BMC, 2017a)
Culture, History and Heritage (Traditional Knowledge and Practice – Preservations and Restoration)	The work rotations will be such that at least some traditional knowledge practises can still be undertaken. The opportunity for most shift workers at the Project to two four-week periods off each year will also help mitigate the effect.	Project Proposal Chapter 15 (BMC, 2017a)
Culture, History and Heritage (Heritage and Historic Sites)	<p>Implementation of the Heritage Resource Management Plan (Appendix F-2) and then site by site management plan. This plan includes (but is not limited to):</p> <ul style="list-style-type: none"> Effects to known heritage resources will be avoided, and if they cannot be avoided, they will be minimized where possible, or mitigated through systematic data recovery efforts. The existing Project chance find procedure and the proposed Heritage Resource Management Plan requires that RRDC be notified of a chance find and that the assessment of potential significance of the materials will be assessed by a qualified archaeologist in collaboration with the YG Archaeology Department and RRDC Representative(s) and mitigative options will be identified. BMC will work with RRDC to ensure that any further action needed is taken. These procedures will be updated to also include LFN representatives. <p>The confidential Traditional Knowledge Protocol with RRDC has provisions for management/mitigations of heritage resources that may be identified during the Traditional Knowledge study.</p> <p>The confidential Traditional Knowledge Protocol with LFN will also contain provisions for heritage resources (currently under negotiation).</p>	<p>Project Proposal Chapter 15 (BMC, 2017a)</p> <p>Response Report #4A (BMC, 2018a)</p>

As part of project proposal submissions, YESAB requires conceptual management plans. These plans were provided in Chapter 18 of the Project Proposal (BMC, 2017a) and comprised the key management plans for quartz mining projects required for assessment and licensing processes. Revised versions will be submitted during licensing to the Yukon Water Board, Yukon Government's Department of Energy Mines and Resources and other regulatory agencies. Several of the conceptual management plans are not specific to a Valued Component; however, they have numerous mitigation measures which will reduce the overall environmental and socio-economic impacts of the Project. Therefore, the mitigation measures from the conceptual management plans that are not specific to a Valued Component are presented in Table 6-3. Mitigation measures contained in the management plans that are specific to a Valued Component were previously included in Table 6-1 and Table 6-2 of this Response Report. Table 6-3 also includes additional mitigation measures that are not specific to a Valued Component that BMC has committed to as part of the ongoing environmental assessment for the Project.

Table 6-3: Summary of Proposed Mitigations that are not Specific to a Valued Component

Category	Proposed Mitigation	Source
Waste Management	To ensure that the handling, storage, transportation, and disposal of all wastes (i.e., solids, liquids, and Special Wastes) generated by the Project are conducted in such a manner as to reduce potential adverse	Project Proposal Chapter 18 (BMC, 2017a)

Category	Proposed Mitigation	Source
	<p>environmental effects associated with waste materials, thereby ensuring that disposal is a last resort when no practicable alternatives exist. To achieve this objective, BMC will:</p> <ul style="list-style-type: none"> ○ Provide proper training for staff and contractors on policies and operations; ○ Comply with all applicable territorial and federal waste management regulations; ○ Minimize waste generation; ○ Where practicable, reuse and recycle materials; and ○ Transfer wastes in a safe and responsible manner. 	
Waste Management	<p>The following presents some of the measures BMC will take to manage general (non-hazardous) wastes:</p> <ul style="list-style-type: none"> ○ BMC will be responsible for the regular collection and disposal of all waste material generated during the course of the Project; ○ BMC will take precautions to ensure waste is not inadvertently dumped into watercourses or in environmentally sensitive areas; ○ BMC will establish regular clean-up and disposal programs so as to prevent the unnecessary accumulation of wastes. Procedures will be adopted to promptly collect and remove any accumulated debris; ○ BMC will ensure these wastes are stored in suitable containers until such time as they are removed from site or incinerated; ○ BMC will take the necessary precautions to ensure no loss of waste materials during transport from site; and ○ All waste removed from site will be disposed of at an approved disposal facility, in compliance with applicable legislation and regulations. 	Project Proposal Chapter 18 (BMC, 2017a)
Waste Management	<p>All food waste and domestic garbage from all Project areas will be collected and placed in an appropriate receptacle in a timely manner with specific frequency depending on the material and quantity. Food waste and domestic garbage will be disposed of in an appropriate and safe manner. All food wastes will be stored and disposed of in a manner that does not attract nuisance animals. Food waste will be incinerated daily.</p>	Project Proposal Chapter 18 (BMC, 2017a)
Hazardous Materials Management	<p>BMC's general management policies related to hazardous waste include the following requirements:</p> <ul style="list-style-type: none"> ○ Store, handle, and transport hazardous materials to avoid loss and to allow containment and recovery in the event of a spill in accordance with all applicable legislation, including, but not limited to the National Fire Code of Canada and the <i>Transportation of Dangerous Goods Act</i>; ○ Designate areas for the transfer and limited temporary storage of hazardous materials and wastes. The area(s) shall be located at least 15 m from the ordinary high water mark of any non-fish bearing water body and 30 m for fish bearing water bodies, clearly labelled and appropriately controlled; ○ Adequately train site personnel in the handling and transportation of hazardous materials; ○ Dispose of hazardous wastes generated during construction in compliance with the <i>Environmental Protection Act</i>; ○ Where Project activities involve the handling, storage, and removal of hazardous wastes, BMC will maintain the following records: <ul style="list-style-type: none"> ○ Inventories of types and volumes of wastes generated, stored, or removed; ○ Manifests identifying licensed waste haulers and disposal destinations; and ○ Disposal certification documents. 	Project Proposal Chapter 18 (BMC, 2017a)
Hazardous Materials Management	<p>The Waste Management Facility will be enclosed by an animal proof fence.</p>	Project Proposal Chapter 18 (BMC, 2017a)
Hazardous Materials Management	<p>Full inventory of dangerous goods and hazardous materials will be maintained at the mine site and will list all chemicals on site, including Material Safety Data Sheets (MSDS) and WHMIS information on the products to ensure that Project personnel have all the necessary information for their safe transportation, use, and disposal.</p> <p>The full inventory will be provided as an appendix to the Hazardous Materials Management plan and maintained and updated by site's safety manager or Environmental Manager. Before any chemical is brought to the site, the supplier or contractor will supply an MSDS for the product, and the chemical will be added to the inventory and master table. MSDS sheets for the Project will be kept with the Hazardous Materials Management plan.</p>	Project Proposal Chapter 18 (BMC, 2017a)
Hazardous Materials Management	<p>All process reagents will be stored in the reagent area with the exception of quick lime which will be stored in a silo adjacent to the Process Plant. The reagent storage tanks will be equipped with volume level indicators and instrumentation to ensure that spills do not occur during operation. The reagent mixing and distribution area has been designed as a wet area, with sloped concrete floors draining to sumps for containment. In addition, appropriate ventilation and fire and safety protection will be provided.</p>	Project Proposal Chapter 18 (BMC, 2017a)
Hazardous Materials Management	<p>Transportation of dangerous goods and materials to the Project will comply with the <i>Transportation of Dangerous Goods Act</i> and Transportation of Dangerous Goods Regulations. Transportation of dangerous goods is regulated under the <i>Dangerous Goods Transportation Act</i>, which requires transporters to have a certified contractor and a spill response plan for all goods to be transported. The transporter will be required to ensure:</p> <ul style="list-style-type: none"> ○ MSDSs accompany all goods and materials; ○ Non-compatible materials will be transported in separate shipments; ○ Fire extinguisher and fire prevention materials will be adequate and appropriate for the material being transported; ○ Containers will be appropriate for the material being shipped; ○ Containers will be properly secured; ○ Containers and trucks will be properly marked, labelled, and placarded; ○ Manifests will be maintained in accordance with federal, territorial (Yukon), and provincial (BC) regulations; ○ Spill response materials will be adequate and appropriate for the materials being transported; and ○ Drivers will be adequately trained and equipped for spill first response, containment, and communication. 	Project Proposal Chapter 18 (BMC, 2017a)

Category	Proposed Mitigation	Source
Hazardous Materials Management	<p>Hazardous materials will be stored in appropriate containers in suitably contained areas and will comply with WHMIS. A figure outlining all hazardous material storage locations at the site will be provided in the final plan as part of Licensing.</p> <p>General handling and storage measures that will be implemented to avoid, control, and mitigate risk include:</p> <ul style="list-style-type: none"> ○ Manufacturers will provide safe packaging and labelling for packaged materials, as a condition of purchase agreements; ○ Storage areas will be appropriately climate-controlled, dry, and well-ventilated; ○ Containers holding the materials will remain sealed to prevent accidental leakage and/or spillage; ○ Incompatible chemicals will be stored separately to prevent deleterious chemical reactions and cross contamination; ○ Chemical storage areas will be designated as non-smoking areas and located away from food storage areas; ○ All personnel handling dangerous goods will be trained and provided with appropriate personal protective equipment; and ○ All bulk chemical storage sites will be outfitted with concrete or lined floors and walls capable of containing 110% of the volume of the largest vessel in the area or as stipulated by appropriate legislation or permits. 	Project Proposal Chapter 18 (BMC, 2017a)
Hazardous Materials Management	<p>All employees (and contractors) involved with handling hazardous materials will receive training on safe and appropriate use as per WHMIS from the Regulations of the <i>Occupational Health and Safety Act</i> (Yukon Government, 2003). All employees will follow <i>Occupational Health and Safety Act</i> Regulations and use appropriate personal protective equipment as well as proper handling procedures when using hazardous materials. All new employees will receive an induction and appropriate training before being required to work with hazardous materials.</p> <p>All employees will be required to wear the appropriate company supplied personal protective equipment prior to being permitted to handle hazardous materials. Employees will be trained in proper use of personal protective equipment, as required. In the event of accidental exposure to the hazardous substance, first aid will be administered as directed in the MSDS and dependent on the severity of the exposure. Emergency response procedures are detailed further in the Health, Safety and Emergency Response Plan (Section 18.15 of the Project Proposal).</p>	Project Proposal Chapter 18 (BMC, 2017a)
Hazardous Materials Management	BMC will adhere to its Cyanide Management Plan which was provided to YESAB as Appendix R3-G of Response Report #3A.	Response Report 3A (BMC, 2018a)
Spill Management	<p>Any spill that occurs at the Project will be reported through the internal reporting chain of command and will follow the procedures for assessment, prevention, containment, and clean-up, and will be reported using BMC's Spill Report Form.</p> <p><i>For each specific chemical, the spill response procedure is based on the product type, quantity, and environmental and safety conditions. MSDS will be available at the mine site in the Hazardous Materials Management Plan. The MSDS sheets will be referenced during any spill response to ensure that proper personal protective equipment is worn, that the chemical or product is handled safely, and that proper emergency and first aid procedures are adhered to. BMC's Emergency Response team will be properly trained on clean-up and disposal methods of each chemical and product used at the Project.</i></p>	Project Proposal Chapter 18 (BMC, 2017a)
Spill Management	<p>The general spill response procedure is outlined below. Upon discovering a spill, the following actions will be undertaken immediately:</p> <ul style="list-style-type: none"> ○ Identify the substance spilled and hazards to human health, if possible (MSDS); ○ Protect yourself and notify any others in the vicinity immediately; ○ If safe to do so, turn off any potential sources of ignition and attend to any injuries. Leave the area if it is not safe to be there; ○ Stop the discharge of the substance, if it is safe to do so; ○ Contain the spilled substance; ○ Inform management of the spill; and ○ Report the spill following the established reporting procedure. 	Project Proposal Chapter 18 (BMC, 2017a)
Spill Management	Wastewater treatment infrastructure will be designed to limit the potential for wastewater entering a body of freshwater and to capture potential leaks in a containment structure.	Project Proposal Chapter 18 (BMC, 2017a)
Spill Management	The Health, Safety and Emergency Response Plan (Section 18.15 of the Project Proposal) will be in place to coordinate a response to an explosives-related emergency. This plan will be registered with Transport Canada under the <i>Transportation of Dangerous Goods Act</i> and <i>Transportation of Dangerous Goods Regulations</i> (Government of Canada, 1992; 2015). The emergency procedures developed will inform control measures for any explosives-related environmental releases, including storage tank failure, spills from product delivery trucks, spills from raw material delivery trucks, process spills, and fire.	Project Proposal Chapter 18 (BMC, 2017a)
Spill Management	Reagents will be transported to the Project in appropriate containers by contracted suppliers. The reagent mixing area on site will be a fully contained area equipped with sumps and sump pumps to return any spills to the appropriate stock tank. The reagent containment area will be designed to accommodate 110% of the volume of a spill from the largest stock tank or mix tank in the area. All reagent mixing and stock tanks will be equipped with level sensors to prevent overfilling. Any reagent spills on site will be responded to as per the MSDS and will be based on the product type, quantity, and environmental and safety conditions.	Project Proposal Chapter 18 (BMC, 2017a)
Spill Management	<p>Spill kits will be located at the following locations throughout the Project area (including but not limited to):</p> <ul style="list-style-type: none"> ○ Fuel Storage Areas; ○ Machine Shop; ○ Mining Operations; ○ Process Plant; ○ Paste Plant; ○ Explosives Facility; 	Project Proposal Chapter 18 (BMC, 2017a)

Category	Proposed Mitigation	Source
	<ul style="list-style-type: none"> ○ Camp; ○ Reagent mixing area; and ○ Vehicles carrying hazardous materials including fuel. 	
Spill Management	<p>Spill Response kits will include a yellow pack container labelled “Spill Kit” and placed at all previously noted locations. Additional smaller kits will be required in all site vehicles/equipment (where practicable, for instance some underground equipment do not have room for spill kits). Spill kits will all include at a minimum:</p> <ul style="list-style-type: none"> ○ Spill Instruction Sheet; ○ Laminated List of Contents; ○ Absorbent Pads (oil, gas, grease); ○ Universal Absorbent Pads; ○ Linkable oil booms; ○ Oil Gator Absorbent; ○ Absorbent socks; ○ Leak repair putty; ○ Heavy duty disposal bags; ○ Protective Clothing – Gloves (Chemical Master Gloves), Coveralls (Tyvek splash suits); and ○ Eye Protection. 	Project Proposal Chapter 18 (BMC, 2017a)
Spill Management	<p>Additional spill equipment will be available at the mine site for larger spills and will include:</p> <ul style="list-style-type: none"> ○ Heavy equipment and machinery (e.g., dozer, loader, excavator, Bobcat, grader, and dump truck); ○ Shovels, rakes, axes; ○ Pails and drums; ○ Pumps and hoses; ○ Emergency flagging and triangular reflectors; and ○ Breathing Apparatus (as required). 	Project Proposal Chapter 18 (BMC, 2017a)
Spill Management	<p>BMC will develop a detailed training program to ensure all employees and contractors are aware of their responsibilities and appropriate practices that everyone on site must adhere to. The emergency response team will receive training as necessary for immediate spill response. Spill response employees will be trained in:</p> <ul style="list-style-type: none"> ○ Workplace Hazardous Materials Information System; ○ Transportation of Dangerous Goods; ○ Spill Training (Spill Responder); ○ Site specific spill orientation including site procedures, location of spill kits and type of substances stored and used on site; ○ Safety orientation including reference to the location of the MSDS sheets and to proper chemical handling and storage procedures; and ○ <i>Occupational Health and Safety Act</i> and regulations and use of appropriate personal protective equipment and chemical/product handling procedures. 	Project Proposal Chapter 18 (BMC, 2017a)
Sediment and Erosion Control	<p>Sediment control measures will be as follows:</p> <ul style="list-style-type: none"> ○ Control runoff and manage stormwater (e.g., rainfall or snow melt) and direct it away from construction areas where excavation, soil placement, and staging activities occur; ○ Develop site-specific measures to reduce changes to the existing hydraulic balance and downstream wetland functions (if applicable), prior to construction of the Project access and site roads; ○ Silt fences, berms, swales, ditches, check dams, settling ponds, and other sediment and erosion control facilities will be installed prior to construction at site-specific locations, as required; and ○ Contingency supplies of sediment and erosion control materials will be maintained, and workers will be sufficiently trained in their appropriate installation and maintenance. 	Project Proposal Chapter 18 (BMC, 2017a)
Sediment and Erosion Control	<p>Sediment and erosion control measures will be:</p> <ul style="list-style-type: none"> ○ Inspected regularly at a frequency commensurate with the risk, nature, location, and seasonality of the work; ○ Adapted or revised, as appropriate; ○ Repaired as necessary in a timely manner, commensurate with the risk, nature, location, and seasonality of the work; ○ Maintained until construction is completed and the affected areas are sufficiently stabilized and revegetated so there is minimal risk of erosion or sedimentation at the site as a result of construction activities; ○ Storage and disposal of construction wastes, overburden, soil, or other substances in such a manner as to reduce the potential for entry into any streams or watercourses; ○ Stockpiles of materials will be located at least 15 m from the ordinary high water mark of any non-fish bearing water body or wetland, and 30 m for fish bearing water bodies, unless otherwise deemed to pose a low risk of sediment entry into any water body; ○ Cover stockpiles of erodible materials such as soil with plastic sheeting or tarps, or establish vegetative cover, to prevent erosion; ○ Manage equipment production rates (if required) to reduce the amount of sediment generated; ○ Isolate in-stream work areas from flowing water to prevent sediment from entering the downstream environment; and ○ Use clean rock materials for riprap construction to reduce the amount of sediment that is introduced into the aquatic environment. 	Project Proposal Chapter 18 (BMC, 2017a)
Sediment and Erosion Control	<p>Erosion control measures are as follows:</p> <ul style="list-style-type: none"> ○ Control site runoff by ditching, grading, sedimentation ponds, check dams, or effective alternatives; ○ Stabilize slopes by maintaining ground cover or using materials such as geotextiles/erosion control cloth; 	Project Proposal Chapter 18 (BMC, 2017a)

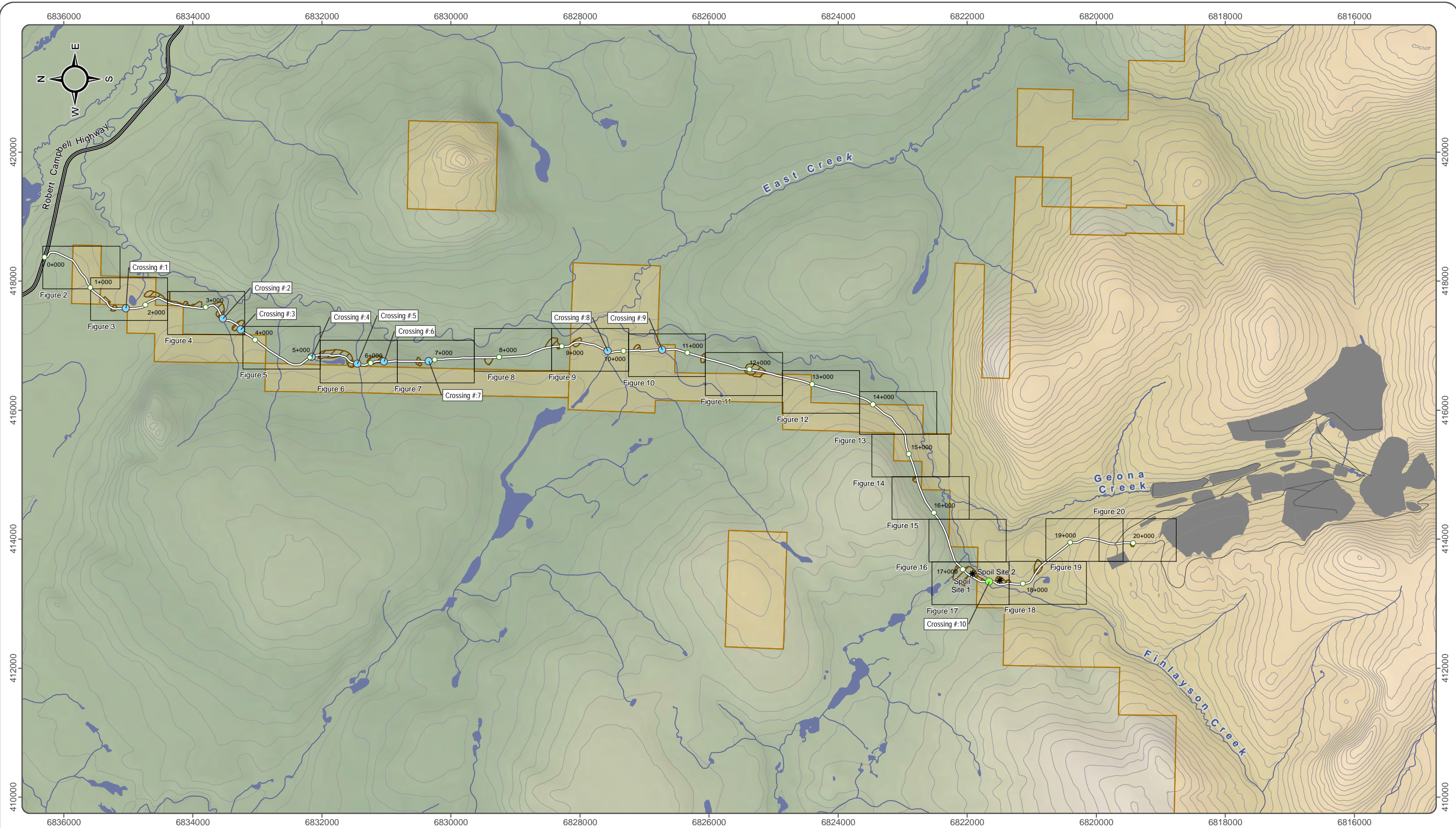
Category	Proposed Mitigation	Source
	<ul style="list-style-type: none"> ○ Manage vegetation and soil stripping, taking into consideration slope stability and the proximity to sensitive habitats such as wetlands or fish habitat, maintaining 30 m riparian buffers adjacent to fish bearing waterbodies and 15 m riparian buffers adjacent to non-fish bearing waterbodies, where practicable; ○ Identify natural drainages that occur in cleared areas and incorporate appropriate sediment and erosion control measures into site planning; ○ Incorporate perimeter channels, as required, to catch and transport site runoff from new construction sites and equipment staging areas; ○ Install water bars to direct road surface runoff away from access and site roads in a safe manner; ○ Where required, install appropriately sized culverts to reduce road failure through erosion and to manage hydrological balance and wetland function; ○ Maintain ditches along access and site roads, as required, to control surface runoff and sediment transport; ○ Operate machinery on land above the high water mark in a manner that reduces disturbance to the banks of watercourses; ○ Remove sediment control measures, such as plastic sheeting and silt fencing, when no longer required; ○ Salvage and stockpile clean surface soils for site restoration; ○ Establish and maintain vegetative cover on the soils stockpiled to prevent erosion; and ○ Restore disturbed areas to a stable vegetated condition as soon as possible. 	
Sediment and Erosion Control	<p>The general measures BMC will use to minimize suspended sediment generation due to surface erosion from overland surface water runoff include:</p> <ul style="list-style-type: none"> ○ Avoiding work where possible, in 15 m of the ordinary high water mark of non-fish bearing watercourses, and 30 m from fish bearing watercourses; ○ Using existing roads where practicable; ○ Establishing lay-down and storage areas at least 15 m from the ordinary high water mark of non-fish bearing watercourses, and 30 m from fish bearing watercourses; ○ Using clean riprap and construction materials; ○ Diverting runoff around disturbed work areas and collecting runoff in sediment ponds for settling and testing prior to discharge to the downstream environment; ○ Using erosion-resistant cover material including compacted granular material on steeper slopes in ditches to increase resistance to erosion; ○ Vegetating exposed surfaces where possible to provide long-term erosion resistance in accordance with the Reclamation and Closure Plan; ○ Vegetating and/or installing erosion control matting on disturbed areas, where possible; and ○ Installing and maintaining silt fencing and sediment control structures (e.g., straw wattles) to minimize sediment transport. 	Project Proposal Chapter 18 (BMC, 2017a)
Sediment and Erosion Control	<p>Sedimentation ponds are structures incorporated into the base of a decline to collect runoff from areas of high sedimentation potential during construction. Sediment collected in the ponds can be allowed to settle and the less turbid water naturally overflows to the surrounding environment or can be pumped to other areas for further settling or, if necessary, treatment prior to discharge. During the early phases of construction, sedimentation ponds will be constructed in several areas to allow water to settle prior to discharge into the surrounding environment.</p>	Project Proposal Chapter 18 (BMC, 2017a)
Sediment and Erosion Control	<p>Specific measures BMC will follow during any in-water works (including but not limited to draining ponds over the proposed ABM open pit and the diversion of Fault Creek) will include:</p> <ul style="list-style-type: none"> ○ Diverting streams/seeps and isolating work activities wherever practicable; ○ Operating equipment in a manner that minimizes sediment release where work areas cannot be isolated; ○ Instream sediment control structures (e.g., silt curtains); ○ Installing water diversion pump intakes in a manner that prevents entrainment of sediments; and ○ Installing water diversion discharge points in a manner that prevents erosion of the downstream substrates. 	Project Proposal Chapter 18 (BMC, 2017a)

7. REFERENCES

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APPENDIX A.
Proposed Right of Way for Access Road and Typical Cross Sections for Road Upgrade



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1:55,000 (when printed on 11 x17 inch paper)

0 1 2 3 Kilometres

- * Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- ══ Tote Road/Proposed Access Road
- Proposed Mine Road
- Contour (20m interval)
- Watercourse
- Waterbody
- ▨ Potential Borrow Area
- Location of Proposed Mine Infrastructure
- BMC Minerals (No. 1) Ltd. Mineral Claim Areas
- Figure Index Extent



KUDZ ZE KAYAH PROJECT

**FIGURE 1
APPENDIX C-8**

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

AEG

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

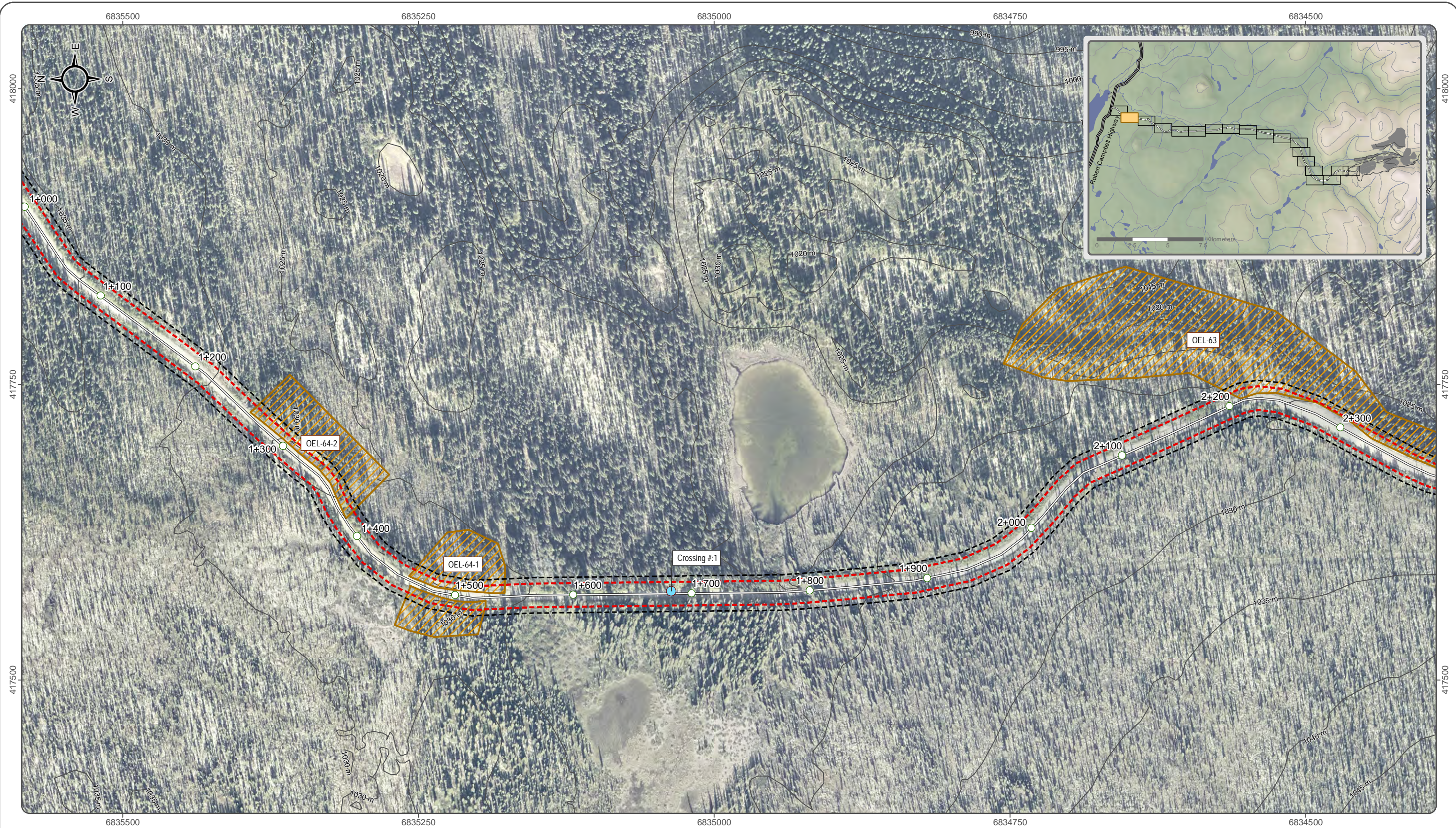


KUDZ ZE KAYAH PROJECT

**FIGURE 2
APPENDIX C-8**

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

AEG

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

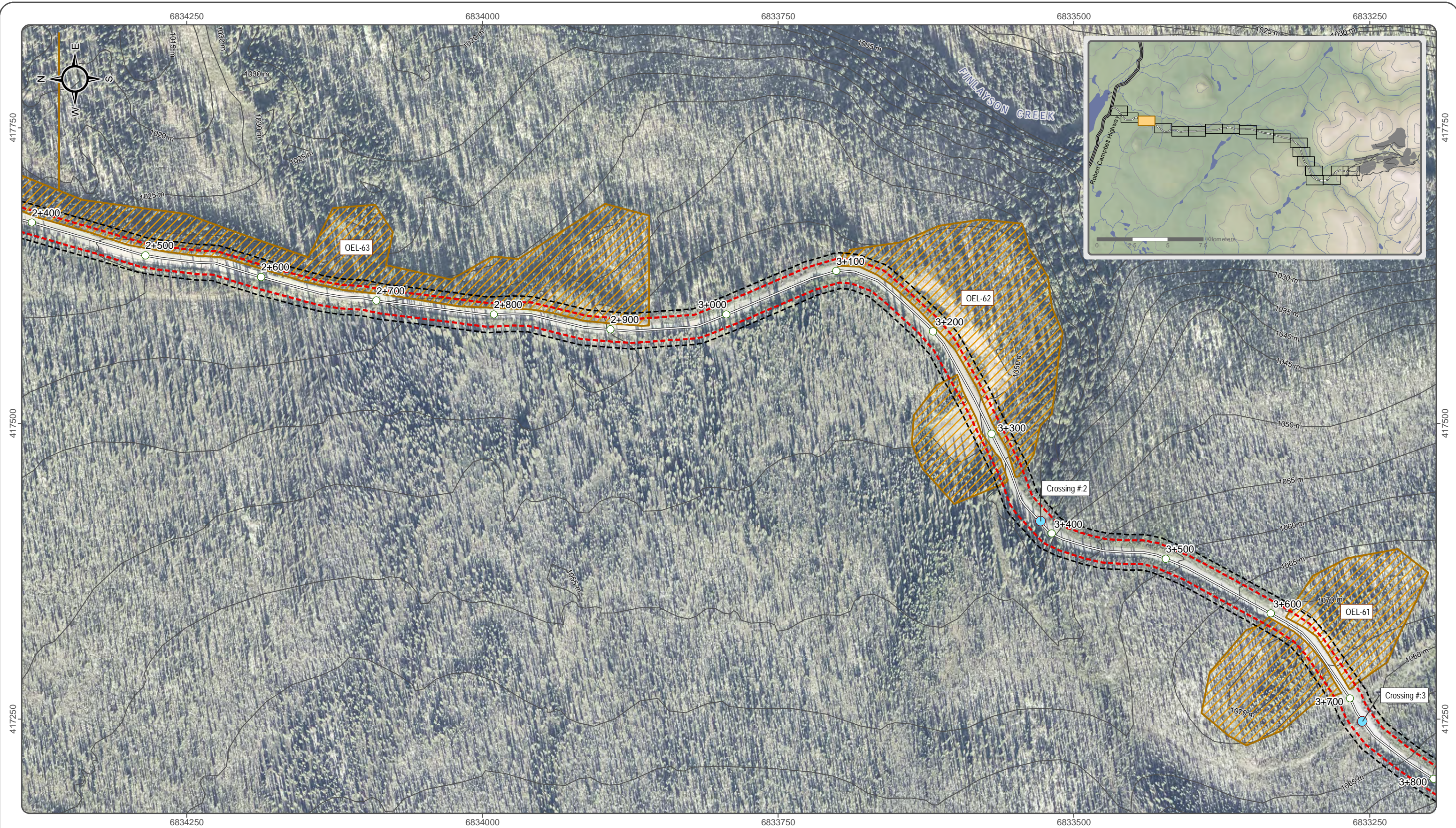


KUDZ ZE KAYAH PROJECT

FIGURE 3
APPENDIX C-8

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

**FIGURE 4
APPENDIX C-8**

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- * Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- ▨ Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

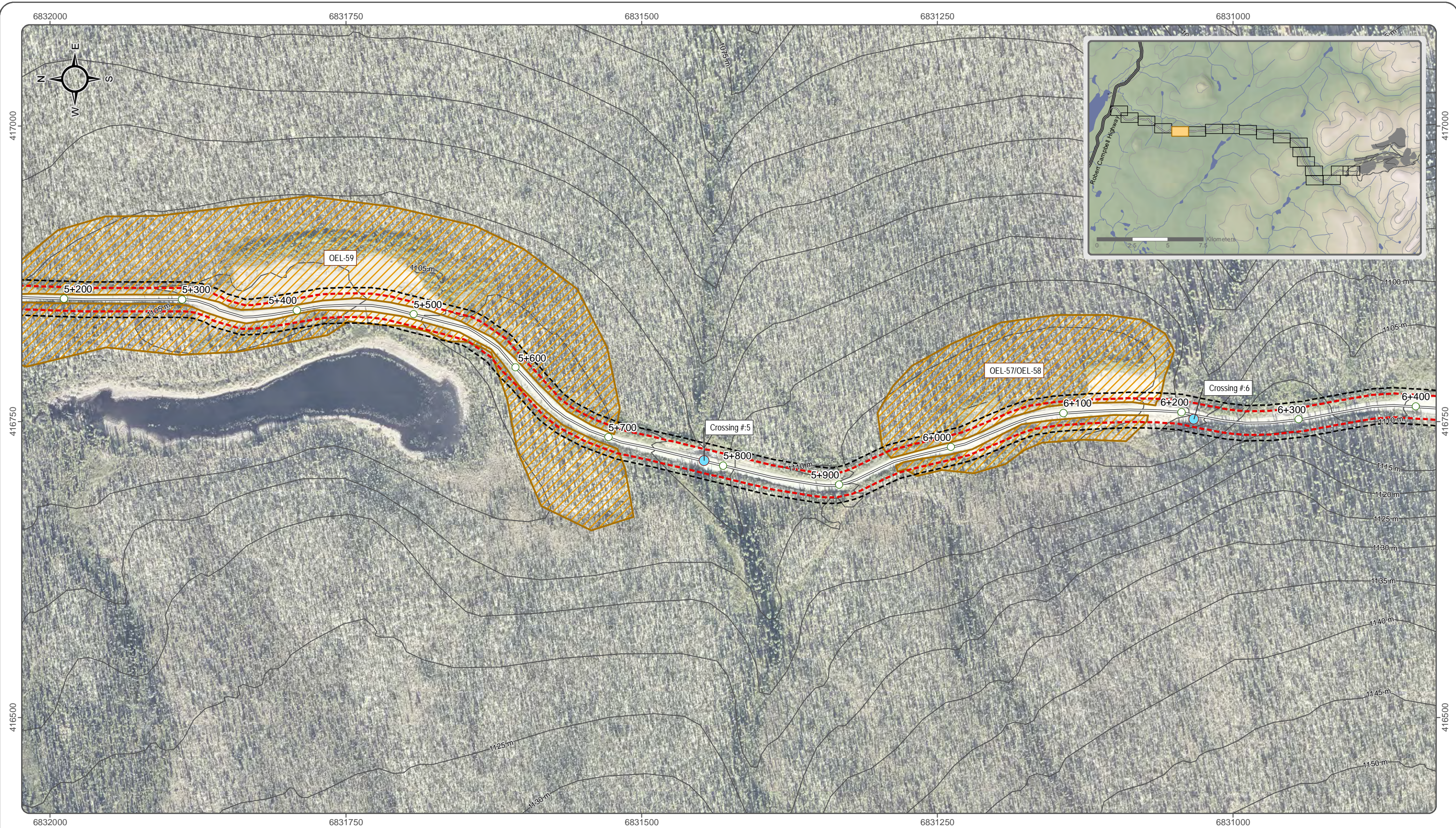


KUDZ ZE KAYAH PROJECT

FIGURE 5
APPENDIX C-8

FEBRUARY 2017

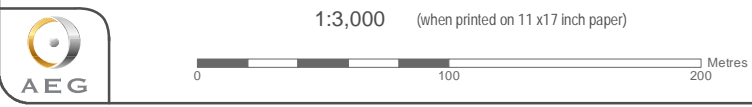
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- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

**FIGURE 6
APPENDIX C-8**

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

AEG

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

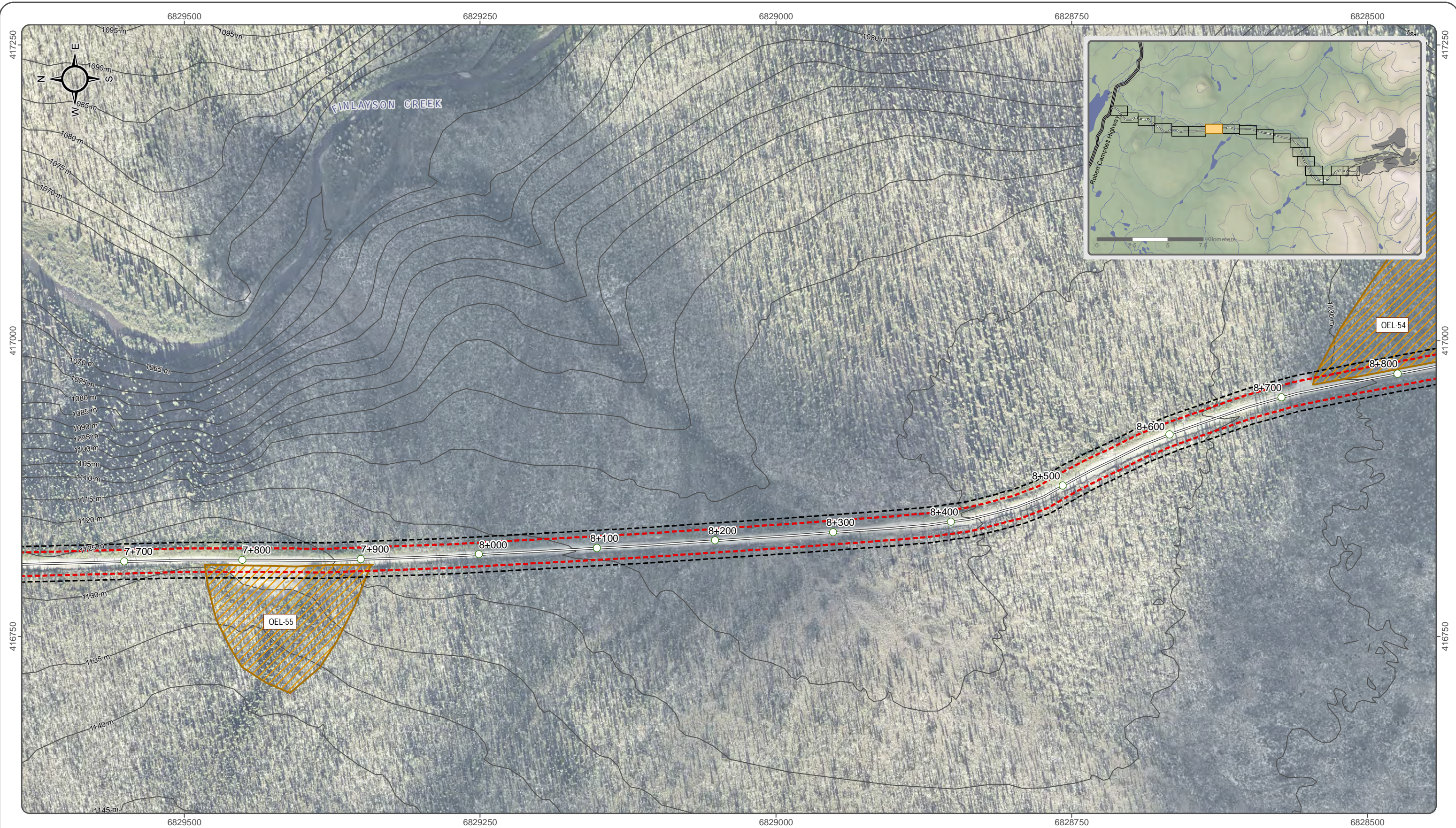


KUDZ ZE KAYAH PROJECT

**FIGURE 7
APPENDIX C-8**

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

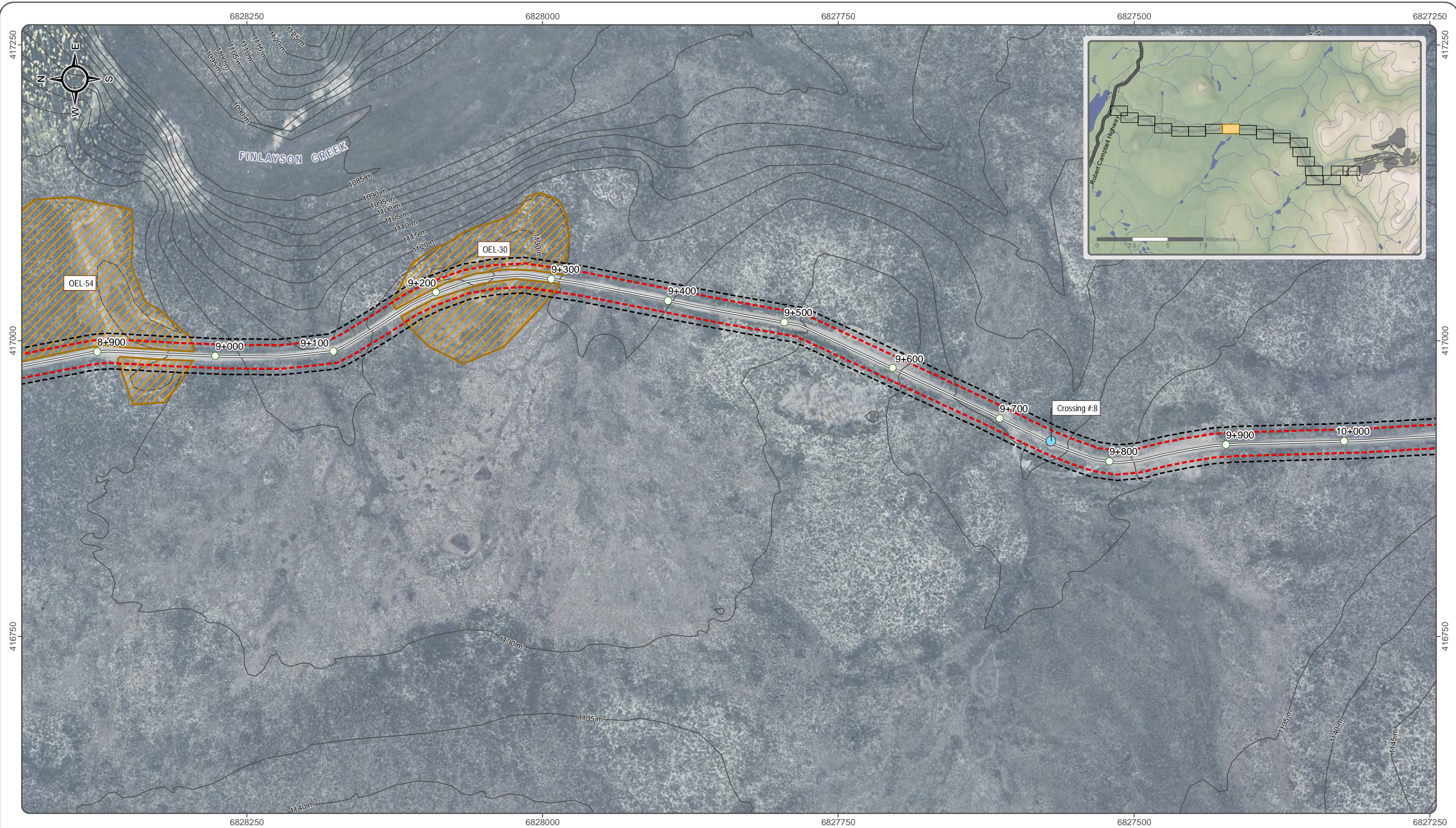


KUDZ ZE KAYAH PROJECT

FIGURE 8
APPENDIX C-8

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0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

FIGURE 9
APPENDIX C-8

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

AEG

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

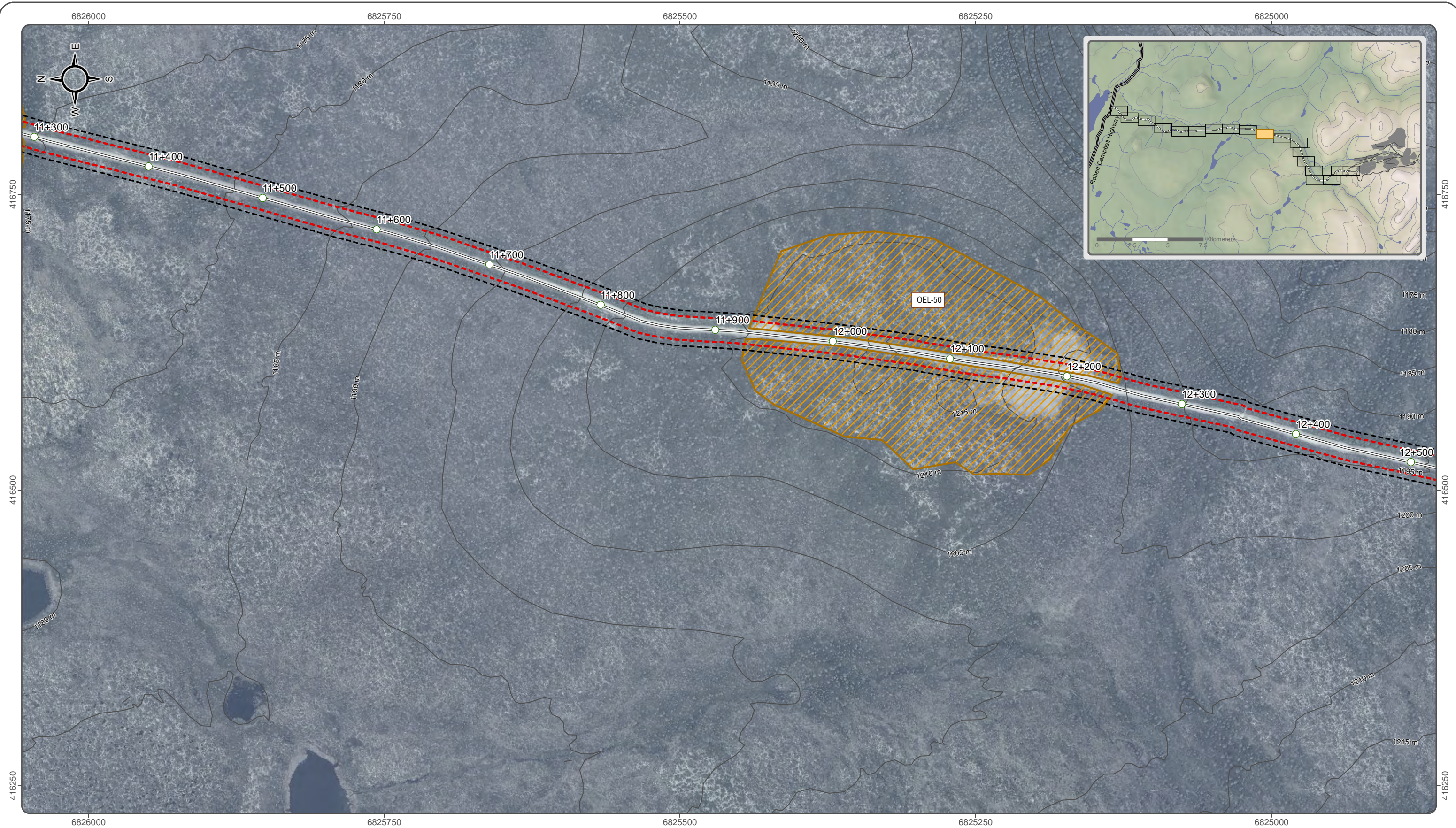


KUDZ ZE KAYAH PROJECT

FIGURE 10
APPENDIX C-8

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

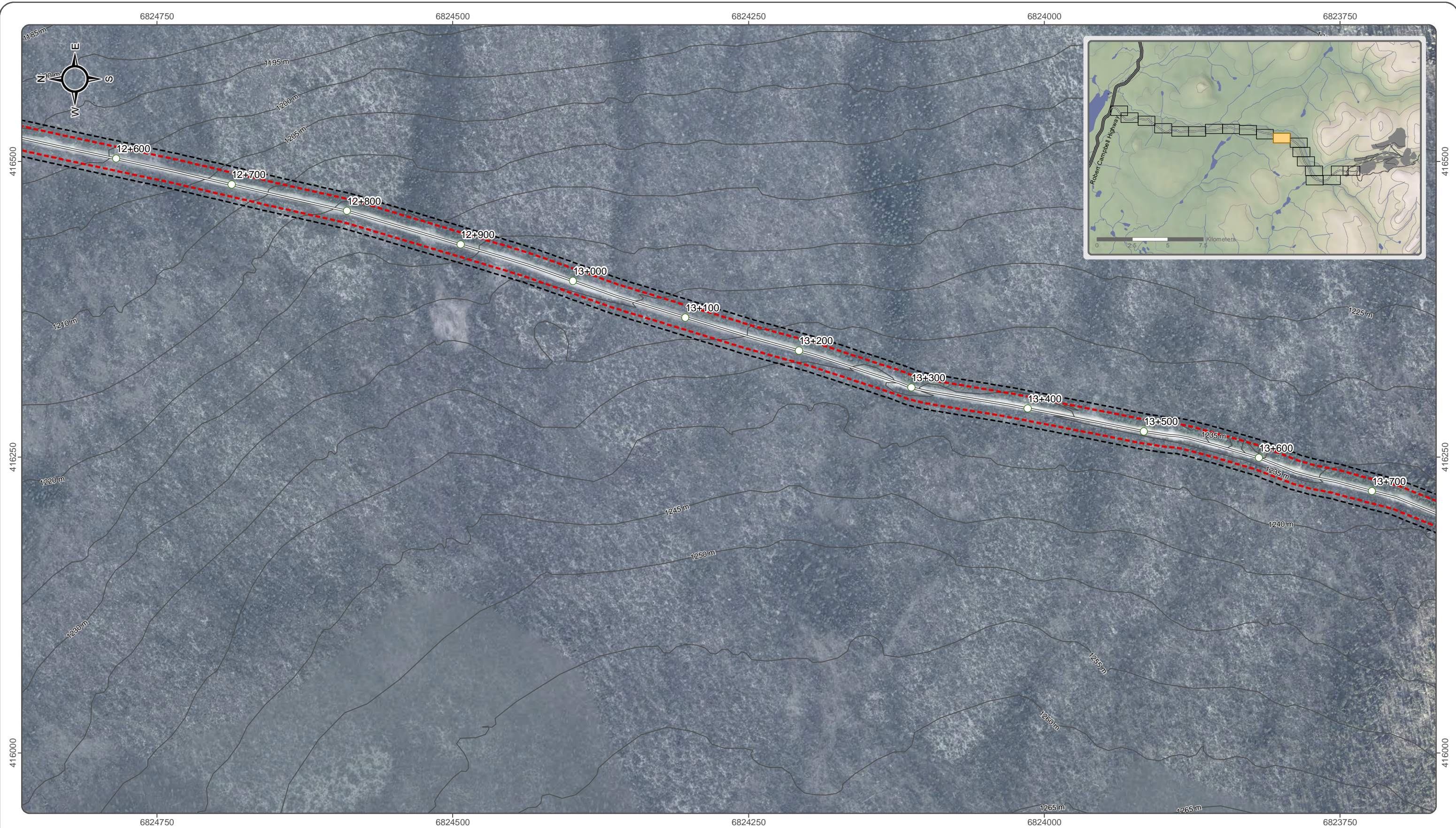


KUDZ ZE KAYAH PROJECT

**FIGURE 11
APPENDIX C-8**

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1:3,000 (when printed on 11 x 17 inch paper)

0 100 200 Metres

- * Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- ▨ Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

**FIGURE 12
APPENDIX C-8**

FEBRUARY 2017

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

FIGURE 13
APPENDIX C-8

FEBRUARY 2017

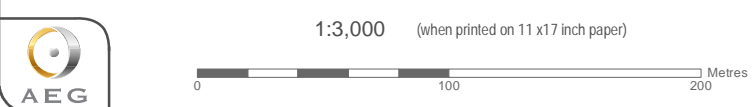
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- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

**FIGURE 14
 APPENDIX C-8**

FEBRUARY 2017

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

FIGURE 15
APPENDIX C-8

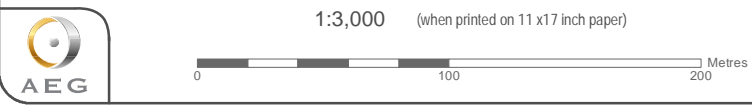
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- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

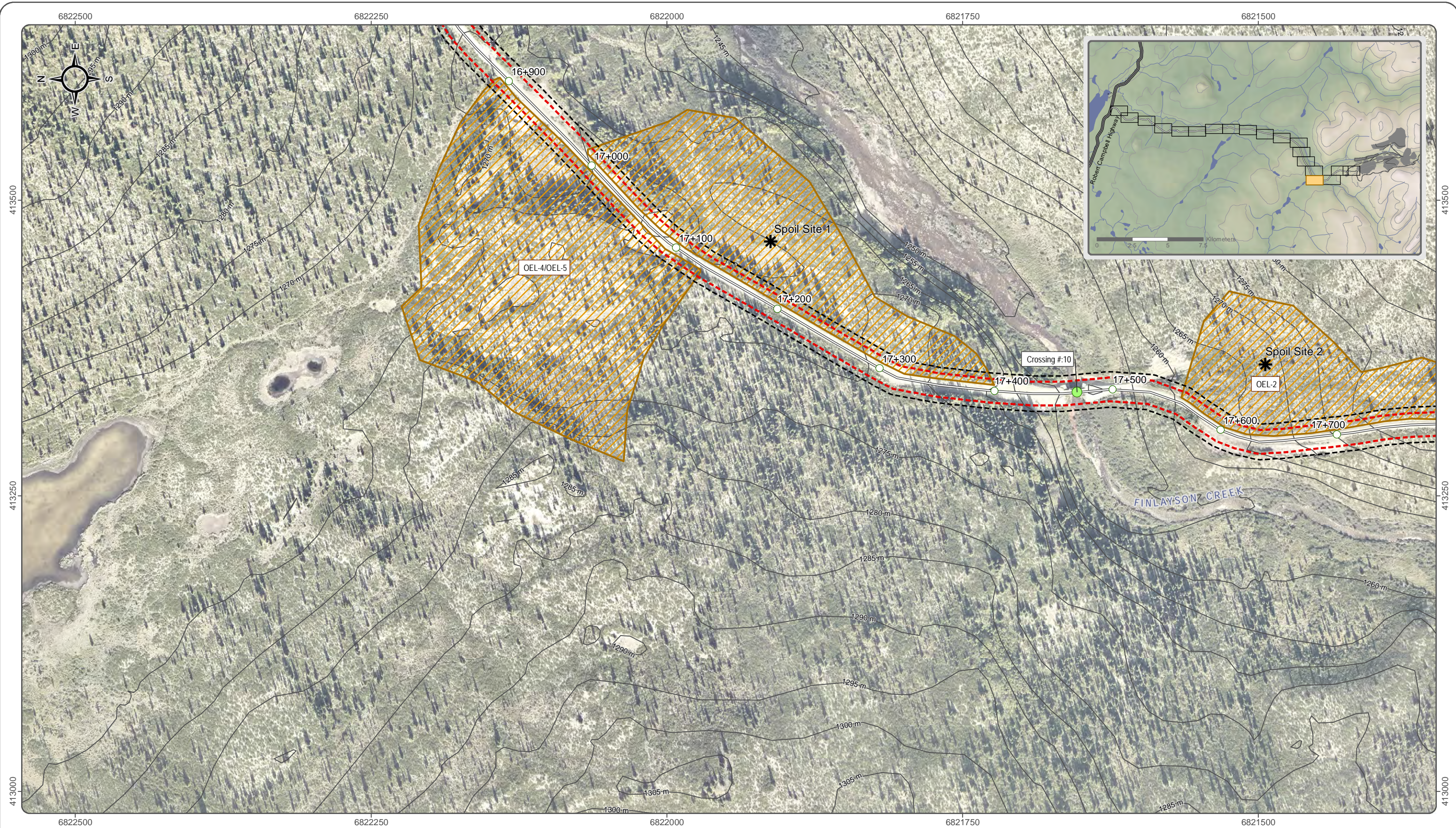


KUDZ ZE KAYAH PROJECT

**FIGURE 16
APPENDIX C-8**

FEBRUARY 2017

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent

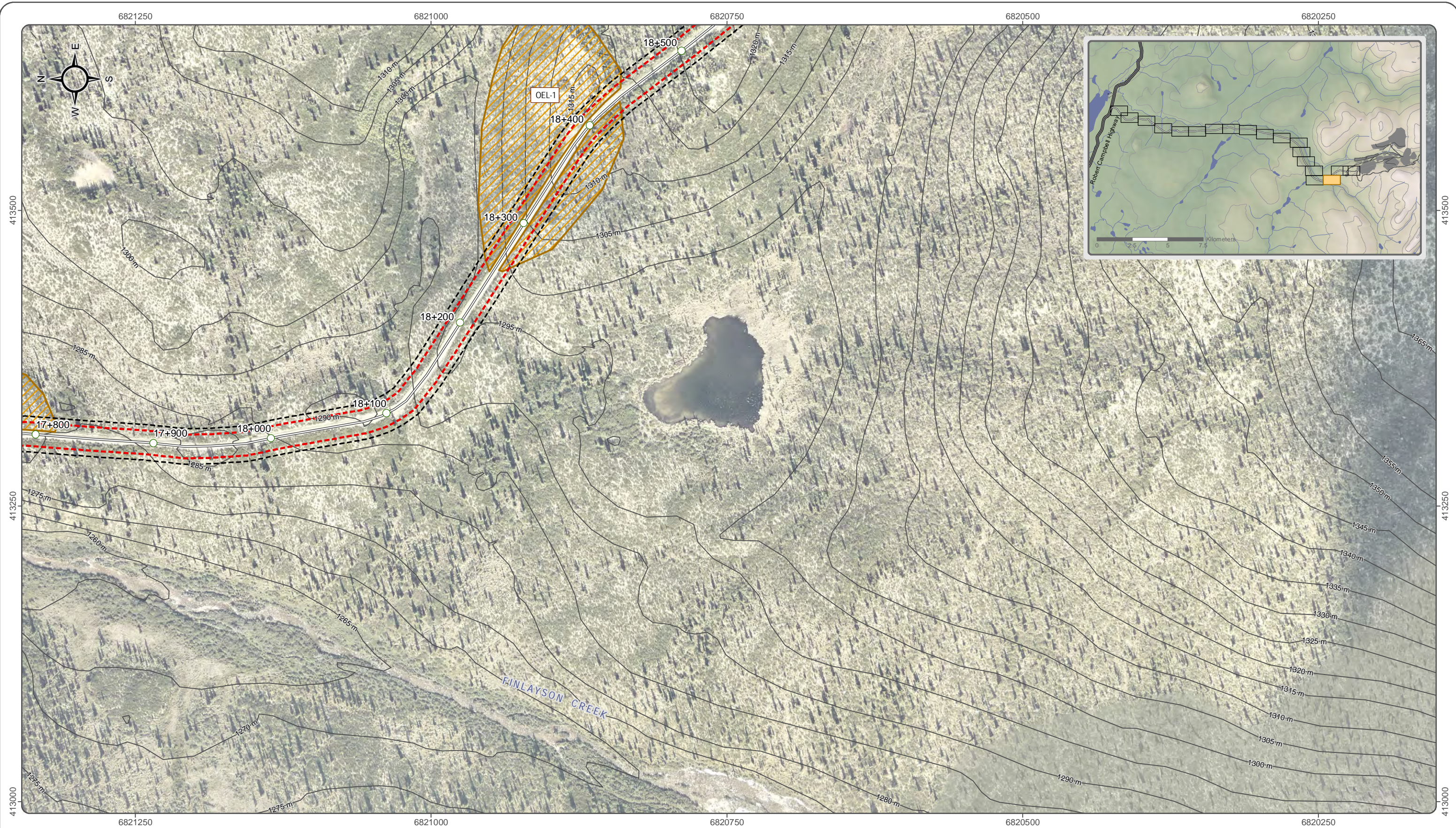


KUDZ ZE KAYAH PROJECT

**FIGURE 17
APPENDIX C-8**

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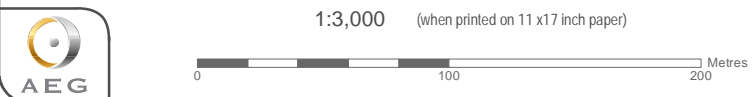
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- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
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- Station Markers
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- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

**FIGURE 18
APPENDIX C-8**

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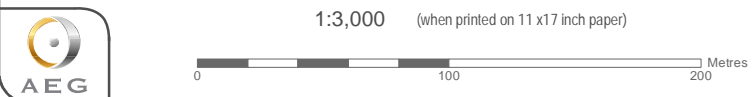
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- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
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- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



KUDZ ZE KAYAH PROJECT

**FIGURE 19
APPENDIX C-8**

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1:3,000 (when printed on 11 x17 inch paper)

0 100 200 Metres

- Proposed Spoil Storage Site
- Stream Crossing Fish Bearing (Bridge)
- Stream Crossing Non Fish Bearing (Culvert)
- Station Markers
- Contours (5 m Interval)
- Proposed Access Road Center Line
- 20m Existing Right of Way (Lease 105G07-001)
- 30m Proposed Right of Way
- Potential Borrow Area
- Location of Proposed Mine Infrastructure
- Map Extent



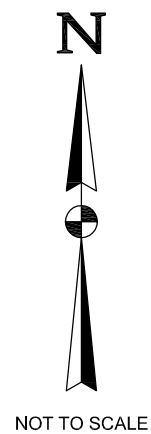
KUDZ ZE KAYAH PROJECT

FIGURE 20
APPENDIX C-8

FEBRUARY 2017

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TYPICAL CROSS SECTIONS FOR KUDZ ZE KAYAH ACCESS ROAD UPGRADE



NOT TO SCALE



DWG No: 1356-2-TYPROADXSECTIONS-001

SHEET: 1 OF 6

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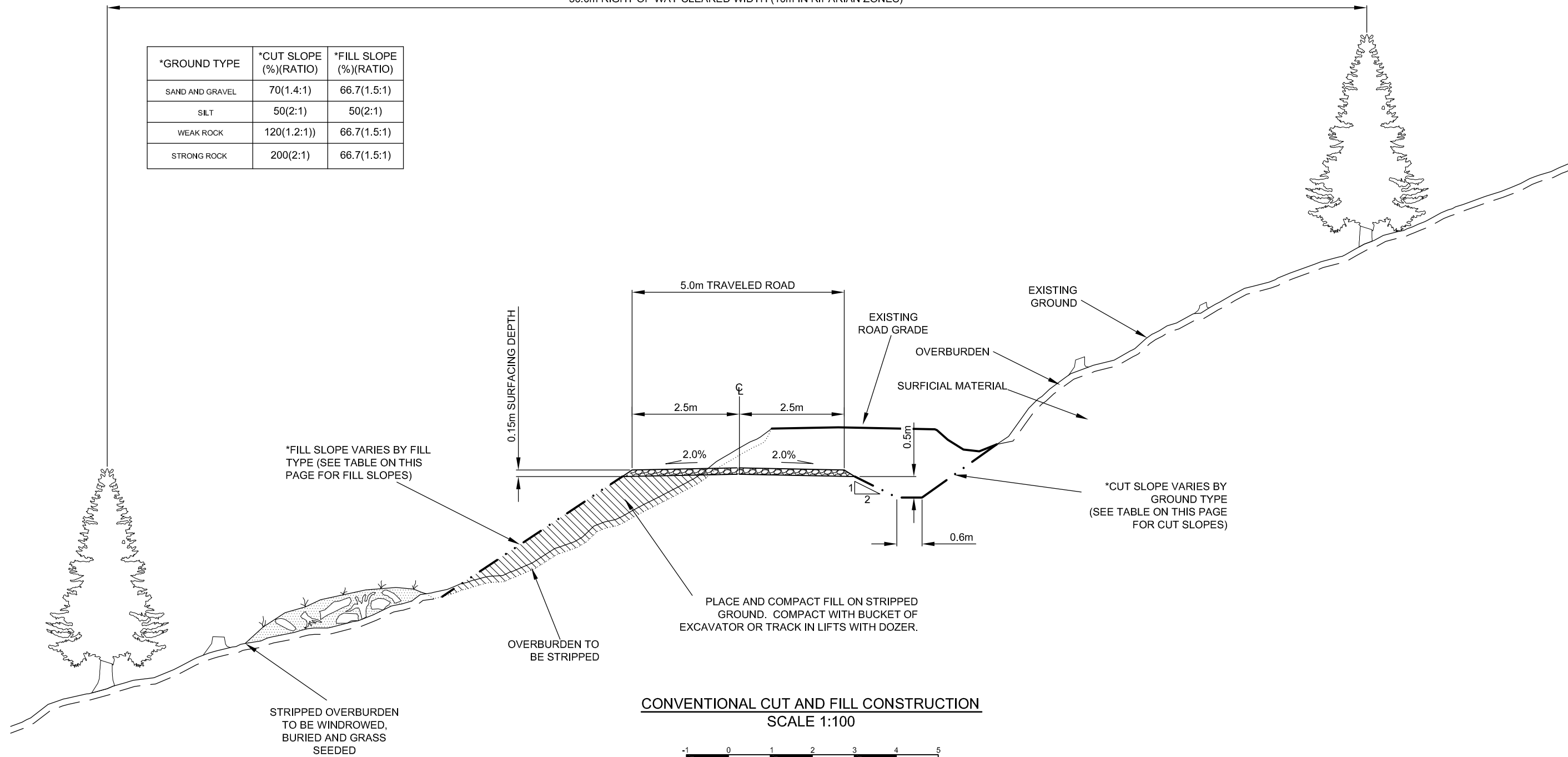
DESIGN BY: MATT DICKIE, EIT
DESIGN DATE: SEPTEMBER 30, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
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DRAWING INDEX:

SHEET 2 OF 6 - CONVENTIONAL CUT AND FILL CONSTRUCTION
SHEET 3 OF 6 - OVERLAND CONSTRUCTION IN ICE RICH PERMAFROST
SHEET 4 OF 6 - CROSS DRAIN CULVERTS IN FILL AND ON GENTLE SLOPES
SHEET 5 OF 6 - ROAD UPGRADES WITH HISTORIC WINDROW PRESENT
SHEET 6 OF 6 - DOUBLE DITCH CONSTRUCTION

30.0m RIGHT OF WAY CLEARED WIDTH (10m IN RIPARIAN ZONES)

*GROUND TYPE	*CUT SLOPE (%) (RATIO)	*FILL SLOPE (%) (RATIO)
SAND AND GRAVEL	70(1.4:1)	66.7(1.5:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1)	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)



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TYPICAL CROSS SECTION:
CONVENTIONAL CUT AND FILL CONSTRUCTION

DWG No: 1356-2-TYPROADXSECTIONS-002

SHEET: 2 OF 6

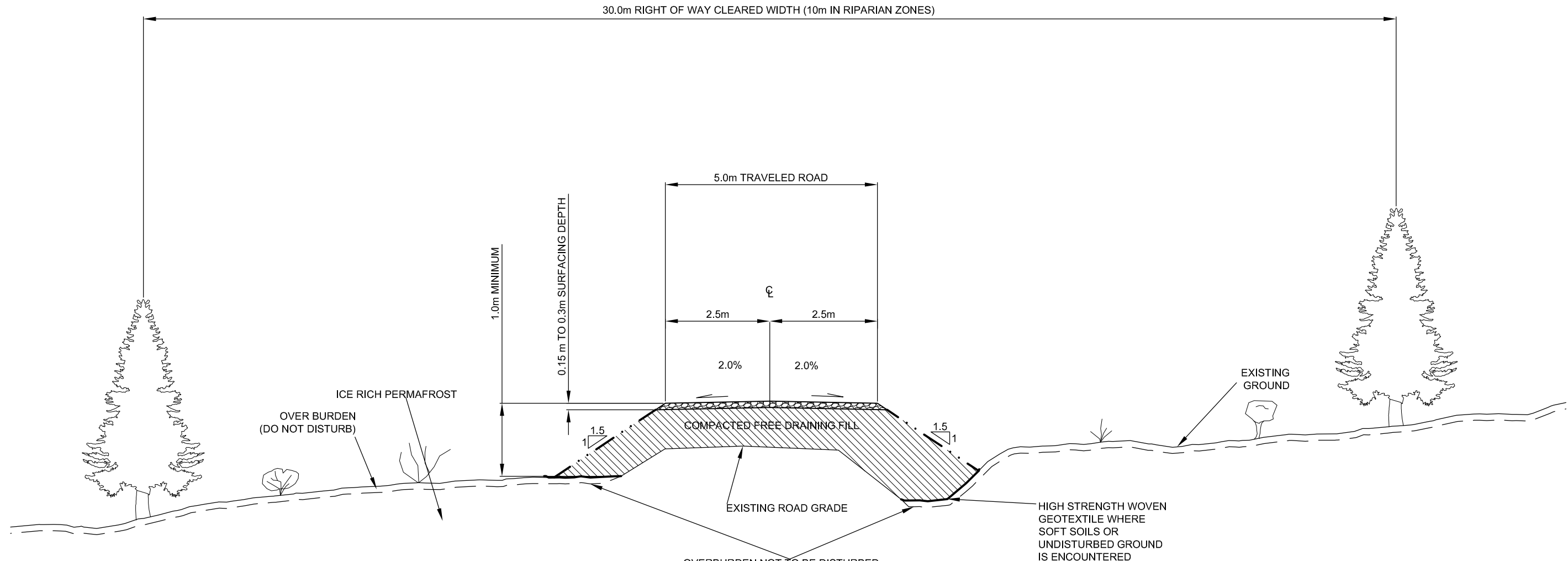
DESIGN BY: MATT DICKIE, EIT
DESIGN DATE: SEPTEMBER 30, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG.
DRAWN BY: MATT DICKIE, EIT
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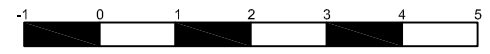
DRAFT


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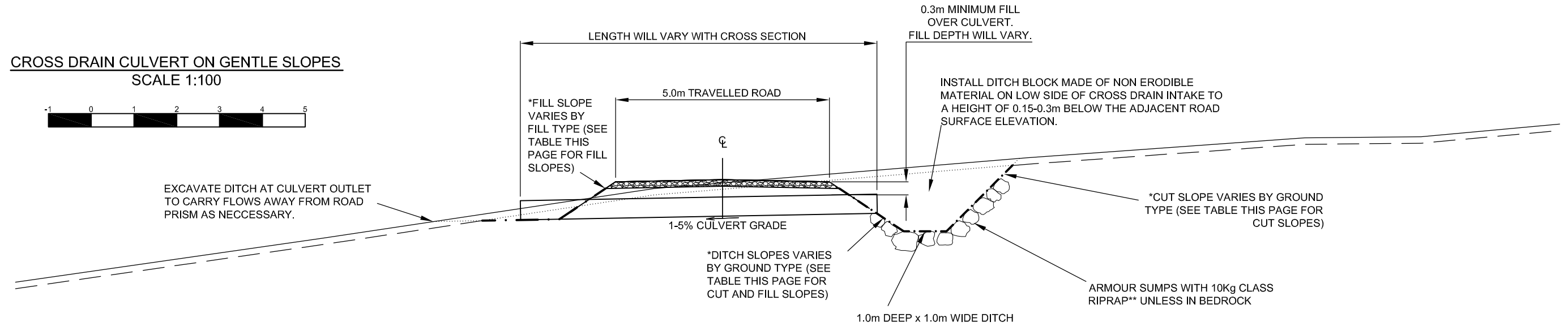
OVERBURDEN NOT TO BE DISTURBED. ICE RICH PERMAFROST SECTIONS ARE TO BE CONSTRUCTED AS A SINGLE HEADING. HIGH STRENGTH WOVEN GEOTEXTILE IS TO BE LAID ON UNDISTURBED GROUND BEFORE FILL IS TO BE PLACED, COMPACTED IN LIFTS, AND BROUGHT UP TO A MINIMUM DEPTH OF 2m. NO EQUIPMENT IS TO PROCEED BEYOND WHERE THE ABOVE HAS BEEN COMPLETE.

OVERLAND CONSTRUCTION IN ICE RICH PERMAFROST
SCALE 1:100

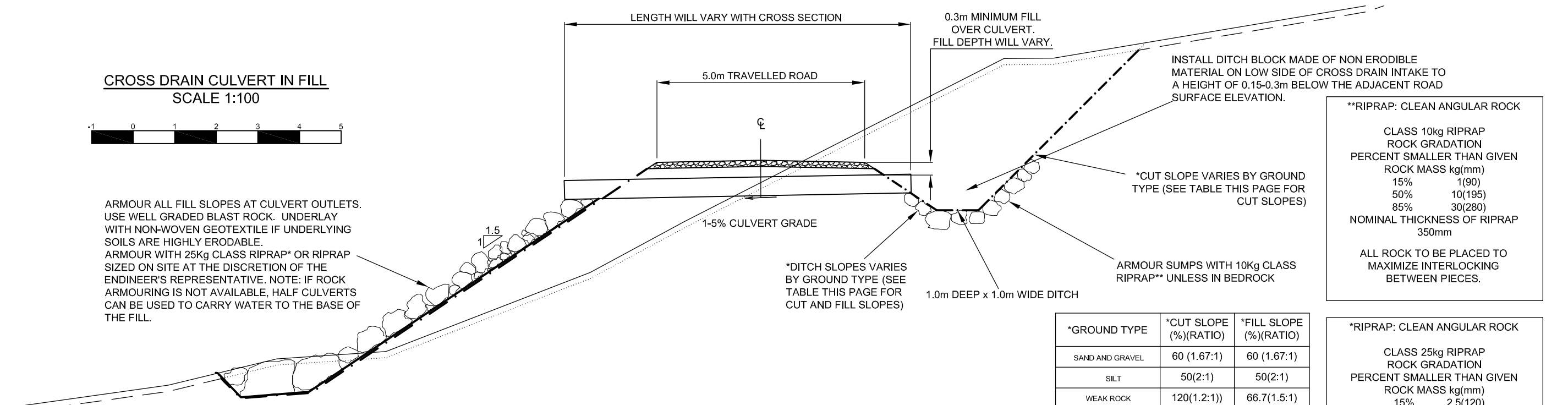


<p>PREPARED FOR:</p> 	<p>PREPARED BY:</p> <p>ONSITE ENGINEERING LTD.</p> <p>NORTH VANCOUVER 2 - 252 1ST ST E NORTH VANCOUVER, BC, V7L 1B3 PH.: 778-628-4968 FAX: 866-235-6943</p>	<p>TYPICAL CROSS SECTIONS: OVERLAND CONSTRUCTION IN ICE RICH PERMAFROST</p> <p>DWG No: 1356-2-TYPROADXSECTIONS-003</p> <p>SHEET: 3 OF 6</p>	<p>DESIGN BY: MATT DICKIE, EIT DESIGN DATE: SEPTEMBER 30, 2016 REVIEWED BY: JEREMY ARAKI, P. ENG. DRAWN BY: MATT DICKIE, EIT SITE VISIT: ONSITE ENGINEERING LTD. SITE VISIT DATES: FILE NAME: TYPROADXSECTIONS.DWG SCALE: AS NOTED REVISION NUMBER: REVISION DATE: ALL MEASUREMENTS IN m UNLESS OTHERWISE NOTED.</p>	<p>SEAL OF Y.T. P.ENG.</p> <p>DRAFT</p> <p>NOT FOR CONSTRUCTION</p>
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CROSS DRAIN CULVERT ON GENTLE SLOPES
SCALE 1:100



CROSS DRAIN CULVERT IN FILL
SCALE 1:100



****RIPRAP: CLEAN ANGULAR ROCK**

CLASS 10kg RIPRAP	
ROCK GRADATION	
PERCENT SMALLER THAN GIVEN	
ROCK MASS kg(mm)	
15%	1(90)
50%	10(195)
85%	30(280)
NOMINAL THICKNESS OF RIPRAP	
350mm	
ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.	

*GROUND TYPE	*CUT SLOPE (%) (RATIO)	*FILL SLOPE (%) (RATIO)
SAND AND GRAVEL	60 (1.67:1)	60 (1.67:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1)	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)
WEATHERED SCHIST	60 (1.67:1)	60 (1.67:1)

***RIPRAP: CLEAN ANGULAR ROCK**

CLASS 25kg RIPRAP	
ROCK GRADATION	
PERCENT SMALLER THAN GIVEN	
ROCK MASS kg(mm)	
15%	2.5(120)
50%	25(260)
85%	75(380)
NOMINAL THICKNESS OF RIPRAP	
450mm	
ALL ROCK TO BE PLACED TO MAXIMIZE INTERLOCKING BETWEEN PIECES.	

- NOTES:**
1. MINIMUM CLEARANCE BETWEEN WALLS OF CULVERTS IN MULTIPLE INSTALLATIONS SHALL BE D/2 OF THE SMALLEST PIPE OR 1.0m, WHICHEVER IS GREATER
 2. GEOTEXTILE FABRIC SHALL BE NON-WOVEN CONSTRUCTED, SUPPLIED IN ROLLS AND APPROVED BY ENGINEER PRIOR TO INSTALLATION.
 3. MINIMUM THICKNESS OF RIPRAP SHALL BE AS FOLLOWS:
 - 300mm FOR 10KG CLASS RIPRAP
 - 450MM FOR 25KG CLASS RIPRAP
 4. SKEW CULVERT 3° FOR EACH 1% ROAD GRADIENT OVER 3%. MAXIMUM SKEW OF 45°.

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TYPICAL CROSS SECTION:
CROSS DRAIN CULVERTS IN FILL AND ON GENTLE SLOPES

DWG No: 1356-2-TYPROADXSECTIONS-004

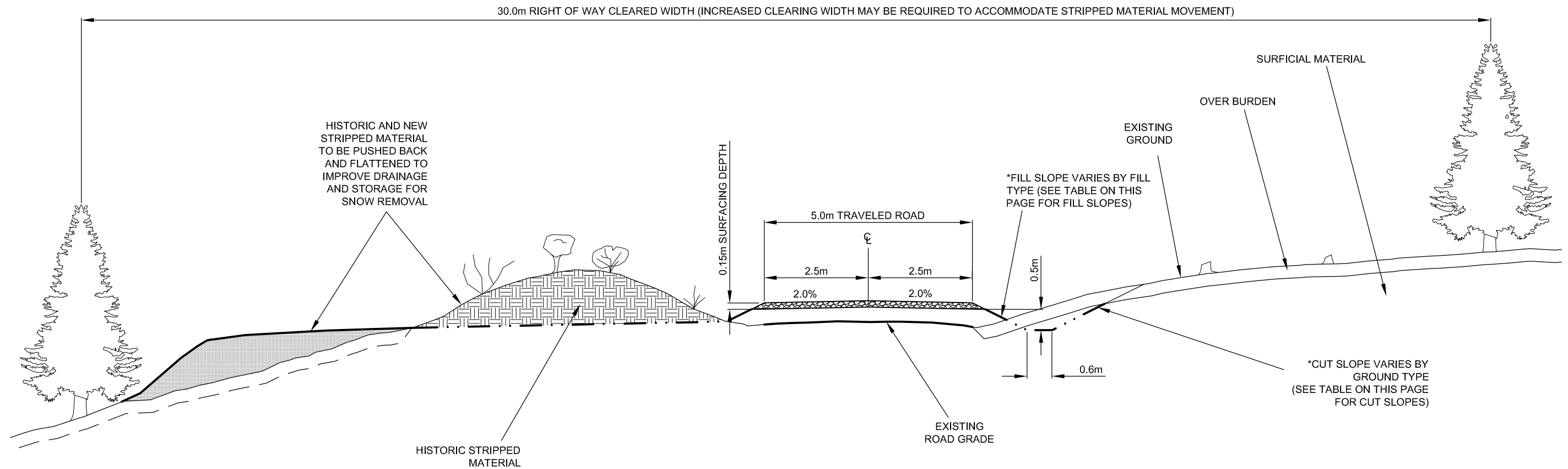
SHEET: 4 OF 6

DESIGN BY: MATT DICKIE, EIT
DESIGN DATE: SEPTEMBER 30, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
SITE VISIT DATES:
FILE NAME: TYPROADXSECTIONS.DWG
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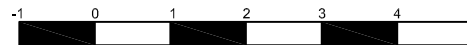
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*GROUND TYPE	*CUT SLOPE (%) (RATIO)	*FILL SLOPE (%) (RATIO)
SAND AND GRAVEL	60 (1.67:1)	60 (1.67:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1)	66.7(1.5:1)
STRONG ROCK	200(2:1)	66.7(1.5:1)
WEATHERED SCHIST	60 (1.67:1)	60 (1.67:1)



ROAD UPGRADES WITH HISTORIC WINDROW PRESENT
SCALE 1:100



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TYPICAL CROSS SECTION:
ROAD UPGRADES WITH HISTORIC WINDROW
PRESENT

DWG No: 1356-2-TYPROADXSECTIONS-005

SHEET: 5 OF 6

DESIGN BY: MATT DICKIE, EIT
DESIGN DATE: SEPTEMBER 30, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG.
DRAWN BY: MATT DICKIE, EIT
SITE VISIT: ONSITE ENGINEERING LTD.
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FILE NAME: TYPROADXSECTIONS.DWG
SCALE: AS NOTED
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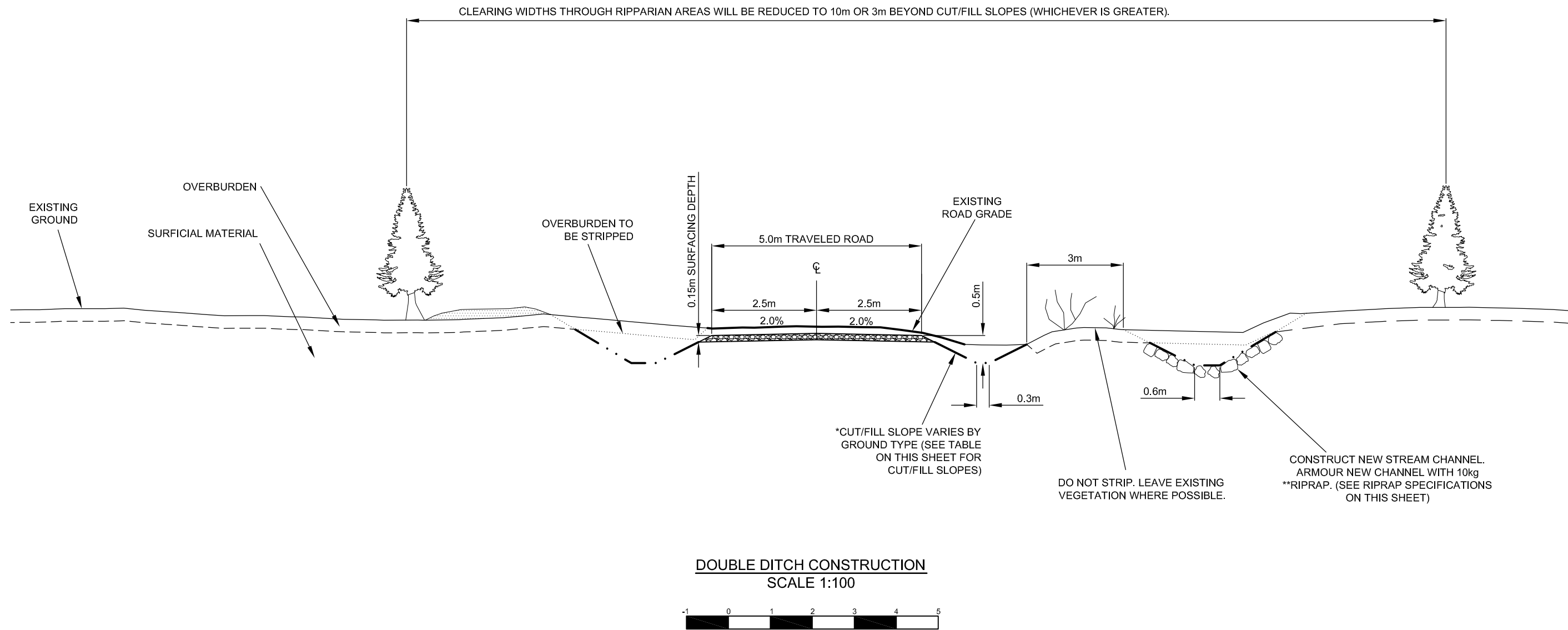
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NOT FOR CONSTRUCTION

*GROUND TYPE	*CUT SLOPE (%) (RATIO)	*FILL SLOPE (%) (RATIO)
SAND AND GRAVEL	60 (1.67:1)	60 (1.67:1)
SILT	50(2:1)	50(2:1)
WEAK ROCK	120(1.2:1)	66.7(1.5:1)
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NOMINAL THICKNESS OF RIPRAP
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ALL ROCK TO BE PLACED TO
MAXIMIZE INTERLOCKING
BETWEEN PIECES.



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TYPICAL CROSS SECTION:
DOUBLE DITCH CONSTRUCTION

DWG No: 1356-2-TYPROADXSECTIONS-006

SHEET: 6 OF 6

DESIGN BY: MATT DICKIE, EIT
DESIGN DATE: SEPTEMBER 30, 2016
REVIEWED BY: JEREMY ARAKI, P. ENG.
DRAWN BY: MATT DICKIE, EIT
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