



**BMC MINERALS (NO.1) LTD**

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**KUDZ ZE KAYAH PROJECT**

**RESPONSE #4B TO YESAB EXECUTIVE COMMITTEE INFORMATION REQUEST KZK**

**PROJECT PROPOSAL**

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June 2019

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## Glossary

Financial Security	The amount of money a mine owner must provide for the full outstanding mine reclamation and closure liability. Outstanding reclamation and closure liability is based on the cost to reclaim and close the mine site in its current status, in accordance with the approved reclamation and closure plan. The outstanding reclamation and closure liability is reassessed by Yukon Government periodically (minimum every two years) to reflect the impact of operations and progressive reclamation.
Primary Source	A primary source is a first-hand account of the event or process in question. Primary sources might include, but are not limited to, journals, correspondence, historical maps, memoirs, ethnographies, fieldnotes, and oral histories.
Secondary Source	Secondary sources are works that synthesize and analyze primary source evidence. Secondary sources include books, articles, theses, and reports which build upon primary source evidence.

### LIST OF ACRONYMS

<b>Acronym</b>	<b>Definition</b>
BMC	BMC Minerals (No 1.) Ltd.
Canamax	Canamax Resources Inc.
Conwest	Conwest Exploration Limited
Security	Financial Security
HPW	Yukon Government Department of Highways and Public Works
IR	Information Request
km	kilometre
km/hr	kilometre per hour
KZK	Kudz Ze Kayah
lb	pound
LFN	Liard First Nation
m	metre
NATCL	North American Tungsten Corporation Ltd.
NWT	North West Territory
oz	ounce
QML	Quartz Mining Licence
RCU	Rural Collector Undivided
RRDC	Ross River Dena Council
SEPA	Socio-economic Participation Agreement
t	tonne
TK	Traditional Knowledge
tpd	metric tonnes per day
Wheaton	Wheaton River Minerals Ltd.
YESAA	<i>Yukon Environmental and Socio-economic Assessment Act</i>
YESAB	Yukon Environmental and Socio-economic Assessment Board
YG	Yukon Government
Yukon Zinc	Yukon Zinc Corp.
\$	Canadian dollar

## 1. INTRODUCTION

In March 2017, 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 (BMC, 2017a). On January 9, 2018, after a full and thorough review, BMC received confirmation from YESAB that the Executive Committee considered the Project Proposal to be adequate for screening:

*The Executive Committee has reviewed the information, including the consultation record by BMC Minerals (No. 1) Ltd., contained in the Kudz Ze Kayah project proposal. Based on this review and in accordance with s.57(1) and (2) of the Yukon Environmental and Socio-economic Assessment Act (YESAA), and Rule 19 of the Rules for Screening Conducted by the Executive Committee, the Executive Committee considers the project proposal to be adequate YESAB File No.2017-0083.*

A 60-day public comment period occurred from January 16 to March 16, 2018. Following this comment period, the Executive Committee developed a supplementary Information Request (*Request for Supplementary Information Request No. 4* dated May 3, 2018) (YESAB, 2018a). BMC responded to this information request in December 2018 (BMC, 2018a). The Executive Committee reviewed BMC's Response Report No.4 and determined that additional information is required with respect to IR4-1, IR4-3, IR4-5, and IR4-7 (YESAB, 2019). On January 24, 2019 BMC representatives met with the Executive Committee regarding the outstanding information requested. BMC has carefully reviewed and considered YESAB's request for additional information. The requested information is provided in this Response Report No.4B.

For clarity and ease of understanding, BMC has listed the Information Requests (IRs) from YESAB's Information Request (in black text) followed BMC's response (in blue text). The requests and responses follow the same order as YESAB's IR No.4.

### 1.1 SUMMARY OF CONSULTATION

Given the nature and content of this Response Report, BMC did consult both LFN and RRDC before submitting to YESAB. Both First Nations were provided copies of IR4B on May 1st and provided until May 21st to submit comments. BMC offered up to \$10,000 in capacity support funding to both First Nations for the review. At LFN's request, the original timeline was extended to June 14th. However, to date we have not received any input from either RRDC or LFN.

BMC appreciates and respects the time and effort LFN and RRDC are putting towards review BMC's Response Report 4B and we remain open to receiving comments and suggestions that arise from their reviews. We committed in writing that if they provide input in the future, we will consider those views and incorporate them, where possible, into the planning, development and operations of the Project.

## **2. R4-1**

### **2.1 INITIAL YESAB QUESTION**

Provide comprehensive information on Liard First Nation's Traditional Land Use (i.e., past and current) including but not limited to traditional economic activities gathered through primary data collection. This information should be in reference to local and regional study areas relevant to the Project. This information is to be presented in the format of a Traditional Land Use study or work of equivalent depth and breadth.

### **2.2 INITIAL BMC RESPONSE**

Liard First Nation (LFN) and BMC are currently negotiating an agreement that will include a Traditional Knowledge Protocol component which will cover any future activity by BMC within LFN traditional territory. If successful, this will result in a non-confidential TK summary report for the proposed Project area that could assist BMC in future discussions with relevant government bodies provided it does not create a confidentiality issue with existing agreements. BMC understands that this document will probably be of sufficient level of detail to assist in addressing the information requested in R4-1; however, given that this agreement does not currently exist it is not possible to predict the likely timing of any future report from LFN.

### **2.3 YESAB DEFICIENCY**

The response indicates that a Traditional Knowledge protocol will be negotiated. However, no additional information, primary or otherwise, on *Traditional Land Use* was provided, nor was any primary data collected.

### **2.4 YESAB RATIONALE FOR REQUIREMENT**

The Executive Committee must consider matters in s. 42 of the *Yukon Environmental and Socio-economic Assessment Act*, including the significance of project effects. One of the methods in which the Executive Committee will consider the effects of the Project is how valued environmental and socio-economic components, such as Traditional Land Use are impacted.

Mining projects often lead to land use effects in proximity to the mine site, inclusive of transportation corridors. Comments submitted to the Executive Committee have also highlighted concerns about impacts to Traditional Land Use. Specific information on effects to Traditional Land Use, particularly if collected through primary data-gathering, provides the Executive Committee with more confidence in the conclusions presented by BMC.

## 2.5 BMC SUPPLEMENTARY RESPONSE

LFN has provided a proposal for BMC to support a program of work that will result in ongoing and sustained engagement by LFN with BMC in relation to this Project. The detailed discussions on this matter are well advanced and will result in BMC assisting in the provision of capacity funding for both technical assessment work and culturally appropriate gathering of Traditional Land Use (TLU) information that will be used by LFN for all assessment and permitting activities on KZK. Ultimately, BMC intends to use this information in the completion and preparation of detailed Project management planning and operations over the life of the proposed mine.

When complete the agreement will ultimately result in a non-confidential TK summary report for the proposed Project area that could assist BMC in future discussions with relevant government bodies provided it does not create a confidentiality issue with other existing agreements. In the longer term this agreement will provide the basis for an ongoing and collaborative relationship between BMC and LFN regarding incorporation of land use elements into the design and ongoing operation of the Project. This process is one that BMC envisages will be part of a relationship that is expected to provide long term and ongoing information flow (both ways) between BMC and LFN that inform all future decisions on the Project. However, YESAB has specifically requested that BMC provide additional information (including but not limited to primary information) on LFN's Traditional Land Use in order to provide confidence for YESAB in their assessment of the Project. In order to sufficiently respond to this IR in a timely manner, BMC commissioned a comprehensive Independent Study on Liard First Nation Traditional Land Use from an independent and well credentialed researcher (**Appendix A**).

This report will not replace or diminish traditional knowledge that might otherwise be obtained through direct engagement with LFN. Rather, it is an attempt to capture that information which is publicly available and helps to address any concerns raised through the assessment process. It is also designed to provide independent support for the basis of Valued Component selection in relation to TLU in the BMC Project Proposal. BMC will continue to work with LFN to gather TLU information for inclusion in the Project planning and development.

This study was prepared by Mr. Glenn Icton (MA, History) who is currently completing his PhD in history at the University of Saskatchewan. His research specialty is environmental and Indigenous history. Specifically, his dissertation examines colonial perceptions of Kaska Dena land use and how these perceptions shaped subsequent discussions regarding Aboriginal rights and title. In addition to his PhD, which is near completion, Icton completed a Master of Arts in history at the University of Calgary examining the fur trade and wildlife commodification in the northern Yukon. In various capacities - including working in the heritage sector, land claims, and in academia. Mr. Icton has been researching Yukon history for the past 13 years and has published 11 papers related to this research. Mr. Icton is a reputable and well credentialed researcher and his background and extensive research experience is included in **Appendix B**.

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The BMC commissioned independent study includes, but is not limited to, traditional economic activities and has been collated through primary data collection. The content of this report supplements and further confirms BMC's assessment of potential effects on LFN's Traditional Land Use, which was provided in BMC's Response Report No.4 (BMC, 2018a).

Commissioning this work is intended to respond to YESAB's requests around TLU with information that is readily available. However, it should also be noted that the larger objective is work with all Kaska, including LFN, to agree on various mitigations that will be implemented over the life of the Project. If so, these mitigation measures will be incorporated into BMC's detailed designs, operating management and monitoring plans that will be submitted to the appropriate decision body for regulatory review during permitting (and subsequently during the life of the mine) that will be thereby adopted during the life of the proposed Project.

Regardless of information that may be provided at a future date, the independent study confirms that the valued components assessed in the Project Proposal and Response Report No.4 have considered available traditional land use information for LFN. No new valued components were identified from the independent study. The independent study, while providing additional valuable information regarding LFN's traditional land use in the vicinity of the Project, has not resulted in a change in the outcome of the effects assessment. With the mitigation measures proposed in the Project Proposal and Response Reports 1 through 4, adverse effects on known LFN traditional land use activities are not predicted to be significant. This includes the traditional land use activities of hunting, trapping, plant gathering, fishing, water use and use of travel corridors.



### **3. R4-3**

#### **3.1 INITIAL YESAB QUESTION**

Provide additional comprehensive information, above that which was provided through Appendix F-3 on Ross River Dena Council's Traditional Land Use (i.e., past and current) including but not limited to traditional economic activities, to be gathered through primary data collection.

#### **3.2 INITIAL BMC RESPONSE**

Where Ross River Dena Council (RRDC) considered it to be appropriate, BMC has provided capacity funding and supported RRDC in compiling existing traditional knowledge (TK) and other information and collecting new TK for the Project since 2015. The TK agreement with RRDC states that RRDC is the owner of the TK and if RRDC shares their TK with BMC (in order to inform the mine design, operation or additional mitigation measures), BMC is to keep it confidential and not to share it with other parties. Subsequently, although the response to this information request is informed by TK (to the extent possible) BMC is not in a position to provide specific TK from RRDC or other "non-public" sources in this Response Report. Further, BMC would like to clarify that TK provided by RRDC Elders over the Project area will be an ongoing process. In accordance with the RRDC TK Protocol, when new TK is shared, both parties will collaboratively identify any new potential effects as well as any additional mitigation measures that may be required based on the new information.

#### **3.3 YESAB DEFICIENCY**

The response indicates that through agreements with RRDC, BMC has supported RRDC in compiling existing TK information. Based on collected information, "*both parties will collaboratively identify any new potential effects as well as any additional mitigation measures that may be required*". However, no additional information, primary or otherwise, on Traditional Land Use was provided.

#### **3.4 YESAB RATIONALE FOR REQUIREMENT**

As noted above, one of the methods in which the Executive Committee will consider the effects of the Project is how valued environmental and socio-economic components, such as Traditional Land Use are impacted. BMC's response to R4-3 indicates that a purpose of its data collection is to identify effects and mitigations – tasks that mirror those that the executive committee must undertake in its assessments. The Project has the potential to affect Traditional Land Use, specific information on effects to Traditional Land Use, particularly if collected through primary data-gathering, provides the Executive Committee with more confidence in the conclusions presented by BMC.

#### **3.5 BMC SUPPLEMENTARY RESPONSE**

As per BMC's initial response to this information request, site specific and detailed TK provided by RRDC to BMC is not and cannot be included in BMC's Response Reports without breaching our

confidentiality agreements with RRDC. However, in order to sufficiently respond to this IR in a timely manner and to directly address YESAB's request, BMC commissioned a comprehensive independent study of Ross River Dena Council Traditional Land Use (**Appendix C**).

This study was prepared by Mr. Glenn Icton (MA, History) who is currently completing his PhD in history at the University of Saskatchewan. His research specialty is environmental and Indigenous history. Specifically, his dissertation examines colonial perceptions of Kaska Dena land use and how these perceptions shaped subsequent discussions regarding Aboriginal rights and title. In addition to his PhD, which is near completion, Icton completed a MA in history at the University of Calgary examining the fur trade and wildlife commodification in the northern Yukon. In various capacities - including working in the heritage sector, land claims, and in academia. Mr. Icton is a reputable and well credentialed researcher who has been researching Yukon history for the past 13 years and has published 11 research papers related to this research. Mr. Icton's background and extensive research experience is included in **Appendix B**.

This independent study includes, but is not limited, to traditional economic activities and has been collated through primary data collection. The content of this report further confirms RRDC's traditional land use activities, in the vicinity of the proposed Project, that were presented in various Chapters and Appendix F-3 of the Project Proposal (BMC, 20017a) and in BMC's Response Report No.4 (BMC, 2018a). The independent study confirms that the valued components assessed in the Project Proposal and Response Report No.4 have considered RRDC's traditional land use information. No new valued components were identified from the independent study. The independent study, while providing additional valuable information regarding RRDC's traditional land use in the vicinity of the Project, has not resulted in a change in the outcome of the effects assessment. With the mitigation measures proposed in the Project Proposal and Response Reports 1 through 4, adverse effects on RRDC's traditional land use activities are not predicted to be significant. This includes the traditional land use activities of hunting, trapping, plant gathering, fishing, water use and use of travel corridors.

Notwithstanding the information provided within this response, BMC notes that RRDC's TK program over the Project is ongoing. In accordance with the RRDC TK Protocol, when new TK is shared, both parties will collaboratively identify any new potential effects as well as come to agreement on additional mitigation measures that may be required based on the new information.

As stated previously in reference to LFN, this report is not intended to replace or otherwise diminish TK and TLU provided directly by RRDC. Rather, it reflects BMC's attempts to respond to YESAB's questions and to buttress the information already provided by RRDC and included in the Project proposal and various IRs.

## **4. R4-5**

### **4.1 INITIAL YESAB QUESTION**

Provide information on the past and current environmental and socio-economic effects of previous mine closures (planned or unplanned closures) on the Liard First Nation, Ross River Dena Council, and the residents of Ross River and Watson Lake to the extent that effects are unique to the community.

### **4.2 INITIAL BMC RESPONSE**

Section 5.7 of the Project Proposal describes how the Cumulative Effects Assessments were undertaken for both the environmental and socio-economic Valued Components. This assessment not only included previous mine closures, it included all past, present and reasonably foreseeable projects and activities (including: exploration projects; guide outfitting; access; trapping; etc.). In this way all potential cumulative effects were evaluated (including those of past mines) following standard EA methods. The cumulative effects assessments for the environmental and socio-economic valued components are presented in Chapters 6 through 15 (Sections 6.5, 7.5, 8.5, 9.5, 10.5, 11.5, 12.5, 13.5, 14.5 and 15.11). At the request of YESAB, this information from the Project Proposal has been extracted and is included as Appendix A to this Response Report. The only change to the Cumulative Effects Assessment from the Project Proposal in this Response Report is that potential effects to Liard First Nation, Ross River Dena Council and Residents of Ross River and Watson Lake to the extent that effects are unique to these community have been identified (where possible).

### **4.3 YESAB DEFICIENCY**

The response refers to the project proposal, specifically, data amalgamated in Appendix A of the response to IR-4. Appendix A indicates that there will be effects to land users and that it is “*unknown*” if there will be unique effects to any one grouping of land users. The response 3 focuses on a cumulative effects approach, while the question is attempting to derive greater certainty of predicted project effects based on previous experiences.

### **4.4 YESAB RATIONALE FOR REQUIREMENT**

The Executive Committee is aware of numerous previous mine closures in south-east Yukon. Affected First Nations have informed the Executive Committee that those closures have had adverse effects on their communities and citizens. The Executive Committee needs to better understand how those mine closures have affected local communities that may be affected by the closure of the Project. The Executive Committee requires information on the effects of mine closure, not only to understand cumulative effects, but to have greater confidence in predicting the direct effects of the proposed project, specifically in relation to scheduled or unscheduled closure.

#### 4.5 BMC SUPPLEMENTARY RESPONSE

There have been five operating mines in Kaska Territory within the Yukon that have closed in the past 57 years. (Faro, Cantung, Ketza, Wolverine, and Sa Dena Hes) (Figure 4-1). In order to better understand the social and environmental effects these closures had on the local communities, it is important to understand the broader historical context in which these mines operated and closed, including:

- each mine's technical and economic assessments and corporate financial position (i.e. financial viability of both the mine and the company) in the context of a global commodity market;
- the historical environmental and regulatory regimes under which each mine was constructed, operated and closed;
- the historical corporate and societal expectations and responsibilities in the era during which each mine was constructed, operated and closed; and
- the accuracy and context of anecdotal evidence against demonstrated outcomes and perceptions.

Once the context in which these mine closures occurred is considered, an Effects Analysis and Risk Level Determination can then be conducted to determine the risk of similar social and environmental effects on local communities when BMC closes the proposed KZK mine.

To that end, this Response provides:

1. A summary of the effects of closure of the previous five mines that have operated in Kaska Territory in the Yukon. It includes not only the social and environmental effects the closure had on the local communities, but also the broader historical context within which the mines were constructed, operated and closed.
2. An evaluation of the Stats Canada and Yukon Statistics for the local communities.
3. The results of a community based survey undertaken with local businesses, community members (including LFN and RRDC) and community leaders.
4. The context in which the proposed Project will be constructed, operated and closed (including mitigation measures that BMC will put in place).
5. An Effects Analysis and Risk Level Determination for similar effects that could conceivably arise from closing the proposed KZK mine.

*Figure 4-1 Locations of Mines that have Closed in Kaska Dena First Nation Traditional Territory (Ross River Dena Council and Liard First Nation)*

## 4.5.1 SUMMARY OF PREVIOUS MINES

### 4.5.1.1 FARO MINE

#### Faro Mine History

In 1953 Al Kulan and Kaska prospectors Jack Ladue, Robert Etzel, Joe Etzel, Art John and Jack Sterriah staked the claim that would eventually become the Faro mine (History of Faro, n.d.). The claim was located 48 km downstream of the community of Ross River. At the time, the deposit was considered too small and remote to be mined. However, it led to discovery of the Faro ore deposit some ten years later (YG, 2013). In 1969, full-scale mining of the Faro deposit by the Anvil Mining Corporation began at the newly developed Faro Mine. Reorganised into the Cyprus Anvil Mining Corporation in 1975, the company quickly became the largest private sector employer in the Territory. It also represented well over a third of the economy of Yukon, and by the mid 1970's was the largest lead/zinc mine in Canada. At one point, for a brief period, it was the largest operating open-pit lead/zinc mine in the world (Town of Faro, n.d.).

According to Yukon Government (YG) (YG, 2013) the mine processed between 5,000 and 9,300 tonnes per day (tpd) of ore while other sources indicate processing rates of up to 15,000 tpd (Horte, 2018). The variable throughput rates roughly correspond to the different phases of mining operations with the higher rate associated with Anvil Range Mining in the 1990's. Operations continued under various owners including Cyprus Anvil Mining Corporation, Curragh Resources Inc., and Anvil Range Mining Corporation until 1982. In 1988, a second mining area called the Vangorda Plateau was developed. Vangorda Plateau, consisting of two deposits, Vangorda and Grum, went into production in 1990. Mining continued intermittently until 1998 when Anvil Range Mining Corporation declared bankruptcy and sought protection under the federal *Companies' Creditors Arrangement Act* (YG, 2013). Figure 4-2 below summarises the Faro Mine timeline.

Each phase of mining commenced at a time of elevated commodity prices (Figure 4-3). The initial closure of Faro in 1982 was due to falling metal prices, low productivity, high operating costs and the added burden of the debt load brought about by a mine expansion. The subsequent closure in 1993 followed the same cycle in terms of commodity prices and debt, except this time with Curragh the debt was associated with both the Faro mine and their coal operations. The final phase of mining during 1995-98, by Anvil Range Mining Corporation, commenced at the start of a relatively short-lived rise in commodity prices, but the return to low commodity prices and high corporate debt levels led to closure. Sensitivity to base metal prices combined with the high capital expenditure involved with open cut mine pre-stripping overwhelmed the operations ability to produce enough immediate revenue to make the project profitable.



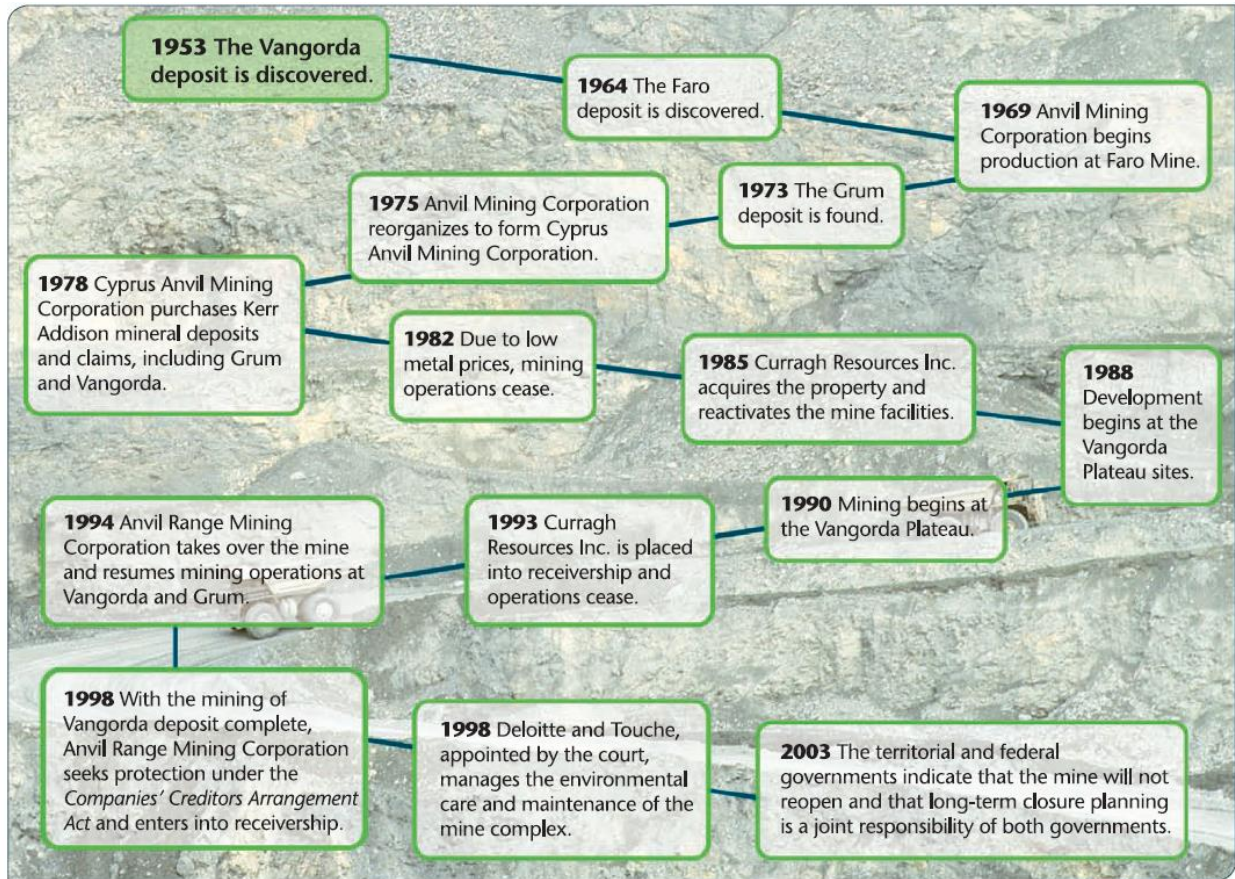


Figure 4-2: Faro Mine Timeline (Source: YG, 2013).

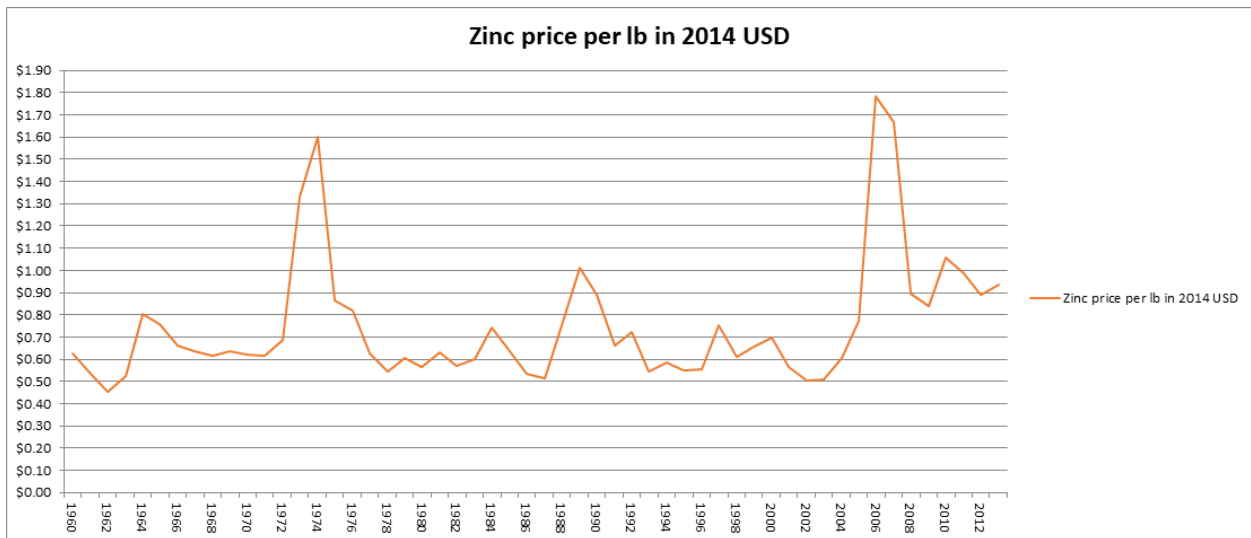


Figure 4-3: Zinc price per lb in 2014 US Dollars

The Government of Canada (Aboriginal Affairs and Northern Development) is currently responsible for the reclamation of the Faro mine and have reported that “since 2009, after many years of research, extensive review and consultation a remediation approach was selected” (Government of Canada, 2019). Parsons Inc. is responsible for managing the immediate projects at the site and ensuring First Nation and Yukon hires and subcontractors have priority. The Kaska Faro Secretariat was established in 2016 and coordinates the Kaska Nation’s (RRDC, LFN and Kaska Dena Council) participation and interests in the remediation project. It is understood that both LFN and RRDC citizens have been and are employed with the project and that capacity funding has been provided for RRDC’s and LFN’s external reviews of the remediation plans as well as reviewing the project proposal for the remediation project, which will require an assessment through YESAB. In January 2019 CBC News reported that Pelly Construction was awarded the contract to remediate the mine and has partnered with RRDC to undertake the work and RRDC will see economic benefits from the Project (CBC News, 2019a). The Faro mine remediation is estimated to cost more than \$500 million over the next 15 to 20 years.

## Regulatory Regime Timelines

### Water

Over the last 40 years, Yukon regulatory regimes in relation to water have undergone substantial changes partly in response to changing community expectations. The Faro mine operation coincided with many of these changes and indeed may have been the catalyst or one of the catalysts for these changes. The broad timeline is summarised as follows:

- In the Yukon, prior to 1974, water related issues were regulated under the federal *Fisheries Act*, federal *Yukon Placer Mining Act* (YG, 2014).
- In 1974 the Department of Indian and Northern Affairs, Government of Canada, enacted the federal *Northern Inland Waters Act*. A licence was now required for water use and the deposit of waste into water. The federal *Northern Inland Waters Act* provided for the establishment of the Yukon Territory Water Board and along with a process to license water use and waste disposal projects (YG, 2014).
- In 1993 the federal *Yukon Waters Act* came into force when the Government of Canada’s Yukon Waters Regulations were developed. This act replaced the federal *Northern Inland Waters Act*. The goal of the new act was to streamline the licensing process.
- In 2003 devolution occurred, resulting in YG gaining direct control over the management of its public lands and mineral resources in the form of a territorial *Yukon Act*. At this time, a territorial *Waters Act* replaced the federal *Yukon Waters Act*. The new act had no major changes (YG, 2014; Government of Canada).



- The Umbrella Final Agreement (1990) and Section 14.8.1 of each Final Agreement with settled First Nations includes the following provision: “a Yukon First Nation has the right to have Water which is on or flowing through or adjacent to its Settlement Land remain substantially unaltered as to quantity, quality and rate of flow, including seasonal rate of flow” (Yukon Water Board, 2018a). Although neither RRDC nor LFN ultimately signed UFA-based Final Agreements, these provisions are enshrined in the permitting process.
- The federal Metal Mining Effluent Regulations were enacted in 2002 and amended in 2018 to Metal and Diamond Mining Effluent Regulations under the federal *Fisheries Act*. The regulations include the requirement for Environmental Effects Monitoring which incorporates sublethal toxicity testing, fish tissue testing for mercury, benthic invertebrate studies, and fish studies (Government of Canada, 2017).
- The federal *Fisheries Act* was amended in 2012 to include new Fisheries Protection Provisions, including the requirement for a federal *Fisheries Act* Authorization if the project has the potential to impact sustainability or productivity of fish or fish habitat that support aboriginal, commercial or recreation fisheries (Government of Canada, 2016).
- The Canadian Water Quality Guidelines for the Protection of Aquatic Life were established in 1987 by the Council of Resource and Environment Ministers (CCME, 2008). While these guidelines are not legislation, they are considered to be the main reference when developing water quality guidelines, in consideration of the long-term health of aquatic life.

### **Land and the Environment Assessment Process in the Yukon**

Much like Yukon regulatory regimes in relation to water have undergone substantial changes over the years, so has the Land and Environmental Assessment Processes. The Faro mine operation coincided with many of these changes and the broad timeline is summarised as follows:

- In 1973, the federal Environmental Assessment and Review Process was developed, but it was not formalised until 1984 as the Environmental Assessment and Review Process Guidelines Order. Following this, the federal government began to develop environmental assessment legislation. This legislation was introduced to Parliament in 1990, and the federal *Canadian Environmental Assessment Act* (CEAA) was passed in 1995. This was followed by amendments to CEAA in 2003, and again in 2010 (Powell, 2014). The old CEAA was repealed and replaced in 2012. Because YESAA is UFA and Final Agreement-derived legislation, the Kaska continue to express concern about the Yukon’s assessment regime. However, it is the prevailing legislation and all projects are required to be assessed through the YESAA process.
- The federal *Yukon Act* came into effect in 1898 and was the main legislation regarding land-use decisions. The federal *Yukon Quartz Mining Act* was enacted in 1985 and updated following devolution in 2003. Under the *Yukon Quartz Mining Act*, a Quartz Mining Licence

(QML) is required for quartz mining operations above thresholds set forth in the regulations. Provisions for financial security were included in the 1985 *Yukon Quartz Mining Act*, and a formalised Security Regulation was appended to the territorial *Yukon Quartz Mining Act* in 2007. There is a section under the act that considers land use and reclamation practices. Other Yukon legislation (*Occupational Health and Safety Act, Heritage Act, Environment Act*) that has come into effect since devolution makes specific considerations to wildlife and Traditional Land Use.

- The Umbrella Final Agreement was reached in 1988 and finalised in 1990. Sections of the Umbrella Final Agreement include land use planning and wildlife. Legislation that has come out of this agreement includes the federal *Yukon Environmental and Socio-economic Assessment Act* (YESAA) in 2003. YESAA's purpose is to protect and maintain environmental quality, heritage resources and the well-being of the Yukon First Nations (YESAB, 2018b). As noted above, the Kaska have rejected the UFA-based agreement process and continue to express concern over the application of various laws and regulations in their traditional territory. However, because so many elements of those agreements are enshrined in federal and territorial legislation, projects are significantly affected by these developments in the Land Claims area.

### **Environmental and Socio-economic Effects of Closure**

The Faro Mine obtained its first water licence in 1974 (water licence Y2L3-0005) (Couch et al. 1981), at a time when there was no environmental assessment legislation and therefore no statutory requirement around environmental risk mitigation (other than the requirements of the licence). Although environmental assessment legislation was later introduced during the course of Faro's long operational history, most of the mine activities were not subjected to environmental assessment. According to Cornett, 2018, a minimalistic effects-assessment (by modern standards) was conducted on the Grum and Vangorda deposits; with recommendations including segregation of high sulfide waste material. Faro closed prior to the introduction of YESAA, which today considers both socio-economic and environmental effects. Due to the lack of assessment and minimal to no requirements to manage the environmental and socio-economic impacts of the mine, its operation resulted in a number of enduring, negative environmental and socio-economic impacts after closure. Further exacerbating the environmental effects was the innate geoenvironmental risk often associated with sedimentary exhalative massive sulphide deposits, and a relative lack of understanding of these risks at the time leading to what would today be considered inappropriate management strategies and processes. Finally, the historic regulatory process was not sophisticated enough to deal with the challenges and risks posed by the project. The following subsections summarise the environmental and socio-economic effects of the project, with some discussion and explanation of the legislative, political, and physical contributors to these effects.

### **Environmental Effects of Closure**

Environmental effects are normally measured by comparison with pre-project conditions, as indicated by environmental baseline studies. Although the project was licenced by the Yukon Water Board (in 1974) and a significant body of environmental monitoring data was subsequently collected, there was no pre-project benchmark data collected for comparison. For example, conditions of water licence Y2L3-0005 required compliance with effluent discharge standards and requirements to monitor water quality and conduct bioassays on tailings pond decant and the seepage. In 1990, the water licence for Vangorda Plateau Development included additional requirements for water quality, fisheries and aquatic resources monitoring in the receiving environment. However, no baseline data had been collected prior to the commencement of operations and monitoring requirements came late into the life of the mine after effects were already underway.

The detail around the environmental effects to Rose Creek and Vangorda Creek are somewhat challenging to quantify given the lack of baseline data. The three-year rolling average Water Quality Index score for Rose Creek above Anvil Creek improved from Fair in 2009-2011 to Good in 2010-2012 (YG, 2017). However, metal concentrations exceeded water quality objectives as recently as 2009 (YG, 2017). An obvious effect of the project on fisheries values is observed in the construction and subsequent destruction of an artificial lake as a water supply reservoir created on Rose Creek above the tailings area in the 1970's. This lake became a valued fishery that was later destroyed in the 2000s as part of the mine reclamation process (Vainio, 2019).

The major costs and outstanding liabilities associated with the Faro Mine site are primarily due to acid rock drainage and metal leaching from the exposed waste rock and tailings, interaction of these elements with the environment, and the impacts on down-gradient ground and surface water (especially Rose Creek). These environmental liabilities have resulted from the lack of a coherent waste management strategy, stemming from a limited understanding of the impact of acid rock drainage and release of metals on the environment, and therefore a reactive rather than proactive management approach. This reactive approach is apparent in historical water licence documents that frequently refer (and defer) to the Controller of Water Rights (under the federal *Northern Inland Waters Act*) to determine the course of action in the event of unexpected environmental performance. This contrasts with modern legislation that places the burden on the mine proponent/owner to proactively plan for and manage unexpected environmental performance (YG, 2006).

Other environmental aspects (such as terrestrial mine impacts) have not been as extensively documented as the water-related effects, due to the lack of past regulation, assessment, and management requirements of these environmental aspects. For example, under the federal *Northern Inland Waters Act* and prior to the introduction of the *Quartz Mining Act*, there were few or no requirements placed on mine proponents in regard to the involvement of other environmental disciplines in pre-mining assessment and operational processes (e.g. wildlife, meteorology, air quality, noise, vegetation, hydrology, groundwater, and etc.).

Overall, the water licence required and contained very little detailed information and limited conditions prior to mining. There was no requirement for an “*abandonment plan*” (now referred to

as a Reclamation and Closure Plan) until licence IN89-002 was issued for Vangorda and Grum in 1990. The licence required the provision of an abandonment plan in 1994, the assessment of the effectiveness of mitigative measures in 1998 and the operation of a water treatment plant in perpetuity at closure. The IN89-002 Decision Document indicated that the decision to require the company to carry out perpetual water treatment was based on “*potential for acid mine drainage over the long term...*” and “*the use of covers and seals for long term control of acid generation represents emerging technology which has not been proven over time*”.

There were also some challenges with enforcement of licence conditions and “*loopholes*” in the licence. For example, according to Holmes (2018), although later versions of the water licence required the development of an Abandonment Plan, the licence lacked any provision requiring the implementation of the plan.

Another challenge for regulators was built into the federal *Northern Inland Waters Act* limiting security to no more than 10% of the capital cost of the undertaking. Environmental and water related liabilities became more apparent during later phases of the Faro mine life. During the licence renewal for water licence IN89-002, the federal Minister responsible (for the Department of Indian and Northern Affairs) pressured Curragh to post additional security above 10% of the capital cost of the undertaking prior to signing the water licence. This led to a lawsuit in which the Minister prevailed, not long before Curragh went into bankruptcy (Holmes, 2018).

In conclusion, the environmental effects that resulted from the Faro mine were the product of:

- (1) mineralization with intrinsic geo-environmental risk when disturbed;
- (2) a lack of understanding of the full scope of environmental issues and a lack of a sophisticated technologies available for mitigation;
- (3) the lack of a modern sophisticated effects assessment process;
- (4) the lack of a modern sophisticated mining regulatory system; and
- (5) uncontrolled closures that were without the protection of a modern financial security system.

### **Socio-economic Effects of Closure**

In 1969, the first families moved into the new town of Faro. At first, the company owned nearly all the housing in the community and built the recreation centre; and the town of Faro was quickly incorporated in December of 1970. Through the 1970s, the population of Faro increased as the mine was profitable and wages were high, with the added allure of heavily subsidised housing. The town of Faro Reports that in 1981 the population was just under 2000 inhabitants ((Town of Faro, n.d.). During the boom times at the Faro mine, (1970s) the influx of young mine workers and relatively

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high available cash resulted in increasing issues with drug and alcohol abuse and crime (Taggart, 2016, Vainio, 2019).

A temporary shutdown was announced in June of 1982 and a waste rock stripping operation, heavily subsidised by government, provided work for approximately one third of the mine's workforce from mid-1983 to October of 1984 when the company locked out its remaining workers. In May 1985, the company announced it was closing the mine (Taggart, 1990). Severance pay was awarded to the locked-out workers following the announcement of Permanent Closure. By July 1985, Faro's population was less than 100 (Taggart, 1990).

In 1985, the mine was purchased from Dome by Curragh Resources Inc., (Curragh) and by the spring of 1986, the Faro mine and processing facility were re-opened. Mining moved from the Faro ore body to the Vangorda deposit in 1990. However, Curragh went bankrupt in 1992 due to financial difficulties and its heavy debt load (Taggart, 1990). The Faro mine was shut down once again in April 1993. No major waste stripping program was conducted to provide ongoing employment and the town's population again decreased dramatically (Taggart, 1990).

The property was subsequently purchased in 1994 by Anvil Range Mining Corporation and a waste stripping program and mill rehabilitation work were conducted. In August of 1995, mining resumed at the Vangorda deposit and expanded to the Grum deposit. The mine was in full commercial production by November 1995 (Taggart, 1990). The community of Faro recovered and many were optimistic as the new company had little debt and owned no other properties with liabilities (Taggart, 1990). However, Anvil Range announced a Temporary Closure of the mine in November 1996 citing depressed metal prices and a high Canadian dollar as the main causes. The mill continued to operate until March 1997 using stockpiles of ore. Anvil Range declared bankruptcy in April 1998, leaving the property in the hands of a receiver (Taggart, 1990).

The Faro mine has played a large role in the Yukon economy since it opened in 1969 (Taggart, 1990). *"Since its inception, the mine at Faro has been the single largest private employer in the Yukon. Between 1974 and 1980, the mine directly employed, on average, 15% of the Yukon's workforce. At its peak in 1981, the mine accounted, directly and indirectly, for 20.1% of total wages and salaries paid in the Yukon"* (Taggart, 1990). Although financial benefits were enjoyed during Faro's operation, the bankruptcy and closure of the mine were particularly difficult for Faro's residents. According to McLachlan, 2012, *"in that one fell swoop, lives, businesses, housing prices, family plans, school enrollment etc. all took one hard hit"*. Taggart (1990) stated the following *"People who had planned on staying and making a career in Faro left; property values plummeted, businesses closed (or went bankrupt), services diminished as the lack of population to support the above situations all fell sharply. Houses and streets fell into disrepair. Everyone predicted that Faro would become a ghost town"*. According to DesBrisay (1994), the Temporary Closure of Faro *"depressed the entire Yukon economy, reduced government revenues, and triggered an out-migration"* (Bone, 1992).



Although the Faro mine was a major economic driver on Yukon, especially during the boom years, these economic benefits were not significantly enjoyed by the local Kaska Dena and the community of Ross River. The only meaningful attempt at economic inclusion by the mine operators appears to have been a “*hire local*” policy instituted in the 1980s which stipulated that Cyprus Anvil were to hire 25% of their workforce from Ross River (Horte, 2018). However, due to lack of training, support, structure and lack of accommodation for local culture and needs, it had limited success with local First Nations (Horte, 2018) and many workers moved to Faro from elsewhere in Yukon and outside of the Territory (Vainio, 2019).

Exacerbating the impact was the fact that the Faro town site ultimately developed into a municipality, which meant significant public funds were invested in that community, rather than Ross River. The infrastructure that was developed for the town, such as piped water and sewer, lighting, roadwork and other similar investments ultimately received (and continues to receive to this day) Yukon Government financial support. That ongoing dynamic has led to significant resentment of the Faro community for RRDC members.

Al Kulan is frequently given credit for the original discovery of the Faro deposit; however, the initial discovery was made by Kaska local Jack Sterriah and his son Jack Jr. while hunting in the Vangorda Creek area several years earlier (Town of Faro, n.d.). According to Tom Law, son of Bert Law, who was also party to the 1953 staking of the original claims, all of the party members including the Kaska prospectors staked mineral claims and received some compensation and stock options as part of the mine development. However, the payout of the compensation was not in keeping with the agreements, and unscrupulous lawyers are thought to have swindled the original staking party out of their fair share of the royalties and/or compensation (Law, 2018).

For context, Yukon Indian people (First Nations) were not given the right to vote until granted by Prime Minister Diefenbaker in 1960. First Nations were not considered by government or private corporations or the general public with respect to the obligation for the Faro mine to acquire a “*social licence to operate*” (McIntyre 2018). Because the Ross River Dena have not settled under the Umbrella Final Agreement, they consider their right and title to their traditional territory to be unsurrendered (Thomson, 2016). However, within the historical context of the Faro mine, the Kaska Dena did not have meaningful involvement in the planning of or economic benefits generated by the mine.

An economic benefit agreement was made in 1995 between Anvil Range Mining Corporation and Ross River Dena, which included a \$1.4 million dollar agreements and effected trappers would be paid annual compensation (Windspeaker, 1995). During the Anvil Range Mining mining phase it was reported that 14 RRDC citizens were employed at the mine. In addition, RRDC’s fuel company was supplying the mine with 1 million litres of fuel per month.

Although RRDC appears to have had some economic benefits (based on the above) from Faro in the late 1990’s, the negative environmental effects resulted in socio-economic adversity, for example a loss of traditional hunting and fishing areas upon which subsistence hunters depend.

The Faro mine damaged or destroyed a significant animal habit area upon which the local First Nations used for subsistence hunting (Beckett, 2017). The Faro area was traditionally the “breadbasket” used by the Kaska to hunt sheep, moose, and caribou (Thomson, 2016). The mine operation has resulted in a significant loss in prime animal habitat upon which many Kaska rely on for subsistence, for which there has been little or no compensation. This negative socio-economic effect is exacerbated by hunting pressure from outside hunters within the Ross River Dena Council’s traditional territory (Thomson, 2016).

## Conclusions

The Faro mine generated wealth and formed a major part of Yukon’s economy for several decades.

However, Faro’s fundamental metrics as a world class scale-deposit and the reactive nature of the sedimentary exhalative massive sulphide ore type carried a significant intrinsic environmental risk. This risk was not initially considered by the company or the federal and territorial governments due to less sophisticated state of environmental science and nascent environmental assessment process and regulatory tools at the time the project was initially constructed and operated. Although major pieces of the current legislative system were developed during Faro’s operations, mitigations put in place were too little and too late to prevent significant negative environmental and socio-economic effects.

Local First Nations (especially RRDC) do not appear to have been significant beneficiaries of the economic benefits of the Faro mine operations when it was active, despite the significant and ongoing negative socio-economic and environmental impacts of the mine. Recognising this legacy, for RRDC and LFN from the Faro mining operation, it appears that the Federal Government is ensuring that they do see benefits from the Faro mine remediation project through participation with the Kaska Faro Secretariat, direct employment, preferred contracting opportunities and capacity funding to review project plans and project proposals) (Government of Canada, 2019 and CBC News, 2019a).

Current legislation, assessment and regulatory processes have been shaped by the Faro mine’s legacy to prevent negative mine-related environmental and socio-economic effects.

### 4.5.1.2 CANTUNG MINE

#### Cantung Mine History

The Cantung mine is located along the Yukon and North West Territory (NWT) border (Figure 4-1). Although it is located in NWT, it is accessed from the Yukon and thus has greater economic and logistical ties with Yukon than with NWT. Combined, the deposits of Mactung (also along the border of NWT and Yukon) and Cantung hold about 15% of the world’s known tungsten resources. The Cantung mine is currently in Care and Maintenance.

The Cantung mine has a long history, with the deposit initially discovered in 1954 by prospectors exploring for copper. The mine operated over several intervals, including from 1962 to 1986, from 2002 to 2003, and from 2005 to 2015 with production suspended for a year in 2009-2010. The mine's latest closure, in October 2015, resulted from the mine owners, North American Tungsten Corporation Ltd. (NATCL), applying for creditor protection through the British Columbia Supreme Court under the federal *Companies' Creditors Arrangement Act* in June of 2015. The Cantung Mine was abandoned by NATCL through the orderly process under the *Companies' Creditors Arrangement Act* proceedings and the Government of Canada assumed the responsibility of the mine (NWT, 2015). Although the mine is currently in Care and Maintenance, recent media reports suggest that the NWT is attempting to sell the property with the associated NATCL deposit, Mactung (CBC News, 2019b).

When in operation the Cantung mine was the largest producer of tungsten in North America, this was more due to the limited number of other tungsten producers rather than due to the size of the Cantung mine. The worldwide demand for tungsten is physically small, so when one or more of the larger mines ramps up production supply can quickly exceed global market demand and impact negatively on the tungsten price. The majority of world tungsten production is currently concentrated in China and as such the tungsten price is largely driven by Chinese production. As a result, the tungsten price can be volatile and the various Cantung mine closures coincided largely with lower market prices for tungsten.

### **Project Development and First Production 1961 to 1965**

The town site that would eventually be named "Tungsten" was constructed in the summer of 1961 to accommodate workers, and a few families for the soon to be developed Cantung mine. Initial supplies and materials for the project were transported by "Cat trains" over a temporary winter road and via a 1,200 m airstrip which was large enough to handle DC-3s. Construction of the 300 km road from Watson Lake to Cantung was commenced in 1961 and completed in 1963.

During the summer of 1962 open pit mining was commenced with ore stockpiled prior to the completion of the construction of the mill in October 1962. Concentrate production commenced however operations ceased in August 1963 due to a combination of factors including low metallurgical recoveries and a drop in the worldwide price of tungsten.

Operations resumed a year later in July 1964 with milling commencing in September. By mid-1965 mill recoveries had been improved and commercial production was achieved.

### **Operations 1965 to 1986**

The first full year of commercial production was in 1966 with production reaching near capacity and increased recoveries and grades. However, in late December the processing plant burned down and concentrate production ceased until the plant was rebuilt in November 1967.



Mining production during the period 1962 to 1973 was by open pit methods and, due to the climatic challenges posed by the location, mining was only undertaken during the warmest months (June through October) with ore stockpiled to maintain processing plant feed throughout the year.

In 1973 open pit operations ceased and production commenced from the recently developed underground mine. Without the climatic restrictions the underground operations were able to function year round and thus supported a more stable workforce on site.

The 1970's and 1980's saw upgrades, and improvements in the processing plant, power station and town site during various stages to bring the daily throughput up to 1200 tpd. During these years there were several strikes by the employees, notably 1977, 1980 and 1981 as well as several periods of lowered production due to lower tungsten prices on the world market, 1975 and 1982 and in 1983 the mine was temporarily shut down for most of the year. A labor dispute halted production in May 1986. In August of that year operations were suspended indefinitely due to low tungsten prices.

On January 21, 2002, Cantung re-opened. In January 2003, the company reported that its tungsten production was 33% higher than anticipated by its mine plan. In December 2003, Cantung closure was announced and the property went on a care and maintenance schedule.

In 2005, due to a world shortage of tungsten the price rose significantly. Kaska Minerals Corp. agreed to invest \$2.97 million in North American Tungsten Corporation Ltd. (NATCL) and Cantung reopened in September 2005. Cantung mine suspended operations in October 2009 due to low metal prices. Production resumed one year later, on October 8, 2010. The Cantung mill shut down October 26, 2015 and the mine transitioned to a Care and Maintenance status. The Government of Canada took over responsibility for the environmental care and maintenance activities in late November 2015 (NATC website News Releases) while, Alvarez & Marsal Canada Inc. is the court-ordered monitor (the Monitor) of care and maintenance operations at the Cantung mine.

Since 2015, the Company, the Monitor and the Department of Indian Affairs and Northern Development have continued to receive enquiries from potential investors and other interested parties regarding opportunities with respect to Cantung including the possibilities of restarting mining and processing operations, re-processing the tailings and/or performing the long term remediation of the mine site (Alvarze and Marsal, 2018).

### **Statutory and Regulatory History**

NATC's predecessor was granted the project's first water licence as per the new rules and regulations concerning water and land use in the Northwest Territories in 1975. This licence was renewed in 1978, 1983, 1986, 1988 and 1995. In early 2002 Tungsten applied to the Mackenzie Valley Land and Water Board (MVLWB) for a renewal of its 1995 licence. The board held that the application was not exempt from part 5 of the NWT's *Mackenzie Valley Resource Management Act*, which "grandfathered in" existing licences, and would require an environmental assessment and environmental impact review. NATC sought a judicial review of this decision by the Supreme Court of the North West

Territories, lost and then appealed to the Northwest Territories Court of Appeal where they won. NATC’s water licence was renewed at the end of 2003, after the mine had closed.

In January 2009 the company received notification from the MVLWB of the renewal of the Company’s Type A water licence. This licence was approved for a period of five years expiring January 2014.

An amended Type A water licence for North American Tungsten Corporation Limited’s mining and milling operations at the Cantung Mine site was issued on April 4, 2014. This was one of the first 2 amended water licences issued after devolution came into effect on April 1, 2014. This licence expires in 2024.

In the past, there have been a number of mine abandonment and reclamation plans prepared for the Cantung site. Mine closure cost estimates were included in all reclamation submissions. Additional mine closure cost estimates have been prepared for NATCL, the MVLWB and Indian and Northern Affairs Canada. The range of closure cost estimates between 2001 and 2010 are presented in **Error! Reference source not found.** (NATC, 2011).

**Table 4-1 Reclamation Cost Estimates – Cantung Mine (2001 to 2010)**

Prepared by	Date Prepared	for	Closure Cost Estimate (\$millions)
EBA	Nov 2001	NATC	2.3
EBA	Oct 2002	NATC	2.5 to 3
Brodie Consulting	Oct 2002	MVLWB	34.5
NATC	July 2003	NATC	1.9
MVLWB Security	Dec 2003	MVLWB	7.9
NATC	Nov 2007	NATC	3.8
Brodie Consulting	June 2008	INAC	13.1
NATC	Mar 2009	NATC	4.2
NATC	Mar 2010	NATC	4.3

The MVLWB selected the reclamation security of \$13.1 million for the 2009 licence based upon the third party estimates up to June 2008.

The Cantung mine currently holds a Type A water licence (MV2015L2-0003) which expires in 2024. Upon issuance of this Licence, the Licensee was required to post and maintain a security deposit of \$27,950,000 and a minimum of ninety (90) days prior to the construction of Tailings Storage Facility 6, the Licensee is required to post and maintain an additional security deposit of \$1,900,000 to maintain a total security deposit of \$30,950,000. No documents in the public domain were available regarding whether or not the security requirements have been increased to \$30,950,000.

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## Environmental and Socio-economic Effects of Closure

### Environmental Effects of Closure

In 2011 NATL reported *“The Cantung Mine is in compliance on all surveillance networks monitoring and reporting and is working very closely with Regulators to schedule required research and associated reports”* (NATC, 2011).

Since November 2015, the Government of Canada (represented by Indigenous and Northern Affairs Canada, which was formerly the Department of Indigenous and Northern Affairs Canada and before that it was the Department of Indian Affairs and North Development) has been funding the care and maintenance program at Cantung. BMC understands that Alvarze & Marsal Canada Inc is the appointed *“Monitor”* who (in part):

- a. Manages the care and maintenance of the Cantung mine site;
- b. Attends to environmental and regulatory matters including regular reporting to the MVLWB and Environment and Climate Change Canada; and
- c. Communicates with key stakeholders in Department of Indian Affairs and Northern Development and representatives of affected First Nations (Alvarze and Marsal, 2018).

Alvarex and Marsal (2018) reported that:

*“In May 2017, the Company engaged Tetra Tech Canada Inc. (Tetra Tech) to perform environmental and geotechnical investigations of the Cantung mine site in order to understand the potential remediation options and related cost estimates. Tetra Tech has completed the majority of its field work which has included the following:*

- a. *Human health and ecological risk assessments;*
- b. *Geochemistry assessment and tailings cover design;*
- c. *Tailings geotechnical assessments;*
- d. *Underground and open pit stability assessments;*
- e. *Borrow source assessments; and*
- f. *Remedial options analysis and preliminary liability estimates.*

*The work is expected to continue through mid-2019 and will be expanded to include:*

- a. *Contracting and supervising drilling contractors;*

- 
- b. Gathering and interpreting data on the stability of the tailings ponds;*
  - c. engaging and consulting with affected First Nations regarding potential remedial options;*
  - d. preparing a preliminary design for the preferred remedial options selected;*
  - e. preparing long-term monitoring plans and related cost estimates; and conducting an archaeological study of the Cantung mine site.*

*The Company is continuing to submit regular reports to ECCC under the Metal Mining Effluent Regulations and the Environmental Effects Monitoring Program and to MVLWB as required under the Companies water licence. The Company met with MVLWB and ECCC in November 2018 to provide an overview of the potential future options for the Cantung mine site.*

*The Company's Engagement Work Plan and Engagement Plan, as approved by the MVLWB, provides for engagement and regular communication and consultation with various stakeholders including First Nations. The Company held community working group calls in April 2018 and arranged for a site visit with affected First Nations in September of 2018 to provide an overview of the current care and maintenance activities, site conditions and planned future remediation options. The Company has worked closely with Department of Indian Affairs and Northern Development on its consultation and engagement efforts. A further community working group call is scheduled for December 4, 2018."*

The purpose of the environmental studies currently being conducted at Cantung are to understand the existing environmental risks and to identify the potential remediation options and related cost estimates. The Tetra Tech reports from the site investigations conducted in 2017 do not appear to be publicly available and therefore it is challenging for BMC to provide YESAB the information that they have requested: *"the past and current environmental effects of mine closure"* for the Cantung mine. ReSDA (2016) reported that *"Environmental concerns have stemmed from the proximity of Cantung's acidic waste rock tailing ponds to the Flat River. This represents a potential threat to Nahanni's aquatic systems. Dust from the mine and mill are also toxic. Contamination from the mine has been found 15 km from the site"*. Given that the detailed care and maintenance reports are also not publicly available, it is not known if these environmental concerns have been addressed through the care and maintenance activities. BMC conducted a review of NATCL's 2017 annual water licence report (MV2015L2-0003) (NATC, 2018); however, this report did not identify effects from closure. Indigenous and Northern Affairs Canada inspected the site on January 10<sup>th</sup>, 2019 to ensure that the site was in compliance with the terms and conditions of the water licence and the various land use permits and was *"satisfied with the overall condition of the site as there were no concerns noted during the inspection"* (INAC, 2019). Non compliance was reported by INAC during their inspection in 2016 which was related to sediment and erosion control issues (INAC 2016). NATC took immediate action to rectify the some of the contraventions and prepared an action plan to address all other deficiencies in a timely manner (NATC, 2016).

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The environmental effects of Permanent Closure will only be able to be assessed once the mine goes in to this stage and the reclamation activities are underway and/or complete.

### **Socio-economic Effects of Closure**

#### *Employment and Tungsten Town-site*

The nature and origins of the workforce were intimately connected to the style of accommodation supplied at Cantung.

Prior to the restart in 2002, all employees, and families, were housed in the town of Tungsten. As such the employees were all, technically at least, residents of the NWT. The population of Tungsten varied greatly with approximately 120 permanent residents in the 1960's (160, in the summer months) and 450 in 1982. About 100 children were enrolled in the school (Kindergarten to grade 9) in 1982. By 1986, it was estimated that only 280 people were living at Tungsten. There does not appear to be any record of where this population originated but it is assumed to be similar to many small resource towns with some locals moving there and other residents coming from further afield. It has been reported that when the mine closed in 1986 many of the families living in Tungsten moved to British Columbia (Garrison, 2016). The loss of jobs in 1986 would likely have had an effect on the employees living in Tungsten and the town itself, rather than specific effects to the communities of Watson Lake, Ross River or Liard First Nation or Ross River Dena Council.

With the restart in 2002 the strategy had changed. The town site remained largely vacant and the employees were instead housed in bunkhouses. The total workforce early in 2002 was approximately 140, 50% of which were northerners, and of that, 35% were Aboriginal. The company also estimated that 20 direct contract jobs were created by company mining operations. In May and June, direct employment at the mine site was increased to 164 employees (Silke, 2009). These jobs were rotational rather than a standard 5 day week, though some of them were seasonal. A concerted effort to hire locally was made by NATCL and there was varying success in Watson Lake and the surrounding communities but with minimal results in the NWT (NATCL, 2001).

The last 10 years of the mine (2005 to 2015) were operated as fly in-fly out (or drive in, drive out) with rotations of 3 weeks in and 3 weeks off site. NATCL chartered private aircraft from Vancouver to Prince George and/or Smithers to transport the majority of the workforce. From Whitehorse, employees were transported by vehicle to the mine. NATCL vehicles picked up and transported northern employees from Whitehorse, Watson Lake and other eastern Yukon communities to the mine site (NATCL, 2014). It is understood that some of these employees were RRDC and LFN citizens. However, this change in operational strategy decreased the amount of local hire described by NATCL, in the above.

In 2013 Yukon News published an article on the Cantung mine and Mactung deposit which included the following:

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*“Liard First Nation Chief Liard McMillan said that while there have been some jobs for Liard First Nation citizens, there have also been a lot of issues with the mine and the company refusing to include the First Nation in negotiations”.*

There are currently twelve full time people on alternating three week schedules whose activities include, among other things, performing regular water sampling and reports, regular inspection of and repairs to site buildings and infrastructure, and maintaining mobile and other equipment as well as access to the mine site by way of the Nahanni Range road, site roads and the airstrip (Alvarze and Marsal, 2018).

### *Infrastructure*

The Cantung mine’s development was responsible for the preliminary development of the first section of the road that would eventually be connected to Carmacks and named the Robert Campbell Highway (Highway 4). The Nahanni Range road (Highway 10) was likewise a result of the development of the Cantung Mine and over the mine’s 50 year life the owners of the project were responsible for the maintenance and upkeep of this access road from km134 to the mine site. The combined travel distance between the mine site and Watson Lake, the nearest town by road is 310 km and takes between 4 and 5 hours depending on road conditions.

These roads allow easier access to areas that had previously only been accessible by non-motorised methods. Both highways were additions to Yukon’s limited infrastructure and have assisted with other projects that have added to the economic wellbeing of the local communities and Yukon as a whole. These resource projects include Wolverine, 3 Aces, logging, and tourism.

Highway 4 has also aided the connection between Watson Lake and Ross River with the travel time between the communities being about 5 hours compared with 10 hours or more travelling by road via Whitehorse. This provides easier access for the residents of Ross River to the facilities and people of Watson Lake. The roads also provide Kaska with easier access to areas where Traditional Land Use and resource gathering may be carried out.

### *Supplies*

Although the mine is situated in the Northwest Territories, Watson Lake was the staging area for trucking the tungsten concentrates and for supplying the mine site, due to the town being the closest to the mine site by road. There is little historical information on the amount of supplies sourced from Watson Lake. However, the supply chain included trucking firms located in Watson Lake and the same companies transported tungsten concentrate from Cantung to Watson Lake prior to movement to points further south.

It is noted that of the total amount creditors were owed at the time of NATC’s *Companies’ Creditors Arrangement Act* process in June 2015, \$79,515,664.93 owed to 237 creditors, there was exactly \$111.30 owed to all the creditors using Watson Lake as their address (CCAA, 2015).

## Conclusions

During its operation the Cantung Mine, owned and operated by NATC, was the largest tungsten producer in North America. The mine opened in 1962 and its latest closure was in 2015. There were several periods during this more than fifty year period when the project was temporarily closed with the commonly stated cause being low market prices of tungsten. The mine's open pit and underground operations extracted tungsten containing ore at a rate of 1,350 tpd.

The mine is now being operated on a care and maintenance basis by the Canadian federal government, with taxpayer funding, and this will continue until the site is reclaimed or sold. The current posted security is \$27.95 to \$30.95 million. Existing environmental effects are unclear as the most recent environmental site assessments do not appear to be publicly available. With older site investigations that are publicly available, there is no publicly available follow-up information that indicates the recommendations presented in those reports have been implemented to mitigate or eliminate the existing effects and risks. Consultation on the care and maintenance program is being conducted (in part) with the Liard First Nation and Kaska Dena Council.

Cantung and the old town site of Tungsten are located on the NWT-Yukon border in the Mackenzie Mountains. Although the mine is within the boundary of the NWT, the property is historically tied to the economic and social interests of Yukon. The mines operations provided local direct and indirect jobs to the region; however, due to the intermittent nature of the operation, particularly in the 21st Century, the resultant fly in fly out (and drive in, drive out) nature of the economic benefits were likely less or at least very differently spread than when the staff were housed at Tungsten.



### 4.5.1.3 KETZA RIVER MINE

#### Ketza River Mine History

The Ketza River Mine is an abandoned gold and silver mine located 85 km south of the community of Ross River, Yukon (Figure 4-1). The mine produced gold and silver through underground and open pit operations primarily from 1988 to 1990 (Assessment of Abandoned Mines, 2016).

The former mine is located within the traditional territory of RRDC, LFN and Teslin Tlingit Council. The site is situated along the headwaters of the Cache Creek drainage basin; which flows into the Ketza River and then the Pelly River approximately 12 km upstream of the community of Ross River (Harpley et al, 1991). The place is of cultural significance to the Kaska First Nation; it is known as “Dena Nezziddi” or “people standing on top of the mountain” (Smith, 2019).

Mineralization in the Ketza River area was first discovered in 1947 by prospectors from the Hudson Bay Mining and Smelting Company Limited who had found lead-silver veins. Gold mineralization was discovered on the property by Conwest Exploration Company Limited (Conwest) in 1954 (SRK Consulting, 2008). In 1974, the main claims were surveyed and leased (Gartner Lee, 2002). “In 1983, Pacific Trans Ocean Resources Ltd. optioned the property from Conwest and carried out limited geochemical and geological surveys before entering a joint venture with Canamax Resources Inc. (Canamax) in 1984.” (SRK Consulting, 2008). By 1989, Canamax was the sole owner of the mine (Gartner Lee, 2002).

From 1984 to 1990, Canamax conducted geotechnical surveys, drilling, and mapping. Construction of the mill began in 1987, followed by commercial production in April 1988 (Gartner Lee, 2002). “Approximately 342,395 tonnes of ore were processed using a conventional carbon-in-pulp process at a nominal rate of 364 tonnes per day to produce approximately 3.1 million grams of gold and approximately 342,000 tonnes of tailings” (Gartner Lee, 2002). At the time, Canamax had been mining oxide ore bodies; however, due to low oxide ore reserves, mining and milling operations ceased in November 1990 (Department of Indian Affairs and Northern Development, 1991). The lower-than-anticipated reserves was caused by a miscalculation of the bulk density of the oxide ore during the feasibility phase. This mistake, along with higher than anticipated underground operating costs made the project no longer economically feasible.

Wheaton River Minerals Ltd. purchased the Ketza River mine from Canamax in 1992, subsequently selling it to their wholly-owned subsidiary, Ketza River Holdings Ltd. In 1994, YGC Resources Ltd. purchased Ketza River Holdings Ltd., thereby becoming the new owner of the Ketza River Mine (Gartner Lee, 2002). YGC continued conducting exploration programs in the Ketza River property (i.e. drilling and mapping) until 2007. In 2007, YGC merged with Queenstake Resources Ltd., forming Yukon-Nevada Gold Corp. (SRK Consulting, 2008).

In 2011, Ketza River Holdings (owned by Yukon-Nevada Gold Corp) submitted a mine proposal to YESAB; the proposal was to mine 49.5 million tonnes of material over a five-year period (YESAB, 2011-2012). YESAB’s Executive Committee came to a consensus that Ketza River Holdings Ltd. had sufficient consultation with the RRDC, LFN and Teslin Tlingit Council and the inhabitants of Ross River (YESAB, 2011-2012). However, in February 2012 the Executive Committee found that more



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information was required: *“The Executive Committee found the Ketz River Mine proposal to be deficient of necessary baseline information, analysis and interpretation of baseline information, detailed project description, characterization of project effects and description of appropriate detailed mitigations”* (YESAB, 2011-2012).

On October 2, 2012 Yukon-Nevada Gold Corp changed its name to Veris Gold Corp. (Newsfile, 2012). Veris Gold Corp. filed for creditor protection in June 2014, maintaining the project until September 2014 (Assessment of Abandoned Mines, 2016). On April 10, 2015 the company abandoned the mine and YG took over the responsibility for care and maintenance (Assessment of Abandoned Mines, 2016) and (CBC News, 2015b). In 2015, YG used approximately \$1.1 million of the mine’s \$3.1 million security to pay for maintenance concerns at the mine site. *“Water leaving the site untreated had to be collected and pumped back to an arsenic treatment plant, and work had to be done to ensure surface water wasn’t going to flow into the tailings pond during spring runoff”* (CBC News, 2015b). In 2019, Yukon Conservation Society estimated that the final liability for the project cleanup would approach \$25 million (Yukon Conservation Society, 2019). In March 2019, BMC contacted YG’s Department of Energy Mines and Resources (EMR) to determine what their estimated costs are to reclaim the Ketz River mine site are. EMR indicated that *“cost estimate and closure planning is still being developed and at a conceptual level”*.

### **Statutory and Regulatory History**

In 1985 the proposed Ketz River Mine Project was referred to the Regional Environmental Committee for review.

In 1986 Land Use and quarry permits were issued.

In January 1987 Canamax submitted a water licence application to the Yukon Water Board. The licence hearing was held in March of that year and water licence Y-IN87-06L was issued on May 1, 1987. The mine began operating in March of 1988.

The water licence was subsequently amended August 2, 1989 and which required the submission of an Abandonment Plan on or before March 31, 1990. A Conceptual Abandonment Plan formed part of subsequent 1990 application by Canamax for and amendment to the water licence. However, the application was withdrawn in March 1992 at the company’s request. In November 1992 the licence was transferred to Wheaton River Minerals Ltd. (Wheaton) who thereby assumed responsibility of meeting all of the terms of the licence including the submission of an Abandonment Plan. In 1993 Wheaton submitted to the Yukon Water Board and Regional Environmental Committee a draft Abandonment Plan. This Draft Abandonment was found to be deficient by the Water Board and/or the Regional Environmental Committee. Wheaton then transferred the Ketz River Mine to Ketz River Holdings and who submitted a new Abandonment Plan for review in February 1994. It is understood that the water licence expired on December 31, 1998 and the Abandonment Plan was never approved.

In August 2004, YG (Water Resources Department) informed Ketzra River Holdings that they would require a water licence for the impoundment of water on site. A Type A water licence (QZ04-063) was issued to Ketzra River Holdings in 2007 and expired December 31, 2009. This licence required a Final Reclamation and Closure Plan to be submitted for review and approval and was submitted to the Yukon Water Board in December of 2009. This Final Reclamation and Closure Plan indicated that a Separate Final Reclamation and Decommissioning Plan was also submitted to EMR in December of 2007 as part of the Mining Land Use Approval LQ00156. Although the Type A water licence expired in 2009, it appears that Ketzra River Holding continued to monitor the site through 2010 as per the requirements of the expired water licence (Ketzra River Holdings, 2011a).

A search of the Yukon Water Board's Waterline website for "Ketzra" showed no active water licence for the project. The previous licences have expired or applications were withdrawn.

The Mining Land Use Approval (LQ00156) fell under the category of a Class 4 Exploration Program. It is understood that the Approval has expired. The security required for the Mining Land Use Approval for the exploration project was \$229,000. This is in addition to the \$3.1 million, which was required under the Type A water licence.

## **Environmental and Socio-economic Effects of Closure**

### **Environmental Effects of Closure**

Between 2004 and 2011, Ketzra River Holdings conducted a care and maintenance program at the Site (Ketzra River Holdings, 2011b). This program included an environmental monitoring program with a number of monitoring stations at the site to measure water quality and water quantity.

Ketzra River Holdings also completed an environmental cleanup and reclamation program of the wastes and un-used products that remained on the site from the Canamax commercial operation. This included:

- Removal of approximately 800 empty or full barrels containing acid, waste oil, sodium hydroxide, and unknown caustic substances;
- Removal of approximately 70 truck loads of general waste, including un-used mill buildings and scrap metal. Barrels and other materials were removed and disposed of in accordance with applicable regulations;
- A former barrel storage area near the Canamax tailings storage facility and a solid waste dump were decommissioned, reclaimed and revegetated; and
- Exploration sites in the area, where there are no future plans for additional mining, have been reclaimed and revegetated as well.

YG Department of Environment, Environmental Programs Branch determined that the Ketzra River Property is not a Designated Contaminated Site pursuant to the territorial Contaminated Sites Regulation (Yukon *Environment Act*); however, the Branch does have information regarding some contamination on the property (File 4202-20-124) (Ketzra River Holdings, 2011b).

Since the abandonment of the mine in 2015, the YG has been monitoring the site and performing care and maintenance as needed. When YG began care and maintenance, “*water leaving the site untreated had to be collected and pumped back to the arsenic treatment plant, and work had to be done to ensure surface water wasn’t going to flow into the tailings pond during spring runoff*” (CBC News, 2015b). As of March 2019, EMR has indicated that “*cost estimate and closure planning is still being developed and at a conceptual level*”. Therefore, although the mine has gone into Permanent Closure potential remediation options and related cost estimates have not yet been determined.

Existing environmental effects are largely uncertain as there are no publicly available reports past 2011. While some older site investigations (i.e. past effects) are publicly available, there is no reliable technical sources of publicly available follow-up information. This creates some uncertainty in understanding whether the recommendations presented in those earlier reports have been implemented to mitigate or eliminate the effects and risk. BMC therefore believes it inappropriate to speculate on this matter.

### **Socio-economic Effects of Closure**

#### *Employment Benefits for Local Communities*

In the 1980s and 1990s, when Canamax owned the Ketzka mine they hired many RRDC Kaska for positions such as a Kaska liaison, cooks, and mill workers (pers comm, confidential). During the mine’s operating period (1988 to 1990) the average number of employees that worked there was 129 (ReSDA, 2016). However, the percentage of employees from local communities and what percentage of those employees were First Nations is not publicly available.

During the operating period a Memorandum of Understanding was in place with the Kaska Nation; however, any benefits gained through the Memorandum of Understanding are not in the public domain.

Information provided by a RRDC member, [pers comm, confidential] indicates that as of 2019, two Kaska First Nation members are contracted to maintain the access road to the Ketzka River Mine.

#### *Socio-economic Participation Agreements*

In 2012, Yukon-Nevada Gold Corp signed a Socio-economic Participation Agreement (SEPA) with all five Kaska First Nations from Northern British Columbia and Yukon Territory including, RRDC and LFN (Yukon-Nevada Gold Corp, 2012). Yukon-Nevada Gold Corp offered training and employment opportunities, and annual scholarship funds for eligible citizens (Yukon-Nevada Gold Corp, 2012). Actual economic benefits gained through the SEPA are not in the public domain.

#### *First Nations Land Use Effects*

In 1992, a study was completed with members of the RRDC to document their experiences with the Ketzka River Mine, and to record the mine’s impacts on indigenous people (Mike Morrell, 1992). RRDC members that were familiar with the project location had concerns about fish contamination from mine toxicants, game animal population declines, access to clean water and air, wildlife habitat

features (e.g., mineral lick concerns), increased beaver populations and contamination of vegetation (Mike Morrell, 1992).

Prior to the Ketzka River Mine activity, many of the RRDC respondents hunted moose and sheep, trapped fur-bearing animals, and fished salmon along the Ketzka River watershed (Mike Morrell, 1992). *"In 13 of the 19 interviews, interviewees reported fishing in the Ketzka drainage in the past. In contrast none of our respondents has fished there in 1991.... In six of these cases, people explicitly stated that they had stopped eating Ketzka fish because of their concerns that the fish are contaminated by the mine effluent and represent a health hazard"* (Mike Morrell, 1992). Over 25 years later (present time), the inhabitants of Ross River continue to avoid fishing in the Ketzka River due to the concern of contaminants (Smith, 2019). Studies conducted in 1981 and 1984, prior to the construction of the Ketzka mine, indicate that slimy sculpin and Arctic grayling in Ketzka River were elevated in metals, when compared to the concentrations found in the Pelly River (Ketzka River Holding, 2011b). Fish tissue monitoring was not conducted during the mine operations nor was it conducted to support Ketzka River Holding's Project Proposal to re-develop the mine in 2011. Therefore, the quality of the fish in the Ketzka River and how the mine may have impacted them is not in the public domain.

The community members of Ross River rely on water delivery from their bulk water station for their primary water use. However, many residents continue to collect their drinking water from streams and creeks within their traditional territory. The Ketzka River was one of these water sources, until the mine began production (Mike Morrell, 1992) and (Smith, 2019).

In the summer of 1988, a pre-existing tote road was upgraded to a 49 km-long, high quality loose-surface road in order to service the Ketzka River Mine (Mike Morrell, 1992) & (Gartner Lee, 2002). This improved road made their traditional hunting territory more accessible for other hunters (Mike Morrell, 1992). Before the mine was abandoned, the property owner(s) controlled who had access past their gates. Only Kaska hunters were given access to the old exploration trails past the mine site, protecting part of their traditional territory from a high influx of hunters (Smith, 2019).

BMC have been advised by RRDC members that some RRDC Elders currently use the Ketzka River Mine access road to access berry and traditional medicine picking areas (pers comm, confidential).

According to the Department of Indian Affairs and Northern Development (1991), *"The access road to the Ketzka River mine from the Campbell Highway to the Canamax mine site is a public road, although it is presently being maintained by Canamax. Once the mine is decommissioned, Canamax does not intend to maintain the road."* In other words, Canamax had no intention to regulate hunter access past the site once the mine was decommissioned.

## Conclusions

The Ketzka River Mine provided economic benefits to Yukon and the Ross River area in the form of direct and indirect jobs, and the purchase of supplies and services, mainly from Whitehorse (Department of Indian Affairs and Northern Development, 1991). The Kaska Nation has received some economic benefits through the Ketzka River Project over the life of the project including, direct employment of Kaska citizens and other benefits (e.g. scholarships for students) as part of the SEPA with Yukon-Nevada Gold Corp (Yukon-Nevada Gold Corp, 2012). However, there are considerable

knowledge gaps in terms of quantifying local economic benefits (and losses) from the mine closure and the total number of employed Kaska members from RRDC and LFN. Currently, there are 2 Kaska (RRDC) members employed by the YG contractor to provide care and maintenance at the Ketz River mine site (Nyland, 2019).

Environmental liability to complete site cleanup and remediation remains and is being borne by Yukon and Canadian taxpayers. Traditional uses of the Ketz River area have declined due to mining activities that have hindered access, additional hunting pressure on the area due to the maintained public access roads, and concerns about the potential for contaminants.

In addition, the legacy of the Ketz River Mine has tarnished the local First Nation's opinion of mineral exploration and mining projects. This is directed at both YG and mining companies, for their inability to ensure that mining projects provide economic benefit to the local First Nation's, that the project can mitigate and limit environmental impacts, and that the project can be closed in a responsible way and not be abandoned, as were the Ketz and Faro projects.

In BMC's review of the permitting and regulatory process for the Ketz Mine, there appears to be data gaps in the mine's requirements for Temporary Closure and care and maintenance activities. Although it is understood that some care and maintenance activities were conducted between 2004 and 2011 (Ketz River Holdings, 2011), there doesn't appear to have been many statutory requirements.

#### **4.5.1.4 WOLVERINE MINE**

The Wolverine mine is an underground zinc-silver mine currently in Temporary Closure (EMR, 2019). The mine was constructed to process up to 1,700 tpd of massive sulphide ores into zinc, copper and lead concentrates which also contained precious metal credits. The mine is located within the Finlayson District of southeastern Yukon approximately 280 km east of Whitehorse, 190 km northwest of Watson Lake and 135 km southeast of Ross River (Figure 4-1).

#### **Wolverine Mine History**

Mineralization has been known in the area for generations (pers comm, confidential, 2017). The first indication of economic mineralization through modern exploration efforts was uncovered in the late 1970's to early 1980's when an exploration syndicate managed by Archer Cathro & Associates Limited conducted exploration in the area. In 1974 two small diameter core holes intersected low grade copper and zinc values; however, the overall low tenor of the mineralization and the poor ground conditions led the syndicate to abandon the claims.

Interest in the district was renewed in the early to mid-1990's after a Targeted Geoscience Initiative conducted by the Yukon Geological Survey indicated the area was underlain by more volcano-sedimentary rocks than previously recognised thus implying many of the base metal geochemical anomalies could be related to occurrences of Volcanogenic Massive Sulphide deposits. On the back of this re-interpretation, Equity Engineering Ltd. conducted targeting exercises that indicated several high priority geochemical anomalies in and around the Wolverine Mine area. These targets were sold to Atna Resources Limited who contracted Equity Engineering Ltd. to stake claims and conduct follow

up work in the area. In 1995 Westmin Resources optioned the property from Atna and funded a diamond drilling campaign which intersected 8.4 m of massive sulphide mineralization in the first hole drilled.

After an attempt by Expatriate Resources Ltd to jointly develop the ABM and Wolverine deposits in 2000, the project went into a dormant phase. In 2004 Yukon Zinc Corp. (Yukon Zinc - formerly Expatriate Resources) commenced the development of the Wolverine underground mine as a stand-alone operation.

The proposed Wolverine mine underwent an environmental assessment pursuant to the federal *Canadian Environmental Assessment Act* between 2004 and 2006. In addition, Yukon Zinc applied for a Type A water licence and Quartz Mining Licence in November 2004. The Responsible Authorities for the environmental assessment completed their review in 2006 and determined that the proposed Wolverine mine was “not likely to cause significant adverse environmental effects”. Yukon Zinc received a Quartz Mining Licence (QML-006) in December of 2006 for processing 1,500 tpd and Type A water licence (QZ04-065) was issued in October of 2007.

In July 2008, Jinduicheng Molybdenum Group Ltd. and Northwest Non-Ferrous International Investment Company Ltd. acquired all outstanding shares of Yukon Zinc, and took the company private.

Yukon Zinc completed major site construction throughout 2009 and 2010. Start-up was delayed due to two fatalities on site during construction and the on-going accident investigations and remediation requirements stemming from those investigations (Yukon Zinc, 2010a). This delay caused the company significant unplanned expense and impacted negatively on the economic viability of the project.

Process plant commissioning commenced in 2011 and commercial production, of 1,020 tpd or 60% of process rate capacity over a 30-day period, was achieved on March 1, 2012. Production first achieved 1,700 tpd in January 2013; however, production was subsequently reduced to 1,400 tpd mid 2013 “due to poor metal values” (Yukon Zinc, 2015). The process plant at Wolverine was designed to process 600,000 tonnes per year; however, as can be seen in the production data contained in Table 4-2, the tonnages processed never consistently achieved planned production capacity around which the economic viability of the project had been assessed. This is attributable to two factors;

- 1) The drastic difference between the competency of the ore and the host rocks resulted in the need to increase ground control measures and reduce blasting round length from the designed 3.5 m down to 2.0 m (Yugo and Shin, 2015). These two measures likely contributed to the reduced production rate.
- 2) The limited production of paste required for underground backfill (Table 4-2) would have significantly impacted productivity of the mining method selected for extraction of the underground ore, thereby contributing to the inability for tonnes of ore milled to match the design capacity of the processing facility.



**Table 4-2: Mining and Milling Activities Summary**

Year	Mined Ore	Milled Ore	Concentrate (t)	Paste (t)	Tailings (t)
2010	26,826	0	0	0	0
2011	142,315	153,352	26,723	0	126,629
2012	441,095	428,955	82,486	86,506	259,963
2013	505,942	419,625	112,629	146,903	260,093
2014	443,867	413,879	100,952	134,502	196,425
2015	35,207	19,594	6,095	2,927	10,572
Total	1,595,253	1,553,405	328,885	370,838	853,682

From: Yukon Zinc, 2016

On January 27, 2015, Yukon Zinc announced that it was temporarily shutting down operations at the Wolverine mine, reportedly due to unfavourable market conditions; putting the site in Temporary Closure. A notice of change of operations was submitted to YG to that effect. Most employees and contractors were laid off at this time and the mine was put into Care and Maintenance (Yukon Zinc, 2015). The Temporary Closure was unplanned.

On January 11, 2019 it was reported that Yukon Zinc had sold the company to Phoenix Global Investment Inc. in November 2018 (Yukon News, 2019).

### Statutory and Regulatory History

Yukon Zinc’s submission of a Quartz Mining Licence and Type A water licence applications in 2004 predates assessments under the federal *Yukon Environment and Socio-economic Assessment Act* which came into effect late 2005. However, the licences could not be issued without an Environmental Assessment first being completed pursuant to the federal CEAA. The nominal throughput of less than 3,000 tpd triggered a screening level of assessment under the CEAA. Throughputs greater than 3,000 tpd would have been subject to a Comprehensive Study.

YG confirmed its involvement in this screening by identifying two Responsible Authorities: the Executive Council Office for the water use licence and EMR for the Quartz Mining Licence. The Development Assessment Branch of the Executive Council Office took the lead in coordinating the screening on behalf of both Responsible Authorities. On November 3, 2004 Executive Council Office undertook an exercise to identify other potential Responsible Authorities and expert authorities within Yukon and Federal Governments. Yukon departments of Environment and Community Services, Highways and Public Works and the federal departments of Environment, Natural Resources Canada and Fisheries and Oceans identified themselves as expert authorities who could contribute specialised advice to the Responsible Authorities undertaking this screening. Fisheries and Oceans Habitat and Enhancement Branch had tentatively declared themselves as Responsible Authority for the proposed Wolverine mine due to the potential requirement for a Fisheries Authorization but soon withdrew after determining that a Fisheries Authorization would not be required for the project to be undertaken. No other federal or Yukon agencies declared themselves as Reasonable Authorities for this project (Yukon Executive Council Office, 2006).



The *Yukon Environmental and Socio-economic Assessment Act* (YESAA) did not apply to this project due to the fact that all relevant regulatory applications required to undertake the project were submitted to Yukon regulators prior to the effective date of part II of the YESAA legislation on November 13, 2004.

Yukon Zinc submitted a Project Description report with their regulatory authorization applications. Based on a broad consultation on the Project Description, the Responsible Authorities issued detailed environmental assessment information guidelines to Yukon Zinc Corporation in March of 2005. These guidelines provided the proponent with the basis of information required for a detailed environmental assessment report that was necessary in order to allow for the completion of the screening report.

Yukon Zinc submitted their Environmental Assessment Report at the end of October of 2005. The Responsible Authorities referred it to a broad consultation. Community meetings were held in Ross River and Watson Lake in January of 2006 and in Ross River in May of 2006 to specifically solicit the views of the Kaska (RRDC and LFN), many of whom place considerable cultural and economic importance in traditional subsistence activities within the area. A focus of the screening was to ensure traditional activities could continue and where there was a disturbance, it would be reversible through the decommissioning and reclamation of the mine and associated infrastructure. Yukon Zinc submitted a further response to the regulatory review of their Environmental Assessment Report, mainly to respond to water management issues requiring further clarification. The Responsible Authorities worked through all remaining issues with Yukon Zinc through June of 2006.

In September of 2006 the Development Assessment Branch issued its Screening Report with the following CEAA determination (Yukon Executive Council Office, 2006):

*“16(1)a*

*subject to subparagraph (c)(iii), where, taking into account the implementation of any mitigation measures that the responsible authority considers appropriate, the project is not likely to cause significant adverse environmental effects, the responsible authority may exercise any power or perform any duty of function that would permit the project to be carried out and shall ensure that any mitigation measures that the responsible authority considers appropriate are implemented”*

As described above, once the environmental assessment was complete the QML and water licence were issued. The mine operated from March 2012 to January 2015 (at which time it went in to Temporary Closure).

At the time the Wolverine mine went in to Temporary Closure Yukon Zinc was \$3 million behind on payment of an approximately \$10 million security requirement to be held by YG (CBC, 2015). This failure to lodge the required financial security eventually led to two charges in the territorial court to which Yukon Zinc plead guilty and was fined \$10,000. The sentence was given in recognition of Yukon Zinc paying the balance the month before the court appearance. The value of the security required is typically based on a combination of the value estimated in updated Reclamation and Closure Plans submitted by the mine operators every two years and an estimate completed by Energy Mines and Resources. The security itself may be pursuant to the territorial *Waters Act*, the territorial *Quartz Mining Act* or both.

On July 16, 2015 Yukon Zinc submitted an updated Reclamation and Closure Plan, which was approved by YG on December 23, 2015. A subsequent updated Reclamation and Closure Plan was submitted in December 2016. Upon request for an extension from three to five years of Temporary Closure Yukon Zinc submitted an updated Reclamation and Closure Plan in December of 2017 (Yukon Zinc, 2017a). Based on a review of this plan, EMR extended the Temporary Closure period from three to five years, the QML is currently valid until January 15, 2020.

In June 2018 the total reclamation security required by YG was \$35,548,650; however, as of January 22, 2019 the value of security held by YG is \$9,596,966 (EMR, 2018). The implied shortfall between environmental security held by YG and reclamation cost is approximately \$25.9 million.

In 2017 Yukon Zinc applied to the Yukon Water Board for an amendment to their Type A water licence to extend the Temporary Closure period by an additional two years. The original Type A water licence permitted Temporary Closure from January 21, 2015 to January 21, 2018 after which the mine would go in to Permanent Closure. Yukon Zinc had requested an extension to January 2020. However, during the Water Board's deliberations for the extension (which occurred between January 10, 2018 and February 28, 2018), the deadline (of January 21, 2018) for the project to go into Permanent Closure was surpassed. The Water Board deemed the project to be in Permanent Closure and denied the application for extension of the Temporary Closure period (Yukon Water Board, 2018b).

Currently the Yukon Water Board considers the Wolverine mine in Permanent Closure while the QML under EMR indicates that the mine is in Temporary Closure. The repercussions of this discrepancy are uncertain.

## **Environmental and Socio-economic Effects of Closure**

### **Environmental Effects of Closure**

The Wolverine Project is a polymetallic massive sulphide deposit, with the commensurate potential for acid rock generation. A considerable focus of the environmental assessment for the project was ensuring that the mine was developed and decommissioned with a strong emphasis on the mitigation of acid rock generation (Yukon Executive Council Office, 2006).

The proposed environmental mitigation for the Wolverine mine evolved through the Environmental Assessment process as Yukon Zinc responded to the concerns being raised. For example, the tailings dam design criteria were modified to withstand a 1:10,000 year hydraulic event whereas the original proposal was for a 1:1,000 year design. Additionally, financial security was required to ensure that mitigation measures would be implemented.

The Environmental Assessment pursuant to the CEAA was considered a modern, robust, open and transparent assessment process. The Assessment considered seven Valued Ecosystem and Cultural Components that included:

1. Ambient Air Quality
2. Terrain, surficial geology and soils
3. Water and Aquatic Resources

4. Vegetation
5. Wildlife
6. Heritage Resources
7. Socio-economic Conditions

Mitigation strategies for adverse effects on the Valued Ecosystem and Cultural Components were developed in collaboration with the Responsible Authorities and public consultation. These included mitigations for both operations and during Temporary and Permanent Closure.

In addition to requiring mitigation measures to protect values within the project locale, follow-up programs were specified in the screening report as a means of assessing, reporting and adapting mitigation measures to mine conditions during all phases of the project. Requirements for maintaining the site in Temporary Closure were stipulated should it be necessary to suspend operations before the exhaustion of metal reserves. Criteria for final decommissioning and reclamation plans and spill response were also specified.

Additional mitigation and management strategies during Temporary and Permanent Closure are contained in the mine's Reclamation and Closure Plan most recently updated in December of 2017. The Reclamation and Closure Plan is a living document, which is required to be updated every two years, and works in conjunction with the site's adaptive management plan to ensure the long term physical and chemical stability of the site.

Yukon Zinc's most recent Reclamation and Closure Plan outlines monthly and quarterly surface and groundwater monitoring, vegetation and wildlife monitoring. The plan also calls for periodic thorough inspections of the tailing storage facility as well as annual geotechnical inspections. A large portion of the closure plan is also dedicated to ongoing studies to facilitate more effective remediation (Yukon Zinc, 2017a).

The most recent annual report for the Wolverine Project on the EMR website is from 2017 (Yukon Zinc, 2018). It was reported that in June 2017, the water level in the flooding underground mine reached the surface of the adit. Pumping infrastructure was immediately installed and surplus water from the underground mine was pumped to the TSF from June through to the end of December (Yukon Zinc, 2018). The quality of the groundwater is not suitable for direct discharge to the receiving environment. All other water collected at the site (i.e., contact water) was also pumped or trucked to the tailings storage facility for storage (Yukon Zinc, 2018). Water has not been discharged from the tailings storage facility as the planned water treatment plant has not been constructed.

The tailings storage facility at Wolverine has capacity to store water for another couple of years. However, the water in the pond will require treatment prior to discharge to the receiving environment; therefore, YG is planning to construct a water treatment plant at the site in 2019 (CBC News, 2019c). CBC News (2019c) also reported that Yukon Zinc had not been conducting the required environmental monitoring.

Based on BMC's review of the effects of Temporary Closure of the Wolverine mine, potential water quality effects appear to be the highest risk factor.

### **Socio-economic Effects of Closure**

A SEPA was ratified by Yukon Zinc and the Kaska Nation in 2005. The agreement provides for Kaska participation in the economic and social aspects of the development and operation of the Wolverine Mine (Yukon Zinc, 2019). The SEPA also stipulated Kaska scholarships to which at least \$100,000 was used to support at least 54 Kaska members for education and skills development to date (Canadian Mining & Energy, March 12, 2019). RRDC also received income from joint ventures with preferred suppliers. However, the overall economic benefits gained through the SEPA to date are not available in the public domain.

The Wolverine mine was a significant contributor to the Yukon economy with over \$170 million in goods and services procured in Yukon over the course of 11 years of development and operation. Employment numbers, reported by Yukon Zinc, during construction and operation were up to 700 people during construction and annual personnel tallies of 366 to 594 during operations; however, other sources state more than 200 people were laid off when the mine went in to Temporary Closure (Whitehorse Star, 2015). In 2013 it was reported that there were 365-plus staff employed at the Wolverine Mine (with Yukon Zinc employees and contractors) and nearly 25 per cent of those were from Yukon and 18 per cent were First Nations (Canadian Mining and Energy, 2013). Other sources provide absolute numbers for local employment with 145 from Yukon including 45 Kaska First Nation People (ReSDA, 2016) and 30 to 50 people from Watson Lake directly or indirectly employed by the mine (CBC News, 2015a).

As a part of the annual reporting requirements, Yukon Zinc was required to report on the number of Yukoners and non-Yukoners employed on site as well as the value of goods and services procured in Watson Lake and Ross River. These reports indicate that, over the eleven years of reporting, a total of approximately \$4 million was spent on goods and services in Watson Lake and \$2.5 million in Ross River, with average annual values of \$445,000 and \$317,000 respectively (Yukon Zinc, 2007, 2008, 2009, 2010b, 2011, 2012, 2013, 2014, 2015, 2016, 2017b and 2018). Employment numbers for each community were not made public.

The sudden and unplanned closure of the mine was followed by Yukon Zinc's application for creditor protection.

Ultimately, creditors voted to accept a plan whereby unsecured creditors owed \$5,000 or less would be paid in full and creditors owed greater than \$5,000 could elect to reduce their claim to \$5,000 or receive 11.5 cents on the dollar. In total there were 273 unsecured creditors representing over \$20 million in claims. Of these 52 were Yukon based companies owed a total of \$4.2 million with 28 claims of \$5,000 or less, five owed between \$5,000 and \$10,000, eleven owed between \$10,000 and \$100,000, five owed between \$100,000 and \$500,000 and three companies owed more than \$500,000 (Whitehorse Daily Star, 2015). However, it is understood that the total amounts that were owed to 131 former employees were paid out in full and that all moneys owed to RRDC (\$170,000) were also paid in full (Yukon News, 2015).

### **Conclusions**

The Wolverine mine provided economic benefits to Yukon and the Ross River area in the form of direct and indirect jobs, the purchase of supplies and services and provided Kaska with benefits

through the SEPA. It was developed and permitted under a modern, open and transparent regulatory regime. However, there were and are challenges with the company providing the required security. In addition, the mine abruptly went in to Temporary Closure with little planning or notice to the regulatory authorities or the community. Although RRDC and employees were paid the money's owed, many contractors received cents on the dollar. The major existing environmental liability appears to be the management of water at the site, which, although falling into the hands of YG, would be mitigated if the required bond was provided. The Wolverine mine has further tarnished RRDC's opinion of mineral exploration and mining projects with respect to how government regulates, and companies operate.

#### 4.5.1.5 SA DENA HES MINE

##### Sa Dena Hes Mine History

The Sa Dena Hes mine is located in southeast Yukon within the traditional territory of the Kaska First Nation (Figure 4-1). The two closest Yukon communities are Ross River and Watson Lake. The property is accessible via a 25 km access road from km 47 of the Robert Campbell Highway and is approximately 70 km by road from the community of Watson Lake.

Potential for economic mineralization was initially identified in 1962 and subsequently explored by various companies under the name Mount Hundere property until it was acquired by Hillsborough Resources and optioned to Curragh Resources in 1989. Extensive diamond drilling in 1989 to 1990 (YG Mineral Properties update, 2008) resulted in the delineation of 5.6 million tonnes grading 12.7% zinc, 4.7% lead and 65 gram per tonne silver in four ore bodies.

The decision to develop the mine was made once Sa Dena Hes was given conditional approval to commence construction upon completion of the Federal Environmental Assessment and Review Process in 1990 (INAC, 1991). Shortly after the completion of the Federal Review, the project was awarded a Type A water licence (IN90-002) in January of 1991 pursuant to the federal *Inland Waters Act*. This was quickly followed by extensive development including the construction of 3,000 tpd process plant, tailings impoundment, haul road and “*completion*” of environmental studies.

In early 1991 a socio-economic agreement was signed by the Mt Hundere Joint Venture, Kaska Nation, Town of Watson Lake and YG that included the following: ensured business and employment opportunities to local residents on a preferred basis. An additional agreement between the Mt Hundere Joint Venture and Kaska included:

1. Kaska have an option to acquire a 5 per cent equity position in Sä Dena Hes project;
2. The Kaska have preferential rights to training, employment and spin-off business opportunities;
3. A jointly funded scholarship fund was established for post-secondary education of Kaska members;

4. Minimum employment and apprenticeship targets were set for Kaska members;
5. Compensation was arranged for trappers;
6. A cooperative environmental review process was developed involving Kaska and Curragh Resources;
7. Kaska Inc. was given an advisory position on the Sä Dena Hes management committee; and
8. Curragh Resources agreed to establish an office on Kaska land. (Jean Gleason, Kaska Dena Council, Forum for Aboriginal Involvement in British Columbia's Industry, November 26, 1991) (Notzke, 1994).

Effectiveness and implementation of the agreements are not publicly documented.

The mine operated for 16 months between August 1991 and December 1992. In December of 1992 the mine was put into Temporary Closure or Care and Maintenance. Operations ceased due to low zinc prices. Infrastructure remaining on site at the time included the underground mine, ore handling facilities, the mill, tailing facilities, camp and support facilities, the access road and a 6.2 megawatt power plant.

In March of 1994 Sa Dena Hes Operating Corporation purchased the Sa Dena Hes Mine (Teck, 2013) but by September of 1994 the Sa Dena Hes Operating Corporation went into receivership and was subsequently purchased in December of that year by Teck (25%) Cominco (25%), Korea Zinc (40%), and Samsung (10%). Teck planned to re-start the mine in the second quarter of 1998 (Northern Miner, 1997) and in anticipation of this, negotiated a Socio Economic Participation Agreement with Liard First Nation in October of 1997 (Teck, 2013). However, the restart was cancelled in December 1997 due to poor market conditions. Prior to cancelling the restart Teck completed rehabilitation of the underground mine and select infrastructure upgrades.

On January 26, 2012, Teck informed YG of intention to move the project to Permanent Closure and commenced with implementation of the Reclamation Plan on January 29, 2013. In general, the plans included decommissioning all buildings and other infrastructure on the site; draining and capping the tailings ponds; breaching the South and Reclaim dams; sealing portals; re-contouring waste rock dumps and re-sloping pit walls; as well as remediation and natural revegetation. The decommissioning, closure and reclamation activities to permanently close the Sa Dena Hes mine were conducted from 2013 to 2015 in accordance with the licensed and approved Detailed Decommissioning and Reclamation Plan (with the exception of decommissioning of the Main Access Road) (Access, 2016).

The Sa Dena Hes mine decommissioning and reclamation project is the first major reclamation project of its kind to be carried out in Yukon by a mining company rather than being completed by the territorial government (Jeffrey et al, 2015).



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## Statutory and Regulatory History

The following is from the 2013 Update to the Detailed Decommissioning and Reclamation Plan (Teck, 2013):

*“The Sa Dena Hes mine was constructed in 1991 and operated for a 16-month period between 1991 and December 1992, under Water Use Licence IN90-002. The Sa Dean Hes Operating Corporation purchased the property from Curragh Resources Inc. in March 1994 and the water Use Licence was subsequently assigned in April 1994. Teck presently manages the property on behalf of the Sa Dena Has Mining Corporation.*

*Water Use Licence IN90-002 was amended by Sa Dean Hes Operating Corporation in August 1997 to address submission of a decommissioning plan for the site. Amended Water Use Licence (QZ97-025) was issued in March 1998 and required the licensee to submit a Detailed Decommissioning and Reclamation Plan for the Site The licence expiry date remained September 15, 2000.*

*The company submitted a final Detailed Decommissioning and Reclamation Plan in February 2000 after extensive consultation with various interested parties. A Water Use Licence renewal application was also filed (QZ99-045) in February 2000 to renew and extend the existing licence and this application triggered an environmental assessment pursuant to the Canadian Environmental Assessment Act (CEAA). Two further amendment requests (QZ00-047 and QZ00-048) were made to the Water Board to request and extension to the licence expiry date to ensure completion of the CEAA review.*

*An extensive CEAA screening was completed in June 2001 while the property was still under Temporary Closure and included an assessment of the June 2001 Detailed Decommissioning and Reclamation Plan. The CEAA screening enabled the issuance of both the Water Use Licence (QZ99-045 and Quartz Mine Production Licence (QML-0004) with specific terms and conditions relating to Temporary Closure and maintenance on site.”*

Updates were made to the Detailed Decommissioning and Reclamation Plan in 2006, 2010, 2012 and 2103 as per the permit requirements (Teck, 2013).

The initial QML (QML-0004) and Type A water use licence (QZ99-045) predated YESAB; however, prior to expiry of those licences on December 31, 2015 Teck applied for renewal and amendment through YESAB district Office to allow for Post Closure activities.

The amended QML is for the proposed 25-year post-reclamation phase. During the 25-year post-reclamation phase, Teck proposes:

- to continue to discharge neutral mine drainage;
- to decommission the Main Access Road and Site Access Road; and,
- to undertake post-reclamation monitoring and adaptive management, inspections and maintenance of constructed/engineered structures.



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The current authorizations to conduct Post Closure activities are governed by Quartz Mining Licence QML-004 and a Type B water licence QZ16-051 (expiry date December 31, 2040).

## **Environmental and Socio-economic Effects of Closure**

### **Environmental Effects of Closure**

In 2012 Teck conducted site assessments and studies in order to refine the Detailed Decommissioning and Reclamation Plan. In addition, Teck provided funds for LFN to retain an environmental consultant to provide for an independent review of the draft Detailed Decommissioning and Reclamation Plan. LFN chose to use their Joint Venture consultant Keyah Nejeh Golder. Golder Associates undertook the review on behalf of Keyah Nejeh Golder. The funds provided by Teck required that LFN members participate in the review process and provide updates to LFN leadership. The updated 2013 Detailed Decommissioning and Reclamation Plan incorporated the recommendations and studies which were undertaken by Teck based on the comments raised by LFN. Key items raised from the LFN review included comments regarding (but not limited to): on going LFN engagement and input; water management and quality; vegetation and wildlife; employment; and, communications. These comments and how Teck addressed them and/or incorporated the recommendations are further described in the Detailed Decommissioning and Reclamation Plan that was updated in 2015 (Teck, 2015).

Teck also provided funding to LFN to undertake Traditional Knowledge studies in which LFN gathered knowledge from the elders to identify trails, traditional uses of the area, including use of plants and animals, and potential end land uses for the mine site. The information gathered was important for completing the human health and ecological risk assessment studies which were undertaken to guide the overall remediation of the mine site (Amec Foster Wheeler, 2016).

The human health and risk assessment and ecological risk assessments commissioned by Teck played a key role in guiding closure and reclamation planning. A comprehensive, collaborative approach to development of the risk assessments was taken, involving Teck and their technical consultants, LFN and several YG departments/branches, and their third-party reviewers (Teck, 2016). For the human health risk assessment samples of soil, water, berries and key plants used as traditional medicines (caribou weed and Labrador tea) were collected from the various areas of the mine site. LFN citizens assisted in sample collection and elders were consulted to identify plants and animals that might be used from the site as country foods or traditional medicines. The samples were analyzed for metal concentrations. In addition, there were a series of meetings and site visits with LFN elders who advised Teck how they might use the site after the reclamation activities were complete (Teck, 2015).

The site assessments and risk assessment, for the reclamation planning, found that areas undisturbed by the Sa Dena Hes mine were naturally elevated in base metal concentrations and that mining was a minor contributor to elevated metal concentrations on site (Baker et al., 2016).

Following the site assessments and human health and risk assessment and ecological risk assessments the decommissioning and reclamation commenced, which in general included: decommissioning all building and other infrastructure on the site; draining and capping the tailings

ponds; breaching the South and Reclaim dams; sealing portals; re-contouring waste rock dumps and re-sloping pit wall as well as remediation and revegetation. Upon completion of the decommissioning and reclamation works, the Post Closure environmental monitoring began in order to identify and manage any potential adverse environmental effects through the Post Closure phase of the Sa Dena Hes mine.

Post-reclamation environmental monitoring, physical/geotechnical inspections, and maintenance of constructed/engineered structures are regularly undertaken at the site during the Post Closure period. The comprehensive environmental monitoring includes: surface water quality (bi-monthly), groundwater (quarterly), and aquatic resources (every two years). Inspection of relevant mine components are conducted annually until 2026 and then in 2031, 2036, and 2040.

In addition to Post Closure site monitoring Teck has implemented an Adaptive Management Plan (Access, 2016). The purpose of the Adaptive Management Plan is to address uncertainty and conditions beyond those anticipated in post-reclamation. The plan sets out a series of specific performance thresholds based on the results from prescribed site monitoring activities. Exceedances of any these thresholds triggers specific response implementation and the entire process, including monitoring results is documented in quarterly and annual reports to both YG Department of Energy Mines and Resources as well as the Water Board.

In 2017, samples from all of the required water quality monitoring stations met the standards in licences QZ16-080 (expired March 31, 2017) and QZ16-051 for all water quality parameters (SRK Consulting, 2018). Furthermore, no Adaptive Management Plan specific thresholds were triggered in 2017. Work at Sa Dena Hes in 2017 included:

- The annual geotechnical inspection and associated earthworks monitoring, which did not uncover any unusual circumstances;
- One rainbow trout bioassay, which all had 100% survival rates;
- Road maintenance included removing debris from the road culverts and replacing the main culvert at 13.6 km with a portable 100 tonne bridge; and
- Review and update of spill contingency plan.

A review of the quarterly water monitoring reports for 2018 also show that the standards in the licence are being met (Alexco, 2018a, 2018b, 2018c, and 2018d).

In general, the environmental impact Post Closure is low. Results of the monitoring program have shown no significant effects or contamination of areas surrounding the operations. Continued monitoring and adherence to the Adaptive Management Plan will ensure any potential deviation from stable conditions will be managed appropriately. Teck's success in the final closure and reclamation of the Sa Dena Hes mine is an example of modern closure and reclamation by an environmentally responsible mining company.

### **Socio-economic Effects of Closure**

The Sa Dena Hes mine had forecast employment of 140 people for a period of 8 to 10 years, with concentrate to be trucked to Skagway (INAC, 1990). ReSDA (2016) reported that the average number

of employees during operations was 110. LFN's website indicates "*Sa Dena Hes a lead -zinc mine opened in 1991 and employed First Nations people until the closure in 1993. At the present time the mine is currently employing a small number of people.*" (LFN, 2019) Additional details of the number of employees from local communities and how many were First Nations is not in the public domain.

A 1990 evaluation of the Traditional Land Uses in the area of Sa Dena Hes found that primary use included hunting, fishing and trapping. No spiritual or special places were found (Teck, 2013). The study hypothesised that the impact of the project would not necessarily come from the mine itself, but rather the increased pressure of hunting from both First Nations and non-First Nations along the access road.

The following is from the 2013 Update to the Detailed Decommissioning and Reclamation Plan (Teck, 2013):

*"Teck has been working with the Liard First Nation (LFN) leadership to ensure the Sa Dena Hes Mine Decommissioning and Reclamation Project is able to provide benefits to the local communities, with a specific focus on the Liard First Nation and other members of the Kaska Collaboration Agreement.*

*Teck is focused on establishing a strong working relationship with the LFN leadership by engaging with the LFN community regarding the Project.*

*The Kaska have formal internal agreement (protocols) articulating the agreed upon approach and the Nation selection as to who will lead proponent engagement for the various areas in Yukon and Northern BC. Under this agreement, the LFN are the designated lead First Nation for the aforementioned project.*

*More recently, Teck met with Chief McMillan of the LFN to discuss Teck's desire to re-initiate the working relationship with the Nation for the Project".*

Following this meeting Teck and LFN proceeded to refine the 1997 *Sa Dena Hes Socio-economic Participation Agreement* to reflect the change in mining focus from development to that of decommissioning (Teck, 2013). The updated agreement was finalised on September 14, 2012. Following this agreement there was several meetings and discussions with Teck and LFN regarding the decommissioning project and Teck secure permission to initiate direct communications with RRDC.

Teck retained Amec Foster Wheeler Environment & Infrastructure (Amec Foster Wheeler) to implement the closure plan for the site and mandated that engagement of local First Nations was a project priority and a key metric for gauging the successful execution of the reclamation program (Amec Foster Wheeler, 2016). To ensure maximum First Nations engagement was achieved, tender documents indicated that favourable consideration would be given to tenders containing "*meaningful*" First Nations content. Bidders were encouraged to provide employment opportunities for local First Nations equipment and resources. In their bid submissions, contractors were required to supply plans demonstrating their efforts to fill positions with First Nations personnel, indicating

the types and quantities of such resources they would use and explaining how they intended to use these resources in the execution of the work, and to provide documentation supporting these commitments. In the tender documents, it was stated that letters of recommendation from local First Nations leadership would be given additional consideration. Upon award, the contractor would be required to provide confirmation of the use of the resources outlined in the bid by providing the names of personnel and the types of equipment required (Amec Foster Wheeler, 2016).

Another key component to successfully engaging First Nations personnel was the decision to leave some of the site works out of the scope of the larger contracts (Amec Foster Wheeler, 2016). These works were strategically selected based on the understanding of available local and First Nations resources. It was reported that members of the Liard First Nation carried out first-aid attendant/site security services for the duration of the 2013 program. The 2014 on-site work activities set aside for direct award included road maintenance, concrete breaking at the mill site, mill site capping and shaping, removal of pipeline, landfill maintenance, decommissioning of monitoring wells, installation of erosion protection materials, construction of helipads for future monitoring, demolition of site exploration camp infrastructure and other small shacks, reclamation of a dyke, and general site clean-up. In 2014, Teck also hired Liard First Nation personnel to act as environmental monitors (managed through LFN's environmental monitoring consultant Dena Cho Environmental). The 2015 reclamation season all activities were directly awarded to the local First Nations, with the exception of tendered activities associated with waste rock dump capping which required use of large rock trucks.

In addition, Amec Foster Wheeler, working with the First Nations contractors, assembled a workforce from the Watson Lake and Lower Post areas who were then orientated to the site, provided PPE and tools, and participated in the revegetation program at various locations throughout the mine site. The tree planting was directed by Laberge Environmental Services of Whitehorse to train workers on correct methods for planting the trees and oversaw the daily operation.

Overall, First Nations personnel worked 55% of all total workforce hours (36,560 out of 66,260 total workforce hours) on the Teck-contracted aspects during closure and reclamation activities up to the end of 2015 (AMEC, Foster, Wheeler, 2016). Based on the above it would seem that the economic benefit to the local community of Watson Lake and LFN and its citizens through the three years of reclamation activity at Sa Dena Hes could have outweighed the benefits during the 16 months of operations. However, the full socio-economic effects of the project during operations and reclamation are unclear without detailed knowledge of the various SEPAs signed and reporting associated with SEPAs.

Upon notification of the intent to put the Sa Dena Hes on Permanent Closure the Department of Energy Mines and Resources determined a financial security of \$15,912,000 would be required to cover all reasonable closure costs (Yukon Government, 2012). This estimate was later revised upward by Teck to \$25.2 million with a 5% contingency. It is then reasonable to assume that this would be the minimum spent on reclamation at Sa Dena Hes (Steve Jan, 2014).

The estimated Post Closure costs for the Sa Dena Hes site is \$4,025,000 (Teck, 2016). At this time it is unclear if the Main Access Road will be required to be decommissioned or if it is considered a public road. As such, the estimated cost to decommission the Main Access Road is not included within the cost estimate table. However, if the road were to be decommissioned, the additional estimated cost is \$3,850,000 (Teck, 2016).

In summary, the relatively short mine life is unlikely to have resulted in as large a positive impact on the community as the past 21 years of closure and reclamation activities. The continued monitoring of the site will provide several jobs and contract opportunities for at least an additional 20 years. The mine closure has therefore provided positive economic benefits for a generation of local people.

## **Conclusions**

The Sa Dena Hes mine was a zinc, lead, and silver mine that operated for 16 months between August 1991 and December 1992. It went in to Temporary Closure due to low zinc prices and remained in temporary closure until 2012 when the final decommissioning and reclamation phase was initiated. This phase was completed in 2015 and the mine is now in the Post Closure Phase. Teck worked closely with the Liard First Nation to ensure that they participated in the planning and execution of the decommissioning and reclamation phase. Environmental issues and concerns raised by LFN were considered and addressed and this included consideration of LFN specific land use of the area Post Closure. In addition, LFN benefited from the contracts and jobs during the reclamation program. The Sa Dena Hes mine decommissioning and reclamation was the first major modern reclamation project of its kind to be carried out in Yukon by a mining company rather than completed by the territorial government. The environmental monitoring results during the Post Closure phase have met the requirements of the water licence and monitoring will continue until 2040 to ensure that the reclamation works at the site is stable and that there are no remaining environmental concerns.

### **4.5.2 COMMUNITY STATISTICS**

The socio-economic baseline (Chapter 15 of the Project Proposal) relied almost entirely on published primary and secondary data. Sources of data included:

- Statistics Canada 2006 and 2011 National Household Survey;
- Yukon Bureau of Statistics data on population, some economic variables, and societal data;
- Canada Revenue Agency for data on income and GST; and,
- Town of Watson Lake and various YG departments and other agencies.

BMC reviewed these data sources in an attempt evaluate trends from when the first of the five mines opened (1962) to the last one closed (2015). Unfortunately, the data was not robust enough for such an assessment and in some cases, there were discrepancies in the federal data vs the territorial data for Ross River and Watson Lake (e.g. inconsistent population estimates). Given the small populations of these communities such discrepancies make a big difference. In addition, much of the data from the 2011 National Household Survey is of poor quality or unavailable due to the voluntary nature of the survey and so trends from 2011 onwards could not be evaluated using this survey. This is a challenge given that the Wolverine mine went in to Temporary Closure in 2015 and Sa Dena Hes employed many people from Watson Lake and LFN in 2013 through 2015.

Given the challenges that BMC had with the review of the government statistics, BMC contacted a professional Yukon-based economist to conduct the trend evaluation for the communities of Ross River and Watson Lake. The response was that he had attempted such evaluations in the past and had come to the same conclusions as BMC (i.e. the data was not robust enough and/or the n values for many of the indicators were too small to be able to conduct a meaningful year to year comparison).

In this context, BMC is unfortunately unable to utilise community statistics to support a response in regard to “*how mine closures have effected local communities*”. BMC therefore undertook a community survey to (in part) evaluate how the closures have affected the local communities (Section 4.5.3).

### 4.5.3 COMMUNITY SURVEY

#### 4.5.3.1 METHODOLOGY AND REPORTING

Over the course of February 10 to March 8, BMC conducted a phone and in-person survey. The survey was designed to obtain opinions based on personal experience related to economic, social and environmental impacts directly or indirectly attributable to temporary and permanent mine closures. The survey questions are included in **Appendix D**.

Overall, more than 30 calls and attempts at communication were made in the course of conducting the survey. Efforts focused on contacting businesses, First Nation-related entities, government agencies, Non Government Organizations and health providers. Survey responses were received from individual businesses, First Nation-related entities, industry groups, medical services, municipal representatives, and environmental organizations. The preponderance of responses were received from Watson Lake, though Ross River-based groups are also represented in the survey.

Multiple people expressed significant concern that their responses would be made public or that the answers provided would lead to the identification of the individuals being interviewed. For some people, this concern led to non-response. In other cases, these concerns were mitigated by commitments from BMC that we would summarise the results of all of the surveys and provide the summary to YESAB, rather than provide the results of the individual surveys.

The following sections summarise the survey results.



#### 4.5.3.2 SUMMARY OF COMMUNITY SURVEY RESULTS

All respondents identified a clear effect from temporary or permanent closure, though there was major variation in perception of those effects. While there was universal agreement that closures led to loss of employment and business revenues, there was less concurrence on the scale and scope of those effects.

All respondents felt that closures were inevitable and that those who planned for the eventuality were better placed to endure the downturn.

In terms of environmental effects related to closures, the vast majority of respondents were unable to identify effects directly or indirectly attributable to the closure, though a few respondents did point to risks that arise from reduced staffing and oversight on site.

In terms of social effect, respondents were not able to identify sustained negative effects from closures. All respondents identified job losses as a major short-term effect, and some indicated that families were forced to relocate to find employment and stability. However, there was also a sense that those effects were limited to individuals employed directly on site or to people who were used to the cycle.

In general, responses on all aspects of the survey can be expressed as points on a continuum between resilience and resignation. The communities understand mining comes with cycles and they understand those cycles have human effects. While no respondent suggested that the community would be better off without mining, most respondents also indicated that companies had not done well preparing communities for eventual closures.

#### Environmental Effects

Respondents struggled to link closures to environmental effect. Many respondents indicated that they could link mine activity, overall, to environmental effect, but that making the tie to closure was difficult.

Some respondents did point to risks to water and other on-site monitoring programs due to a lack of staffing and capacity during closures. They suggested that reduced staffing and oversight increased risks that operators would be slower to discover any issues and as a result, minor issues could balloon into more significant problems.

No respondent was able to provide an example of an operator taking steps that mitigated closure-related environmental effects. Suggestions around steps that could be taken were limited to better planning, so that remediation was an ongoing activity that would continue even in closure.



### **Economic Effects**

Economic effects of closure were the most readily identified for respondents. Virtually every respondent had felt a direct economic effect or knew of one or more people who had been affected.

There was broad consensus that one area that mining companies could improve on was in communicating closures well in advance, to provide individuals and businesses with the time required to adjust and prepare. Multiple respondents also stated that mining companies need to ensure that local companies are fully paid for goods and services.

One business did indicate that it had changed its model to ensure that any work lost due to closure could be mitigated by obtaining work related to care and maintenance.

There was some consensus around the fact that mining was the outlier and that the state of the economy during closure was the norm. This comment lined up with multiple respondents who stated that anyone working for a mine needs to be prepared for the eventual closure.

Even so, there was a clear sentiment that companies had not done enough to reduce effects at the community level. Communication was one area that multiple respondents were critical of operators. There was some consensus that the community would be better placed to weather a closure, if businesses and individuals were given longer lead time on any impending closures.

More than one business pointed to a lack of local sourcing for materials as one reason closures had less effect today than in years past. Whereas food, construction materials and other items used to be sourced out of local businesses, mines increasingly look to Whitehorse or larger communities for these materials. For clarity, this approach to sourcing of materials from further afield was not viewed as positive, overall – only that it reduced effect of closure.

### **Social Effects**

Responses on this set of questions varied the most with limited consensus on the nature and scope of social effects arising from closure.

One medical practitioner indicated that there is no change in approach, budget or services, regardless of economic activity in the town. Others provided anecdotal comments about reduced drinking due to less money available, while others pointed to the sustained negative affects of unemployment.

One area of strong consensus was that neither government nor operators had done anything noteworthy in preparing for or responding to social effects of closure. Suggestions were largely limited to operators improving communications, so that individuals had time to prepare.

More than one respondent referred to their community as largely “*forgotten*” in referencing government support during closures.

One area that was highlighted as a possible mitigation for social effect was training and education, so that mine employees were better prepared to gain employment in other industries post-closure.

#### 4.5.4 SUMMARY

Table 4-3 provides a summary of the context in which the previous five mines in Kaska Territory in Yukon operated with respect to:

- The years each mine operated, closed and the current stage of each mine;
- each mine's technical and economic assessments and corporate debt (i.e. financial viability);
- the environmental and regulatory regimes at the time in which each mine was constructed, operated and closed; and
- the corporate-social responsibility era in which each mine was constructed, operated and closed.

**Table 4-3: Context in Which the Previous Five Mines in Kaska Territory in Yukon Operated and Closed**

Mine	Years of Operations*	Closure Status	Reclamation Status	Technical and Economic Assessments	Environmental & Regulatory	Corporate Social Responsibility
Faro	1969 to 1982 1988 to 1993 1995 to 1998	2003 - was the year it went from Temporary Closure to Permanent Closure	In progress (Federal Government)	- Economic viability was partly tied to zinc prices but also the company was not able to overcome their debt from other less economical projects that they owned	- Was constructed prior to any regulatory oversight and effects to the environment and mitigations were not considered, although this gradually changed over the mine's life  - Regulatory requirements for financial security evolved of the life of the mine but the amounts were not sufficient to cover mine reclamation and closure liability	- Was constructed in an era where community impacts both positive and negative were not considered, although this gradually changed over the mine's life  - Was built as a company town
Cantung	1962 to 1986 2002 to 2003 2005 to 2015 (was temporarily closed Oct 2009 to Oct 2010)	2015 - currently in Temporary Closure/Care and Maintenance	In Care and Maintenance	- Economic viability was tied to global tungsten markets	- Was constructed prior to any regulatory oversight and effects to the environment and thus mitigations were not considered, although this gradually changed over the mine's life  - Currently the posted security is \$27.95	- Was constructed in an era where community impacts both positive and negative were not considered, although this gradually changed over the mine's life  - Was initially built as a company town
Ketza	1988 to 1990	2015 - was the year it went in to Permanent Closure	In progress (Territorial Government)	- Error in the technical assessment resulted in the mine not being economic	- An environmental assessment was conducted, and the project obtained appropriate licences, but it was in the early days of assessment and permitting and the requirements were not as robust as they are today  - The security at the time of closure was \$3.1 million, this was insufficient to cover the reclamation activities	- Was constructed in an era where community impacts both positive and negative were starting to be considered by companies  - This is evidenced through the company negotiating an MOU with Kaska and local employment of RRDC citizens and Ross River residents during operations
Wolverine	2011 to 2015	2015 - was the year it went in to Temporary Closure	In Care and Maintenance	- Economic viability was partly tied to zinc prices but also the company was not able to get the predicted tonnages mined (due to challenging ground conditions and low paste-fill production) that were needed for the project's economic viability  - The deaths during construction caused unplanned delays and unplanned expense at a time when the company was at maximum debt drawdown prior to production cashflows commencing	- An environmental assessment was conducted, and the project obtained appropriate licences  - Although the environment assessment pre-dated YESAB the project was fully assessed under a robust environmental and socio-economic assessment process  - The security at the time of closure was \$10 million and the company was \$3 million behind on its payments. In June 2018 the security was raised to approximately \$35.5 million, as of January 2019 the security help by YG was approximately \$9.5 million	- Was constructed in an era where community impacts both positive and negative impacts and benefits to local communities were considered and were a main component of the project obtaining its "social licence to operate"
Sa Dena Hes	1991 to 1992	2012 - was the year it went from Temporary Closure to Permanent Closure	Reclamation complete and Post Closure monitoring in progress (Teck Resources)	Economic viability tied to zinc prices	- An environmental assessment was conducted, and the project obtained appropriate licences, but it was in the early days of assessment and permitting and the requirements were not as robust as they are today - Upon going into Permanent Closure YG estimated the security required would be approximately \$16 million, Teck revised this estimate to be \$25.2 million with a 5% contingency	- - Was constructed in an era where community impacts both positive and negative were starting to be considered by companies - This is evidenced by the socio-economic agreements with the local community and Kaska - Closure and reclamation was undertaken with full involvement of the Liard First Nation

\*none of the closures were planned.

#### 4.5.5 KUDZ ZE KAYAH CONTEXT

The following sections provide a summary of the context in which the proposed Kudz Ze Kayah mine will operate and close; with respect to:

- Technical feasibility;
- Financial feasibility;
- Regulatory and environmental considerations; and
- Socio-economic considerations.

##### 4.5.5.1 TECHNICAL

The Kudz Ze Kayah Project was purchased from Teck Resources Ltd (Teck) in January 2015. Teck acquired ownership of the project through their takeover of Cominco in July 2001.

The Kudz Ze Kayah Project is relatively unique in that over a period of approximately 20 years it has had two successful prefeasibility studies carried out by two experienced, separate and independent owners where both studies made a compelling economic case for the development of the Project. Concurrently, over a cumulative period of approximately 25 years independent environmental and technical assessments of the project have been undertaken to support the granting of permits and licences to mine. This means that in this latest application to YESAB (BMC, 2017), BMC is not so much applying to start a new mine as applying for the existing assessments and permits to be reinstated for a mine that for all intents and purposes (in relation to environmental footprint at least) is the same as the proposed mine that was previously permitted in 1998.

Through the period from discovery until 2001, Cominco carried out numerous detailed technical studies on the project. A full list of these studies to date is contained in **Appendix E**. In 1995, Cominco completed a Prefeasibility Study for mining the ABM Deposit at KZK and in 1996 commenced several years of optimisation work on areas such as geotechnical assessments, mine design, tailings storage facilities, metallurgical performance and concentrate quality. Cominco also prepared, submitted and was granted a Type A water licence by the Yukon Water Board (granted in 1998, QZ97-026) which expired in 2018. At that time, the Type A water licence was the licence that allowed proponents to construct and operate a mine. Since that time, the Yukon regulatory system has evolved, and mine development requires as a minimum a Quartz Mining Licence and a Type A water licence in addition to a myriad of other approvals and licences.

Between 2001 and 2015, Teck continued to assess the Project with a number of exploration programs including a bulk test mining program to confirm the preferred mineral processing route for the upper section of the ABM orebody. Teck also continued to carry out routine water monitoring and other

environmental programs in accordance with the work commenced by Cominco and their obligations under the Type A water Licence.

The Prefeasibility Study completed by Cominco in 1996 was as a result of nearly 5 years of ongoing technical studies. The positive economic outcomes from this Prefeasibility Study formed the basis for an application to the Yukon Water Board for a Type A water licence to commence mining construction and operation. This was granted in 1998 however, due to competing corporate strategic factors (including the discovery and development of the world class Red Dog mine in Alaska) Cominco elected to defer development. In 2001 Teck acquired Cominco and the project was then not considered to be of sufficient scale to warrant development by the much larger corporate entity.

In 2015, upon acquiring the project from Teck, BMC commenced comprehensive confirmatory studies on all facets of the project designed to:

- in the first instance to validate the significant work carried out by Cominco and Teck over a nearly 20 year period; and
- in the second instance to provide the basis for a modern feasibility study to underpin financing decisions around the development of the ABM Mine and to underpin an application to YG in relation to re-permitting the project for mining.

The work programs carried out by BMC over the last four years include approximately \$50 million spent on technical programs on the following;

- Relogging all available drill core drilled throughout the history of the Project;
- Confirmation of existing and generation of new geological models;
- Drilling and recovering approximately 75,000 m of diamond core over 4 years for exploration, metallurgical and geotechnical purposes;
- Test work programs designed as the basis for re-estimation and remodelling of groundwater;
- Reclamation of over 11 hectares of historic drill holes and disturbed areas (in the process being awarded in 2016 the Leckie award by YG for environmental excellence);
- A full suite of metallurgical studies to reconfirm and where possible to improve upon the metallurgical performance using a conventional froth flotation process;
- A full optimisation and redesign of the mine in order to extract the ore reserves via the ABM pit and the Krakatoa underground;

- In addition to historical work, a comprehensive 3 year test work program to assess the potential for short term acid generation in various rock types for the proposed mine;
- Additional, comprehensive work over nearly 3 years to model the results of the hydrogeological assessment;
- Leading to the completion in 2016 of a Prefeasibility Study that confirmed that the Kudz Ze Kayah Project would sustain a viable mine on the ABM Deposit; and
- Further work on various environmental baseline studies (climate, flora, fauna, noise, water, geochemical etc.) as well as surface and groundwater modelling required to complete the Prefeasibility Study and then prepare the full environmental and socio-economic assessment; and
- In 2017 and 2018, subsequent substantial technical work to prepare a Definitive Feasibility Study and to update various water and other models to answer questions from both YESAB and from RRDC Environmental Consultant Dena Cho on behalf of RRDC and Kaska Nation.

A full list of these studies to date is contained in **Appendix E**. The principal purpose of this significant and comprehensive body of technical and economic work has been to identify and mitigate risks in relation to technical, financial, social and environmental aspects of the proposed mining project so as to ensure that a robust and sustainable mining and processing operation can be developed. The body of work carried out on the Kudz Ze Kayah Project in the 25 years prior to submission of a mining proposal to YESAB and indeed during the current assessment is unprecedented in Yukon. No other single project in Yukon has undergone the sustained and detailed assessment that has been carried out on this Project.

#### 4.5.5.2 ECONOMIC

The following text was provided previously to YESAB in Response Report #2 (BMC, 2017c) and is re-presented here to support BMC's response to this additional Information Request.

In preparing the prefeasibility economic assessment of the Project, BMC utilised financial analyst consensus long term metal prices of US\$1.07/pound (lb) zinc, US\$0.94/lb lead, US\$2.95/lb copper, US\$1,292/ ounce (oz) gold and US\$19.31/oz silver. As of the date of preparing this response (November 13, 2017) current metal prices are in general notably higher than that used in the Prefeasibility Study; namely US\$1.49/lb zinc, US\$1.15/lb lead, US\$3.08/lb copper, US\$1,278/oz gold and US\$16.92/oz silver, indicating a degree of flexibility from that used for the economic assessment (prices were obtained from the following source: <http://www.indexmundi.com/commodities/>).

In the event that metal prices were to fall below that adopted for Prefeasibility Study economic analysis, a considerable margin exists before the operating viability of the Project would be called into question. Annual operating costs are projected to be in the order of US\$120 million per year. Metal prices would need to fall by an average of 50% from that considered in the Prefeasibility Study

before the average annual operating costs would no longer be covered by revenue generated from concentrate sales. This equates to metal prices of US\$0.54/lb zinc, US\$0.47/lb lead, US\$1.48/lb copper, US\$646/oz gold and US\$9.65/oz silver. A comparison to historical metal prices over the last ten years as shown in Figure 4-4 to Figure 4-8, demonstrates that metal prices would need to fall significantly below their long term averages before the average annual operating costs could no longer be covered by regular operations and hence the long term economic viability of the Project could possibly be placed in doubt.

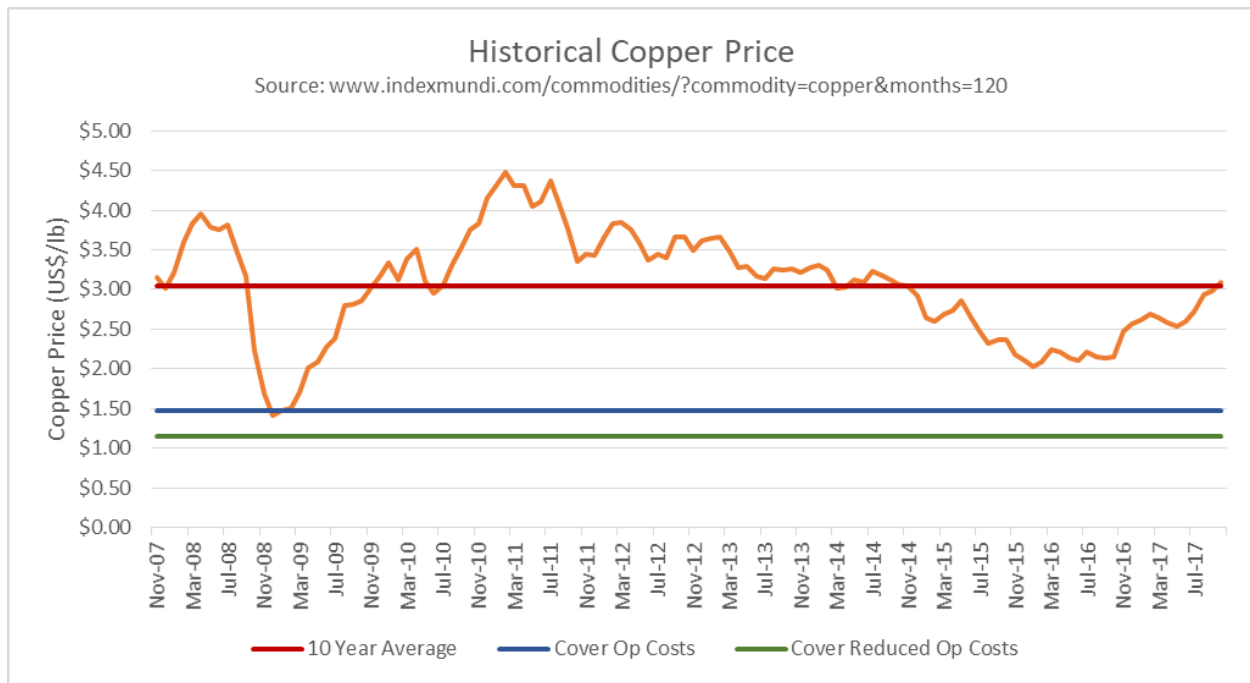


Figure 4-4: Historical Copper Price Compared to Operating Costs and Reduced Operating Costs



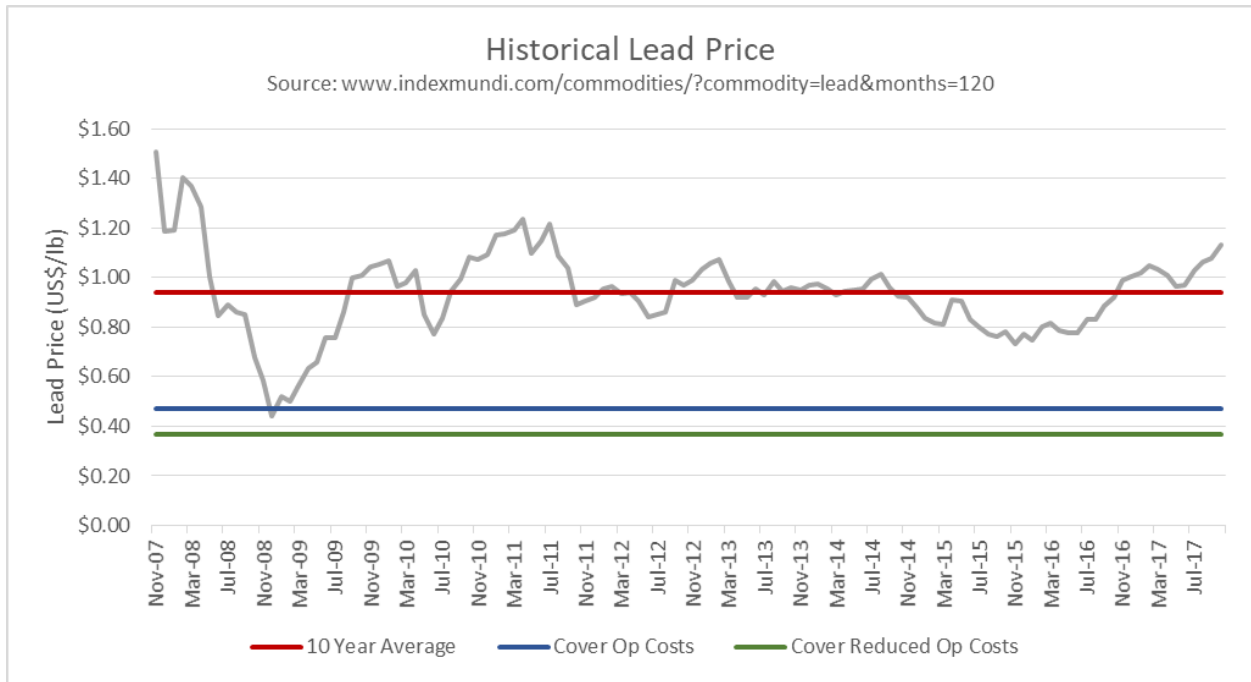


Figure 4-5: Historical Lead Price Compared to Operating Costs and Reduced Operating Costs

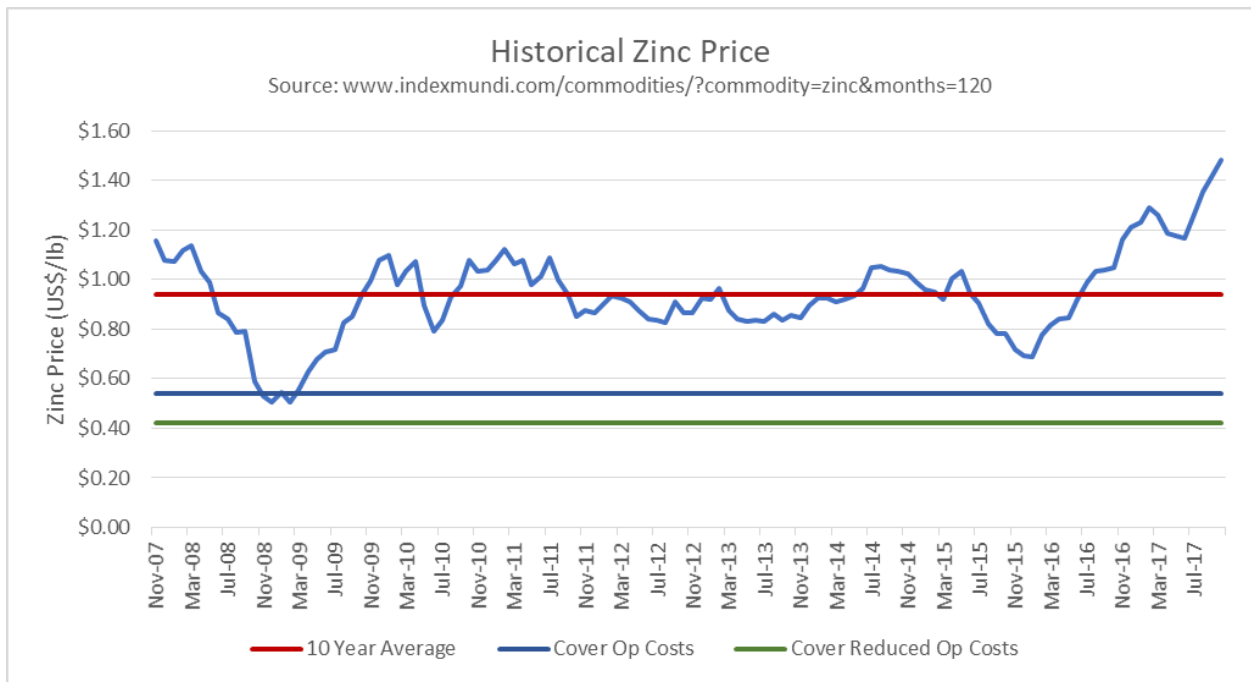


Figure 4-6: Historical Zinc Price Compared to Operating Costs and Reduced Operating Costs

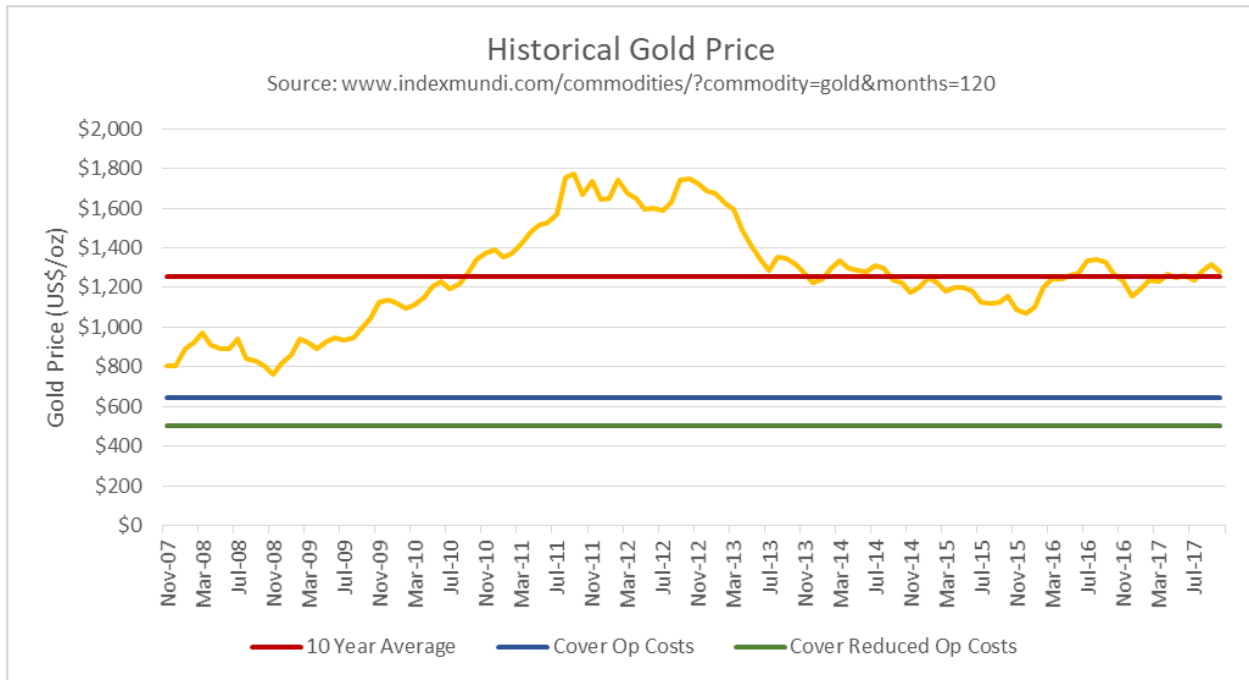


Figure 4-7: Historical Gold Price Compared to Operating Costs and Reduced Operating Costs

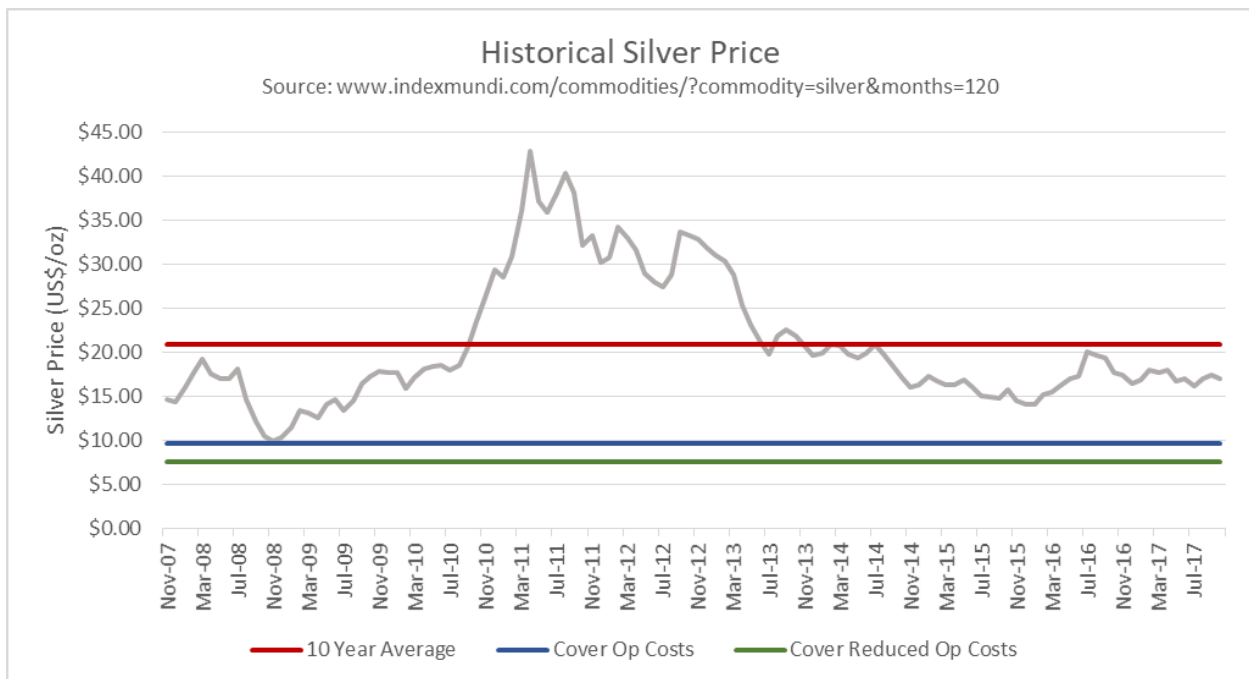


Figure 4-8: Historical Silver Price Compared to Operating Costs and Reduced Operating Costs

In addition to the financial strength of the Project noted above, should a sustained period of low metal prices be experienced, BMC would review its operating expenditures and make appropriate short

term reductions to defer the need to place the operation in a Temporary Closure phase. This could include cessation or reduction of open pit waste stripping to focus on mining of previously exposed ore and ore that has a lower waste to ore stripping ratio. Typically, the open pit mine would have between one and six months supply of ore exposed within the open pit available for blasting and haulage to the processing plant. This ensures that a reliable supply of ore can be maintained to the processing plant and that blending and scheduling requirements can be adequately managed. However, should it be necessary to temporarily cease mining of open pit waste, operating costs would be reduced by approximately 45% of that of regular operations, allowing metal prices to reduce to US\$0.42/lb zinc, US\$0.37/lb lead, US\$1.15/lb copper, US\$505/oz gold and US\$7.50/oz silver before operating costs could no longer be covered by day to day operations. These metal prices are also detailed in Figure 4-4 to Figure 4-8. Clearly, as a polymetallic mining project the mix of metals, by their very nature, provide a natural hedging effect. It would be unlikely that all metals would be reduced or at a cyclical low at the same time and so while the above metal prices are theoretically possible at the same time there is no sensible scenario that makes them likely.

Should low metal prices persist, the company will also have stockpiled ore on the ROM Pad to draw from to continue to feed the processing plant, without the need of incurring additional mining costs. Stockpile levels vary by month according to the mine plan but are typically in the order of three to four months of processing plant requirements.

In summary, the Kudz Ze Kayah Project has been demonstrated to be a robust economic Project, able to withstand a significant reduction (50%) in metal prices before operating costs would no longer be covered and the ongoing viability of the operation could be called into question. In the unlikely event that this were to occur, the company has additional operating strategies to reduce ongoing operating costs to ensure that the operation can continue as a going concern until metal prices recover to long term historical fundamentals. This is common practice in the international mining industry.

#### **4.5.5.3 ENVIRONMENTAL**

The Kudz Ze Kayah mine proposal that BMC submitted to YESAB in March 2017 contained a full, modern assessment of the closure costs for the Project. These closure costs were assessed by the independent professional personnel at Alexco Environmental Group, a successful and respected Yukon company. Alexco Environmental Group consultants are highly experienced with the company having over 20 years of experience in environmental management and mine reclamation in the north of Canada, and Yukon in particular.

The use of financial security for mines in Yukon is a relatively recent phenomenon. Yukon has lagged the rest of the world somewhat in the use of financial security and the obligations on mine owners and operators to reclaim and rehabilitate closed mines. For example, in Yukon this obligation has not yet been in place much more than 20 years. In many other parts of the world where mining activity occurs, the obligation to reclaim mines and rehabilitate mined areas with commensurate financial security to cover that reclamation has existed for over twice that period.

The reclamation plans and the estimated reclamation costs submitted and calculated by Alexco Environmental Group for the Project are based on the liability that exists at the time that the mine closes (after approximately 10 years of operation). These are and will continue to be reviewed and assessed by the licensing bodies over the next few years until the mine is permitted for construction and operation. At the time of licensing, YG licensing bodies will impose financial security requirements and performance obligations on the project and BMC as a condition of that licensing.

BMC has reviewed five previous mines that have operated in Southeast Yukon over the last 57 years (Faro, Sa Dena Hes, Cantung, Ketza and Wolverine). Of these five mines used as comparison to Kudz Ze Kayah, four out of the five were licensed and operated in a previous era where reclamation obligations and standards and financial security provisions were viewed quite differently to today. The fifth (Wolverine) is a special case and will be discussed separately.

The closure planning carried out by Cantung, Ketza, Faro and Sa Dena Hes prior to commencement of construction and operation can be described as notional at best. Little, if any consideration to closure planning appears to have been carried out by the proponent or assessed by the regulator prior to licences being issued. Financial security placed against those projects was either non-existent or was not intended to cover the reclamation of the mining project to meet society's standards of the day let alone the standards of 2019.

In the case of the Wolverine mine, whilst environmental assessments were carried out and closure plans prepared, the current YESAB and QML processes that are being used to assess the BMC, Kudz Ze Kayah Project proposal were not in place. In addition to this, it is clear upon review of the publicly available documents that over the period of time that Wolverine mine operated, the requisite financial security under the licensing conditions were not provided by the mine's operators to the regulator and provision of this financial security was not enforced in any meaningful manner.

The current estimate of the closure costs for the Wolverine mine is circa \$35,000,000. By comparison, the closure costs estimated and presented in the Project Proposal (Appendix H) that were independently generated by Alexco Environmental Group for Kudz Ze Kayah were circa \$90,500,000. Following BMC's responses to YESAB's IR2-17c "*An updated closure liability estimate including costs for temporary closure, permanent closure, and care and maintenance costs in perpetuity. Costing should include periodic*" as well as additional costs for the more robust design cover for the Class B Storage Facility, the current estimate is circa \$115,000,000 (BMC, 2017c). These are the estimated costs of reclamation at closure of the Project in approximately 2032. BMC expects that as the proponent and operator of the Kudz Ze Kayah mine, as a condition of licensing, it will be required to put in place financial security for the mine reclamation. This security will be progressive in nature and as the mine life progresses, the financial security obligation provided by BMC will eventually reach the sum of circa \$115,000,000. This obligation has been fully costed in the Project economic models used by BMC to assess the economic viability of the Project.

In the event of early mine closure due to whatever cause, the financial security that will have been provided to YG will be available to fund reclamation activity. This activity will continue for two decades Post Closure of the mine. Employment of local people will be prioritised, and this will ensure that negative economic outcomes due to the mine closure are mitigated.

#### **4.5.5.4 SOCIO-ECONOMIC**

The following text was provided previously to YESAB in Response Report #2 (BMC, 2017c) and is re-presented here to support BMC's response to this additional Information Request.

There are a number of tried and successfully executed methods for the orderly closure of mining projects. The following outlines one that is common and that the proponents have utilised before. The key to successful mine closure is for clarity, and communication with, the workforce so that the Project phases are well understood as early as possible. In this way the company and its current and potential employees can and will make decisions on employment in full knowledge of both the risks and consequences.

During the last one to two years of the operational phase of the Project, mining activity will reduce steadily as follows;

- In the underground mine, mine development will reduce and then cease and only production stoping will continue. During this period, a number of personnel will naturally cease working for the company of their own accord and take up positions elsewhere. This is typical in the last year or two of both mining and non-mining industries. The company will regularly assess its employment needs and as underground mine development reduces, mine development personnel will be redeployed into the mine production crews (where their skills are readily transferrable) to fill ongoing vacancies. During this period, the company shall commence removal of fixed equipment from mined out areas and this will be undertaken by former development personnel. The company acknowledges that at times it will be slightly over or understaffed and has accommodated this in its schedules and financial calculations.
- In the open pit, as the pit gets deeper and work areas become restricted, the mining (drill/blast/excavate) sequence will be modified, waste to ore strip ratios will be reduced and activity in the pit will gradually reduce. At the same time, reclamation activity on the mining waste rock storage areas will be increased and when mining activity is low in the open pit, personnel will be redeployed to carrying out the reclamation earthworks. In this way it is expected that overall activity for mining personnel will be kept relatively constant.
- At the end of the open pit mining period, specialist drill and blast personnel will be offered employment termination packages (see below). Most other mine earthmoving personnel will move to fulltime roles in reclamation. This work shall continue for 1 to 2 years.
- From a mineral processing perspective, the company will continue at full processing production until late in the final year of operations at which point the company will most

likely transition to an operating cycle that fits with the remnant production capacity of the mine. In the company's experience, it is likely that personnel will commence to find other permanent roles from approximately 12 months prior to this period. The company will therefore need to adopt a strategy to deal with a steadily reducing workforce during this period. The company may need to modify its processing activity slightly earlier than expected if employee numbers dictate. In any event, this will not appreciably impact the company's financial models and will be easily accommodated.

- Once the Project has processed all the available ore stockpiles, the processing team will commence closure operations which will ensure employment continuity for the majority of the operators. The remainder will be offered termination packages (see below).
- 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 (i.e. Transitional or Passive) of closure.
- Given that the Transitional and Passive Closure period runs for 23 years past this point (i.e. starting in approximately 13 to 14 years from now) any prediction past that point will have limited accuracy. In addition, the company estimates that the natural attrition of employees leaving employment during that time will largely balance the declining need for personnel hence whilst at some point a number of redundancy packages may be offered it is likely these will be limited.
- Throughout the steps above, 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.
- Redundancy packages typically include the following elements:
  - 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 Yukon and Canada at the time but typically these packages are provided for 3- to 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;
- Termination redundancy payments will vary depending upon circumstances but typically these payments will vary from 1 to 6 months of the average annual wage of the employee; and
- Employee Assistance Programs to provide counselling and emotional support on an as required basis for both employees and their immediate family members for a period of 3-6 months after closure of the Project.

#### 4.5.5.5 SUMMARY

Table 4-4 provides a summary of the context in which the Kudz Ze Kayah mine will operate and close compared with the previous five mines that have operated and closed in southeast Yukon.

**Table 4-4: Context in Which the Kudz Ze Kayah Project Will Operate and Close**

Technical Assessments	Economic Assessments	Environmental & Regulatory	Corporate Social Responsibility
<p>- Technical studies have been carried out for 25 years and have included 3rd party independent reviews</p> <p>- No other single project in Yukon has undergone the sustained and detailed assessment that has been carried out on this Project.</p>	<p>- Economic viability is based on long term metal prices of several metals where as some of the mines the economic viability was based on the price of just one metal. This provides a natural hedge against negative metal price changes</p> <p>- Economic viability has been verified via a 3<sup>rd</sup> party independent reviewer of BMC's economic models</p>	<p>- Is currently being assessed under a more rigorous environmental assessment regime than the previous mines in the district</p> <p>- BMC has provided a realistic cost estimate for closure and reclamation and the financial security will be based (in part) on that estimate</p>	<p>- A plan for Temporary Closure and Permanent Closure has been proposed and will minimise socio-economic impacts whereas the other mines in the district closed abruptly and had no plan</p>

#### 4.5.6 EFFECTS ANALYSIS AND RISK LEVEL DETERMINATION

BMC conducted a review of the previous five mines that have operated and closed in southeast Yukon. In conducting this review, the context to which caused the mines to close and the subsequent effects to the local communities (i.e. Liard First Nation, Ross River Dena Council, Watson Lake and Ross River) were identified (to the extent possible). Following this, BMC described the context in which the Kudz Ze Kayah mine will operate and closure. Through this exercise it has become apparent that BMC's proposed Project, with respect to context, is very different than the previous mines in Yukon,

such that the adverse effects to the environment and communities that occurred from previous mines are not likely to occur at Kudz Ze Kayah. For clarity and understanding the scenarios and potential effects have been assessed in a formal Effects Analysis and Risk Level Determination.

#### 4.5.5.6 METHODS

For each of the identified scenarios, risk is derived from the product of probability (i.e., likelihood of occurrence) and consequence (i.e., severity of occurrence). The likelihood rating is based on probability of occurrence and is derived from the level of design information available for the Project, review of historic or current events, and professional judgement. The consequence rating is determined based on the severity of the scenario and is derived from spatial and temporal effects. The likelihood and consequence ratings are described in Table 4-5.

**Table 4-5: Likelihood and Consequence Classifications**

Likelihood		Environmental Consequence		Economic and Social Consequence	
Rating	Description	Rating	Description	Rating	Description
Very unlikely	The event is not expected to occur	Very low	Potential effects are localised and are readily reversible	Very low	Very high degree of community resilience to type of change
Unlikely	The event is not likely to occur	Low	Potential effects are within the Project area and are reversible in the short term (i.e., 1 to 5 years)	Low	High degree of community resilience to type of change
Likely	The event is probable	Medium	Potential effects are within the Project extend beyond the Project area and are readily reversible/reversible in the short term	Medium	Moderate degree of community resilience to type of change
Very likely	The event is expected to occur	High	Potential effects extend beyond the Project area and are not reversible	High	Low to very low degree of community resilience to type of change

The risk level for each scenario is determined through combination of likelihood and consequence ratings, as shown in Table 4-6. Risk grades range from low (i.e., negligible risk) to unacceptable. Scenarios ranked from low to moderate risk are considered not significant. Risk grades high and unacceptable are considered to have serious potential effects. The risk level classifications are shown in Table 4-6.

**Table 4-6: Risk Level Classifications**

Likelihood	Consequence			
	<i>Very Low</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>
<i>Very unlikely</i>	Low	Low	Low	Moderate
<i>Unlikely</i>	Low	Moderate	Moderate	High
<i>Likely</i>	Low	Moderate	High	Unacceptable
<i>Very likely</i>	Moderate	High	Unacceptable	Unacceptable

**4.5.5.7 RESULTS**

Table 4-7 presents the results of the Effects Analysis and Risk Level Determination. The scenarios assessed are classified as low.

**Table 4-7: Effects Analysis and Risk Level Determination of Previous Mine Closure Scenarios**

Scenario	Likelihood	Environmental Consequence	Economic and Social Consequence	Risk Level Classification
KZK is not technically viable which results in the mine not being economically viable and goes into unplanned Temporary or Permanent Closure	This scenario is Very Unlikely to occur given the extensive technical studies that have been conducted and all closures (Temporary or Permanent) will be planned	Given that the KZK Project has been designed for closure, progressive reclamation will be undertaken and the extensive environmental mitigation, management and monitoring measures that will be undertaken, this consequence is Low  In addition, given that BMC has prepared a realistic cost estimate for closure and reclamation, the security will be in place if YG ends up responsible for the clean-up. Aside from long term post closure monitoring the reclamation would take less than 3 years and any environmental effects during this time would be limited to the mine site so this consequence is Low	Given that there will be a Temporary and Permanent Closure plan which includes early communications and numerous measures to alleviate the impacts to employees, contractors and suppliers and the community appears to have a high degree of resilience to this type of change the consequence is Low	Low
KZK is not economically viable due to a downturn in global metal markets and goes into unplanned Temporary or Permanent Closure	This scenario is Very Unlikely to occur given the economic assessments that have been conducted for the five economic metals at KZK and all Temporary or Permanent Closures will be planned	Given that the KZK Project has been designed for closure, progressive reclamation will be undertaken and the extensive environmental mitigation, management and monitoring measures that will be undertaken, this consequence is Low  Given that BMC has prepared a realistic cost estimate for closure and reclamation, the security will be in place if YG ends up responsible for the clean-up. Aside from long term Post Closure monitoring the reclamation would take less than 3 years and any environmental effects during this time would be limited to the mine site so this consequence is Low	Given that there will be a Temporary and Permanent Closure plan which includes early communications and numerous measures to alleviate the impacts to employees, contractors and suppliers and the community appears to have a high degree of resilience to this type of change the consequence is Low	Low

## 5. R4-7

### 5.1 INITIAL YESAB QUESTION

Describe how the Project, namely highway traffic, will affect both Traditional Land Use activities and other uses of the area, particularly on the safety of Liard First Nation and other users of the area and their ability to access traditional sites along the Robert Campbell Highway.

### 5.2 INITIAL BMC RESPONSE

BMC's response to R4-7 has been divided into two components:

1. Public Health Safety Related to Increased Highway Traffic
2. Access to Traditional Sites along the Robert Campbell Highway

#### 1. Public Health and Safety Related to Increased Highway Traffic

Public Health and Safety Related to Increased Highway Traffic was assessed in the Project Proposal (Chapter 15) and was further assessed in response to YESAB's IRs during the adequacy review stage of the assessment process. The relevant information from the Project Proposal and BMC's responses to YESAB's IRs are repeated below, as per YESAB's request to "*Identify that information and extract it from the Project Proposal*".

#### **Assessment in Project Proposal**

Chapter 15 of the Project Proposal presents an Assessment of the Valued Component Human Health and Well Being. A Sub-component assessed for this Valued Component is Public Health and Safety (Increased Traffic, Hazardous Material Transport, Waste Disposal) (Section 15.6.5). Section 15.5.2 (Transportation Infrastructure – Roads and Airports) also considers increased traffic on the Robert Campbell Highway. The information presented in Chapter 15 is repeated here.

The expected increase in traffic and hazardous material transport during operations is shown in Table 5-1. Most of this traffic, including the concentrate haul, is expected to be over the southern portion of the Robert Campbell Highway between the Project and Watson Lake. The truck traffic during the operations phase is more regular and predictable than the construction phase. The construction phase will likely have truck traffic of around seven trucks per day but will vary significantly depending on where certain materials are sourced from. For example, if gravel for concrete was sourced on site then there would not be any need to truck it in from other sources.

**Table 5-1: Expected Truck Traffic: Operations Phase**

Year 2 to Year 9 average	Annual Requirement	Load/ Truck (average)	Trucks/ year	Trucks/ Month	Trucks/ day
Reagents	15,400 tonnes	20	770	64	2.1
Operations Fuel	10,201,000 litres	43,900	232	19	0.6
Generator TDS	991,200 GJ	1,500	661	55	1.8
Explosives	6,400 tonnes	20	320	27	0.9
Underground Paste Cement	13,300 tonnes	40	333	28	0.9
Miscellaneous	5,000 tonnes	20	250	21	0.7
<b>Subtotal:</b>			<b>2,566</b>	<b>214</b>	<b>7.1</b>
<b>Concentrates</b>					
Copper/Zinc - Tridem Trucking	250,000 tonnes	44	5,682	473.5	15.8
Lead-Containerised Trucking	36,500 tonnes	33	1,106	92.2	3.1
<b>TOTAL</b>			<b>9,354</b>	<b>780</b>	<b>26</b>

The expected daily average truck traffic during the operations phase will be 26 trucks making round-trips to the site per day (or 52 one way trips per day). These trucks are expected to travel on the southern Robert Campbell Highway between the Project and Watson Lake. The traffic counter at km 110 (Tutchitua of the Robert Campbell Highway) showed that the daily year-round vehicle counts between 1997 through 2011 varied from 17 to 44.

Subsequently, the Project will roughly double the average daily traffic on the southern portion of the Robert Campbell Highway. Although doubling the traffic count may appear significant, the still very low absolute numbers means the Project will likely not have a large effect on the highway itself as the use is well within design parameters.

As with any similar project there is the risk of an accidental spill or release of hazardous materials. This potential effect has been assessed in Section 17.3.2 of the accidents and malfunctions chapter of the Project Proposal and is therefore not carried forward in the socio-economic assessment.

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:

- 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 utilised in Yukon and Canada.

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).

In Addition, YG Highways has been upgrading portions of the Robert Campbell Highway and with the KZK Project proceeding, will create an incentive to continue the upgrades and perhaps re-allocated other funding to where use is increasing. These upgrades have widened the Highway and associated Rights of Way, which have made the Highway safer.

BMC will also require all contractors to follow all of the applicable territorial laws regarding use of the Highway (i.e., speed limits etc.).

With the mitigation measures in place, no residual effects to public health and safety (including LFN citizens) are predicted.

### **Responses to Information Requests**

During the both the Adequacy and Seeking views stages of YESAB's Environmental and Socio-economic Assessment process, YESAB requested BMC to provide additional information related to (in part) public health and safety due to increased highway traffic (YESAB, 2017a and 2018a). BMC's responses are presented in BMC, 2017b and 2018a. The information requests and BMC's responses are repeated here.

YESAB Issue (YESAB, 2017a)

Traffic safety around the Project footprint is described in detail but there is very little description of the proponent's plans to mitigate traffic risks in Watson Lake or along the truck route to port facilities.

R268

*"Provide additional information on the identification of risks, effects of increased traffic along the entire route, and mitigations. Include communities, other road users, and wildlife in addition to the following:*

- a. strategies for avoidance of school children at the beginning and end of the school day,*
- b. logistics to reduce risks of driver fatigue in long haul truckers, and*
- c. risks to other users based on the transportation of fuel, supplies, and ore concentrate."*

BMC Response (BMC, 2017b)

a) Once off the property and onto the Robert Campbell Highway and other highways, traffic out of and into the Kudz Ze Kayah Mine will operate using existing high traffic roadways and traffic corridors, which include identified industrial trucking routes through municipalities. All contract

concentrate haul trucks, which will be appropriately lit including strobe lights, as well as high intensity driving lights for the long stretches of unlit highway during winter operations.

With the exception of Watson Lake, the municipalities through which Kudz Ze Kayah concentrate haul trucks will travel do not intersect school zones. Heavy truck haul routes have been designed to eliminate the intersection of industrial traffic and school zones. During community consultations and in meetings with the Mayor and Town Council of Watson Lake regarding the Kudz Ze Kayah Mine, this issue was identified. Under the current road arrangement, the truck route through Watson Lake runs in front of the school. In this section of the haul route, trucks will obey the school zone speed limit of 15 km per hour.

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. 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.

b) All long-haul trucking operations will be operated in accordance with Yukon Occupational Health and Safety Regulations in Yukon and in British Columbia the *BC Motor Vehicle Act* and other pertinent workers health and safety statutes and regulations regarding maximum allowable driver working durations.

c) Both Yukon and BC also have modern statutes and regulations governing the transportation of hazardous goods on public roadways, designed to protect public safety.

In fact, past experience in Yukon has shown that the addition of regular traffic by professional drivers equipped with basic first aid supplies and reliable communication capabilities on remote highways has proven to be a welcome safety feature for the public. In many instances in the past during mining operations in remote areas such as Yukon, concentrate haul and supply trucks have played pivotal roles in providing critically needed and otherwise unavailable timely roadside assistance. BMC assumes that this reality will not go unobserved in the socio-economic assessment of this aspect of the Kudz Ze Kayah Project.

YESAB Issue (YESAB, 2017a)

While the proposal provides an effects characterization on Transportation Infrastructure – Roads and Airports (Section 15.8.2), it only considers traffic volumes; it does not provide information on or discuss the current condition of the Robert Campbell Highway. No details are provided about the configuration and types of project related vehicles that will be using the highway, and there is limited discussion as to how or whether or not the current conditions and state of the highway, and how it can vary seasonally, could affect or alter the project schedule and use of the highway. Additionally, there is limited discussion about potential mitigations or adjustments that the proponent could implement or propose to accommodate highway conditions and other highway users. The discussion provided is focused on limits to legal axle loads that could be imposed during spring thaw and break

up. And while the project proposal does have a Traffic and Access Management Plan component (Section 18.12), it appears only to apply to the proposed tote road and site/haul roads in the Project area and not to the proposed use of the Robert Campbell Highway.

R291

*“Provide information on the following in relation to the Robert Campbell Highway:*

- a) current conditions with respect to expected road standards;*
- b) configuration and types of project related vehicles that will be using the highway;*
- c) discussion on how or whether the current conditions and state of the highway, and expected seasonal variances and effects of the environments, may affect or alter the project schedule and proposed use of the highway;*
- d) traffic management plan for proposed use of the Robert Campbell Highway including consideration for the varying physical state and condition of the road and with respect to other users; and*
- e) mitigations and alternatives that could be implemented.”*

BMC Response (BMC, 2017b)

It is acknowledged that there have been upgrades to the Robert Campbell Highway and more are planned by the Department of Highways and Public Works (HPW). The recent upgrades have concentrated on the section between Watson Lake and the Tuchtua Highway Maintenance Camp over the last few years.

While the current road conditions on the highway between KZK and the Wolverine Mine (approximately 50 km) are not ideal, they are acceptable for all expected Project traffic and are not expected to affect or delay the Projects timeline or proposed use of the highway. However, any highway improvements that are made to this section of the road will benefit all users of the road including those directly involved with the Project. The existing highway from Wolverine mine to the port of Stewart has been upgraded by HPW to allow concentrate haulage.

Project related traffic on the Robert Campbell Highway has been described at a high level in Section 4.12.4 (Transportation Volumes) of the Project Proposal. There will be a variety of configuration of trucks and light vehicles dependent on the material being transported to, or from, the site. These will vary from light vehicles carrying passengers to oversize wide load haulers for the larger pieces of equipment during the construction phase. During the operations phase, the majority of the traffic will entail concentrate haulers consisting of a combination of conventional bulk concentrate carriers (tridem tractor with Super B train Convey Ore style concentrate trailers) and specialised super B flat deck trailers outfitted to transport containerised bulk carriers. Supplies will

be transported using conventional trucking fleets provided by appropriately licenced contractors and suppliers.

The current condition of the road and seasonal variances have been considered with the construction schedule, the projected concentrate trucking schedule, and the supply schedule with redundancy and excess warehouse space to mitigate for seasonal, and unanticipated road closures and less than ideal driving conditions.

The Traffic and Access Management Plan only applies to the Access Road from Robert Campbell Highway to the Kudz Ze Kayah site. It would be presumptuous for BMC to create a traffic management plan for a public highway such as the Robert Campbell Highway as any such plan may involve restrictions on other users. It is anticipated that a traffic management plan would be created for the Robert Campbell Highway by the HPW, with input from BMC regarding Project related traffic use. The condition of the Robert Campbell Highway would inform any restrictions required and the plan would be updated as roads were improved, or conditions deteriorated. Restrictions, such as the speed limits enforced for the concentrate trucks from Wolverine, may be required on Project specific equipment and possibly on all traffic, an example of this would be extended “*No Passing*” zones. The decisions for these are the responsibility of the HPW although it is hoped that they would liaise with BMC when making adjustments to traffic use requirements.

YESAB Issue (YESAB, 2018c)

The Robert Campbell Highway is narrow in many areas, with poor sightlines, limited passing opportunities, pull outs, turning lane and presents travel concerns in all seasons. An increase in truck traffic throughout the construction, operation and active closure of the mine has resulted in a series of safety concerns being raised.

R3-38

Describe the various safety concerns with the proposed use of the Robert Campbell Highway and BMC’s role in addressing those concerns.

BMC Response (BMC, 2018a)

BMC is aware of limitations of the Robert Campbell Highway and this has been reiterated by the communities that use it. While there has been substantial work undertaken in previous years by YG, which is ongoing, the Robert Campbell Highway remains an all season gravel highway with certain limitations.

The Robert Campbell Highway (Highway 4) has a total length of 583.6 km consisting of 355.2 km dual lane gravel, 60 km single lane seal coated highway, and 168.4 km double lane seal coated highway. From Watson Lake, the first 100 km is seal coated; the balance is gravel until the Faro intersection. It is generally considered a well maintained road but can experience rough/wet operating conditions during rainy periods from May until freeze up in early October. Historically, weight restrictions are

in place from early April until late May and occasionally during prolonged wet, rainy periods in summer/fall.

The primary area of concern of the highway is south from the KZK Access Road to the Wolverine turnoff, a distance of approximately 50 km. A secondary (and lesser) area of concern exists from the Wolverine turnoff to Tuchitua, a length of approximately 120 km. The section of highway from Tuchitua to Watson Lake has been widened and chip sealed which has assisted in the abatement of a majority of the deficiencies that exist in the 60 km to 232 km section. Other works have also been carried out over the last 5 years from Tuchitua to the Wolverine turnoff.

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 maximise safety and minimise disruptions that they may have.

Safety concerns that have been identified prior to use of the road for haulage of concentrates and supplies are centred on two main issues:

- 1. Road Conditions- current conditions and likely changes with increased traffic*
- 2. Traffic- An increase in traffic volumes will increase the potential for vehicle interactions*

The amount of truck traffic estimated during operations is 52 one way trips per day or approximately 2 one way trips per hour if the trucks are operated for 24 hours per day. The majority of these one-way trips will be concentrate trucks (38 one way trips per day) which will be operated 24 hours a day. All concentrate traffic and the majority of supply trucks will use the Watson Lake to km 232 stretch of the Robert Campbell Highway.

The expected number of trucks and assuming an average speed of 55 km/hr suggests that at any one time there will be 4 Project related trucks travelling in each direction on the highway.

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:

- 1. 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.

2. 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.
3. 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.
4. 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 maximise safety.
5. 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.
6. Increased traffic will degrade road conditions more rapidly than at present. The worsening can be minimised by reducing the speed that traffic uses the road and using proper driving techniques such as; minimising 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.
7. Yukon Highways, and contractors working for them, are continually upgrading and maintaining the highway and BMC realises 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 minimise disruption to their projects. This will mean informing Highways of trucking schedules and may mean scheduling trucking to certain times of the day to minimise effects on the various activities.
8. Winter driving: In winter the driveable 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.
9. 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.

It is apparent that success in minimising effects of the increased traffic on the Robert Campbell Highway will rely on continued communication between all the relevant parties including, but not limited to, BMC, Yukon Highways, the people of Ross River and Watson Lake, and all service providers that use the road currently or into the future. With this communication in place and the appropriate procedures and action plans in place negative effects of the increased traffic can be minimised.

With the mitigation and management measures in place, no residual effects to public health and safety (including LFN citizens) are predicted.

## 2. Access to Traditional Sites along the Robert Campbell Highway

Based on the mitigation measures presented above, no residual effects to public health and safety (including LFN citizens) are predicted. Therefore, health and safety concerns should not impede LFN citizens from accessing traditional sites along the Robert Campbell Highway. However, BMC acknowledges that some LFN citizens may chose not to access traditional sites along the highway due to what they view as health and safety concerns (i.e. it is understood that some people stopped using the Highway for traditional purposes when the Wolverine mine was operating).

The predicted volume of traffic will remain very low and should not prevent LFN from accessing traditional sites (i.e. there would be no physical barriers from Project related vehicles to the Traditional Sites).

### 5.3 YESAB DEFICIENCY

The response to R4-7 notes that *“it is understood that some people stopped using the Highway for traditional purposes when the Wolverine mine was operating”*, but that the Project *“should not impede LFN citizens from accessing traditional sites along the Robert Campbell Highway.”*

As noted in the response, previous similar projects (the Wolverine mine primarily) have reduced propensity to use the Robert Campbell Highway for Traditional Land Users. No information is provided to suggest that the Project will not result in similar effects as the Wolverine mine regarding highway transportation. BMC itself suggests that it should travel to local communities to ask for suggestions on methods to manage increased traffic to maximise safety.

### 5.4 YESAB RATIONALE FOR REQUIREMENT

As noted above, one of the methods in which the Executive Committee will consider the effects of the Project is by understanding how valued environmental and socio-economic components, such as Traditional Land Use, are impacted. In addition to concerns based on previous projects, BMC itself anticipates the need for further mitigation. Comments submitted to the Executive Committee indicate

concerns regarding increased traffic in relation to Traditional Land Use. Additional information on the effects of proposed additional highway traffic will provide the Executive Committee with increased confidence on effects predictions and significance determinations.

## 5.5 BMC SUPPLEMENTARY RESPONSE

BMC would like to clarify the context regarding the initial response that indicated “*it is understood that some people stopped using the Highway for traditional purposes when the Wolverine mine was operating*”, but that the Project “*should not impede LFN citizens from accessing traditional sites along the Robert Campbell Highway*”. This comment was made to BMC during the consultation program and was in the context of perceived health and safety risks from Yukon Zinc’s permitted use of the Robert Campbell Highway for hauling concentrate (as per the Bulk Haul Agreement issued to Yukon Zinc by YG). This impact from the Yukon Zinc operation has not been quantified or verified by BMC and therefore is based on anecdotal comment not verified fact.

Notwithstanding this, in order to provide the Executive Committee with increased confidence on the effects predictions and significance determinations with respect to effects from haul traffic, the following was further researched and that information is provided within this response:

1. Road Safety Statistics;
2. Traffic Counts;
3. Yukon Zinc Ore Haul Statistics;
4. Highway Maintenance and Inspection Procedures; and
5. Requirements of the Bulk Haul Agreement.

This information was obtained directly from the department of Highways and Public Works Transport Services Branch, Transportation Engineering Branch, and Transportation Maintenance Branch. The following provides the results and interpretations of this data.

In addition, an independent study of Traditional Land Use along the Robert Campbell Highway from km 0 to 232 was prepared (**Appendix F**).

### 5.5.1 ROAD SAFETY STATISTICS

Primary road safety statistics were obtained from the Transport Services Branch of Highways and Public Works (Parry, 2019). Due to the relatively small numbers, privacy rules and HPW policy prevent the disclosure of collision statistics where the number of incidents is greater than zero or less than 5 (1-4).

The Transport Services Branch statistics are broken out in two sets. The first set is an aggregate of 2009-2017 data and includes the breakdown on the Robert Campbell Highway between Ross River

and Watson Lake as well as Ross River and Carmacks (Table 5-2). The latter set was included as a comparative of accident rates on a similar type of highway without any ore haul. Yukon Zinc shipped concentrate from the Wolverine Mine via the Robert Campbell Highway to Watson Lake and then to the Port of Stewart BC from 2010 through 2015. The accident statistics presented in Table 5-2 for km 0 to km 362 (part of which had haul trucks) and km 362 to 582 (which had no haul trucks) are very similar, suggesting that the haul traffic did not result in increased accidents or increased risk for people using the Robert Campbell Highway for access to traditional use sites.

The second set of Transport Services Branch statistics is a yearly breakdown for the Robert Campbell Highway between the Wolverine mine access road and Watson Lake (Table 5-3). Due to privacy rules there is no breakdown of the type of accident and so it is unknown if any of the accidents were related to haul traffic. However, the numbers are very low in years when Wolverine was hauling concentrate and in years when Wolverine was not hauling concentrate.

**Table 5-2: Robert Campbell Highway Accident Statistics, January 1, 2009 through December 31, 2017**

Accident Type	Watson Lake (km 0) to Ross River (km 362)	Ross River (km 362) to Carmacks (km 582)
Damage	13 - 16	23 - 26
Personal Injury	25	17
Fatality	4 or less	4 or less
Total Incidents	42	44

**Table 5-3: Annual Accident Statistics Robert Campbell Highway (km 0 to 190) 2009 Through 2017**

Year	Total Number of Accidents
2009	4 or less
2010	6
2011	6
2012	4 or less
2013	5
2014	4 or less
2015	4 or less
2016	0
2017	4 or less

Road safety was also considered as part of the *Function Plan for the Robert Campbell Highway km 114 414.4*, prepared by Associated Engineering for the Transportation Engineering Branch of HPW (Associated Engineering, 2016). Functional Plans are a detailed engineering assessment of a highway from a variety of perspectives including geometric design, environmental conditions, traffic patterns

and safety. These plans include recommendations for required improvements to bring highway corridors to a desired standard, and high-level cost estimates to complete the work. The Associated Engineering report analysed accident statistics from 2004 through 2013 for the section of the Robert Campbell Highway between 114 to 414 (Faro access Road). The study identified a total of 30 collisions in the study area through this period. 33% were between km 114 to 230 with the remaining 66% occurring between km 230 and 414. 66% of the accidents were single vehicle off-road incidents. The study noted that the collision rate and the collision severity index for the Robert Campbell highway were well below the BC Provincial rates. The report also noted the collision rate was well below the BC Critical collision rate which indicates this section of the Robert Campbell Highway was not collision prone.

The results of the safety statistics and the road safety considerations in the Function Plan for the Robert Campbell Highway indicate that the number of accidents on the highway remained low even when Yukon Zinc was hauling concentrate.

### 5.5.2 TRAFFIC COUNTS

The Transportation and Engineering Branch of HPW maintains traffic statistics within Yukon and is transitioning traffic data storage, analysis, and dissemination to a centralised data warehouse and that work is ongoing (Knowles, 2019). As such, data is available on request however a full annual report has not been prepared since 2011. The Transportation and Engineering Branch has updated the 2011 Traffic count statistics for the Robert Campbell Highway using a combination of permanent and temporary counters from data obtained in 2016 and 2017 (Table 5-4). The counts provide an estimated Annual Average Daily Traffic and are consistent with the historical published record to 2011. The Transportation and Engineering Branch does not have complete data sets for the years 2011 through 2016.

**Table 5-4: Robert Campbell Highway Updated Traffic Counts**

km	Year	Estimated Annual Average Daily Traffic	% Large Vehicles*	% Trucks*
0	2017	1332	16	1
10	2017	98		
107	2017	32	27	6
110	2017	20		
171	2017	13	21	5
354	2017	26	20	3
363	2017	71	22	5
400	2016	58	20	5
583	2017	114		

\*Large Vehicles include buses, RVs, cube vans and trucks.

\*Trucks include tractor/trailer units

The Transportation and Engineering Branch does not have complete data sets for the years 2011 through 2016. The only other information they provided was the Annual Average Daily Traffic for km 10 of the Robert Campbell Highway (Table 5-5).

**Table 5-5: Annual Average Daily Traffic at km 10 on the Robert Campbell Highway**

Year	Annual Average Daily Traffic
2012	Not available
2013	145
2014	Not available
2015	114
2016	109
2017	98

This data suggests that 2013 may have been the year that Yukon Zinc had the highest number of Haul Trucks on the Robert Campbell Highway. The assessment of haul traffic in the following section also supports that 2013 was the peak year. Despite this being a peak haul traffic year, there was no reported peak in accidents in 2013 (Table 5-3).

### 5.5.3 YUKON ZINC ORE HAUL STATISTICS

Yukon Zinc shipped concentrate from the Wolverine Mine to the Port of Stewart BC from 2010 through 2015. The statistics obtained from Transport Services Branch are presented in Table 5-6 (Parry, 2019). The statistics are incomplete for the period March 2013 to March 2014, as the data sets were inaccessible. Transport Services Branch has indicated they will attempt to retrieve the data sets through the archive but as of the date of submission of this report had been unable to do so.

The statistics are for bulk haul traffic only and do not include re-supply or construction related traffic.

**Table 5-6: Transport Services Branch Bulk Haul Statistics for Yukon Zinc Wolverine Mine**

Year	Loads	Tonnes
2010	67	3,555
2011	514	35,760
2012	1248	75,600
2013 (Jan – Feb)	213	14,839
2014 (Apr – Dec)	311	2,110
2015	27	1,854

A more complete set of statistics was provided in Yukon Zinc’s Annual Report filed with Yukon Department of Energy Mines and Resources in fulfillment of their obligations under their Quartz Mining Licence ([http://emrlibrary.gov.yk.ca/minerals/MajorMines/wolverine/annual\\_reports/](http://emrlibrary.gov.yk.ca/minerals/MajorMines/wolverine/annual_reports/)). Yukon Zinc was obligated to report the tonnage of production transported as part of the QML) (Yukon Zinc, 2015). A summary of this is presented in Table 5-7 below.

**Table 5-7: Yukon Zinc Concentrate Haul Statistics**

Year	Tonnes			Total
	Copper	Lead	Zinc	
2010	0	426	2,506	2,932
2011	2,889	3,442	18,475	24,806
2012	7,881	10,065	58,940	76,886
2013	16,797	11,307	80,628	108,732
2014	15,704	11,442	72,282	99,428

The reason for the discrepancy between the Transport Services Branch and Yukon Zinc records is not publicly available. Yukon Zinc would be charged under its Bulk Haul Agreement based on the Transport Services Branch scale weights. It’s unclear why they would report shipping less than the scaled amounts in 2010 and 2011. Yukon Zinc did not report any product shipments in 2015; however, they were hauling remains of stockpiled material at that time.

Beginning in July 2010 Yukon Zinc began keeping records of all traffic entering and exiting the mine site through the access control point at the junction of the Wolverine Mine access road and the Robert Campbell Highway at km 190. A breakdown of the type of traffic was only available in the 2010 and 2011 reports. For the purposes of constructing **Table 5-8** the following assumptions were made:

- Total numbers are inbound and outbound traffic all of which would have used the Robert Campbell Highway,
- # of Concentrate Trucks is calculated on tonnage reported transported in 2010 and 2011 and extrapolated for 2012 – 2104, and
- Trucking operations ran 365 days per year.

**Table 5-8: Yukon Zinc Traffic Statistics\***

Year	Total	Light	Concentrate	Re-supply	Avg/Trucks/Day
2010	4,100	1,409	98	2,593	7.4
2011	3,430	590	974	1,866	7.8
2012	4,402	500	1,537	2,365	10.7
2013	4,727	500	2,174	2,053	11.5
2014	3,870	500	1,988	1,382	9.2

\*Traffic Recorded at Control Point



Total daily truck traffic for Kudz Ze Kayah is estimated to be just over twice the peak reported traffic for Yukon Zinc (26 vs 12). While this is a large increase it must be noted that overall traffic levels will remain lower than those on other numbered highways in Yukon including the Robert Campbell Highway between km 362 to 582.

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. This monitoring and reporting commitment will be added to BMC's traffic management plan.

#### 5.5.4 HIGHWAY DESIGN STANDARDS AND CONDITIONS

Jurisdictional design standards are established using the Transportation Association of Canada Geometric Design Guide for Canadian Roads. Individual jurisdictions adopt the Transportation Association of Canada guideline as their own standard or in some cases amend it to their own specific needs. In Yukon, the Transportation and Engineering Branch has adopted both the Transportation Association of Canada guideline and some specific BC Ministry of Transportation and Infrastructure standards. However, the underlying basis for the Yukon design standard is the Transportation Association of Canada guideline.

The Robert Campbell Highway between km 0 and km 114 (north of Tuchitua River) has been reconstructed to a design classification RCU (Rural Collector Undivided) 80/90 Ore Haul. Associated Engineering (2016) recommended a slightly lower 80 km/hr design standard for the unreconstructed section between km 114 to 362. Associated Engineering noted some sections in the km 362 to 414 section had already been reconstructed to the RCU 80/90 standard and recommended continued use of this standard in that segment.

Table 5-9 outlines the key differences between the existing standard, the recommended standard, and the RCU 80/90 standard (Associated Engineering, 2016). The full design standard table from the Robert Campbell Highway Functional plan is presented in Associated Engineering's Functional Design Report (Associated Engineering, 2016).

**Table 5-9: Existing and Proposed Design Standards for Robert Campbell Highway km 0 to 362**

Design Element	Existing Conditions km 114 to 362	Proposed Design km 114 to 362	Existing Conditions km 0 to 114
Classification	Low Volume Road	Low Volume Road	RCU 80/90 Ore Haul
Posted Speed (km/hr)	70	80	90
Design Speed	Unknown	80	90
Basic # Lanes	2	2	2

Design Element	Existing Conditions km 114 to 362	Proposed Design km 114 to 362	Existing Conditions km 0 to 114
Min Horizontal Radius	150 m	250 m	300 m
Max Grade	13%	8%	8%
Finished Road Width	6.5 (average)	9.0	10.5
Lane Width	3.25	3.5	3.75
Shoulder Width	None	1.0	1.5
Clearing Width	15 to 20 m	60 m	60 m

The section highway between km 114 and the Kudz Ze Kayah access at km 232 was recommended for an upgrade from a highway design perspective, this is consistent with BMC’s previous responses to YESAB’s information requests regarding use of the Robert Campbell Highway. HPW has made spot improvements within this section and some areas such as the Finlayson Hill have been reconstructed to the higher standard. In addition, YG has accepted industrial use of the highway and has not limited it in any way beyond the annual seasonal weight restrictions. They have further allowed bulk haul and mine re-supply operations between km 114 to 190, which is almost 2/3 of the section.

HPW does regular brush and weeding operations along this section of highway and BMC will work with HPW to increase the frequency of this activity. BMC will also work with HPW to identify areas where additional spot improvements could enhance usability and visibility.

In support of the Yukon Zinc bulk haul, HPW constructed pullouts at key intervals to allow trucks to pull over and allow passing as required in the bulk haul agreement. Extending this network of pullouts between km 190 to 232 would improve safety for all road users. Therefore, BMC will also work with HPW to identify locations for pullout construction between km 190 to 232.

### 5.5.5 HIGHWAY MAINTENANCE AND INSPECTION PROCEDURES

The Robert Campbell Highway within the area to be accessed by BMC, is serviced by three separate highway maintenance camps operated by the Transportation Maintenance Branch of HPW; Watson Lake Camp km 0 to 58, Tuchtua Camp km 58 to 230, and Ross River camp km 230 to 414. Equipment and personnel are dispatched from each camp on an as required basis for normal maintenance activities which include:

- Winter snow removal
- Summer grading
- Sign maintenance
- BST maintenance
- Rest stop maintenance

The Road Foremen in each camp ensure the entire highway segment within their section is inspected daily. Area Superintendents normally inspect each camp section at least monthly.

The Transportation Maintenance Branch works closely with the Transportation and Engineering Branch and where issues emerge that require engineering assessment are identified, Transportation Maintenance Branch brings appropriate engineering staff on site to assess and provide guidance.

In addition, the Transportation Maintenance Branch relies on regular communication with commercial operators on the highway to identify emerging issues.

These highway maintenance, inspection and communication procedures will ensure that the Robert Campbell Highway remains safe for all users of the Highway.

### 5.5.6 BULK HAUL AGREEMENT

The Bulk Commodity Haul Regulations, enacted under the territorial *Yukon Highways Act* in 1994, allow carriers to apply for authorization for a maximum Gross Vehicle Weight of 77,100 kg., approximately 21% above the normal legal Gross Vehicle Weight of 63,500 kg. Legal axle loads between the same under a bulk haul scenario. Carriers must meet certain criteria around vehicle safety and performance, reporting, and route selection to be considered for a Bulk Haul Permit.

As part of the agreement application process, all vehicle configurations and trailer designs must be assessed for stability and safety by a qualified, independent engineer specializing in vehicle stability. The applicant is also required to provide analysis of all bridges on the proposed route to ensure they are suitable for bulk haul operations.

Once the agreement is issued it includes additional requirements the carrier must meet to enhance the safety of the operation. The conditions are designed to ensure the bulk haul operation can be conducted safely on the selected route under all anticipated conditions.

Operating conditions are established under various categories and include:

1. Vehicle Specifications and Stability and Control Measures
  - a. Independent Stability Analysis
  - b. Static Rollover Threshold
  - c. Dynamic Load Transfer
  - d. Friction Demands
  - e. Braking Efficiency
  - f. Off-tracking
2. Required Unit Equipment Specifications
  - g. Lighting
  - h. Strobe Lighting
  - i. Under-ride Protection
  - j. Brake Systems
  - k. Radio Systems

- l. Driver and Vehicle Monitoring Systems
  - m. Preventative Maintenance Inspection Program
  - n. Mud Flaps
3. Vehicle Operation and Safety Procedures
- o. Hours of operation
  - p. Minimum Vehicle Separation on Highway
  - q. Minimum Vehicle Separation in School Zones
  - r. Minimum Vehicle Separation on Bridges
  - s. 3rd vehicle Passing Allowances
  - t. Public Information Programs
  - u. Truck Maintenance Programs
  - v. Driver Qualifications
  - w. Driver Safety Education Program
  - x. Driver Certification Requirements
  - y. List of Drivers
4. Other Conditions
- z. Emergency Response
  - aa. Safety Supervisor
  - bb. Monitoring and Safety Equipment
  - cc. Department Monitoring
  - dd. Public Complaint Process

For bulk hauls on the Robert Campbell Highway, all inbound and outbound trucks must also report to the Watson Lake Weigh Scales. This allows Carrier Compliance personnel the opportunity to observe the vehicle and conduct vehicle safety inspections as necessary.

As part of the application process there is a requirement for an independent engineering stability assessment of the tractor/trailer configuration proposed for use. In addition, an engineering assessment of all bridges on the route must be completed. The only bridges on the proposed route have already been assessed as part of the Yukon Zinc Bulk Haul Agreement. Regardless, HPW is unlikely to wave the requirement for an assessment.

Since the introduction of the bulk haul regulations in 1994, bulk haul carriers have had a very good safety record. When you consider that the regulations allow 21% increase in weight, the corresponding decrease in the number of trucks required to carry the same volume is approximate 18%. Therefore, pursuing a bulk haul arrangement is in the interests of reducing truck traffic and formalizing safety requirements.

BMC will make the bulk haul conditions, or portions thereof, standard for any carrier who will be contracted with BMC.

### 5.5.7 TRADITIONAL LAND USE

In order to sufficiently respond to this IR, BMC commissioned a comprehensive Independent Study of RRDC and LFN's Traditional Land Use along the Robert Campbell highway corridor between km 0 and 232 (**Appendix F**).

From this report, certain conclusions can be reached regarding the Traditional Land Use of the Robert Campbell Highway corridor:

- a. Both RRDC and LFN have a long history of hunting, trapping, and fishing along the present route of the Campbell Highway;
- b. The Robert Campbell Highway roughly follows and intersects with LFN and RRDC travel corridors; and
- c. The Robert Campbell Highway continues to be an important travel corridor for RRDC and LFN hunting, trapping, fishing, and plant gathering activities.

### 5.5.8 SUMMARY

BMC provided the Executive Committee with an effects assessment of the Valued Component Public Health and Safety due to increased traffic in Chapter 15 of the Project Proposal (summarised above in BMC's initial response to R4-7). BMC has also provided additional information and commitments with respect to traffic safety in responses to R268, R291 and R3-38. In addition, BMC (in response to YESAB's most recent request) has conducted further research to assess the safety of the Robert Campbell Highway with and without haul traffic. This research included:

1. Road Safety Statistics;
2. Traffic Counts;
3. Yukon Zinc Ore Haul Statistics;
4. Highway Design Standards and Conditions;
5. Highway Maintenance and Inspection Procedures; and
6. Requirements of the Bulk Haul Agreement.

The statistical evidence available indicates the Robert Campbell Highway between km 0 to 232 has no worse safety performance than the Robert Campbell Highway between km 362 to 582, the majority of which has been reconstructed. The statistics also seem to indicate that during the peak years of the Yukon Zinc ore haul there was no significant spike in reported accidents. Therefore, any anecdotal evidence provided to BMC relating to land users who didn't use the road when Yukon Zinc was operating appears to be based on individual perception of risk rather than real risk.

The independent study of Traditional Land Use along the Robert Campbell Highway indicates that RRDC and LFN have historically used and currently use the Robert Campbell Highway corridor to access traditional use sites.

Based on the above, the following additional commitments have been made by BMC and will be added to BMC's traffic management plan:

- 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 EMR website and will be presented at community meetings in Ross River and Watson Lake and meetings with LFN and RRDC.
- BMC will work with HPW to increase the frequency of brushing from km 114 to 232.
- BMC will also work with HPW to identify areas where additional spot improvements could enhance usability and visibility from km 114 to 232.
- BMC will also work with HPW to identify locations for pullout construction between km 190 to 232.
- 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 HPW.

Also, BMC is bound to all national and Yukon regulation regarding drivers and equipment including the National Safety Code and associated regulations.

<http://www.hpw.gov.yk.ca/trans/transportservices/nsc/171.html>. The regulations include driver's hour of service standards.

**Appendix G** of this response report presents a summary of the commitments that BMC has made in response to YESAB's Information Requests throughout the environmental assessment process to date. These commitments will be added to BMC's Traffic and Access Management Plan (which will be expanded to include the Robert Campbell Highway).

With the additional information collated regarding traffic safety, highway design standards and conditions; highway maintenance and inspection procedures; requirements of the Bulk Haul Agreement, and BMC's additional commitments provides further confidence in BMC's effects assessment in Chapter 15 that there will be no significant adverse effects to the Valued Component of public health and safety and there will be no significant adverse effects to the land users accessing their traditional sites from the Robert Campbell Highway.

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**APPENDIX A.**  
**Independent Study of Liard First Nation Traditional Land Use**

**APPENDIX B.**  
**Curriculum Vitae: Mr. Icton**

**APPENDIX C.**  
**Independent Study of Ross River Dena Council Traditional Land Use**

**APPENDIX D.**  
**Community Survey**

**APPENDIX E.**  
**Bibliography of Technical Studies Conducted for Kudz Ze Kayah**

**APPENDIX F.**

**Independent Study of Kaska Traditional Land Use Along the Robert Campbell Highway**



**APPENDIX G.**  
**Summary of Additional Mitigation Measures for Traffic Management Plan**

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**KUDZ ZE KAYAH MINE PROJECT  
INDEPENDENT STUDY OF LIARD FIRST NATION LAND USE**

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March 2019

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**Prepared for: BMC Minerals (No.1) LTD**

Research Assistants:  
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## **Executive Summary**

The following is an independent research report that presents the publicly available data on traditional land use and occupancy of the Liard First Nation (LFN) in the vicinity of the proposed Kudz Ze Kayah mine. This study examines a diverse array of land uses in this region including hunting, trapping, fishing, plant use, water use, and transportation corridors. This report is written in conjunction with two other reports. One report examines the land use patterns of the Ross River Dena Council (RRDC) in the vicinity of the proposed Kudz Ze Kayah mine.<sup>1</sup> The other study examines both LFN and RRDC land use and occupancy along the Robert Campbell Highway.<sup>2</sup> When necessary, I have cross referenced the two other reports.

From this report, certain conclusions can be reached regarding LFN land use:

- Although the LFN do not have traplines registered in the vicinity of the proposed mine, there is evidence of historical hunting, trapping, and fishing in the region;
- Historical evidence shows that members of the LFN were familiar with trails through the region; and
- The waterways in the Finlayson watershed have been historically important for LFN hunting activities.

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<sup>1</sup> BMC, *Independent Study of Ross River Dena Council Traditional Land Use*, (BMC, 2019).

<sup>2</sup> BMC, *Independent Study of Kaska Traditional Land Use Along the Robert Campbell Highway*, (BMC, 2019).

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**LIST OF ACRONYMS**

HBC	Hudson's Bay Company
Km	Kilometre
LFN	Liard First Nation
RRDC	Ross River Dena Council
TLU	Traditional Land Use

## GLOSSARY

<b>Term</b>	<b>Definition</b>
<b>Primary Source</b>	A primary source is a first-hand account of the event or process in question. Primary sources might include, but are not limited to, journals, correspondence, historical maps, memoirs, ethnographies, fieldnotes, and oral histories.
<b>Secondary Source</b>	Secondary sources are works that synthesize and analyze primary source evidence. Secondary sources include books, articles, theses, and reports which build upon primary source evidence.
<b>Toponym</b>	A place name, particularly related to a geographic feature.

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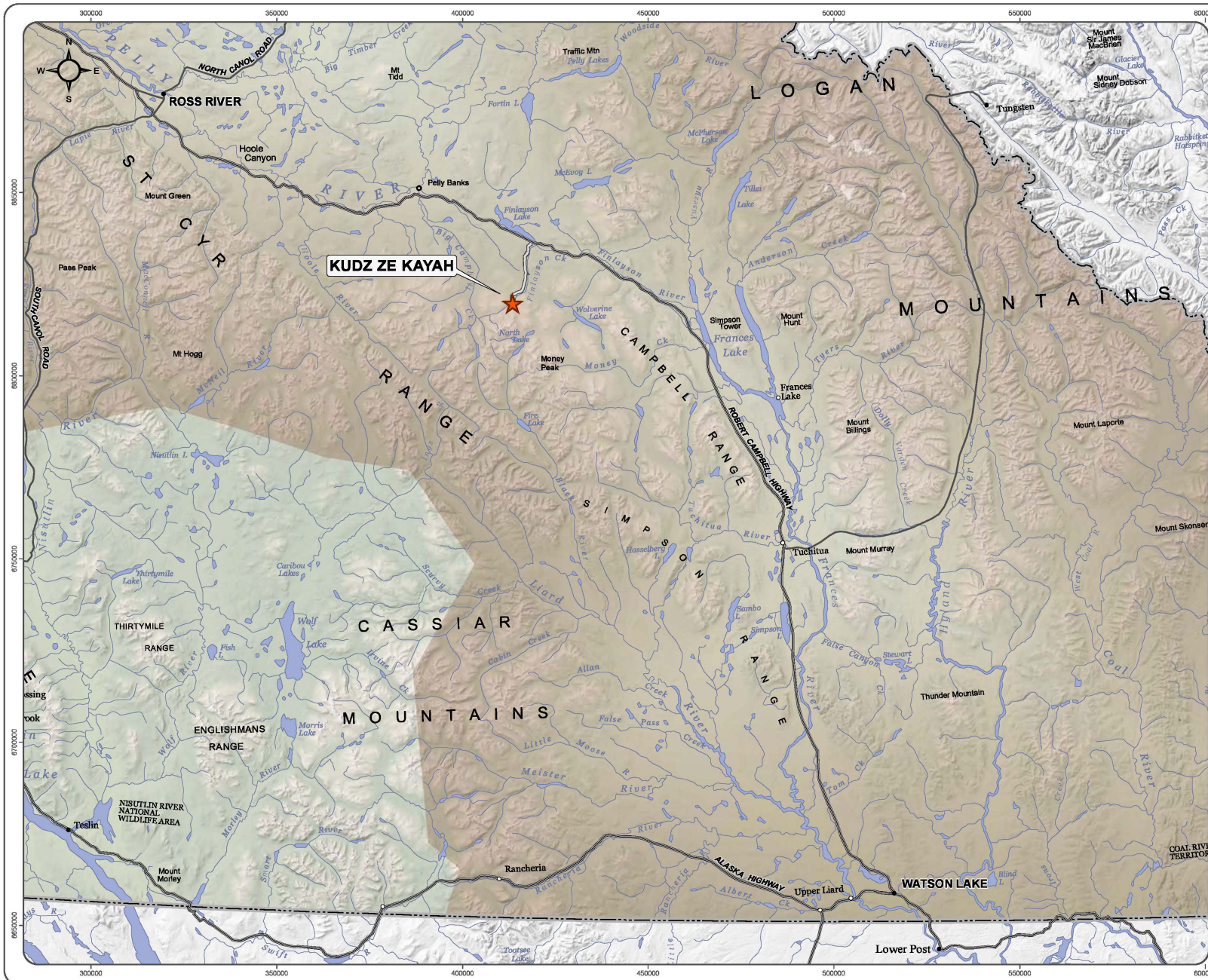
## 1. INTRODUCTION

BMC Minerals (No 1.) LTD (BMC) proposes to develop the Kudz Ze Kayah mine (the Project) approximately 260 kilometres (km) northwest of Watson Lake. The proposed Project is located within an area overlapping with Kaska Traditional Territory (Ross River Dena Council and Liard First Nation). Figure 1 illustrates the location of the Project with respect to the Kaska Traditional Territory and surrounding communities.

The purpose of this report is to document the collection and summarise the findings the publicly available data in relation to Liard First Nation (LFN) Traditional Land Use (TLU) data pertaining to the Project area. The publicly available primary data sources have been reviewed and analysed in order to ascertain LFN land use within the vicinity of the Project. This primary source material has been complemented and contextualized using secondary sources.

Access to the Project is via a 24 km existing single lane gravel Tote Road that connects the Project to the Robert Campbell Highway. The Project is expected to employ a permanent workforce of approximately 300 people during operations, with a nominal mine life of ten years, extracting approximately 180,000 tonnes of zinc, 35,000 tonnes of copper, and 25,000 tonnes of lead annually. Plans for the Project include a combined open pit and underground mine, various mining and processing facilities, ancillary buildings, and upgrades to the existing Tote Road extending from the Robert Campbell Highway to the Project site.

The report begins with an overview of the methods used to collect the traditional use information, followed by the results of the research which includes summaries of the traditional land uses of hunting, trapping, fishing, plant use, and travel corridors.



**KUDZ ZE KAYAH PROJECT**

**FIGURE 1  
PROJECT LOCATION**

NOVEMBER 2016

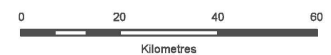


- Kudz Ze Kayah Project
- Kaska Dena First Nation (Ross River and Liard) Traditional Territory



Digital elevation model created by the Yukon Department of the Environment interpolated from the digital 1:50,000 Canadian National Topographic Database (NTDB Edition 2) contour and watercourse layers. Obtained from Geomatics Yukon.  
Contours compiled by Natural Resources Canada at a scale of 1:10,000 - 1:50,000. Reproduced under license from Her Majesty the Queen in Right of Canada, as represented by the Minister of Natural Resources Canada. All rights reserved.  
Drainage areas obtained from National Hydrology Network 2011  
Datum: NAD 83; Projection: UTM Zone 8N  
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## **2. METHODOLOGY**

### **2.1 STUDY AREA**

Two study areas were selected to conduct the desk-based research, the Local Study Area and the Regional Study Area. The Local Study Area includes the parts of the Kaska Traditional Territory that directly overlap with or are within 1 km the proposed Project while the Regional Study Area covers the areas from Frances Lake to Ross River within 100 km of the Project site. The rationale for a large area is based on considerations of human and wildlife movements, species with the largest habitat range, and natural landform barriers. Furthermore, while LFN land uses may occur in different parts of their territory, they are inextricably linked by travel and seasonal rotation. For example, one area of the territory may be overhunted or become developed, which may shift the LFN land use to another part of their territory. While past human activity was heavily influenced by terrain, including constraints of naturally occurring barriers (e.g., major mountain ranges, watersheds, ecosystems), modern-day equipment and technology (such as motorized vehicles) allows LFN citizens to transcend these barriers. An additional reason for the large Regional Study Area is that the nature of primary sources that provide insights into TLU are often not geographically precise, consequently, it is necessary to consider TLU within the broader region.

### **2.2 DATA SOURCES**

This report contains the results of desk-based research, including compiling and summarizing publicly-available primary data sources. For the purpose of this study, primary data sources are first hand or eye witness accounts of LFN land use. These primary data sources include a wide variety of materials including:

- Journals from HBC fur trading posts;
- Yukon government trapline registration records;
- Trapline maps;
- Other government records;
- Travel narratives;
- Published oral histories; and
- Published ethnographies.

These primary data sources are complemented by secondary source materials including published TLU reports, Environmental Assessment documents, archaeological surveys, and published scholarly works. Additionally, GIS has been used to analyse spatial primary data sources, such as trapline maps, and visually represent traditional land use in reference to the Project area.

### **2.3 REVIEW OF LITERATURE**

Sources used in the research included; Hudson's Bay Company (HBC) journals and travel narratives of individuals who travelled through the traditional territories of the LFN and RRDC. These include geologist George Dawson and sportsman Warburton Pike. Additionally, government records relating to trapline registration has been used to further elucidate trapping activities. These sources have been used in conjunction with anthropological literature and other secondary source materials in order to ascertain a full picture of land use and occupancy.

As nomenclature relating to Indigenous peoples has changed since the HBC established posts at Frances Lake and Pelly Banks, the terms Ross River Dena Council and Liard First Nation do not appear in the historical and ethnographic literature. I have used historical terminology and, when the relation to current terminology is unclear, I have made inferences into how historical terms relate to modern terminology. Thus, to the best of my ability, I have separated the research results of LFN traditional land use from that of RRDC traditional land use.

The terminology used by Europeans and Euro-Canadians in reference to Indigenous peoples has changed with time. Consequently, it is necessary to discuss historical and ethnographic terminology and how terms used in the past relate to the contemporary RRDC and LFN. HBC fur traders were the first people to produce written records relating to the Kaska in the Yukon. As the HBC traders contacted different Kaska groups, they used different terms. For example, Mauvais Monde was used in reference to the Kaska that the HBC encountered and traded with on the upper Liard River.<sup>3</sup> Meanwhile, Indigenous peoples who traded at Frances Lake Post were referred to in the post journals as Gens grand d'eau.<sup>4</sup> This term translates to mean "People of the Big Water." This is similar to "Big Water Dwellers" (Tu'tcogtena) one of the terms identified by anthropologist John Honigmann as applying to the Frances Lake Kaska.<sup>5</sup> Indigenous peoples from the Pelly River region were generally referred to as "Pelly Indians," people "from beyond the mountains," or "Gens de couteau" (Knife Indians in Robert Campbell's published journals).<sup>6</sup> Additionally, the post journals at Pelly Banks refer to the "Mountains Indians," Indigenous peoples who arrived from the mountain range separating the Pelly River and Mackenzie River watershed.

During the late nineteenth and early twentieth centuries, terminology used by Euro-Americans and Euro-Canadians generally referred to the region the respective Indigenous group

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<sup>3</sup> Hudson's Bay Company Archives (HBCA), Frances Lake Post Journal, B.73/a/1, 2 September 1842, fol. 8.

<sup>4</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 4 November 1843, fol. 11d.

<sup>5</sup> Honigmann, *The Kaska Indians*, 20.

<sup>6</sup> See for example, HBCA, Frances Lake Post Journal, B.73/a/1, 17 December 1842, fol. 19d.



inhabited. For example, in the Lower Post region and contiguous sections of the Yukon, Indigenous peoples were referred to as “Upper Liard Kaska” or “Liard Indians.”<sup>7</sup> Further north, in the vicinity of Frances Lake, Indigenous peoples were generally referred to as “Frances Lake Kaska” or “Frances Lake Indians.”<sup>8</sup> Basing his analysis on a 1926 RCMP report, Honigmann noted that there was a distinction between the Upper Liard Kaska and Frances Lake Kaska.<sup>9</sup> Finally, the Indigenous peoples of the upper Pelly River were referred to as the “Pelly Indians” or “Pelly River Indians.”<sup>10</sup> Curiously, Honigmann did not classify them as Kaska in spite of the fact that one of his informants had drawn attention to their close linguistic association with the Frances Lake Kaska.<sup>11</sup> Honigmann’s failure to connect the Indigenous peoples of the Pelly River region more broadly with the Kaska might be attributed to the fact that he did not visit Ross River.<sup>12</sup> It should also be noted that while Euro-American and Euro-Canadian travelers who traversed through the Frances Lake region encountered “Pelly Indians” in the vicinity, they made a distinction between

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<sup>7</sup> John J. Honigmann, *The Kaska Indians: An Ethnographic Reconstruction*, (New Haven: Human Relations Area Files Press, 1954) 19; Warburton Pike, *Through the Subarctic Forest: A Record of a Canoe Journey from Fort Wrangel to the Pelly Lakes, and Down the Yukon River to the Behring Sea*, (London: E. Arnold, 1896), 98.

<sup>8</sup> Honigmann, *The Kaska Indians*, 20; Anton Money, with Ben East, *This Was the North*, (New York: Crown Publishers, 1975), 100 and 119.

<sup>9</sup> Honigmann, *The Kaska Indians*, 20.

<sup>10</sup> Pike, *Through the Subarctic Forest*, 120.

<sup>11</sup> Honigmann, *The Kaska Indians*, 22.

<sup>12</sup> Honigmann, *The Kaska Indians*, 5-6.

the “Pelly Indians” and the Frances Lake Kaska.<sup>13</sup> During the early 20<sup>th</sup> century, Ross River trader Poole Field was told of a massacre of the “Pellys” said to have occurred in 1886, resulting in few survivors. He went on to state that some Indigenous peoples from the Liard region moved northward to occupy the upper Pelly River region.<sup>14</sup> Summing up the situation, Field wrote: “The Center Indians from that time on gradually moved into the Pelly country and claimed it as theirs, also claiming a right to the country they had left at the head waters of the Liard.”<sup>15</sup> This has led some scholars to suggest that the Indigenous peoples in the upper Pelly River during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries were distinct from the “Knife Indians” described by Campbell during the 1840s.<sup>16</sup> However, this position does not account for the distinct “Pelly Indian” identity that Pike witnessed in 1893, six years after the incident.

With respect to how early ethnographic divisions relate to contemporary First Nations, references to “Pelly Indians” have been assumed to relate to the ancestors of the RRDC. Meanwhile, information relating to the Upper Liard Kaska and Frances Lake Kaska has been included in sections relating to LFN. This is based on the amalgamation of the Watson Lake and

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<sup>13</sup> Pike, *Through the Subarctic Forest*, 137.

<sup>14</sup> Poole Field, “The Poole Field Letters (1913),” *Anthropologica* 4 (1957) 48-49.

<sup>15</sup> Field, “The Poole Field Letters,” 49.

<sup>16</sup> Glenda Denniston and Carter Denniston, “A Preliminary Report on Ross River, an Athapaskan Community,” (Unpublished manuscript, 1965), 4.

Frances Lake bands in 1961.<sup>17</sup> It should be noted, however, that distinctions between LFN and RRDC are not always so easily made. As noted by historian Ken Coates, LFN also includes individuals from Ross River.<sup>18</sup> Coates has also noted, Indian Affairs encouraged Ross River residents to move to Upper Liard.<sup>19</sup> Additionally, it should be noted that some Frances Lake Kaska families moved to Ross River.<sup>20</sup> Ruth Gotthardt has noted that following the closure of the HBC store at Frances Lake in 1947, many families moved either to Watson Lake, Upper Liard, or Ross River.<sup>21</sup>

#### **2.4 REVIEW OF PREVIOUS DOCUMENTS PREPARED BY BMC**

Appendix F-3 of BMC's Project Proposal for the Kudz Ze Kayah mine included a comprehensive "Kaska Ethnographic Overview of the Kudz Ze Kayah Project."<sup>22</sup> In addition, BMC's Response Report #4<sup>23</sup> included LFN traditional land use information. Both of these reports were reviewed for relevant LFN TLU information.

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<sup>17</sup> Kaska Dena Council v. Yukon (Government of), 2019 YKSC 13, 7-8; Library and Archives Canada (LAC), RG 10, Accession V1998-00301-9, Box 1, File 801/1-1-2, W.C. Bethune memorandum to Assistant Indian Commissioner for BC, 3 May 1961.

<sup>18</sup> Kaska Dena Council v. Yukon (Government of), 2019 YKSC 13, 7.

<sup>19</sup> Ken Coates, *Best Left as Indians: Native-White Relations in the Yukon Territory, 1840-1973*, (Montreal & Kingston: McGill-Queen's University Press, 1991), 212.

<sup>20</sup> Denniston and Denniston, "A Preliminary Report on Ross River," 4.

<sup>21</sup> R. Gotthardt, *Frances Lake: Traditional and Archaeological Sites*, (Liard First Nation, 1993), 13.

<sup>22</sup> BMC, 2017. *Kudz Ze Kayah Project Proposal to YESAB Executive Committee*. March 2017.

<sup>23</sup> BMC, 2018. *Kudz Ze Kayah Project, Response Report #4 to YESAB Executive Committee Adequacy Review of KZK Project Proposal*. December 14, 2018.



## 2.5 DATA LIMITATIONS

While not perfect sources, HBC journals provide important insights into historical Indigenous land use (including LFN land use) and occupancy in the region surrounding the Project site. As the proposed Project site falls in the region between the Frances Lake Post (established in 1842) and the Pelly Banks Post (established in 1845), a review of these records can provide opportunities for making inferences into LFN land use in the region. While these sources do not always provide precise geographical locations of hunting, trapping, and fishing activities, they nevertheless provide a general understanding of land use in the region. An additional element that needs to be considered when analyzing HBC records is the effect of epidemic diseases which spread with the advance of the fur trade. These epidemics affected Indigenous land use patterns. For example, in January 1844 it was noted at Frances Lake Post that “a Stranger arrived from beyond Finlayson’s Lake with no very cheering News – The Indians in that quarter are still labouring under the effects of that Malady which spread among them last fall.”<sup>24</sup>

Ethnography is a form of study that presents degrees of qualitative and quantitative descriptions of human social phenomena, which are gathered during fieldwork and observations of human groups. The Kaska people have had several main ethnographers who lived with and observed them and ethnographic sources are an important source of cultural and historical context and allow the comparison of different information over time. However, ethnographic data and observations also have limitations and should not be considered conclusive. Ethnographic accounts

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<sup>24</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 7 January 1844, fol. 17-17d.

are criticized as they were overwhelmingly recorded by Euro-Canadians in the late 1880s through to the mid-1900s, who were largely informed by a western worldview. In some instances, ethnographers have specific agendas and preconceived notions of the people and communities they encounter, which skew the information and call into question some, if not many, of their observations and interpretations. However, their accounts often provide an important snapshot of daily life, social and political structures and subsistence methods employed by Kaska people, especially at the turn of the twentieth century.

### 3. RESULTS

#### 3.1 OVERVIEW

The focus of this research is on the LFN TLU in the vicinity of the proposed Kudz Ze Kayah Project. The key traditional use areas in the vicinity of the Project are summarized in Table 1 and their locations are presented in Figure 2. These areas will be frequently referenced throughout this report.

**Table 1: Summary of Key Traditional Use Areas in the Vicinity of Kudz Ze Kayah**

<b>English Name</b>	<b>Kaska Name (Source)</b>	<b>Approximate Distance from the KZK Project</b>
North Lakes	<i>Ihts'I Ba Mene'</i> – meaning north Wind lake <sup>25</sup>	5 km South
Finlayson Creek	<i>Luge Destie Tue</i> – meaning Fish creek	5 km North West

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<sup>25</sup> Mary Charlie in Douglas Rutherford, *Archaeological Reconnaissance of the Kudz Ze Kayah Project, Central Yukon, Phases 1 and 2*, (Vancouver: Norecol, Dames & Moore; Ross River: Ross River Dena Council; Whitehorse: Heritage Branch, Government of Yukon, 1995), 29.

Wolverine Lake	<i>Negha Mene</i> – meaning Wolverine lake <sup>26</sup>	15 km East
Money Peak	Possibly <i>Tse Nehtsat</i> [Pelly dialect] and <i>Gucha Dedie Hes</i> [Liard dialectic] <sup>27</sup>	14 km South East
Big Campbell Creek	<i>Tanidzi</i> – meaning in the middle <sup>28</sup>	12 km West
Finlayson River	N/A	20 km North
Finlayson Lake	<i>Tetl'ane Joje</i> <sup>29</sup>	20 km North
Money Creek	<i>Il-es-too-a</i> <sup>30</sup>	20 km South East
Pelly River	N/A	45 km North West
Fire Lake	N/A	30 km South
Frances Lake	<i>Tu Cho</i> – meaning big water	50 km East
Frances River	N/A	75 km South East
Pelly Banks	N/A	45 km North West
Simpson Tower	<i>Tenidzé</i> <sup>31</sup>	60 km East
Trail to Pelly River	<i>Tú Désdés Tué</i> <sup>32</sup>	
Trail from Frances Lake to Pelly Lakes	<i>Tu Désdé Méné/Ges Méné</i> <sup>33</sup>	
Fortin Lake	<i>Ghanhe Méné</i> <sup>34</sup>	

<sup>26</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 29.

<sup>27</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 34-35.

<sup>28</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 34.

<sup>29</sup> Gotthardt, *Frances Lake*, 7.

<sup>30</sup> Fenley Hunter, *Frances Lake, Yukon*, (Flushing, NY: Marion Press, 1924).

<sup>31</sup> Gotthardt, *Frances Lake*, 1.

<sup>32</sup> Gotthardt, *Frances Lake*, 9.

<sup>33</sup> Gotthardt, *Frances Lake*, 9.

<sup>34</sup> Gotthardt, *Frances Lake*, 9.

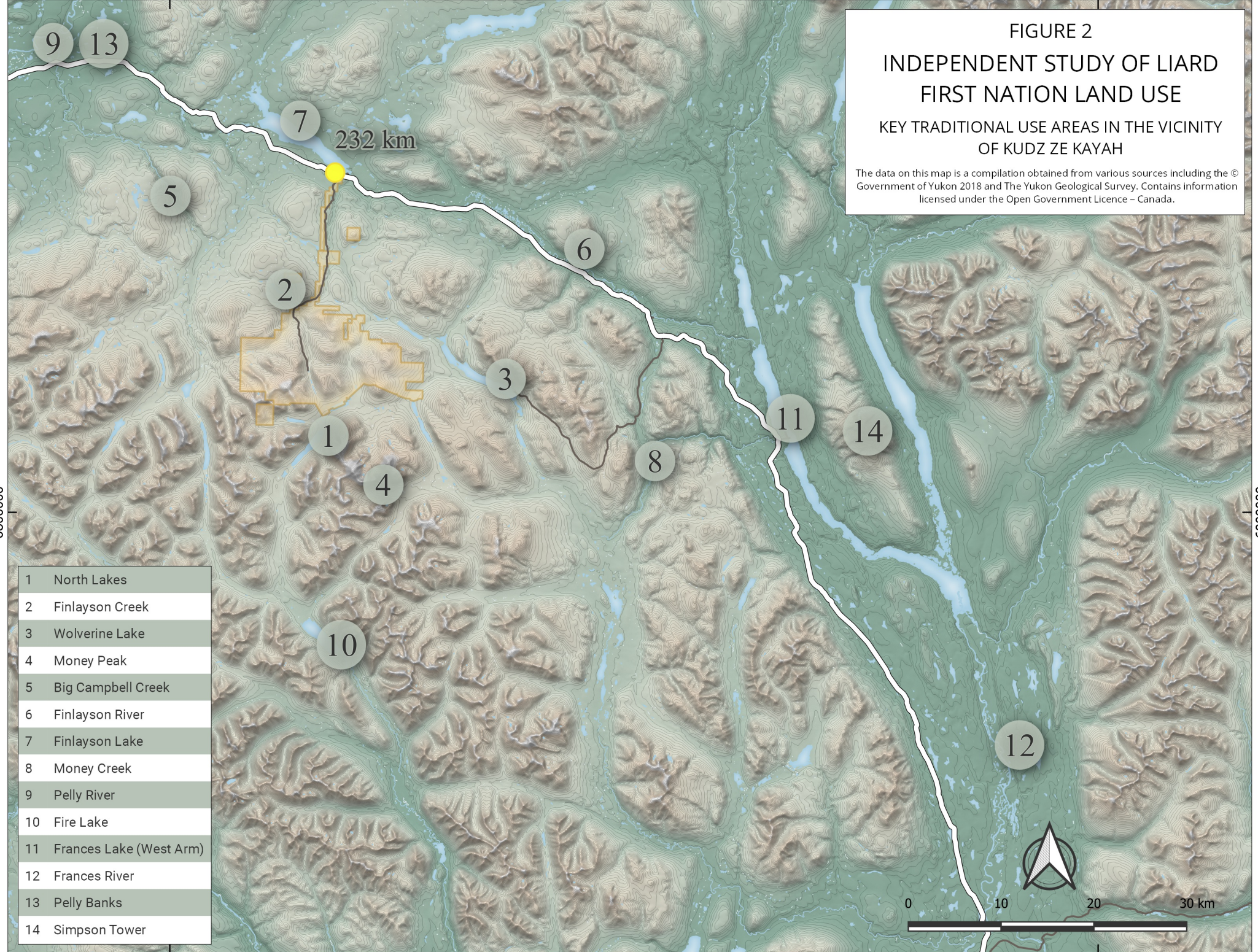


400000

500000

**FIGURE 2**  
**INDEPENDENT STUDY OF LIARD**  
**FIRST NATION LAND USE**  
**KEY TRADITIONAL USE AREAS IN THE VICINITY**  
**OF KUDZ ZE KAYAH**

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.



- |    |                         |
|----|-------------------------|
| 1  | North Lakes             |
| 2  | Finlayson Creek         |
| 3  | Wolverine Lake          |
| 4  | Money Peak              |
| 5  | Big Campbell Creek      |
| 6  | Finlayson River         |
| 7  | Finlayson Lake          |
| 8  | Money Creek             |
| 9  | Pelly River             |
| 10 | Fire Lake               |
| 11 | Frances Lake (West Arm) |
| 12 | Frances River           |
| 13 | Pelly Banks             |
| 14 | Simpson Tower           |

0 10 20 30 km

400000

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680000

680000



The Frances Lake region appears to be an important region to LFN TLU. In 1993, archaeologist Ruth Gotthardt identified a myriad of LFN traditional uses in the region; these include hunting and trapping sites, fishing camps, and trails connecting France Lake to other traditional territories of the LFN.<sup>35</sup> Additionally, Anton Money's 1975 memoir of his mining activities in the vicinity of Frances Lake (which took place during the 1920s) demonstrates the importance of the lake as a gathering place. Money discussed the seasonal comings and goings of the Frances Lake Kaska.<sup>36</sup>

## **3.2 HUNTING**

### **3.2.1 OVERVIEW**

According to Honigmann's 1954 ethnographic reconstruction of the Kaska, the animals eaten by the Upper Liard Kaska were: "caribou, moose, black and brown bear, sheep, goats (more rarely), beaver, muskrat, lynx, ground hog, gopher, and marten, the latter being described as resembling rabbit in taste. Porcupine often provided mainstay in winter, people refraining from killing this animal in summer in order to insure a supply for a period when it might be sorely needed."<sup>37</sup> The importance of hunting to the Kaska was further reinforced in Honigmann's contribution to the *Handbook of North American Indians*:

Variations in the seasonal cycle brought about notable changes in the habits and conditions of the game animals. The Indians responded by altering their routines

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<sup>35</sup> Gotthardt, *Frances Lake*.

<sup>36</sup> Money, *This Was the North*.

<sup>37</sup> Honigmann, *The Liard Kaska*, 38.

and moving their homes to take advantage of what the country offered. For example, in late summer, when game fattened, hunters and their families moved into the mountains to hunt goat, sheep, woodland caribou, and “gophers” and “groundhogs” (marmots). Women busied themselves drying meat and caching it for winter use, while men readied snowshoes, toboggans, and walking staves. As the cold season progressed, families gathered at a “fish lake” where they subsisted on fresh fish or dried meat fetched from autumn caches.<sup>38</sup>

Archaeologist Ruth Gotthardt has elaborated on the importance of hunting to the LFN. This includes a discussion on their mobility surrounding harvesting practices and how hunting practices interacted with other forms of land use:

Before the European traders came to their country, Frances Lake people followed a hunting and fishing way of life, and depended on the land for all their needs. The movement of game required the people to keep travelling over their territories as the seasons changed. Fall was the time of hunting moose and caribou, and drying meat in the mountains. Groundhogs were trapped and snares as well, and people picked berries to store for the winter ahead. In early winter, whitefish and lake trout were spawning and people moved their camps down to the lake. On Frances Lake, the main place for spawning whitefish is at the Narrows of the East Arm of the Lake, and at the mouth of the Thomas River (*Too-tlas*) at the head of the East Arm. In winter, moose were hunted in their winter range, along the Frances River and around *Ollie Méné*, at the north end of Frances Lake. Surrounds were constructed for hunting caribou in their winter range, on Simpson Tower (*Tenidzé*) or on Finlayson Lake. And all through winter, people lived off the dried meat and fish in their caches. Spring was the time of the caribou hunt, as the herds moved to their summer ranges. Caribou Crossing, on the East Arm of the Lake, was a traditional location for intercepting the caribou herds as they crossed the lake. People also trapped beaver and muskrat, and fished for grayling, which were spawning at the head of Frances River in late spring. Fishing and hunting continued through the summer, but this was also the season when people travelled to visit their neighbours<sup>39</sup>

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<sup>38</sup> John J. Honigmann, “Kaska,” in *Handbook of North American Indians, Vol. 6, Sunarctic*, (Washington: Smithsonian Institution, 1981), 444.

<sup>39</sup> Gotthardt, *Frances Lake*, 1.

In addition to drawing attention to the broader seasonal movements of the LFN and associated land uses, Gotthardt has also drawn attention to the importance of Finlayson Lake as a hunting ground. HBC traders provided additional insights into hunting and trapping activities in the vicinity. LFN citizens have also informed BMC that Finlayson Lake is an important site.<sup>40</sup>

### **3.2.2 KEY RESEARCH FINDINGS**

The fur trade journal at Frances Lake Post provides insights into Indigenous hunting activities in the region. The arrival of Indigenous traders with provisions for the trading post indicates the species that were hunted in the vicinity. For example, on 27 February 1843, Robert Campbell wrote: “The Joli Jeune homme and another Indian cast up at last, with each a parcel not yet examined.”<sup>41</sup> On the following day, the HBC employee recorded the contents of Joli Jeune homme’s parcel: “The arrivals of yesterday traded what they brought say 4 Bearskins & 60 lb spliced meat and then went off.”<sup>42</sup> On 9 February 1843, Campbell wrote about the arrival of an Indigenous man with the tongues and meat of caribou.<sup>43</sup> In mid-February, Campbell wrote: “Two Strange Indians who left here yesterday cast up loaded with part of the meat of a rein Deer they killed after leaving here yesterday.”<sup>44</sup> He then reported the arrivals departing to the northeast side

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<sup>40</sup> BMC, *Response Report #4*, 16.

<sup>41</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 27 August 1843, fol. 5d.

<sup>42</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 28 August 1843, fol. 5d.

<sup>43</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 9 February 1843, fol. 25.

<sup>44</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 14 February 1843, fol. 25d.



of Frances Lake.<sup>45</sup> Sometimes evidence of hunting in the region was not species-specific: “An Envoy for tobacco from the Ahbatahtena’s Chief cast up last night with a little meat & furs.”<sup>46</sup>

Gotthardt had discussed the provisions trade at Frances Lake Post:

In late winter of 1846, however, moose and caribou meat was being brought into the post by Frances Lake people and the trade at the post had increased. By the winter of 1847, trade was reported as flourishing. But once again, starvation threatened Frances Lake in 1848 and 1849, this time largely as a result of mismanagement of the post supplies. Problems of supply, not only for Frances Lake, but for Pelly Banks and Fort Selkirk, contributed to the decision to abandon Frances Lake in 1851 and Fort Selkirk in 1852. Pelly Banks, which had burned down in 1849, was not rebuilt.<sup>47</sup>

Further evidence of hunting in the region is provided by the trade in hides at Frances Lake Post. On 20 November 1843, it was recorded in the Frances Lake Post journal: “on my return found that six other Indians had arrived during my absence,- they are all strangers, except for an old Man named the ‘Grand Blanc’- they brought us all 133 M[ade] B[eaver]. – and 5 excellent Mooseskins.”<sup>48</sup> Although HBC journals did not always indicate where hunting activities took place, there is evidence of hunting between the France Lake and Pelly River watershed: “Late last night Hoole arrived starving – In the three Lakes which he tried he could get no fish – All the Indians who are in that quarter have left it and are gone off in quest of Animals towards the Pelly[.]”

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<sup>45</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 15 February 1843, fol. 25d.

<sup>46</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 24 March 1844, 23d.

<sup>47</sup> Gotthardt, *Frances Lake*, 11.

<sup>48</sup> HBCA, Frances Lake Post Journals, B.73/a/2, fol. 13.

It would appear that there are some vestiges of rein Deer, but the Weather, till lately has been too cold for hunting.”<sup>49</sup> While not explicitly stating a location for these wintertime hunting activities towards the Pelly River region, they may indicate hunting up the Finlayson River watershed towards the Pelly River.

A toponym indicating an important hunting area is Il-es-too'-a (now known as Money Creek) which flows into Frances Lake. In 1887, Dawson noted: “This stream is somewhat smaller than the Finlayson, and is known to the Indians as the *Il-es-too'-a*.”<sup>50</sup> Anton Money, the creek’s namesake, wrote of it: “We traveled up Frances Lake all the next day on the rim ice, the dogs pulling steadily, and camped that night at the delta of the Big Sheep Lick River, the Il-es-tooa of the Indians. It was later named for me, and today’s maps show it as Money Creek. I appreciate the honor but I like the old name better.”<sup>51</sup> The translation of the Indigenous name, “Big Sheep Lick River,” indicates its importance as a sheep hunting area. Gotthardt has also commented on the significance of hunting along Money Creek: “Along this creek is a mineral lick where hunters went

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<sup>49</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 31 January 1844, fol. 19.

<sup>50</sup> George Mercer Dawson, *Report on an Exploration in the Yukon District, N.W.T. and Adjacent Northern Portion of British Columbia 1887*, (Montreal: Dawson Brothers, 1888), 109B.

<sup>51</sup> Money, *This Was the North*, 122.

to find game.”<sup>52</sup> In Money’s memoir he also stated that Caesar – a member of the Frances Lake Kaska – would not accompany him to Pelly Banks as “it was outside his tribal hunting grounds.”<sup>53</sup>

In 1993, archaeologist Ruth Goddhardt has noted the existence of a “moose lick” near the point where the Finlayson River flows into Frances Lake:

In the old days, many fish camps were located at the north end of Frances Lake, around the mouth of the Finlayson River and the mouth of *Nehtsedzi* -- the river that connects Frances Lake to *Ollie Méné*. When George Dawson visited the Frances Lake country in 1887, he recorded the name of the Finlayson River as ‘Tle-tlan-a-tsoots’. Robert and Leda Jules recalled a somewhat different name for the river: *Tet’áne Joje*.

People came to this part of the lake in winter for moose hunting: this area is known to be a winter range for moose. Robert Jules reports a moose lick here as well, in a slough just below the Finlayson River mouth, on the west side of the lake. The end of the lake and along *Nehtsedzi* is also an area used by nesting ducks.<sup>54</sup>

This excerpt demonstrates the importance of the area where the Finlayson River flows into Frances Lake for hunting both moose and waterfowl, such as ducks.

### 3.3 TRAPPING

#### 3.3.1 OVERVIEW

Traplines in the immediate vicinity of the Project are currently registered to RRDC citizens. This appears to have been the case since the beginning of group trapline registration by RRDC, and possibly prior to this development. However, historically the Kaska that comprise present-day

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<sup>52</sup> Gotthardt, *Frances Lake*, 6-7.

<sup>53</sup> Money, *This Was the North*, 216.

<sup>54</sup> Gotthardt, *Frances Lake*, 7-8.

LFN have a history of trapping in the Finlayson River watershed region. Primary source materials describing trapping practices prior to the implementation of compulsory trapline registration in 1950, describes Frances Lake Kaska trapping activities in the region. HBC fur trade records as well as Frances Lake prospector Anton Money indicate LFN trapping activities in the region. In 1981, Honigmann described the importance of trapping activities to the Kaska in general:

With the advent of fur trapping, the annual cycle came to involve two major shifts of residence. The following description is of activities in the decade of the 1940s. In spring, families left the trap lines, taking along furs that had accumulated since the man last visited the store prior to the breakup of the rivers and lakes. Travelling by water, the family came to the trading post settlement, sold the last of its furs, and proceeded to live on fish locally netted plus canned goods, potatoes, bacon, and other food purchased from the store with the winter's earnings.<sup>55</sup>

Further demonstrating the importance of trapping to the LFN, in 1949, one of Honigmann's ethnographic informants wrote to the anthropologist lamenting the government's imposition of a closed season on trapping beaver.<sup>56</sup>

### **3.3.2 KEY RESEARCH FINDINGS**

As Robert Campbell was establishing Frances Lake Post in the summer of 1842, he was provided various clues regarding both hunting and trapping activities in the region. For example, shortly after arriving at Frances Lake, Campbell wrote in the post journal: "Whitforde I sent in the

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<sup>55</sup> Honigmann, "Kaska," 444.

<sup>56</sup> Smithsonian Institution, National Anthropological Archives, Papers of John Joseph Honigmann, Series 6, Box 50, Correspondence, Folder 1, [name redacted] letter to John J. Honigmann, Liard Bridge, YT, 15 January 1949.

morning for a Caché of Furs discovered yesterday by the Indian lad and where 7 parcels were found containing collectively 81 large Beaver, 14 Small ditto, 60 Martens, 23 Rats, 2 Cross Foxes, 1 Red ditto, 1 Otter, 2 wolvereens [sic] 1 lbs Castorum and 6 excellent dressed Mose Skins.”<sup>57</sup>

Later, during the fall, Campbell learned who the owners of these furs were:

A party or rather two parties in all ten Indians from below & above. Hoole also arrived accompan[y]ing those from above. Five of the Fur parcels we got encache after our arrival here is claimed by some of them which with that Furs they brought they trade and among other Articles they took three Guns. None of the party ever saw a white man before except one who visited me two years ago at Fort Halkett.<sup>58</sup>

By using the terms ‘above’ and ‘below,’ Campbell was indicating whether the arrivals had travelled from upstream (above) or downstream (below) relative to the HBC’s position on Frances Lake. Areas above Frances Lake Post would likely have involved the watershed of the Finlayson River. Consequently, this episode provides insights into the trapping activities in the region. The post journal contains numerous mentions of the arrivals of traders and details the items that were traded. For example, on 4 March 1843, Campbell wrote: “Traded what the Indians brought way 13 Martens & 132 lbs spliced meat.”<sup>59</sup> Additionally, on 25 April 1843, Campbell recorded: “In the 19 morning two Indians arrived and brought 60 lbs meat[,] 19 martens[,] 4 Beaver[,] and some dressed Skins.”<sup>60</sup> Additionally, the Frances Lake Post journal referred to the arrival of Indigenous

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<sup>57</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 16 August 1842, fol. 6d.

<sup>58</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 2 October 1842, fol. 11.

<sup>59</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 4 March 1843, fol. 27.

<sup>60</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 25 April 1843, fol. 31.

peoples trading marmots (referred to in the post journals by the French term, Siffleurs).<sup>61</sup> While these entries did not mention specifically who the Indigenous arrivals were, they were likely members of the Frances Lake Kaska,<sup>62</sup> part of today's LFN. References to Indigenous peoples from the Pelly River watershed generally made reference to arrivals from the river on the west side of the mountains.<sup>63</sup>

Additional evidence of the Indigenous trappers and traders in the vicinity of the Project site was provided the following year. On 4 November 1843, Campbell noted: "In the course of the day three off [sic] the Gens Grand d'eau cast up and brought collectively 66 Martens."<sup>64</sup> "Gens Gand d'eau" translates to mean People of the Big Water. Significantly, anthropologist John Honigmann has noted that Tu'tcogtena (an Indigenous name for the Frances Lake Kaska) translates to mean "Big Water Dwellers."<sup>65</sup>

During the 1920s, Money traded for furs with the Frances Lake Kaska. This trade demonstrates the continued importance of trapping in the vicinity:

The four families camped below the cabin for three days, visiting us much of the time. I traded for some of their furs, mink, marten, lynx, fox, wolverine, and coyote, even a few wolf, fisher, and otter pelts. The men agreed to work for me at the gold digging, when they came back from their spring beaver hunt in June. Then, with no

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<sup>61</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 28 September 1843, fol. 8d.

<sup>62</sup> Honigmann, *The Kaska Indians*, 20.

<sup>63</sup> BMC, *Independent Study of Ross River Dena Council Traditional Land Use*.

<sup>64</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 4 November 1843, fol. 11d.

<sup>65</sup> Honigmann, *The Kaska Indians*, 20.

announcement and no fanfare, they were gone, fading swiftly up the rivers that flowed into Frances Lake, each family with its load of camp gear and the younger children loaded into a carryall on the toboggan.<sup>66</sup>

Trapline maps held at the Yukon Archives provide a sense of the spatial distribution of trapping activities in the vicinity of the Project. In addition to the trapline maps, government correspondence helps contextualize these maps. For example, in 1959, a list of trappers and trapline license numbers was produced by the government relating to traplines registered in the Watson Lake District. The list identifies registered trappers from Watson Lake, Upper Liard, and Frances Lake. These lists also identified who the Indigenous trappers were. The Asterix (\*) signifies that the trapper is Indigenous.

- Watson Lake: Fritz Donnesay\* (#127); Harry Donnesay\* (#140); Joe George\* (#115); Einar Hagen (#288); Fred Hasselberg Jr. (#134); Fred Hasselberg Sr. (#350); Howard Jimmy\* (#298); Dick Morris\* (#114); Timmy Stewart\* (#267); Oscar Stewart\* (#125); Frank Tom\* (#124); Liard Tom\* (#123); and Robert Watson\* (#105)
- Upper Liard: George Jackson\* (#314)
- Francis Lake: Mahou Jimmy\* (#228); Peter Jules\* (#244); Francis Magum\* (#231); and Russell Magum\* (#227)<sup>67</sup>

When lists such as the one above are matched against trapline maps – such as the ones provided below (Figure 3) – it is possible to get a sense of the extent of LFN trapping activities near the Project. Names and trapping license numbers correspond with those on the map. These maps and

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<sup>66</sup> Money, *This Was the North*, 177.

<sup>67</sup> YA, GOV 2154, f14, List of names and licence numbers, 1959.



correspondence provide strong evidence of LFN trapping activities in the Local and Regional Study Areas.

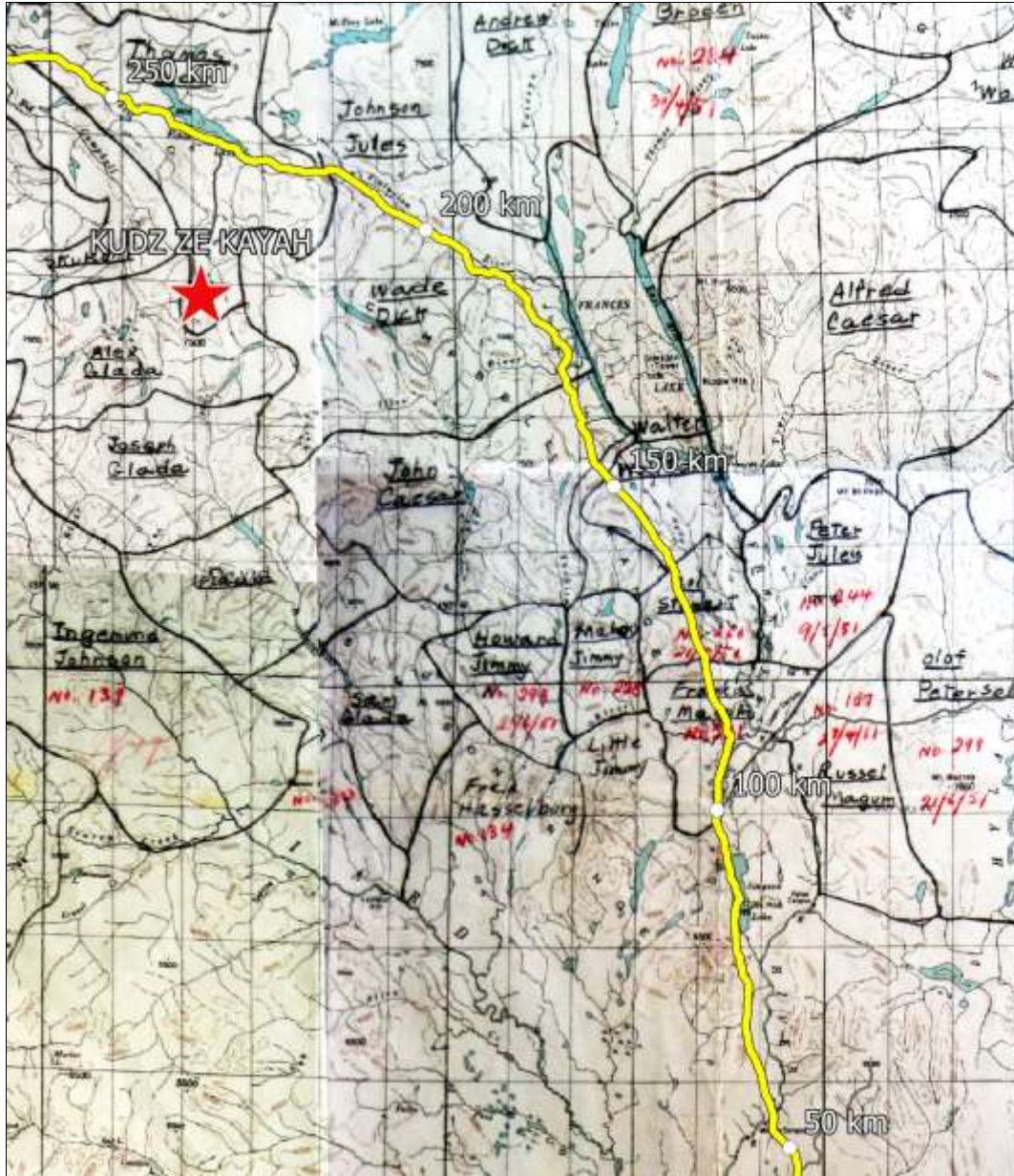


Figure 3: Wolf Lake – Watson Lake Traplins (H-557, Yukon Archives)

Yellow line represents the Robert Campbell Highway

Additionally, prior to group trapline registration, there is evidence of LFN trapping activities in the vicinity. Map H-1602-1 (Figure 4), represents registered traplines in 1951 and 1952. Names appearing on this map are similar to names of trappers from the Ross River region provided in government correspondence in 1958:

- 324/ Arthur John/ Ross River/ 1957/58 (in pencil it says “Paid 4/3/58”)
- 327/ Jack Ladue/ Ross River “(now in Dawson area)”/ 1956/7 and 57/8
- 355/ Mac Peter/ Ross River/ 1957/8 (in pencil it says “OK Paid May 2/58”)
- 363/ Amos Dick/ 1957/8
- 366/ Joe Ladue/ Ross River “(now in Dawson area)”/ 1957/8 (has three red checkmarks above “owes for” part)
- do checkmarks denote that it’s been paid, or are these checkmarks in reference to Amos Dick (as they are next to his entry)?
- 367/ Allan Dickson/ Ross River “([now in] Whse. [area])”/ 1957/8
- 373/ Eso Dick/ Ross River “([now in] Upper Liardarea [sic])”/ 1957/8
- 374/ David Dick/ Ross River “([now in Upper Liardarea (sic)])”/ 1956/7 and 57/8
- 378/ Pete Charlie/ Ross River “([now in Upper Liardarea (sic)])”/ 1956/7 and 57/8
- 419/ John McKay/ Ross River/ 1957/8 (written in red next to entry: “OK paid May 2nd [?]”)
- 1/ David Shorty/ Ross River/ 1956/7 and 57/8
- 321/ Pete Bob/ Pelly Lakes/ 1954/5, 55/6, 56/7, and 57/8
- 323/ Jim Smith/ Pelly Lakes/ 1954/5, 55/6, 56/7, and 57/8
- 380/ John Caesar/ Ross River/ 1954/5, 55/6, 56/7, and 57/868

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<sup>68</sup> YA, GOV 2154, File 13, G.R. Bidlake letter to T.O. Connolly 26 March 1958.



residential school. When they moved they became Upper Liard members and then several years later when they moved back north to the Ross River region they then became RRDC members.

### **3.4 FISHING**

#### **3.4.1 OVERVIEW**

Historical evidence points towards a long history of LFN fishing in the Finlayson River watershed. HBC records indicate that Finlayson Lake and the surrounding region was an important fishing site. Additionally, Money has described Frances Lake Kaska fishing activities along the Finlayson River, and further, Money Creek has been identified as an important LFN fishing site. Honigmann described the importance of fish to Kaska subsistence in his 1954 study:

Although the Upper Liard Kaska, like other northern Indians, regarded game as the most attractive food, actually fish provided the dietary mainstay of the population. From lakes and rivers people took jsckfish, lake pickerel, lake and brook trout, whitefish (in smaller numbers because they were also the prey of jackfish), grayling, loche, and sucker.<sup>70</sup>

Honigmann has also described the importance of families congregating around a “fish lake” during the winter.<sup>71</sup> Gotthardt has similarly noted the importance of fishing to the LFN: “In early winter, whitefish and lake trout were spawning and people moved their camps down to the lake. On Frances Lake, the main place for spawning whitefish is at the Narrows of the East Arm of the Lake, and at the mouth of the Thomas River (*Too-tlas*) at the head of the East Arm.”<sup>72</sup>

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<sup>70</sup> Honigmann, *The Kaska Indians*, 37.

<sup>71</sup> Honigmann, “Kaska,” 444.

<sup>72</sup> Gotthardt, *Frances Lake*, 1.

### 3.4.2 KEY RESEARCH FINDINGS

While at Frances Lake Post, Campbell also learned about fishing activities in the Finlayson Lake region. This information was gleaned from the hunters that he had dispatched to the area:

In the evening we were cheered by the arrival of two of the Hunters at last (LaPie and Gauche) from Finlaysons' [sic] Lake with a load of meat and some Beaver[.] They convey the good tidings of their having seen some of the Natives and glad to learn our being here went off to notify their relations and I hope the news will soon get wings and spread among the different families inhabiting these Wilds. They also report favourably of the Finlaysons' [sic] and all the other Lakes in that vicinity for fishing.<sup>73</sup>

While the journal entry does not indicate the type of land use activities of the Indigenous peoples surrounding smaller lakes, this area was likely used for fishing. Additionally, Campbell noted that the individuals encountered by the hunters were going to inform their relations about the establishment of the trading post. This observation indicates that there may have been numerous Indigenous peoples in the vicinity. It should also be noted that when the HBC expanded its trading post system into the Pelly River watershed with the establishment of Pelly Banks, they continued to view Finlayson Lake as an important source of fish.<sup>74</sup> As the HBC traders recognized the significance of this place for fishing, it was likely also recognized as an important fishing site by LFN in the Frances Lake region.

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<sup>73</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 29 September 1842, fol. 10d.

<sup>74</sup> LAC, Robert Campbell fonds, MG 19, A 25, "Journal of Occurrences at Pelly Banks," 28 August 1846.

HBC post journals also contain references to Indigenous peoples trading fish at the posts, such as Frances Lake Post. For example, in September 1843 some Indigenous arrivals traded “70 lb spliced Meat[,] 20 Siffleurs[,] and 4 Beaver skins and also a few dried fish.”<sup>75</sup> As these individuals arrived at the post roughly one year after the hunters had observed Indigenous peoples in the Finlayson Lake area, it is possible that their arrival was part of the same seasonal round in which they would have passed through the region to hunt, fish, and trap before arriving at the post. Moreover, in the 1920s, Money described Oaltal – a member of the Frances Lake Kaska – fishing on the Finlayson River.<sup>76</sup>

Much of the ethnographic sources noted the varying degrees of success Kaska had catching/netting fish compared to non-Aboriginal people who were working at the HBC post. There are numerous records both from Fenley Hunter (1924) and staff at the Frances Lake post that indicated there were few fish in Frances Lake (or their fishing skills and knowledge of the area did not match their Kaska counterparts): “The fish in Frances Lake do not bite; not at this time of year, anyway. The Indians are using a ragged net without success.”<sup>77</sup> During the 1840s Hudson’s Bay Company employee, Robert Campbell, noted the same in several journal entries, which was part of the reason for eventually abandoning the post at Frances Lake:

Our fisheries proving insufficient to meet our daily wants much less to allow us to lay aside fish for the winter, & strangers as we were to the resources of the country, I

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<sup>75</sup> HBCA, Frances Lake Post Journal, 28 September 1843, fol. 8d.

<sup>76</sup> Money, *This Was the North*, 184-185.

<sup>77</sup> Hunter, *Frances Lake*, 63.

deemed in inadvisable to keep all the men we had...Then came better times, the Indians finding us out and spreading the news that we were stationed at Frances Lake, & gladly coming in to trade furs & provisions with us.<sup>78</sup>

In 1993, Gotthardt explained the Kaska location of fishing on the west arm of Frances Lake:

A jackfish spawning site is located here in the south shore of the lake, opposite narrow point. ... Lead and Robert Jules said people used to stay here all the time for fishing. ... Money Point was a very important fishing site for Frances Lake people in the past. The outlet of *Al'as Tue* (Money Creek) was a net fishing site and probably also where people used to set fish traps.<sup>79</sup>

### 3.5 PLANT USE

#### 3.5.1 OVERVIEW

Although historical and ethnographic records provide little information with respect to the locations of plant harvesting, the importance of plant use to the Kaska is well established. As Honigmann has wrote in 1981: “Women did the principal collecting, chiefly berries, including the soapberry, high- and lowbush cranberry, salmonberry, raspberry, strawberry, currant, and blueberry. Other vegetables products sought were fern roots (in spring), lily bulbs, birchroots (in spring), lily bulbs, birch sap, mushrooms, muskeg apples, wild onions, rose petals, and wild rhubarb.”<sup>80</sup> In his previous ethnography, published in 1954, Honigmann noted that the Kaska used plants for more than food. Cottonwood and spruce bark was used to construct canoes.<sup>81</sup>

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<sup>78</sup> Robert Campbell, *Two Journals of Robert Campbell*, (Seattle, Washington: 1958), 68.

<sup>79</sup> Gotthardt, *Frances Lake*, 6.

<sup>80</sup> Honigmann, “Kaska,” 443.

<sup>81</sup> Honigmann, *The Kaska Indians*, 54-55.



### 3.5.2 KEY RESEARCH FINDINGS

Sometimes HBC journals made references to Indigenous peoples procuring canoe bark: “Hoole and Boucher accompanied by an Indian went off to search for Canoe Bark.”<sup>82</sup> Anthropologist John Honigmann (1954) has also provided insights into the Liard Kaska’s plant use:

The Indians secured food through gathering, trapping, hunting, and fishing. Girls and women did the principal collecting, although men also sought vegetable products in the course of walking through a favourable area while hunting. Berries were the main items sought by collectors and included, in approximate order of frequency, the soap berry, high- and low-bush cranberry, salmon berry, raspberry, strawberry, currant, and blueberry. Other vegetable products taken from the land included fern roots in the spring; lilly bulbs; mushrooms, frequently stolen from a squirrel’s cache; muskeg apples, that grew up in the mountains and were described as tasting somewhat like turnips; wild onions, of which only the greens were eaten; rose petals, made into a beverage by boiling; and white rhubarb. Both sexes chewed gum taken from a “half dead” spruce tree, a choice advised by the fact that such gum would not stick to the teeth. Jackpine and spruce fibers were also eaten but mud, birch fiber, willow buds, wild rice, and wild peas had no place in the diet. Birch sap, obtained by tapping the birch in spring, ranked as a minor delicacy but people ignored poplar sap.<sup>83</sup>

## 3.6 WATER USE

### 3.6.1 OVERVIEW

Although the Kaska generally travelled overland, river travel did serve an important function (see Section 3.7 below). As Honigmann (1981) noted, boats were sometimes taken to

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<sup>82</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 28 April 1843, fol. 31d.

<sup>83</sup> Honigmann, *The Kaska Indians*, 32-33.

trading posts after the breakup of ice on rivers and lakes.<sup>84</sup> Honigmann elaborated, writing, “during the summer months, travelers could use mooseskin boats, dugouts, bark canoes, or rafts.”<sup>85</sup> Watercraft and water travel was important both for travelling to trading posts and for hunting.

### 3.6.2 KEY RESEARCH FINDINGS

When geologist George Dawson arrived at Finlayson Lake in 1887, he noted that Indigenous peoples called it Tle-tlan'-a-tsoots.<sup>86</sup> As Dawson did not encounter any Indigenous peoples since departing Lower Post until he was approaching the Pelly River's confluence with the Yukon River, he likely learned this name from the Upper Liard Kaska.<sup>87</sup> This toponym for the Finlayson Lake indicates LFN use of the region.

During the 1920s, prospector Anton Money noted the use of skin boats for hunting in the Finlayson River watershed:

[T]hey had long ago mastered the technique of making remarkable and very serviceable skin boats of moose hide. The one this band used in crossing Frances Lake at the delta of the Finlayson was typical. About twelve feet long, it consisted of a light frame made from alder poles with three moosekins stretched over it. The skins were sewed together while green, stretched in place as tight as a drumhead, laced with rawhide, and allowed to dry. They shrank as they dried, and the finished boat was as waterproof as any canoe. So light that one man could lift it over his head or raise it up to a cache without effort, the boat could carry a ton of meat and

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<sup>84</sup> Honigmann, “Kaska,” 444.

<sup>85</sup> Honigmann, “Kaksa,” 444.

<sup>86</sup> Dawson, *Report on an Exploration in the Yukon District*, 117B.

<sup>87</sup> Dawson, *Report on an Exploration in the Yukon District*, 8B.

several people and still draw no more than a few inches of water. Empty, it rode the surface like a water spider. In a wind it was hard for one man to control, but apart from that it was a wonderful boat for hunting, fast and quiet, with no sound when waves slapped against the dried skins. On many occasions, using a wooden boat, I have known its noise to alert a moose. In the skin boat a hunter could drift almost on top of one without alarming it.<sup>88</sup>

### 3.7 TRAVEL CORRIDORS

#### 3.7.1 OVERVIEW

Many late nineteenth and early twentieth century observers of Indigenous travel patterns through southeast Yukon noted a lack of water travel. They suggested that overland travel was the preferred method of travel. For example, geologist George Dawson commented in 1887:

The Indians inhabiting the region in the south and east of the site of old Fort Selkirk are poor boatmen and follow the various rivers in the course of their periodic journeys to a very limited extent. Most of their travel routes appear, indeed, to run nearly at right-angles to the direction of drainage, the rivers being crossed in summer on rafts, the remains of which may frequently be observed. In travelling thus they carry their entire small camping outfit on their backs.<sup>89</sup>

These travel patterns were similarly observed by Warburton Pike and Anton Money.

In the 1920s, Anton Money established a gold mine in the Finlayson River region. During this process he gained insights into some to the travel corridors of Liard and Frances Lake Kaska. These insights were recorded in his memoir, *This Was the North*. Among these insights was their

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<sup>88</sup> Money, *This Was the North*, 107.

<sup>89</sup> Dawson, *Report on an Exploration in the Yukon District*, 21B.

preference towards overland travel between Lower Post and Frances Lake. During his first ascent of the Frances River, Money noted: “the Indians of this region did not travel the rivers. They preferred to go overland, on foot.” He elaborated on this statement: “these rivers were too savage and dangerous to serve as canoe routes.”<sup>90</sup> Money learned more about the trail between Frances Lake and Lower Post when he was told of the trading activities of the Frances Lake Kaska: “Caesar told me that there were to more men who belonged with the group, but they were off trading for salt, traps, and tea at Lower Post on the Liard. They had gone by way of the long mountain trail that followed the valley at the foot of the high slopes to the east, and they would return the same way, using small rafts to cross small streams. They were not expected back for another month.”<sup>91</sup>

Later, at Lower Post, Money learned the location of the trail:

From the Indians at the post I bought a supply of babiche, moose rawhide thongs for spare snowshoe webbing. From them I also learned the location of the trail used by the Frances Lake Indians when they came to the post to trade. It followed close to the foothills east of the Frances River, they told me, thus missing the steep cuts made by reeks running into the Frances. The trail wound north and northwest almost on a straight line to Frances Lake, a far more direct route than going up the Liard sixty miles to the Frances River and following that to the lake, as Amos and I had done.<sup>92</sup>

Travel corridors between the traditional territories of the RRDC and LFN were likely used by both groups. For example, according to Honigmann (1954) the “Pelly Indians” travelled “south

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<sup>90</sup> Money, *This Was the North*, 92.

<sup>91</sup> Money, *This Was the North*, 106-107.

<sup>92</sup> Money, *This Was the North*, 119.

to what is now called Albert or Cormier Creek, near Watson Lake. They made this journey in order to contact the Tahltan traders who after 1700 became middlemen carrying European trade goods inland from the Tlingit.”<sup>93</sup> There is also evidence that travel corridors between Frances Lake and the Liard River (and beyond) were used by the Kaska from the Dease River region.<sup>94</sup>

### 3.7.2 KEY RESEARCH FINDINGS

While being shown the location of galena veins in the Finlayson River watershed, Caesar – a member of the Frances Lake Kaska – also led Money along a trail through the region. This trail was about sixteen kilometres beyond the head of Frances Lake’s west arm: “A trail zigzagged up beside the creek, and we had walked only a short distance when the Indians pulled up and Caesar pointed to a place where the carpet of moss had been scraped off the ground.”<sup>95</sup> Additionally, the Frances Lake Kaska told Money of a trail leading from Frances Lake to Pelly Banks:

I had learned from the Indians back in the summer that there was a trading post over the divide on the Pelly River at Pelly Banks, some seventy-five miles by rough trail northwest of my cabin. It was one of a dozen scattered on the side streams of the Yukon basin, belonging to the Taylor & Drury Company, an outfit that had its headquarters and main store in Whitehorse.

The trail led up the Finlayson River, the Indians had said, along the northeast side of Finlayson Lake, and then down the creek to the Pelly. The trip would do the dogs good and would be a break for me.<sup>96</sup>

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<sup>93</sup> Honigmann, *The Kaska Indians*, 22.

<sup>94</sup> HBCA, Frances Lake Post Journal, B.73/a/b, 31 March 1844, fol. 24.

<sup>95</sup> Money, *This Was the North*, 109.

<sup>96</sup> Money, *This Was the North*, 132.

Gotthardt (1993) has also described a trail used by LFN in the Finlayson River region extending towards the Pelly River watershed: “This trail goes from the mouth of the Finlayson River overland along the river to the south side of Finlayson Lake (*Tetl’ane Joje*), then along the north side of Airport Lake and Campbell Creek to Pelly Banks on the Pelly River.”<sup>97</sup> According to Gotthardt the trail was called *Tú Désdés Tué* (Trail to Pelly River).<sup>98</sup> Money provided further evidence of travel between Frances Lake and Pelly Banks. While at Frances Lake during the 1920s, he met an individual who claimed to have helped Robert Campbell build Pelly Banks:

He was Dentiah, they said, and Indian word for ‘Old Chief.’ Chief Smith was a descendant of his, but we could not be sure which generation. In any case, the old man’s age was hard to believe. We learned that he and his son had helped to build the trading post at Pelly Banks, built by Robert Campbell for the Hudson’s Bay Company in 1842.<sup>99</sup>

Although Money recorded the wrong year for the construction of the HBC post at Pelly Banks, this nevertheless establishes a long history of travel between Frances Lake and Pelly Banks.

Gotthardt also noted the existence of a trail from Frances Lake to Pelly Lakes, passing through the Finlayson River and Lake region. This trail was known as *Tu Désdé Méné/Ges Méné*. Gotthardt recorded the route of the trail: “This trail follows the part of the route of the Pelly River trail from Frances Lake. At the confluence of Finlayson River and McEvoy Creek, just south of

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<sup>97</sup> Gotthardt, *Frances Lake*, 9.

<sup>98</sup> Gotthardt, *Frances Lake*, 9.

<sup>99</sup> Money, *This Was the North*, 105.

Finlayson Lake, the trail turns north and follows along the creek to just south of McEvoy Lake. From here, the trail passes through a valley to join Fortin Creek, following north to Fortin Lake (*Ghanje Méné*) and on to Pelly Lakes.”<sup>100</sup>

In 1887, while travelling past Finlayson Lake, geologist George Dawson searched for Indigenous trails. While he failed to locate a trail, he did see signs of previous Indigenous occupancy in the vicinity:

Track surveyed up lake along SW shore, examining carefully for signs of Indian camps or anything which might indicate trail. Found at length the old H.B. Cache in a rotten state. Evidently the point at which they struck the lake, but no sign of trail & Indians certainly do not now come out at same place. A little further up lake, however, numerous Indian signs, chipping etc, but mostly a number of years old. Probably that if any trail beaten we shall fall upon it without much trouble before getting far inland.<sup>101</sup>

As Dawson made his way towards Pelly Banks, he commented further on his conviction that an Indigenous trail would lead to the Pelly River: “A somewhat blind lead thus to follow straight across country to Pelly, & feel convinced that the Indians have some easier route which they now follow instead of the old H.B. road, which evidently abandoned.”<sup>102</sup> Dawson also had a sketch map depicting a portage trail between the Frances Lake and River watershed and the Pelly River

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<sup>100</sup> Gotthardt, *Frances Lake*, 9.

<sup>101</sup> McGill University Archives, George Mercer Dawson fonds, MG 1022 C82 item 59 Diary 1887, 26 July 1887.

<sup>102</sup> McGill University Archives, George Mercer Dawson fonds, MG 1022 C82 item 59 Diary 1887, 27 July 1887.



watershed (Figure 5). As Dawson had not met any Indigenous peoples on the upper Pelly River,<sup>103</sup> he likely learned about this trail from the Kaska of Lower Post.



**Figure 5: Sketch Map Depicting Indigenous Portage Between Frances Lake and Pelly River**

Source: Library and Archives Canada, RG 45, Accession 912020, Item 13.

### **3.8 CONCLUSIONS**

As this report demonstrates, LFN have historically participated in a diverse array of land use activities in the Regional Study Area. Primary source evidence from the late nineteenth and early twentieth centuries provide evidence of hunting activities. Evidence of hunting activities is further supported by ethnographies, previous TLU reports, and other studies which elucidate certain aspects of LFN hunting activities. There is also a great amount of historical evidence

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<sup>103</sup> Dawson, *Report on an Exploration in the Yukon District*, 201B.

demonstrating LFN trapping activities. Written evidence of LFN trapping activities dates back to the 1840s, as the HBC established trading posts within LFN traditional territory. Further evidence of trapping activities is provided in the narratives of late nineteenth and early twentieth century sport hunters and prospectors. Similar evidence has also demonstrated fishing, plant use, and limited use of water courses for transport in the Regional Study Area. Finally, primary sources demonstrate that many transportation corridors existed in the region.

## **Mr. Glenn Icton (ABD)**

Mr. Glen Icton is a Canadian born academic involved in research and lecturing, currently working at the University of Saskatchewan. Mr. Icton's fields of expertise cover Environmental History, Comparative Aboriginal History and Northern Canadian History. He is currently working on a PhD at the University of Saskatchewan, titled: "Defining Space: How History has Shaped and Informed Notions of Kaska Land Use and Occupancy".

Mr. Icton has written, reviewed, refereed and presented numerous articles in his fields of study, including the following:

### **Refereed Articles**

Co-authored with Michelle Desveaux, Patrick Chassé, Anne Janhunen, and Omeasoo Wāhpāsiw, "Twenty-First Century Indigenous Historiography: Twenty-Two Must-Read Books," *Canadian Journal of History* 50, no. 3 (Winter 2015): 524-548.

'Many Families of Unseen Indians': Trapline Registration and Understandings of Aboriginal Title in the BC-Yukon Borderlands," *BC Studies* 201 (Spring 2019) [forthcoming].

### **Non-Refereed Book Chapters**

"Missionaries." In *Qikiqtaryuk: a natural and cultural history of Yukon's Arctic island*. Calgary: University of Calgary Press, 2012.

### **Roundtable Contributions**

"Trapped by Geography in the BC-Yukon Borderlands." *Historical Geography* 45 (2017): 113-116.

### **Book Reviews**

Review of *Law of the Yukon: A History of the Mounted Police in the Yukon* by Helene Dobrowolsky. *The Northern Review* 38 (2014): 305-308.

Review of *The Last Patrol: Following the Trail of the Royal Northwest Mounted Police's Legendary Lost Patrol* by Keith Billington. *The Northern Review* 38 (2014): 302-305.

Review of *The Kandik Map* by Linda Johnson. *The Northern Review* 34 (Fall 2011): 100-102.

### **Workshop Papers**

"Colonizing and Decolonizing the Past: Indigenous Land Claims, Remembrance, and Historical Representations in the Yukon," Canadian History and Environment Summer Symposium, Saskatoon, Saskatchewan, June 1-2, 2018.

## **Conference Papers**

“Traplines, Pipelines, and Storylines: Histories at the Intersection of Local and Land Use and Global Resource Development,” American Society for Environmental History, Columbus, Ohio, April 10-14, 2019 (upcoming).

“Assessing Environmental Social Justice: Indigenous Participation in Environmental Impact Assessments in the Yukon-British Columbia Borderlands,” Canadian Historical Association Annual Conference, Regina, Saskatchewan, May 28-30, 2018.

“Assessing the Past: Environmental Impact Assessments and Contested Historical Narratives in the Yukon Territory,” American Society for Environmental History, Riverside, California, March 14-18, 2018.

Roundtable presentation on the theme of extraction and jurisdiction, Canadian Association of Geographers, Toronto, Ontario, May 29-June 2, 2017.

“Trapping the Indigenous Trapper: Trapline Registration and Understandings of Aboriginal Title in the BC-Yukon Borderlands,” BC Studies, Nanaimo, British Columbia, May 4-6, 2017.

“Across the Line: Cross-Border Effects of Trapline Registration in Northern British Columbia and the Yukon,” American Society for Environmental History, Chicago, Illinois, March 29-April 2.

“Contested Claims, Contested Stories: Land Claims and Historical Representations in the Yukon, 1973-1993,” Canadian Historical Association Annual Conference, Calgary, Alberta, May 30-June 1, 2016.

“Trapline Registration and Constructing Land Use: A Spatial History of Kaska Land Use in the Early to Mid-Twentieth Century,” American Society for Environmental History, Seattle, Washington, March 30-April 3, 2016.

“Narrating the Past and Future of Indigenous Land Use: State and Ethnographic Understandings of Kaska Land Use during the Early 20th Century,” American Society of Ethnohistory Annual Conference, Las Vegas, Nevada, November 4-8, 2015.

“‘It was commencing to get wintery’: Ethnographic Field Work, Transportation, and Seasonality in the Yukon-BC Borderlands From the Early to Mid-Twentieth Century,” British Association for Canadian Studies 2015 Conference, London, England, April 23-25, 2015.

“Land Use, Dispossession, and Repossession: Ethnography, State Knowledge, and Aboriginal Title Along the Yukon-British Columbia Border,” Under Western Skies 3, Mount Royal University, Calgary, Alberta, September 9-12, 2014.

“Buying Local: Changes in Athapaskan Material Culture and the Commodification of Wildlife in Northern Yukon, 1860-1910,” Place and Replace: A Joint Meeting of Western Canadian Studies and St. John’s Collee Prairies Conference, Winnipeg, Manitoba, September 16-18, 2010.

“Profits and Prophets: The Impacts of Exchange in the Northern Yukon on Shamanism and Wildlife Management,” Northern Environmental History Workshop, Whitehorse, Yukon, June 11-15, 2009.

“On the Other Side of the ‘Long Chalk’: Intersecting Fur Trading Dynasties in Russian America,” Canadian Historical Association Annual Conference, Ottawa, Ontario, May 24-27, 2009.

### **Conference Posters**

“I Shall Get You Any Curiosity Worth While: Collecting Biases in Material Exchange in the Artifact Trade in the Northern Yukon, 1860-1910,” American Society for Environmental History, Washington, DC, March 18-22, 2015.

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- |           |   |
|-----------|---|
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| 2017-2018 | Graduate Research Fellowship in Scholarly Publishing (\$18,000 CAD)   |
| 2015-2016 | Teacher Scholar Doctoral Fellowship (\$19,500 CAD)  |
| 2014-2017 | Social Sciences and Humanities Research Council of Canada, Joseph Armand Bombardier Scholarship (\$105,000 CAD) |
| 2012-2014 | A.S. Morton Scholarship (\$18,000/year CAD)   |
| 2008-2009 | Social Sciences and Humanities Research Council of Canada, Canada Graduate Scholarship (\$17,500)               |
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| 2007-2008 | Eleanor Luxton Historical Foundation Graduate Scholarship (\$5000)  |

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- |      |  |
|------|--|
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| 2018 | HTST 345, Canadian Native History. Taught at University of Calgary, Fall (currently teaching). |
| 2018 | HTST 345, Canadian Native History. Taught at University of Calgary, Winter.                    |
| 2018 | HTST 443, The Métis People of Canada. Taught at University of Calgary, Winter.                 |

- 2017 Hist 255, Canadian History from the Pre Contact Period to 1867. Taught at University of Saskatchewan, Fall.
- 2017 Hist 125.3, History Matters – Colonization and Indigenous Sovereignties in the Circumpolar North. Taught at University of Saskatchewan, Spring.
- 2016 Hist 395, Northern Resource Development and Aboriginal Rights: An Environmental History. Taught at University of Saskatchewan, Winter.

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- 2018 Project: Klondike Gold Rush  
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University of Saskatchewan, Johnson Shoyama School of Public Policy, Dr. Ken Coates
- 2016 Project: Geographic and Financial Analysis of First Nations and non-First Nations  
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#### **Geographic Information Systems (GIS) Work**

- 2015 Project: Mi’kmaq Cultural Values Survey  
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#### **Other Research Experience**

- 2011-2012 Contract Researcher, Yukon Government, Executive Council Office, Land Claims Implementation Secretariat.
- 2011 Auxiliary Researcher, Yukon Government, Executive Council Office, Land Claims Implementation Secretariat.

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# **KUDZ ZE KAYAH PROJECT**

## **INDEPENDENT STUDY OF ROSS RIVER DENA COUNCIL LAND USE STUDY**

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March 2019

Prepared by Glenn Iceton (MA), PhD Candidate, Department of History, University of Saskatchewan

**Prepared for: BMC Minerals (No.1) LTD**

Research Assistants:

Frances Reilly, PHD

Erin Spinney, PHD

## **EXECUTIVE SUMMARY**

The following is a research report into the land use and occupancy of the Ross River Dena Council (RRDC) in the vicinity of the proposed Kudz Ze Kayah mine. This study examines a diverse array of land uses in this region including hunting, trapping, fishing, plant use, water use, and transportation corridors. This report is written in conjunction with two other reports. One report examines the land use patterns of the Liard First Nation (LFN) in the vicinity of the proposed Kudz Ze Kayah mine. The other study examines both LFN and RRDC land use and occupancy along the Robert Campbell Highway (between kilometre 0 and 232).<sup>1</sup> When necessary, I have cross referenced the three reports. From this report, certain conclusions can be reached regarding RRDC land use:

- RRDC have a long and well documented history of hunting, trapping, and fishing in the region surrounding the mine site.
- Beginning with the registration of individual traplines, and continuing with group traplines, the region has predominantly been trapped by members of the RRDC.

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<sup>1</sup> BMC, *Independent Study of Liard First Nation Traditional Land Use*, (BMC, 2019); BMC, *Independent Study of Kaska Land Use Along the Robert Campbell Highway*, (BMC, 2019).



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## LIST OF ACRONYMS

<b>Acronym</b>	<b>Definition</b>
BMC	BMC Minerals (No 1.) Ltd.
RRDC	Ross River Dena Council
LFN	Liard First Nation

## GLOSSARY

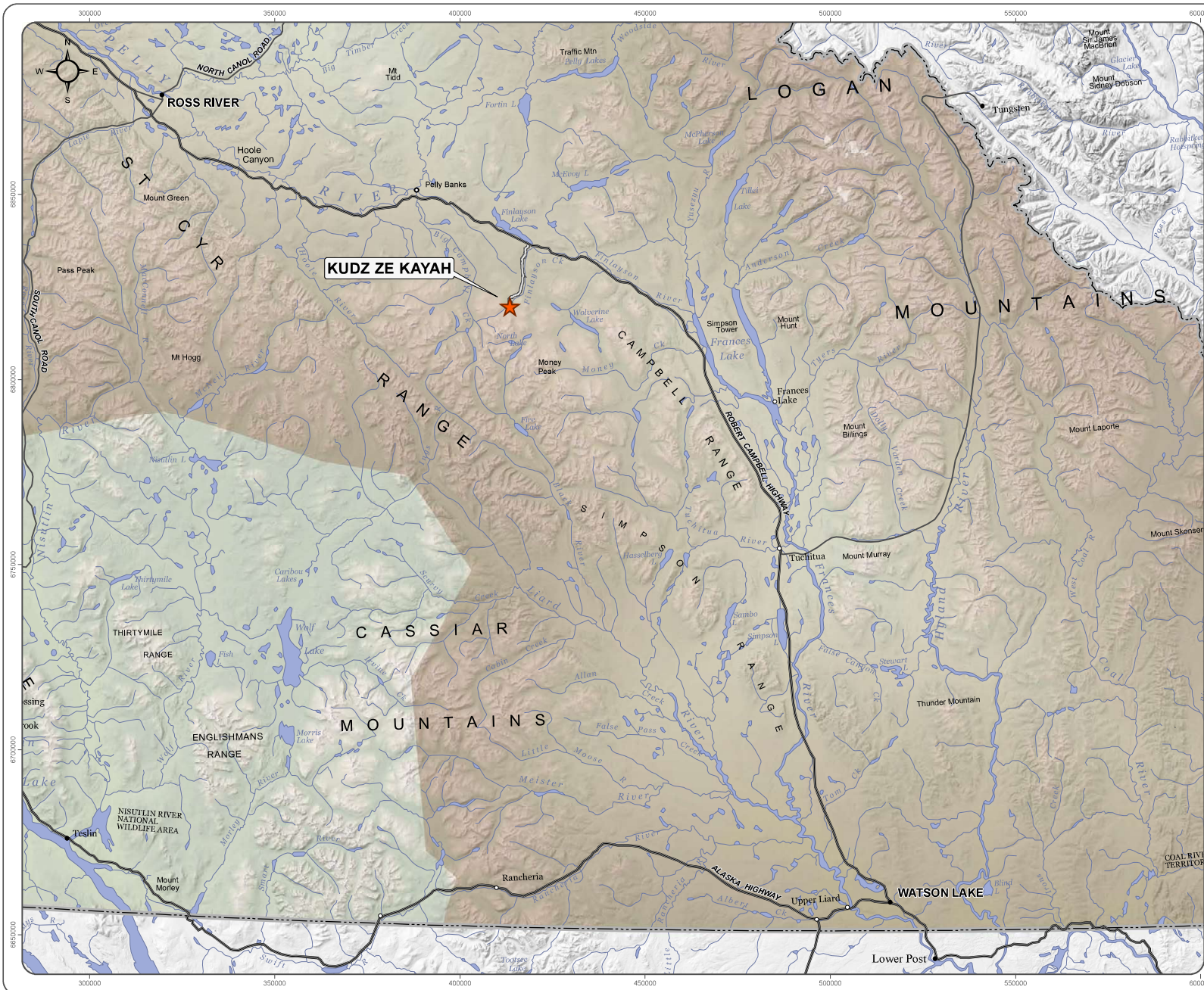
<b>Term</b>	<b>Definition</b>
<b>Primary Source</b>	A primary source is a first-hand account of the event or process in question. Primary sources might include, but are not limited to, journals, correspondence, historical maps, memoirs, ethnographies, fieldnotes, and oral histories.
<b>Secondary Source</b>	Secondary sources are works that synthesize and analyze primary source evidence. Secondary sources include books, articles, theses, and reports which build upon primary source evidence.
<b>Toponym</b>	A place name, particularly related to a geographic feature.

## **1. INTRODUCTION**

BMC Minerals (No 1.) LTD (BMC) proposes to develop the Kudz Ze Kayah mine (the Project) approximately 115 km southeast of Ross River. The proposed Project is located within an area overlapping with Kaska Traditional Territory (Ross River Dena Council and Liard First Nation). Figure 1-1 illustrates the location of the Project with respect to the Kaska Traditional Territory and surrounding communities.

Access to the Project is via a 24 km existing single lane gravel Tote Road that connects the Project to the Robert Campbell Highway. The Project is expected to employ a permanent workforce of approximately 300 people during operations, with a nominal mine life of ten years, extracting approximately 180,000 tonnes of zinc, 35,000 tonnes of copper, and 25,000 tonnes of lead annually. Plans for the Project include a combined open pit and underground mine, various mining and processing facilities, ancillary buildings, and upgrades to an existing Tote Road extending from the Robert Campbell Highway to the Project site.

The purpose of this report is to document the collection and summarise the findings of Ross River Dena Council (RRDC) Traditional Land Use (TLU) data pertaining to the Project. The report begins with an overview of the methods used to collect the traditional use information, followed by the results of the research which includes summaries of the traditional land uses of hunting, trapping, fishing, plant use, and travel corridors.



**KUDZ ZE KAYAH PROJECT**

**FIGURE 1-1  
PROJECT LOCATION**

NOVEMBER 2016



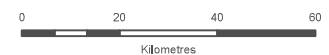
- Kudz Ze Kayah Project
- Kaska Dena First Nation (Ross River and Liard) Traditional Territory



Digital elevation model created by the Yukon Department of the Environment interpolated from the digital 1:50,000 Canadian National Topographic Database (NTDB Edition 2) contour and watercourse layers. Obtained from Geomatics Yukon.  
 Canoes compiled by Natural Resources Canada at a scale of 1:10,000-1:50,000. Reproduced under license from Her Majesty the Queen in Right of Canada, as represented by the Minister of Natural Resources Canada. All rights reserved.  
 Drainage areas obtained from National Hydrology Network 2011

Datum: NAD 83, Projection: UTM Zone 8N  
 This drawing has been prepared for the use of Alexco Environmental Group Inc. a client and may not be used, reproduced or sold again by third parties, except as agreed by Alexco Environmental Group Inc. and its client, as required by law or for use of governmental reviewing agencies. Alexco Environmental Group Inc. accepts no responsibility and denies any liability.

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 (Last edited by: mcolbourne 15/03/2016 05:07 AM)

## **2. METHODOLOGY**

### **2.1 STUDY AREA**

Two study areas were selected to conduct the desk-based research. The Local Study Area includes the parts of the Kaska Traditional Territory that directly overlap with or are within 1 km the proposed Project. The Regional Study Area generally covers the areas from Frances Lake to Ross River within 100 km of the Project site. The rationale for a large area is based on considerations of human and wildlife movements, species with the largest habitat range, and natural landform barriers. Furthermore, while RRDC land uses may occur in different parts of their territory, they are inextricably linked by travel and seasonal rotation. For example, one area of the territory may be overhunted or become developed, which may shift the RRDC land use to another part of their territory. While past human activity was heavily influenced by terrain, including constraints of naturally occurring barriers (e.g., major mountain ranges, watersheds, ecosystems), modern-day equipment and technology (such as motorized vehicles) allows RRDC citizens to transcend these barriers. An additional reason for the large Regional Study Area is the nature of primary sources that provide insights into TLU. Many primary sources are not geographically precise. Consequently, it is necessary to consider TLU within the broader region.

### **2.2 DATA SOURCES**

This report contains the results of desk-based research, including compiling and summarizing publicly-available primary data sources. For the purpose of this study, primary data sources are first hand or eye witness accounts of RRDC traditional land use. These primary data sources include a wide variety of materials including:

- Journals from Hudson Bay Company (HBC) fur trading posts;
- Yukon government trapline registration records;
- Trapline maps;
- Other government records;

- Travel narratives;
- Published oral histories; and
- Published ethnographies.

These primary data sources are complemented by secondary source materials including published TLU reports, Environmental Assessment documents, archaeological surveys, and published scholarly works. Additionally, GIS has been used to analyse spatial primary data sources, such as trapline maps, and visually represent traditional land use in reference to the Project site.

### **2.3 REVIEW OF LITERATURE**

Sources used in the research included (but are not limited to): HBC journals, travel narratives of individuals who travelled through the traditional territories of RRDC and LFN. These include geologist George Dawson and sportsman Warburton Pike. Additionally, government records relating to trapline registration have been used to elucidate trapping activities. These sources have been used in conjunction with anthropological literature and other secondary source materials in order to ascertain a full picture of land use and occupancy.

As nomenclature relating to Indigenous peoples has changed since the HBC established posts at Frances Lake and Pelly Banks, the terms Ross River Dena Council and Liard First Nation do not appear in the historical and ethnographic literature. I have used historical terminology and – when the relation to current terminology is unclear – I have made inferences into how historical terms relate to modern

terminology. Thus, to the best of my ability, I have separated the research results for RRDC traditional land use from that of LFN traditional land use which is reported under a separate cover.<sup>2</sup>

As mentioned above, terminology used by Europeans and Euro-Canadians in reference to Indigenous peoples has changed with time. Consequently, it is necessary to discuss historical and ethnographic terminology and how terms used in the past relate to the contemporary RRDC and LFN. HBC fur traders were the first people to produce written records relating to the Kaska in the Yukon. As the HBC traders contacted different Kaska groups, they used different terms. For example, “Mauvais Monde” was used in reference to the Kaska that the HBC encountered and traded with on the upper Liard River.<sup>3</sup> Meanwhile, Indigenous peoples who traded at Frances Lake Post were referred to in the post journals as “Gens grand d’eau”.<sup>4</sup> This term translates to mean “People of the Big Water.” This is similar to “Big Water Dwellers” (Tu’tcogtena) one of the terms identified by anthropologist John Honigmann as applying to the Frances Lake Kaska.<sup>5</sup> Indigenous peoples from the Pelly River region were generally referred to as “Pelly Indians,” people “from beyond the peoples mountains,” or “Gens de couteau” (Knife Indians in Robert Campbell’s published journals).<sup>6</sup> Additionally, the post journals at Pelly Banks refer to the “Mountains

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<sup>2</sup> BMC, *Independent Study of Liard First Nation Traditional Land Use*.

<sup>3</sup> Hudson’s Bay Company Archives (HBCA), Frances Lake Post Journal, B.73/a/1, 2 September 1842, fol. 8.

<sup>4</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 4 November 1843, fol. 11d.

<sup>5</sup> Honigmann, *The Kaska Indians: An Ethnographic Reconstruction*, (New Haven: Human Relations Area Files Press, 1954), 20.

<sup>6</sup> See for example, HBCA, Frances Lake Post Journal, B.73/a/1, 17 December 1842, fol. 19d.



Indians,” Indigenous who arrived from the mountain range separating the Pelly River and Mackenzie River watershed.

During the late nineteenth and early twentieth centuries, terminology used by Euro-Americans and Euro-Canadians generally referred to the region the respective Indigenous group inhabited. For example, in the Lower Post region and contiguous sections of the Yukon, Indigenous peoples were referred to as “Upper Liard Kaska” or “Liard Indians.”<sup>7</sup> Further north, in the vicinity of Frances Lake, Indigenous peoples were generally referred to as “Frances Lake Kaska” or “Frances Lake Indians.”<sup>8</sup> Basing his analysis on a 1926 RCMP report, Honigmann noted that there was a distinction between the Upper Liard Kaska and Frances Lake Kaska.<sup>9</sup> Finally, the Indigenous peoples of the upper Pelly River were referred to as the “Pelly Indians” or “Pelly River Indians.”<sup>10</sup> Curiously, Honigmann did not classify them as Kaska in spite of the fact that one of his informants had drawn attention to their close linguistic association with the Frances Lake Kaska.<sup>11</sup> Honigmann’s failure to connect the Indigenous peoples of the Pelly River region more broadly with the Kaska might be attributed to the fact that he did not visit Ross River.<sup>12</sup> It should also be noted that while Euro-American and Euro-Canadian travelers who traversed through the Frances Lake

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<sup>7</sup> Honigmann, *The Kaska Indians*, 19; Warburton Pike, *Through the Subarctic Forest: A Record of a Canoe Journey from Fort Wrangel to the Pelly Lakes, and Down the Yukon River to the Behring Sea*, (London: E. Arnold, 1896), 98.

<sup>8</sup> Honigmann, *The Kaska Indians*, 20; Anton Money, with Ben East, *This Was the North*, (New York: Crown Publishers, 1975), 100 and 119.

<sup>9</sup> Honigmann, *The Kaska Indians*, 20.

<sup>10</sup> Pike, *Through the Subarctic Forest*, 120.

<sup>11</sup> Honigmann, *The Kaska Indians*, 22.

<sup>12</sup> Honigmann, *The Kaska Indians*, 5-6.

region encountered “Pelly Indians” in the vicinity, they made a distinction between the “Pelly Indians” and the Frances Lake Kaska.<sup>13</sup> During the early 20<sup>th</sup> century, Ross River trader Poole Field was told of a massacre of the “Pellys” said to have occurred in 1886, resulting in few survivors. He went on to state that some Indigenous peoples from the Liard region moved northward to occupy the upper Pelly River region.<sup>14</sup> Summing up the situation, Field wrote: “The Center Indians from that time on gradually moved into the Pelly country and claimed it as theirs, also claiming a right to the country they had left at the head waters of the Liard.”<sup>15</sup> This has led some scholars to suggest that the Indigenous peoples in the upper Pelly River during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries were distinct from the “Knife Indians” described by Campbell during the 1840s.<sup>16</sup> However, this position does not account for the distinct “Pelly Indian” identity that Pike witnessed in 1893, six years after the incident.

With respect to how early ethnographic divisions relate to contemporary First Nations, references to “Pelly Indians” have been assumed to relate to the ancestors of RRDC. Meanwhile, information relating to the Upper Liard Kaska and Frances Lake Kaska has been assumed to relate to the ancestors of LFN. This is based on the amalgamation of the Watson Lake and Frances Lake bands in 1961.<sup>17</sup> It should be noted,

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<sup>13</sup> Pike, *Through the Subarctic Forest*, 137.

<sup>14</sup> Poole Field, “The Poole Field Letters (1913),” *Anthropologica* 4 (1957) 48-49.

<sup>15</sup> Field, “The Poole Field Letters,” 49.

<sup>16</sup> Glenda Denniston and Carter Denniston, “A Preliminary Report on Ross River, an Athapaskan Community,” (Unpublished manuscript, 1965) 4.

<sup>17</sup> Kaska Dena Council v. Yukon (Government of), 2019 YKSC 13, 7-8; Library and Archives Canada (LAC), RG 10, Accession V1998-00301-9, Box 1, File 801/1-1-2, W.C. Bethune memorandum to Assistant Indian Commissioner for BC, 3 May 1961.

however, that distinctions between LFN and RRDC are not always so easily made. As noted by historian Ken Coates, LFN also includes individuals from Ross River.<sup>18</sup> Coates has also noted, Indian Affairs encouraged Ross River residents to move to Upper Liard.<sup>19</sup> Additionally, it should be noted that some Frances Lake Kaska families moved to Ross River.<sup>20</sup> Personal communications with an RRDC Elder<sup>21</sup> have also advised that the distinctions between LFN and RRDC are not always so easily made when interpreting the historical trapping records, as many families from the Ross River region and region around the proposed Kudz Ze Kayah mine moved to Lower Post, Upper Liard and Watson Lake to be close to their children that had been sent to residential school. When they moved they became Upper Liard members and then several years later when they moved back north to the Ross River region they then became RRDC members.

## **2.4 REVIEW OF PREVIOUS DOCUMENTS PREPARED BY BMC**

Appendix F-3 of BMC's Project Proposal for the Kudz Ze Kayah mine included a comprehensive "*Kaska Ethnographic Overview of the Kudz Ze Kayah Project.*"<sup>22</sup> In addition, BMC's Response Report #4<sup>23</sup> was peppered with LFN and RRDC traditional land use information. Both reports were reviewed for relevant TLU information related to the Robert Campbell Highway.

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<sup>18</sup> Kaska Dena Council v. Yukon (Government of), 2019 YKSC 13, 7.

<sup>19</sup> Ken Coates, *Best Left as Indians: Native-White Relations in the Yukon Territory, 1840-1973*, (Montreal & Kingston: McGill-Queen's University Press, 1991), 212.

<sup>20</sup> Denniston and Denniston, "A Preliminary Report on Ross River," 4.

<sup>21</sup> Confidential. 2019. Personal Communication, RRDC Elder.

<sup>22</sup> BMC, 2017. *Kudz Ze Kayah Project Proposal to YESAB Executive Committee*. March 2017.

<sup>23</sup> BMC, 2018. *Kudz Ze Kayah Project, Response Report #4 to YESAB Executive Committee Adequacy Review of KZK Project Proposal*. December 14, 2018.

## 2.5 DATA LIMITATIONS

While not perfect sources, HBC journals provide important insights into Indigenous land use and occupancy, including RRDC land use in the vicinity of the proposed Project. While these sources do not always provide precise geographical locations of hunting, trapping, and fishing activities, they nevertheless provide a general understanding of land use in the region.

An additional element that needs to be considered when analyzing HBC records is the effect of epidemic diseases which spread with the advance of the fur trade. These epidemics affected Indigenous land use patterns. For example, in January 1844 it was noted at Frances Lake Post that “a Stranger arrived from beyond Finlayson’s Lake with no very cheering News – The Indians in that quarter are still labouring under the effects of that Malady which spread among them last fall.”<sup>24</sup>

Ethnography is a form of study that presents degrees of qualitative and quantitative descriptions of human social phenomena, which are gathered during fieldwork and observations of human groups. RRDC have had several main ethnographers who lived with and observed them. Ethnographic sources are an important source of cultural and historical context and allow the comparison of different information over time. However, ethnographic data and observations also have limitations and should not be considered conclusive. Ethnographic accounts are criticized as they were overwhelmingly recorded by Euro-Canadians in the late 1880s through to the mid-1900s, who were largely informed by a western worldview. In some instances, ethnographers have specific agendas and preconceived notions of the people and communities they encounter, which skew the information and call into question some, if not many, of their observations

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<sup>24</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 7 January 1844, fol. 17-17d.

and interpretations. However, their accounts often provide an important snapshot of daily life, social and political structures and subsistence methods employed by Kaska people, especially at the turn of the twentieth century.

Government records related to trapline registration have also been used to assess RRDC traditional land use. However, these records can also be suspect. Trapline maps potentially distill more complicated forms of land use to a simple tract of land. Additionally, similar to ethnographic works, government records are produced through a Eurocentric lens. Consequently, these records may misrepresent or misunderstand certain aspects of Kaska land use.<sup>25</sup>

### **3. RESULTS**

#### **3.1 KEY TRADITIONAL LAND USE AREAS**

The focus of this research is on the RRDC traditional land use in the vicinity of the proposed Kudz Ze Kayah Project. The key traditional use areas in the vicinity of the Project are summarized in Table 3-1 and their locations are presented in Figure 3-1. These areas will be frequently referenced throughout this report.

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<sup>25</sup> See Glenn Ice-ton, "Trapped by Geography in the BC-Yukon Borderlands." *Historical Geography* 45 (2017): 113-116.

**Table 3-1: Summary of Key Traditional Use Areas in the Vicinity of Kudz Ze Kayah**

ENGLISH NAME	KASKA NAME (SOURCE)	APPROXIMATE DISTANCE FROM THE KZK PROJECT
North Lakes	<i>Ihts'I Ba Mene'</i> – meaning north Wind lake <sup>26</sup>	5 km South
Finlayson Creek	<i>Luge Destie Tue</i> – meaning Fish creek	5 km North West
Wolverine Lake	<i>Negha Mene</i> – meaning Wolverine lake <sup>27</sup>	15 km East
Money Peak	Possibly <i>Tse Nehtsat</i> [Pelly dialect] and <i>Gucha Dedie Hes</i> [Liard dialectic] <sup>28</sup>	14 km South East
Big Campbell Creek	<i>Tanidzi</i> – meaning in the middle <sup>29</sup>	12 km West
Finlayson River	N/A	20 km North
Finlayson Lake	<i>Tet'ane Joje</i> <sup>30</sup>	20 km North
Money Creek	<i>Il-es-too-a</i> <sup>31</sup>	20 km South East
Pelly River	N/A	45 km North West
Fire Lake	N/A	30 km South
Frances Lake	<i>Tu Cho</i> – meaning big water	50 km East
Frances River	N/A	75 km South East
Pelly Banks	N/A	45 km North West
Simpson Tower	<i>Tenidze</i> <sup>32</sup>	60 km East
Trail to Pelly River	<i>Tú Désdés Tué</i> <sup>33</sup>	
Trail from Frances Lake to Pelly Lakes	<i>Tu Désdé Méné/Ges Méné</i> <sup>34</sup>	
Fortin Lake	<i>Ghanhe Méné</i> <sup>35</sup>	

<sup>26</sup> Mary Charlie in Douglas Rutherford, *Archaeological Reconnaissance of the Kudz Ze Kayah Project, Central Yukon, Phases 1 and 2*, (Vancouver: Norecol, Dames & Moore; Ross River: Ross River Dena Council; Whitehorse: Heritage Branch, Government of Yukon, 1995), 29.

<sup>27</sup> Charlie in Rutherford (1995), *Archaeological Reconnaissance*, 29.

<sup>28</sup> Charlie in Rutherford (1995), *Archaeological Reconnaissance*, 34-35.

<sup>29</sup> Charlie in Rutherford (1995), *Archaeological Reconnaissance*, 34.

<sup>30</sup> R. Gotthardt, *Frances Lake: Traditional and Archaeological Sites*, (Liard First Nation, 1993), 7.

<sup>31</sup> Fenley Hunter, *Frances Lake, Yukon*, (Flushing, NY: Marion Press, 1924).

<sup>32</sup> Gotthardt, *Frances Lake*, 1.

<sup>33</sup> Gotthardt, *Frances Lake*, 9.

<sup>34</sup> Gotthardt, *Frances Lake*, 9.

<sup>35</sup> Gotthardt, *Frances Lake*, 9.

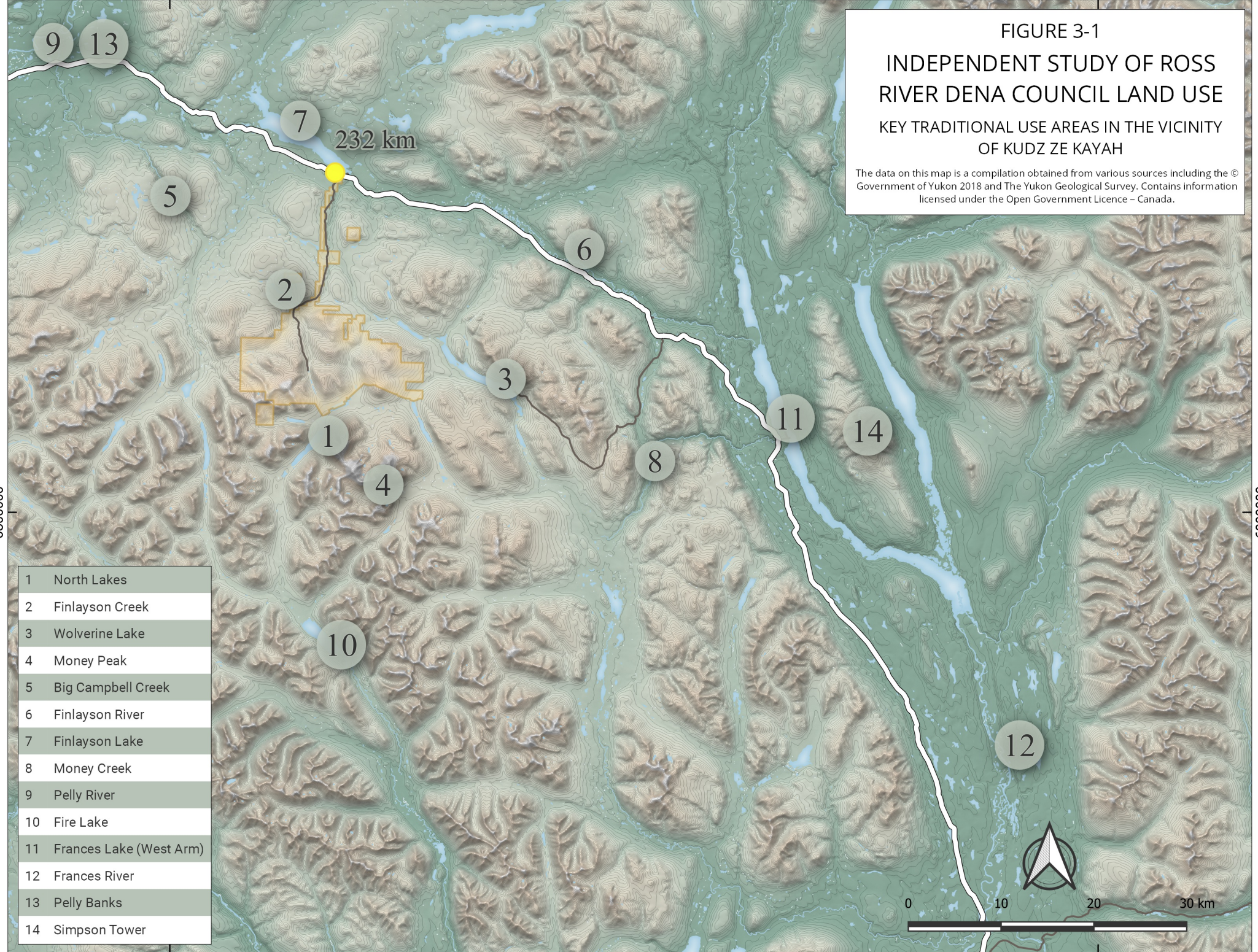


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**FIGURE 3-1**  
**INDEPENDENT STUDY OF ROSS RIVER DENA COUNCIL LAND USE**  
**KEY TRADITIONAL USE AREAS IN THE VICINITY**  
**OF KUDZ ZE KAYAH**

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.



- 1 North Lakes
- 2 Finlayson Creek
- 3 Wolverine Lake
- 4 Money Peak
- 5 Big Campbell Creek
- 6 Finlayson River
- 7 Finlayson Lake
- 8 Money Creek
- 9 Pelly River
- 10 Fire Lake
- 11 Frances Lake (West Arm)
- 12 Frances River
- 13 Pelly Banks
- 14 Simpson Tower

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## **3.2 HUNTING**

### **3.2.1 OVERVIEW**

Regarding animal species in the Ross River region, in his Masters thesis on Ross River Dena land use Peter Dimitrov identified seven broader species categories: ungulates, bears, fur mammals, small game mammals, upland game birds, waterfowl, and fish. Among the ungulates Dimitrov identified moose, caribou, Dall sheep, and mountain goat. Among the bears he identified black and grizzly bears. Among the fur mammals he identified beaver, lynx, marten, mink, weasel, otter, wolverine, red fox, wolf, coyote, muskrat, and red squirrel. Among the small game mammals he identified hoary marmot, Arctic ground squirrel, porcupine, and snowshoe hare. Among the upland birds he identified blue grouse, spruce grouse, ruffed grouse, sharp-tailed grouse, willow ptarmigan, rock ptarmigan, and white-tailed ptarmigan. Among the waterfowl he identified lesser Canada goose, lesser snow goose, sandhill crane, whistling swan, mallard, pintail, green-winged teal, American widgeon, shoveler, canvasback, greater scaup, lesser scaup, common goldeneye, Barrow's goldeneye, bufflehead, harlequin duck, white-winged scoter, surf scoter, common merganser, and red-breasted merganser. Finally, among the fish species he identified lake trout, broad whitefish, lake whitefish, round whitefish inconnu, grayling, pike (jackfish), longnose sucker, white sucker, burbot (ling cod), chinook salmon (king salmon), and chum salmon (dog salmon).<sup>36</sup> Martin Weinstein has noted that moose are an extremely important resource to the Ross River Dena. Additionally, he has noted the importance of furbearers, Pacific salmon, and small game to the Ross River Dena economy.<sup>37</sup>

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<sup>36</sup> Dimitrov, "A Northern Band's Mode of Production and its Articulation with the Multinational Mode," 32.

<sup>37</sup> Weinstein, "The Ross River Dena," 11.



### 3.2.2 KEY RESEARCH FINDINGS

In 1845, following the establishment of the HBC trading post at Pelly Banks, Indigenous people traded meat to the post. For example, on 7 January 1846, Robert Campbell wrote, “Le Grant Toton arrived with three other Indians. They brought a little meat, but no furs.”<sup>38</sup> A similar transaction was recorded on 7 February 1846.<sup>39</sup> The trading of meat at the post indicates hunting in the region.

Writing about the patterns of Ross River Dena hunting as well as the paucity of historical records describing their hunting practices, Dimitrov wrote:

Unfortunately [Robert] Campbell’s and other explorers’ journals do not provide much information about Indian people on the Upper Liard and Pelly Rivers. What is known of those days is largely the result of information obtained from present day Ross River Indian Elders. According to their stories, the forefathers of the present day Ross River Indians were a hunting-gathering band society and extended family groups highly mobile throughout their territory. Livelihood was dependent on moose, caribou, small game and other dispersed animal resources and as a consequence dispersal of the human population was required to harvest resources.<sup>40</sup>

This statement points to the fact that failures to mention Ross River Dena harvesting activities in the historical literature does not necessarily mean the absence of wildlife harvesting activities. Moreover, it provides insights into Ross River Dena land use patterns.

Dimitrov also wrote about the effects of road construction on Ross River Dena hunting activities. In particular, he addressed how the reopening of the North and South Canol Roads and the

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<sup>38</sup> LAC, Robert Campbell fonds, MG 19, A 25, “Journal of Occurrences at Pelly Banks,” 7 January 1846.

<sup>39</sup> LAC, Robert Campbell fonds, MG 19, A 25, “Journal of Occurrences at Pelly Banks,” 7 February 1846.

<sup>40</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 36.

construction of the Robert Campbell Highway affected hunting. These impacts included both positive and negative effects. On the positive side, Dimitrov noted that the Ross River Dena had easier access to “bush camps.” However, Dimitrov also noted that increased road access resulted in an increase presence of “outsiders.”<sup>41</sup> The following maps show hunting activities before and after the construction of the Cyprus-Anvil Mine.

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<sup>41</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 47.

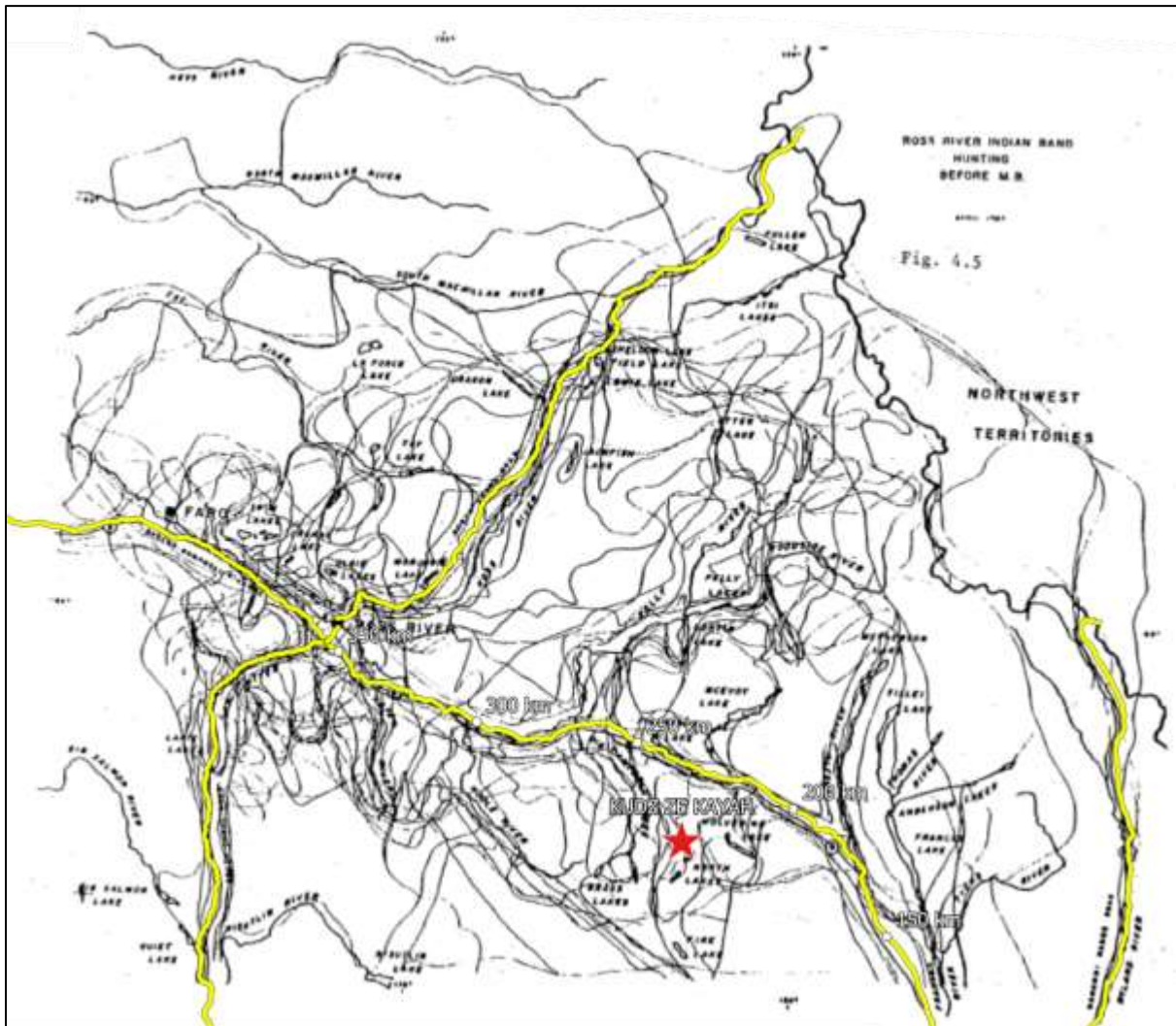


Figure 3-2: RRDC Hunting pre-Cyprus-Anvil Mine

Source: Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode," 59.

Yellow represents the main highways and roads in the territory.

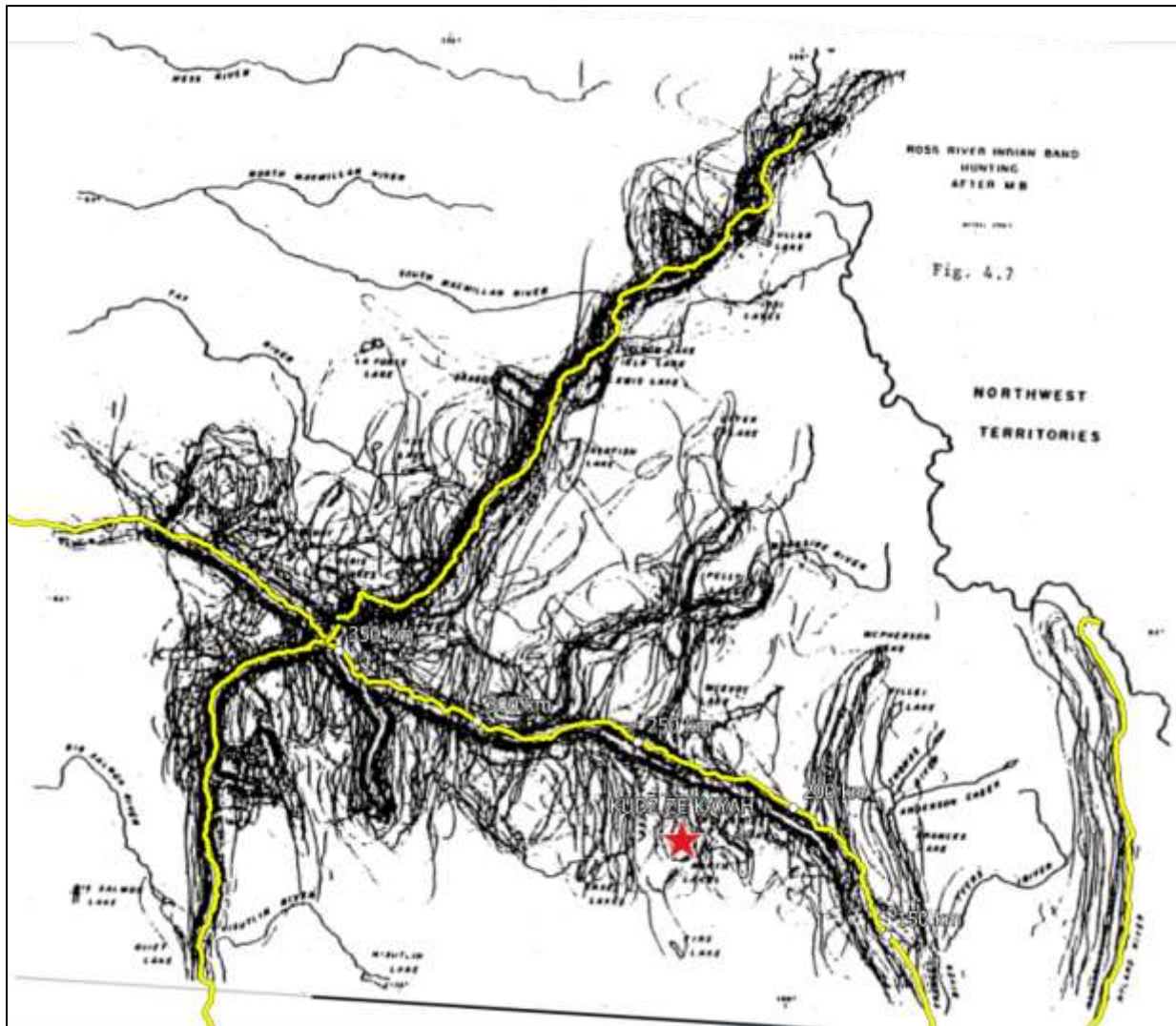


Figure 3-3: Hunting post-Cyprus-Anvil Mine

Source: Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode," 62.

Yellow represents the main highways and roads in the territory.

Fall was, and continues to be, an important hunting season for RRDC citizens. After summer grazing, many animals are in ideal conditions for harvesting in terms of health, nutrition, and population densities. Historically this was the time of the year RRDC citizens traditionally dispersed from larger

summer camps around fish-bearing lakes to travel into alpine locations in pursuit of meat.<sup>42</sup> The timing was influenced by the seasonal patterns of specific animals.

In general, despite substantial outside pressures and influences to shift away from subsistence hunting, this is still an integral part of RRDC's way of being and connecting to the land. They have done so more than other Aboriginal groups across Yukon.<sup>43</sup> This speaks to their resilience and determination to maintain their traditions and way of life, which is confirmed in an assessment of effects of the Ketzka Mine, a neighbouring mining development approximately 100 km west of Kudze Ze Kayah Project:

[H]unting for moose, caribou, and thinhorn sheep is the principal economic use of the Ketzka River drainage basin by members of the RRDC. Respondents in this study considered that half or more of their food comes from land-based subsistence activities like hunting. This is consistent with the findings of Dimitrov and Weinstein (1984) that the subsistence economy of the Indians at Ross River contributes in a very substantial way to the mixed cash and subsistence economy of the community.<sup>44</sup>

Of particular note pertaining to the proposed Kudz Ze Kayah Project site is that it plays an important part in the RRDC harvesting system, especially when other places are depleted of wildlife, feeding other parts of the nation and its members. Furthermore, based on RRDC management practices, the area in and around the Project site may law fallow for several seasons in an attempt to rejuvenate the wildlife resources.

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<sup>42</sup> John W. Ives and Carly M. Sinopoli, "The Archaeological Correlates of the Athapaskan Kaska," *Michigan Discussions in Anthropology* 5, no. 1 (1980): 26.

<sup>43</sup> M. Morrell, *Indian Land Use in the Ketzka River Valley and the Impact of the Ketzka River Mine*, (Ross River, Yukon: Ross River Dena Council, 1992), 19 and 21-23.

<sup>44</sup> Morrell, *Indian Land Use in the Ketzka River Valley*, 19. Within this excerpt, Morrell is referencing P. Dimitrov and M.S. Weinstein, *So That the Future Will Be Ours*, (Ross River: Ross River Band Council, 1094).

This flexible and dynamic approach to resource use underpins a sophisticated use of the area proposed for development.

In general, the Project site is a key RRDC hunting area with many reported past and present meat drying poles and equipment. Of particular note is the hunting site south of the Project site at Money Peak. According to Rutherford, there are an additional five hunting areas at a distance greater than 5 km from the Project at North Lakes, Grass Lakes, and Wolverine Lake.<sup>45</sup> Some of this information has come from the traditional land use interviews that were conducted to support the Initial Environmental Evaluation for the proposed Project.<sup>46</sup> Mary Charlie noted the location of licks (which are important TLU sites in the regional study area but not within the proposed Project footprint) which are located by smell:

He [Mary's father] walk around on the side you know. Deep [steep] that mountain, but daddy go around on the side, come with us that time. Lots of our grandma, daddy, daddy's dad, his grandma, too. I guess people go to that moose lick all the time he said, you know long time ago. They set snare for moose, caribou, sheep. That's what people live [on] he said. ... They know all the time moose lick together. ... You come up there, you could smell moose and sheep, caribou.<sup>47</sup>

Tilly Smith also noted the smell of caribou that Mary mentioned:

They used to dry meat. There were lots of caribou. It just smelled of caribou there were so many.<sup>48</sup>

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<sup>45</sup> Rutherford (1995), *Archaeological Reconnaissance*, 10 and 46.

<sup>46</sup> Rutherford (1995), *Archaeological Reconnaissance*, 45-46, 50, 53, and 55.

<sup>47</sup> Charlie as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 31.

<sup>48</sup> Charlie as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 31.

Another RRDC Elder, Sid Atkinson, noted the locations and species he and his relatives would hunt in and around the Project area:

We shot sheep on the side of North Lake right there. Groundhog, oh lots, oodles. This mountain on this side.<sup>49</sup>

According to the Wolverine Project Heritage Protection Plan, the Wolverine Lake area approximately 25 km east of the proposed Project is of particular important to RRDC citizens for its relative wildlife abundance playing a critical function during periods of wildlife depletion in other areas:

The Kaska Dena know Nougha Mene [Wolverine Lake] as an area of bountiful wildlife, fish and plants. While the Wolverine area is commonly used for harvesting, gathering, and trapping, it is particularly important in lean years when wildlife is hard to find in other areas of the territory. At these times, community members came to Wolverine to harvest at special locations known to harbour wildlife.<sup>50</sup>

Mary Charlie in her interview for the Kudz Ze Kayah Archaeological Reconnaissance confirmed the prevalence and importance of licks in and around the Project site:

Past that Wolverine Lake, over that way. From that mountain, little ways down there. You see that moose lick here, and sheep lick right here, caribou lick right here. Three place, three different kind of lick. ... They call 'em *eles* 'lick' *Eles Mene* ['Lick Lake'] they call it".<sup>51</sup>

Tilly Smith also noted the area in and around the Project site as an important RRDC hunting destination:

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<sup>49</sup> Sid Atkinson as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 46.

<sup>50</sup> Yukon Zinc Corporation, *Wolverine Project Heritage Resource Protection Plan*, (Vancouver: Yukon Zinc Corporation; Ross River: Ross River Dena Council, November 2007), 1.

<sup>51</sup> Charlie as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 31.

They hunt around there. They were living around on *Tse Nehtsat* [possibly Money Peak]. They went for meat up there. They were drying meat. They lived up there on everything. They were snaring gophers. There were lots of gophers. Lots of marmots! They hunted around for marmots. There were lots of caribou up there and they shot them also. Even sheep, everything on that mountain they call *Tse Nehtsat*. There is a little lake up there. On top.<sup>52</sup>

In Weinstein's retrospective assessment of the effects of the Faro Mine, he reported survey results of greater than 20% of interviewees (i.e., >17 members) hunt in Zone 6 (which overlaps with the KZK Project area (Figure 3-4).

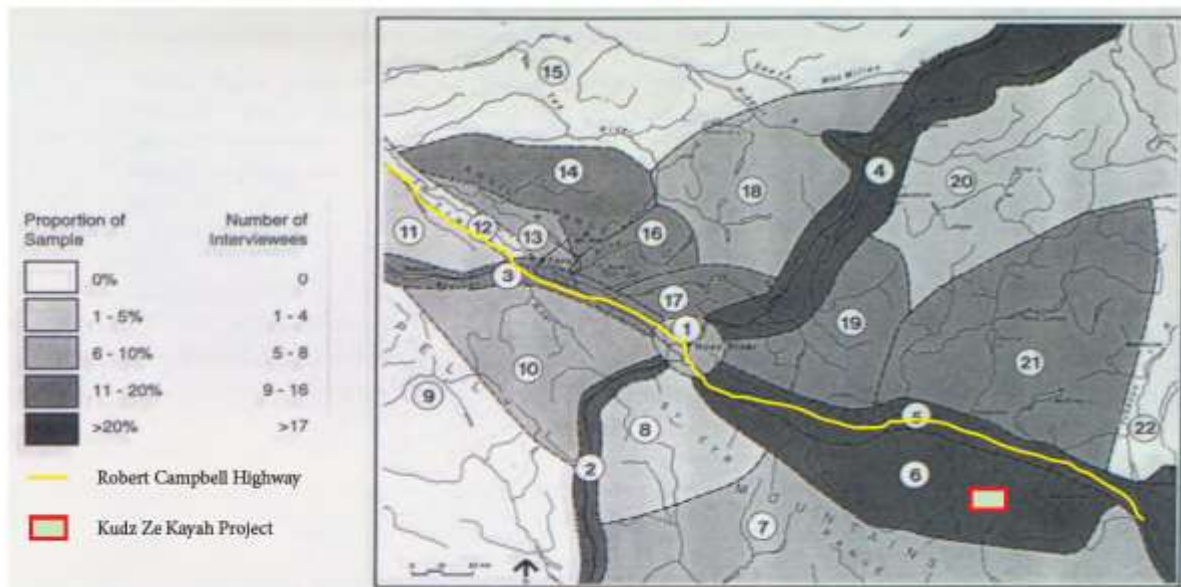


Figure 3-4: Percentage of RRDC Interviewees Hunting

Source: Weinstein, 1992; 139

<sup>52</sup> Tilly Smith as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 50.



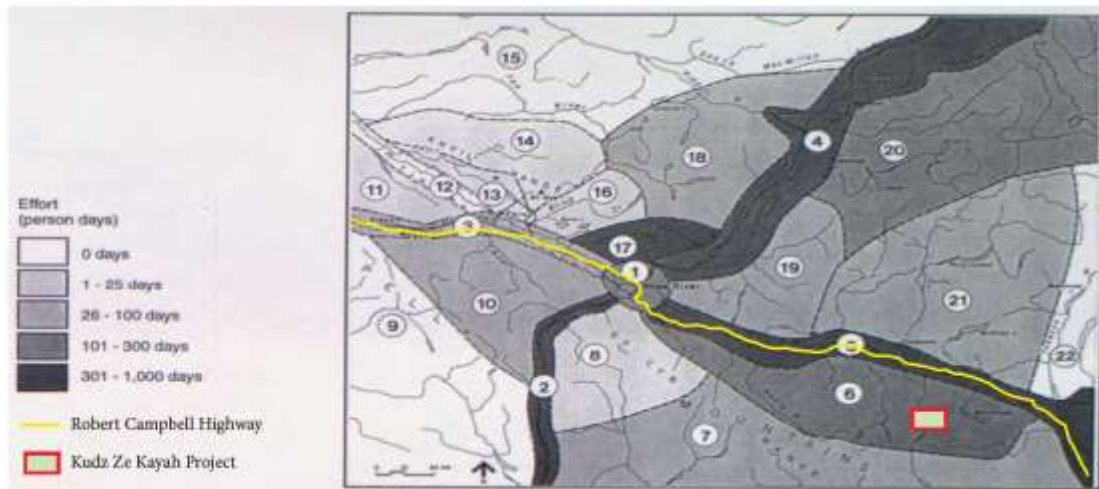
### **Harvest Intensity**

There are two key studies that measure RRDC intensity of harvest in and around the proposed Project area. In particular, Weinstein conducted a study of Kaska land use (including hunting and trapping) in the early 1990s and a harvest study was conducted in the late 1980s by the Yukon Department of Renewable Resources. These studies do not provide a comprehensive picture of Kaska harvest levels; however, together the studies provide an important glimpse into and a snapshot of the scale, seasonality, and types of harvesting efforts among Kaska citizens. Without additional quantitative data, it is not possible to determine whether these are numbers representative or outliers.

In Weinstein's retrospective assessment of the Faro Mine on Kaska land use, the level of harvesting effort (as measured in person days) is high in Zone 6 for hunting (101 to 300 days), but lower for trapping and fishing (1 to 50 days)<sup>53</sup> as represented in Figure 3-5 and Figure 3-6. Without corresponding zone-specific harvest levels, it is hard to determine if these data reflect a concentration of Kaska hunting activity or a lack of wildlife abundance requiring more effort. Given the oral history provided in the previous section, it is more like the former.

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<sup>53</sup> Weinstein, *Just Like People Get Lost*, 142.



**Figure 3-5: Level of Hunting Effort**

Source: Weinstein, 1992:142

RRDC were and are skilled in determining when an area needed rest from hunting. Weinstein explains the RRDC practice:

Through the exchange of information, the community would decide which areas would be left fallow to recover their animal populations and which would be in productive use making operated from the bottom-up, through consensus-building....<sup>54</sup>

This is an important consideration when assessing RRDC level of use and activity in an area. That is, non-use of an area should not be equated with non-productivity. The non-use may be temporary and intentional.

The 1987 Yukon Indian Harvest Survey included levels of Ross River hunting of the following wildlife species: moose, caribou, sheep, goat, grizzly bear, black bear, and wolf. The survey results noted

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<sup>54</sup> Weinstein, *Just Like People Get Lost*, 55.

a high number of hunters in the Ross River community compared to other Yukon First Nations: “Over the total number of households, 76% had a hunter residing in the house and this ranged from a high of 87% in Ross River to a low of 59% in Watson Lake.”<sup>55</sup> Of the total number of hunters in Ross River, 90% labeled themselves occasional hunters. According to the survey results in Table 3-2, there were more Ross River men hunting (78%) compared to women hunting (22%) with more caribou hunters (47 hunters) than moose hunters (35 people). Table 3-3 summarizes Kaska harvest levels for seven wildlife species in 1987 reported by Ross River resident with the majority of kills being caribou and moose.<sup>56</sup>

The data indicates that no goats were harvested by Ross River members. The authors of the harvest study provide hypotheses as to why this might be: “The goat harvest is likely very minimal in Yukon as goats are very inaccessible and are not thought of as a good foods source. However, goat hides are sometimes used to make blankets.”<sup>57</sup>

**Table 3-2: Ross River Caribou, and Moose Hunters by Sex (1987)**

	<b>Male</b>	<b>Female</b>
<b># of Caribou Hunters</b>	87% (47)	13% (7)
<b># of Moose Hunters</b>	100% (35)	0% (0)
<b>Total Hunters</b>	78%	22%

Source: Quock and Jingsfor 1988:1

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<sup>55</sup> Ray Quock and Kent Jingsfors, *Indian Harvest Survey, Progress Report, 1987*, (Whitehorse: Yukon Department of Renewable Resources, 1988), 10.

<sup>56</sup> Quock and Jingsfors, *Indian Harvest Survey*, 14.

<sup>57</sup> Quock and Jingsfors, *Indian Harvest Survey*, 17.

**Table 3-3: Reported Ross River Harvest by Species (1987)**

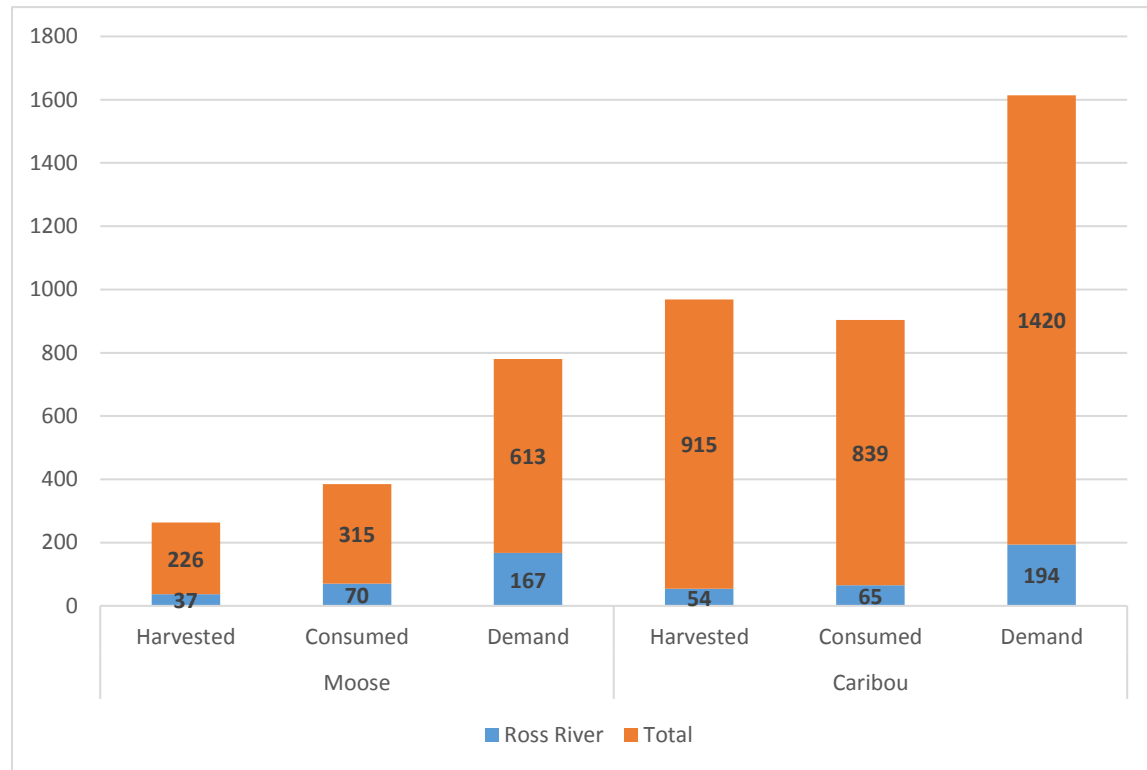
Location	Moose	Caribou	Black Bear	Grizzly Bear	Wolf	Sheep	Goat
<b>Ross River</b>	<b>37</b>	<b>54</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>0</b>
<b>All Six Aboriginal Communities</b>	<b>226</b>	<b>915</b>	<b>17</b>	<b>11</b>	<b>22</b>	<b>1</b>	<b>2</b>

Source: Quock and Jingsfor 1988:16

The authors of the study reported a notable difference between the level of harvest compared to wildlife consumed. This documented across all communities and also for Ross River in particular: “All communities except Old Crow consumed substantially more meat than they reported harvesting. ... The discrepancy between the reported harvest and current meat consumption suggest that most Yukon Indian hunters with the exception of Old Crow tend to underreport their actual harvest.”<sup>58</sup> There may be reasons other than these, including a strong tradition of sharing and trading meat across communities. This non-alignment between reported harvest and consumption levels is reflected in Figure 3-6.

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<sup>58</sup> Quock and Jingsfors, *Indian Harvest Survey*, 18.



**Figure 3-6: Harvest, Consumption and Demand for Moose and Caribou**

Source: Quock and Jingsfor 1988:20

More recently, BMC has reported the importance of moose and caribou to RRDC in the Project area. This information is based on their discussions with RRDC citizens; RRDC’s Elders Oversight Committee meetings; consultation with RRDC; and RRDC Elders tours of the Project site.<sup>59</sup> Although a secondary source, the BMC report (2019) provides insights into RRDC’s current land use.

<sup>59</sup> BMC, *Response #4 to YESAB Executive Committee Information Request KZK Project Proposal*, (December 2018), 126.

### 3.3 TRAPPING

#### 3.3.1 OVERVIEW

The Project site is located primarily within a group trapline site of the RRDC. Historical evidence demonstrates that this has been the case since the Ross River Dena opted for group trapline registration in the late 1950s. Trapping was especially practiced in winter to harvest furbearers for sale at trading posts.<sup>60</sup> Traditional methods of trapping include using a four- or five-stranded braided babiche line. Also, corridors were created to drive animals such as moose, caribou and sheep into set traps. Deadfalls were used to take bear, marten, beaver, and smaller animals. Beavers were also caught with big nets 15 to 20 feet long constructed of babiche lines.<sup>61</sup> Weinstein confirms the species of focus for trapping, including “fox, lynx, marten, mink and others...”<sup>62</sup> Honigmann has also discussed the species of animals trapped by the Kaska. They include lynx,<sup>63</sup> as well as “bear, marten, mink, fisher, beaver, and ground hog.”<sup>64</sup> In his contribution to the Handbook of North American Indians, Honigmann has described the importance of trapping activities to the Kaska in general:

With the advent of fur trapping, the annual cycle came to involve two major shifts of residence. The following description is of activities in the decade of the 1940s. In spring, families left the trap lines, taking along furs that had accumulated since the man last visited the store prior to the breakup of the rivers and lakes. Travelling by water, the family came to the trading post

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<sup>60</sup> Honigmann, *The Kaska Indians*.

<sup>61</sup> Honigmann, *The Kaska Indians*, 31-46.

<sup>62</sup> Weinstein, *Just Like People Get Lost*, 59.

<sup>63</sup> Honigmann, *The Kaska Indians*, 33.

<sup>64</sup> Honigmann, *The Kaska Indians*, 34.

settlement, sold the last of its furs, and proceeded to live on fish locally netted plus canned goods, potatoes, bacon, and other food purchased from the store with the winter's earnings.<sup>65</sup>

Trapping was and currently is conducted during the winter months in the valley bottoms.<sup>66</sup>

### 3.3.2 KEY RESEARCH FINDINGS

While this section focuses on trapping, it should be noted that hunting, fishing, and trapping activities often overlapped with each other. As Dimitrov has noted:

[I]t must be stated that the analysis of land use activities into such categories as hunting, trapping and fishing is a Euro-Canadian distortion of the integrated nature of Ross River Indian land and resource use. When a Ross River Indian goes trapping this implies a whole range of activities such as camping, hunting, and fishing far beyond the setting of traps and snares. Likewise, summertime activities are concurrently gathering, hunting, fishing, and camping.<sup>67</sup> Consequently, while this report separates various forms of land use – such as hunting, fishing, and trapping – when necessary they are considered together.

In December 1842, Campbell provided some insights into the travel and trapping of Indigenous peoples from the Pelly River region (likely ancestors to the RRDC). Campbell wrote: “In the evening a party of 4 Indians cast up and are from the river beyond the mountains. They brought and traded 44 large Beaver[,] 13 Small ditto[,] 31 Martens[,] & a Robe of 26 ditto the whole they traded for 2 Guns & ammunition[,] They brought us no provision nor has any of the Natives of this vicinage as yet brought

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<sup>65</sup> John J. Honigmann, “Kaska,” in *Handbook of North American Indians, Vol. 6, Subarctic*, (Washington: Smithsonian Institution, 1981), 444.

<sup>66</sup> RRDC, *Dene Dechen Tah Néde’*, 36; Robert Campbell, *Robert Campbell’s Fur Trade Journals, 1808 to 1853*, (Seattle, Washington: 1958), 73.

<sup>67</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 66.

any.”<sup>68</sup> The “river beyond the mountains” was likely in reference to the Pelly River. This journal entry provides insights into travel corridors between the Pelly River watershed and Frances Lake and – while not detailing where the furs were trapped – may also indicate trapping activities in the region between Frances Lake and Pelly River.

Further evidence of travel and possible trapping in the region between Frances Lake and the Pelly River was provided in a springtime journal entry. On 12 April 1843, Campbell wrote: “in the evening four other arrived with three loaded Sledges they brought from near the Source of the River west Side the Mountains. They traded their loads say 352 lbs Spliced Meat[,] 27 rein deer tongues[,] 4 lbs Grease[,] & 8 dressed deer Skins[,] 43 Martens[,] & 1 Wolverineen [sic].”<sup>69</sup>

Sometimes the HBC traders also noted the non-arrival of Indigenous peoples from the Pelly River watershed. Such an occasion was recorded by Campbell in 1843: “No Indians making their appearance from the quarter of the Pelly.”<sup>70</sup> While this journal entry records the non-arrival of Indigenous peoples from the Pelly River watershed, it suggests the expectation of their arrival at the post. By expressing their expectation that Indigenous people from the Pelly River would arrive, the HBC employees indicated that travel to Frances Lake was part of their seasonal movements. Such information may have been communicated to the HBC employees by arrivals from Pelly River during a previous visit. Later in the fall, Indigenous peoples from the upper Pelly River arrived: “The two Indians who were here [T]uesday cast up

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<sup>68</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 17 December 1842, fol. 19d.

<sup>69</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 8 April 1843, fol. 30.

<sup>70</sup> HBCA, Frances Lake Post Journal, B. 73/a/2, 19 September 1843, fol. 7d.



with a little Bear, they were accompanied by 4 other Indians from the upper parts of the Pelly with a few furs, which they traded, and immediately left the place.”<sup>71</sup>

Meanwhile, in the adjacent territory in the Pelly River watershed – following the establishment of Pelly Banks in 1845 – Robert Campbell recorded the trading activities. This information provides details into Indigenous trapping activities in the vicinity, including the species of furbearers trapped. On 12 May 1846, he wrote: “Three other Indians came in with some Marten.”<sup>72</sup> Additionally it was noted that Indigenous peoples were trading beaver, marmot, and rabbits at Pelly Banks.<sup>73</sup>

Weinstein (1992) explains the history of trapline registries among Ross River citizens:

Yukon traplines were first registered in 1951. At the onset of registration Ross River Indians registered individual trapping areas. During the late 1950s, however, band members requested that the traplines be re-registered as grouped traplines. The band’s traplines were grouped into 3 group traplines and ultimately grouped into a single band trapline. As result, fur harvest records cannot be attributed to particular regions of the band’s territory.<sup>74</sup>

Trapline maps held at the Yukon Archives show RRDC have a history of trapping in the vicinity of the proposed Project and provide a sense of the spatial distribution of trapping activities by RRDC (Figure 3-7, Figure 3-8, and Figure 3-9) . Figure 3-7 (Map H-1601-1), represents registered traplines in 1951 and 1952. Names appearing on this map are similar to names of trappers from the Ross River region provided in government correspondence in 1958:

-324/ Arthur John/ Ross River/ 1957/58 (in pencil it says “Paid 4/3/58”)

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<sup>71</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 19 October 1843, fol. 10-10d.

<sup>72</sup> LAC, Robert Campbell fonds, MG 19, A 25, “Journal of Occurrences at Pelly Banks,” 12 May 1846.

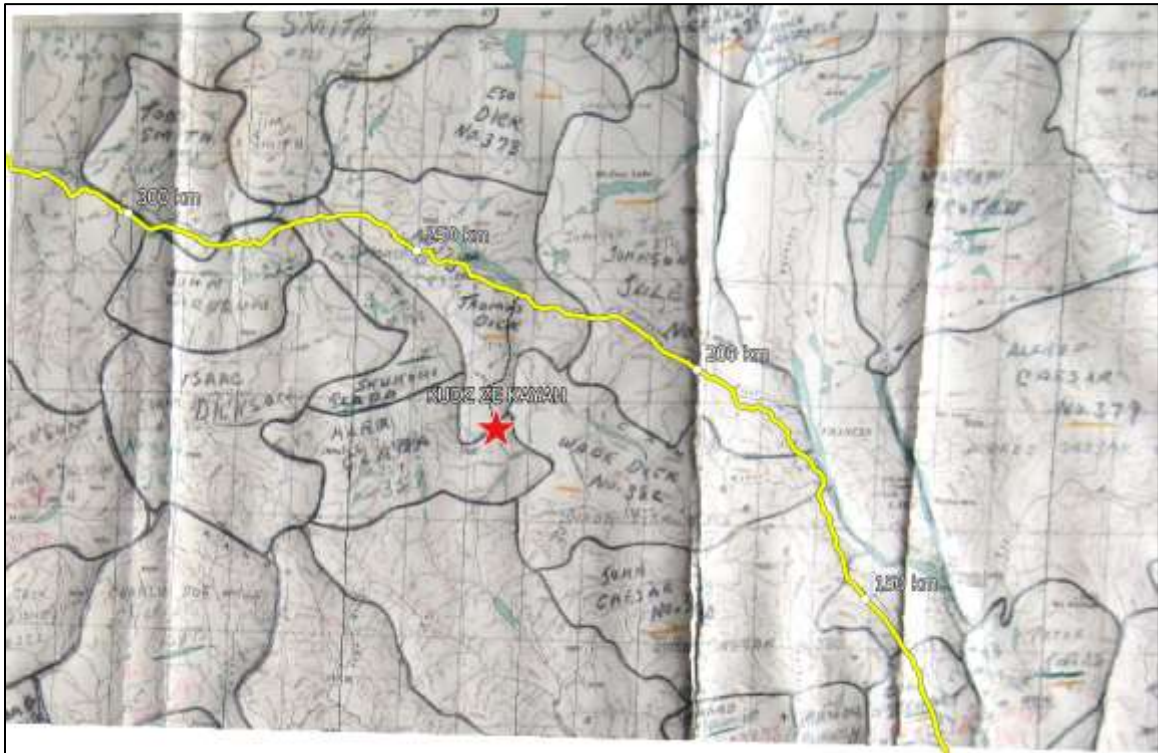
<sup>73</sup> LAC, Robert Campbell fonds, MG 19, A 25, “Journal of Occurrences at Pelly Banks,” 25 September 1846 and 8 October 1846.

<sup>74</sup> Weinstein, *Just Like People Get Lost*, 14.

- 327/ Jack Ladue/ Ross River “(now in Dawson area)”/ 1956/7 and 57/8
- 355/ Mac Peter/ Ross River/ 1957/8 (in pencil it says “OK Paid May 2/58”)
- 363/ Amos Dick/ 1957/8
- 366/ Joe Ladue/ Ross River “(now in Dawson area)”/ 1957/8 (has three red checkmarks above “owes for” part)
- do checkmarks denote that it’s been paid, or are these checkmarks in reference to Amos Dick (as they are next to his entry)?
- 367/ Allan Dickson/ Ross River “([now in] Whse. [area])”/ 1957/8
- 373/ Eso Dick/ Ross River “([now in] Upper Liardarea [sic])”/ 1957/8
- 374/ David Dick/ Ross River “([now in Upper Liardarea (sic)])”/ 1956/7 and 57/8
- 378/ Pete Charlie/ Ross River “([now in Upper Liardarea (sic)])”/ 1956/7 and 57/8
- 419/ John McKay/ Ross River/ 1957/8 (written in red next to entry: “OK paid May 2nd [?]”)
- 1/ David Shorty/ Ross River/ 1956/7 and 57/8
- 321/ Pete Bob/ Pelly Lakes/ 1954/5, 55/6, 56/7, and 57/8
- 323/ Jim Smith/ Pelly Lakes/ 1954/5, 55/6, 56/7, and 57/8
- 380/ John Caesar/ Ross River/ 1954/5, 55/6, 56/7, and 57/8<sup>75</sup>

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<sup>75</sup> YA, GOV 2154, File 13, G.R. Bidlake letter to T.O. Connolly 26 March 1958.



**Figure 3-7: Map of Registered Traplines (produced between 1951 and 1952)**

Source: H-1601-1, Yukon Archives

Yellow line represents the Robert Campbell Highway

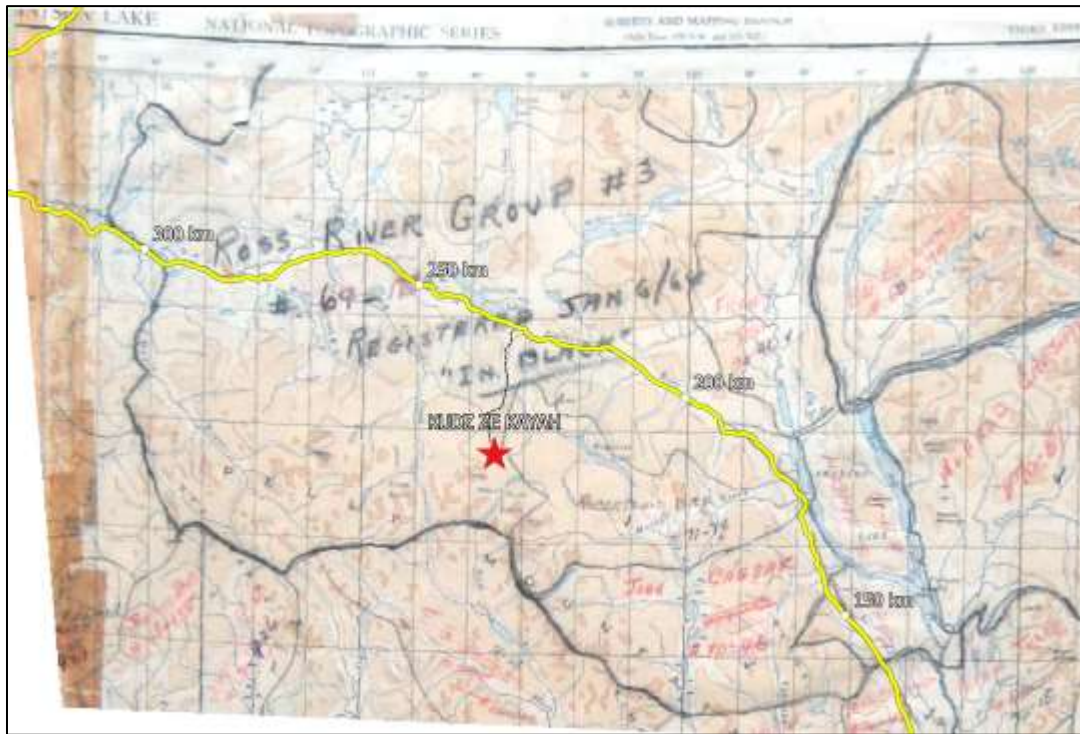
Figure 3-8 (Map H-1602-8) is believed to have been produced during 1963-1964 while Figure 3-9 (Map H-1602-4) indicates traplines registered between 1964-72. Figure 3-9 shows RRDC's Group Trapline #3. The Kudz Ze Kayah Project claims area overlaps with two present day trapping concessions; the Tote Road and the west portion of the claims overlap with group trapline concession #405 (held by Ross River group), and the eastern portion of the claims overlap trapline concession #250 which is held by two RRDC citizens.



Figure 3-8: Map of Registered Traplines (produced between 1963 and 1964)

Source: H-1602-8, Yukon Archives

Yellow line represents the Robert Campbell Highway



**Figure 3-9: Map of Registered Traplines (produced between 1964-72)**

Source: H-1602-4, Yukon Archives

Yellow line represents the Robert Campbell Highway

As complementary evidence to government trapline registration maps, Dimitrov mapped Ross River Dena hunting and trapping activities before and after the construction of the Anvil Mine (Figure 3-10 and Figure 3-11, respectively). Dimitrov noted that all Ross River Dena were trapping within the boundaries of group traplines at the time of his study (1984).<sup>76</sup> Commenting on the ‘before’ map, Dimitrov stated that there are “large numbers of lines cross-crossing each other over an immense area. Each of these lines

<sup>76</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 64.

represent the route of a hunter/trapper carrying out his harvesting activity.”<sup>77</sup> Further commenting on the maps and the wildlife harvesting activities of the Ross River Dena, he wrote:

This movement, as the section on the Indian system of land use will attest, was a social adaptation to the dispersals and concentrations of wildlife species. In general however, the valleys near Ross and Pelly Rivers and their tributaries, were important for winter-spring hunting and trapping, with upland pasturages being more important during late summer and early fall.<sup>78</sup>

Just as he provided context for the ‘before’ maps, Dimitrov also contextualized the ‘after’ maps. Noting the smaller areal coverage of the ‘after’ maps by comparison to the ‘before’ maps, he commented: “it would be incorrect to conclude that the Ross River Indian people do not consider all their traditional land as still important. The Indian land use maps show human usage; they do not show wildlife habitats that are important and used by wildlife species.”<sup>79</sup>

Commenting on Ross River Dena organization of the group traplines, Dimitrov wrote:

With regard to trapping, the Ross River Indian Group Trapline is one of two group-traplines hold [sic] in the Yukon. The Group trapping area is presently divided into two areas, each with a group trapline leader who together with the Band Council formulates policy respecting useage [sic]. Generally, certain extended families use particular areas of the Group Area, while in other region of the Trapline the area is open for use by any Band member. Typically, the Indian trappers of Ross River deliberately employ a rotational system of trapping so as to give animals that use a specific area time to increase their productivity. While such self-regulation may not serve the requirements of governments which often seek to maximize resource revenues over the short term, it has been a way for the Ross River Indian people to insure harvests intergenerationally. Considering that the Ross River Lands have been home for thousands of years and there is little inclination to leave, the Ross River Indian people have concerns over the longterm [sic] ability of the land and animals to sustain themselves, not only for dietary and economic reasons, but also for social-cultural reasons.<sup>80</sup>

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<sup>77</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 58.

<sup>78</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 58.

<sup>79</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 61.

<sup>80</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 77-78.



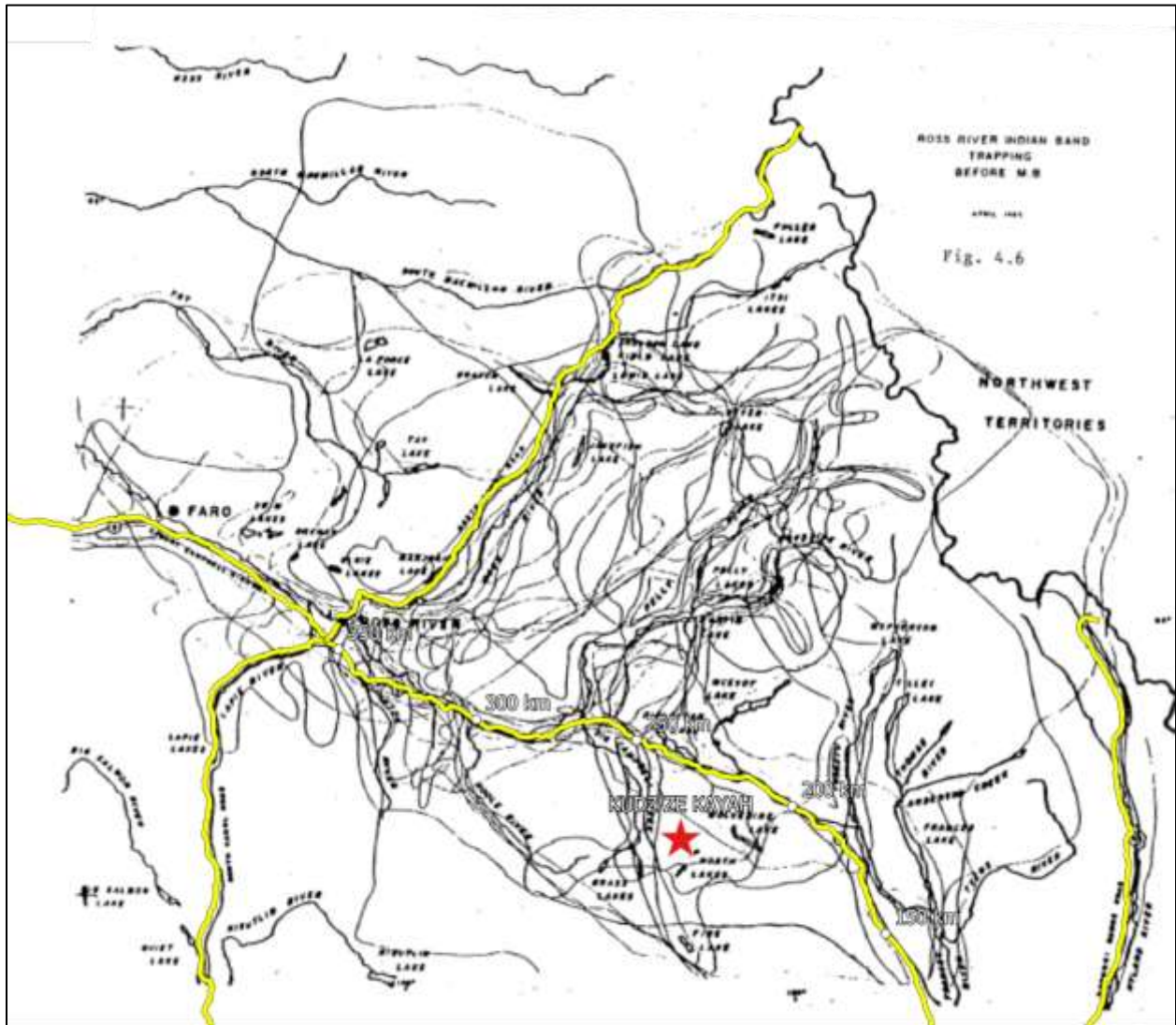


Figure 3-10: Trapping Activities pre-Cyprus-Anvil Mine

Source: Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode," 60.

Yellow line represents the Robert Campbell Highway

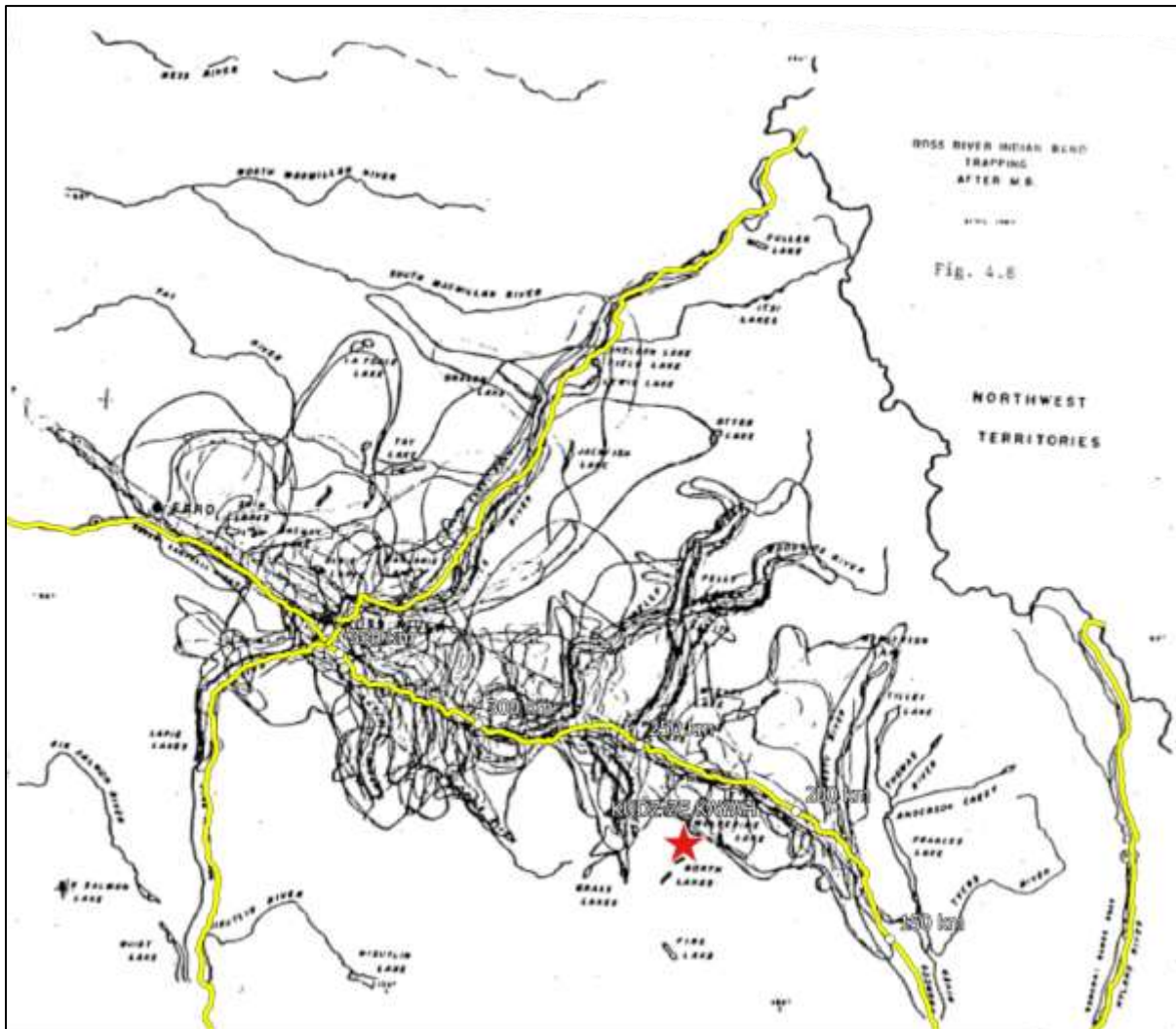


Figure 3-11: Trapping Activities post-Cyprus Anvil Mine

Source: Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode," 63.

Yellow line represents the Robert Campbell Highway



In Weinstein's retrospective assessment of the Faro Mine on Kaska land use, the level of harvesting in Zone 6 for trapping (1 to 50 days) (Figure 3-12).<sup>81</sup>

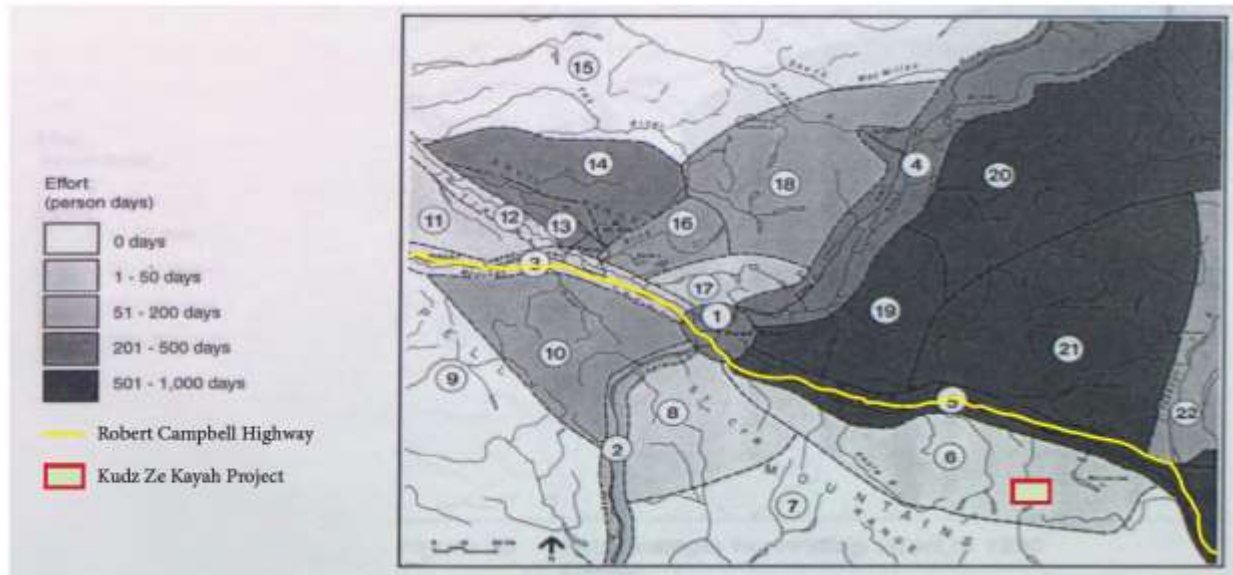


Figure 3-12: Level of Trapping Effort

Source: Weinstein, 1992: 142

### 3.4 FISHING

#### 3.4.1 OVERVIEW

Ethnographic sources confirm that fish were important for Kaska citizens, including those from Ross River. Families gathered in larger groups for summer and winter camps to harvest fish. Fish were speared, netted, trapped, and angled.<sup>82</sup> Gill nets were set from canoes in the summer and under ice in the

<sup>81</sup> Weinstein, *Just Like People Get Lost*, 142.

<sup>82</sup> Honigmann, *The Kaska Indians*, 31-32.

winter. Beaver bone was used traditionally to make fish hooks. In terms of food preference, fish were regarded as inferior to red meat (Honigmann, 1954). Fish species mentioned to have been harvested by Kaska people in the ethnographic record include grayling, trout, jackfish, whitefish, and sucker.<sup>83</sup>

As noted by Arthur John, a RRDC Elder, there were a variety of fish species, seasons they were fished, and methods of preparing for consumption: “Grayling, suckers and jackfish were scooped with hands. ... Scoop in hands during the spawning period in spring, and in August for grayling, when young fish enter the streams at low water time to feed on mosquitoes. ... Dried suckers are a delicacy. Eat them as a snack like potato chips. ...”<sup>84</sup>

### **3.4.2 KEY RESEARCH FINDINGS**

Through community consultation, Dimitrov mapped out the various important fishing sites to the Ross River Dena. While noting the importance of salmon fishing to the Ross River Dena (see Campbell Highway report),<sup>85</sup> he also indicated the continued significance of all fishing sites that were mapped:

All the fishing locations noted on the maps are important because collectively they represent a network of fishing spots whose value varies according to accessibility, seasonality of fishing use, species availability, proximity to family camp locations, and varied other cultural-historical reasons. Viewed totally, the ‘after’ [Anvil Mine] and ‘before’ [Anvil Mine] fishing maps present graphic evidence of not only the continuity of fishing at specific locations but also the importance of fishing as a component activity of the Ross River Indian economy.<sup>86</sup>

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<sup>83</sup> Honigmann, *The Kaska Indians*, 37.

<sup>84</sup> Arthur John in Weinstein, *Just Like People Get Lost*, 94.

<sup>85</sup> BMC, *Independent Study of Kaska Land Use Along the Robert Campbell Highway*.

<sup>86</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 58.

Figure 3-12 through Figure 3-15 indicate net and line fishing activities before and after the construction of Cyprus Anvil Mine. These maps indicate Ross River Dena fishing activities in the Finlayson Lake region.

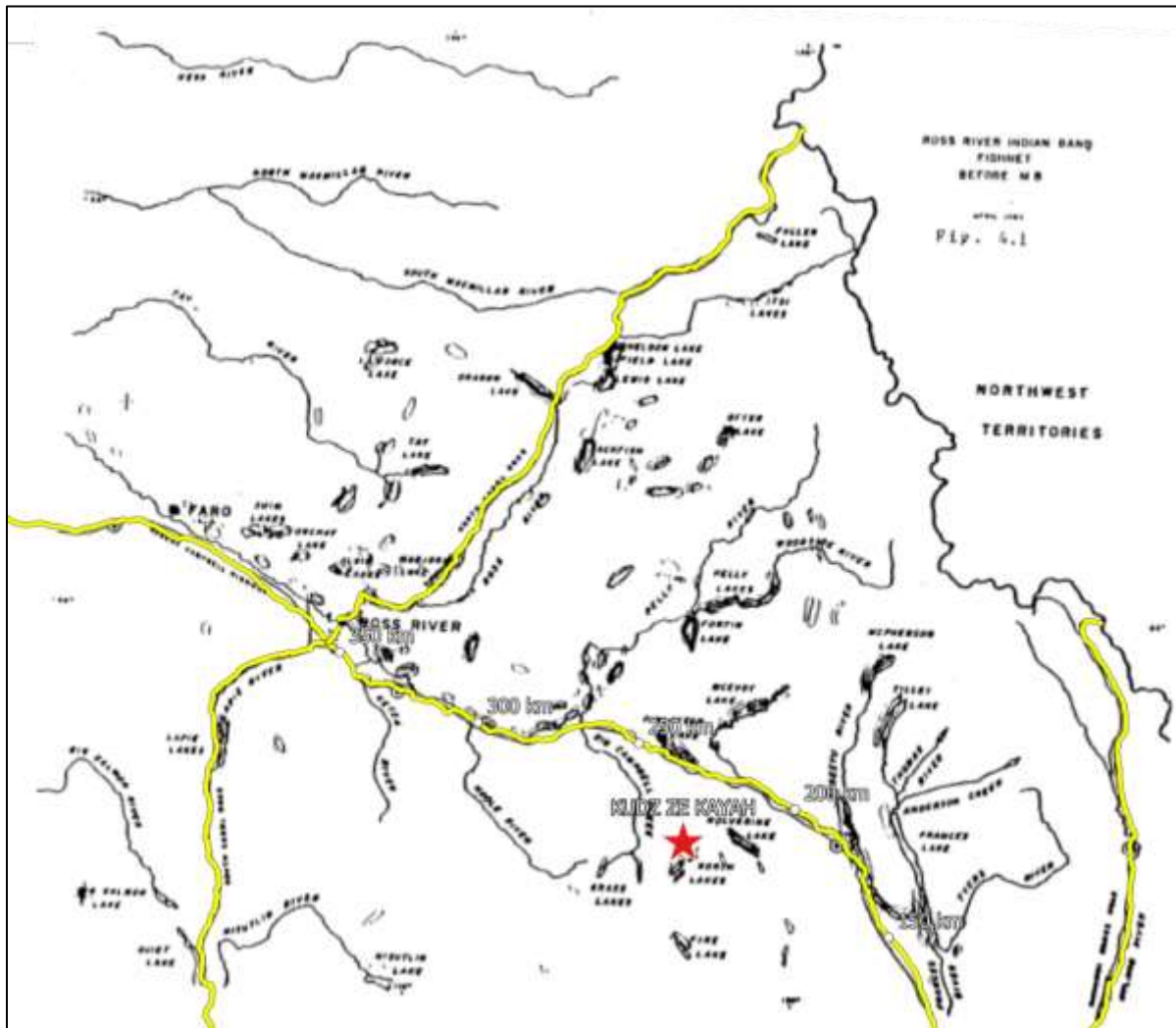


Figure 3-12: Net Fishing pre-Cyprus Anvil Mine

Source: Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode," 53.

Yellow line represents the Robert Campbell Highway

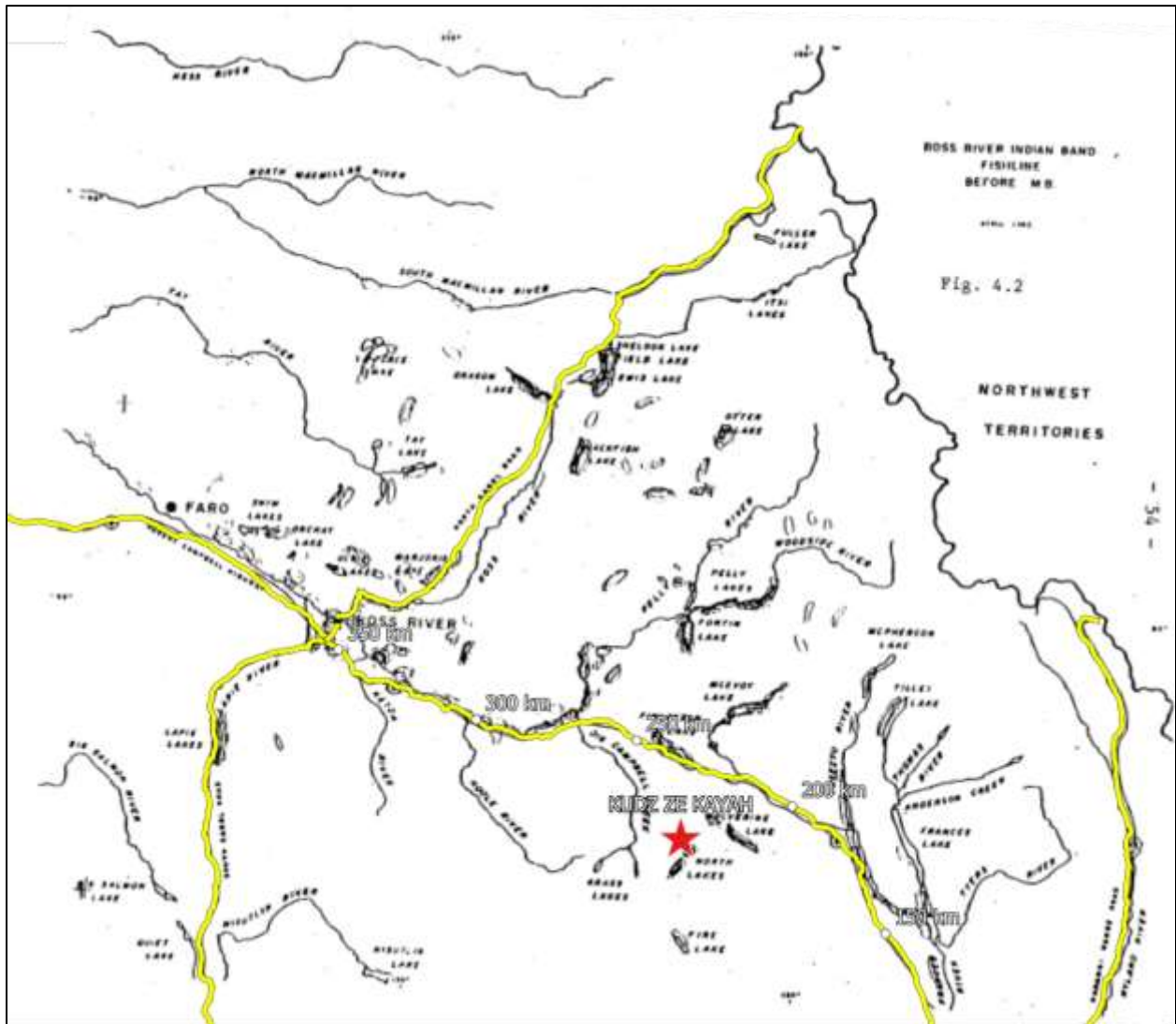


Figure 3-13: Line Fishing pre-Cyprus Anvil Mine

Source: Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode," 54.

Yellow line represents the Robert Campbell Highway

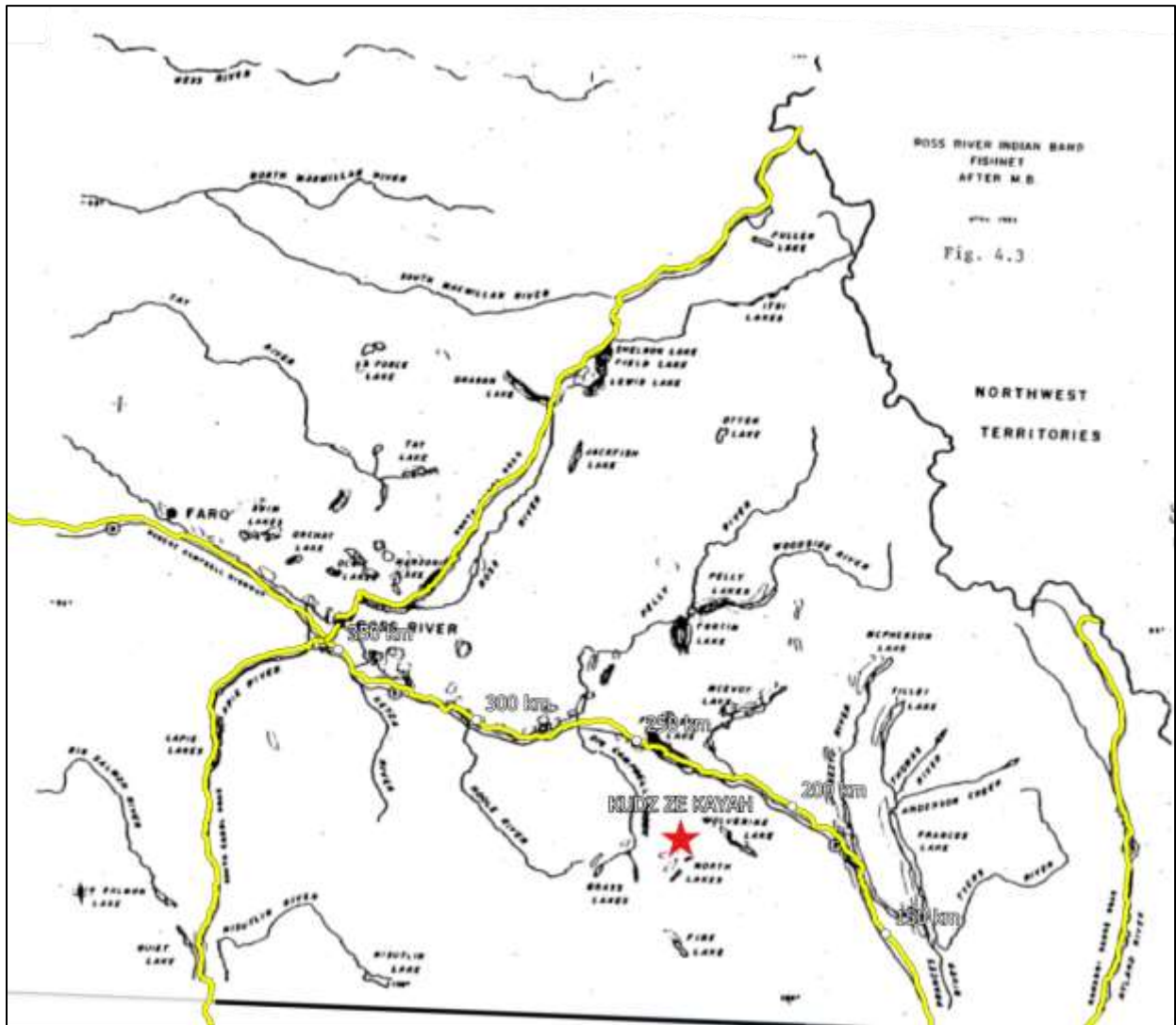
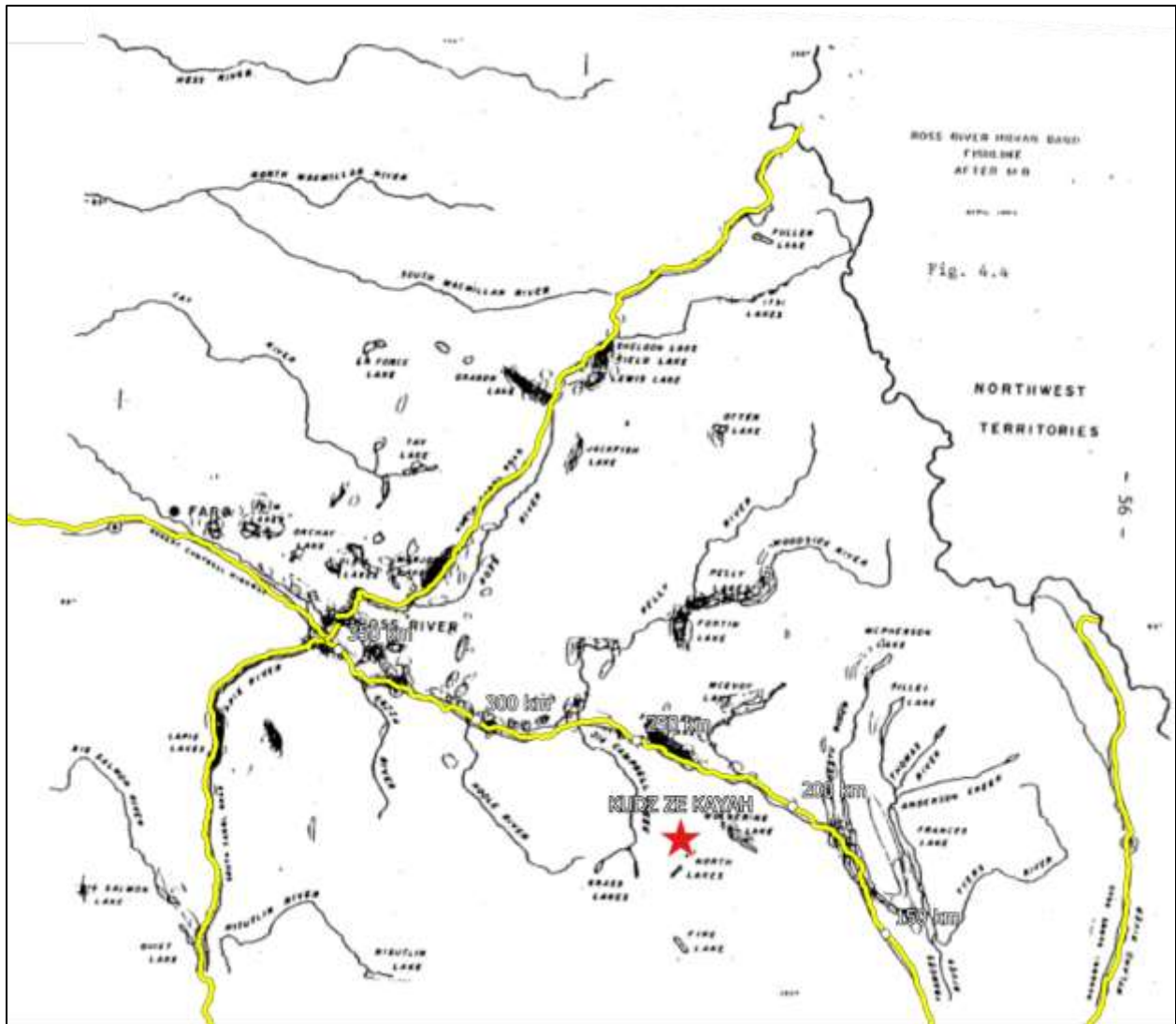


Figure 3-14: Net Fishing post Cyprus-Anvil Mine

Source: Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode," 55.

Yellow line represents the Robert Campbell Highway



**Figure 3-15: Line Fishing post-Cyprus-Anvil Mine**

Source: Dimitrov, “A Northern Indian Band’s Mode of Production and its Articulation with the Multinational Mode,” 56.

Yellow line represents the Robert Campbell Highway

Of particular relevance to the proposed Project is past and current Kaska fishing reported by Mary Charlie along Finlayson Creek, Money Creek, and Wolverine Lake for a variety of fish species in the spring and summer months:



Ya lots of fish. Indian way they call it *Luge Destie Tue* [“Fish Creek”] *Tu destsie la* [“the water is ...”]. ... Grayling. The other one, you know *El'es Tue?* I tell you? Trout, whitefish, and on top of that Wolverine Lake, any kind of fish mixed. People dry it you know long time ago. And the spring time, all summer.<sup>87</sup>

Tom Smith shared about the abundance of fish in North and Fire Lakes:

I went up there with a hunting party. North Lake. Lots of trout. Hunt anything. That's Fire Lake, eh?<sup>88</sup>

Amos Dick noted an abundance of suckers in North Lakes:

Flowing down from Wind Lakes. It's just full of sucker fish this time of year.<sup>89</sup>

BMC has reported that:

During meetings with the RRDC Elders Oversight Committee and site tours with the Elders, Finlayson Creek and North Lakes were identified as having been used for the traditional land use activity of fishing. To date Arctic grayling have been identified as the main fish species caught. Geona Creek was identified as being important habitat for wild game and game birds that RRDC rely on (but not specifically for fish, which is not surprising given the low densities of fish observed in Geona Creek).

Finlayson Creek was identified by RRDC Elders as having historically been used for fishing of Arctic grayling; however, when YG installed the culverts at the Robert Campbell Highway they created a fish barrier. Since the barrier has been in place, Finlayson Creek has not been used for fishing as density of fish in the system is too low.<sup>90</sup>

In his retrospective impact assessment of the Cyprus Anvil Mine, Weinstein has mapped the intensity of RRDC fishing activities during 1990. His study area included the territory covered by the

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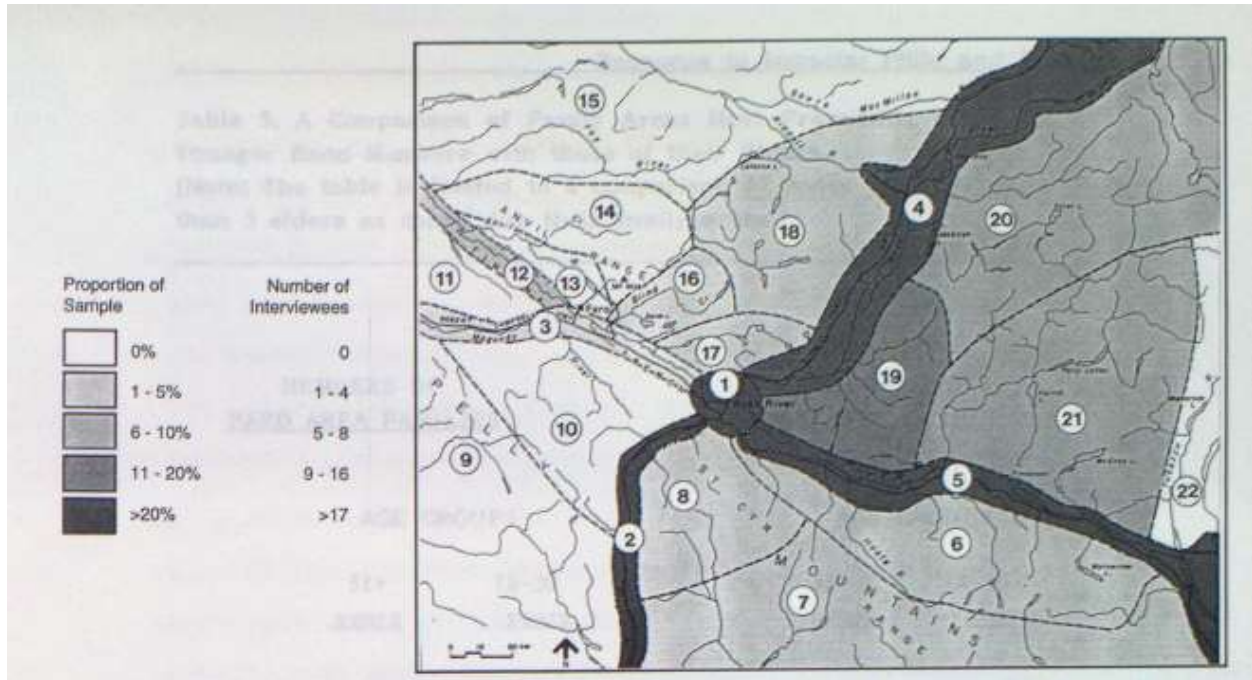
<sup>87</sup> Charlie as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 33.

<sup>88</sup> Tom Smith as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 53.

<sup>89</sup> Amos Dick as quoted in Rutherford (1995), *Archaeological Reconnaissance*, 41.

<sup>90</sup> BMC, *Response #4 to YESAB Executive Committee Information Request KZK Project Proposal*, (December 2018), 29.

Project. The intensity of RRDC fishing activities within the vicinity of the project can be seen in Figure 3-17.



**Figure 3-17: Level of Fishing Effort**

Source: Weinstein, 1992: 139

### 3.5 PLANT USE

#### 3.5.1 OVERVIEW

Plant and berry harvesting was primarily done by women in summer and fall. Very important was the gathering of blueberries, raspberries, strawberries, currants, salmonberries, cranberries, and soapberries. Root vegetables were also collected, such as lily bulbs, wild onions, and fern roots. Other plants and plant products collected were wild rhubarb, rose petals, spruce and birch fibres, willow and spruce gum, and the



sap of birch trees.<sup>91</sup> A main beverage prepared consisted of birch sap and rose petals steeped in water.<sup>92</sup> Based on a review of secondary sources, there are no specific references of plant gathering that overlap with the Project site.

### **3.5.2 KEY RESEARCH FINDINGS**

HBC journals also provide insights into the use and exchange of bark. On 12 May 1846, it was recorded in the post journal that the HBC “Got a few bark from the Idle Indians about the place.”<sup>93</sup> Similar to the bark traded at Frances Lake Post (see LFN report),<sup>94</sup> this bark was likely used to construct canoes.

BMC (2019) has reported the importance of plant use to RRDC, based on their discussions with RRDC citizens; RRDC’s Elders Oversight Committee meetings; consultation with RRDC; RRDC Elders tours; and through reclamation research programs which have been conducted with the participation of RRDC citizens. RRDC has identified numerous culturally important vegetation species (both foods/berries and medicines) in the Project area. BMC noted that the species and locations were not specifically reported in order to avoid potential confidentiality breaches of their TK agreement with RRDC.<sup>95</sup>

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<sup>91</sup> Honigmann, *The Kaska Indians*, 32-33; Honigmann, “Kaska,” 443.

<sup>92</sup> Honigmann, *The Kaska Indians*.

<sup>93</sup> LAC, Robert Campbell fonds, MG 19, A 25, “Journal of Occurrences at Pelly Banks,” 21 May 1846.

<sup>94</sup> BMC, *Independent Study of Liard First Nation Traditional Land Use*.

<sup>95</sup> BMC, *Response 4*, 52

## 3.6 WATER USE

### 3.6.1 OVERVIEW

A previous ethnographic report has identified the importance of waterways to the Kaska. According to the report: “Water bodies are indicated to be especially significant to the Kaska people. In general, fish bearing lakes were the main gathering sites for large groups of Kaska people particularly in winter and summer. Areas in and around lakes are treated as sacred areas with cultural importance due to the potential for burial grounds along lakeshores.”<sup>96</sup> Wetlands, and particularly headwaters, have also been identified as areas of significance as they provide habitats for the many animal species harvested by the Kaska.<sup>97</sup> Honigmann has also noted the importance of waterways to the Kaska for travel. Waterways were travel routes during summer and winter alike: “With snow on the ground and bodies of water covered with ice the toboggans and snowshoes provided the basic travel aids while in the season of open water travelers relied on the canoe, paddle, and raft.”<sup>98</sup>

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<sup>96</sup> BMC, *Kaska Ethnographic Overview of the Kudz Ze Kayah Project*, (October 2016), 3-34.

<sup>97</sup> BMC, *Kaska Ethnographic Overview*, 3-34 – 3-35.

<sup>98</sup> Honigmann, *The Kaska Indians*, 46,

### **3.6.2 KEY RESEARCH FINDINGS**

BMC has reported that Fault Creek has been identified by RRDC Elders as being an important drinking water source.<sup>99</sup> During BMC's consultation with RRDC (Presented in BMC's Project Proposal as Chapter 2) it is evident that water and its continued use for generations is important to them. The record shows several RRDC citizens are familiar with the waters at the Project site and study area, likely through their own use of the area. This is evidenced by their comments and knowledge of the Geona Creek valley having artesian conditions, knowledge of the fish barrier in Finlayson Creek, stating of the importance of the trails through the valley to North Lakes, knowledge of the watershed divide at the south end of the proposed Project area, and the proximity of Mink Creek to the Project site.

The waterbodies closest to the proposed Project that have been specifically identified as being used for traditional purposes are Finlayson Creek, Fault Creek, North Lakes and Geona Creek.<sup>100</sup>

## **3.7 TRAVEL CORRIDORS / CAMPS**

### **3.7.1 OVERVIEW**

Kaska settlements and camps have varied over time. Traditionally, settlements were determined by subsistence activities and followed an annual sequence of aggregation and dispersal. Before contact, Kaska people lived from fishing, hunting, trapping and gathering. This meant in summer and winter Kaska people primarily gathered in low-land areas around water bodies such as lakes for fishing, hunting and gathering,

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<sup>99</sup> BMC, *Response #4*, 77.

<sup>100</sup> BMC, *Response #4*, 77-79.

and in fall and spring headed to higher elevation areas for hunting, trapping and gathering.<sup>101</sup> With the introduction of the fur trade settlement patterns, Kaska adapted to new lifestyles, including an emphasis on trapping activities and traveling to and living around fur-trading at this water is posts.<sup>102</sup>

Traditionally, shelters varied with seasonal needs. In the winter, semi-permanent winter dwellings or temporary shelters were constructed. The most commonly used semi-permanent dwelling was the conical lodge created by placing poles in a conical shape close to each other and covering the structure with sod or moss. Another semi-permanent dwelling was an A-shaped house, a composite structure made by erecting two lean-tos facing each other. Temporary shelters included simpler lean-tos and sometimes snow houses. When the fur trade was introduced, settlement location and structures changed. In the winter, people chose to live in log cabins with access to their trap lines. In the summer, they lived close to the trading posts in a frame house, log cabin, tent-frame, or wall tent.<sup>103</sup> According to secondary sources, there are many semi-permanent and permanent habitation sites scattered throughout the area in and around the Project site, including North Lakes, Money Peak, Wolverine Lake, Frances Lake, Pelly Banks, and Money Creek.

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<sup>101</sup> Ives and Sinopoli, "The Archaeological Correlates of the Athapaskan Kaska," 26; Honigmann, "Kaska," 444.

<sup>102</sup> Honigmann, "Kaska," 444.

<sup>103</sup> Honigmann, "Kaska," 444.

### 3.7.2 KEY RESEARCH FINDINGS

Mary Charlie noted the location of several seasonal camps in the area of the Project site and she underscores the importance of sharing resources between groups of Kaska people:

The Wind Lake [Kaska name for North Lake] too we go there, all the way. We camp little ways like that. And then we come to that mountain [Money Peak]. I tell you that high mountain. ... And there were lots of caribou. ... And sometime people when they got nothing to eat they got to look around for their friend. And they see a fire on top of the mountain, they go there. ... You gotta give some to people you know.<sup>104</sup>

Amos Dick confirmed Mary's knowledge in his interview:

People used to live around there [mountain near Wind and Wolverine Lakes] all the time. Daddy [George Dick] had a cabin around there. Where they call it *Tl'oge Cho*.<sup>105</sup>

Amos Dick also noted past and recent seasonal Kaska residence in and around the Project site:

We lived up there. People are still living up there, like Franklin [Charlie]. There were people living around up there all over. You could find dried poles still sticking up [from camps].<sup>106</sup>

Another Kaska Elder confirmed the information about important Kaska summer camps south of the proposed Project:

[E]verything on that mountain they call *Tse Nehtsat*. There is a little lake up there. On top. Right on top, that's where the camp is. ... there are two little lakes near there. ... No they don't go up there in the winter time. Only in the summer time.<sup>107</sup>

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<sup>104</sup> Charlie in Rutherford (1995), *Archaeological Reconnaissance*, 36.

<sup>105</sup> Dick in Rutherford (1995), *Archaeological Reconnaissance*, 38.

<sup>106</sup> Dick in Rutherford (1995), *Archaeological Reconnaissance*, 41.

<sup>107</sup> Tilly Smith in Rutherford (1995), *Archaeological Reconnaissance*, 50.

About 15 km southeast of proposed Project site, Hunter (1924) discovered a Kaska camp (about 45 km west of Frances Lake at the headwaters of Money Creek – also known as *Il-es-too-a* Creek):

Old Indian meat-drying camp here, with lots of poles still standing for that purpose. That salt lake is over in the flat, ¾ miles away, in plain sight. About 100 yards behind this camp is an aerial graveyard – an Indian child’s coffin stuck up on a tree stump about 20 feet above ground. We received quite a jolt when we first came upon this lonesome little coffin in the wilderness (Hunter, 1924:70).

This camp is confirmed in Mary Charlie’s interview for the Kudz Ze Kayah Archaeological Reconnaissance:

From that lake [Wolverine Lake], close to mountain right there we walk around. Long time ago daddy said right here we stay right here ... People they stay together right there they make dry meat fall time ... Just about over grow[n], but you could still show off that meat pole, everything. ... Besdie it *El’es Tue* ‘Lick Cree’ [Money Creek] flows.<sup>108</sup>

Weinstein describes the selection criteria of the location for Kaska cabins, including access to water and wood to support various harvesting activities:

[C]abins were constructed at sites that provided all of the requirements for longer term residency, such as shelter, a good supply of wood and access to good harvesting sites and areas. ... Each family group had a complex of cabins and tent sites that they occupied seasonally as they followed the harvesting round. ... Cabins were built to provide shelter during winter trapping season. ... The trapping cabins would be occupied until March.<sup>109</sup>

Many early and late explorers of Kaska territory note the settlements connected by a network of trails. In particular, Fenley Hunter (1924) reported a settlement of Kaska on the south end of Frances Lake with their preference for trading at Pelly Bank compared to the Liard Post. He noted:

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<sup>108</sup> Charlie in Rutherford (1995), *Archaeological Reconnaissance*, 32.

<sup>109</sup> Weinstein, *Just Like People Get Lost*, 74-75.

On a fair wind, with cloudy skies, entered Frances Lake at 3:45 this afternoon. Passed Indian grave on sand-spirt at west side of entrance, and dead ahead on site of old Fort Frances found collection of Indian cabins with the usual caches. Cabins unoccupied. Indians probably gone to Pelly Banks to trade, which they now prefer to Liard Post.<sup>110</sup>

Many late nineteenth and early twentieth century observers of Indigenous travel patterns through southeast Yukon noted a lack of water travel. They suggested that overland travel was the preferred method of travel. For example, geologist George Dawson commented in 1887:

The Indians inhabiting the region in the south and east of the site of old Fort Selkirk are poor boatmen and follow the various rivers in the course of their periodic journeys to a very limited extent. Most of their travel routes appear, indeed, to run nearly at right-angles to the direction of drainage, the rivers being crossed in summer on rafts, the remains of which may frequently be observed. In travelling thus they carry their entire small camping outfit on their backs.<sup>111</sup>

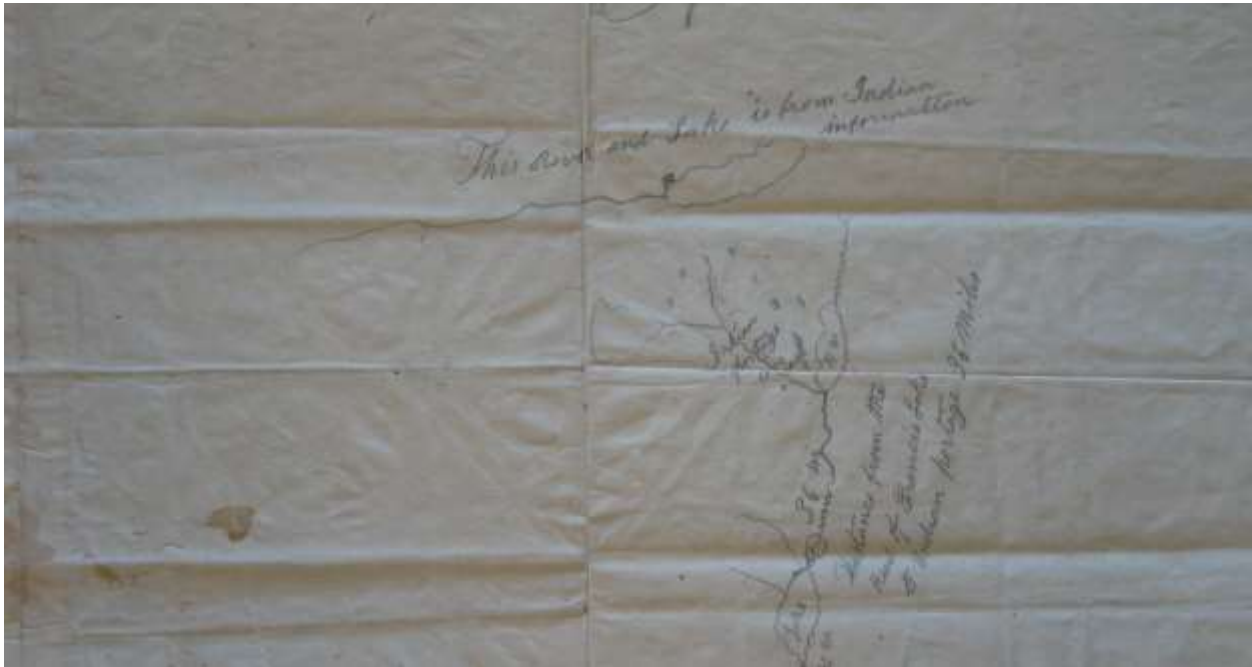
During his exploratory journey, Dawson also learned about a trail connecting the Frances River and the Pelly River watersheds. Although Dawson likely learned about this trail from the Upper Liard Kaska,<sup>112</sup> the trail was likely also used by the RRDC. These travel patterns were similarly observed by Warburton Pike.

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<sup>110</sup> Hunter, *Frances Lake*.

<sup>111</sup> George Mercer Dawson, *Report on an Exploration in the Yukon District, N.W.T. and Adjacent Northern Portion of British Columbia 1887*, (Montreal: Dawson Brothers, 1888), 21B.

<sup>112</sup> Dawson did not meet any Indigenous peoples on the upper Pelly River. Dawson, *Report on an Exploration in the Yukon District*, 201B.



**Figure 3-18: Sketch Map Depicting Indigenous Portage Between Frances Lake and Pelly River**

Source: Library and Archives Canada, RG 45, Accession 912020, Item 13.

Travel corridors between the traditional territories of the RRDC and LFN were likely used by both groups. There is also evidence that travel corridors between Frances Lake and the Liard River (and beyond) were used by the Kaska from the Dease River region.<sup>113</sup>

Although Pike failed to find the trail, he was told by his guide of a trail connecting the Yus-ez-uh River watershed with Pelly Lakes:

We found no signs of a trail, although Narchilla had told us that there was a well-marked path used by the Indians in summer, so we forced our way through the willow scrub, and waded swamps and small creeks, till at last we reached the smooth gravelly beach on the south shore of the main Pelly Lake and made camp at the mouth of Ptarmigan Creek.<sup>114</sup>

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<sup>113</sup> HBCA, Frances Lake Post Journal, B.73/a/b, 31 March 1844, fol. 24.

<sup>114</sup> Pike, *Through the Subarctic Forest*, 151.



Slightly a decade after Pike's journey, another sport hunter named Charles Sheldon ascended the Pelly River to go sheep hunting. While at Ross River, he was shown a trail to Lapie River:

Many Indians had come to our camp for the purpose of seeing the horse, which aroused intense interest among them. That morning three appeared very early and watched us throw the pack on Danger. So great was their astonishment to see him walk off with a pack of two hundred pounds, that they followed up for three miles and showed us an Indian trail which led to the Lapie River, six miles above its mouth.<sup>115</sup>

Dimitrov further commented on Ross River Dena travel corridors as they relate to broader hunting and trapping activities and road construction:

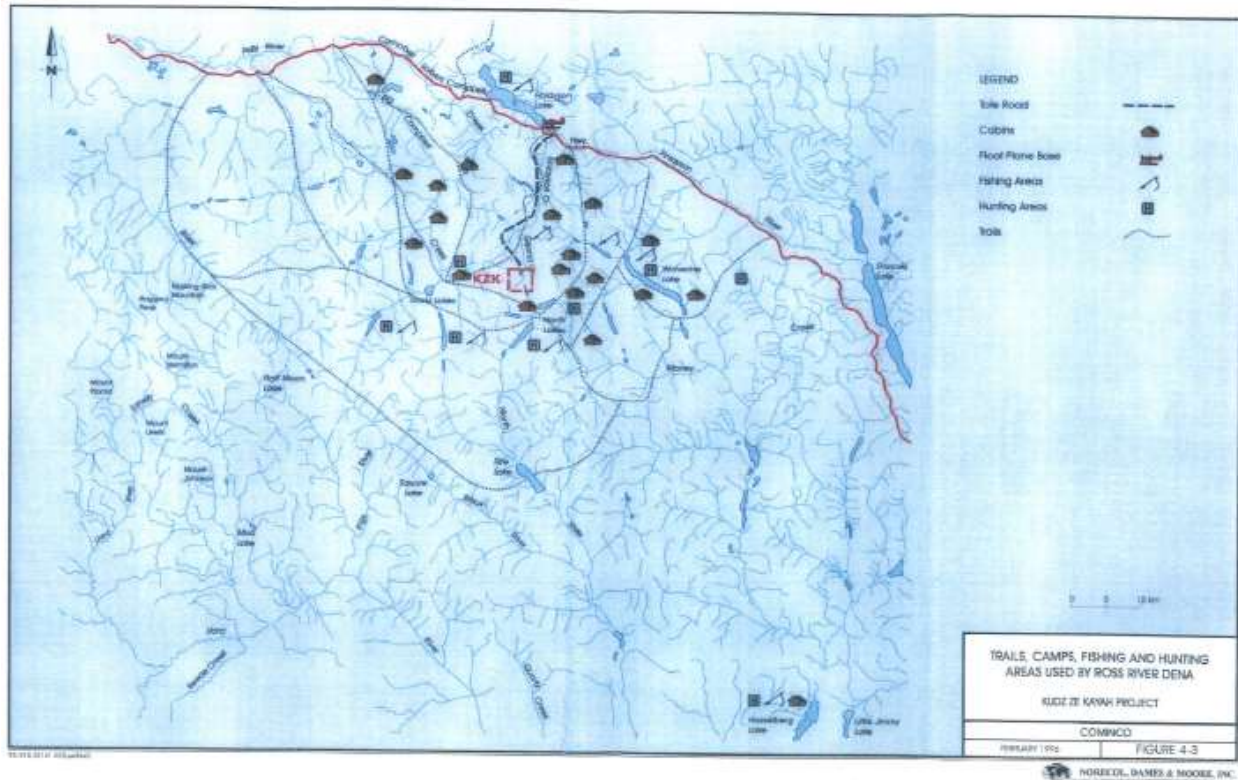
When looking at the 'after' hunting map one notes a concentration of lines close to the transportation corridors of the North Canal Road and the Campbell Highway. The facile conclusion is that the Ross River people are principally road-hunters, and while it is true that the game are sometimes killed if intercepted close to the road that is not the only explanation for the convergence of lines near roads. According to Elders virtually all the major roads were built on, or close to Indian Trails along rivers and high valleys. Today the roads are not only infrastructure for resource developers they are also used by Indian people to gain access to hunting, trapping and fishing areas off the roads. For instance the lines that follow the Campbell Highway are usually the result of truck and skidoo traffic in the winter/spring period when trapping/hunting takes place. Regarding the lines up the Pelly River these are a combination of skidoo traffic during winter and boat travel during the spring and summer. The trapping and hunting lines along the Ketzka, Lapie, Ross River and North Canal Road are the result of several family groups during winter and extensive use by virtually everyone during the summer/fall hunts.<sup>116</sup>

Finally, in his 1995 archaeological survey of the Project area, archaeologist Douglas Rutherford mapped RRDC trails, cabins, fishing sites, and hunting areas.

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<sup>115</sup> Sheldon, *The Wilderness of the Upper Yukon*, 195.

<sup>116</sup> Dimitrov, "A Northern Band's Mode of Production and its Articulation with the Multinational Mode," 64-65.



**Figure 3-19: Map of Trails, Camps, Fishing, and Hunting Areas Used by the RRDC**

Source: Rutherford, 1995.

## 4. CONCLUSIONS

The Project region has long been used by RRDC to hunt, trap, fish, gather plants, and seek shelter. There are also traditional trails in the area used by RRDC to travel between key traditional use locations. There are two main access routes to the proposed Project area, including from the west starting at Frances Lake along Money Creek as well as from the north at Pelly Banks through Finlayson Creek. There is a significant amount of evidence demonstrating that the region has been an important transportation corridor between the Frances and Pelly River watersheds. The area in and around the proposed Project has been of particular importance for hunting for big game, such as caribou, moose, and sheep, especially in the North Lakes area (south of the Project). There are several Kaska cabins in the region, including nearby locations along North Lakes, Money Peak, and Wolverine Lake with more distant locations along Frances Lake, Pelly Banks, and Money Creek. These cabins were identified during the Traditional Knowledge study conducted for the Project in the 1990s.

Note that trails, camps, fishing, and hunting areas within an approximate 30 km radius from the proposed mine site were identified, mapped, and provided in Rutherford's 1995 Traditional Knowledge report. The intent of summarizing the information and providing specific quotes from the interviews in Rutherford was to acknowledge the extensive use of the area by RRDC without releasing confidential information. The only direct overlap with the Project components and the items shown on the maps is a traditional trail that winds back and forth over the existing Tote Road. It is understood that this trail is currently used by the guide outfitter seasonally during hunting season and therefore the use and existence of the trail is not considered confidential.

In addition to oral interviews, documentary evidence demonstrates RRDC hunting and trapping activities in the Project region. HBC journals and government trapline correspondence and maps show a long history of RRDC harvesting activities in the region. This is further supported by the ethnographic literature and previous environmental impact assessments. The combined evidence provided by primary source materials as well as previous studies demonstrate extensive RRDC TLU within the Project region.

## **Appendix D. Community Survey (Specific Effects of Closure)**

### Environmental Impacts

1. What direct or indirect environmental impacts of closures did you note? (e.g. wildlife impact, hunting impacts, etc.)
2. Were environmental impacts that resulted from closure short-term or were they sustained?
3. Of the impacts that you noted, were they a direct result of closure, or were they lingering effects of the mining activity? How do you differentiate?

### Economic Impacts

1. What direct or indirect effects on (Watson Lake/Ross River) businesses did you note during temporary and/or permanent closures of recent mining projects?
2. Did you note employment impacts of those same closures?
3. Were any of the business or employment effects mitigated by any specific steps taken by previous operators?
4. How sustained were the effects? Did closures create sustained economic impacts? If so, for how long?
5. Were there any positive economic effects of closure activities associated with any of the projects?

### Social Impacts

1. What are the social impacts specific to the community in which you live that you noted from previous closures?
2. Did companies/government take any specific steps to address these impacts?
3. Were there steps that you believe could have been taken to mitigate any negative impacts that were not undertaken by the companies involved?

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**KUDZ ZE KAYAH MINE PROJECT**

**INDEPENDENT STUDY OF KASKA TRADITIONAL LAND USE ALONG THE ROBERT  
CAMPBELL HIGHWAY**

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March 2019

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## **Executive Summary**

The following is an independent research report that presents the traditional land use (TLU) and occupancy of the Liard First Nation (LFN) and Ross River Dena Council (RRDC) along the Robert Campbell Highway. This study examines a diverse array of land uses along the highway corridor including hunting, trapping, fishing, plant use, water use, and transportation corridors. This report is written in conjunction with two other reports that examine the respective land use patterns of the LFN and RRDC in the vicinity of the proposed Kudz Ze Kayah mine.<sup>1, 2</sup> When necessary, I have cross referenced these two reports.

From this report, certain conclusions can be reached regarding the traditional land use of the Robert Campbell Highway corridor:

- Both the RRDC and LFN have a long history of hunting, trapping, and fishing along the present route of the Robert Campbell Highway;
- The Robert Campbell Highway roughly follows and intersects with LFN and RRDC travel corridors; and
- The Robert Campbell Highway continues to be an important travel corridor for RRDC's and LFN's hunting, trapping, fishing, and plant gathering activities.

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<sup>1</sup> BMC, *Independent Study of Ross River Dena Council Traditional Land Use*.

<sup>2</sup> BMC, *Independent Study of Liard First Nation Traditional Lane Use*.

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## LIST OF ACRONYMS

HBC	Hudson's Bay Company
LFN	Liard First Nation
km	kilometre
RRDC	Ross River Dena Council
TLU	Traditional Land Use

## **GLOSSARY**

toponym      a place name, especially one derived from a topographical feature

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## **1. INTRODUCTION**

The purpose of this report is to document the collection and summarizes the findings of Kaska (RRDC and LFN) traditional land use (TLU) along the Robert Campbell Highway. BMC Minerals (No 1.) Ltd (BMC) proposes to use the Robert Campbell Highway from kilometre (km) 0 to 232 for the purposes of transporting concentrate from their proposed Kudz Ze Kayah mine.

This report contains a summary of past and current traditional land uses along the Robert Campbell Highway, based on primary data sources available in the public domain and therefore, the confidentially agreements that BMC has with RRDC regarding traditional knowledge (including TLU) has been maintained.

The report begins with an overview of the methods used to collect the traditional use information, followed by the results of the research which includes summaries of the traditional land uses of hunting, trapping, fishing, plant use, and travel corridors of RRDC and LFN respectively.

## **2. METHODOLOGY**

This report contains the results of desk-based research, including compiling and summarizing publicly-available primary data sources. For the purpose of this study, primary data sources are first hand or eye witness accounts of RRDC and LFN traditional land use. These primary data sources include a wide variety of materials including:

- Journals from Hudson Bay Company (HBC) fur trading posts;
- Yukon government trapline registration records;
- Trapline maps;

- Other government records;
- Travel narratives;
- Published oral histories; and
- Published ethnographies.

These primary data sources are complemented by secondary source materials including;

- published TLU reports;
- Environmental Assessment documents;
- archaeological surveys; and
- published scholarly works.

Additionally, GIS has been used to analyse spatial primary data sources, such as trapline maps, and visually represent traditional land use in reference to the Robert Campbell Highway.

## **2.1 REVIEW OF LITERATURE**

Sources used in the research included (but are not limited to): HBC journals, travel narratives of individuals who travelled through the traditional territories of RRDC and LFN. These include geologist George Dawson and sportsman Warburton Pike. Additionally, government records relating to trapline registration have been used to elucidate trapping activities. These sources have been used in conjunction with anthropological literature and other secondary source materials in order to ascertain a full picture of land use and occupancy.

As nomenclature relating to Indigenous peoples has changed since the HBC established posts at Frances Lake and Pelly Banks, the terms Ross River Dena Council and Liard First Nation do not appear in the historical and ethnographic literature. I have used historical terminology and – when the relation to current terminology is unclear – I have made inferences into how historical

terms relate to modern terminology. Thus, to the best of my ability, I have separated the research results for RRDC traditional land use from that of LFN traditional land use.

It is acknowledged that many of the literature sources reviewed were written prior to the construction of the Robert Campbell Highway. However, it is understood that the construction of the Robert Campbell Highway allowed easier access to the traditional land use areas that had previously only been accessible by non-motorized methods.<sup>3</sup>

## **2.2 REVIEW OF PREVIOUS ENVIRONMENTAL ASSESSMENTS**

Over the past 10 to 15 years, major projects along the Robert Campbell Highway corridor, have consisted mainly of the Government of Yukon Department of Highways and Public Works road reconstruction activities (e.g., geotechnical investigations, pit development, clearing, construction).

A review of the Yukon Environmental and Socio-economic Assessment Board's Online Registry for the period 2005 to 2019 was conducted for Highways and Public Works projects to identify where traditional land uses by LFN and RRDC were identified. In addition, the Golden Predator 3 Aces project on Nahanni Range Road and the Yukon Zinc Wolverine mine project assessments were also reviewed for relevant information.

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<sup>3</sup> Peter Petkov Dimitrov, "A Northern Indian Band's Mode of Production and its Articulation with the Multicultural Mode," MSc. Thesis, (University of British Columbia, 1984), 47.

### **2.3 REVIEW OF PREVIOUS DOCUMENTS PREPARED BY BMC**

Appendix F-3 of BMC's Project Proposal for the Kudz Ze Kayah mine included a comprehensive "*Kaska Ethnographic Overview of the Kudz Ze Kayah Project.*"<sup>4</sup> In addition, BMC's Response Report #4<sup>5</sup> was peppered with LFN and RRDC traditional land use information. Both reports were reviewed for relevant TLU information related to the Robert Campbell Highway.

### **2.4 NOTES ON TERMINOLOGY**

As mentioned above, terminology used by Europeans and Euro-Canadians in reference to Indigenous peoples has changed with time. Consequently, it is necessary to discuss historical and ethnographic terminology and how terms used in the past relate to the contemporary RRDC and LFN.

HBC fur traders were the first people to produce written records relating to the Kaska in the Yukon. As the HBC traders contacted different Kaska groups, they used different terms. For example, "Mauvais Monde" was used in reference to the Kaska that the HBC encountered and traded with on the upper Liard River.<sup>6</sup> Meanwhile, Indigenous peoples who traded at Frances Lake

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<sup>4</sup> BMC, *Kudz Ze Kayah Project Proposal to YESAB Executive Committee*, (BMC: March 2017).

<sup>5</sup> BMC, *Kudz Ze Kayah Project, Response Report #4 to YESAB Executive Committee Adequacy Review of KZK Project Proposal*, (BMC: December 14, 2018).

<sup>6</sup> Hudson's Bay Company Archives (HBCA), Frances Lake Post Journal, B.73/a/1, 2 September 1842, fol. 8.

Post were referred to in the post journals as “Gens grand d’eau”.<sup>7</sup> This term translates to mean “People of the Big Water.” This is similar to “Big Water Dwellers” (Tu’tcogtena) one of the terms identified by anthropologist John Honigmann as applying to the Frances Lake Kaska.<sup>8</sup> Indigenous peoples from the Pelly River region were generally referred to as “Pelly Indians,” people “from beyond the mountains,” or “Gens de couteau” (Knife Indians in Robert Campbell’s published journals).<sup>9</sup> Additionally, the post journals at Pelly Banks refer to the “Mountains Indians,” Indigenous peoples who arrived from the mountain range separating the Pelly River and Mackenzie River watershed.

During the late nineteenth and early twentieth centuries, terminology used by Euro-Americans and Euro-Canadians generally referred to the region the respective Indigenous group inhabited. For example, in the Lower Post region and contiguous sections of the Yukon, Indigenous peoples were referred to as “Upper Liard Kaska” or “Liard Indians.”<sup>10</sup> Further north, in the vicinity of Frances Lake, Indigenous peoples were generally referred to as “Frances Lake

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<sup>7</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 4 November 1843, fol. 11d.

<sup>8</sup> John J. Honigmann, *The Kaska Indians: An Ethnographic Reconstruction*, (New Haven: Yale University Press, 1954), 20.

<sup>9</sup> See for example, HBCA, Frances Lake Post Journal, B.73/a/1, 17 December 1842, fol. 19d.

<sup>10</sup> Honigmann, *The Kaska Indians*, 19; Warburton Pike, *Through the Subarctic Forest: A Record of a Canoe Journey from Fort Wrangel to the Pelly Lakes and Down the Yukon River to the Behring Sea*, (London: Edward Arnold, 1896), 98.

Kaska” or “Frances Lake Indians.”<sup>11</sup> Basing his analysis on a 1926 RCMP report, Honigmann noted that there was a distinction between the Upper Liard Kaska and Frances Lake Kaska.<sup>12</sup> Finally, the Indigenous peoples of the upper Pelly River were referred to as the “Pelly Indians” or “Pelly River Indians.”<sup>13</sup> Curiously, Honigmann did not classify them as Kaska in spite of the fact that one of his informants had drawn attention to their close linguistic association with the Frances Lake Kaska.<sup>14</sup> Honigmann’s failure to connect the Indigenous peoples of the Pelly River region more broadly with the Kaska might be attributed to the fact that he did not visit Ross River.<sup>15</sup> It should also be noted that while Euro-American and Euro-Canadian travelers who traversed through the Frances Lake region encountered “Pelly Indians” in the vicinity, they made a distinction between the “Pelly Indians” and the Frances Lake Kaska.<sup>16</sup> During the early 20<sup>th</sup> century, Ross River trader Poole Field was told of a massacre of the “Pellys” said to have occurred in 1886, resulting in few survivors. He went on to state that some Indigenous peoples from the Liard region moved northward to occupy the upper Pelly River region.<sup>17</sup> Summing up the situation,

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<sup>11</sup> Honigmann, *The Kaska Indians*, 20; Anton Money with Ben East, *This Was the North*, (Toronto: General Publishing Co. Limited, 1975), 100 and 119.

<sup>12</sup> Honigmann, *The Kaska Indians*, 20.

<sup>13</sup> Pike, *Through the Subarctic Forest*, 120.

<sup>14</sup> Honigmann, *The Kaska Indians*, 22.

<sup>15</sup> Honigmann, *The Kaska Indians*, 5-6.

<sup>16</sup> Pike, *Through the Subarctic Forest*, 137.

<sup>17</sup> Poole Field, “The Poole Field Letters (1939),” ed., J.H. MacNeish, *Anthropologica* 4 (1957)” 48-49.

Field wrote: “The Center Indians from that time on gradually moved into the Pelly country and claimed it as theirs, also claiming a right to the country they had left at the head waters of the Liard.”<sup>18</sup> This has led some scholars to suggest that the Indigenous peoples in the upper Pelly River during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries were distinct from the “Knife Indians” described by Campbell during the 1840s.<sup>19</sup> However, this position does not account for the distinct “Pelly Indian” identity that Pike witnessed in 1893, six years after the incident.

With respect to how early ethnographic divisions relate to contemporary First Nations, references to “Pelly Indians” have been assumed to relate to the ancestors of RRDC. Meanwhile, information relating to the Upper Liard Kaska and Frances Lake Kaska has been assumed to relate to the ancestors of LFN. This is based on the amalgamation of the Watson Lake and Frances Lake bands in 1961.<sup>20</sup> It should be noted, however, that distinctions between LFN and RRDC are not always so easily made. As noted by historian Ken Coates, LFN also includes individuals from Ross River.<sup>21</sup> Coates has also noted, Indian Affairs encouraged Ross River residents to move to

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<sup>18</sup> Field, “The Poole Field Letters,” 49.

<sup>19</sup> Glenda Denniston and Carter Denniston, “A Preliminary Report on Ross River, an Athapaskan Community,” 4.

<sup>20</sup> *Kaska Dena Council v. Yukon (Government of)*, 2019 YKSC 13, 7-8; LAC, RG 10, Accession V1998-00301-9, Box 1, File 801/1-1-2, W.C. Bethune memorandum to Assistant Indian Commissioner for BC, 3 May 1961.

<sup>21</sup> *Kaska Dena Council v. Yukon (Government of)*, 2019 YKSC 13, 7.

Upper Liard.<sup>22</sup> Additionally, it should be noted that some Frances Lake Kaska families moved to Ross River.<sup>23</sup> Personal communications with an RRDC Elder<sup>24</sup> have also advised that the distinctions between LFN and RRDC are not always so easily made when interpreting the historical trapping records, as many families from the Ross River region and region around the proposed Kudz Ze Kayah mine moved to Lower Post, Upper Liard and Watson Lake to be close to their children that had been sent to residential school. When they moved they became Upper Liard members and then several years later when they moved back north to the Ross River region they then became RRDC members.

## 2.5 DATA LIMITATIONS

While not perfect sources, HBC journals provide important insights into Indigenous land use and occupancy, including LFN and RRDC land use in the vicinity of the Robert Campbell Highway. While these sources do not always provide precise geographical locations of hunting, trapping, and fishing activities, they nevertheless provide a general understanding of land use in the region.

An additional element that needs to be considered when analyzing HBC records is the effect of epidemic diseases which spread with the advance of the fur trade. These epidemics

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<sup>22</sup> Ken S. Coates, *Best Left as Indians: Native-White Relations in the Yukon Territory, 1840-1973*, (Montreal and Kingston: McGill-Queen's University Press, 1991), 212.

<sup>23</sup> Denniston and Denniston, "A Preliminary Report on Ross River," 4.

<sup>24</sup> Confidential. 2019. Personal Communication, RRDC Elder.



affected Indigenous land use patterns. For example, in January 1844 it was noted at Frances Lake Post that “a Stranger arrived from beyond Finlayson’s Lake with no very cheering News – The Indians in that quarter are still labouring under the effects of that Malady which spread among them last fall.”<sup>25</sup>

Ethnography is a form of study that presents degrees of qualitative and quantitative descriptions of human social phenomena, which are gathered during fieldwork and observations of human groups. The Kaska people have several main ethnographers who lived with and observed them. Ethnographic sources are an important source of cultural and historical context and allow the comparison of different information over time. However, ethnographic data and observations also have limitations and should not be considered conclusive. Ethnographic accounts are criticized as they were overwhelmingly recorded by Euro-Canadians in the late 1880s through to the mid-1900s, who were largely informed by a western worldview. In some instances, ethnographers have specific agendas and preconceived notions of the people and communities they encounter, which skew the information and call into question some, if not many, of their observations and interpretations. However, their accounts often provide an important snapshot of daily life, social and political structures and subsistence methods employed by Kaska people, especially at the turn of the twentieth century.

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<sup>25</sup> HBCA, Frances Lake Post Journal, B.73/a/2, 7 January 1844, fol. 17-17d.

Government records related to trapline registration have also been used to assess Kaska traditional land use. However, these records can also be suspect. Trapline maps potentially distill more complicated forms of land use to a simple tract of land. Additionally, similar to ethnographic works, government records are produced through a Eurocentric lens. Consequently, these records may misrepresent or misunderstand certain aspects of Kaska land use.<sup>26</sup>

### 3. RESULTS

The region covered in this study is the 232 km of the Robert Campbell Highway in southeast Yukon. More specifically, the study focuses on the highway corridor between Watson Lake (km 0) and the tote road turn off (km 232) leading to the proposed Kudz Ze Kayah mine (

Figure 1). The highway passes roughly parallel to the Frances River, primarily on the west side of the river. Going from south to north, the road passes by a variety of lakes, including Simpson Lake (on the west side of the highway), Frances Lake (on the east side of the highway), and Finlayson Lake (on the north side of the highway).

The key traditional use areas in the vicinity of the Robert Campbell Highway are summarized in Table 1 and their locations are presented in Figure 1. These areas will be frequently referenced throughout this report.

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<sup>26</sup> See Glenn Icton, "Trapped by Geography in the BC-Yukon Borderlands." *Historical Geography* 45 (2017): 113-116.

**Table 1: Summary of Key Traditional Use Areas along the Robert Campbell Highway**

English Name	Kaska Name (Source)	Approximate Distance from the Highway
North Lakes	<i>Ihts'I Ba Mene'</i> – meaning north Wind lake <sup>27</sup>	25 km South
Finlayson Creek	<i>Luge Destie Tue</i> – meaning Fish creek	Crosses Highway
Wolverine Lake	<i>Negha Mene</i> – meaning Wolverine lake <sup>28</sup>	15 km South West
Money Peak	Possibly <i>Tse Nehtsat</i> [Pelly dialect] and <i>Gucha Dedie Hes</i> [Liard dialectic] – meaning sheep mountain <sup>29</sup>	30 km South West
Big Campbell Creek	<i>Tanidzi</i> – meaning in the middle <sup>30</sup>	Crosses Highway
Finlayson River	Not available	0.1 km North
Finlayson Lake	<i>Tetl'ane Joje</i> <sup>31</sup>	0.3 km North
Money Creek	<i>El'es Tue</i> <sup>32</sup> <i>Il-es-too-a</i>	Crosses Highway
Pelly River	Not available	0.1 km North
Fire Lake	Not available	50 km South West
Frances Lake	<i>Tu Cho</i> – meaning big water	0.5 km East

<sup>27</sup> Mary Charlie in Douglas Rutherford, *Archaeological Reconnaissance of the Kudz Ze Kayah Project, Central Yukon, Phases 1 and 2*, (Vancouver: Norecol, Dames & Moore; Ross River: Ross River Dena Council; Whitehorse: Heritage Branch, Government of Yukon, 1995), 29.

<sup>28</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 29.

<sup>29</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 34-35.

<sup>30</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 34.

<sup>31</sup> R. Gotthardt, *Frances Lake: Traditional and Archaeological Sites*, (Liard First Nation, 1993), 7.

<sup>32</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 33.

English Name	Kaska Name (Source)	Approximate Distance from the Highway
Frances River	Not available	Crosses Highway
Pelly Banks	Not available	2 km North
Sambo Lake	Not available	15 km West
Simpson Creek	Not available	Crosses Highway
Simpson Lake	Not available	0.1 km West
Simpson Mountains	Not available	30 km West
Logan Mountains	Not available	80 km North East
Hoole Canyon	Not available	1 km North
Frances Lake (West Arm)	Tudie' Disela <sup>33</sup>	1 km East
Hyland River	Eg-is-e-too'-a <sup>34</sup>	40 km East
Yusezyu River	Yus-ez-eh <sup>35</sup>	15 km North East
Pelly Lakes	Not available	55 km North
Too-Tsho Mountains	Not available	25 km East
Simpson Tower	Tenidzé <sup>36</sup>	8 km East

<sup>33</sup> Gotthardt, *Frances Lake*, 6.

<sup>34</sup> George M. Dawson, *Report on an Exploration in the Yukon District, N.W.T. and Adjacent Northern Portions of British Columbia, 1887*, (Montreal: Dawson Brothers, 1888), 79B-80B.

<sup>35</sup> Pike, *Through the Subarctic Forest*, 151.

<sup>36</sup> Gotthardt, *Frances Lake*, 6.

English Name	Kaska Name (Source)	Approximate Distance from the Highway
Money Point	Al'as Túé <sup>37</sup>	30 km South East
McPherson Lake (?)	Un-tas'-tsho <sup>38</sup>	50 km North East

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<sup>37</sup> Gotthardt, *Frances Lake*, 6.

<sup>38</sup> Dawson, *Report on an Exploration of the Yukon District*, 111B.

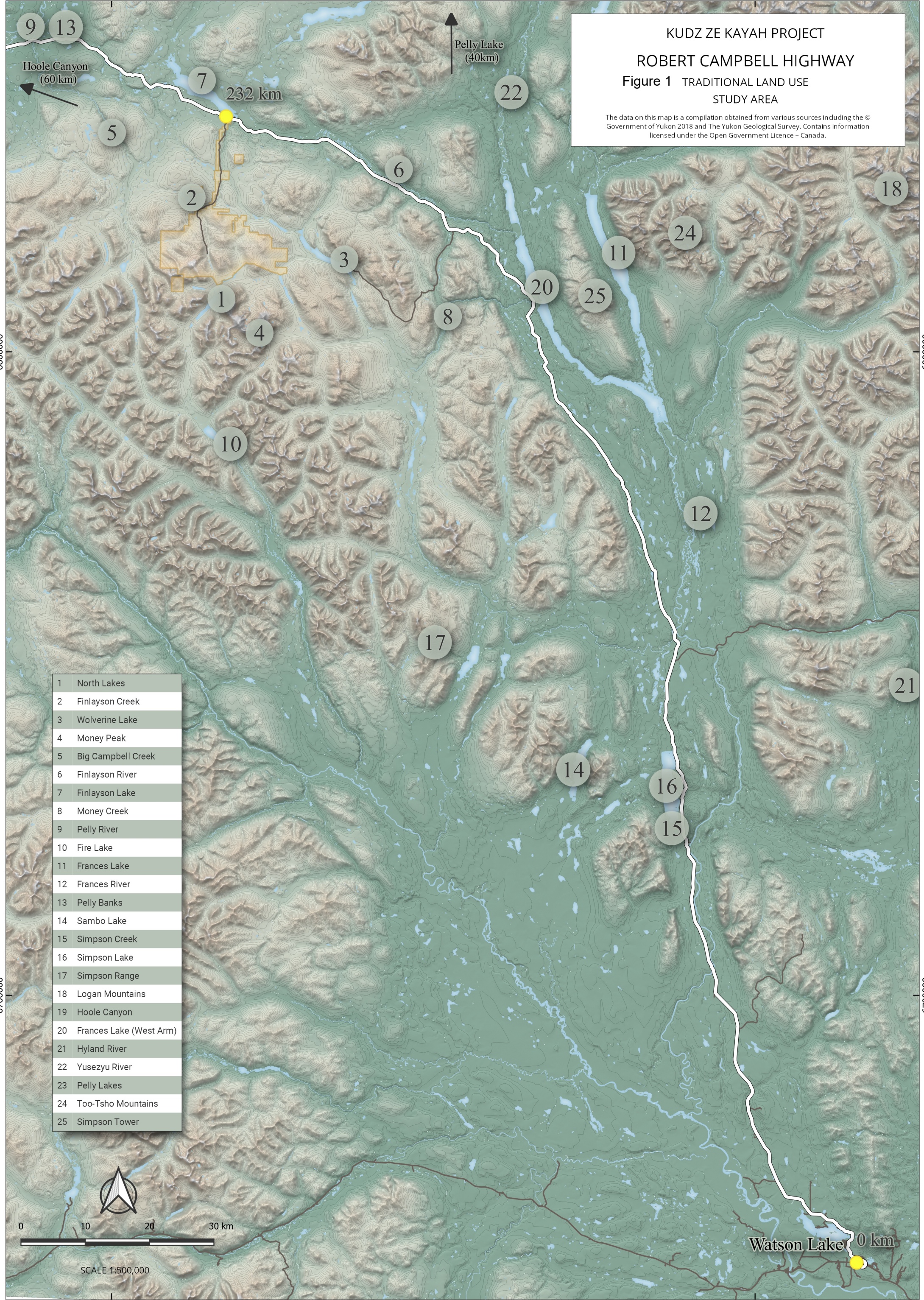


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KUDZ ZE KAYAH PROJECT  
 ROBERT CAMPBELL HIGHWAY  
 Figure 1 TRADITIONAL LAND USE  
 STUDY AREA

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.



Hoole Canyon (60 km)

Pelly Lake (40km)

232 km

Watson Lake 0 km

- 1 North Lakes
- 2 Finlayson Creek
- 3 Wolverine Lake
- 4 Money Peak
- 5 Big Campbell Creek
- 6 Finlayson River
- 7 Finlayson Lake
- 8 Money Creek
- 9 Pelly River
- 10 Fire Lake
- 11 Frances Lake
- 12 Frances River
- 13 Pelly Banks
- 14 Sambo Lake
- 15 Simpson Creek
- 16 Simpson Lake
- 17 Simpson Range
- 18 Logan Mountains
- 19 Hoole Canyon
- 20 Frances Lake (West Arm)
- 21 Hyland River
- 22 Yusezyu River
- 23 Pelly Lakes
- 24 Too-Tsho Mountains
- 25 Simpson Tower



0 10 20 30 km

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### 3.1 HUNTING

Ethnographic sources mention culturally important wildlife species to the Kaska citizens, including big game such as caribou, moose, sheep, and bear.<sup>39</sup> In general, Kaska hunting occurs in the spring and fall in mountainous areas and trapping is done in the winter months in the valley bottoms.<sup>40</sup> Birds were also reported to be part of the traditional Kaska diet including geese, ducks, swans, loons, ptarmigans, and grouse.<sup>41</sup>

Fall was/is an important hunting time, as many animals are in optimal condition after summer grazing in terms of health, nutrition, and density. This was the time of the year Kaska citizens traditionally dispersed from larger summer camps around fish-bearing lakes to travel into alpine locations in pursuit of meat.<sup>42</sup> The timing was influenced by the seasonal patterns of specific animals.

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<sup>39</sup> Honigmann, *The Kaska Indians*, 31 and 38; Ross River Dena Council (RRDC), *Dene Dechen Tah Néde' Living in the Bush: Traditional Lifestyles of the Kaska and Mountain Slavey People of Ross River*, (Ross River: Ross River Dena Council, 1992), 39; Gotthardt, *Frances Lake*, 1.

<sup>40</sup> RRDC, *Dene Dechen Tah Néde' Living in the Bush*, 35; Gotthardt, *Frances Lake*, 1;

<sup>41</sup> Honigmann, *The Kaska Indians*; Marten Weinstein, "Just Like People Get Lost: A Retrospective Assessment of the Impacts of Faro Mining Development on the Land Use of the Ross River Indian People," (Ross River; Ross River Dena Council, June 1992).

<sup>42</sup> J. Ives and C. Sinopoli, "The Archaeological Correlates of the Athapaskan Kaska," *Michigan Discussions in Anthropology* Vol. 5 (1980): 1-2.

In general, despite substantial outside pressures and influences to shift away from subsistence hunting, this is still an integral part of Kaska way of being and connecting to the land. They have done so more than other Aboriginal groups across Yukon.<sup>43</sup>

### **3.1.1 ROSS RIVER DENA COUNCIL**

Fall was an important hunting time, as many animals are in optimal condition after summer grazing in terms of health, nutrition, and density. During this time of the year Kaska citizens traditionally dispersed from larger summer camps around fish-bearing lakes to travel into alpine locations in pursuit of meat.<sup>44</sup> The timing was influenced by the seasonal patterns of specific animals.

Regarding animal species in the Ross River region, in his Masters thesis on Ross River Dena land use, Peter Dimitrov identified seven broader species categories: ungulates, bears, fur mammals, small game mammals, upland game birds, waterfowl, and fish. Among the ungulates Dimitrov identified moose, caribou, Dall sheep, and mountain goat. Among the bears he identified black and grizzly bears. Among the fur mammals he identified beaver, lynx, marten, mink, weasel, otter, wolverine, red fox, wolf, coyote, muskrat, and red squirrel. Among the small game mammals he identified hoary marmot, Arctic ground squirrel, porcupine, and snowshoe hare. Among the

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<sup>43</sup> M. Morrell, *Indian land use in the Ketsa River Valley and the impact of the Ketsa River Mine* (Ross River: Ross River Dena Council, 1992).

<sup>44</sup> Ives, J. and C. Sinopoli. 1980. *The Archaeological Correlates of the Athapaskan Kaska*. Michigan Discussions in Anthropology. Vol. 5, 1-2.



upland birds he identified blue grouse, spruce grouse, ruffed grouse, sharp-tailed grouse, willow ptarmigan, rock ptarmigan, and white-tailed ptarmigan. Among the waterfowl he identified lesser Canada goose, lesser snow goose, sandhill crane, whistling swan, mallard, pintail, green-winged teal, American widgeon, shoemaker, canvasback, greater scaup, lesser scaup, common goldeneye, Barrow's goldeneye, bufflehead, harlequin duck, white-winged scoter, surf scoter, common merganser, and red-breasted merganser. Finally, among the fish species he identified lake trout, broad whitefish, lake whitefish, round whitefish inconnu, grayling, pike (jackfish), longnose sucker, white sucker, burbot (ling cod), chinook salmon (king salmon), and chum salmon (dog salmon).<sup>45</sup> In writing about the Ross River Dena, Martin Weinstein also noted that moose are an extremely important resource to the Ross River Dena. Additionally, he has noted the importance of furbearers, Pacific salmon, and small game to the Ross River Dena economy.<sup>46</sup>

Writing about the patterns of Ross River Dena hunting as well as the paucity of historical records describing their hunting practices, Dimitrov wrote:

Unfortunately [Robert] Campbell's and other explorers' journals do not provide much information about Indian people on the Upper Liard and Pelly Rivers. What is known of those days is largely the result of information obtained from present day Ross River Indian Elders. According to their stories, the forefathers of the present day Ross River Indians were a hunting-gathering band society and extended family groups highly mobile throughout their territory. Livelihood was dependent on moose, caribou, small game and other dispersed animal resources and as a consequence dispersal of the human population was required to harvest resources.<sup>47</sup>

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<sup>45</sup> Dimitrov, "A Northern Band's Mode of Production and its Articulation with the Multinational Mode," 32.

<sup>46</sup> Weinstein, "The Ross River Dena," 11.

<sup>47</sup> Dimitrov, "A Northern Band's Mode of Production and its Articulation with the Multinational Mode," 36.

This statement points to the fact that failures to mention Ross River Dena harvesting activities in the historical literature does not necessarily mean the absence of wildlife harvesting activities, but rather it provides insights into Ross River Dena land use patterns.

Dimitrov also wrote about the effects of road construction on Ross River Dena hunting activities. In particular, he addressed how the construction of the Robert Campbell Highway affected hunting. These impacts included both positive and negative effects. On the positive side, Dimitrov noted that the Ross River Dena had easier access to “bush camps.” However, Dimitrov also noted that increased road access resulted in an increase presence of “outsiders.”<sup>48</sup>

While ascending the Frances River during the winter of 1893, American sportsman Warburton Pike noted sheep hunting by people who he referred to as the “Pelly River Indians” in the mountains near the first canyon of the river:

One of these hills, known to the natives as “Chesi,” was once a sure find for big-horn, but a few years ago, during a season of deep snow, they were nearly all killed by a band of Pelly River Indians, who made themselves very unpopular with the Liard tribes in consequence of this breach of hunting laws, which require each hunter keep within his own territory. Any sheep that survived the raid have since avoided Chesis and sought security in the higher ranges to the north.<sup>49</sup>

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<sup>48</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 47.

<sup>49</sup> Pike, *Through the Subarctic Forest*, 120.

While this incident indicates that Kaska from the Pelly River region hunted sheep in the mountains surrounding Frances River, it also indicates efforts by Upper Liard Kaska to protect their hunting territories.

Pike also found evidence of sheep hunting in the mountains near Hoole Canyon: “These mountains are probably inhabited by mountain sheep, as they look to be splendidly suited to that animal’s tastes, and in an old Indian camp at the cañon I found two or three sheep’s skulls, besides several scraps of skin.”<sup>50</sup> In 1993, Weinstein noted the importance of Ross River and Pelly Banks for harvesting activities: “The territory is the harvesting area of the hunting groups whose primary summering and trading locations during the early and mid-20<sup>th</sup> century were at the mouth of the Ross River and at Pelly Banks.”<sup>51</sup>

According to the Wolverine Project Heritage Protection Plan, the Wolverine Lake area approximately 10 km south of the Robert Campbell Highway is of particular importance to RRDC for its relative wildlife abundance playing a critical function during periods of wildlife depletion in other areas:

The Kaska Dena know Nougha Mene [Wolverine Lake] as an area of bountiful wildlife, fish and plants. While the Wolverine area is commonly used for harvesting, gathering, and trapping, it is particularly important in lean years when wildlife is hard to find in other areas of the territory. At these times, community

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<sup>50</sup> Pike, *Through the Subarctic Forest*, 199.

<sup>51</sup> Martin Weinstein, “The Ross River Dena: A Yukon Aboriginal Economy,” (Royal Commission on Aboriginal Peoples, 1993), 15.

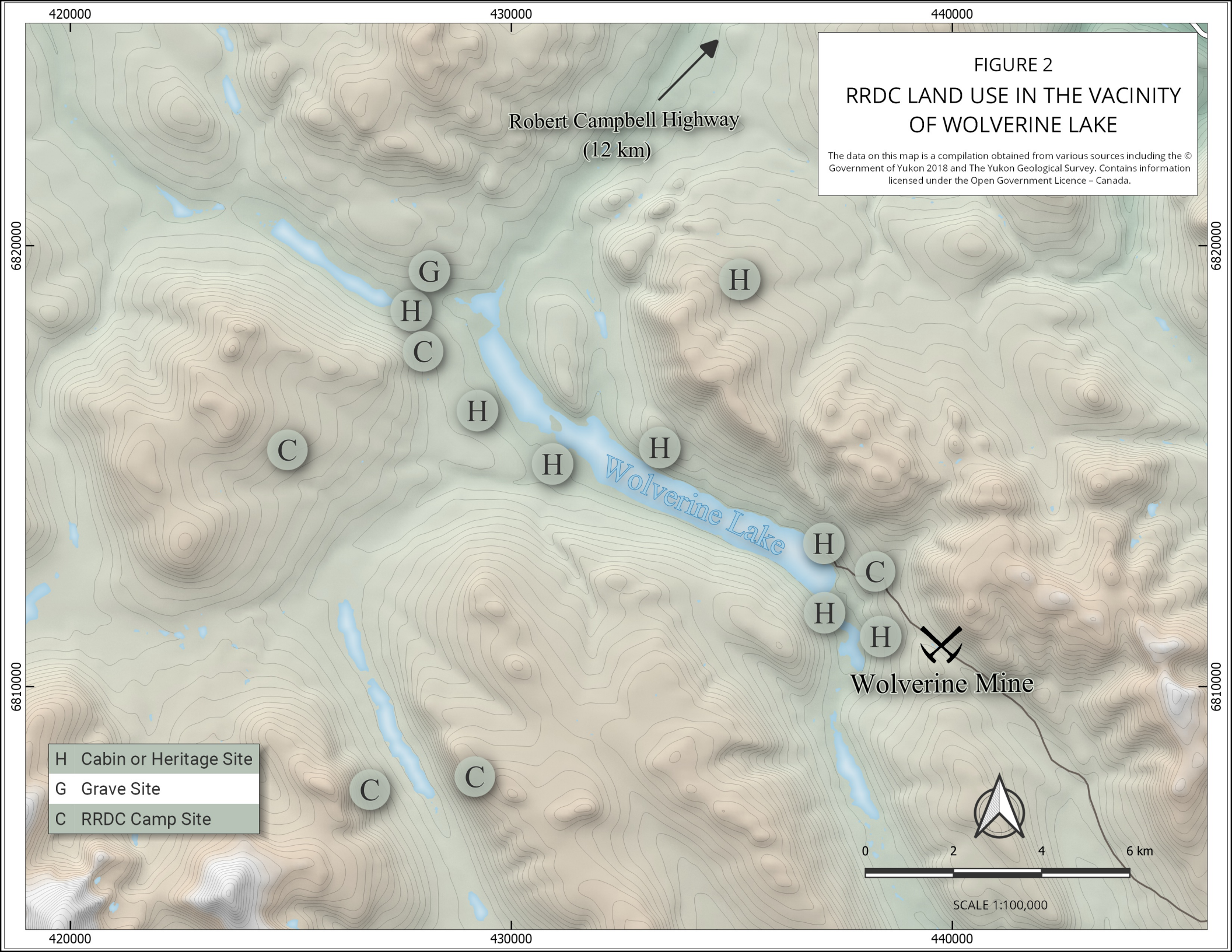
members came to Wolverine to harvest at special locations known to harbour wildlife.<sup>52</sup>

Expatriate's Water Licence Application for the Wolverine Exploration Project also identifies RRDC land use (i.e. cabins etc.) south of the Robert Campbell Highway<sup>53</sup> in the vicinity of Wolverine Lake. Land use sites presented in this water licence application are presented here in Figure 2.

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<sup>52</sup> Yukon Zinc Corporation, *Wolverine Project Heritage Resource Protection Plan*, (Vancouver: Yukon Zinc Corporation; Ross River: Ross River Dena Council, November 2007), 1.

<sup>53</sup> Expatriate Resources Ltd., *Wolverine Advanced Exploration Program - Water Licence Application*, APPENDIXC *Wolverine Advanced Exploration Program Public Consultation* (Whitehorse: Expatriate Resources; White Mountain Consulting; Gartner Lee; DFO; YTG, January 2001), 1.



**FIGURE 2**  
**RRDC LAND USE IN THE VICINITY**  
**OF WOLVERINE LAKE**

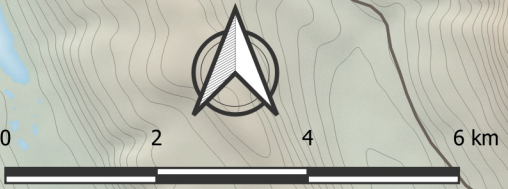
The data on this map is a compilation obtained from various sources including the © Government of Yukon 2018 and The Yukon Geological Survey. Contains information licensed under the Open Government Licence - Canada.

Robert Campbell Highway  
(12 km)

Wolverine Lake

Wolverine Mine

- H Cabin or Heritage Site
- G Grave Site
- C RRDC Camp Site



420000 430000 440000

6810000 6820000



During his interview, Arthur John discussed the importance of hunting in the mountainous regions of the Kaska Territory, especially for caribou and sheep:

That's when [August] they start to go back to the bush. That's when those animal get fat eh. ...Then you find caribou same time in the mountain too eh. People to that way all the time, he go right up that hill there. That high hill. Sheep, they all stay in the mountain. You have to go to, you want a sheep, you got to up Lapie, up that way people get 'em. They know where's all the sheep lick is. They go there, then they wait. And sheep come down the lick, then they get 'em eh.<sup>54</sup>

Arthur John, Sr. also described the snaring of sheep and moose:

No rifle that time. Down the Mye Mountain, that's where they snare sheep. They said sheep got trail eh. They go on his trail all the time. Some place, tight place, they went through. Some place, narrow place, well, they set his snare there eh. They snare moose [too] wintertime. Like on the mountain, big draw eh, big draw he know moose up there. Down there they set snare. They put pole through, all through the bush. All the way up to the side, from that side eh. Every little hole there where they don't have pole across, they set snare there. And two three got to go up there. He chase 'em down. One guy, one or two guy, watch here, eh. He stand up long way away, I guess, watching. And moose come down, one get caught, they run over there, they have to sheet him with bow and arrow eh.<sup>55</sup>

Although Mount Mye is not situated along the Robert Campbell Highway, John, Sr.'s statement highlights the importance of both sheep and moose hunting.

### **3.1.2 LIARD FIRST NATION**

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<sup>54</sup> RRDC, *Dene Dechen Tah Néde' Living in the Bush*, 34.

<sup>55</sup> RRDC, *Dene Dechen Tah Néde' Living in the Bush*, 3,

According to Honigmann, the animals eaten by the Upper Liard Kaska were: “caribou, moose, black and brown bear, sheep, goats (more rarely), beaver, muskrat, lynx, ground hog, gopher, and marten, the latter being described as resembling rabbit in taste. Porcupine often provided mainstay in winter, people refraining from killing this animal in summer in order to insure a supply for a period when it might be sorely needed.”<sup>56</sup>

While somewhat more distant from the route of the Campbell Highway than Frances River, Pike noted Indigenous caribou hunting grounds:

In the present instance we learnt afterwards from the Indians that the cariboo are like mosquitoes—the universal Indian synonym for a large number—to the eastward of Hyland River, but do not cross to the west side, while on the Frances the west side is the Frances the westside is the favoured locality, yet neither of these streams present any obstacle to the cariboo’s progress.<sup>57</sup>

Pike had likely learned of these hunting grounds from the Kaska who traded at Lower Post. While this information indicates potential caribou hunting grounds more distant from the Robert Campbell Highway, it also indicates caribou hunting grounds near the highway.

Pike later learned more details about hunting in the Frances River region:

We found an encampment of Indians 40 miles up from the mouth of the river [Frances River] and obtained from them a supply of moccasins and babiche that we were rather short of. They also gave us a general description of the country, and the localities of the game. Some of the hunters had just returned from an expedition to the Simpson Mountains, lying at some distance to the westward of the Frances.

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<sup>56</sup> Honigmann, *The Liard Kaska*, 38.

<sup>57</sup> Pike, *Through the Subarctic Forest*, 79-80.

They pointed us out some round-topped mountains where the cariboo were particularly numerous. The best moose country, they told us, lies to the eastward of the False Cañon—a constriction of the river without rapids, a few miles above their camp.<sup>58</sup>

In the 1920s, Anton Money described a Frances Lake Kaska camp on the west arm of Frances Lake:

Ten or a dozen miles farther up the west arm [of Frances Lake] we found the first sign of human habitation. A bundle of long poles stood stacked against a tree. They were winter tepee poles, and there were the remains of many fires on the ground. The poles had been cut at the height of a man's shoulder above the ground, indicating deep snow at the time. Plainly this was the site of a winter camp for the Frances Lake Indian families.

Late that afternoon, nearing the head of the lake, we saw the smoke of a campfire rising through the trees. We pulled to the beach and tied up. Here was journey's end. The fire was tiny, built between two tents. When we walked closer we saw that the tents were old and stained and that many holes had been burned in them. Squatted in front of the fire was the oldest Indian I had ever seen.<sup>59</sup>

This camp appeared to be headquarters for hunting activities in the vicinity. Money recounted the arrival of the hunters at Frances Lake:

The fourth day the Indian hunters came back. They were waiting for us when we returned to camp that evening. Little Jimmy, who had shown Amos the galena sample back at Telegraph Creek, was in the group. He told us that he had started back to Frances Lake overland a son as he left us there, and he had made better time afoot than we had by boat. With him were two other Indian men, Chief Smith and Caesar. I decided that the party of stampedeers who had wintered at Frances Lake in

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<sup>58</sup> Pike, *Through the Subarctic Forest*, 121.

<sup>59</sup> Money, *This Was the North*, 99-100.



1898 had named them. Little Jimmy apparently had come by his name from the trader at Lower Post on the Liard.

All three of the men spoke broken English, so our language troubles were at an end. They told us they had had a good hunt. They had cached part of their moose meat and they returned to the camp with sixteen pack dogs carrying forty pounds. Nobody would be short of food the remainder of the summer.<sup>60</sup>

A toponym indicating an important hunting area is Il-es-too'-a (now known as Money Creek) which flows into Frances Lake. In 1887, Dawson noted: "This stream is somewhat smaller than the Finlay son, and is known to the Indians as the *Il-es-too'-a*."<sup>61</sup> Anton Money, the creek's namesake, wrote of it: "We traveled up Frances Lake all the next day on the rim ice, the dogs pulling steadily, and camped that night at the delta of .the Big Sheep Lick River, the Il-es-tooa of the Indians. It was later named for me, and today's maps show it as Money Creek. I appreciate the honor but I like the old name better."<sup>62</sup> The translation of the Indigenous name, "Big Sheep Lick River," indicates its importance as a sheep hunting area. In Money's memoir he also stated that Caesar – a member of the Frances Lake Kaska – would not accompany him to Pelly Banks as "it was outside his tribal hunting grounds."<sup>63</sup>

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<sup>60</sup> Money, *This Was the North*, 104-105.

<sup>61</sup> Dawson, *Report on an Exploration in the Yukon District*, 109B.

<sup>62</sup> Money, *This Was the North*, 122.

<sup>63</sup> Money, *This Was the North*, 216.

In her archaeological survey of Frances Lake – conducted for LFN – archaeologist Ruth Gotthardt elaborated on the importance of Money Creek and the neighbouring Money Point:

Money Point was a very important fishing site for Frances Lake people in the past. The outlet of *Al'as Túé* (Money Creek) was a net fishing site and probably also where people used to set fish traps. *Al'as Túé* means 'lick water'. Along this creek is a mineral l

Gotthardt describes LFN moose hunting off the west arm of Frances Lake:

Tudie' Disela' is located about 10km west of the Narrows (Kedelini Tue) and was in the past an important moose hunting and fishing place for Frances Lake people. Tudie' Disela' means "lots of little islands across" (the lake in the Kaska language). ... Caribou and moose cross the lake here [along their migration toward Mount Logan].<sup>64</sup>

In connection with its significance as a hunting site, Money Creek has also been identified as part of a trail network connecting Frances Lake, Money Creek, and Finlayson Lake.<sup>65</sup>

Currently, LFN use their knowledge of wildlife's daily and seasonal movements to determine best hunting locations and approaches to maximize their chances of hunting success. Gotthardt (1993) noted hunting methods of Kaska who lived around Frances Lake and traveled to and from Finlayson Lake following the caribou migration through the area of the Project site:

Surrounds were constructed for hunting caribou in their winter range, on Simpson Tower (Tenidze) or on Finlayson Lake. ... Spring was the time of the caribou hunt, as the herds moved to their summer ranges [in and around Logan Mountain to the east of Frances Lake]. Caribou Crossing, on the East Arm of the Lake, was a

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<sup>64</sup> R. Gotthardt, *Frances Lake Traditional and Archaeological Sites: A report prepared for the Liard First Nation*, (Whitehorse: Heritage Branch, Government of Yukon, March 1993).

<sup>65</sup> *Kaska Ethnographic Overview of the Kudz Ze Kayah Project*, II.

traditional location for intercepting the caribou herds as they crossed the lake. ... [H]unting continued through the summer, but this was also the season when people travelled to visit with their neighbours”.<sup>66</sup>

Through YESAB submissions, LFN has discussed more recent hunting activities along the Robert Campbell Highway. For example, in response to the proposed reconstruction of kilometres 56 to 60 of the highway, it was noted: “Liard First Nation discussed impacts to hunting cabins due to past Highways and Public Works projects, indicating that some of the work has destroyed the access trail to

The project is located in the traditional territories of LFN and RRDC. Lands within the traditional territories may have been used or inhabited by aboriginal peoples for hundreds or thousands of years. Heritage resources include, but are not limited to, cabins, caches, graves, hunting camps, and man-made structures or objects that have been abandoned. No specific locations provided.<sup>67</sup>

Meanwhile, between km 70 and 90, various hunting cabins and salt licks were identified:

-Cabins at km 69 (left hand side), km 76 (left hand side) and km 78 (right hand side) in the Simpson Creek area.

- Salt licks (one salt lick is within 1 km of a testing area), cabins and associated springs, traditional camp sites, hunting cabins, viewpoints and the Kaska governance site at Simpson Lake.

...

- A cabin off the right-of-way near km 78 is confirmed to be in a geotechnical testing area.<sup>68</sup>

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<sup>66</sup> Gotthardt, *Frances Lake Traditional and Archaeological Sites*.

<sup>67</sup> YESAB Ref. #2012-0035.

<sup>68</sup> YESAB Ref. #2013-0048.

Additionally, LFN has identified cabins at kilometres 69, and 76 (off the right of way), 88.4, and 92.4. There is also a seep or spring near the cabin at kilometer 76.<sup>69</sup>

A summary of the traditional land use areas identified from the review of previous Environmental Assessments on the YESAB Online Registry are included in Appendix A while the maps series showing these locations are included in Appendix B.

### **3.2 TRAPPING**

Honigmann mentions that trapping was especially practiced in winter to harvest furbearers for sale at trading posts.<sup>70</sup> Traditional methods of trapping include using a four- or five-stranded braided babiche line. Also, corridors were created to drive animals such as moose, caribou and sheep into set traps. Deadfalls were used to take bear, marten, beaver, and smaller animals. Beavers were also caught with big nets 15 to 20 feet long constructed of babiche lines.<sup>71</sup> Weinstein confirms the species of focus for trapping, including “fox, lynx, marten, mink and others...”.<sup>72</sup>

A diverse array for furbearing animals have been integral to Kaska trapping practices, including wolves, as well as small furbearers such as muskrat, beaver, marten, mink, porcupine,

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<sup>69</sup> YESAB Ref. #2014-0013.

<sup>70</sup> Honigmann, *The Kaska Indians*.

<sup>71</sup> Honigmann, *The Kaska Indians*.

<sup>72</sup> Weinstein, “Just Like People Get Lost.”

squirrel, fox, lynx, and gopher.<sup>71, 73, 74</sup> Trapping is carried out during the winter months in the valley bottoms.<sup>73, 74</sup>

In 1950, the Yukon government introduced a compulsory trapline registration program. This meant that the Indigenous peoples of the Yukon had to register their trapping territories with the government. The current registered traplines along the Robert Campbell Highway are presented in Figure 1 and Appendix B. The historical traplines are summarized and analysed in the following sections.

### **3.2.1 ROSS RIVER DENA COUNCIL**

Pike's party encountered Indigenous peoples from the upper Pelly River region trapping beaver on the Yus-ez-uh River, which flows into the west arm of Frances Lake. Pike wrote:

Towards evening I sent the two Indians ahead to investigate the cause of the smoke, and try to trade some meat from the encampment they were sure to find. They returned during the night, having met a band of Pelly Indians, who were trapping beaver along the Yus-ez-uh, but they were short of meat themselves and very little include to party with any.<sup>75</sup>

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<sup>73</sup> RRDC, *Dene Dechen Tah Nede': Living in the Bush*.

<sup>74</sup> Gotthardt, *Frances Lake*.

<sup>75</sup> Pike, *Through the Subarctic Forest*, 137.

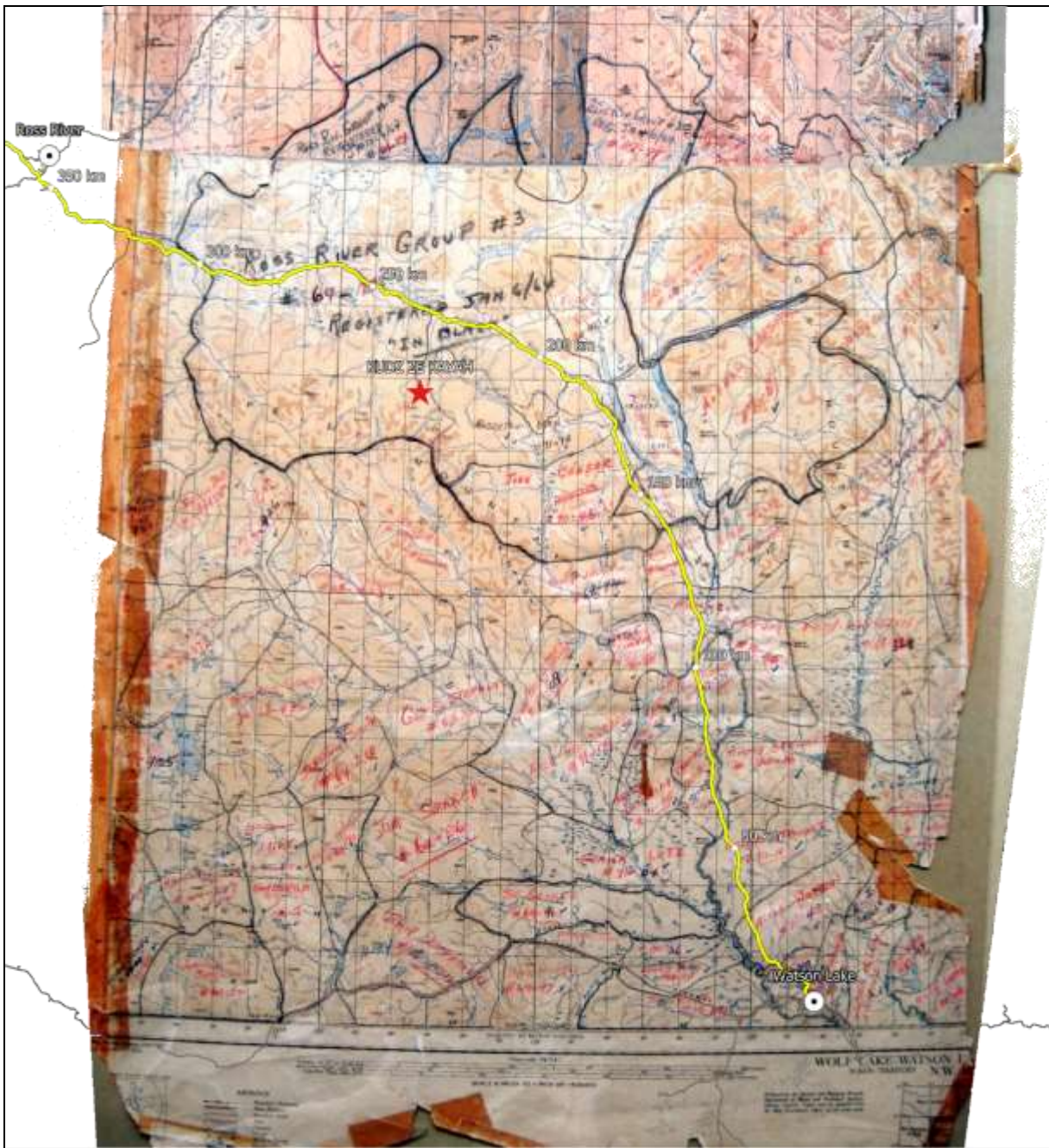
Commenting further upon the “Pelly Indians” activities over the previous winter (which he learned the following day), Pike wrote, “Here we found two families, who had left the main band of the Pellys in the autumn and had passed the winter between the Frances and Pelly Lakes.”<sup>76</sup>

Dimitrov has noted that as of his study (1984) the Ross River Dena trapped entirely within the boundaries of the group traplines. Elaborating on the areas of intensive trapping activities, he stated: “The most intensive trapping areas are north and south along the Pelly River and its tributaries; east and west of the Ross River; and up the North Canol Road to about 30 miles past Sheldon Lake.”<sup>77</sup> Group traplines have been mapped by government administrators and are held at the Yukon Archives. Figure 2 shows the proximity of Ross River group trapline #2 to the Robert Campbell Highway.

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<sup>76</sup> Pike, *Through the Subarctic Forest*, 137-138.

<sup>77</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 64.



**Figure 3: Ross River Group Trapline #3 in Proximity to the Robert Campbell Highway**

Dimitrov also commented on the coincidental nature of hunting and trapping activities:

In the month of June beaver and muskrat hunting takes place along the Pelly and Ross Rivers, as well as around Tay, Blind, and Orchie lakes. While trapping, hunting for caribou, moose and small game also takes place. For this reason the

Trapping land use maps not only reveal the spatial extent of trapping, but also the spatial extent of winter/spring hunting.<sup>78</sup>

Given the overlap in harvesting activities, it is important to not read the maps/figures with a reductionist eye. While trapline maps certainly reflect trapping activities within a specific tract of land, they likely also represent a variety of land use activities.

### **3.2.2 LIARD FIRST NATION**

The trading activities of Robert Campbell at the Frances Lake Post (established in 1842) provide greater insights into historical hunting and trapping activities along the highway corridor. On 31 August 1842, he noted the arrival of two individuals who he had previously met at “the Forks” (most likely the confluence of the Frances and Liard Rivers).<sup>79</sup> Campbell noted the following day that they traded “6 Beaver & the meat of a rein deer.”<sup>80</sup> As the arrivals made their departure on 2 September 1842, the trader wrote, “the Mauvais Monde lads went off across the South side of the Lake.”<sup>81</sup> The HBC often used the term Mauvais Monde in reference to the Indigenous peoples who traded in the Fort Halkett region (most likely ancestors to LFN).<sup>82</sup> The arrival of these traders at Frances Lake Post indicates both hunting and trapping activities in the

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<sup>78</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 64.

<sup>79</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 31 August 1842, fol. 8.

<sup>80</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 1 September 1842, fol. 8.

<sup>81</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 2 September 1842, fol. 8.

<sup>82</sup> HBCA, Fort Halkett Post Journal, B.85/a/8, 17 February 1838, fol. 24d.



region between the confluence of the Liard and Frances Rivers and Frances Lake. Again on 22 October 1843, “Traded the Furs brought from the Indians who arrived from below.”<sup>83</sup>

Trapline maps held at the Yukon Archives provide a sense of the spatial distribution of trapping activities along the route of the Robert Campbell Highway. In addition to the trapline maps, government correspondence helps contextualize these maps. For example, in 1959, a list of trappers and trapline license numbers was produced by the government relating to traplines registered in the Watson Lake District. The list identifies registered trappers from Watson Lake, Upper Liard, and Frances Lake. These lists also identified who the Indigenous trappers were (\*).

- Watson Lake: Fritz Donnesay\* (#127); Harry Donnesay\* (#140); Joe George\* (#115); Einar Hagen (#288); Fred Hasselberg Jr. (#134); Fred Hasselberg Sr. (#350); Howard Jimmy\* (#298); Dick Morris\* (#114); Timmy Stewart\* (#267); Oscar Stewart\* (#125); Frank Tom\* (#124); Liard Tom\* (#123); and Robert Watson\* (#105)
- Upper Liard: George Jackson\* (#314)
- Francis Lake: Mahou Jimmy\* (#228); Peter Jules\* (#244); Francis Magum\* (#231); and Russell Magum\* (#227)<sup>84</sup>

When lists such as the one above are matched against trapline maps – such as the one provided below (Figure 3) – it is possible to get a sense of the extent of LFN trapping activities along the corridor of the Robert Campbell Highway. Names and trapping license numbers correspond with

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<sup>83</sup> HBCA, Frances Lake Post Journal, B.73/a/1, 21 October 1882, fol. 13d.

<sup>84</sup> YA, GOV 2154, f14, List of names and licence numbers, 1959.

those on the map. These maps and correspondence provide strong evidence of LFN trapping activities along the Robert Campbell Highway.

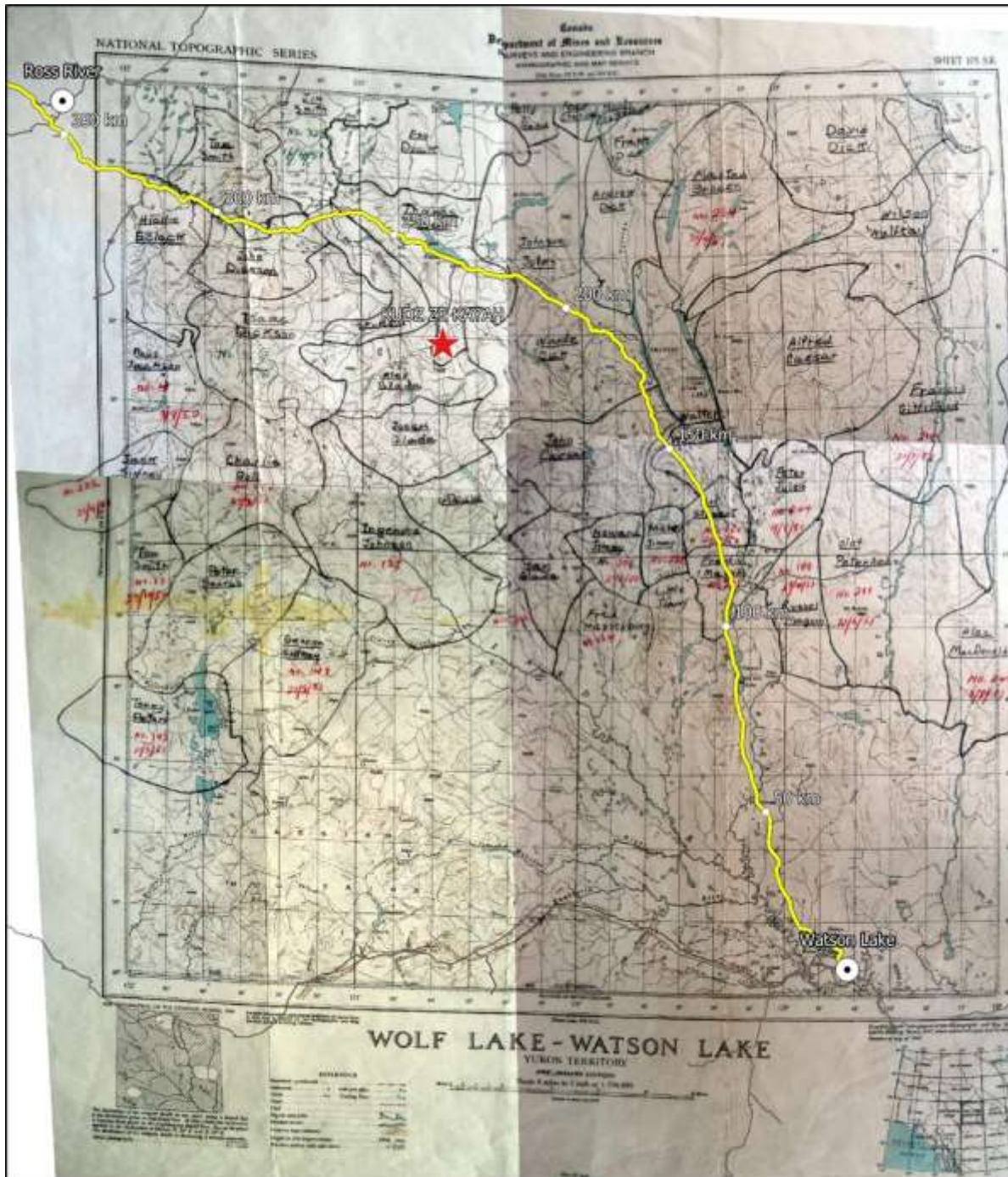


Figure 4: Wolf Lake – Watson Lake Traplines (H-557, Yukon Archives)

In addition to trapline maps, information pertaining to hunting and trapping can be found in the YESAB submissions (summarized in Appendix A). One submission reports a hunting and trapping site at kilometer 312 of the Robert Campbell Highway, attributed to both RRDC and LFN:

The proposed project is located in Kaska Traditional Territory, on land which may have been used or inhabited by aboriginal peoples for hundreds or thousands of years. The area may also have been used and/or traveled upon in the recent past by trappers, explorers, geologists, hunters and road users. Heritage resources include, but are not limited to, cabins, caches, graves, brush camps, man-made structures or objects that have been abandoned and are of greater than 50 years antiquity.<sup>85</sup>

Additionally, in response to proposed pullouts on the Robert Campbell Highway, LFN expressed concerns over how this development would affect “wildlife, in particular, big game and furbearers.”<sup>86</sup> The LFN have also indicated that the Hyland River is important for hunting, trapping, and recreational activities.<sup>87</sup>

### **3.3 FISHING**

Ethnographic sources confirm that fish were important for Kaska citizens, including those from Ross River. Families gathered in larger groups for summer and winter camps to harvest fish. Fish were speared, netted, trapped, and angled.<sup>88</sup> Gill nets were set from canoes in the summer and

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<sup>85</sup> YESAB Ref. #2008-0299.

<sup>86</sup> YESAB Ref. #2010-0098.

<sup>87</sup> YESAB Ref. #2011-0053.

<sup>88</sup> Honigmann, *The Kaska Indians*.

under ice in the winter. Beaver bone was used traditionally to make fish hooks. In terms of food preference, fish were regarded as inferior to red meat.<sup>88</sup> Fish species mentioned to have been harvested by Kaska people in the ethnographic record include grayling, trout, jackfish, whitefish, and sucker.<sup>88, 89</sup> Most of the fishing areas noted are focused on Frances Lake, Frances River, and Hoole Canyon along the Pelly River.

There are numerous records both from Fenley Hunter and staff at the Frances Lake post that indicate there were few fish in Frances Lake (or their fishing skills and knowledge of the area did not match their Kaska counterparts):

The fish in Frances Lake do not bite; not at this time of year, anyway. The Indians are using a ragged net without success.<sup>90</sup>

Robert Campbell noted the same in several journal entries, which was part of the reason for eventually abandoning the post at Frances Lake:

Our fisheries proving insufficient to meet our daily wants much less to allow us to lay aside fish for the winter, & strangers as we were to the resources of the country, I deemed in inadvisable to keep all the men we had... Then came better times, the Indians finding us out and spreading the news that we were stationed at Frances Lake, & gladly coming in to trade furs & provisions with us (Campbell, 1958:64).

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<sup>89</sup> Gotthardt, *Frances Lake*.

<sup>90</sup> Fenley Hunter, *Frances Lake, Yukon*, (Flushing, NY: Marion Press, 1924).

There is a preference among Kaska members for particular species of fish: “Predatory fish species, such as lake trout and grayling, are favoured by both Indian harvesters and non-native sports fishers”.<sup>91</sup>

There are other areas well outside of the Project site where Kaska focus their fishing efforts: “The Band’s salmon fishing camps have historically been concentrated on the Pelly River between Fish Hook and Hoole Canyon, with a few camps located on the Lapie and Ross Rivers, near their junctions with the Pelly”.<sup>91</sup>

Although this section is focused on fishing activities, it is important to note that fishing often accompanied other types of land use. This is demonstrated by RRDC elder Maudie Dick’s discussion of salmon fishing:

Sometimes eight would get in the trap, sometimes six. There might be nine in there. My father and my grandparents and me were packing them to camp. We cut up salmon to dry just like cutting up meat. They divided all the salmon between the people in the camp. Sometimes while the salmon were still spawning we quit fishing and went hunting in the mountains. Sometimes we would remain behind and the men would go hunting by themselves. My mother was catching salmon with my older sister Sadie Jules. We were setting snares for rabbits while they caught salmon. We used to go pick berries too. Many people came back in July.<sup>92</sup>

As Dick demonstrates, fishing was accompanied by hunting, snaring, and berry picking.

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<sup>91</sup> Weinstein, “Just Like People Get Lost.”

<sup>92</sup> RRDC, *Dene Dechen Tah Néde’ Living in the Bush*, 5.

### 3.3.1 ROSS RIVER DENA COUNCIL

As noted by Arthur John, an RRDC Elder, there were a variety of fish species, seasons they were fished, and methods of preparing for consumption: “Grayling, suckers and jackfish were scooped with hands. ... Scoop in hands during the spawning period in spring, and in August for grayling, when young fish enter the streams at low water time to feed on mosquitoes. ... Dried suckers are a delicacy. Eat them as a snack like potato chips. ... (Arthur John)”.<sup>93</sup>

Of particular relevance to the proposed Kudz Ze Kayah mine is past and current RRDC fishing reported by Mary Charlie along Finlayson Creek, Money Creek, and Wolverine Lake for a variety of fish species in the spring and summer months:

Ya lots of fish. Indian way they call it Luge Destie Tue [“Fish Creek”] Tu destsie la [“the water is ...”]. ... Grayling. The other one, you know El’es Tue? I tell you? Trout, whitefish, and on top of that Wolverine Lake, any kind of fish mixed. People dry it you know long time ago. And the spring time, all summer.<sup>94</sup>

While at Pelly Lakes, Pike observed “two small dug-out canoes and an old Indian camp near the head of the lake.”<sup>95</sup> Although Pike did not indicate what type of camp this was, it was likely a fish camp. The sportsman noted that salmon spawn in the region in great numbers. It is also possible that the area was used as a hunting camp as Pike commented that there was a “good

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<sup>93</sup> Weinstein, “Just Like People Get Lost.”

<sup>94</sup> Charlie in Rutherford, *Archaeological Reconnaissance*, 33.

<sup>95</sup> Pike, *Through the Subarctic Forest*, 154.

caribou mountain” nearby and that there was an abundance of moose.<sup>96</sup> Further commenting on the fishing potential of Pelly Lakes, Pike write:

This sheet of water is probably the one marked on some maps, from Indian report, as the upper of the two Pelly Lakes, but it is of such insignificant size that the Indians would have been hardly likely to make mention of it, unless it had the reputation of being a good fishing-ground, which we certainly found it to be.<sup>97</sup>

Moreover, the individual who Pike had met at the head of Frances Lake – whom Pike referred to as the “Pelly River Indians” – provided details regarding their fishing activities in the Pelly Lakes: “The Indians whom we met at the head of Frances Lake had told us of a fish they sometimes catch in the Pelly Lakes, resembling the white-fish, but which they call the ‘Salmon’s Cousin,’ on account of its size.”<sup>98</sup>

Pike also discussed fishing activity on the Pelly River between Pelly Lakes and the confluence of the Pelly and Hoole Rivers. As he descended the Pelly River, the sportsman described the signs of Indigenous fishing activities that he witnessed:

On the following day we passed out of the lakes and found the river running, with a good current, between low, gravelly banks, bearing many signs of old Indian encampments. The huge stages for drying fish, and the traps carefully stowed away for future use, suggested great abundance of salmon in the autumn, while the skeletons of these fish were to be seen everywhere scattered along the banks of the little creeks. Every year, no doubt, the Pelly Indians camp here to gather their

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<sup>96</sup> Pike, *Through the Subarctic Forest*, 155.

<sup>97</sup> Pike, *Through the Subarctic Forest*, 164.

<sup>98</sup> Pike, *Through the Subarctic Forest*, 171.

harvest, which needs no sowing, but comes of its own accord from the distant waters of the Behring Sea.<sup>99</sup>

Half a century prior to Pike's journey down the Pelly River, the HBC also noted the importance of the salmon runs. It was recorded in the Pelly Banks post journal on August 1846 that "Three Indians arrived with some meat and a few dried salmon."<sup>100</sup> Dimitrov has further indicated the importance of salmon fishing by mapping salmon fishing sites along the Pelly and Ross Rivers through community interviews. Commenting on their importance, he wrote, "the circles along the Pelly and Ross River are and have always been important locations for salmon netting."<sup>101</sup> (See RRDC report for maps.)<sup>102</sup>

### **3.3.2 LIARD FIRST NATION**

Anthropologist John Honigmann suggested that "fish provided the dietary mainstay of the [Upper Liard Kaska] population. From the lakes and rivers people took jackfish, lake pickerel, lake and brook trout, whitefish (in smaller numbers because they were also the prey of jackfish),

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<sup>99</sup> Pike, *Through the Subarctic Forest*, 179.

<sup>100</sup> LAC, Robert Campbell fonds, MG 19, A 25, "Journal of Occurrences at Pelly Banks," 13 August 1846.

<sup>101</sup> Dimitrov, "A Northern Band's Mode of Production and its Articulation with the Multinational Mode," 57.

<sup>102</sup> BMC, *Independent Study of Ross River Dena Council Traditional Land Use*; BMC, *Independent Study of Liard First Nation Traditional Lane Use*.



grayling, loche, and sucker.”<sup>103</sup> While at Frances Lake, geologist George Dawson did not encounter any Indigenous peoples. However, he did see signs of Indigenous occupancy:

In order to exhaust the possibility of obtaining further assistance before making the attempt, I made a light trip in one of our boats round into the east arm, which had not even been observed on our way up the lake. This also enabled me to sketch the east arm, but no Indians were found; in fact, we discovered traces of only a single camp which had been made during the same summer, most of the Indian signs being two or more years old.<sup>104</sup>

The camps located by Dawson likely belonged to the Frances Lake Kaska.<sup>105</sup> This camp was likely a fishing camp. Although, along with fishing it is likely that hunting and trapping activities were also carried out.

Passing through the Frances Lake region in 1893, only six years after Dawson, Pike made inquiries into fishing activities in the region. His Indigenous guide from Lower Post provided insights: “An appeal to the guide produced the information that he had once caught a good many fish in the summer time in another lake that lay among the Too-Tsho Mountains to the eastward, but he had no suggestion to offer with regard to Frances Lake as a fishing ground in the summer.”<sup>106</sup>

Gotthardt has also described LFN fishing activities on Frances Lake:

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<sup>103</sup> Honigmann, *The Kaska Indians*, 37.

<sup>104</sup> Dawson, *Report on an Exploration in the Yukon District*, 114B.

<sup>105</sup> Honigmann, *The Kaska Indians*, 20.

<sup>106</sup> Pike, *Through the Subarctic Forest*, 134.

The Narrows to the East Arm of Frances Lake was one of the principal fishing sites for Frances Lake people. The water in the narrows stayed open all winter, and it was here that people set nets for schooling whitefish in November and December. Robert and Leda Jules described the east side of the narrows, where the 1939 Hudson's Bay store used to be, as the old village site. From here, people also fished for jackfish at *San Tú*: this is a small lake across the narrows and a short distance to the west along a foot trail. The small gap where this little lake runs into Frances Lake was a net fishing site. The older boys from the village were sent daily to check the nets and bring the fish back.<sup>107</sup>

Gotthardt also described another LFN fishing site on Frances Lake:

*Tudie' Disela'* is located about 10 km west of the Narrows (*Kedelini Túé*) and was in the past an important moose hunting and fishing place for the Frances Lake people. *Tudie' Disela'* means 'lots of little islands across' (the lake) in the Kaska language. A jackfish spawning site is located here on the south shore of the lake, opposite the long narrow point. Caribou and moose cross the lake here.

Leda and Robert Jules said people used to stay here all the time for fishing. It was from this camp that Robert Dick was stolen by bushmen when he was small, but his father got him back.<sup>108</sup>

The west arm of Frances Lake was also the site of an important LFN fishing camp:

Long Point, on the east shore of the West Arm, used to be an important hunting and fishing camp. From here, the trail lead up to *Tenidzé* (Simpson Tower) to the caribou winter range. From the end of the point, a long sand bar stretches almost across to the other side of the lake. This is probably used by caribou crossing the lake during their migration, and Long Point used to be a traditional fishing area as well. Robert Jules explained that most of the points of land on Frances Lake were locations of old camps.<sup>109</sup>

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<sup>107</sup> Gotthardt, *Frances Lake*, 3.

<sup>108</sup> Gotthardt, *Frances Lake*, 6.

<sup>109</sup> Gotthardt, *Frances Lake*, 6.

In addition to demonstrating an important fishing camp, this also demonstrates how different types of land use (in this case hunting and fishing) overlapped. Further demonstrating this overlap in land use activities is the fishing site at Money Point:

Money Point was a very important fishing site for Frances Lake people in the past. The outlet of *Al'as Túé* (Money Creek) was a net fishing site and probably also where people used to set fish traps. *Al'as Túé* means 'lick water'. Along this creek is a mineral lick where hunters went to find game. The creek runs down from the Campbell Range, and it is likely that old hunting trails follow its course into the mountains. Trails probably lead [sic] from here to Flint Mountain, which is in the Campbell Range, according to John Dick. Auntie Margaret Dick's old house is on Money Point.<sup>110</sup>

Simpson Lake has also likely been an important fishing site. When ascending the Liard River in 1831, HBC trader John McLeod recorded in his journal what he had learned about fishing activities at Simpson Lake. Upon meeting a group referred to by the traders as the "Thlo et Chosse Indians," McLeod was told about another Indigenous group further west: "they say that the Tribe inhabiting the mountains at the source of the West Branch they seldom or ever see; but report them to be numerous; called the Alder Indians, and that Simpson's Lake is their general resort Spring and Autumn for the purpose of Fishing, they also informed me that the same range is very extensive, and terminates near the Sea Coast."<sup>111</sup> While it is unclear exactly who the "Alder Indians" are, given Simpson Lake's proximity to other forms of LFN traditional land use activities and its apparent importance as a fishing site, the lake was likely fished by the ancestors to the LFN.

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<sup>110</sup> Gotthardt, *Frances Lake*, 6-7.

<sup>111</sup> HBCA, B.200/a/14, Fort Simpson Post Journal, 28 August 1831, fol. 14.

At Frances Lake, Pike's guide provided insights into fishing activities in the surrounding region:

An appeal to the guide produced the information that he had once caught a good many fish in the summer time in another lake that lay among the Too-Tsho Mountains to the eastward, but he has no suggestion to offer with regard to Frances Lake as a fishing ground in the spring.<sup>112</sup>

While there is no salmon in the Liard and Frances River watershed, anthropologist John Honigmann has noted that the Upper Liard Kaska sometimes travelled to the Pelly River to fish for salmon.<sup>113</sup> Elaborating on Upper Liard and Frances Lake Kaska fishing on the Pelly River, Honigmann wrote: "The Upper Liard and Frances Lake people occasionally sought salmon at Pelly Banks and there encountered Pelly Indians."<sup>114</sup> Gotthardt has also discussed LFN salmon fishing on the upper Pell River: "Traditionally, Frances Lake people had very close ties with the Pelly River people and often travelled to their country for salmon fishing."<sup>115</sup>

### 3.4 PLANT USE

Plant and berry harvesting was (and still is) primarily done by women in summer and fall. Very important was the gathering of blueberries, raspberries, strawberries, currants, salmonberries,

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<sup>112</sup> Pike, *Through the Subarctic Forest*, 134.

<sup>113</sup> Honigmann, *The Kaska Indians*, 19.

<sup>114</sup> Honigmann, *The Kaska Indians*, 22.

<sup>115</sup> Gotthardt, *Frances Lake*, 1.

cranberries, and soapberries.<sup>116</sup> Root vegetables were also collected, such as lily bulbs, wild onions, and fern roots. Other plants and plant products collected were wild rhubarb, rose petals, spruce and birch fibres, willow and spruce gum, and the sap of birch trees.<sup>116, 117</sup> A main beverage prepared consisted of birch sap and rose petals steeped in water.<sup>116</sup>

### **3.4.1 ROSS RIVER DENA COUNCIL**

HBC journals also provide insights into the use and exchange of bark. On 12 May 1846, it was recorded in the post journal that the HBC “Got a few bark from the Idle Indians about the place.”<sup>118</sup> Similar to the bark traded at Frances Lake Post,<sup>119</sup> this bark was likely used to construct canoes.

In his study of the Ross River Dena economy, Dimitrov discussed various types of plant use: “‘Bear-roots’ which grow near river banks and such other plants as poplar buds and willow stems are also gathered.”<sup>120</sup> Further discussing plant use, Dimitrov wrote: “In addition to these, Band members gather six different types of berries and various roots and plants for food and

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<sup>116</sup> Honigmann, *The Kaska Indians*.

<sup>117</sup> John J. Honigmann, “Kaska,” in June Helm, ed. *Handbook of North American Indians. Vol. 6, Subarctic*, 442-51, (Washington, D.C.: Smithsonian Institution, 1981).

<sup>118</sup> Library and Archives Canada (LAC), Robert Campbell fonds, MG 19, A 25, “Journal of Occurrences at Pelly Banks,” 21 May 1846.

<sup>119</sup> BMC, *Independent Study of Liard First Nation Traditional Lane Use*.

<sup>120</sup> Dimitrov, “A Northern Indian Band’s Mode of Production,” 70.

medicinal purposes. Firewood is gathered as the primary household fuel by approximately 98% of all households.”<sup>121</sup>

### 3.4.2 LIARD FIRST NATION

Archaeologist Ruth Gotthardt has described the importance of berry picking to the LFN. Berries collected over the summer were stored for the winter.<sup>122</sup> The LFN have identified the Hyland River region as an area still used for berry picking.<sup>123</sup> Describing plant use of the Upper Liard Kaska, Honigmann wrote:

Girls and women did the principal collecting, although men also sought vegetable products in the course of walking through a favorable area while hunting. Berries were the main items sought by collectors and included, in approximate order of frequency, the soap berry, high- and low-bush cranberry, salmon berry, raspberry, strawberry, currant, and blueberry. Other vegetable products taken from the land included fern roots in spring; lily bulbs; mushrooms, frequently stolen from a squirrel’s cache; muskeg apples, that grew up in the mountains and were described as tasting somewhat like turnips; wild onions, of which only the greens were eaten; rose petals, made into a beverage by boiling; and wild rhubarb. Both sexes chewed gum taken from a “half dead” spruce tree, a choice advised by the fact that such gum would not stick to the teeth. Jackpine and spruce fibers were also eaten but mud, birch fiber, willow buds, wild rice, and wild peas held no place in the diet. Birch sap, obtained by tapping the birch in spring, ranked as a minor delicacy but people ignored poplar sap. Children kept the camp supplied with water, securing it from the river or in the form of snow. Warmed moose milk was sometimes drunk.<sup>124</sup>

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<sup>121</sup> Dimitrov, “A Northern Indian Band’s Mode of Production,” 85.

<sup>122</sup> Gotthardt, *Frances Lake*, 1.

<sup>123</sup> YESAB Ref. #2011-0053.

<sup>124</sup> Honigmann, *The Kaska Indians*, 32-33.

Additionally, cottonwood and spruce bark was used to construct canoes.<sup>125</sup>

### **3.5 WATER USE**

Much of the historical literature indicates that the Kaska preferred overland travel to traveling via waterways. However, this does not mean that lakes and streams were not important to RRDC and LFN. While the importance of waterways for fishing has already been discussed above, waterways were also used for hunting certain species, such as moose. Additionally, Euro-Americans who passed through the Kaska traditional territory frequently viewed evidence of watercraft used for crossing streams.

#### **3.5.1 ROSS RIVER DENA COUNCIL**

While it appears that the RRDC generally preferred to travel overland, outsiders travelling through RRDC traditional territories observed the presence of watercraft for crossing rivers. For example, Pike noted rafts on the shore while his party descended the Pelly River:

In this stretch of river we often noticed rafts tied up to the banks, evidently used by the Indians for crossing the Pelly, but we did not fall in with any of the wandering bands. It is curious that they do not use canoes on such an easily navigable stream, but prefer to pack a load on their backs and make a straight course for their hunting-grounds, crossing and recrossing the main stream to cut off a detour, and only camping on its banks when they know that the salmon are running. Their fish-drying stages may be seen at every suitable spot, but it was as yet too early for the salmon to have covered the long distance from the sea.<sup>126</sup>

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<sup>125</sup> Honigmann, *The Kaska Indians*, 54-55.

<sup>126</sup> Pike, *Through the Subarctic Forest*, 204.

### 3.5.2 LIARD FIRST NATION

During his travels through southeast Yukon, Geologist George Dawson noted the Indigenous name for Frances River: “The Indian name of the Frances [River] is identical with that of the Dease, being Too-tsho-tooa’, or ‘Big Lake River.’”<sup>127</sup> While Dawson did not indicate in his report the Indigenous group that he derived the information from, he likely learned this from the Upper Liard Kaska. During most of his travels between Lower Post and Fort Selkirk, the geologist did not encounter any other Indigenous peoples.<sup>128</sup> This toponym for the Frances River indicates a connection to the river.

At the head of the western arm of Frances Lake, Dawson noted other waterways with Indigenous toponyms: “The river flowing into the head of the west arm is named *Yus-sez’-uh*, and the lake in its western branch is known as *Us-tas’-a-tsho*.”<sup>129</sup> The geologist further elaborated on the name of the lake, indicating that it was named after a “mythical creature-hero of the Tinné.”<sup>130</sup> This lake is possibly McPherson Lake.

While somewhat more distant from the route of the Campbell Highway, sport hunter Warburton Pike described what was likely LFN connections with the Hyland River region:

A few miners have ascended the river some distance beyond the point at which we left the cañon, and report it easily navigable above the cañon to its source at a large

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<sup>127</sup> Dawson, *Report on an Exploration in the Yukon District*, 100B

<sup>128</sup> Dawson, *Report on an Exploration in the Yukon District*, 8B.

<sup>129</sup> Dawson, *Report on an Exploration in the Yukon District*, 111B. When Pike ascended the Yes-ez-uh River in 1893, he did not locate the lake. See Pike, *Through the Subarctic Forest*, 145-146.

<sup>130</sup> Dawson, *Report on an Exploration in the Yukon District*, 111B.



lake. But the Indians deny the existence of a lake at the head of the river, and say it rises very near to the Frances as also do the Black River and the Beaver—the lower tributaries of the Liard, so that the four streams, although wide apart at their mouths, head close together on one plateau, like the ribs of an umbrella. But the Indians do not like the country. Something evil lives there; and once, a long time ago, before the whites came to the Liard, a party of hunters met with the terrible fate at the head-waters of Hyland River. According to the story, they were working their canoe through a cañon when a sudden darkness overtook them, and the evil thing rose out of the water, turned over the canoe, and dragged the unlucky hunters down into the depths of a whirlpool. Since then, the Indians are chary of going far up any of these streams, and turn back, by their own account, as soon as they see bones of huge animals lying on the river bars.<sup>131</sup>

Pike also noted a mountain near the Hyland River referred to by Indigenous peoples (likely Kaska who traded at Lower Post) as Ke-la-gurn. According to Pike, the term means “the mountain of many sticks.”<sup>132</sup> Additionally, Pike observed spruce bark canoes on the banks of the Hyland River which he noted were used by the “Cascas and Liard Indians.” Elaborating on the presence of canoes, the sportsman stated that the Kaska “do not make much use of the waterways, preferring to pack heavy loads through the woods to working a canoe up stream; while, if they wish to run down a river, they can make a bark or skin canoe in a few hours, and lose nothing by throwing it away at the end of the run.”<sup>133</sup>

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<sup>131</sup> Pike, *Through the Subarctic Forest*, 77-78.

<sup>132</sup> Pike, *Through the Subarctic Forest*, 78.

<sup>133</sup> Pike, *Through the Subarctic Forest*, 81.

YESAB submissions also provide insights into LFN water use along the Robert Campbell Highway. In response to proposed reconstruction of kilometres 56 to 60, LFN expressed the concern that, “The proponent intends to infill a wetland adjacent to the unnamed creek at km 56.3 in the right of way. Liard First Nation indicated it may be a spring used by LFN citizens.”<sup>134</sup> With respect to the same project it was also noted:

The LFN have stated that there are valued sites within the project area. The project area is considered to have been used and/or inhabited by aboriginal people for thousands of years and has the potential for a variety of heritage resources to be present including archaeological, paleontological, pre-historic, and historic resources that may have either a cultural and/or scientific value. In addition, rivers and creeks are considered to have a higher than average likelihood of harboring heritage resources because they may have served as natural travel corridors, camping areas and/or hunting and fishing areas.<sup>135</sup>

Another water resource was identified at kilometer 76 of the Robert Campbell Highway: “A spring exists at km 76 adjacent to the cabin at that location. While no other specific spring locations were identified, the Proponent indicates that it seems reasonable that a water source that could be adversely affected by the Project exists near each cabin.”<sup>136</sup>

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<sup>134</sup> YESAB Ref. #2010-0114.

<sup>135</sup> YESAB Ref. #2010-0114.

<sup>136</sup> YESAB Ref. 2013-0048.

### 3.6 TRAVEL CORRIDORS

Many late nineteenth and early twentieth century observers of Indigenous travel patterns through southeast Yukon noted a lack of water travel. They suggested that overland travel was the preferred method of travel. For example, geologist George Dawson commented in 1887:

The Indians inhabiting the region in the south and east of the site of old Fort Selkirk are poor boatmen and follow the various rivers in the course of their periodic journeys to a very limited extent. Most of their travel routes appear, indeed, to run nearly at right-angles to the direction of drainage, the rivers being crossed in summer on rafts, the remains of which may frequently be observed. In travelling thus they carry their entire small camping outfit on their backs.<sup>137</sup>

These travel patterns were similarly observed by Warburton Pike and Anton Money. In the 1920s, Anton Money established a gold mine in the Finlayson River region. During this process he gained insights into some of the travel corridors of Liard and Frances Lake Kaska. These insights were recorded in his memoir, *This Was the North*. Among these insights was their preference towards overland travel between Lower Post and Frances Lake. During his first ascent of the Frances River, Money noted: “the Indians of this region did not travel the rivers. They preferred to go overland, on foot.” He elaborated on this statement: “these rivers were too savage and dangerous to serve as canoe routes.”<sup>138</sup> Money learned more about the trail between Frances Lake and Lower Post when he was told of the trading activities of the Frances Lake Kaska: “Caesar

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<sup>137</sup> Dawson, *Report on an Exploration in the Yukon District*, 21B.

<sup>138</sup> Money, *This Was the North*, 92.

told me that there were to more men who belonged with the group, but they were off trading for salt, traps, and tea at Lower Post on the Liard. They had gone by way of the long mountain trail that followed the valley at the foot of the high slopes to the east, and they would return the same way, using small rafts to cross small streams. They were not expected back for another month.”<sup>139</sup>

Later, at Lower Post, Money learned the location of the trail:

From the Indians at the post I bought a supply of babiche, moose rawhide thongs for spare snowshoe webbing. From them I also learned the location of the trail used by the Frances Lake Indians when they came to the post to trade. It followed close to the foothills east of the Frances River, they told me, thus missing the steep cuts made by reeks running into the Frances. The trail wound north and northwest almost on a straight line to Frances Lake, a far more direct route than going up the Liard sixty miles to the Frances River and following that to the lake, as Amos and I had done.<sup>140</sup>

Travel corridors between the traditional territories of the RRDC and LFN were likely used by both groups. For example, according to Honigmann the “Pelly Indians” travelled “south to what is now called Albert or Cormier Creek, near Watson Lake. They made this journey in order to contact the Tahltan traders who after 1700 became middlemen carrying European trade goods inland from the Tlingit.”<sup>141</sup> There is also evidence that travel corridors between Frances Lake and the Liard River (and beyond) were used by the Kaska from the Dease River region.<sup>142</sup>

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<sup>139</sup> Money, *This Was the North*, 106-107.

<sup>140</sup> Money, *This Was the North*, 119.

<sup>141</sup> Honigmann, *The Kaska Indians*, 22.

<sup>142</sup> HBCA, Frances Lake Post Journal, B.73/a/b, 31 March 1844, fol. 24.

### 3.6.1 ROSS RIVER DENA COUNCIL

Although Pike failed to find the trail, he was told by his guide of a trail connecting the Yus-ez-uh River watershed with Pelly Lakes:

We found no signs of a trail, although Narchilla had told us that there was a well-marked path used by the Indians in summer, so we forced our way through the willow scrub, and waded swamps and small creeks, till at last we reached the smooth gravelly beach on the south shore of the main Pelly Lake and made camp at the mouth of Ptarmigan Creek.<sup>143</sup>

Slightly a decade after Pike's journey, another sport hunter named Charles Sheldon ascended the Pelly River to go sheep hunting. While at Ross River, he was shown a trail to Lapie River:

Many Indians had come to our camp for the purpose of seeing the horse, which aroused intense interest among them. That morning three appeared very early and watched us throw the pack on *Danger*. So great was their astonishment to see him walk off with a pack of two hundred pounds, that they followed up for three miles and showed us an Indian trail which led to the Lapie River, six miles above its mouth.<sup>144</sup>

Dimitrov further commented on Ross River Dena travel corridors as they relate to broader hunting and trapping activities and road construction:

When looking at the 'after' hunting map one notes a concentration of lines close to the transportation corridors of the North Canol Road and the Campbell Highway. The facile conclusion is that the Ross River people are principally road-hunters, and while it is true that the game are sometimes killed if intercepted close to the road that is not the only explanation for the convergence of lines near roads. According to Elders virtually all the major roads were built on, or close to Indian

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<sup>143</sup> Pike, *Through the Subarctic Forest*, 151.

<sup>144</sup> Charles Sheldon, *The Wilderness of the Upper Yukon*, (New York: Charles Scribner's Sons, 1919), 195.

Trails along rivers and high valleys. Today the roads are not only infrastructure for resource developers they are also used by Indian people to gain access to hunting, trapping and fishing areas off the roads. For instance the lines that follow the Campbell Highway are usually the result of truck and skidoo traffic in the winter/spring period when trapping/hunting takes place. Regarding the lines up the Pelly River these are a combination of skidoo traffic during winter and boat travel during the spring and summer. The trapping and hunting lines along the Ketza, Lapie, Ross River and North Canol Road are the result of several family groups during winter and extensive use by virtually everyone during the summer/fall hunts.<sup>145</sup>

Elaborating on the significance of the Robert Campbell Highway to Ross River Dena travel and associated wildlife harvesting activities, Dimitrov wrote: “The Robert Campbell Highway linking Ross River to other settlements provided a convenient way not only to travel from the village to bush cabins and harvesting areas, but it also facilitated the use of more modern technology such a skidoos and trucks.”<sup>146</sup> These observations by Dimitrov complement Money’s comments about the trail between Lower Post and Frances Lake made during the 1920s. This trail roughly follows the present route of the Campbell Highway.

### **3.6.2 LIARD FIRST NATION**

Various toponyms indicate LFN use of territory between the confluence of the Frances and Liard Rivers and the mine site. For example, on the lower reaches of the Frances River, Dawson wrote: “To the eastward it is bounded, at a distance of about ten miles, by a comparatively low

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<sup>145</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 64-65.

<sup>146</sup> Dimitrov, “A Northern Band’s Mode of Production and its Articulation with the Multinational Mode,” 67.

range of rounded mountains and hills, which, from the Indian name of one of its salient points to the northward, may be called the *Tses-ī-uh Range*.<sup>147</sup> While Dawson did not indicate the type of land use, this toponym nevertheless indicates travel through and familiarity with the region. Further up the Frances River – above False Canyon – Dawson noted an additional travel corridor:

On the opposite side, one stream of considerable size joins the Frances. This is supposed to be the *Agā-zī-za* of the Indians, and, if so, is represented as rising in a chain of small lakes, some of which drain in an easterly direction to the Macpherson (*Eg-is-e-too'-a*) River. The valley occupied by these lakes is a travelled route by the Indians.<sup>148</sup>

It should be noted that what Dawson referred to as the Macpherson River is now named the Hyland River.<sup>149</sup> Macpherson River was a name first applied to the river by the Hudson's Bay Company in the 1830s. Dawson likely learned this name through his correspondence with HBC trader Robert Campbell.<sup>150</sup>

Providing further insights into travel corridors in the False Canyon region, Pike gained some information from individuals encamped over sixty kilometres (forty miles) up the Frances River from its confluence with the Liard River. Pike wrote: "From the False Cañon it is an Indians

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<sup>147</sup> Dawson, *Report on an Exploration in the Yukon District*, 102B.

<sup>148</sup> Dawson, *Report on an Exploration in the Yukon District*, 107B.

<sup>149</sup> Warburton Pike noted in *Through the Subarctic Forest*, 71, that the Hyland River had been referred to as the Macpherson River by the HBC explorers.

<sup>150</sup> Dawson, *Report on an Exploration in the Yukon District*, 200B. According to a footnote, Dawson corresponded with HBC explorer Robert Campbell.

‘not far’ to Hyland River, a large lake [likely Stewart Lake] occupying most of the space between the two streams.”<sup>151</sup> With respect to the Hyland River, LFN has indicated in a YESAB submission that the river is an important travel corridor: “LFN identify the Hyland River area as a travel corridor and an important location for fall and spring harvesting activities. It was identified that people still use the area to pick berries.”<sup>152</sup>

Archaeologist Ruth Gotthardt’s archaeological resource inventory provides additional insights into the significance of the transportation corridor along the Frances River to LFN. As part of the project, Gotthardt learned about the important sites occupied by LFN:

According to informants in the Liard Band, sites in the study area traditionally occupied by Kaska were: Sambo Lake (east shore); Simpson Lake – north and south end (there are also graves on the islands in Simpson Lake); the mouth of Simpson Creek; Watson Lake (site of the airport); and on the Liard River, various localities at the mouth of Sambo Creek, Meister Rover, Frances River, Rancheria River (Big Eddy – also the site of the Tahltan trade rendez-vous), Cabin Creek, Tom Creek, Watson Creek, Albert Creek, Cormier Creek and the Canyon on the Liard. The trail from Upper Liard to Lower Post passes by the canyon. This trail also leads onward to Alaska from Upper Liard.<sup>153</sup>

Additionally, numerous archaeological sites were identified and mapped:

Evidence of prehistoric occupation was recovered at Marten Lake (Stop 18), Sambo Lake (Stop 16), Simpson Lake (Stop 5), Watson Lake (Stop 13), at the canyon on the Liard River (Stop 8), and at the nearby site of Frank Watson’s old cabin (Stop 27). With the exception of Stops 8 and 27, all sites occurred above the White River volcanic ash (dated about 1250 years before present). Artefacts recovered at Stops

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<sup>151</sup> Pike, *Through the Subarctic Forest*, 121.

<sup>152</sup> YESAB Ref. #2011-0053.

<sup>153</sup> R.M. Gotthardt, “Archaeological Resource Inventory: Liard and Frances Rivers, Southeast Yukon (Interim Report),” (24 September 1986), 7.



8 and 27 occurred immediately under the ash level, and date to some time [sic] before 1250 years ago.

Charcoal samples from hearth features were collected at Stops 5, 8, 18 and 27, which will permit direct radiocarbon dating of these sites.

The artefact inventory from these sites will be described in more detail in a later report. A preliminary list by site is as follows:

- |         |  |
|---------|--|
| Stop 5  | Scraper/notch combination tool made on a grey chert flake  |
| Stop 8  | Miscellaneous shatter related to the testing of, or tool production form, quartzite river cobbles  |
| Stop 13 | One bone bead (broken) and a small chip or flake (silicified slate?) possibly resulting from stone tool sharpening   |
| Stop 16 | Chert chip or flake relating to stone tool manufacture   |
| Stop 18 | One chert flake, one back quartzite flake core and approximately 15 flakes deriving from the core. One of these flakes has been made into a scraper/notch combination tool. Also miscellaneous shatter (various materials), a split quartzite cobble which may have been used as a skin scraper  |
| Stop 27 | One split chert cobble skin scraper showing shaping retouch on the working edge, a quartzite flake knife (?), one black chert flake deriving from the final stages of stone tool production. A burned fragment of a moose tarsal bone was also recovered in the site – this may relate to the later occupation of the site by Frank Watson and his family <sup>154</sup> |

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<sup>154</sup> Gotthardt, "Archaeological Resource Inventory," 5-6.

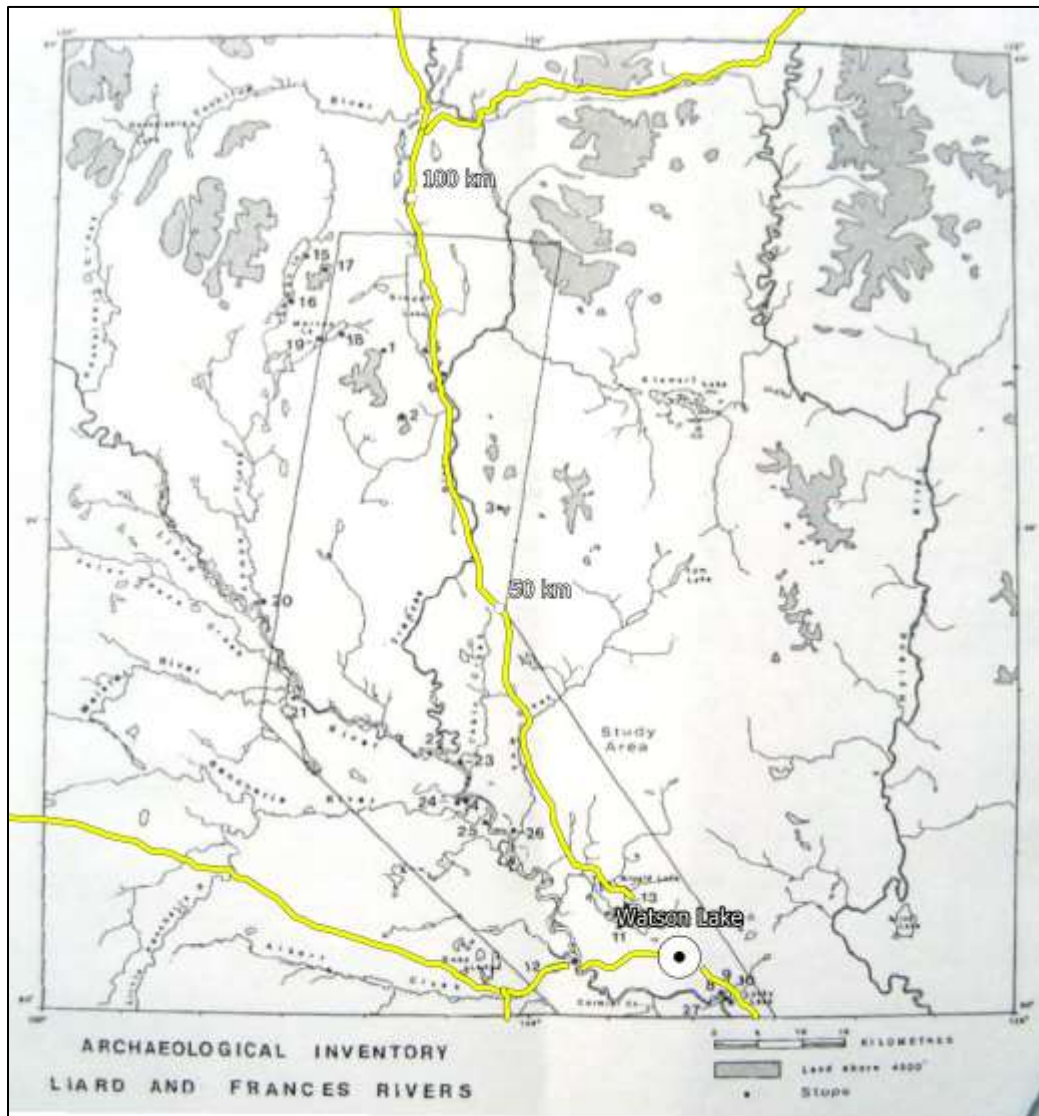


Figure 5: Archaeological Resources on the Frances River

#### 4. CONCLUSIONS

This report demonstrates, both LFN and RRDC citizens have historically participated in a diverse array of land use activities along the Robert Campbell Highway corridor. Primary source evidence from the late nineteenth and early twentieth centuries provide evidence of hunting activities along the highway. Evidence of hunting activities is further supported by ethnographies, previous TLU reports, and other studies which elucidate certain aspects of Kaska hunting

activities. There is also a great amount of historical evidence demonstrating LFN and RRDC trapping activities along the highway corridor. Written evidence of Kaska trapping activities dates back to the 1840s, as the HBC established trading posts within Kaska traditional territory. Further evidence of trapping activities is provided in the narratives of late nineteenth and early twentieth century sport hunters and prospectors. Trapline maps and correspondence also demonstrate Kaska trapping activities along the highway corridor. This evidence is further supported by the works of anthropologists and archaeologists as well as Kaska oral histories. Similar evidence has also demonstrated fishing, plant use, and water use along the Robert Campbell Highway corridor. Finally, primary sources demonstrate that many transportation corridors exist along the Robert Campbell Highway route. In fact, there is strong evidence of a trail between Lower Post and Frances Lake following a roughly similar route to the highway. Given the significant amount of evidence indicating both LFN and RRDC TLU along the route of the Robert Campbell Highway, the highway's importance for continued TLU activities is evident.

**Appendix A Summary of Traditional Land Use Areas Identified  
from YESAB's Online Registry**

Appendix A: Review of Traditional Uses and Heritage Resources along the Robert Campbell Highway, (YESAB Online Registry 2006-2019)

Project Name	YESAB Ref.#	Proponent	First Nation	Traditional Use Potentially Impacted
Tuchitua Hill Reconstruction, Km 107-113 Campbell Highway	2006-0325	Yukon Government - Highways and Public Works	Kaska: Liard First Nation and Ross River Dena	Burial Site. There is a First Nation burial site within an estimated 150 m of a granular material pit at km 111. The footprint associated with the activity of extracting granular material overlaps with the burial site.
				Interim Protected Lands / Traditional Use. There is a proposed steep embankment at km 113.0 that may encroach 2-3 m onto LFN IPLs for ~ 300 m.
Campbell Highway Reconstruction, km 30.8-56.0	2007-0212	Yukon Government Highways and Public Works	Liard First Nation	Interim Protected Lands / Traditional Use. There is a large IPL block adjacent to the west (left-hand-side) of the highway from approximately km 32-57, excepting the gravel pit reserves and forestry blocks.  There are a few smaller IPL blocks around km 40 (left-hand-side), km 52 (right-hand-side), km 54 (right-hand-side), and km 56 (right-hand-side).
Campbell Highway Clearing Project, Yukon	2008-0052	Yukon Government – Highways and Public Works	Kaska: Liard First Nation, Ross River Dena Council	None identified.
Campbell Highway Km 312: Road Construction and Culvert Replacement	2008-0299	Yukon Government – Highways and Public Works	Kaska: Liard First Nation, Ross River Dena Council	Heritage Resources. Project activities that have the potential to overlap with heritage resources include earthworks and use of heavy equipment. The proposed project is located in Kaska Traditional Territory, on land which may have been used or inhabited by aboriginal peoples for hundreds or thousands of years. The area may also have been used and/or traveled upon in the recent past by trappers, explorers, geologists, hunters and road users. Heritage resources include, but are not limited to, cabins, caches, graves, brush camps, man-made structures or objects that have been abandoned and are of greater than 50 years antiquity.
Campbell Highway Pullouts	2010-0098	Yukon Government – Highways and Public Works	Kaska – Liard First Nation, Ross River Dena Council	Wildlife Impacts. The Liard First Nation was concerned with impacts to wildlife, in particular, big game and furbearers.
Reconstruction of km 56-60 of the Campbell Highway	2010-0114	Yukon Government – Highways and Public Works	Kaska – Liard First Nation, Ross River Dena Council	Potable Water. The proponent intends to infill a wetland adjacent to the unnamed creek at km 56.3 in the right of way. Liard First Nation indicated it may be a spring used by LFN citizens.
				Interim Protected Lands / Traditional Use. Between km 56 to km 60, there are three LFN Interim Protected Land (IPL) blocks, including: R-106B (left hand side of highway), S-279B (both sides of the highway), and S- 68B (both sides of the highway). Project activities such as the clearing of land, earthworks and blasting have the potential to change the physical and productive characteristics of the land. In areas where the proposed project is near to, or overlaps with IPL, the traditional use or value of the area may be affected.
				Interim Settlement Land / Traditional Use. There is a potential that installation of the Newberry culvert at km 56.3 may impact an IPL block.
				Traditional Land Use. Liard First Nation discussed impacts to hunting cabins due to past HPW projects, indicating that some of the work has destroyed the access trail to citizen’s cabins (no location provided)
				Heritage Resources.

Project Name	YESAB Ref.#	Proponent	First Nation	Traditional Use Potentially Impacted
				<p>LFN have stated that there are a number of gravesites and areas of traditional use within the project area. Three interim protected land blocks are located adjacent to the project site (described above); therefore this area may have an elevated significance for the first nation. (No location provided).</p> <p>The LFN have stated that there are valued sites within the project area. The project area is considered to have been used and/or inhabited by aboriginal people for thousands of years and has the potential for a variety of heritage resources to be present including archaeological, paleontological, pre-historic, and historic resources that may have either a cultural and/or scientific value. In addition, rivers and creeks are considered to have a higher than average likelihood of harboring heritage resources because they may have served as natural travel corridors, camping areas and/or hunting and fishing areas.</p>
Reconstruction of km 60 to 67 – Robert Campbell Highway	2010-0252	Yukon Government Highways and Public Works	Liard First Nation, Ross River Dena Council	<p>Heritage Resources (Archeological Sites). Project activities including earthworks and the use of heavy equipment have the potential to impact the identified archaeological site in the project area. A heritage site inventory performed by the YG Heritage Resources Branch identified an archaeological site (JdTg-2) located at km 64 of the Robert Campbell Highway. It is considered the oldest archaeological site in the southeast Yukon and is therefore considered unique.</p>
				<p>Heritage Resources (undiscovered). There is a potential for a variety of heritage resources to be present including archaeological, paleontological, pre-historic, and historic resources that may have cultural and/or scientific value. No specific location provided.</p>
				<p>Traditional Land Use. Proposed activities have the potential to interfere with traditional land use, including land clearing, site preparation, replacement of culverts, establishment of a camp, and human presence. LFN has identified several sites of cultural, historic, ancient, and socio-economic importance within and near the proposed project. No specific location provided.</p> <p>Interim Protected Lands / Traditional Use. Project activities also include improvements to two existing access routes to LFN IPLs.</p>
Reconstruction of km 95 to km 107 of the Campbell Highway	2011-0281	Yukon Government Highways and Public Works	Liard First Nation, Ross River Dena Council	<p>Heritage Resources. Potential for a variety of heritage resources to be present including archaeological, paleontological, pre-historic and historic resources that may have cultural and/or scientific value. No location provided.</p>
				<p>Traditional Land Use. Interference with traditional and contemporary land use and activities. No locations provided.</p> <p>Interim Protected Lands / Traditional Use. Proposed geotechnical testing and development includes activity on IPL parcels. Polygons #5, 6, and 7, located between km 95 and 107.</p>
Geotechnical Investigations and Granular Resources Development, km 113.7 – km 148 Robert Campbell Highway	2012-0035	Yukon Government Highways and Public Works	Liard First Nation and Ross River Dena Council	<p>Interim Protected Lands / Traditional Use. The proposed project may overlap with Liard First Nation IPL parcels located between km 112 to 120.5. However, it is unknown whether polygons that overlap with IPLs will prove viable.</p>
				<p>Heritage Resources. The project is located in the traditional territories of LFN and RRDC. Lands within the traditional territories may have been used or inhabited by aboriginal peoples for hundreds or thousands of years. Heritage resources include, but are not limited to, cabins, caches, graves, hunting camps, and man-made structures or objects that have been abandoned. No specific locations provided.</p>
Geotechnical Investigations from Km 70 to Km	2013-0048	Yukon Government Highways	Liard First Nation and Ross River Dena Council	<p>Traditional Land Use. The Project overlaps the traditional territories of LFN and RRDC, in which a variety of traditional harvesting, gathering, ceremonial, and social activities occur. The Project specifically overlaps with 5 First Nation IPL parcels which emphasize LFN's particular interest in the area. These IPLs appear to be approximately km 70 to 80 on both sides of the highway.</p>

Project Name	YESAB Ref.#	Proponent	First Nation	Traditional Use Potentially Impacted
90 of the Robert Campbell Highway		and Public Works		<p>Specific values of concerns to LFN include:</p> <ul style="list-style-type: none"> <li>- Cabins at km 69 (left hand side), km 76 (left hand side) and km 78 (right hand side) in the Simpson Creek area.</li> <li>- Salt licks (one salt lick is within 1 km of a testing area), cabins and associated springs, traditional camp sites, hunting cabins, viewpoints and the Kaska governance site at Simpson Lake.</li> <li>- A spring exists at km 76 adjacent to the cabin at that location. While no other specific spring locations were identified, the Proponent indicates that it seems reasonable that a water source that could be adversely affected by the Project exists near each cabin.</li> <li>- A cabin off the right-of-way near km 78 is confirmed to be in a geotechnical testing area.</li> </ul> <p>The Project may also create a zone of influence that disrupts the natural use of the area by wildlife (such as in proximity to a mineral lick). Those who traditionally harvest resources in the area may experience short-term harvest disruptions and may have to begin looking elsewhere. This may reduce the chances of successful experiences and possibly increase the cost, distance of travel, and the amount of time spent away from families.</p>
Reconstruction of km 67 to km 95 of the Robert Campbell Highway	2014-0013	Yukon Government Highways and Public Works	Liard First Nation and Ross River Dena Council	<p>Traditional Land Use.</p> <p>The Project overlaps a known area of high interest, value and importance to LFN. Traditional land uses as well as sites/places of cultural importance are confirmed to exist where traditional land use activities are still being practiced to this day. There have been some site-specific values identified throughout the project area and the Proponent has previously acknowledged that they do not have comprehensive knowledge of all specific LFN values which lie outside the highway right-of-way. Thus, there is uncertainty regarding the Project's spatial overlap with items or places of cultural value.</p> <p>Some specific values include:</p> <ul style="list-style-type: none"> <li>- Four First Nation cabins (located at approximately km 69 (LHS), km 76 (LHS), km 88.4 (LHS) and km 92.4 (RHS).</li> <li>- An important access point to an interim protected S-block at approximately km 90.4.</li> <li>- In previous correspondence, the Proponent indicated that there is a known surface water seep or spring adjacent to the cabin at km 76.</li> <li>- Further, the Proponent noted that it is reasonable that a water source could be adversely affected near each cabin.</li> <li>- The Proponent also noted that there is a cabin off the right of way near km 78. One of the proposed pit developments for this Project is located at km 78.2.</li> </ul>
				<p>Heritage Resources.</p> <p>Project activities such as use of heavy equipment, earthworks, clearing activities and human presence may result in the damage or destruction of items that are of historic or heritage value. No locations provided.</p>
Robert Campbell Highway Right of Way Clearing km 174-190	2016-0127	Yukon Government Highways and Public Works	Liard First Nation and Ross River Dena Council	None formally identified, however heritage resources were discussed.
3Ace Exploration Program – Nahanni Range Road	2011-0053	Northern Tiger Resources Inc.	Liard First Nation and Ross River Dena Council	<p>Traditional Land Use.</p> <p>LFN identify the Hyland River area as a travel corridor and an important location for fall and spring harvesting activities. It was identified that people still use the area to pick berries. Specific concerns include the concern that access to any areas within the Project area would be reduced and that traditional patterns of use might be altered because of the Project.</p>
				<p>Heritage Resources.</p> <p>This area has been used and/or inhabited by aboriginal people for thousands of years and has the potential for a variety of heritage resources to be present including archaeological, paleontological, pre-historic, ethnographic, and historic resources that may have either a cultural, historic, and/or scientific value. Trappers, hunters, and recreational users have also used this area in the recent past. In addition, rivers and creeks are considered to have a higher than average likelihood of harbouring heritage resources because they may have served as natural travel corridors, camping areas, and/or hunting areas.</p> <p>The assessor indicates the proposed campsite and the proposed helicopter pad sites have the highest potential for the presence of heritage resources. The campsite is S of the access road on east side of Little Hyland; helipad is S of the access road on west side of Little Hyland) – see Figure 2 of Recommendation Document.</p> <p>The sections of the proposed access road (between the Main Zone and the Green Zone in Figure 2 of Recommendation Document) may have elevated potential for the presence of archaeological hunting sites.</p>

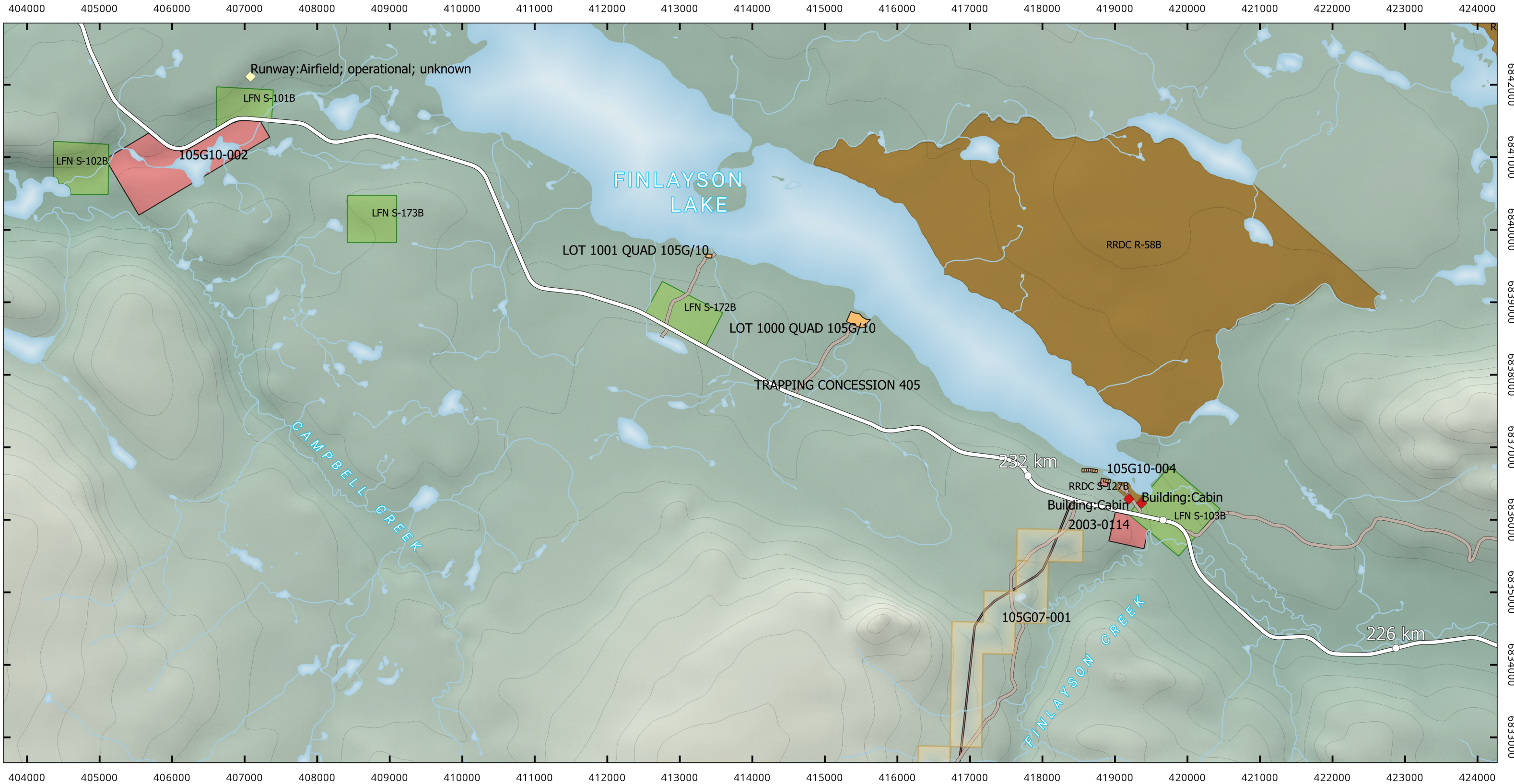
Project Name	YESAB Ref.#	Proponent	First Nation	Traditional Use Potentially Impacted
Wolverine Project	N/A. The project predates YESAB and was assessed through Major Projects Yukon. <sup>1</sup>	Yukon Zinc Corporation	Kaska	Current Use of Lands & Resources. The project will render a small portion of land in the mine area unsuitable for the pursuit of traditional purposes by aboriginal persons.
				Wildlife Impacts (Haul Road).  Numerous reviewers have raised concern with the potential for this project to disrupt the high wildlife values in the Finlayson area if focused management plans are not in place. The Finlayson Caribou herd is of particular concern due to the sensitivity of woodland caribou to development, particularly of linear corridors.
				Heritage Resources. There are known culturally significant historical resources within the scope of the project area, yet no known physical and cultural values will be directly affected by this project.

<sup>1</sup> [http://emrlibrary.gov.yk.ca/minerals/MajorMines/wolverine/screening\\_report\\_DAB\\_2006.pdf](http://emrlibrary.gov.yk.ca/minerals/MajorMines/wolverine/screening_report_DAB_2006.pdf)



**Appendix B      Map Series of Traditional Land Use Areas along the  
Robert Campbell Highway**





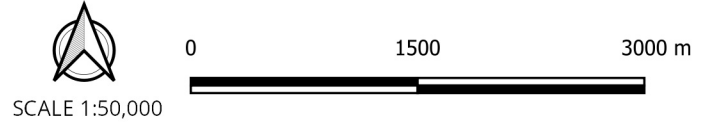
KUDZ ZE KAYAH PROJECT  
 APPENDIX B-1  
 TRADITIONAL LAND USE  
 ROBERT CAMPBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

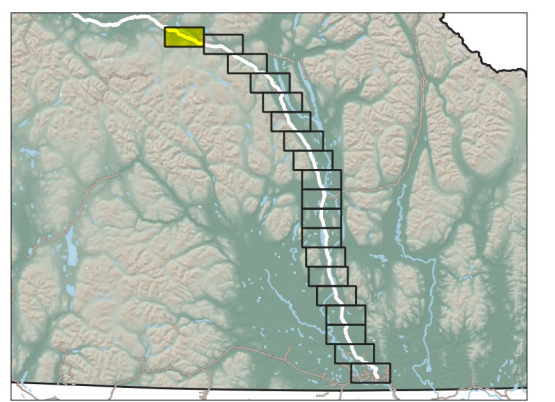
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

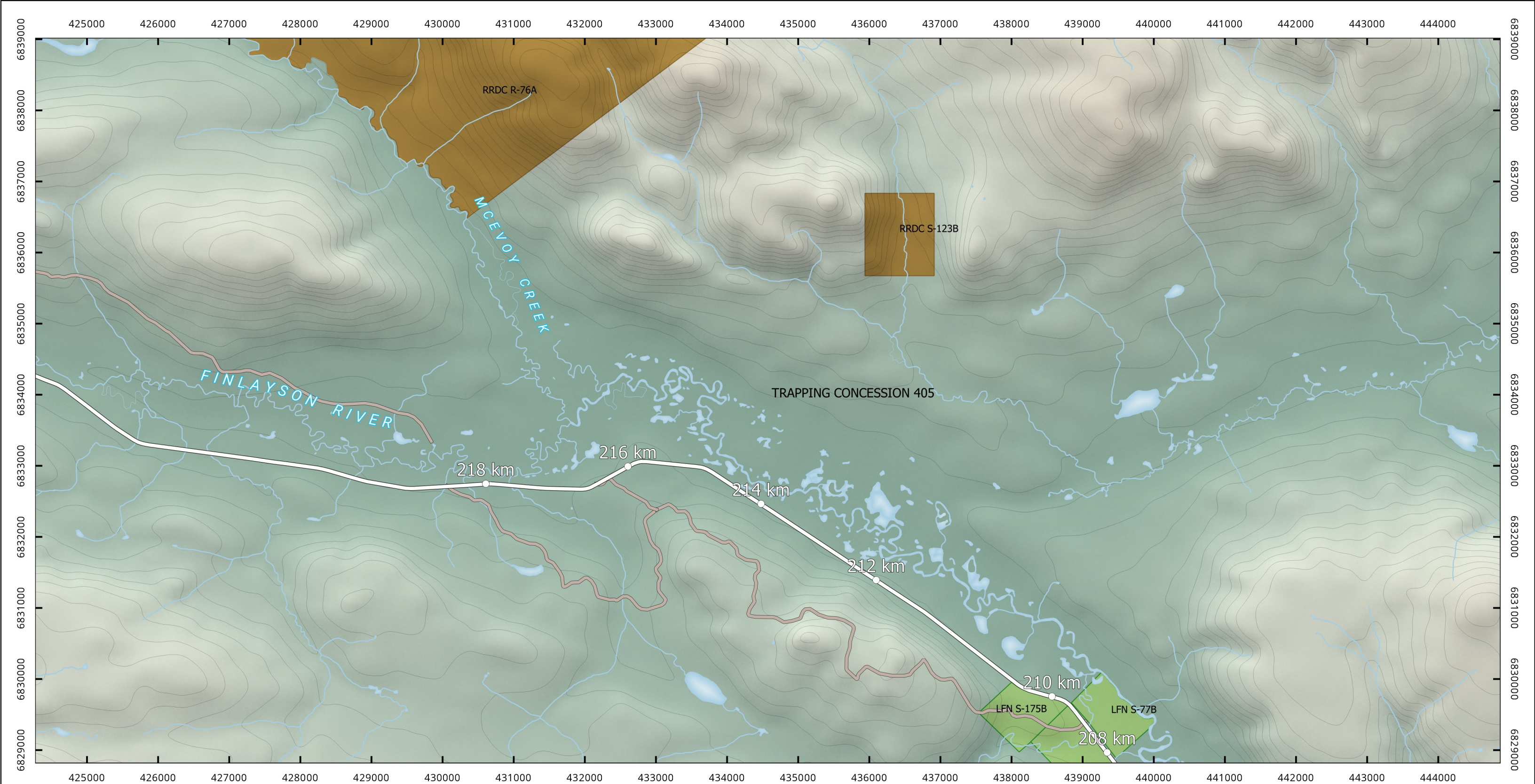
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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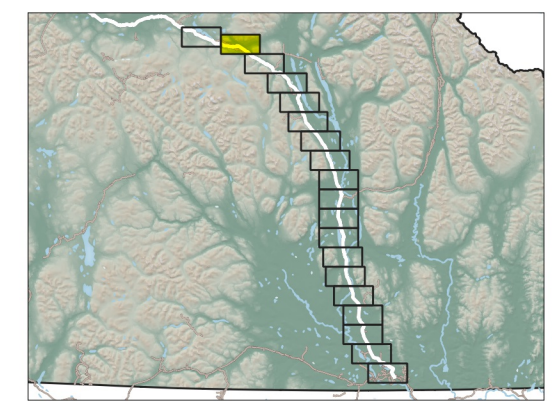


KUDZ ZE KAYAH PROJECT  
 APPENDIX B-2  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

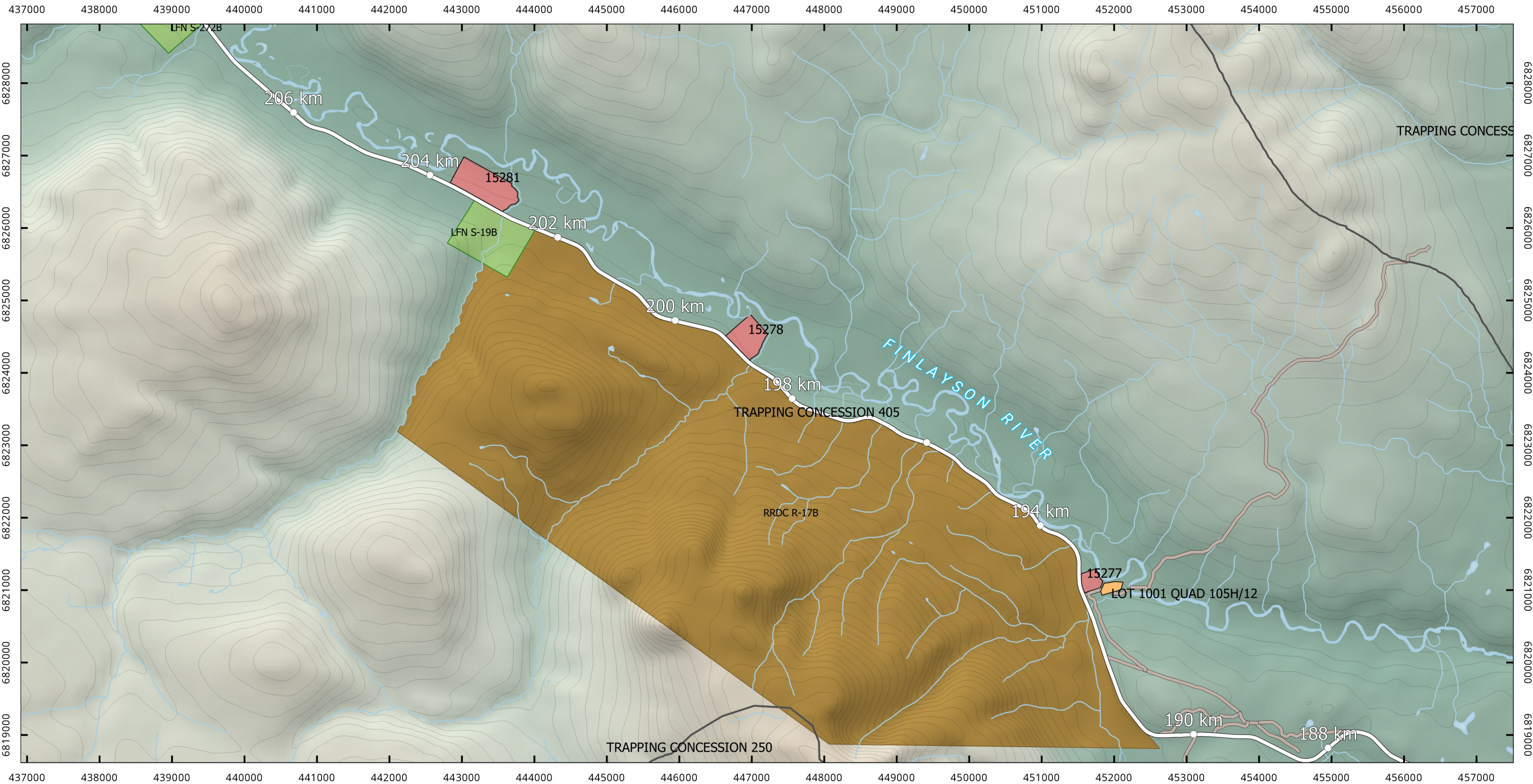
- |                         |  |                                 |               |
|-------------------------|--|---------------------------------|---------------|
| Robert Campbell Highway | Unsurveyed Settlement Lands  | Building                        | Runway        |
| Highway Km Posts        | LFN  | Built-up area                   | Seaplane base |
| Roads, Trails           | RRDC   | Campground                      | Ski centre    |
| KZK Tenure Outline      | Traditional Use Sites Identified in Previous YESAB Environmental Assessments | Historic site/point of interest | Tank          |
| Parcel Addresses        |  | Mining area                     | Tower         |
| Land Dispositions       |  | Picnic site                     | Well          |
| Trapping Concessions    |  |                                 |               |



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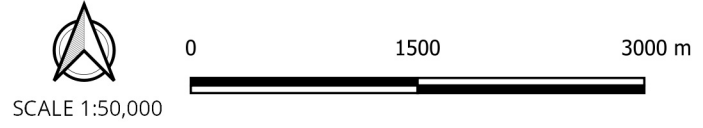
KUDZ ZE KAYAH PROJECT  
 APPENDIX B-3  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

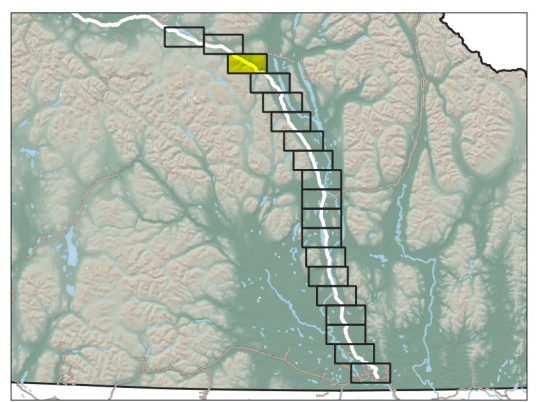
- Unsurveyed Settlement Lands**
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

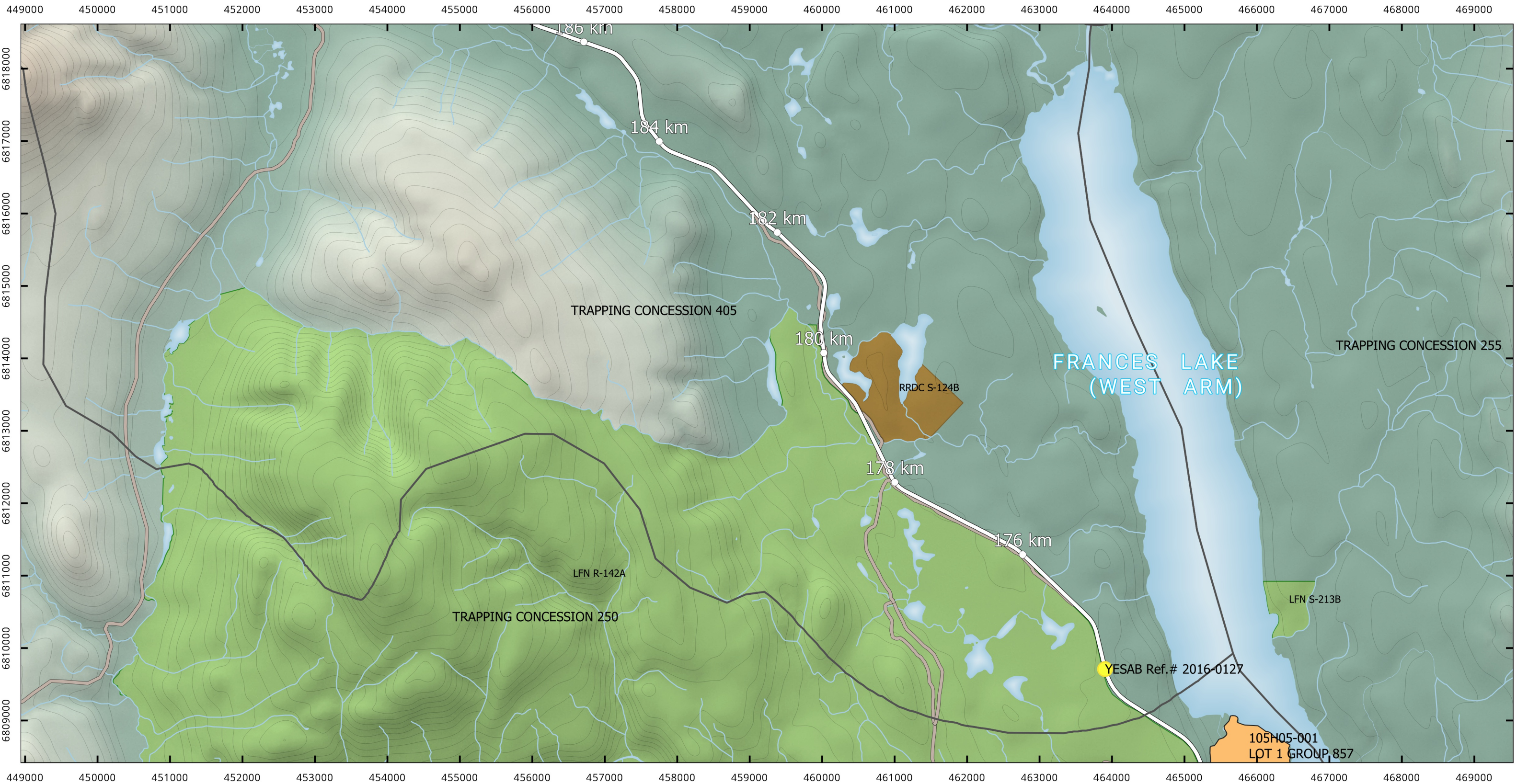
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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KUDZ ZE KAYAH PROJECT  
 APPENDIX B-4  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

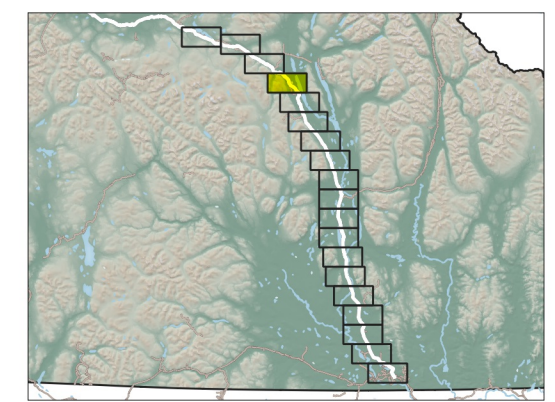
- Unsurveyed Settlement Lands
- LFN
- RRDC

- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

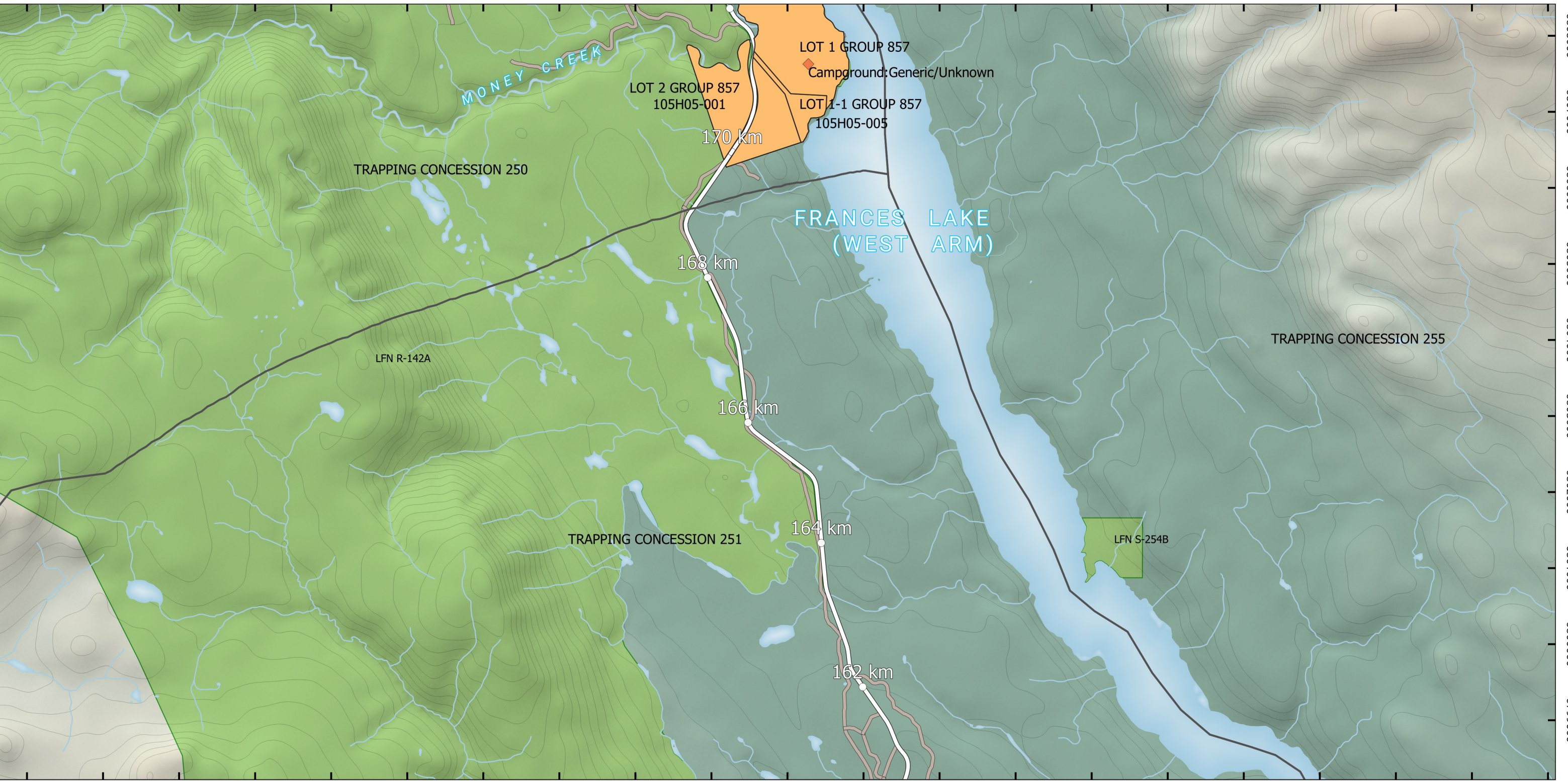
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well

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KUDZ ZE KAYAH PROJECT  
APPENDIX B-5  
TRADITIONAL LAND USE  
ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

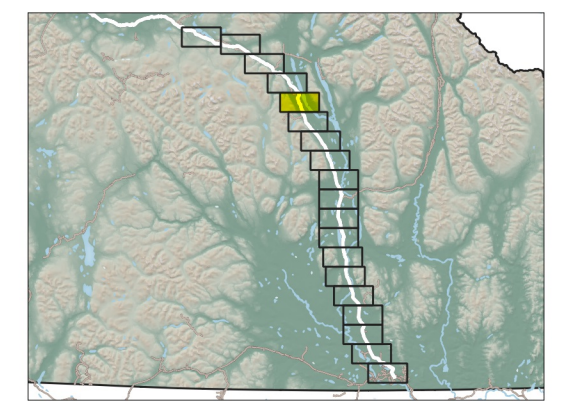
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

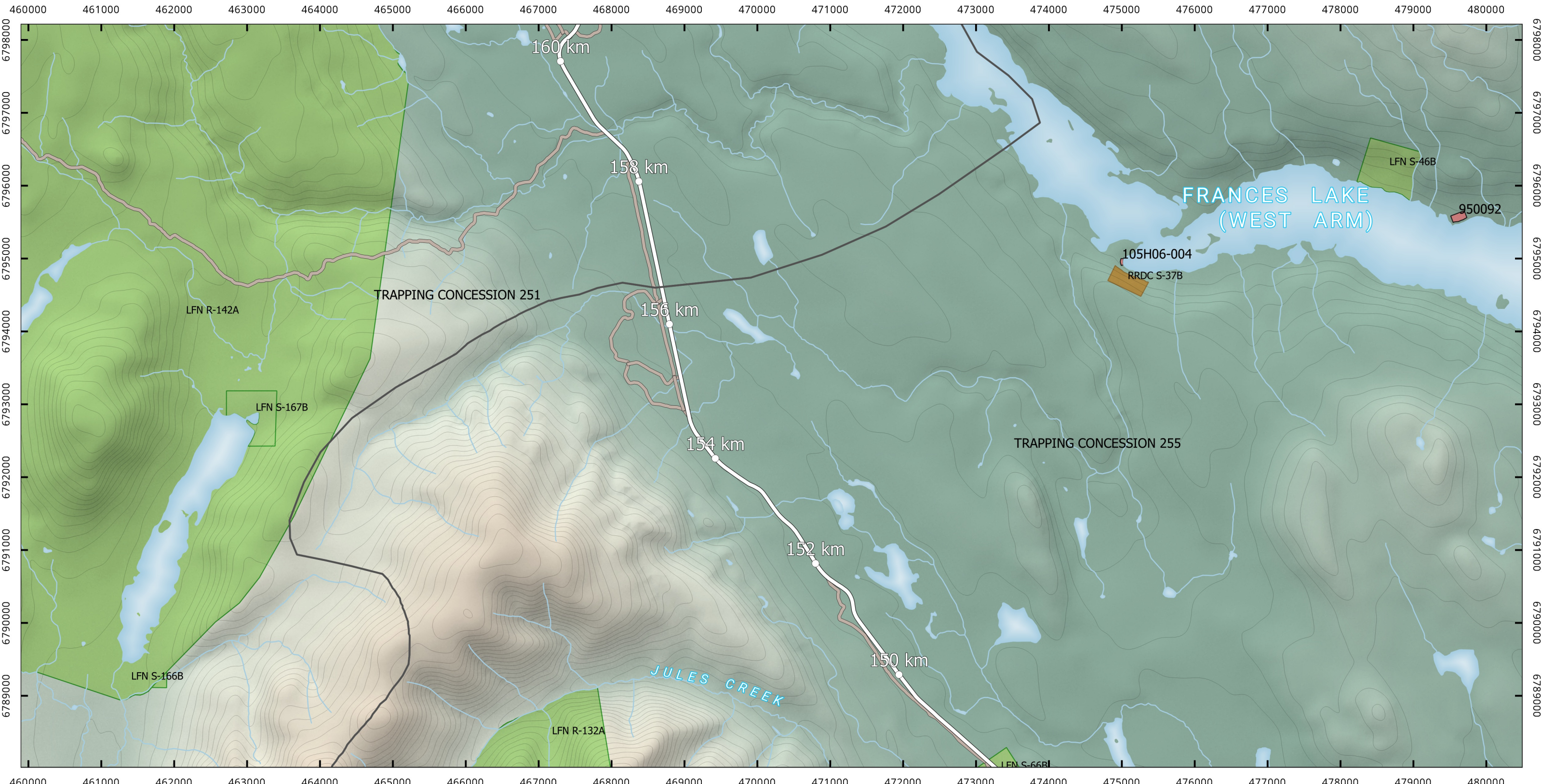
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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KUDZ ZE KAYAH PROJECT  
 APPENDIX B-6  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

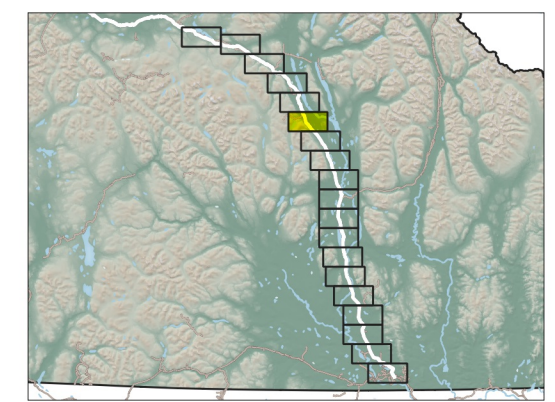
- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

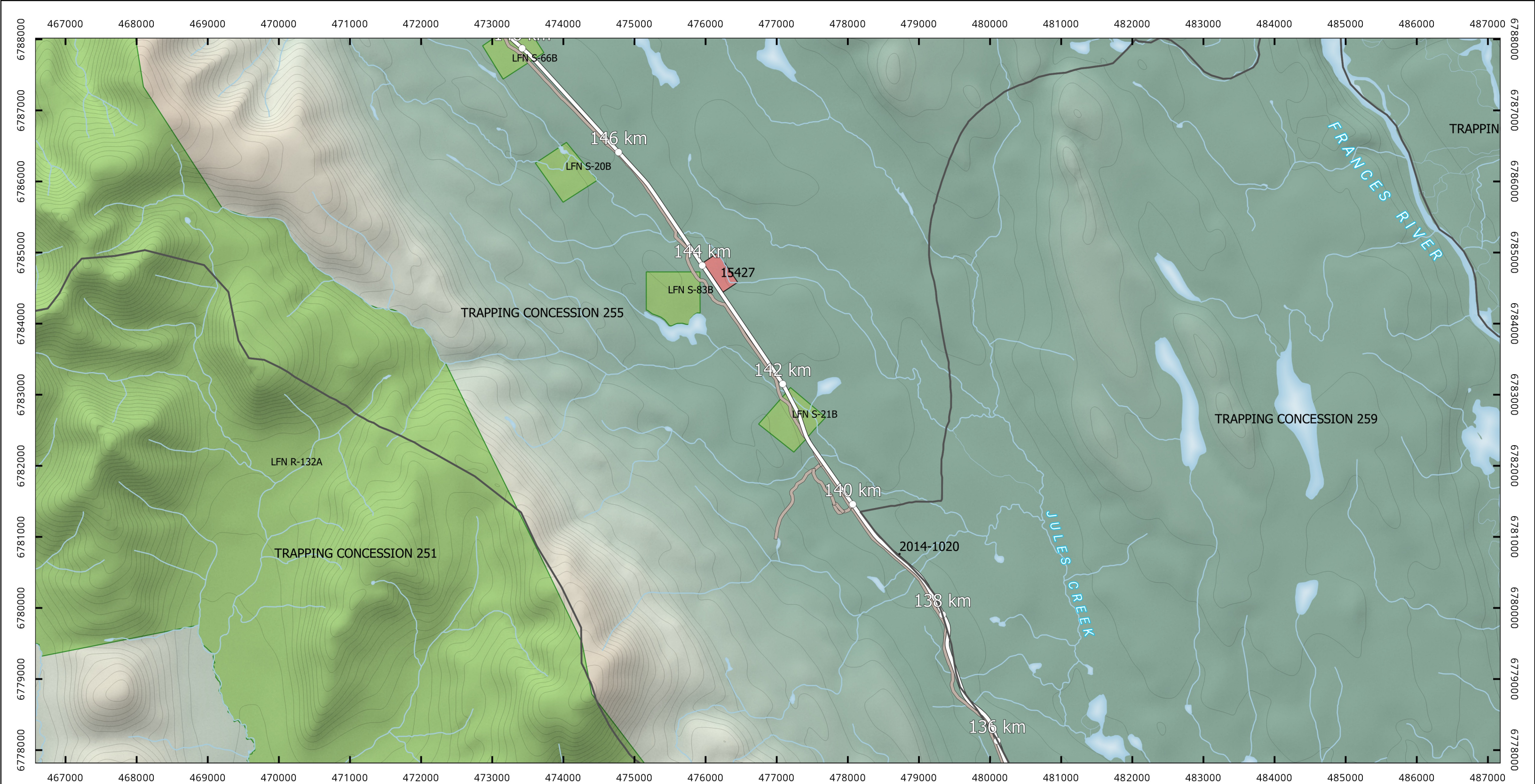
- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well

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KUDZ ZE KAYAH PROJECT  
 APPENDIX B-7  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

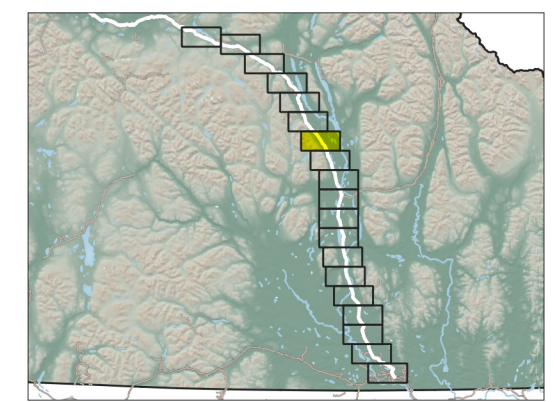
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well

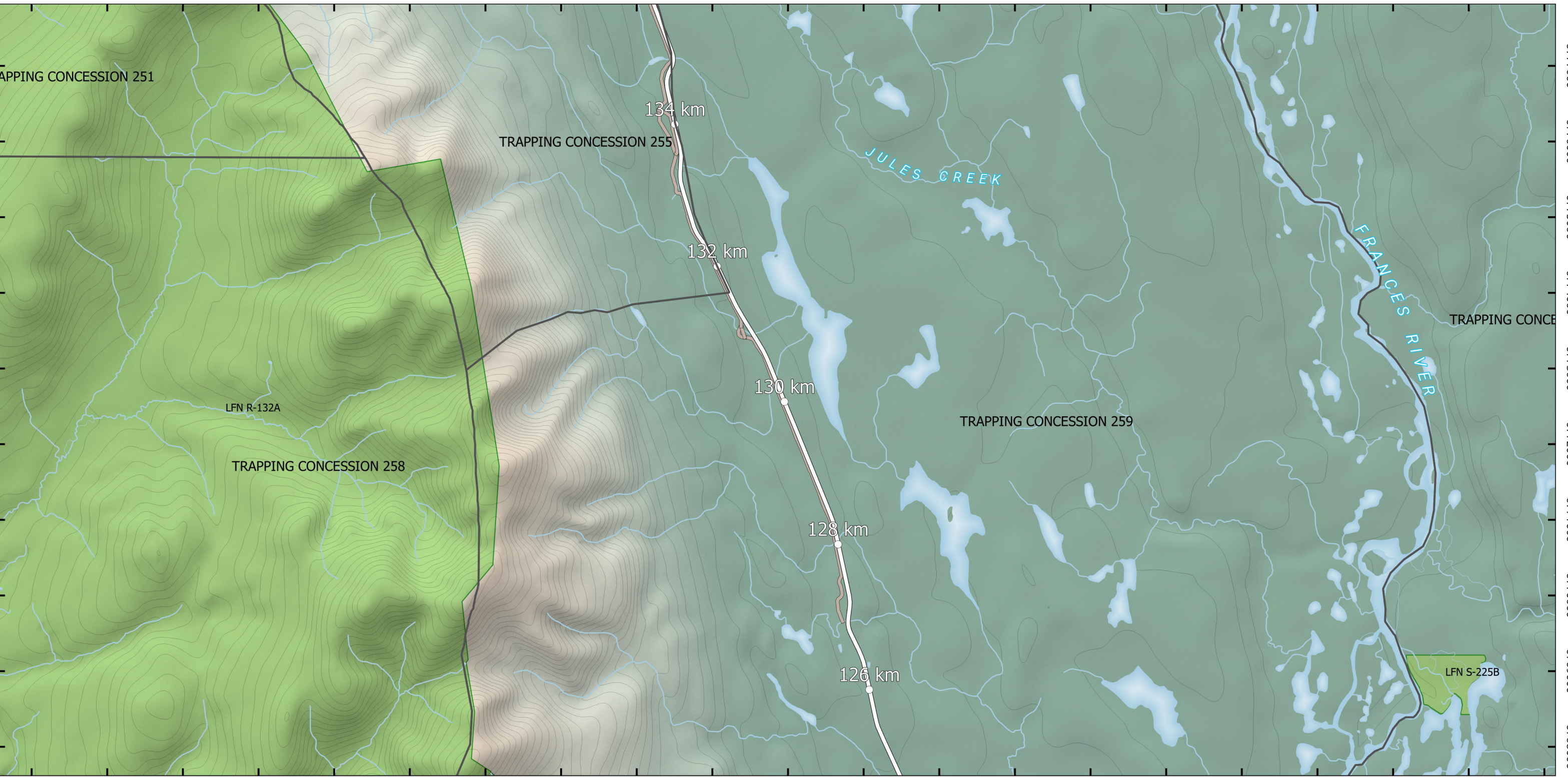


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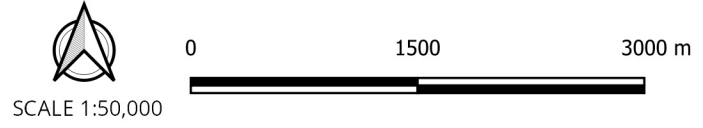
KUDZ ZE KAYAH PROJECT  
APPENDIX B-8  
TRADITIONAL LAND USE  
ROBERT CAMPBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

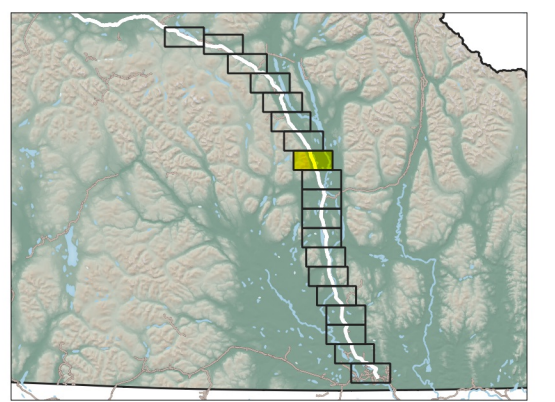
- Unsurveyed Settlement Lands
  - LFN
  - RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

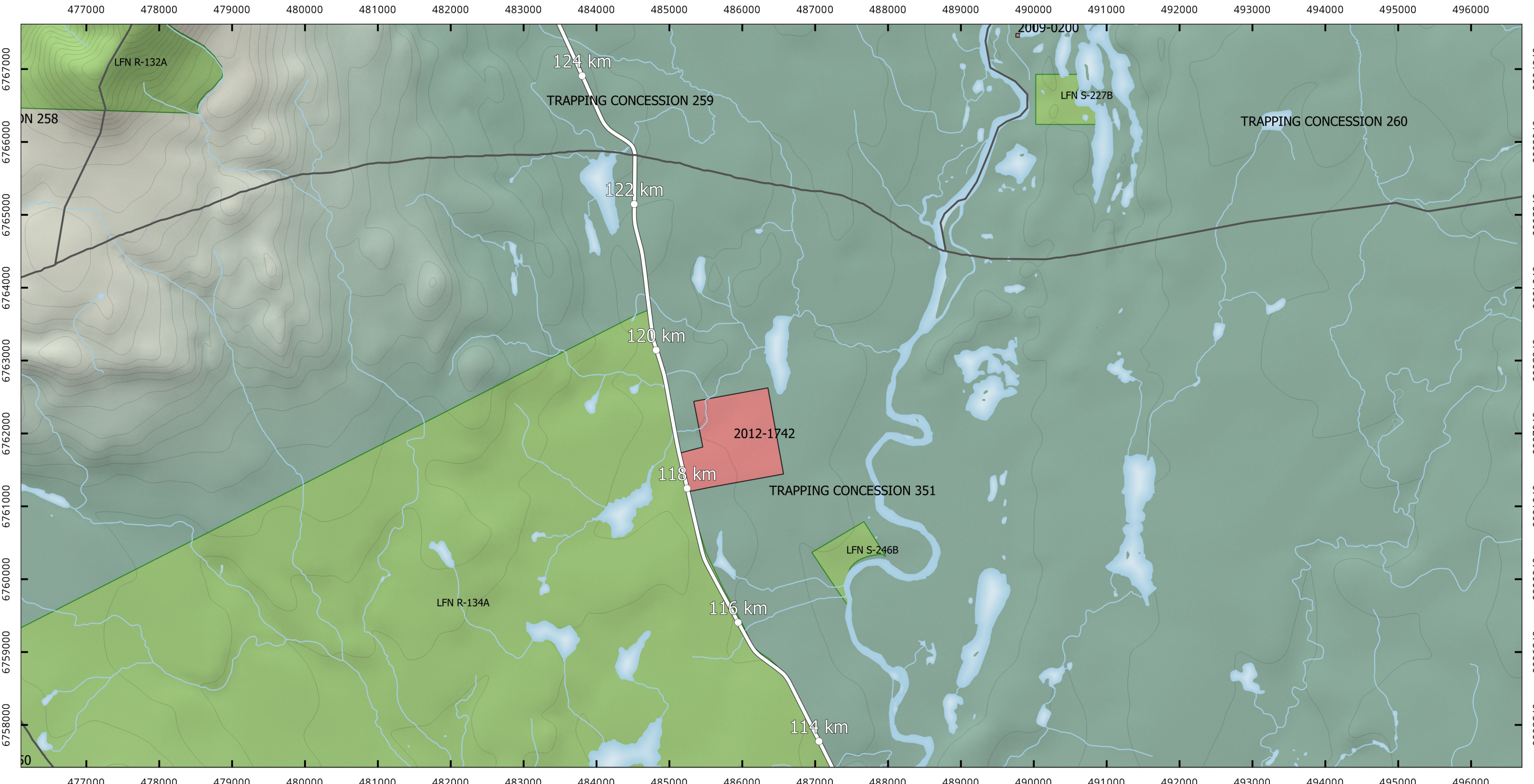
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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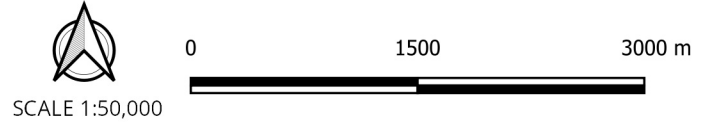
KUDZ ZE KAYAH PROJECT  
 APPENDIX B-9  
 TRADITIONAL LAND USE  
 ROBERT CAMPELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

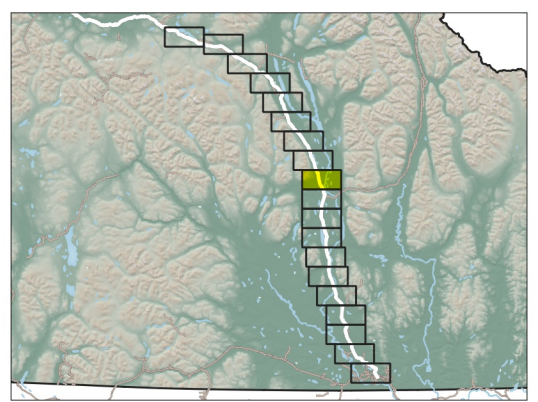
- Unsurveyed Settlement Lands LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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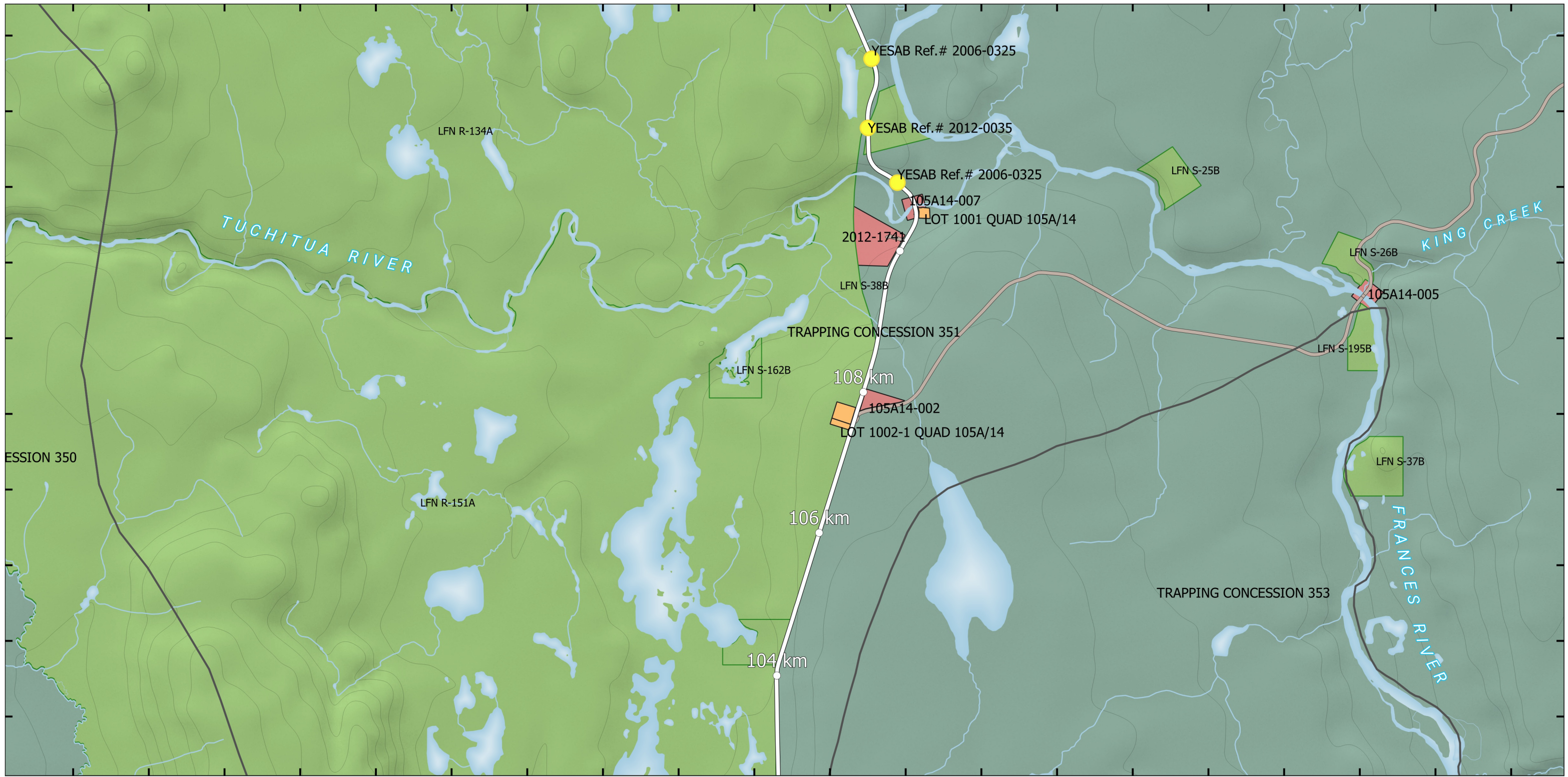




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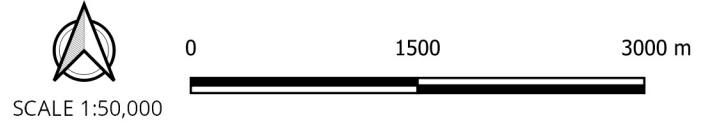
KUDZ ZE KAYAH PROJECT  
APPENDIX B-10  
TRADITIONAL LAND USE  
ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

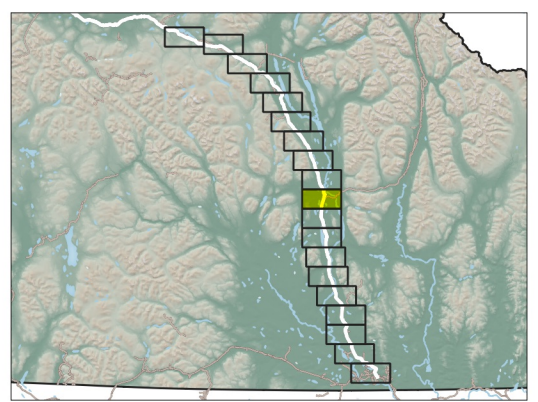
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

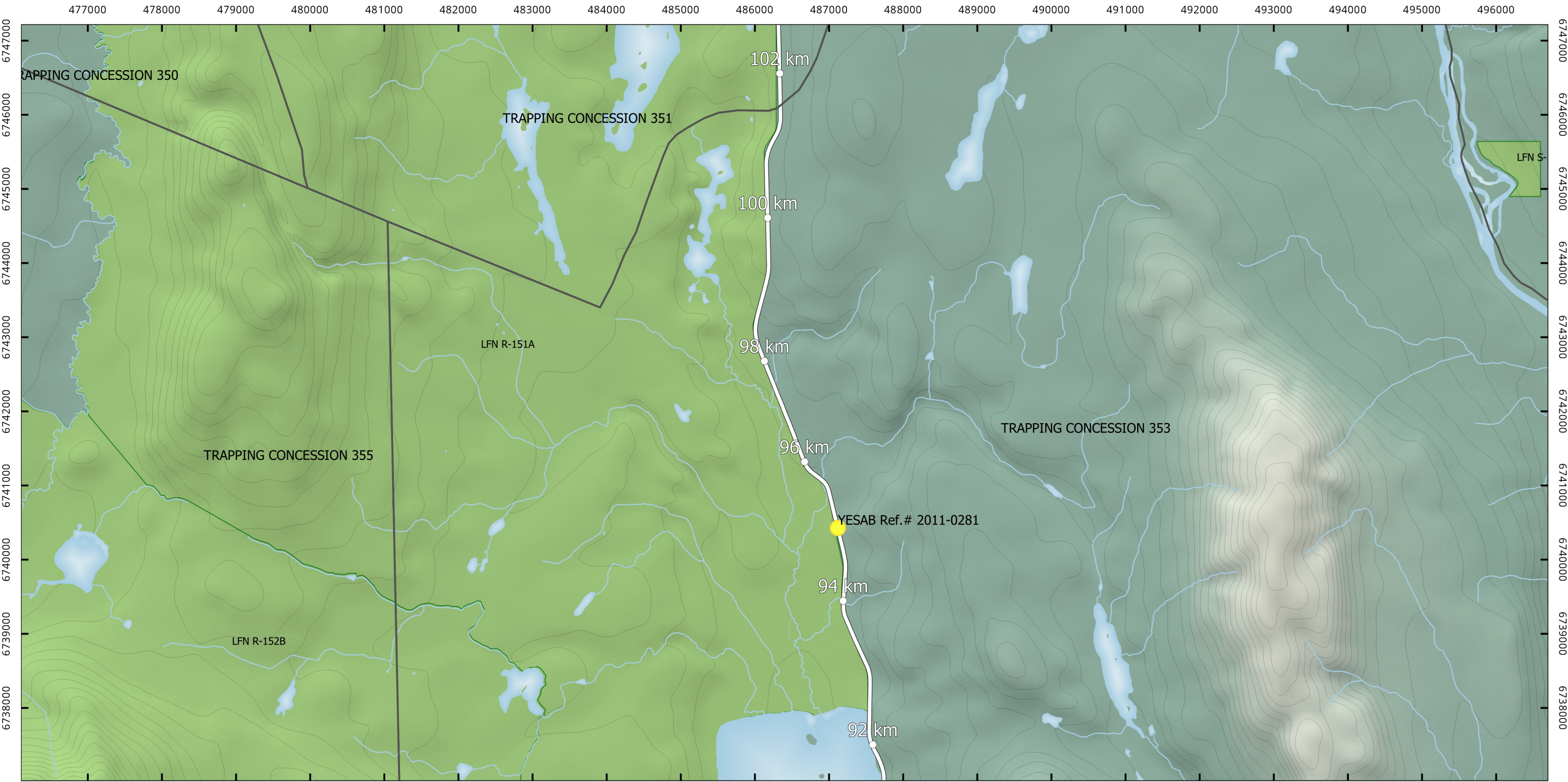
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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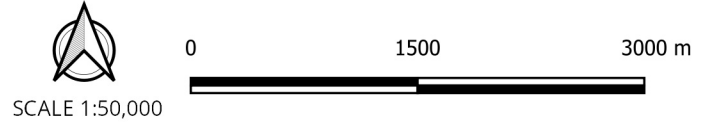
KUDZ ZE KAYAH PROJECT  
 APPENDIX B-11  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

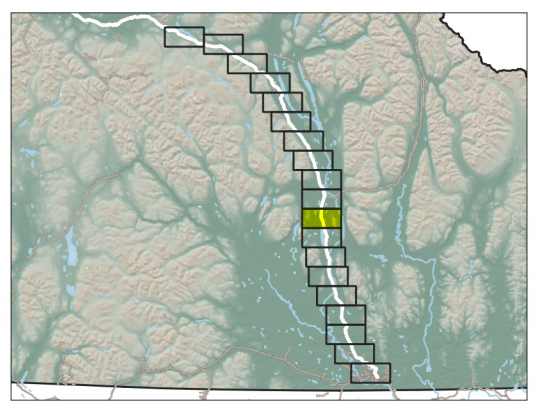
- Unsurveyed Settlement Lands**
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

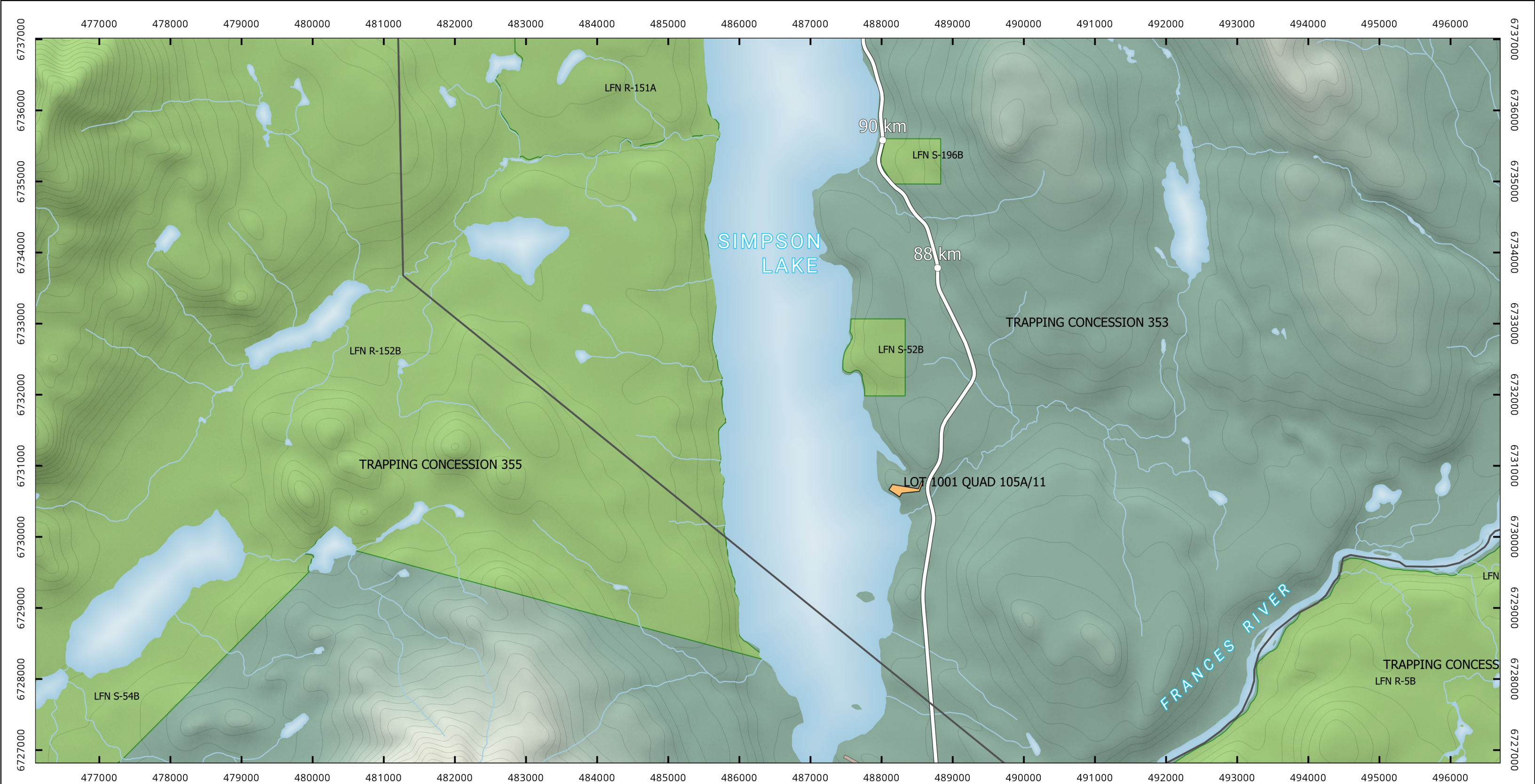
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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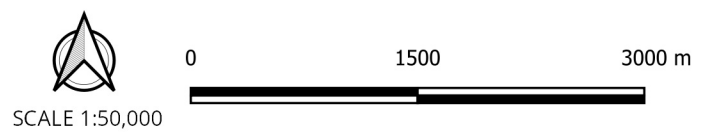




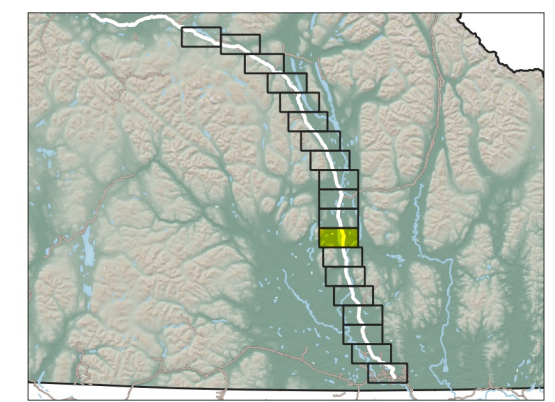


KUDZ ZE KAYAH PROJECT  
 APPENDIX B-12  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- |                         |  |                                 |               |
|-------------------------|--|---------------------------------|---------------|
| Robert Campbell Highway | Unsurveyed Settlement Lands  | Building                        | Runway        |
| Highway Km Posts        | LFN  | Built-up area                   | Seaplane base |
| Roads, Trails           | RRDC   | Campground                      | Ski centre    |
| KZK Tenure Outline      | Traditional Use Sites Identified in Previous YESAB Environmental Assessments | Historic site/point of interest | Tank          |
| Parcel Addresses        |  | Mining area                     | Tower         |
| Land Dispositions       |  | Picnic site                     | Well          |
| Trapping Concessions    |  |                                 |               |



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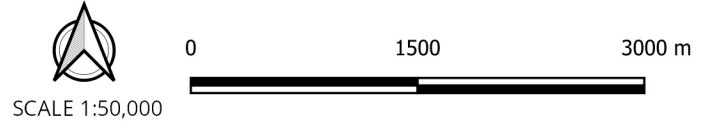
KUDZ ZE KAYAH PROJECT  
APPENDIX B-13  
TRADITIONAL LAND USE  
ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

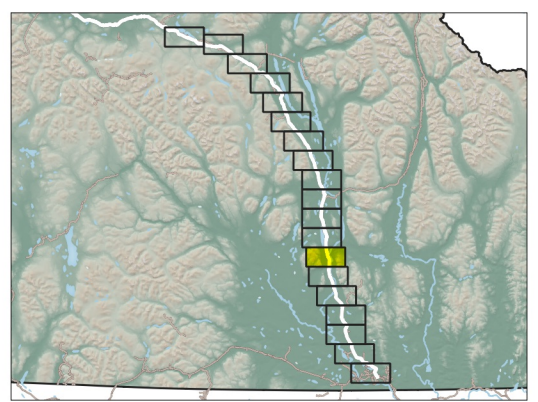
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well

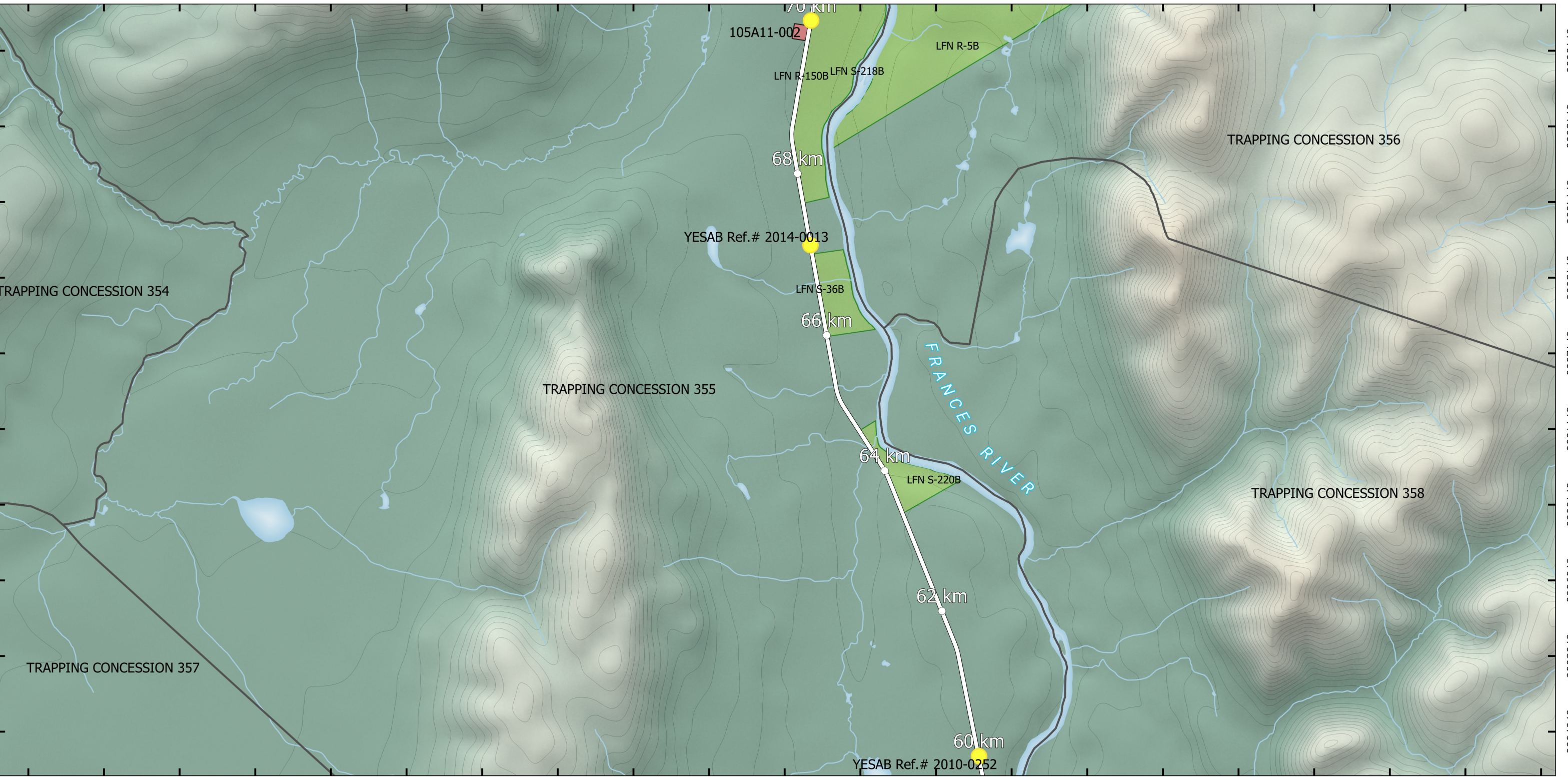


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KUDZ ZE KAYAH PROJECT  
APPENDIX B-14  
TRADITIONAL LAND USE  
ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

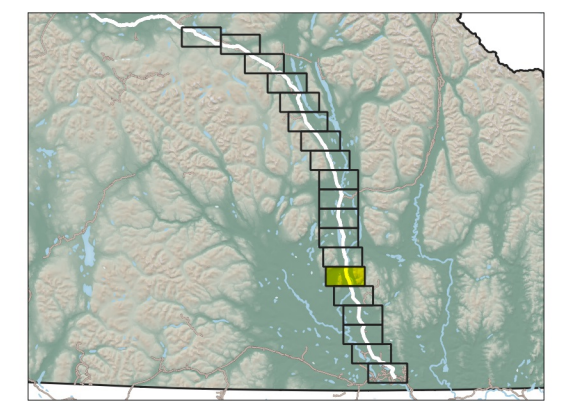
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

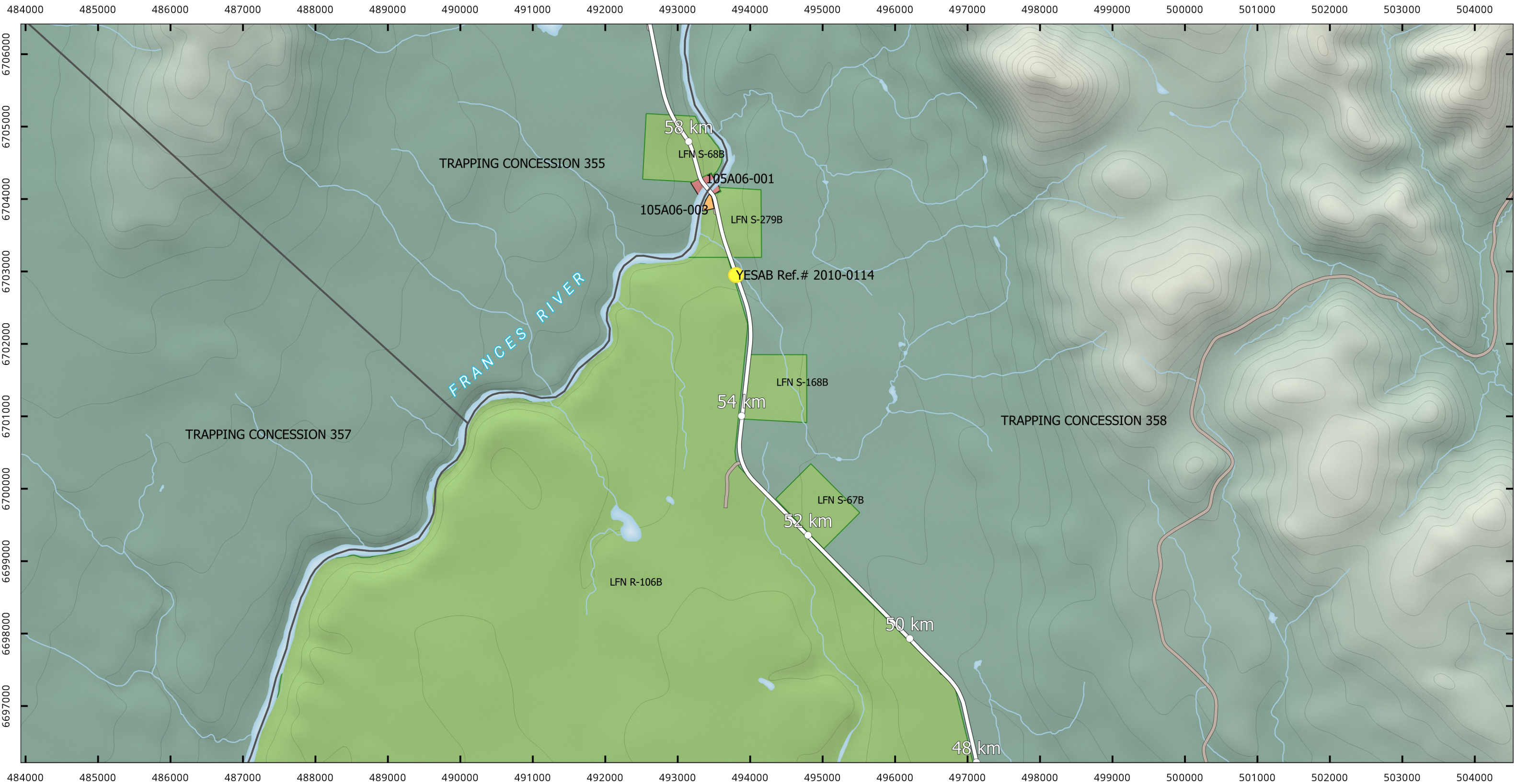
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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KUDZ ZE KAYAH PROJECT  
 APPENDIX B-15  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

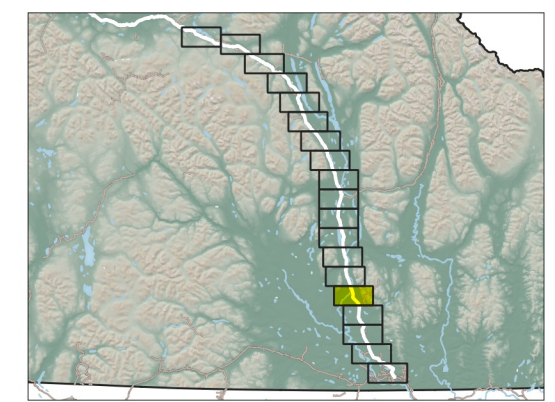
- Unsurveyed Settlement Lands
- LFN
- RRDC

- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well

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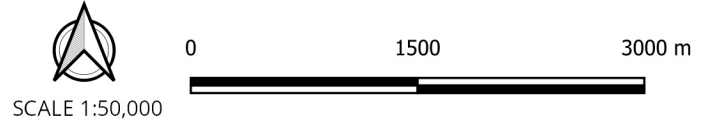
KUDZ ZE KAYAH PROJECT  
 APPENDIX B-16  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

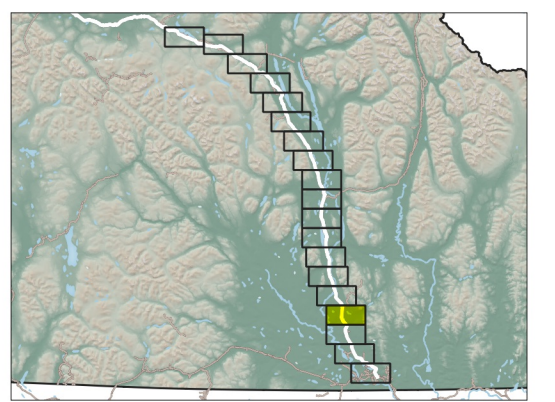
- Unsurveyed Settlement Lands**
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

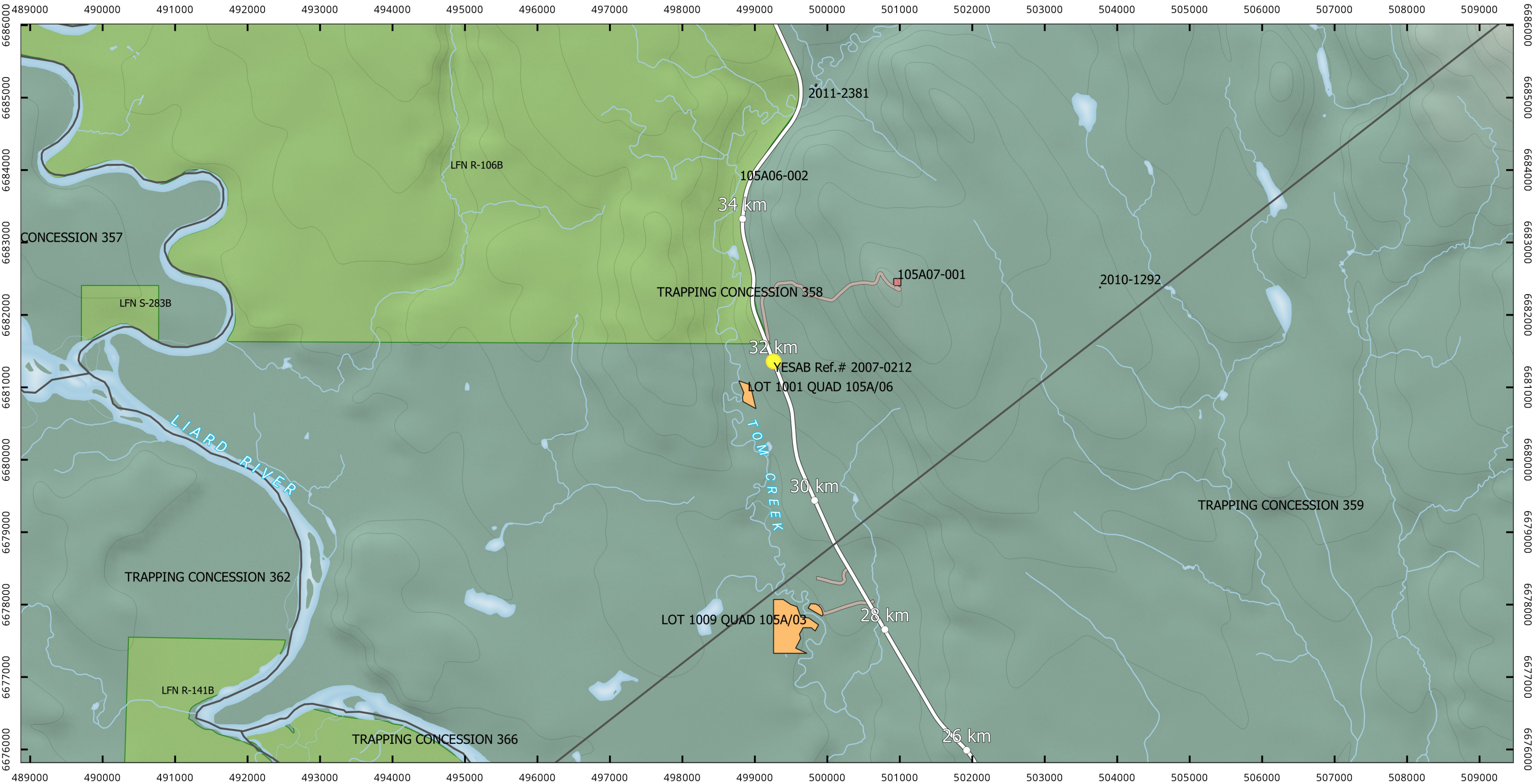
- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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KUDZ ZE KAYAH PROJECT  
 APPENDIX B-17  
 TRADITIONAL LAND USE  
 ROBERT CAMBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

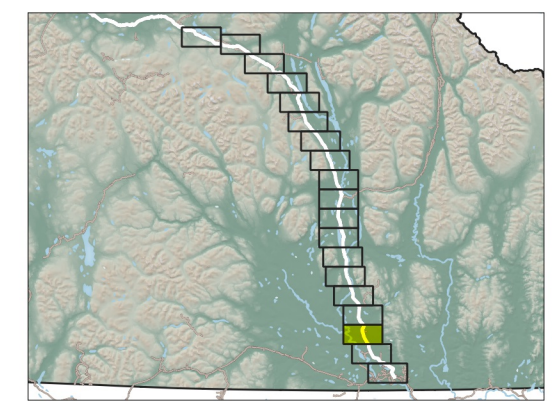
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well

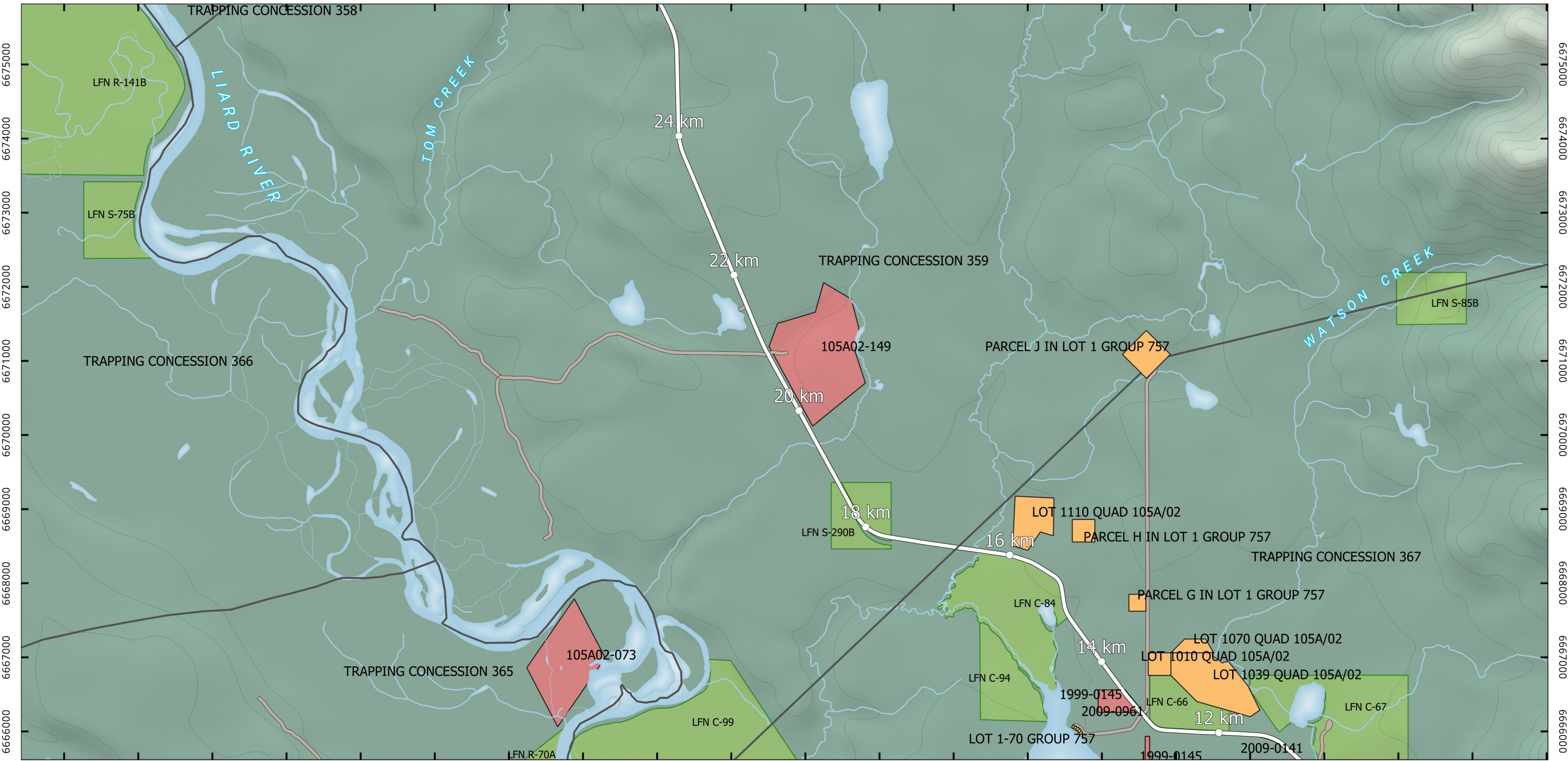


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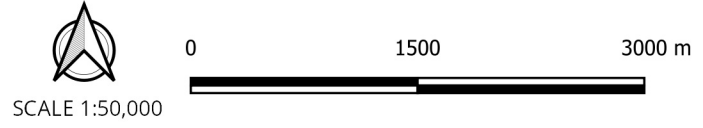
KUDZ ZE KAYAH PROJECT  
 APPENDIX B-18  
 TRADITIONAL LAND USE  
 ROBERT CABBELL HIGHWAY

- Robert Campbell Highway
- Highway Km Posts
- Roads, Trails
- KZK Tenure Outline
- Parcel Addresses
- Land Dispositions
- Trapping Concessions

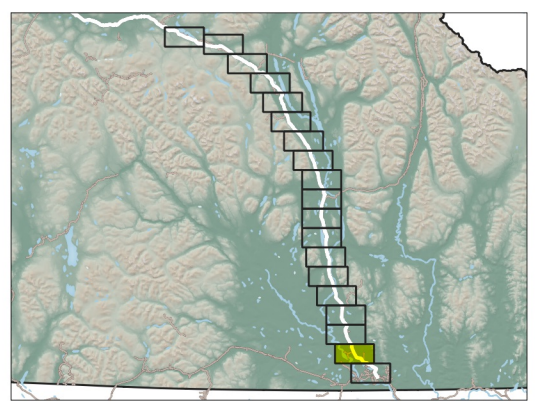
- Unsurveyed Settlement Lands
- LFN
- RRDC
- Traditional Use Sites Identified in Previous YESAB Environmental Assessments

- Building
- Built-up area
- Campground
- Historic site/point of interest
- Mining area
- Picnic site

- Runway
- Seaplane base
- Ski centre
- Tank
- Tower
- Well



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## **Appendix G. Summary of Additional Mitigations Measures for Traffic Management Plan**

BMC provided the Executive Committee with an effects assessment of the VC Public Health and Safety due to increased traffic in Chapter 15 of the Project Proposal. Chapter 15 indicates that 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). During both the Adequacy and Seeking views stages of YESAB's Environmental and Socio-economic Assessment process, YESAB requested BMC to provide additional information related to (in part) public health and safety due to increased highway traffic. BMC's responses to these information requests have resulted in BMC providing additional information and commitments that will be added to the Traffic and Access Management Plan (which as a result will be expanded to include the Robert Campbell Highway and include commitments that are within BMC's control vs Yukon Highways and public Works control).

For clarity, these additional commitments are as follows:

- Kudz Ze Kayah Mine transport will operate using existing high traffic roadways and traffic corridors, which include identified industrial trucking routes through municipalities.
- All concentrate haul trucks will be appropriately lit including strobe lights, as well as high intensity driving lights for the long stretches of unlit highway during winter operations.
- 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.
- 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.
- All long-haul trucking operations will be operated in accordance with Yukon Occupational Health and Safety Regulations in Yukon and in British Columbia the BC Motor Vehicle Act and other pertinent workers health and safety statutes and regulations regarding maximum allowable driver working durations.
- 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.
- Prior to construction of the mine and its operation, the locations of safe passing zones along the highway haulage route 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 truck speed, or even stopping, to allow other traffic to easily and safely pass at these locations.
- 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 BMC will work closely with the

community and Yukon Highways. Community input will be sought and where appropriate the company can run trials to evaluate the effectiveness of various proposed strategies.

- Increased traffic will increase normal wear and tear along the road more rapidly than at present. The increased wear can be minimised by appropriate road management including reducing the speed that traffic uses the road and using proper driving techniques such as; minimising 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 minimise disruption to their projects. This will mean informing Highways of trucking schedules and may mean scheduling trucking to certain times of the day to minimise effects on the various activities.
- Winter driving: In winter the driveable 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.
- Discrete sections of the Robert Campbell Highway have potential for washouts during high rainfall events and ice “glaciers” during the peak of the spring melt. The glaciers will occur during the highway weight restriction period and during this period the company will be altering vehicle movement schedules to reduce site specific traffic movements thereby reducing potential issues 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 opportunity for the potential problem to 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.
- 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 are available to be used with the relevant safety statistics for comparison purposes. These reports will be publicly available through the EMR website and will be presented at community meetings in Ross River and Watson Lake and meetings with LFN and RRDC. Any corrective actions or opportunities for improvement presented by the use of this data shall be actively considered by the company.
- BMC will work with HPW to increase the frequency of brushing from km 114 to 232.
- BMC will also work with HPW to identify areas where additional spot improvements could enhance usability and visibility from km 114 to 232.
- BMC will also work with HPW to identify locations for additional pullout construction between km 190 to 232.
- It is apparent that success in minimising effects of the increased traffic on the Robert Campbell Highway will rely on continued communication between all the relevant

parties including, but not limited to, BMC, Yukon Highways, the people of Ross River and Watson Lake, and all service providers that use the road currently or into the future. 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 HPW. With this communication in place and the appropriate procedures and action plans in place negative effects of the increased traffic can be minimised and the positive benefits maximised.

- Additional signage on the highway alerting traffic to the road condition or the possible presence of heavy haulage.